THRIVENI

Ref: TEMPL – LP /DFO/2024-25/207

Date- 31.08.2024

To

The Divisional Forester Officer
Keonjhar Subdivision
Dist. Keonjhar,Odisha

Sub: Proposal for seeking prior approval of the Central Government under Section-2(ii) of the Forest (Conservation) Act, 1980 in favour of M/s Thriveni Earthmovers Private Limited for non-forestry use of 94.351 ha of forest land including 4.261 ha of safety zone (3.858 ha along the ML boundary and 0.403 ha along the PWD road) within the granted Loi for ML over 131.800 ha for Laserda Pcheri Manganese & Iron Ore Block in Keonjhar district of Odisha – reg. (Online Proposal no.FP/ OR/ MIN/149499/2021).

X-Sub: Submission of Stage-I compliance for diversion of 94.351 ha of forest land coming under Keonjhar Forest Division stipulations imposed by MoEF & CC, Govt. of India.

Ref: 1). F.No. 8-02/2023-FC dated 21.12.2023 of MoEF & CC ,Govt.of India.

2). Meno no. 26731 /FE&CC dated 29.12.2023 of OSD- Cum- Special Secretary.

3). Letter no 2031 / Mining-21/2024 dated 04.03.2024 of DFO,Keonjhar Division,

Dear Sir,

In reference to the cited subject, we are herewith submitting the point wise Compliance to the 43 nos of conditions stipulated in stage – I approval of Ministry of Environment, Forest & Climate Change (Forest Conservation Division), Government of India, New Delhi vide letter no.8-02/2023-FC dated 21.12.2023 for Diversion of 94.351 Ha. Forest land includes 4.261 Ha. of Safety Zone (3.858 ha along the ML boundary and 0.403 ha along the PWD road in Laserda Pacheri Manganese & Iron Ore Block of M/s Thriveni Earthmovers Private Limited in Barbil tahsil under Keonhjar forest division of Keonjhar district, Odisha. The Compliance of the of stage -I conditions is enclosed as Appendix -I.

Submitted for your kind perusal and needful action.

Your Sincerely

For Thriveni Earthmovers Pvt.Ltd.

V Kumar
Vice President

THRIVENI EARTHMOVERS PVT. LTD.

Received
2.9.24

Thriveni Earthmovers Private Limited
CIN: U60231TZ1999PTC008876
CO : At - Topadhi, P.O.: Guali,P.S:Rugudi Dist.: Keonjhar-758035, Odisha,India
Ph/Fax: 0427 - 2447667 / 2445909 | email: info@thriveni.com | Website: www.thriveni.com

Compliance to conditions stipulated by MoEF&CC in stage –I approval order Dated 21.12.2023 for diversion of 94.351 ha of forest land including 4.261 ha of safety zone within granted LoI for ML over 131.800 ha for mining and allied activities in respect of Laserda-Pacheri Manganese and Iron Ore Block in village Lserda, Dhanujaypur and Kanrda under Barbil Tahasil of Keonjhar District.

1. ***Legal status of the diverted forest land shall remain unchanged;***

Reply- Legal status of the diverted forest land shall remain unchanged. An undertaking to this effect is enclosed vide **Annexure- I.**

2. **Compensatory Afforestation**

a) The User Agency shall transfer the cost of raising and maintaining the compensatory afforestation as per the approved CA Scheme at the current wage rate in consultation with State Forest Department in the account of CAMPA of the concerned State through online portal;;

Reply- Non – forest land over 96.00 ha (91.00 + 5.00) has been identified and allotted by the Collector, Keonjhar in village Uperbirikala under Banspal Tahasil of Keonjhar forest Division. A sum of Rs.55443200/-(Rs. 48371400+ Rs.7071800)/- towards the cost of Compensatory afforestation as per the scheme approved at the current wage rate of Rs. 450/- per MD with a maintenance for 10 years has been deposited through RTGS vide URT No. ICICR22024043003014962 dt. 30.04.2024 & ICICR22024072504374175 dt. 25.07.2024 respectively. The copy of the remittance receipt is enclosed vide **Annexure- II.**

b) The land identified for raising Compensatory Afforestation shall be notified by the State Government as RF under Section-4 or PF under Section-29 of the Indian Forest Act. 1927 or under

the relevant Section (s) of the local Forest Act, as the case may be, before the Stage-II approval;;

Reply- Non – forest land over 91.00 ha has been identified and allotted in village Uperbirikala under Banspal Tahasil has been mutated and transferred in favour of State Forest Department vide order No 681, dt. 14.03.2024 of Tahasildar, Banspal and the same land has been notified protected forest under Section 33 of Odisha Forest Act, 1972 vide notification No. 13674, dt. 26.07.2024. Copy of the same is enclosed as **Annexure III**. Further non-forest land over 5.00 ha has been identified and allotted in village Uperbirikala under Banspal Tahasil has been mutated and transferred in favour of State Forest Department vide order No 1818, dt. 27.08.2024 of Tahasildar, Banspal. The proposal for notification as PF has been submitted to the PCCF (Nodal), Bhubneswar vide memo no.6877/6F-Mining-152/2021 dated 29.08.2024 of DFO, Keonjhar Division & copy of the same is enclosed as **Annexure III(A)**

c) ***The cost of survey, demarcation and erection of permanent pillars, if required on the identified CA land, shall be deposited in advance with the Forest Department by the user agency. The CA will be maintained for 10 years. The scheme may include afforestation of indigenous species with appropriate provision for anticipated cost increase for works scheduled for subsequent years;;***

Reply- Non – forest land over 96.00 ha (91.00 + 5.00) has been identified and allotted by the Collector, Keonjhar in village Uperbirikala under Banspal Tahasil of Keonjhar forest Division. A sum of Rs. 5,54,43,200/-(Rs. 48371400+ Rs.7071800)/- towards the cost of Compensatory afforestation as per the scheme approved at the current wage rate of Rs. 450/- per MD with a maintenance for 10 years has been deposited through RTGS vide URT No. ICICR22024043003014962 dt. 30.04.2024 & ICICR22024072504374175 dt. 25.07.2024 respectively. The copy of the remittance receipt is enclosed vide **Annexure- II.**

Further degraded forest land over 104 ha has been identified in Jyotipur RF under Champua range of Keonjhar forest Division. A sum of Rs.5,22,95,503/- towards to accommodate the planting of balance seedling as per the scheme approved at the current wage rate of Rs. 450/- per MD with a maintenance for 10 years has been deposited through RTGS vide URT No. ICICR22024043003014963 dt. 30.04.2024. The copy of the remittance receipt is enclosed vide **Annexure- II.**

d) ***The compensatory afforestation over non-forest land, equal in extent to the forest land being diverted i.e. 94.351 ha, shall be raised by the State Forest Department at the project cost within three years from the date of grant of Stage - II approval. The details of the CA along with the KML will provided by the UA at the time of the submission of compliance of the Stage-II.;***

Reply- Non – forest land over 96.00 ha (91.00 + 5.00) has been identified and allotted by the Collector, Keonjhar in village Uperbirikala under Banspal Tahasil of Keonjhar forest Division for Compensatory Afforestation against 94.351 ha of forest land being diverted. The KML file of CA land is enclosed in CD format.

e) ***Afforestation on degraded forest land to be selected elsewhere, measuring one and a half times the area under safety zone, shall also be done at the project cost under the supervisions of the State Forest Department 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.***

Reply- Degraded forest land over 5.787 ha has been identified in Bansuli RF under Patna range of Keonjhar forest Division. A sum of Rs.37,04,000/- towards one and half times the area under safety zone as per the scheme approved at the current wage rate of Rs. 450/- per MD with maintenance for 10 years has been deposited through RTGS vide URT No. ICICR22024060403537960 dt. 04.06.2024. The copy of the remittance receipt is enclosed vide **Annexure- II.**

f) 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 meter 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;.

Reply- A scheme has been prepared over 55.00 ha to undertake gap plantation soil & moisture conservation activities to restock and rejuvenate the degraded open forests located in the area within 100 meter from outer perimeter of the mining lease with a budgetary provision of Rs. 1,06,12,600/- at the current wage rate of Rs. 450/- per MD with a maintenance for 10 years. The same has been approved by RCCF, Rourkela Circle vide letter No. 3133, dt. 19.07.2024. Copy of the same is enclosed as **Annexure – IV**

g) 25% of the CA cost additionally will be spent towards soil and moisture conservation activities in the proposed CA area as per site requirement and deposited in CAF;

Reply- 25% of the additional CA cost has been included in CA scheme towards soil and moisture conservation activities and approved by PCCF, Bhubaneswar. A sum of Rs. 5,54,43,200/-(Rs. 4,83,71,400+ Rs.70,71,800)/- towards the cost of Compensatory afforestation as per the scheme approved at the current wage rate of Rs. 450/- per MD with a maintenance for 10 years has been deposited through RTGS vide URT No.

ICICR22024043003014962 dt. 30.04.2024 & ICICR22024072504374175 dt. 25.07.2024 respectively. The copy of the remittance receipt is enclosed vide **Annexure- II.**

3. NPV

a) The User Agency shall transfer the funds towards the cost of Net Present Value (NPV) of the forest land being diverted under this proposal from the User Agency 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 06.01.2022 read with 22.03.2022 through online portal of CAMPA account of the State Concerned;

Reply- The amount of Rs. 10,53,80,632/- (Rs. 1,53,80,632 +Rs.9,00,00,000) towards Net Present Value (NPV) of the entire forest area involved within the granted mining lease area over 94.351 ha has been deposited in the CAMPA Fund through RTGS mode vide URT No. ICICR22024032802510396 dt. 28.03.2024 & ICICR22024032802510396 dt. 28.03.2024 respectively. The copy of the remittance receipt is enclosed vide **Annexure- II.**

b. At the time of payment of the Net Present Value (NPV) at the present 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;

Reply- As per demand we have paid Rs. 10,53,80,632/- towards NPV. Further an undertaking for paying any additional amount of NPV if so determined is enclosed as **Annexure – I.**

4. The CA area has been provided over 90.493 ha NFL; therefore, the State Govt. shall ensure that the equivalent non-forest land to the extent of the forest land being diverted will be provided;.

Reply- Non – forest land over 96.00 ha (91.00 + 5.00) towards Compensatory Afforestation has been identified and allotted by the Collector, Keonjhar in village Uperbirikala under Banspal Tahasil of Keonjhar forest Division towards 94.351 ha forest land being diverted. Further the said land has already been muted in the name of forest dept. ROR Copy of the same is enclosed as **Annexure – V**.

5. ***Transportation of ore shall be as per the recommendation in the report submitted by CSIR-NEERI;.***

Reply- Transportation of ore will be as per the recommendation in the report submitted by CSIR-NEERI. An undertaking in this regards is enclosed as **Annexure – I.**

6. ***A holistic transportation plan shall be prepared by the State Govt. aiming to have minimum impact in the landscape. The same shall be implemented. Transportation of ore should be as far as possible through common conveyor belt, slurry pipeline, railways, etc. Transportation of ore through road should be minimized in a time bound manner;***

Reply- We will follow the transportation plan prepared the State Govt. to aiming minimum impact in the landscape. An undertaking in this regards is enclosed as **Annexure – I.**

7. ***An Oversight Committee shall be constituted under the Chairmanship of the DDGF (Central) RO Bhubaneswar for 10 years who will monitor and review the compliance of the conditions stipulated in the approval for these five mines [namely 1. Netrabandha Pahar iron Ore Block (area 112.621***

ha, 2. . Netrabandha Pahar (West) area 66.242 ha), 3. Laserda Pacheri Manganese & Iron Ore Block (area 94.351 ha), 4. . Kalmang West (Northern Part) Block for Iron Ore Mines Iron Ore Block (Area 42.608 ha). 5. Guali Opencast Iron Ore Mines (area 194.683 ha)] twice a year and submit their yearly report to this Ministry in the month of December. This Oversight Committee shall consist following members and logistics of this Committee shall be borne by State Government at the cost of UAs:

a) ***DDGF (Central) – Regional Office Bhubaneswar- Chairman.***
b) ***One Representative from IIFM Bhopal***
c) ***One Representative from WII Dehradun***
d) ***One Representative from ICFRE. e. One Representative from NEERI. f. One expert in Geology***
e) ***Two other experts nominated by MoEF&CC***

The recommendation made by the said committee shall be considered by the Ministry and if agreed the same shall be binding on the UAs;

Reply- We will follow the recommendation if any made by the committee constituted under the Chairmanship of the DDGF (Central) RO Bhubaneswar for 10 years during monitor and review of compliance. An undertaking in this regards is enclosed as **Annexure – I.**

8. ***Integrated Regional Wildlife Conservation Plan shall be prepared for 10 years covering the forest Division of Sundargarh, Jharsuguda and Keonjhar Districts at the cost of UA. The works shall be executed as per APO and the regional plan shall have site/species specific wildlife sub plans/prescriptions;.***

Reply- The Site Specific Conservation Plan has been approved by PCCF (Wildlife) & Chief Wildlife Warden, Odisha, Bhubaneswar has approved and as per demand towards wages @ Rs 40000/- per month of a Sociologist from January 2024 and we had paid the same from Jan 24 to July 2024. Copy of

the same is enclosed as **Annexure – II**. We will pay the said monthly amount up to 5 years from January 2024. An undertaking in this regards is enclosed as **Annexure – I.**

9. ***A Bio-diversity Conservation Plan for this entire landscape shall also be prepared by the State Govt at the cost of UA;***

Reply- In this regards the State Govt. has engaged IIFM, Bhopal for preparing scheme for Bio-diversity Conservation Plan with total budgetary of Rs. 57,18,924/- for total 5 leases. In this regards total consultancy charge for Laserda Mines is Rs. 10,57,014/-. Out of that as per demand 50% of total amount of Rs. 5,28,507/- against Laserda Mines have paid vide demand draft No. 503273, dt. 30.08.2024. Copy of the same is enclosed as **Annexure – II**.

10. ***Soil and moisture conservation measures shall be undertaken in and around 10 KM radius of the mining lease areas at project cost;***

Reply- The Scheme for Soil and moisture conservation measures shall be undertaken in and around 10 KM radius of the mining lease areas has been approved by RCCF, Rourkela Circle vide letter No. 3133, dt. 19.07.2024. Copy of the same is enclosed as **Annexure – IV.** The budgetary approved for the same is Rs. 12,10,32,222/-. We will do the said work as per the scheme. An undertaking in this regards is enclosed as **Annexure – I.**

Approved Scheme enclosed herewith

11. ***The conditions stipulated in EC should be strictly implemented and monitored.***

Reply- An Undertaking to this effect is enclosed vide **Annexure – I**.

12. ***Compensatory levies to be realized from the User Agency under the project shall be transferred/ deposited, through e-challan, in to the account of CAMPA pertaining to the State concerned through e-portal (https://parivesh.nic.in/);.***

Fund related to the project have been deposited as per the details given below-

Sl. No.	Details of Funds Deposited	Amount Deposited (in Rs.)	Payment Details
1	NPV over 94.351 ha	10,53,80,632/-	Through RTGS vide URT No. ICICR22024032802510396 dt. 28.03.2024 & ICICR22024032802510396 dt. 28.03.2024
	Total NPV	**10,53,80,632.00**	
2	Site Specific Wild Life Management Plan	3,90,00,402/-	Through RTGS URT No. ICICR22024031402284358 dt. 14.03.2024
	Total SSWL Plan	**3,90,00,402.00**	
3	C.A. over 91.00 ha. CA over 5.00 ha	4,83,71,400 70,71,800	Through RTGS URT No. ICICR22024043003014962 dt. 30.04.2024 & ICICR22024072504374175 dt. 25.07.2024
	Degraded forest land over 104.00 ha	5,22,95,503	Through RTGS vide URT No. ICICR22024043003014963 dt. 30.04.2024
	Total CA	**10,77,38,703.00**	
4	Cost of one and half times of the safety zone over 5.787 ha	37,04,000	Through RTGS URT No. ICICR22024060403537960 dt. 04.06.2024
	Total SZ	**37,04,000.00**	
	Grand Total in Rs.	**25,58,23,737.00**	

Copies of the receipts of payment of the aforesaid funds are enclosed **vide Annexure - II.**

13. ***The KML files of diverted area, the CA areas, the proposed SMC treatment area and the WLMP area shall be uploaded on the e-Green watch portal with all requisite details prior to Stage-II approval;;***

Reply- The KML files of diverted area, the CA areas, the proposed SMC treatment area and the WLMP area will upload on the e-Green watch portal prior to Stage II approval.

14. ***Following activities, as per approved plan / schemes, shall be undertaken in the lease area by the User Agency under the supervision of the State Forest Department. Approved scheme/plan shall be submitted to the Ministry along with compliance of Stage-I approval:;***

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

    Reply- A scheme has been prepared towards Mitigative measures to minimize soil erosion and choking of stream with a budgetary provision of Rs. 4,64,96,715/- at the current wage rate of Rs. 450/- per MD with a maintenance for 10 years. The same has been approved by RCCF, Rourkela Circle vide letter No. 3133, dt. 19.07.2024. Copy of the same is enclosed as **Annexure – IV**.

    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;

    Reply- A scheme has been prepared towards 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 budgetary provision of Rs. 3,42,160/- at the current wage rate of Rs. 450/- per MD with a maintenance for 10 years. The same has been approved by RCCF, Rourkela Circle vide letter No. 3133, dt. 19.07.2024. Copy of the same is enclosed as **Annexure – IV**.

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;***

Reply- A scheme has been prepared towards Construction of check dams, retention /toe walls to arrest sliding down of the excavated material along the contour where budgetary has not been taken due to the same has been taken in budgetary provision of condition No. 7(a). The same has been approved by RCCF, Rourkela Circle vide letter No. 3133, dt. 19.07.2024. Copy of the same is enclosed as **Annexure – IV**.

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°; and***

Reply- A scheme has been prepared towards 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° where budgetary has not been taken due to the same has been taken in budgetary provision of condition No. 7(a). The same has been approved by RCCF, Rourkela Circle vide letter No. 3133, dt. 19.07.2024. Copy of the same is enclosed as **Annexure – IV**.

15. Safety Zone Management: Following activities, at project cost, shall be undertaken by the user agency for the management of safety zone as per relevant guidelines issued by the Ministry's guidelines:;

a) ***User agency shall ensure demarcation of safety zone (7.5-meter strip all along the inner boundary of the mining lease area),***

and its fencing, protection and regeneration by erecting adequate number of 6 feet high RCC boundary pillars inscribed with DGPS coordinates with barbed wire fencing and deploying adequate number of watchers under the supervision of the. State Forest Department;

Reply- A scheme has been prepared towards ensure demarcation of safety zone (7.5-meter strip all along the inner boundary of the mining lease area), and its fencing, protection and regeneration by erecting adequate number of 6 feet high RCC boundary pillars with a budgetary provision of Rs. 2,87,71,000/-. The same has been approved by RCCF, Rourkela Circle vide letter No. 3133, dt. 19.07.2024. Copy of the same is enclosed as **Annexure – IV**.

b) ***Boundary of the safety zone of the mining lease, adjacent to habitation/roads, should be properly fenced by the user agency;***

Reply- We will do the maintenance of safety zone as per the approved scheme. An Undertaking to this effect is enclosed vide **Annexure – I**.

c) ***Safety zone shall be maintained as green belt around mining lease and to ensure dense canopy in the area, regeneration shall be taken up in this area by the user agency at project cost under the supervision of the State Forest Department;***

Reply- A scheme has been prepared towards ensure demarcation of safety zone (7.5-meter strip all along the inner boundary of the mining lease area), and its fencing, protection and regeneration by erecting adequate number of 6 feet high RCC boundary pillars with a budgetary provision of Rs. 2,87,71,000/-. The same has been approved by RCCF, Rourkela Circle vide letter No. 3133, dt. 19.07.2024. Copy of the same is enclosed as **Annexure – IV**.

d) ***The State Government and the user agency shall ensure that safety zone is maintained as per the prescribed norms;***

Reply- We will do the maintenance of safety zone as per the approved scheme. An Undertaking to this effect is enclosed vide **Annexure – I**.

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

Reply- A scheme has been prepared towards top soil management plan with a budgetary provision of Rs. 1,28,10,180/-. The same has been approved by RCCF, Rourkela Circle vide letter No. 3133, dt. 19.07.2024. Copy of the same is enclosed as **Annexure – IV**.

17. ***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 approved 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;***

Reply- A scheme has been prepared towards existing village tanks and other water bodies with GPS co-ordinates located within five km from the mine lease boundary with a budgetary provision of Rs. 1,26,36,800/-. The same has been approved by RCCF, Rourkela Circle vide letter No. 3133, dt. 19.07.2024. Copy of the same is enclosed as **Annexure – IV**.

18. ***The cost of felling of trees shall be deposited by the User Agency with the State Forest Department;***

Reply- We will pay the cost of felling of trees to the State Forest Department. An Undertaking to this effect is enclosed vide **Annexure – I.**

19. ***Trees should be felled in phased manner as per the requirement in the approved Mining Plan with prior permission of concerned DFO;***

Reply- Tree will be felled in phase manner as per approved mining plan. An Undertaking to this effect is enclosed vide **Annexure – I.**

20. ***The User Agency shall undertake that afforestation of the non-mineralized virgin forest land within the mining area shall be taken up at project cost;***

Reply- We will do the afforestation of the non-mineralised virgin forest land as per the approved mining plan. An Undertaking to this effect is enclosed vide **Annexure – I.**

21. ***The user agency shall explore the possibility of translocation of maximum number of trees identified to be felled and shall ensure that any tree felling shall be done only when it is unavoidable and that too under strict supervision of the State Forest Department.***

Reply- We will explore the every possibility of translocation of trees and felling will be taken as per the approved mining plan requirement. An Undertaking to this effect is enclosed vide **Annexure – I.**

22. ***A site-specific Wildlife Management Plan shall be prepared by the State Government in consultation with the PCCF (Wildlife) for the protection and conservation of wildlife of the area. A copy of approved Plan shall be submitted to the Ministry along with the compliance of Stage-I approval. Entire cost of implementation of the provisions of the Wildlife Management Plan shall be deposited into the account of CAMPA of the State;***

Reply- The site-specific Wildlife Management Plan has been prepared and approved by PCCF (Wildlife). The approved amount of Rs. 3,90,00,402/- has been deposited in the CAMPA Fund through RTGS mode vide URT No. ICICR22024031402284358 dt. 14.03.2024. The copy of the remittance receipt is enclosed vide **Annexure- II.**

23. ***State Government shall complete settlement of rights, in term of the Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, if any, on the forest land to be diverted and submit the documentary evidence, along with compliance of Stage-I approval, as prescribed by this Ministry's letter No. 11-9/1998-FC (Pt.) dated 03.08.2009 read with 05.07.2013, in support thereof;***

Reply- The certificate regards Complete settlement of rights, in term of the Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 has been obtained from

Collector, Keojhar vide letter No. 2827, dt. 12.08.2022. Copy of the same is enclosed as **Annexure – VI**.

24. ***The User Agency shall undertake that, user agency and the State Forest Department shall create and maintain from funds to be provided by the user agency alternate habitat/ home for the avifauna, whose nesting trees are to be cleared in this project as per the plan duly approved by the Principal Chief Conservator of Forests (Wildlife) and the Chief Wildlife Warden Odisha. Bird nests artificially made out of eco-friendly materials shall be used in the area, including forest area and human settlements, adjoining the forest area being diverted for the project;***

Reply- We will pay the aforementioned payment as and when demand by the State Forest dept. An Undertaking to this effect is enclosed vide **Annexure – I.**

25. ***The User Agency shall undertake that the project authority needs to take up works for construction and cleaning of garland drains, stabilizing retaining walls, proper terracing of OB dumps and checking gully formation resulting in soil erosion;***

Reply- We will construct and cleaning of garland drains, stabilizing retaining walls, proper terracing of OB dumps and checking gully formation resulting in soil erosion. An undertaking in this regards is enclosed as **Annexure – I.**

26. ***The User Agency shall undertake that plants which are having lowest translocation factor can be preferred under afforestation on the OB dumps and fruit trees to be avoided in planting during biological stabilization of OB dumps;***

Reply- We will undertake that plants which are having lowest translocation factor can be preferred under afforestation on the OB dumps and fruit trees to be avoided in planting during biological stabilization of OB dumps. An undertaking in this regards is enclosed as **Annexure – I.**

27. ***The User Agency shall undertake that prevention of fall of wild animals into mining pit by fencing the open pit area;***

Reply- We will undertake that we will take necessary precaution for prevention of fall of wild animals into mining pit by fencing the open pit area. An undertaking in this regards is enclosed as **Annexure – I.**

28. ***The User Agency shall undertake that the angle of repose in OB dumps to be maintained to ensure stability and safety;***

Reply- We will undertake that we will keep proper angle of repose in OB dumps to be maintained to ensure stability and safety. An undertaking in this regards is enclosed as **Annexure – I.**

29. ***The User Agency shall undertake that vetiver grass can be planted at the lower reaches of the dump to bind the soil and prevent soil erosion giving better stability to the dump;***

Reply- We will undertake that we will vetiver grass can be planted at the lower reaches of the dump to bind the soil and prevent soil erosion giving better stability to the dump. An undertaking in this regards is enclosed as **Annexure – I.**

30. ***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 concern Addl. Principle Chief Conservator of Forests (Central) may direct that the mining activities shall remain suspended till such time, such reclamation activities area satisfactorily executed;***

Reply- We will undertake that we will do the mining operation and taking due care for reclamation immediate after exhaustion of mineral as per approved mining plan and the annual report on implementation thereof will be submitted to the Nodal Officer. An undertaking in this regards is enclosed as **Annexure – I.**

31. ***The User Agency shall comply with the Hon'ble Supreme Court order on re- grassing, and re-grass the mining area and any other areas which may have been disturbed due to mining to restore them to a condition which is fit for growth of fodder, flora, fauna, etc. in a timely manner;***

Reply- We will re-grass the mining area and any other areas which may have been disturbed due to mining to restore them to a condition which is fit for growth of fodder, flora, fauna, etc. in a timely manner. An undertaking in this regards is enclosed as **Annexure – I.**

32. ***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 Mines and Minerals (Development and Regulation) Act, 1957, as amended and the Rules framed there-under;***

Reply- The period of forest diversion will be the co-terminus with the period of the mining lease proposed to be granted under the Mines and Minerals (Development and Regulation) Act, 1957, as amended and the Rules framed there-under. An undertaking in this regards is enclosed as **Annexure – I.**

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

Reply- The Environment Clearance as per the provisions of the Environmental (Protection) Act, 1986 has been obtained vide letter dated 02.07.2024 by Member Secretary, MoEF&CC, Govt. of India. Copy of the same is enclosed as **Annexure – VII.**

34. ***No labour camp shall be established on the forest land and 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;***

Reply- No labour camp will be established inside the forest area and we will provide alternate fuels to the labourers and the staff working at the site. An Undertaking to this effect is enclosed vide **Annexure – I.**

35. ***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 coordinates;***

Reply- We will erect the boundary pillar of the diverted forest land, mining lease and safety zone by erecting four feet high reinforced cement concrete pillars, each inscribed with its serial number, distance from pillar to pillar and GPS coordinates. An Undertaking to this effect is enclosed vide **Annexure – I**.

36. ***The layout plan of the mining plan/ proposal shall not be changed without the prior approval of the Central Government and the forest land shall not be used for any purpose other than that specified in the proposal;***

Reply- The layout plan of the mining plan/proposal land will not change without prior approval of MoEF&CC and the forest land will not be used for any purpose other than that specified in the proposal. An Undertaking to this effect is enclosed vide **Annexure – I**.

37. ***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;***

Reply- 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. An Undertaking to this effect is enclosed vide **Annexure – I**.

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

Reply- There will be no damage of flora and founa of the adjoining area. An Undertaking to this effect is enclosed vide **Annexure – I**.

39. ***Any other condition that the concerned Regional Office of this Ministry may stipulate with the approval of competent authority in the interest of conservation, protection and development of forests & wildlife; and***

Reply- We will obey any other condition that the concerned Regional Office of this Ministry may stipulate with the approval of competent authority

in the interest of conservation, protection and development of forests & wildlife. An Undertaking to this effect is enclosed vide **Annexure – I.**

40. ***The user agency shall comply with all the provisions of the all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order (s) and NGT Order (s) pertaining to this project, if any, for the time being in force, as applicable to the project.***

Reply- We will comply all the provisions of the all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order (s) and NGT Order (s) pertaining to this project, if any, for the time being in force, as applicable to the project. An Undertaking to this effect is enclosed vide **Annexure – I.**

41. ***Violation of any of these conditions will amount to violation of Forest(Conservation) Act, 1980 and action would be taken as prescribed in para 1.21 of Chapter 1 of the Handbook of comprehensive guidelines of Forest (Conservation) Act, 1980 as issued by this Ministry's letter No. 5-2/2017-FC dated 28.03.2019.***

Reply- We will obey the action as prescribed in para 1.21 of Chapter 1 of the Handbook if there is any violation of the condition. An Undertaking to this effect is enclosed vide **Annexure – I.**

42. ***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 regularly;***

Reply- We will 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 regularly after execution of the mines.

43. ***The compliance report shall be uploaded on e-portal (https://parivesh.nic.in/).***

Reply- We will upload the compliance report on e-portal.

For Thriveni Earthmovers Pvt.Ltd.

V Kumar

(Vice President)

THRIVENI EARTHMOVERS PVT. LTD.

THRIVENI

Annexure-I

UNDERTAKING

I Sri V. Kumar Authorized person of LaserdaPacheriMnganese& Irion Ore Block of Thriveni Earthmovers Private Limited, do hereby undertake to bear the following cost if any on demand and also do hereby undertake to do the following works as per conditions stipulated in Stage I order by MoEF, Govt. of India vide order dated 21.12.2023.

i) Condition No.-1

The legal status of the diverted forest land will remain unchanged.

ii) Condition No.-2. (f)

To implement the approved Scheme for gap plantation and soil & moisture conservation activities to restock and rejuvenate the degraded open forests (having crown density less than 0.4), located in the area within 100m from outer perimeter of the mining lease, in a phased manner, at the project cost.

iii) Condition No.-3.(b)

We will pay the additional amount of NPV of the diverted forest land , if so determined, as per the final decision of the Hon'ble Supreme Court of India.

iv) ConditionNo.-5

The ore transportation will be as per the recommendation of CSIR-NEERI.

v) Condition No.6

We will implement the holistic transportation planprepared by the State Govt. aiming to have minimum impact in the landscape.

COUNTERSIGNED

Divisional Forest Officer
Keonjhar Division

(V. Kumar)

THRIVENI EARTHMOVERS PRIVATE LIMITED

Thriveni Earthmovers Private Limited
CIN: U60231TZ1999PTC008876
Regd.Office: 22/110, Greenways Road, Fairlands, Salem - 636 016, Tamilnadu, India
CO: At - Topadhi, P.O.: Guali,P.S:Rugudi Dist.: Keonjhar-758035, Odisha,India
Ph/Fax: 0427 - 2447667 / 2445909 | email: info@thriveni.com | Website: www.thriveni.com

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vi) **Condition No.7**

Wewill obey the recommendation if any made by the Oversight committee constituted under the Chairmanship of the DDGF (Central) RO Bhubaneswar for 10 years during monitor and review of compliance.

vii) **Condition No.8**

We will pay the approved cost of Integrated Regional Wildlife Conservation Plan for 10 years covering the forest Division of Sundargarh, Jharsuguda and Keonjhar Districts as demanded by the forest department.

viii) **Condition No.9**

We will pay the cost as per the approved Bio-diversity Conservation Planfor the entire landscape covering the forest Division of Sundargarh, Jharsuguda and Keonjhar Districts as demanded by the forest department.

ix) **Condition No.10**

We will implement the Soil and Moisture Conservation measures in and around 10 KM radius of the Mining lease area as per the approved scheme, in phased manner at the project cost.

x) **Condition No.11**

We will implement and monitor the conditions stipulated in EC.

xi) **Condition No.-14.(a)**

We will implement the approved Scheme for Mitigative measures to minimize soil erosion and choking of stream within a period of three years with effect from the issue of Stage-II clearance in consultation with the State Forest Department, in a phased manner at the project cost.

COUNTERSIGNED

Divisional Forest Officer
Keonjhar Division

(V. KUMAR)

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THRIVENI

xii) **Condition No.-14.(b)**

We will implement the 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 in consultationwith the State Forest Department, in a phased manner at the project cost.

xiii) **Condition No.-14.(c)**

We will implement the approved Scheme for Construction of check dams, retention /toe walls to arrest sliding down of the excavated material along the contourin consultationwith the State Forest Department in a phased manner at the project cost.

xiv) **Condition No.-14.(d)**

Wewill implement the approved Scheme forStabilize the overburden dumps by appropriate grading/benchingto ensure that angles of repose at any given place is less than 28° in a phased manner at the project cost.

xv) **Condition No.-15.(a) & (c)**

Wewill implement the approved Scheme formaintaining green belt around mining lease with demarcation of safety zone (7.5-meter strip all along the inner boundary of the mining lease area), and its fencing, protection and regeneration by erecting adequate number of 6 feet high RCC boundary pillars inscribed with DGPS coordinates with barbed wire fencing and deploying adequate number of watchers, at the project cost under the supervision of the State Forest Department.

xvi) **Condition No.-15.(b)**

We will protect the boundary of the safety zone of the mining lease, adjacent to habitation/roads, will be properly fenced at the project cost.

xvii) **ConditionNo.-15.(d)**

We will the Safety zone as per prescribed Norm under the supervision of the State Forest Department.

COUNTERSIGNED

Divisional Forest Officer
Keonjhar Divisi on

C.V.Kumar

THRIVENI EARTHMOVERS PRIVATE LIMITED

Thriveni Earthmovers Private Limited
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xviii) **Condition No.-16**

We will follow the approved scheme for topsoil management,in a phased manner at the project cost.

xix) **Condition No.-17**

We will implement the scheme approved for De-silting of the village tanks and other water bodies located within five km from the mining lease boundary so as to mitigate the impact of siltation of such tanks/water bodies,in a phased manner at the project cost.

xx) **Condition No.-18**

We will deposit the cost of felling of trees as per the guidance of the State Forest Department.

xxi) **Condition No.-19**

Trees will be felled in a phased manner as per the requirement in the approved Mining Plan with prior permission of DFO, Keonjhar forest division.

xxii) **Condition No.-20**

We will do theafforestation of the non-mineralized virgin forest land within the mining area as per approved mining plan.

xxiii) **Condition No.-21**

We will explore every possibility of translocation of trees identified to be felledand shall ensure that any tree felling shall be done only when it is unavoidableand that do under supervision of the State Forest Department.

xxiv) **Condition No.-22**

The activities given for project proponent in the core zone as per the approved site-specific Wildlife conservation Plan will be executed under

COUNTERSIGNED

Divisional Forest Officer
Keonjhar Division

C.V. Kumar

Thriveni Earthmovers Private Limited
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THRIVENI

the guidance of DFO, Keonjhardivision and will bear the additional cost if any (Enhancement of wage rate and escalation of price of materials) at the time of implementation SSWLCP.

xxv) **ConditionNo.-24**

We will provideextra funds for making of alternate habitat/ home with eco-friendly materials for the avifauna, whose nesting trees are to be cleared in this project and shall be included in the approved site-specific Wildlife conservation Plan, after necessary modification.

xxvi) **Condition No.-25**

We will construct and carryout cleaning of garland drains, stabilizing retaining walls, proper terracing of OB dumps and checking gullyformation resulting in soil erosion.

xxvii) **Condition No.-26**

Plants having lowest translocation factor will be preferred foraffforestation on the OB dumps and fruit trees shall be avoided in planting during the biological stabilization of OB dumps.

xxviii) **Condition No.-27**

We will take necessary precautionfor prevention of wild animals falling into the mining pit by Installing Sollar fencing and construction of Safety Berm on top bench of the open pit area.

xxix) **Condition No.-28**

We willmaintain the angle of repose below 28° in Over burden dumps to ensure stability and safety.

xxx) **Condition No.-29**

We will carry out vetiver grass plantation at the lower reaches of the dump to bind the soil and prevent soil erosion giving better stability to the dumps.

COUNTERSIGNED

Divisional Forest Officer
Keonjhar Division

(V. KUMAR)

Thriveni Earthmovers Private Limited
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THRIVENI EARTHMOVERS PRIVATE LIMITED

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xxxi) **ConditionNo.-30**

We will carry out mining in a phased manner and will take due care for reclamation of the mined over area as per the approved mining plan. We will also submit an annual report on reclamation status of the mines to concerned government departments/Authorities.

xxxii) **Condition No.-31**

We will re-grass the mining area and any other areas which may have been disturbed due to mining to restore them to a condition which is fit for growth of fodder, flora, fauna, etc. in a timely.

xxxiii) **Condition No.-32**

The Period of diversion will be the co-terminus with the period of the mining lease proposed to be granted under the Mines and Minerals (Development and Regulation) Act, 1957, as amended and the Rules framed there-under.

xxxiv) **Condition No.-34**

We will not establish any labour camp inside the forest land and alternate fuels will be provide to the laborers and the staff working at the site to avoid any damage and pressure on the nearby forest areas.

xxxv) **Condition No.-36**

The layout plan of the mining plan/ proposal shall not be changed without the prior approval of Ministry of Environment, Forest & Climate change and the forest land shall not be used for any purpose other than that specified in the proposal.

xxxvi) **Condition No.-37**

The forest land proposed to be diverted will not be transferred to any other agency, department or person without prior approval of Ministry of Environment, Forest & Climate change.

COUNTERSIGNED

Divisional Forest Officer
Keonjhar Division

(V. G. VINAY)

THRIVENI EARTHMOVERS PRIVATE LIMITED

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xxxvii) **ConditionNo.-38**

No damage to the flora and fauna of the adjoining area shall be caused by us and we will take all protective measures as would be required in consultation with DFO, Keonjhar forest division.

xxxviii) **Condition No.-39**

Any other condition that the concerned Regional Office of this Ministry may stipulate with the approval of competent authority in the interest of conservation, protection and development of forests & wildlife shall be followed by the us.

xxxix) **Condition No.-40**

We will comply all the provisions of all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order (s) and NGT Order (s) pertaining to this project, if any, for the time being in force, as applicable to the project.

xxxx) **Condition No.-41**

We shall ensure compliance to provisions of all Acts, Rules & Regulations as prescribed in in para 1.21 of Chapter 1 of the Handbook of comprehensive guidelines of Forest (Conservation) Act,1980 as issued by the ministry's letter no. 5-2/2017-FC dated 28-03.2019.

xxxxi) **Condition No.-42**

We will submit annual self -monitoring report on compliance of stipulated conditions to the State Government, concerned Regional Office and to this Ministry by the end of March every year.

COUNTERSIGNED

Divisional Forest Officer
Keonjhar Division

(V. KUMAR)

THRIVENI EARTHMOVERS PRIVATE LIMITED

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THRIVENI

Ref. No: TEMPL/LP_FDP/2024-25/0205 **Date:** 02.05.2024

To,

Divisional Forest Officer,

Keonjhar Division,

Keonjhar

Sub: Payment towards **CA & ACA Schemes** of the Diversion Proposal of 94.351 ha of forest land including 4.261 ha of safety zone (3.858 ha along the ML boundary and 0.403 ha along the PWD road) within the granted Lol for ML over 131.800 ha for Laserda Pacheri Manganese & Iron Ore Block of M/s Thriveni Earthmovers Private Limited in Keonjhar district of Odisha - reg. (Online Proposal no. FP/OR/MIN/149499/2021)

Ref: Your Letter No. 3252/6F-Mining/-21/2022, Dated. 20th April 2024.

Dear Sir,

With reference to the above mentioned above, we have deposited an amount of Rs. **10,06,67,000/-** (Ten crore six lakh sixty-seven thousand) towards the cost of Compensatory Afforestation & Additional Compensatory Afforestation schemes against the non-forestry use of 94.351 Ha proposed forest land diversion as mentioned below.

SN	Particulars	Amount
1	Scheme for CA over 91.00 Ha of non-forestry Govt. Land identified in Village-Upara Birikala under Banspal Tahasil of Keonjhar District.	4,83,71,400.00
2	Scheme for ACA over 104 Ha of degraded forest land identified in Jyotipur RF under Keonjhar Forest Range of Keonjhar Forest Division.	5,22,95,600.00
Total		**10,06,67,000.00**

Thriveni Earthmovers Private Limited
CIN: U60231TZ1999PTC008876
CO : At - Topadhi, P.O.: Guali,P.S:Rugudi Dist.: Keonjhar-758035, Odisha, India
Ph/Fax: 0427 - 2447667 / 2445909 | email: info@thriveni.com | Website: www.thriveni.com

THRIVENI

The payment success receipt of the same has been attached along with this letter as well as the UTR Numbers of the RTGS transactions are furnished below for your reference.

SN	UTR Number	Amount
1	ICICR22024043003014962	4,83,71,400.00
2	ICICR22024043003014963	5,22,95,600.00
Total		**10,06,67,000.00**

This is for your information and kindly do the needful.

Thanking You,

For Thriveni Earthmovers Private Limited

V Kumar

Vice President

THRIVENI EARTHMOVERS PVT. LTD. THRIVENI

Encl: -

1. Payment Success Receipts
2. Your Letter No. 3252/6F-Mining/-21/2022, Dated. 20th April 2024

Thriveni Earthmovers Private Limited
CIN: U60231TZ1999PTC008876
CO : At - Topadhi, P.O.: Guali,P.S:Rugudi Dist.: Keonjhar-758035, Odisha, India
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OFFICE OF THE DIVISIONAL FOREST OFFICER, KEONJHAR DIVISION
Phone No- 06766-254315, email ID- dfo.keonjhar@odisha.gov.in

Letter No. 3252 **/6F-Mining-21/2022**
Dated, Keonjhar the 20th **April, 2024**

To

The Authorised Signatory,
Laserda Pacheri Manganese & Iron Ore Block of
M/s Thriveni Earth Movers Pvt. Ltd.,
At/Po- Barbil, Dist-Keonjhar, Odisha, Pin-758086.

Sub: Proposal for seeking prior approval of the Central Government under section 2(ii) of FC Act, 1980 in favour of M/s Thriveni Earthmovers Pvivate Limited for non-forestry use of 94.351 ha of forest land including 4.261 ha of safety zone (3.858 ha along the mining Lease boundary and 0.403 ha along the PWD road) within the granted LoI for Mining Lease over 131.800 ha for Laserda Pacheri Manganese & Iron Ore Block in Keonjhar district of odisha-Finacial Outlay of CA and Addl. CA Scheme regarding.

X-Sub: Demand of funds towards CA & ACA Schemes.

Ref: Memo No.8225 dated 18.04.2024 of Chief Conservator of Forests, FD & NO, FC Act, O/o the Principal Chief Conservator of Forests, Odisha, Bhubaneswar.

Sir

With reference to the aforementioned memo on the captioned subject, you are requested to deposit the approved amount of **Rs. 10,06,67,000.00/- (Rupees ten crore six lakh sixty-seven thousand)** only towards the cost of Compensatory Afforestation & Additional Compensatory Afforestation schemes against non-forestry use of 94.351 ha forest land proposed for diversion in respect of the aforementioned project through e-portal of MoEF&CC as provided in the https://parivesh.nic.in/ and the proof/evidence of the deposit of fund be submitted to this office for further necessary action at this end.

Details approved of CA/ACA Schemes

Sl. No.	Particulars	Balance amount to be deposited (in Rs)
1	Scheme for Compensatory Afforestation over 91.00 ha of non-forest Govt. land identified in Vill-Upara Birikala under Banspal Tahasil of Keonjhar District.	4,83,71,400.00
2	Scheme for Additional Compensatory Afforestation over 104 ha degraded forest land identified in Jyotipur RF under Keonjhar Forest Range of Keonjhar Forest Division.	5,22,95,600.00
Grand Total		10,06,67,000.00

(Rupees ten crore six lakh sixty-seven thousand) only.

Yours faithfully,

20/04/24

Divisional forest Officer,
Keonjhar Division.

Memo No. 3253(2) **/Dated** 20-04-2024

Copy submitted to the Regional Chief Conservator of Forests, Rourkela Circle, Rourkela / Principal Chief Conservator of Forests, FD & NO, FC Act, O/o the Principal Chief Conservator of Forests, Odisha, Bhubaneswar for favour of kind information and necessary action with reference this office memo No.8225 dated 18.04.2024.

20/04/24

Divisional forest Officer,
Keonjhar Division

ICICI Bank

THRIVENI EARTHMOVERS PVT LTD

TRIVENI EARTHMOVERS PVT LTDPOST BOX NO1 PS
JODA AT UNCHABALI BAMEBARI DIST KEONJHAR
JODA
758034

PAYMENT ADVICE

Account No. : XXXXXXXX0001 **Customer Ref. No. :** I1112V3004LSD **Value Date :** 30-Apr-2024

Beneficiary Code :
Beneficiary Name : ORRISA CAMPA
Beneficiary Address: BHUBANESWAR
Kap-751024

Contact/Mobile No. :

Email IDs :

Beneficiary Account No. : XXXXXXXXXXXX9613
Payment Document No. : 202410004200003044A
Payment Mode : RTGS
Bank Reference No. : CMS4126069853
UTR No. : ICICR22024043003014962
Remarks : LSD-Adv.paymt fr Compensatory o ver Non-ForestLand
Additional Details :

Dear Sir/Madam,

We have initiated your payment through RTGS with Beneficiary Account No. XXXXXXXXXXXX9613 and IFSC UBIN0996335 for the value of Rs. 48,371,400.00 (Rupees Four Crores Eighty-three Lakhs Seventy-one Thousand Four Hundred Only).

This is a computer generated advice and hence does not require signature.

ICICI Bank

THRIVENI EARTHMOVERS PVT LTD

TRIVENI EARTHMOVERS PVT LTDPOST BOX NO1 PS
JODA AT UNCHABALI BAMEBARI DIST KEONJHAR
JODA
758034

PAYMENT ADVICE

Account No. : XXXXXXXX0001 **Customer Ref. No. :** I1112V3004LSD **Value Date :** 30-Apr-2024

Beneficiary Code :
Beneficiary Name : ORRISA CAMPA
Beneficiary Address: BHUBANESWAR
Kap-751024

Contact/Mobile No. :

Email IDs :

Beneficiary Account No. : XXXXXXXXXXXX9613
Payment Document No. : 2024100042000003045A
Payment Mode : RTGS
Bank Reference No. : CMS4126069854
UTR No. : ICICR22024043003014963
Remarks : LSD-Adv.paymt fr Compensatory over Non-ForestLand
Additional Details :

Dear Sir/Madam,

We have initiated your payment through RTGS with Beneficiary Account No. XXXXXXXXXXXX9613 and IFSC UBIN0996335 for the value of Rs. 52,295,600.00 (Rupees Five Crores Twenty-two Lakhs Ninety-five Thousand Six Hundred Only).

This is a computer generated advice and hence does not require signature.

OFFICE OF THE DIVISIONAL FOREST OFFICER, KEONJHAR DIVISION
Phone No- 06766-254315, email ID- dfo.keonjhar@odisha.gov.in

Letter No. 5739 **/6F-Mining-21/2022**
Dated, Keonjhar the 20th **July, 2024**

To

The Authorised Signatory,
Laserda Pacheri Manganese & Iron Ore Block of
M/s Thriveni Earth Movers Pvt. Ltd.,
At/Po- Barbil, Dist-Keonjhar, Odisha, Pin-758086.

Sub: Proposal for seeking prior approval of the Central Government under section 2(ii) of FC Act, 1980 in favour of M/s Thriveni Earthmovers Pvivate Limited for non-forestry use of 94.351 ha of forest land including 4.261 ha of safety zone (3.858 ha along the mining Lease boundary and 0.403 ha along the PWD road) within the granted LoI for Mining Lease over 131.800 ha for Laserda Pacheri Manganese & Iron Ore Block in Keonjhar district of odisha-Finacial Outlay of CA and Addl. CA Scheme regarding.

X-Sub: Demand of funds towards CA Schemes.

Ref: Memo No.14073 dated 19.07.2024 of Chief Conservator of Forests (Nodal), O/o the Principal Chief Conservator of Forests, Odisha, Bhubaneswar.

Sir

With reference to the aforementioned memo on the captioned subject, you are requested to deposit the approved amount of **Rs.70,71,800/- (Rupees seventy lakhs seventy one thousand eight hundred)** only in the Orissa CAMPA account towards the approved cost of Compensatory Afforestation scheme over 5.00 ha non-forest Govt. land in Village- Uperbirikla under banspal Tahasil againest 4.261 ha forest land involved in Safety zone area within non-forestry use of total 94.351 ha forest land proposed for diversion in respect of the aforementioned project through e-portal of MoEF&CC as provided in the https://parivesh.nic.in/ and the proof/evidence of the deposit of fund be submitted to this office for further necessary action at this end.

Yours faithfully,

20/07/24

Divisional Forest Officer,
Keonjhar Division.

Memo No. 5740(2) **/Dated** 20.07.2024

Copy submitted to the Regional Chief Conservator of Forests, Rourkela Circle, Rourkela / Principal Chief Conservator of Forests, FD & NO, FC Act, O/o the Principal Chief Conservator of Forests, Odisha, Bhubaneswar for favour of kind information and necessary action with reference this office memo No.8225 dated 18.04.2024.

20/07/24

Divisional Forest Officer,
Keonjhar Division.

THRIVENI

Ref No : TEMPL-LP/DFO/2024-25/03 **Date : 29.07.2024**

To

OFFICE OF THE DIVISIONAL FOREST OFFICER

KEONJHAR DIVISION

Keonjhar, Odisha.

SUB : Payment towards CA Schemes – Reg

Ref : Your office Letter No 5739/6F Mining-21/2022 dated 20th July 2024

Dear sir,

With reference to the aforementioned Reference Letter on the captioned subject, we have deposited the approved amount of Rs.70,71,800/- (Rupees seventy lakhs seventy one thousand eight hundred) to the Orissa CAMPA account towards the approved cost of Compensatory Afforestation scheme over 5.00 ha non-forest Govt. land in Village- Uperbirikla under banspal Tahasil against 4.261 ha forest land involved in Safety zone area within non-forestry use of total 94.351 ha forest land proposed for diversion in respect of the Laserda Pacheri Manganese & Iron Ore Block of M/s Thriveni Earth Movers Pvt Ltd.

Thanking You

THRIVENI EARTHMOVERS PVT. LTD. THRIVENI

Laserda Pacheri Manganese & Iron Ore Block

M/s Thriveni Earth Movers Pvt Ltd

Thriveni Earthmovers Private Limited
CIN: U60231TZ1999PTC008876
Regd.Office: 22/110, Greenways Road, Fairlands, Salem - 636 016, Tamilnadu, India
CO : At - Topadhi, P.O.: Guali,P.S:Rugudi Dist.: Keonjhar-758035, Odisha,India
Ph/Fax: 0427 - 2447667 / 2445909 | email: info@thriveni.com | Website: www.thriveni.com

THRIVENI EARTHMOVERS PVT LTD

TRIVENI EARTHMOVERS PVT LTDPOST BOX NO1 PS
JODA AT UNCHABALI BAMEBARI DIST KEONJHAR
JODA
758034

PAYMENT ADVICE

Account No. : XXXXXXXX0001	**Customer Ref. No. :** I1091V2507LSD	**Value Date :** 25-Jul-2024

Beneficiary Code	:	Beneficiary Account No.	: XXXXXXXXXXXX9278
Beneficiary Name	: ORRISA CAMPA	Payment Document No.	: 202410004200011682A
Beneficiary Address	: BHUBANESWAR Kap-751024	Payment Mode	: RTGS
		Bank Reference No.	: CMS4345899523
		UTR No.	: ICICR22024072504374175
Contact/Mobile No.	:	Remarks	: LSD-Adv.paymt for CA Land demand of Lasarda mines
Email IDs	:	Additional Details	:

Dear Sir/Madam,

We have initiated your payment through RTGS with Beneficiary Account No. XXXXXXXXXXXX9278 and IFSC UBIN0996335 for the value of Rs. 7,071,800.00 (Rupees Seventy Lakhs Seventy-one Thousand Eight Hundred Only).

This is a computer generated advice and hence does not require signature.

OFFICE OF THE DIVISIONAL FOREST OFFICER, KEONJHAR DIVISION
Phone No- 06766-254315, email ID- dfo.keonjhar@odisha.gov.in

No. 4409 /6F-Mining-21/2022
Dated, Keonjhar, the 31st May, 2024

To

The Authorised Signatory,
Laserda Pacheri Manganese & Iron Ore Block,
M/s Thriveni Earthmovers Pvt. Ltd
At- Unchabali, P.O- Bamebari, Via- Joda
Dist- Keonjhar, Odisha- 758086.

Sub: Proposal for seeking prior approval of the Central Government under Section-2(ii) of the Forest (Conservation) Act, 1980 in favour of M/s Thriveni Earthmovers Private Limited for non-forestry use of 94.351 ha of forest land including 4.261 ha of safety zone (3.858 ha along the ML boundary and 0.403 ha along the PWD road) within the granted LoI for ML over 131.800 ha for Laserda Pacheri Manganese & Iron Ore Block in Keonjhar district of Odisha – reg.

X-Sub: Demand of funds towards afforestation of 1.5 times Safety Zone over 5.787 ha of degraded forest land identified in Baunsuli RF under Patna Range in Keonjhar Division.

Ref: Memo No. 2299 dated 29.05.2024 of Regional Chief Conservator of Forests, Rourkela Circle, Rourkela.

Sir

With reference to the aforementioned memo on the captioned subject, the Regional Chief Conservator of Forests, Rourkela Circle, Rourkela has approved the scheme of 1.5 times Safety Zone over 5.787 ha of degraded forest land identified in Baunsuli RF under Patna Range in Keonjhar Division with financial outlay of Rs. **37,04,000/-**.

Hence, you are requested to deposit the approved amount of **Rs. 37,04,000/- (Rupees thirty-seven lakh four thousand)** only towards the cost of afforestation of 1.5 times Safety Zone over 5.787 ha of degraded forest land through e-portal of MoEF&CC, Govt. of India as provided in the **https://parivesh.nic.in/** and the proof /evidence of the deposit of fund be submitted to this office for further necessary action at this end.

Yours faithfully,

31/05/24

Divisional Forest Officer,
Keonjhar Division.

Memo No. 4410 **/Dated** 31.05.2024

Copy forwarded to the Regional Chief Conservator of Forests, Rourkela Circle, Rourkela /Principal Chief Conservator of Forests, FD & NO, FC Act, O/o the PCCF&HoFF, Odisha, Bhubaneswar for favour of kind information and necessary action.

31/05/24

Divisional Forest Officer,
Keonjhar Division.

THRIVENI

Ref No : TEMPL-LP/DFO/2024-25/26 **Date : 05.06.2024**

To

OFFICE OF THE DIVISIONAL FOREST OFFICER

KEONJHAR DIVISION

Keonjhar, Odisha.

SUB : Payment towards afforestation of 1.5 times Safety Zone over 5.787 ha of degraded forest land identified in Baunsuli RF under Patna Range in Keonjhar Division– Reg

Ref : Your office Letter No 4409/6F Mining-21/2022 dated 31st May 2024

Dear sir,

With reference to the aforementioned Reference Letter on the captioned subject, we have deposited the approved amount of Rs.37,04,000/- (Rupees thirty-seven lakh four thousand only) to the cost of afforestation of 1.5 times Safety Zone over 5.787 ha of degraded forest land in respect of the Laserda Pacheri Manganese & Iron Ore Block of M/s Thriveni Earth Movers Pvt Ltd.

Thanking You

THRIVENI EARTHMOVERS PVT LTD

Laserda Pacheri Manganese & Iron Ore Block

M/s Thriveni Earth Movers Pvt Ltd

Thriveni Earthmovers Private Limited
CIN: U60231TZ1999PTC008876
Regd.Office: 22/110, Greenways Road, Fairlands, Salem - 636 016, Tamilnadu, India
CO : At - Topadhi, P.O.: Guali,P.S:Rugudi Dist.: Keonjhar-758035, Odisha,India
Ph/Fax: 0427 - 2447667 / 2445909 | email: info@thriveni.com | Website: www.thriveni.com

THRIVENI EARTHMOVERS PVT LTD

TRIVENI EARTHMOVERS PVT LTDPOST BOX NO1 PS
JODA AT UNCHABALI BAMEBARI DIST KEONJHAR
JODA
758034

PAYMENT ADVICE

Account No. : XXXXXXXX0001 **Customer Ref. No. :** I1005V0406CO **Value Date :** 04-Jun-2024

Beneficiary Code	:	Beneficiary Account No.	: XXXXXXXXXXXX9389
Beneficiary Name	: ORRISA CAMPA	Payment Document No.	: 202410004200006285A
Beneficiary Address	: BHUBANESWAR Kap-751024	Payment Mode	: RTGS
		Bank Reference No.	: CMS4202721717
		UTR No.	: ICICR22024060403537960
Contact/Mobile No.	:	Remarks	: LSD-Adv.paymt for Forest clearance stage-1
Email IDs	:	Additional Details	:

Dear Sir/Madam,

We have initiated your payment through RTGS with Beneficiary Account No. XXXXXXXXXXXX9389 and IFSC UBIN0996335 for the value of Rs. 3,704,000.00 (Rupees Thirty-seven Lakhs Four Thousand Zero Only).

This is a computer generated advice and hence does not require signature.

THRIVENI

Ref. No: TEMPL/LP_FDP/2023-24/2803 Date: 28.03.2024

To,

Divisional Forest Officer,

Keonjhar Division,

Keonjhar

Sub: Payment of **Net Present Value (NPV)** against the Diversion Proposal of 94.351 ha of forest land including 4.261 ha of safety zone (3.858 ha along the ML boundary and 0.403 ha along the PWD road) within the granted Lol for ML over 131.800 ha for Laserda Pacheri Manganese & Iron Ore Block of M/s Thriveni Earthmovers Private Limited in Keonjhar district of Odisha - reg. (Online Proposal no. FP/OR/MIN/149499/2021)

Ref: Your Letter No. 2029/Mining/-21/2022, Dated. 04th March 2024

Dear Sir,

With reference to the above mentioned above, we have deposited an amount of Rs. **10,53,80,632/-** (Ten crore fifty-three lakh eighty thousand six hundred thirty-two) towards Net Present Value (NPV) over 94.351 ha Forest land involved in Keonjhar Forest Division at the rate of Rs. 11,16,900/- per ha (Eco value Class- I, Canopy Density- 0.3) and the payment details are furnished below for your reference.

SN	RTGS reference no	Amount
1	ICICR22024032802510396	9,00,00,000.00
2	ICICR22024032802510397	1,53,80,632.00
Total		**10,53,80,632.00**

Thriveni Earthmovers Private Limited
CIN: U60231TZ1999PTC008876
CO : At - Topadhi, P.O.: Guali,P.S:Rugudi Dist.: Keonjhar-758035, Odisha, India
Ph/Fax: 0427 - 2447667 / 2445909 | email: info@thriveni.com | Website: www.thriveni.com

THRIVENI

The payment success receipt of the same has been attached along with this letter for your reference.

This is for your information and kindly do the needful.

Thanking You,
For Thriveni Earthmovers Private Limited

V Kumar
Vice President

THRIVENI EARTHMOVERS PVT. LTD. THRIVENI

Encl: -

1. Payment Success Receipts
2. You Letter No. 2029/Mining/-21/2022, Dated. 04th March 2024

Thriveni Earthmovers Private Limited
CIN: U60231TZ1999PTC008876
CO : At - Topadhi, P.O.: Guali,P.S:Rugudi Dist.: Keonjhar-758035, Odisha, India
Ph/Fax: 0427 - 2447667 / 2445909 | email: info@thriveni.com | Website: www.thriveni.com

ICICI Bank

THRIVENI EARTHMOVERS PVT LTD

TRIVENI EARTHMOVERS PVT LTDPOST BOX NO1 PS
JODA AT UNCHABALI BAMEBARI DIST KEONJHAR
JODA
758034

PAYMENT ADVICE

Account No. : XXXXXXXX0001 **Customer Ref. No. :** I1132V2803LSD **Value Date :** 28-Mar-2024

Beneficiary Code :
Beneficiary Name : ORRISA CAMPA
Beneficiary Address: BHUBANESWAR
Kap-751024

Contact/Mobile No. :

Email IDs :

Beneficiary Account No. : XXXXXXXXXXXX9560
Payment Document No. : 202310004200035585A
Payment Mode : RTGS
Bank Reference No. : CMS4040865368
UTR No. : ICICR22024032802510397
Remarks : LSD-Adv.paymt for forest land saf ety zone-NPV
Additional Details :

Dear Sir/Madam,

We have initiated your payment through RTGS with Beneficiary Account No. XXXXXXXXXXXX9560 and IFSC UBIN0996335 for the value of Rs. 15,380,632.00 (Rupees One Crore Fifty-three Lakhs Eighty Thousand Six Hundred Thirty-two Only).

This is a computer generated advice and hence does not require signature.

ICICI Bank

THRIVENI EARTHMOVERS PVT LTD

TRIVENI EARTHMOVERS PVT LTDPOST BOX NO1 PS
JODA AT UNCHABALI BAMEBARI DIST KEONJHAR
JODA
758034

PAYMENT ADVICE

Account No. : XXXXXXXX0001 **Customer Ref. No. :** I1132V2803LSD **Value Date :** 28-Mar-2024

Beneficiary Code	:	Beneficiary Account No.	: XXXXXXXXXXXX9560
Beneficiary Name	: ORRISA CAMPA	Payment Document No.	: 202310004200035584A
Beneficiary Address	: BHUBANESWAR Kap-751024	Payment Mode	: RTGS
		Bank Reference No.	: CMS4040865367
		UTR No.	: ICICR22024032802510396
Contact/Mobile No.	:	Remarks	: LSD-Adv.paymt for forest land saf ety zone-NPV
Email IDs	:	Additional Details	:

Dear Sir/Madam,

We have initiated your payment through RTGS with Beneficiary Account No. XXXXXXXXXXXX9560 and IFSC UBIN0996335 for the value of Rs. 90,000,000.00 (Rupees Nine Crores Only).

This is a computer generated advice and hence does not require signature.

OFFICE OF THE DIVISIONAL FOREST OFFICER, KEONJHAR DIVISION

Phone No- 06766-254315, email ID- dfo.keonjhar@odisha.gov.in

No. 2029 /Mining- 21/2022
Dated, Keonjhar the 4th March, 2024

To

The Authorised Signatory,
Laserda Pacheri Manganese & Iron Ore Block,
M/s Thriveni Earthmovers Pvt. Ltd
At- Unchabali, P.O- Bamebari, Via- Joda
Dist- Keonjhar, Odisha- 758086.

Sub: Proposal for seeking prior approval of the Central Government under Section-2(ii) of the Forest (Conservation) Act, 1980 in favour of M/s Thriveni Earthmovers Private Limited for non-forestry use of 94.351 ha of forest land including 4.261 ha of safety zone (3.858 ha along the ML boundary and 0.403 ha along the PWD road) within the granted LoI for ML over 131.800 ha for Laserda Pacheri Manganese & Iron Ore Block in Keonjhar district of Odisha – reg. (Online Proposal no. FP/OR/MIN/149499/2021).

X-Sub: Demand of funds towards Net Present Value (NPV).

Ref: F. No. 8-02/2023-FC dated 21.12.2023 of MoEF&CC, Govt. of India.

Sir

With reference to the aforesaid memo on the captioned subject, this is to intimate that the condition No. 2.3.(a) of the approval order dated 21.12.2023 of MoEF&CC, Govt. of India, you are requested to deposit an amount of Rs. 10,53,80,631.90 or say **Rs. 10,53,80,632/-** (Rupees ten crore fifty-three lakh eighty thousand six hundred thirty-two) only towards Net Present Value (NPV) over 94.351 ha Forest land involved in Keonjhar Forest Division as per guideline vide F. No. 5-3/2011-FC (Vol-I) dated 06.01.2022 & F. No. 5-3/2011-FC (Vol-I) dated 22.03.2022 at the rate of Rs. 11,16,900/- per ha **(Eco value Class- I, Canopy Density- 0.3)** as per Site Inspection Report of the undersigned dt. 17.02.2022. The above demanded amount has to be deposited in Orissa CAMPA Account only through e-portal **(https://parivesh.nic.in/)** within 30 days from the date of issue of this letter and the proof/evidence of the deposit of fund be submitted to this office for further necessary action at this end.

Yours faithfully,

04/03/24

Divisional Forest Officer,
Keonjhar Division.

Memo No. 2030 **/ Dated.** 05.03.24

4/3

Copy forwarded to the Regional Chief Conservator of Forests, Rourkela Circle/ Principal Chief Conservator of Forests, Forest Diversion and Nodal Officer, FC Act, O/o the PCCF & HoFF, Odisha, Bhubaneswar for favour of kind information and necessary action.

04/03/24

Divisional Forest Officer,
Keonjhar Division.

4/3

OFFICE OF THE DIVISIONAL FOREST OFFICER, KEONJHAR DIVISION
Phone No- 06766-254315, email ID- dfo.keonjhar@odisha.gov.in

Letter No. 6869 **6F/Mining-108/2022**
Dated, Keonjhar the 29th **August, 2024**

To

The Director,
M/s Thriveni Earth Movers Pvt. Ltd.,
At-Unchabali, Po-Bamebari,
Dist.-Keonjhar, Odisha, Pin-758086.

Sub: Submission of Proposal on "Preparation of Biodiversity Conservation Plan for the entire landscape of Netrabandha Pahar in respect of 5 (five) nos. of Mines as per the common conditions envisaged in the Stage-I/ in-principle approval of Govt. of India, MoEF&CC (FC Division), New Delhi-regarding.

Ref: Your letter No. TEMPL/LP_FDP/2023-24/1405 dated 14.05.2024.

Sir

With reference to your letter cited above on the captioned subject, this is to inform you that, the demand draft No. 526189 dated 13.05.2024 for Rs. 5,28,507/- (Rupees five lakh twenty-eight thousand five hundred seven) only received from you towards 50% amount for preparation of Biodiversity Conservation Plan was sent to the Director, Indian Institute of Forest Management, Bhopal vide this office letter No.6167 dated 03.08.2024 for further action at his end.

The aforesaid demand draft is returned from the Director, Indian Institute of Forest Management, Bhopal vide his letter No. IIFM/DIR/Aca.01/2024/201 dated 16.08.2024 with a request to re-validate it, as the same is outdated/ stale.

As such, in enclosing the aforesaid demand draft in original, it is requested to revalidate the above demand draft and submit the same in this office for onwards transmission to the Director, Indian Institute of Forest Management, Bhopal.

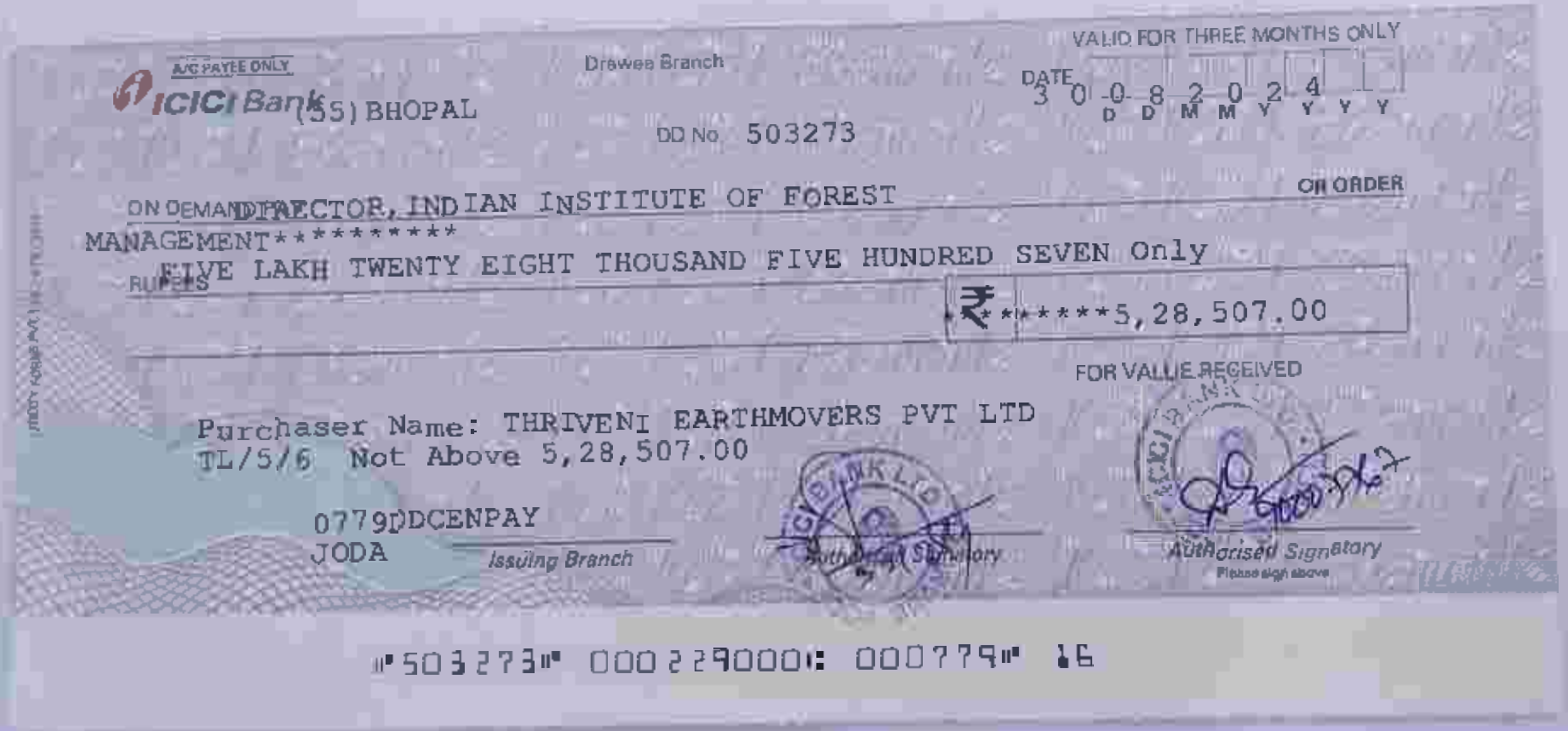
Encl:- As above.

Yours faithfully,

29/08

Divisional Forest Officer,
Keonjhar Division.

29/8



A/C PAYEE ONLY

ICICI Bank (55) BHOPAL

Drawee Branch

VALID FOR THREE MONTHS ONLY

DATE 30-08-2024 (D D M M Y Y Y Y)

DD No 503273

ON DEMAND PAY TO THE ORDER OF DIRECTOR, INDIAN INSTITUTE OF FOREST MANAGEMENT**********

RUPEES FIVE LAKH TWENTY EIGHT THOUSAND FIVE HUNDRED SEVEN Only

₹ *****5,28,507.00

FOR VALUE RECEIVED

Purchaser Name: THRIVENI EARTHMOVERS PVT LTD
TL/S/6 Not Above 5,28,507.00

0779DDCENPAY
JODA
Issuing Branch

Authorised Signatory

Authorised Signatory
Please sign above

"503273" 000229000: 000779" 16

THRIVENI

Ref. No: TEMPL/LP_FDP/2024-25/0104 Date: 01.04.2024

To,

Divisional Forest Officer,

Keonjhar Division,

Keonjhar

Sub: Payment of **Scheme Funds towards approved SSWLCP** in respect of the Diversion of forest land for Laserda Pacheri Manganese and Iron Ore Block of M/s Thriveni Earthmovers Private Limited in Keonjhar district of Odisha

Ref: Your Letter No. 10290/Mining, Dated. 13th September 2023.

Dear Sir,

With reference to the above mentioned above, we have deposited an amount of Rs. **3,90,40,200/-** (Three Crores Ninety Lakhs Forty Thousand Two Hundred) towards the scheme funds of the approved SSWLCP in respect of the Diversion of forest land for Laserda Pacheri Manganese and Iron Ore Block of M/s Thriveni Earthmovers Private Limited and the payment details are furnished below for your reference.

SN	RTGS/UTR reference no	Amount
1	ICICR22024031402284358	3,90,40,200.00

The payment success receipt of the same has been attached along with this letter for your reference.

Thanking You,

For Thriveni Earthmovers Private Limited

V Kumar

Vice President

THRIVENI EARTHMOVERS PVT. LTD. THRIVENI

Encl: -

1. Payment Success Receipts
2. Your Letter No. 10290/Mining, Dated. 13th September 2023.

Thriveni Earthmovers Private Limited
CIN: U60231TZ1999PTC008876
CO : At - Topadhi, P.O.: Guali,P.S:Rugudi Dist.: Keonjhar-758035, Odisha, India
Ph/Fax: 0427 - 2447667 / 2445909 | email: info@thriveni.com | Website: www.thriveni.com

ICICI Bank

THRIVENI EARTHMOVERS PVT LTD

TRIVENI EARTHMOVERS PVT LTDPOST BOX NO1 PS
JODA AT UNCHABALI BAMEBARI DIST KEONJHAR
JODA
758034

PAYMENT ADVICE

Account No. : XXXXXXXX0001 **Customer Ref. No. :** I1061V1403LSD **Value Date :** 14-Mar-2024

Beneficiary Code :
Beneficiary Name : ORISSA CAMPA
Beneficiary Address: BHUBANESWAR
Kap-751024

Contact/Mobile No. :

Email IDs :

Beneficiary Account No. : XXXXXXXXXXXX9224
Payment Document No. : 202310004200034444A
Payment Mode : RTGS
Bank Reference No. : CMS4008956598
UTR No. : ICICR22024031402284358
Remarks : LSD-Adv.paymt for Wildlife Conservation Plan.
Additional Details :

Dear Sir/Madam,

We have initiated your payment through RTGS with Beneficiary Account No. XXXXXXXXXXXX9224 and IFSC UBIN0996335 for the value of Rs. 39,040,200.00 (Rupees Three Crores Ninety Lakhs Forty Thousand Two Hundred Only).

This is a computer generated advice and hence does not require signature.

AGENCY COPY

यूनियन बैंक ऑफ इंडिया Union Bank of India

आन्ध्रा Andhra

NEFT / RTGS CHALLAN for CAMPA Funds

Date : 14-03-2024

Agency Name.	MS THRIVENI EARTHMOVERS PRIVATE LIMITED
Application No.	58149499224
MoEF/SG File No.	8-02/2023-FC
Location.	ORRISA
Address.	22/110, Greenways Road, Fairlands,SalemSalem
Amount(in Rs)	39040200/-

Amount in Words :Three Crore Ninety Lakh Forty Thousand Two Hundred Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	UBIN0996335
Pay to Account No.	1508258149499224 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India FCS Centre,21/1, III Floor, Jelitta Towers, Mission Road, Bengaluru-560027

- This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

BANK COPY

यूनियन बैंक ऑफ इंडिया Union Bank of India

आन्ध्रा Andhra

NEFT / RTGS CHALLAN for CAMPA Funds

Date : 14-03-2024

Agency Name.	MS THRIVENI EARTHMOVERS PRIVATE LIMITED
Application No.	58149499224
MoEF/SG File No.	8-02/2023-FC
Location.	ORRISA
Address:	22/110, Greenways Road, Fairlands,Salem Salem
Amount(in Rs)	39040200/-

Amount in Words :Three Crore Ninety Lakh Forty Thousand Two Hundred Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	UBIN0996335
Pay to Account No.	1508258149499224 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India FCS Centre, 21/1, III Floor, Jelitta Towers, Mission Road, Bengaluru-560027

- This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

Note:After making the required payment through challan, if the payment status has not been updated even after 7 working days, then kindly mail a copy of your challan with transaction date and reference id to Email: fcsblr@unionbankofindia.bank , epurse@unionbankofindia.bank, ubin0903710@unionbankofindia.bank

OFFICE OF THE DIVISIONAL FOREST OFFICER, KEONJHAR DIVISION

Phone No- 06766-254315, email ID- dfo.keonjhar@odisha.gov.in

No. 10290 /Mining-
Dated, Keonjhar, the 13-09-2023

To

The Authorized Signatory,
Laserda Pacheri Manganese and Iron Ore Block,
M/s Thriveni Earthmovers Pvt. Limited,
At/PO-Barbil, Dist- Keonjhar, Odisha

Sub: Submission of SSWLCP in respect of diversion of Forest land for Laserda Pacheri Manganese and Iron Ore Block of M/s Thriveni Earthmovers Pvt. Limited in Barbil Tahasil, Keonjhar District.

X-Sub: Demand of scheme funds towards approved Site Specific Conservation Plan.

Ref: Memo No. 10007 dt. 11.09.2023 of Conservator of Forests (ET), O/o the Principal Chief Conservator of Forests, (WL), CWLW, Odisha, Bhubaneswar.

Sir

With reference to the aforementioned memo on the captioned subject, this is to intimate that the Principal Chief Conservator of Forests, (WL), CWLW, Odisha, Bhubaneswar has approved the Site Specific Conservation Plan in respect of Laserda Pacheri Manganese and Iron Ore Block of M/s Thriveni Earthmovers Pvt. Limited in compliance to the ToRs prescribed by MoEF&CC, New Delhi vide letter No. IA-11015/113/2021-IA-II(NCM) dt. 28.03.2022 with a financial outlay of **Rs. 390.402 lakh** (Keonjhar Division- Rs. 320.202 lakh + Bonai Division- Rs. 70.200 lakh). Hence, you are requested to deposit the said approved amount of **Rs. 390.402 lakh** (Rupees three crore ninety lakh forty thousand two hundred) only towards scheme for Site Specific Wildlife Conservation Plan through **e-portal** of MoEF&CC as provided in the **https://parivesh.nic.in/** and the proof/evidence of the deposit of fund be submitted to this office for further necessary action at this end. Further, it is intimated that the PCCF (WL) has imposed three other conditions along with the aforesaid approval which has to be abided by as follows.

- Activities in the project area as per Chapter- IV of the Plan will be executed by the project proponent under the guidance of DFO, Keonjhar Division.
- The plan period is five years and will be revised by DFO at least one year before expiry of its implementation. The User Agency will bear the cost of such plan on its approval. Further, the User Agency will bear additional cost, if any, towards enhancement of wage rate and escalation of price of materials at the time of implementation of this plan. In case of any deviation, it will be delay as per law for violations of Forest (Conservation) Act, 1980, Environmental (Protection) Act, 1986, and Wildlife Protection Act, 1972.

Yours faithfully,

13/09/23

Divisional Forest Officer,
Keonjhar Division.

13/9

PTO

Memo No. 10291 **/ Dated.** 13-09-2023

Copy forwarded to the Divisional Forest Officer, Bonai Division for information and necessary action with reference to memo No. 10008 dt. 11.09.2023 of Conservator of Forests (ET), O/o the Principal Chief Conservator of Forests, (WL), CWLW, Odisha, Bhubaneswar.

13/09/23

Divisional Forest Officer,
Keonjhar Division.

Memo No. 10292 **/ Dated.** 13-09-2023

Copy forwarded to the Regional Chief Conservator of Forests, Rourkela Circle for favour of kind information and necessary action with reference to memo No. 10008 dt. 11.09.2023 of Conservator of Forests (ET), O/o the Principal Chief Conservator of Forests, (WL), CWLW, Odisha, Bhubaneswar.

13/09/23

Divisional Forest Officer,
Keonjhar Division.

Memo No. 10293 **/ Dated.** 13-09-2023

Copy forwarded to the Principal Chief Conservator of Forests, Forest Diversion and Nodal Officer, FC Act, O/o the Principal Chief Conservator of Forests & HoFF, Odisha, Bhubaneswar for favour of kind information and necessary action with reference to memo No. 10008 dt. 11.09.2023 of Conservator of Forests (ET), O/o the Principal Chief Conservator of Forests, (WL), CWLW, Odisha, Bhubaneswar.

13/09/23

Divisional Forest Officer,
Keonjhar Division.

Memo No. 10294 **/ Dated.** 13-09-2023

Copy forwarded to the Principal Chief Conservator of Forests, (WL), CWLW, Odisha, Bhubaneswar for favour of kind information and necessary action with reference to his memo No. 10008 dt. 11.09.2023.

13/09/23

Divisional Forest Officer,
Keonjhar Division.

THRIVENI

Ref No: TEMPL-LP/DFO/2024-25/04 **Date: 19.10.2024**

To

The Divisional Forest Officer

Keonjhar Division

Keonjhar, Odisha.

Sub: Payment towards approved scheme for creation and maintenance of alternative habitat/home for avifauna whose nesting trees area to be cleared in Laserda Pacheri Mn & Iron ore block– Reg

Ref: Your Office letter No 8310/6F/Mining-21/2022 dated 14.10.2024

Dear Sir,

With reference to the above cited subject, as per the conduction No.24 of Stage –I approved dated 21.12.2023 of MoEF &CC for Laserda Pacheri Mines, we have paid the amount of Rs 10,50,000/- towards approved scheme for creation and maintenance of alternative habitat/home for avifauna whose nesting trees area to be cleared in Laserda Pacheri Mn & Iron ore block.

The payment receipt detail is attached for your kind reference.

Thanking you

Yours truly

For Laserda Pacheri Manganese & Iron Ore Block

Vice President

M/s Thriveni Earthmovers Pvt Ltd

Thriveni Earthmovers Private Limited
CIN: U60231TZ1999PTC008876
Regd.Office: 22/110, Greenways Road, Fairlands, Salem - 636 016, Tamilnadu, India
CO : At - Topadhi, P.O.: Guali,P.S:Rugudi Dist.: Keonjhar-758035, Odisha,India
Ph/Fax: 0427 - 2447667 / 2445909 | email: info@thriveni.com | Website: www.thriveni.com

ICICI Bank

THRIVENI EARTHMOVERS PVT LTD
TRIVENI EARTHMOVERS PVT LTDPOST BOX NO1 PS
JODA AT UNCHABALI BAMEBARI DIST KEONJHAR
JODA
758034

PAYMENT ADVICE

Account No. : XXXXXXXX0001 **Customer Ref. No. :** I1071V1810LSD **Value Date :** 18-Oct-2024

Beneficiary Code :
Beneficiary Name : ORRISA CAMPA
Beneficiary Address: BHUBANESWAR
Kap-751024

Contact/Mobile No. :

Email IDs :

Beneficiary Account No. : XXXXXXXXXXXX9662
Payment Document No. : 202410004200019917A
Payment Mode : RTGS
Bank Reference No. : CMS4587519414
UTR No. : ICICR22024101805795238
Remarks : LSD-Adv.paymt fr Compensatory over Non-ForestLand
Additional Details :

Dear Sir/Madam,

We have initiated your payment through RTGS with Beneficiary Account No. XXXXXXXXXXXX9662 and IFSC UBIN0996335 for the value of Rs. 1,050,000.00 (Rupees Ten Lakhs Fifty Thousand Zero Only).

This is a computer generated advice and hence does not require signature.

OFFICE OF THE DIVISIONAL FOREST OFFICER, KEONJHAR DIVISION
Phone No- 06766-254315, email ID- dfo.keonjhar@odisha.gov.in

Letter No. 8310 **/6F-Mining-21/2022**
Dated, Keonjhar the 14th **October, 2024**

To

The Authorised Signatory,
Laserda Pacheri Manganese & Iron Ore Block of
M/s Thriveni Earth Movers Pvt. Ltd.,
At/Po- Barbil, Dist-Keonjhar, Odisha, Pin-758086.

Sub: Proposal for seeking prior approval of the Central Government under section 2(ii) of FC Act, 1980 in favour of M/s Thriveni Earthmovers Pvivate Limited for non-forestry use of 94.351 ha of forest land including 4.261 ha of safety zone (3.858 ha along the mining Lease boundary and 0.403 ha along the PWD road) within the granted LoI for Mining Lease over 131.800 ha for Laserda Pacheri Manganese & Iron Ore Block in Keonjhar district of Odisha- Finacial outlay of CA Scheme regarding.

X-Sub: **Demand of funds towards approved Scheme for creation and maintenance of alternative habitat / home for avifauna, whose nesting trees are to be cleared in Laserda Pacheri Manganese & Iron Ore Block.**

Ref: Memo No.12142 dated 09.10.2024 of Chief Conservator of Forests (WL-III), O/o the Principal Chief Conservator of Forests (WL & CWLW), Odisha, Bhubaneswar **(Copy enclosed)**.

Sir

With reference to the aforementioned memo on the captioned subject, this is to intimate that, in compliance to the condition No.24 of Stage-I approval dated 21.12.2023 of MoEF&CC, GoI in respot of aforementioned forest diversion proposal, the Chief Conservator of Forests (WL-III), O/o the Principal Chief Conservator of Forests (WL & CWLW), Odisha, Bhubaneswar has technically approved the Scheme for creation and maintenance of alternative habitat / home for avifauna, whose nesting trees are to be cleared in your Laserda Pacheri Manganese & Iron Ore Block with a total financial outlay of **Rs.10.50/- Lakhs.**

Hence, you are requested to deposit the approved amount of **Rs.10.50/- Lakhs** only through e-portal of MoEF&CC as provided in the https://parivesh.nic.in/ and the proof/evidence of the deposit of fund be submitted to this office for further necessary action at this end.
Encl:- As above.

Yours faithfully,

Divisional forest Officer,
Keonjhar Division.

Memo No. 8311 **/Dated** 14.10.2024
Copy submitted to the Regional Chief Conservator of Forests, Rourkela Circle, Rourkela / Chief Conservator of Forests (WL-III), O/o the PCCF (WL & CWLW), Odisha, Bhubaneswar / Principal Chief Conservator of Forests, FD & NO, FC Act, O/o the PCCF&HoFF, Odisha, Bhubaneswar for favour of kind information and necessary action.

Divisional forest Officer,
Keonjhar Division.

Annexure-III

GOVERNMENT OF ODISHA
FOREST, ENVIRONMENT & CLIMATE CHANGE DEPARTMENT
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NOTIFICATION

Bhubaneswar, dated the 26.07.24

No.FE-DIV-FLD-0002-2023-{10F-(Cons)-02/2023}-13674/FE&CC, In exercise of the powers conferred under Section-33 of the Odisha Forest Act, 1972 (Odisha Act 14 of 1972), the State Government do hereby declare that the following land situated in Village-**Uparbirakala** under Banspal Tahasil of Keonjhar District mutated and transferred in favour of Forest, Environment & Climate Change Department for raising Compensatory Afforestation thereon against the proposed diversion for non-forestry use of 94.351 ha of forest land including 4.261 ha of safety zone (3.858 ha along the ML boundary and 0.403 ha along with PWD Road) within the granted LoI for ML over 131.800 ha for Laserda Pacheri Manganese & Iron Ore Block in Keonjhar District of Odisha in favour of M/s Thriveni Earthmovers Private Limited vide 'in-principle' approval of Government of India, MoEF&CC, New Delhi communicated in letter No.8-02/2023-FC dt.21.12.2023 under Section-2 of the Forest (Conservation) Act, 1980, the limits of which are specified below and the area of which is 91.000 Ha (224.863 Ac) shall be Protected Forest with effect from the date of issue of the Notification and shall be known as "**Uparbirakala Protected Forest**".

Forest Block:

Name of the Protected Forest	:	**Uparbirakala**
Area in Ha	:	91.000
Area in Acres	:	224.863
Name of the Village	:	Uperbirikala
Name of the Police Station	:	Nayakote
Name of the Tahasil	:	Bansapal
Name of the Sub-Division	:	Keonjhar
Name of the District	:	Keonjhar

Land Schedule:

Village	Khata No.	Plot No.	Kisam	Area in Ha.	Boundary description			
					North	South	East	West
Uparbirakala	35/1	117/ 172	Parbat	14.603	Plot No. 117 (P)	Plot No. 116	Plot No. 167	Plot No.109
		109		49.421	Plot No. 108	Plot No. 115	Plot No. 117/ 172 & 116	Plot No.110/ 171
		110/ 171		30.584	Plot No. 107 & 110 (P)	Plot No. 114 & 110/173	Plot No. 109	Plot No. 110/173, 111, 110 (P) & 111/ 176
		114		30.443	Plot No. 110/ 171 & 110/ 173	Village Boundary	Plot No. 115	Plot No. 113
		115		28.861	Plot No. 109	Village Boundary	Plot No. 116	Plot No. 114
		116		22.536	Plot No. 117/ 172	Village Boundary	Plot No. 168	Plot No. 109 & 115
		111		29.089	Plot No. 106	Plot No. 113 & 111/ 176	Plot No. 111/176, 110 (P) & 110/ 171	Plot No. 112/ 177 & 112 (P)

		112/ 177		19.326	Plot No. 112 (P)	Plot No. 113	Plot No. 111	Village Boundary
Total				224.863 Ac or 91.000 ha				

By Order of the Governor

(Satyabrata Sahu)
Additional Chief Secretary to Government

By e-Mail: deputydirectorpp@rediffmail.com

Memo No. 13675 /FE&CC, Date 26.07.24

Copy with soft copy forwarded to the Director of Printing, Stationery and Publication, Odisha Cuttack for publication in an extra-ordinary issue of the Odisha Gazette and supply 10 copies of printed notification each to Forest, Environment & Climate Change Department/ Director of Land Records and Surveys, Odisha, Cuttack/ Collector, Keonjhar/ Divisional Forest Officer, Keonjhar Forest Division/ Tahasildar, Banspal Tahasil, Dist.-Keonjhar.

2. The Notification is statutory and may be assigned SRO number.

OSD-cum-Special Secretary to Government

Memo No. 13676 /FE&CC, Date 26.07.24

Copy forwarded to the Assistant Inspector General of Forests, Govt. of India, Ministry of Environment, Forest and Climate Change, (F.C. Division), Indira Paryavaran Bhawan, Jor Bagh Road, Aliganj, New Delhi-110003/ Deputy Director General of Forests (Central), Govt. of India, MoEF&CC, Regional Office, A/3, Chandrasekharpur, Bhubaneswar-23 for information and necessary action.

OSD-cum-Special Secretary to Government

Memo No. 13677 /FE&CC, Date 26.07.24

Copy forwarded to the Steel & Mines Department/ Revenue & Disaster Management Department/ Director of Land Records and Surveys, Odisha, Cuttack/ RDC (ND) Sambalpur/ Collector, Keonjhar/ Tahasildar, Banspal Tahasil, Dist.-Keonjhar for information and necessary action.

OSD-cum-Special Secretary to Government

Memo No. 13678 /FE&CC, Date 26.07.24

Copy forwarded to the Principal Chief Conservator of Forests & HoFF, Odisha/ Principal Chief Conservator of Forests (WL) & CWLW, Odisha/ Principal Chief Conservator of Forests (FD&NO, FC Act), O/o the PCCF & HoFF, Odisha w.r.t. his letter No.7211, dt.30.03.2024/ Regional Chief Conservator of Forests, Rourkela Circle/ Divisional Forest Officer, Keonjhar Forest Division for information and necessary action.

OSD-cum-Special Secretary to Government

Memo No. 13679 /FE&CC, Date 26.07.24

Copy forwarded to the Head State Portal, IT Centre, Odisha Secretariat, Bhubaneswar/ OE (IT) Section, FE&CC Department w.r.t. this Department letter No.21646/F&E dtd.22.11.2016/ 5 spare copies for G.F. for information and necessary action.

OSD-cum-Special Secretary to Government

Memo No. 13680 /FE&CC, Date 26.07.24

Copy forwarded to the Director, M/s Thriveni Earthmovers Pvt. Ltd, At-Unchabali, Po-Bamebari, Dist.-Keonjhar, Odisha, Pin-758086 for information and necessary action.

OSD-cum-Special Secretary to Government

Annexure-IIIA

STATE FOREST HEADQUARTERS, ODISHA
OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS & HoFF
PLOT NO. GD-2/12, ARANYA BHAWAN, CHANDRASEKHARPUR
BHUBANESWAR-751023

No. 17827 /9F(MG)-II/2022
Dated Bhubaneswar the 03rd September 2024

To

The **Additional Chief Secretary to Government**
Forest, Environment & Climate Change Department
Odisha, Kharavel Bhawan, Bhubaneswar

Sub-: Submission of Draft notification proposal for declaration of Protected Forest of the non-forest Govt. land identified, transferred & mutated in favour of the State Forest Department under Section-33 of Orissa Forest Act, 1972 located in village Uperbirakala under Banspal Tahasil of Keonjhar district against the approved diversion of 94.351 ha of forest land including 4.261 ha of safety zone (3.858 ha along the ML boundary line and 0.403 ha along the PWD road) within the granted LoI for ML over 131.800 ha for Laserda Pacheri Manganese & Iron Ore block in Keonjhar District of Keonjhar Division, Odisha.

Ref: Government of India, MoEF & CC, FC Division, New Delhi approval order No. 8-02/2023-FC dated 21.12.2023 (Stage-I).

Sir,

The draft notification proposal submitted by the DFO, Keonjhar Forest Division is sent here with for declaration of "**Protected Forests**" measuring **5.00 ha** of non-forest Govt. land in village **Uperbirakala** under Banspal Tahasil of Keonjhar District under Section-33 of Orissa Forest Act, 1972. The said area has been transferred & mutated in favour of the State Forest Department as per condition stipulated by GoI, MoEF & CC, FC Division, New Delhi vide their Letter No. 8-02/2023-FC dated 21.12.2023 (Stage-I) against the approved diversion of 94.351 ha of forest land including 4.261 ha of safety zone (3.858 ha along the ML boundary line and 0.403 ha along the PWD road) within the granted LoI for ML over 131.800 ha for Laserda Pacheri Manganese & Iron Ore block in Keonjhar District of Keonjhar Division, Odisha The details of land schedule with boundary particulars around each plot are mentioned below:-

Sl. No.	Village/ Tahasil	Khata No.	Plot No.	Kissam	Total Area (in Ac.)	Boundary Description (Plot No. existing)				Remarks
						North	South	East	West	
1.	Uperbirakala / Banspal	35/1	167/ 178	Parbata	1.8483	167(P)	168/179	Vill boundary of Mundatopa village	117/172	Two plots in one patch
			168/ 179		10.5060	167/178	168(P)	Vill boundary of Mundatopa village	116	
	Total	Total two plots in one patch			12.3543 Ac or say 5.00 Ha					

The background of the notification along with relevant land schedule have been di incorporated in the body of the draft notification. The documents endorsed by the DFO, Keonjhar Forest Division are furnished below:-

1) Draft PF Notification Proposal with land schedule and boundary particulars around each plot.
2) Copy of the letter of Stage-I approval of GoI, MoEF & CC, FC Division, New Delhi vide their Letter No. 8-02/2023-FC dated 21.12.2023 (Stage-I).
3) Allotment Order No269/Rev dt.30.01.2024 of the Collector & District Magistrate, Keonjhar District of the Non-forest Govt. land over 12.3543 Ac or say 5.00 ha in village Uperbirakala under Banspal Tahasil of Keonjhar District for raising of CA against this project addressed to the DFO, Keonjhar Forest Division.
4) Alienation order No.1423/Rev dated.31.07.2024 of the Collector & District Magistrate, Keonjhar District of the non-forest Govt. land over 5.00 ha identified for raising of CA against this project with land schedule at village Uperbirakala under Banspal Tahasil of Keonjhar District.
5) Joint verification report with land schedule and boundary particulars of the mutated non forest Govt. Land identified for raising of CA at village Uperbirakala under Banspal Tahasil of Keonjhar District with certificate of non-encroachment & non encumbrance, not covered under section 4(1) notification, not covered under DLC category of land, not allotted earlier to any other user agency, not covered under ML/PL area, not settled in favour of individual / community under FRA-2006 etc. authenticated by both the DFO & Tahasildar concerned.
6) Land schedule of the transferred & mutated non-forest Govt. Land identified for raising of CA at village Uperbirakala under Banspal Tahasil of Keonjhar District with boundary particulars around each mutated plot duly authenticated by both the DFO & Tahasildar concerned.
7) Copy of RoR in support of transfer & mutation of the said non forest Govt. land in favour of the State Forest Department issued by the Tahasildar, Banspal Tahasil under Khata No.35/1 over two nos. of plots in one patch furnished by the Tahasildar, Banspal Tahasil vide his letter No.1818 dt.27.08.2024 addressed to the DFO, Keonjhar Forest Division.
8) Location Map showing the mutated CA land over part cadastral map village Uperbirakala Sheet No.4 duly countersigned by both the DFO & Tahasildar concerned.
9) DGPS surveyed & ORSAC vetted cadastral map of village Uperbirakala Sheet No.4 on tracing cloth in 1:4000 scale showing the mutated CA land plots posted with boundary pillars around with land schedule and boundary particulars around each mutated plot with GPS coordinate of the individual boundary pillar and pillar to pillar distance

posted around with certificate of non-encroachment & non encumbrance, not covered under section 4(1) notification, not covered under DLC category of land, not allotted earlier to any other user agency, not covered under ML/PL area, not settled in favour of individual / community under FRA-2006 etc. duly authenticated by both the DFO & Tahasildar concerned.

In this context, Government in FE&CC Department is requested to communicate their order declaring aforementioned mutated non-forest Govt. land measuring **12.3543 Acres** or say **5.000 ha** in village **Uperbirakala** under **Banspal Tahasil** of **Keonjhar District** as **"Uperbirakala Protected Forests"** under Section-33 of Orissa Forest Act, 1972.

Yours faithfully

Encl-: **As above**

Principal Chief Conservator of Forest
Forest Diversion & Nodal Officer, FC Act

Memo No. 17828 Dt 03.09.2024

Copy forwarded to the Regional Chief Conservator of Forests, Rourkela Circle for information & necessary action with reference to Memo No.6878 dated 29.08.2024 of the DFO, Keonjhar Forest Division to his address.

PrincipalChief Conservator of Forest
Forest Diversion & Nodal Officer,FC Act

Memo No. 17829 Dt 03.09.2024

Copy forwarded to the Divisional Forest Officer, Keonjhar Forest Division for information & necessary action with reference to his Memo No.6877 dated 29.08.2024.

Principal Chief Conservator of Forest
Forest Diversion & Nodal Officer, FC Act

Annexure-IV

PLANTING AND SOIL MOISTURE CONSERVATION ACTIVITIES TO RESTOCK AND REJUVENATE THE DEGRADED OPEN FOREST LOCATED IN THE AREA WITHIN 100 Mtrs. FROM OUTER PERIMETER OF THE MINING LEASE

LASERDA PACHERI MANGANESE & IRON BLOCK

THRIVENI EARTH MOVERS PRIVATE LTD

PLANTING AND SOIL MOISTURE CONSERVATION ACTIVITIES TO RESTOCK AND REJUVENATE THE DEGRADED OPEN FOREST LOCATED IN THE AREA WITHIN 100 Mtrs. FROM OUTER PERIMETER OF THE MINING LEASE

1. INTRODUCTION

Government of Odisha issued the Letter of Intent (LoI) vide letter No – IV (MISC) SM-06/2017848/SM, Bhubaneswar dated 27.01.2017 under Rule 18(1) of Mineral Auction Rules 2015 for grant of Composite License (CL) in favor of M/s Thriveni Earthmovers Pvt. Ltd (TEMPL). After complying with the stipulated conditions of LoI, Govt. of Odisha declared M/s Thriveni Earth Movers Pvt. Ltd as the Successful Bidder and Granted the Composite License over 256.304 ha for Manganese vide No.IV (B)SM-100/2007-433/SM, dated 19.01.2019 and the prospecting license deed was executed on 24.01.2019 for 2 years. During the prospecting new minerals (i.e. iron ore) was discovered and it was intimated to Govt. under Rule 11(2) of Minerals (Other than Atomic and Hydro Carbons energy Minerals) Concession Rules, 2016. On due completion of exploration, Mining Lease application over 131.889 ha was submitted and Government of Odisha has awarded the Letter of Intent for grant of mining lease vide No. 7731-IV(B)SM-100/2017/SM dated 21.09.2021 in favour of M/s Thriveni Earthmovers Pvt. Ltd. for Manganese & Iron ore over an area of 131.889 ha situated in Dhanrjayapur-40, Kanrda -38 & Laserda village under Barbil Tehsil of Keonjhar District, Odisha. Subsequently after conduct of DGPS survey by ORSAC, the area now comes to 131.800 ha which has been intimated by Director of Mines vide no. MXIII (b) 80/2015/8031/DM/dated 22.10.2021.

On an application of forest diversion proposal over 94.351 ha of forest lnd including 4.261 ha of safety zone, the Ministry of Environment & forests, Govt. of India have granted Stage–I approval vide their letter No.8-02/2023-FC, dt. 21.12.2023 subject to fulfillment of certain conditions.

As per condition No. 2 (f) of the Stage-I approval, the User Agency has toprepare a scheme for "*gap planting and soil moisture conservation activities to restock and rejuvenate the degraded open forest located in the area within 100 mtrs. from outer perimeter of the mining lease*". In compliance with this condition, a comprehensive scheme is prepared for implementation of the same.

Except Northern side of Pacheri Block all other three sides of Pacheri Block and all four sides of Laserda side of Mining Lease area about 5500 mtrs. of length is free for gap planting in the degraded open village forest and Sabik forest located in the area within 100 mtrs. from outer perimeter of the mining lease. Total 55.00 Ha. of land will be free for gap plantation.

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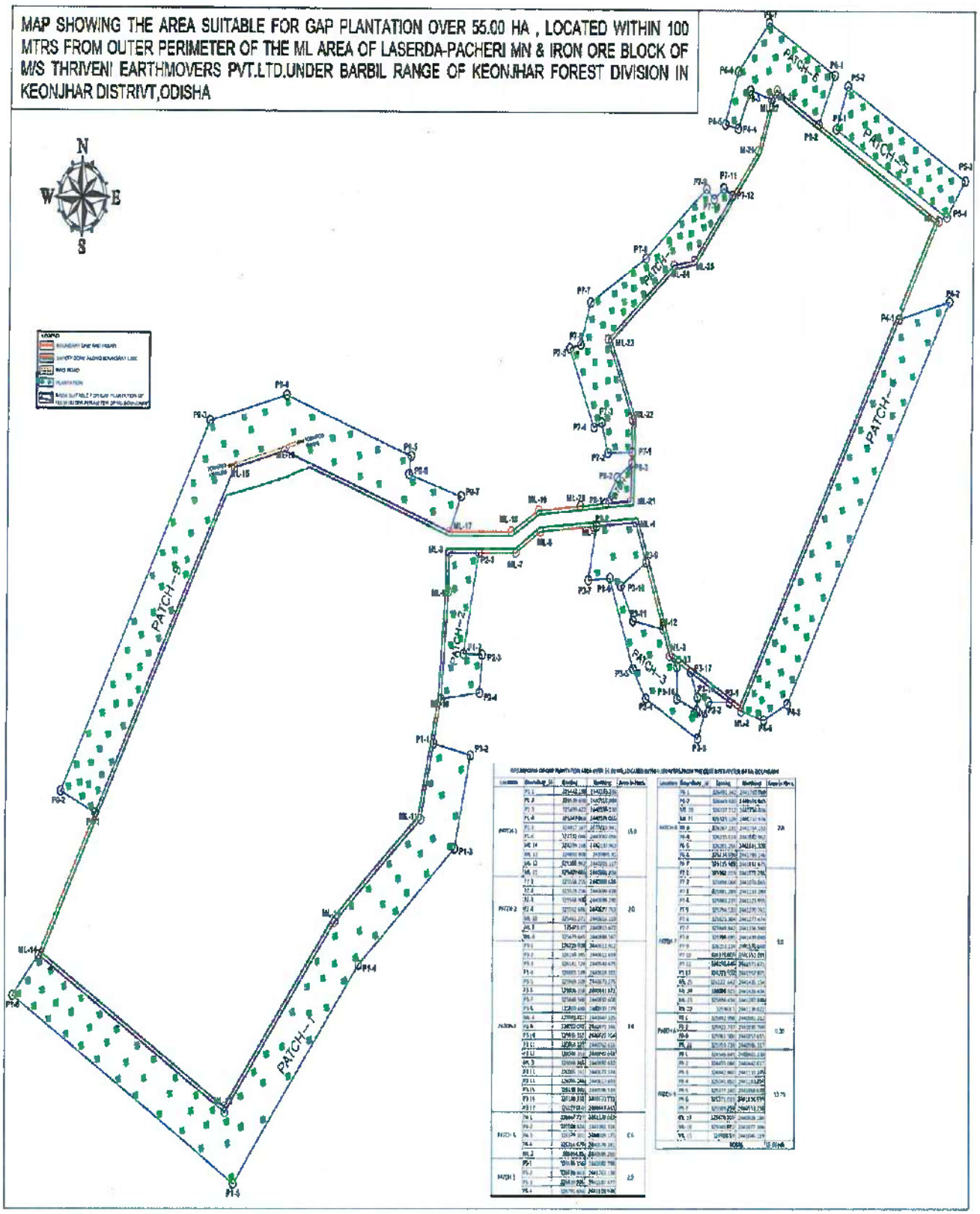
Location of the area 55.0 ha proposed for Gap Plantation within 100mtrs from outer perimeter of ML boundary.



2. LOCATION OF THE ML AREA

The allotted ML area is bounded by latitude 22°04'11.44231" to 22°03'25.92856"N and longitude 85°19'15.99748" to 85° 17'53.81761"E of Survey of India Topo-sheet No. F45H8.

3. SOIL TYPE

The lateritised surface is covered by a thin veneer of soil with thickness varying from 0.5 m to 4.00 m. The soil is yellowish brown to reddish brown to grey colour. Due to extensive mining activity and deforestation soil has been eroded along the slopes and only preserved in the areas with vegetation cover. The soil/ alluvium are mostly silty and clayey with pebbles and cobbles of chert, jasper, BHJ and iron ore (hematite).

4. CLIMATE

The tropical climate zone with summer stretching from March to May recording up to 45°C during peak days. Monsoonal rain sets in June and continues up to September. Annual rainfall averages to 1500mm. The winter is restricted to November, December & January with temperature dropping down to minimum of approximately 4°C.

5. DRAINAGE

The area exhibits a rugged topography and is dissected by first, second and third order streams. Karo River flowing from south to north serves as the main drainage channel of the area.

6. EXISTING VEGETATION

There is natural vegetation on the area of dry deciduous species like Sal, Kurum, Kangara, Asan, Dhaura, Kendu, Jamu, Mango etc. with canopy density of below 0.4. In general, various edaphic and climatic factors have also contributed to the development of different types of forests such as Khesra, Reserve forest land.

7. OBJECTIVE OF THE SCHEME:

The objectives of the proposed scheme are as follows:

1. To meet the requirement of condition No. 2(f) of the Stage – I approval of GoI, MoEF.
2. To restock and rejuvenate the degraded open forest
3. Ensuring Soil & Moisture Conservation Measures to enrich the micro-edaphic conditions.
4. Tending the existing crop for maximum growth and improving the density condition and composition of the crop.

8. PLANTING PLAN

Planting Plan reflects the species-specific treatment of the identified site. Choice of species is based on the geo-morphology of the site, soil-texture, structure, fertility

and depth, proneness of the site to water logging etc. Specific treatment of the site in terms of soil and moisture conservation intervention will be depicted in the treatment map. A treatment map will invariably be prepared for Species to be planted and treatments to be applied to the different patches shown in the treatment map and planting plan. This plan will be followed when actual planting is carried out.

Species to be planted:-

Sl. No.	Local Name	Scientific Name
1	Jamu	*Sizygium cumini*
2	Kurum	*Adina cordifolia*
3	Dhaura	*Anogeissus acuminata*
4	Khair	*Acacia catechu*
5	Sisoo	*Dalbergia sissoo*
6	Neem	*Azadirachta indica*
7	Gambar	*Gmelina arborea*
8	Bahada	*Terminalia bellirica*
9	Harida	*Terminalia chebula*
10	Karanja	Pongamia Pinnata
11	Ainla	*Emblica officinalis*

9. PRE-PLANTING OPERATION

9(i)-RAISING OF PLANTATION STOCK- NURSERY-

Nursery will be raised @4000 per year including seedlings for 10% causality replacement.

9(ii)-SURVEY, DEMARCATION & PILLAR POSTING, GPS READING WITH MAPPING-

The planting area has been properly demarcated. Boundary post has been fixed at each corner, at each place where the boundary line of the site crosses a road or a prominent path and at each other prominent point. It consists of RCC post of 4 feet tall. The name of the plantation site, species, year of plantation and area has been reflected on each boundary post. The area demarcated for plantation has been accurately surveyed. A map in the scale of 1:4000 has been prepared along with GPS co-ordinates reflected in the map.

GPS Reading Of Boundary Of Gap Plantation Area Over 55.00 Ha Located Within 100 Mtrs From The Outer Perimeter Of Ml Boundary as below:

GPS READING OF BOUNDARY OF GAP PLANTATION AREA OVER 55.00 HA LOCATED WITHIN 100 MTRS FROM THE OUTER PERIMETER OF ML BOUNDARY				
Location	Boundary_Id	Easting	Northing	Area in Hect.
PATCH-1	P1-1	325442.199	2440533.286	15.9
	P1-2	325539.650	2440510.849	
	P1-3	325499.422	2440336.130	
	P1-4	325247.068	2440121.066	
	P1-5	324917.167	2439715.941	
	P1-6	324331.046	2440062.056	
	ML-14	324399.168	2440137.963	
	ML-13	324893.908	2439845.81	

	ML-12	325182.962	2440201.117	
	ML-11	325409.486	2440391.204	
PATCH-2	P2-1	325558.255	2440888.694	2.0
	P2-2	325519.256	2440699.838	
	P2-3	325568.906	2440698.290	
	P2-4	325562.686	2440627.763	
	ML-10	325461.271	2440616.119	
	ML-9	325478.87	2440815.672	
	ML-8	325479.645	2440888.567	
PATCH-3	P3-1	326225.919	2440611.912	3.8
	P3-2	326169.385	2440612.659	
	P3-3	326141.724	2440543.675	
	P3-4	326003.149	2440618.301	
	P3-5	325969.109	2440673.275	
	P3-6	325906.358	2440841.873	
	P3-7	325848.560	2440837.608	
	P3-8	325869.480	2440939.279	
	ML-4	325973.811	2440947.325	
	P3-9	326002.082	2440871.366	
	P3-10	325935.317	2440827.304	
	P3-11	325968.172	2440762.616	
	P3-12	326048.353	2440747.048	
	ML-3	326066.745	2440697.632	
	P3-13	326085.161	2440677.374	
	P3-14	326086.146	2440617.693	
	P3-15	326138.380	2440596.533	
	P3-16	326140.338	2440620.772	
	P3-17	326122.060	2440667.843	
PATCH-4	P4-1	326667.727	2441328.061	8.6
	P4-2	326800.624	2441361.316	
	P4-3	326379.301	2440609.175	
	P4-4	326316.478	2440578.381	
	ML-2	326256.85	2440595.255	
PATCH-5	P5-1	326496.356	2441682.798	2.9
	P5-2	326526.863	2441763.138	
	P5-3	326839.926	2441587.477	
	P5-4	326791.694	2441518.976	
PATCH-6	P6-1	326491.342	2441783.069	2.8
	P6-2	326449.920	2441691.645	
	ML-28	326337.712	2441754.606	
	ML-27	326323.128	2441737.976	
	P6-3	326267.231	2441754.153	
	P6-4	326235.614	2441682.962	
	P6-5	326201.256	2441691.320	
	P6-6	326234.996	2441789.146	
	P6-7	326315.965	2441881.475	
PATCH-7	P7-1	325962.019	2441078.298	5.0
	P7-2	325898.068	2441076.865	

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	P7-3	325881.289	2441133.380	
	P7-4	325860.235	2441123.955	
	P7-5	325794.520	2441270.761	
	P7-6	325823.304	2441277.474	
	P7-7	325848.842	2441356.560	
	P7-8	325994.695	2441439.040	
	P7-9	326153.134	2441570.660	
	P7-10	326173.009	2441551.285	
	P7-11	326198.646	2441571.671	
	P7-12	326221.922	2441557.871	
	ML-25	326122 .642	2441435.154	
	ML-24	326068.925	2441426.434	
	ML-23	325896.434	2441287.846	
	ML-22	325963.5	2441138.022	
PATCH-8	P8-1	325892.998	2440981.312	0.30
	P8-2	325922.737	2441030.769	
	P8-3	325961.506	2441057.615	
	ML-21	325959.738	2440986.317	
PATCH-9	P9-1	324546.845	2440401.230	13.70
	P9-2	324455.066	2440442.017	
	P9-3	324842.860	2441133.345	
	P9-4	325045.850	2441181.294	
	P9-5	325377.140	2441068.673	
	P9-6	325371.033	2441034.599	
	P9-7	325509.294	2440993.350	
	ML-17	325479.709	2440928.184	
	ML-16	325040.872	2441077.366	
	ML-15	324908.59	2441046.119	
		TOTAL		55.00 HA.

9(iii)- SITE PREPARATION AND SILVICULTURAL OPERATION INCLUDING CLEARANCE OF WEED, CLIMBER CUTTING, HIGH STUMP CUTTING, SINGLING OF SHOOTS-

The clearing of the site involving removal of invasive weeds, bushes, climbers, high stumps and singling of shoots will be taken up preferably by the end of February and latest by the end of March. Pits of the dimension 45 x 45 x 45 cm. will be dug @ 1000 per ha in the available gaps preferably 2 months before or at least a month before planting of seedlings. In addition, planting section of 4.00 ha area will be ensured through plantation of distinct species than that of the species to be planted in the section.

10. PLANTING OPERATION

Planting of seedlings will be taken up in the month of July. The polythene covering of the balls of earth will be carefully removed before planting. Care will be taken to see that the ball of earth is not broken while doing so. The seedling with the ball of earth will then be placed firmly in the pit and buried at such a depth that the root collar is well below the surface of the soil. The soil around the plant will be well compacted with the heal as a final step so that there is a proper bond between the ball and the

surrounding soil. The earth close to the collar will be slightly elevated so that rain water does not accumulate very close to the plant.

11. POST PLANTING OPERATION

11(i)-CASUALTY REPLACEMENT

The entire area will be gone over in the same order as plantation was carried out and casualties, if any, will be replaced as soon as the main plantation operation is over.

11(ii)-WEEDING AND SOIL WORKING

Regular and efficient weeding will start immediately after sprouting of the stumps is complete or after the seedlings have started throwing up new buds.

11(iii)-MANURING AND INSECTICIDE APPLICATION

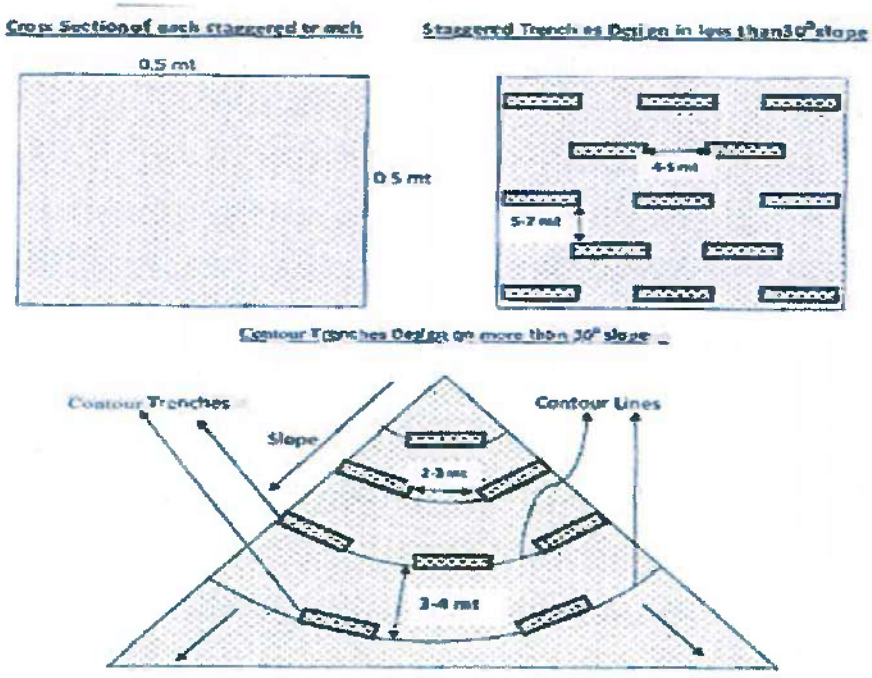
On degraded sites urban compost or farmyard manure, wherever available, will be added to the soil while refilling the pits. As regards artificial fertilizers, the minerals required and dosage @ 50 grams of patent mixtures like 'Gromor' or N.P.K. (2:2:1) will be applied in two split doses one in August and the other in September.

11(iv)-SOIL MOISTURE CONSERVATION MEASURES

Soil Moisture Conservation Measures structure like Staggered Trench, Contour Trench, Graded earthen bund, LBCD, Wire mesh LBCD, sub surface dyke & WHS as per the slope & site requirement will be constructed in the plantation area.

Design/Cross Section of Soil Moisture Conservation Measures structures

1. Straggered Trench (ST) and Contour Trench (CT)



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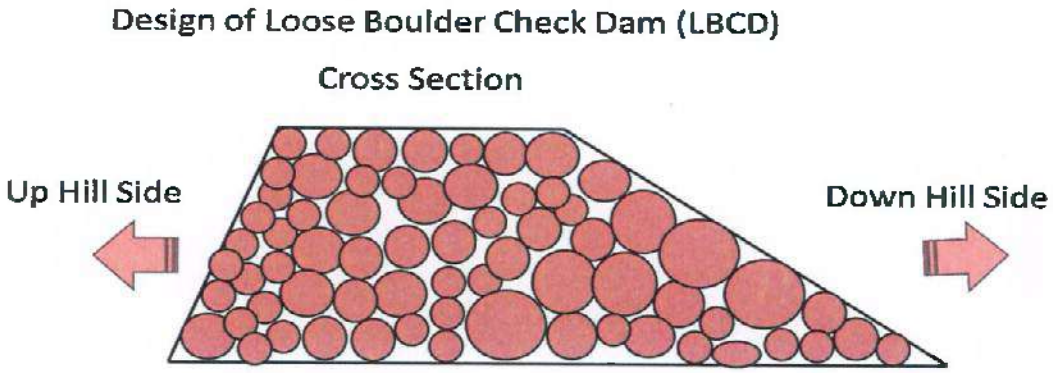
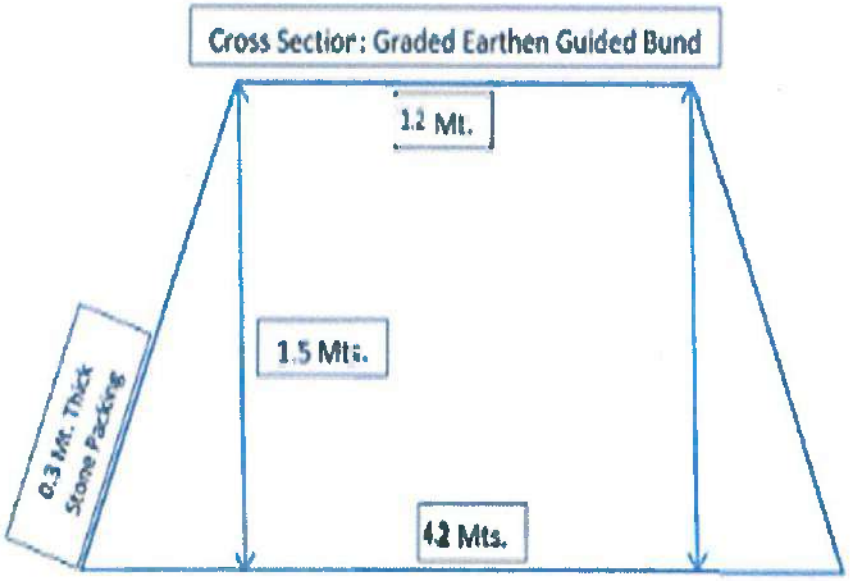
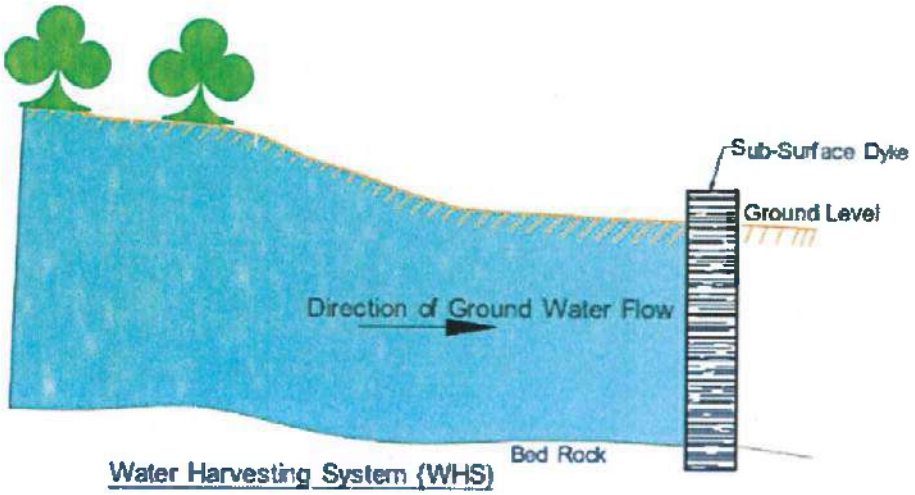
2. Loose Boulder Check Dam (LBCD)



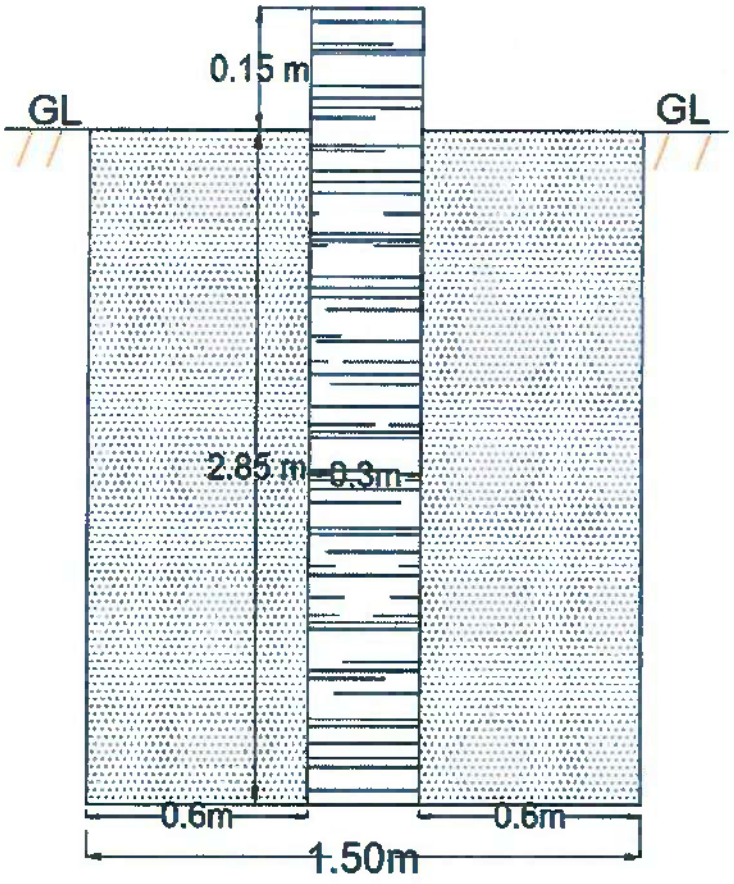
3. Graded Earthen Bund (GEB)



4. Water Harvesting System (WHS) and Sub-Surface Dyke (SSD)



Water Harvesting System (WHS)



Cross Sectional View of SSD

11(v)-PROTECTION AGAINST FIRE AND GRAZING

Fire line tracing will be ensured to protect the plantation from fire and watch & ward will be provided as per the approved norm for protecting the plantation from grazing.

12. 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. Budgetary provision of 15% of the total project cost has been earmarked on this score.

13. EXECUTING AGENCY

The works in the present Scheme shall be executed by the User Agency having specialized departments headed by qualified persons with outsourced man and machinery. To facilitate this, the user agency shall establish its 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 in coordination with the Forest Department.

14. REQUIREMENT OF FUNDS

The total cost of the implementation of mitigative measures will be Rs. **1,06,12,600/- (Rupees one crore six lakh twelve thousand six hundred)** only for implementation of the above mitigation measures, the above expenditure will be made over the next ten years period. Therefore, budget provision of will be kept by the user agency for implementation of the above mitigation measures over a period of next ten years. This budget will be subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next ten years for the implementation of mitigative measures is given in the following table:-

TOTAL COST OF THE PROJECT

Sl.No.	Description of the Work	Fund Required (in Rs.)
1.	**Biological Measures**	
A	Nursery @2000 seedlings per ha.	The financial forecast has already been provided in the scheme imposed in Condition No.14 (b). So no extra budgetary provision has been suggested.
B	RDF Plantation (200 no./ha.) over 55 ha. @ Rs. 1,11,286/- (as per base norm of Matrix for the year 2024-25) (Annexure-I).	61,20,730.00
	Sub-Total:	**61,20,730.00**
2.	**Structural Measures**	
A	Soil Moisture Conservation (SMC) over 55 ha @ Rs. 41,248/- per ha (as per base norm of Matrix for the year 2024-25) (Annexure-II).	22,68,640.00
	Sub-Total:	**22,68,640.00**
	Grand Total:	**83,89,370.00**
Inspection, monitoring and evaluation @ 15% of the total Project cost		12,58,405.50
	Total:	**96,47,775.50**
	Price escalation @ 10%	9,64,777.55
	GRAND TOTAL	1,06,12,553.05 OR SAY **1,06,12,600.00**
(Rupees one crore six lakh twelve thousand six hundred) only		

Techinically Approved

Regional Chief Conservator of Forests
Rourkela Circle

Divisional Forest Officer
Keonjhar Division

Forest Range Officer
Barbil

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Annexure-I

COST STRUCTURE OF PLANTATION, PROVISION OF FUNDS AND UTILIZATION

COST ESTIMATE FOR BLOCK PLANTATION OF 200 SEEDLINGS / Ha.

ANNEXURE-6

Base Cost Norms for Compensatory Afforestation through Aided Natural Regeneration (ANR) @ 200 Seedlings/Ha. (18 months old seedling)						
WAGE RATE Rs- 311/- PER MANDAY						
Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour Cost (In Rs.)	Matrial Cost (In Rs.)	Total cost (In Rs.)
0th Year (Advance work) Pre-Planting Operation						
1	Survey, Demarcation and Pillar posting	Nov/Dec	2	622	0	622
2	Preparation of Treatment Map (Digital Map)	Nov/Dec	1	311	100	411
3	Site preparation	Nov/Dec	2	622	0	622
4	Silvicultural operations including clearance of weed, cutting of climber, High stump cutting, singling of shoots & removal of cut out after drying from the field to blank space.	Jan/Feb	15	4665	0	4665
5	Alignment and stacking for digging of pits	Feb/Mar	0.5	156	0	156
6	Digging of pits (45 cm x 45 cm X 45 cm) in hard and gravelly soil	Feb/Mar	8	2488	0	2488
	Total		28.5	8863.5	100.0	8963.5
1st Year/Planting Year						
1	Refilling of pits by altering the dugout soil of the pits, application of organic compounds/ CDM/ FYM & mixing the same perfectly.	June/Jul	1.5	466.5	1000	1467
2	Transportation of 18 months old polythene bag seedlings in hired truck /tractor from the permanent/Mega nursery to planting site including loading & unloading (Average lead of 10 Rkm) & Stacking the seedling @ Rs.6/-/ Seedling. (220 nos.)	Jul/Aug	0	0	1320	1320
3	Watering polythene bag seedlings at stacking site of plantation	Jul/Aug	0.5	155.5	0	156
4	Conveyance of polythene bag seedlings on head load from the stacking site to individual dugout pits within the planting site, applying insecticide, fertilizer & planting after scooping the soil with other applied materials and pressing the soil perfectly around the planted seedling.	Jul/Aug	4.5	1399.5	0	1400
5	Cost of Fertilizer & Insecticide (a)NPK/ Bio-fertiliser @ 50 gms/plant as basal dose = 10kg @ Rs.30/- per kg = Rs. 300.0 (b) Urea/Vermicompost/Mo Khata/any other fertilizer @ Rs. 150.00 (c) Insecticide/ Bio-pesticide @ 5 gms/plant= 1 kg @ Rs.150/- per kg = Rs. 150/-	Jul/Aug	0	0	600	600
6	Casualty Replacement @ 10% (20 nos.)	Jul/Aug	0.5	156	0	156
7	1st weeding & Manuring	Aug/Sept	2	622	0	622
8	2nd Weeding, Soil working (1mt. diametre around the plants) & Manuring	Oct/Nov	3	933	0	933
9	Fire line tracing & Inspection path	Feb/Mar	3	933	0	933
10	Watch & Ward including watering as per requirement	Aug-Mar	8	2488	0	2488
	Total		23	7153	2920	10073
2nd Year Maintenance						

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Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour Cost (In Rs.)	Matrial Cost (In Rs.)	Total cost (In Rs.)
1	Transportation of 20 seedlings from Nursery to plantation site including loading, unloading & conveyance by Tractor @ Rs.6/- per seedling	Jul	0	0	120	120
2	Planting for casualty replacement	Jul	0.5	155.5	0.0	155.5
3	Cost of Fertilizer & Insecticide- A) Cost of Insecticide/ Bio- pesticide(Thomet/ Furate) @ 5 gms/plant = 0.1 Kg @ Rs.150/- per kg = Rs.15/- B) Urea/NPK/Bio-fertilizer/Vermicompost/Mo Khata/any other fertilizer= Rs. 560/-	Jul	0	0	575	575
4	Weeding (Complete weeding), Manuring & Soil working, (1mt. diametre around the plants)	Sep/Oct	4	1244	0.0	1244
5	Fire line tracing (2 m. wide fire line over 400 m long) & Inspection path	Feb/Mar	3	933	0.0	933
6	Watch & Ward including watering as per requirement	Apr/Mar	12	3732	0.0	3732
	Total		19.5	6064.5	695.0	6759.5
	3rd Year Maintenance					
3	Cost of Fertilizer:- Urea/NPK/Bio-fertilizer/Vermicompost/Mo Khata/any other fertilizer= Rs. 560/-	Sep/Oct	0	0	560	560
4	Weeding (Complete weeding), Manuring & Soil working, (1 mt. Diametre around the plants)	Aug/Sep	4	1244	0	1244
5	Fire line tracing (2 m. wide fire line over 400 m long) & Inspection path	Feb/Mar	3	933	0	933
6	Watch & Ward including watering as per requirement	Apr/Mar	12	3732		3732
	Total		19.0	5909.0	560.0	6469.0
	4th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m long) & Inspection path	Feb/Mar	3	933	0	933
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3732	0	3732
	Total		15	4666	0	4,665
	5th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length) &Inspection path	Feb/Mar	3	933.00	0	933
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3732.00	0	3732
	Total		15.0	4665.0	0	4665
	6th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length) &Inspection path	Feb/Mar	3	933.00	0	933
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3732.00	0	3732
	Total		15.0	4665.0	0.0	4665.0
	7th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length) &Inspection path	Feb/Mar	3	933.00	0	933
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3732.00	0	3732
	Total		15.0	4665.0	0.0	4665.0
	8th Year Maintenance					

Engr.

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Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour Cost (In Rs.)	Matrial Cost (In Rs.)	Total cost (In Rs.)
1	Fire line tracing (2 m. wide fire line over 400 m length) &inspection path	Feb/Mar	3	933.00	0	933
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3732.00	0	3732
	Total		15.0	4665.0	0.0	4665.0
	9th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length) &inspection path	Feb/Mar	3	933.00	0	933
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3732.00	0	3732
	Total		15.0	4665.0	0.0	4665.0
	10th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length) &inspection path	Feb/Mar	3	933.00	0	933
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3732.00	0	3732
	Total		15.0	4665.0	0.0	4665.0

Year wise Abstract of Cost Norm (showing seedling cost separately)

Sl. No	Year	No. person days	Labour cost @ Rs. 311/-per day (Rs)	Material Cost (In Rs.)	Monitoring Evaluation, Learning, Documentation and Other Contingency (5%) of (4+5+6)	Cost of Seedlings @Rs.50.31 per seedlings	TOTAL COST
1	2	3	4	5	7	6	8
1	0th year	28.5	8863.5	100	436.50	0.00	9400.0
2	1st year	23.0	7153.0	2920	427.00	11068.00	21568.0
3	2nd year	19.5	6064.5	695	240.50	1006.00	8006.0
4	3rd year	19.0	5909.0	560	231.00	0.00	6700.0
5	4th year	15.0	4665.0	0	135.00	0.00	4800.0
6	5th year	15.0	4665.0	0	135.00	0.00	4800.0
7	6th year	15.0	4665.0	0	135.00	0.00	4800.0
8	7th year	15.0	4665.0	0	135.00	0.00	4800.0
9	8th year	15.0	4665.0	0	135.00	0.00	4800.0
10	9th year	15.0	4665.0	0	135.00	0.00	4800.0
11	10th year	15.0	4665.0	0	135.00	0.00	4800.0
	Total:	195.0	60645.0	4275.0	2200.0	12074	79274.0

Note:

1 Priority must be given to the indigenous local species available nearby to the site of plantation.

2 10 % Indigenous fruit bearing trees must be preferred in Plantation.

3 Site specific Soil conservation work like LBCD, Gully Plugging, Staggered Trench, Contour Trench, Graded Bund, etc. may be taken up

4 Chain link fencing can be adopted in the CA plantation taken up outside the forest area and Bamboo twigs fencing may be prefered in CA plantations taken up in degraded forest area.

5 Watering facilities for procurement of water & watering may be adopted as per the availability of water.

6 The Cost Norm of various items can be changed with the approval of the concerned RCCFs keeping the overall cost norm fixed for each Financial Year

APCCF (Forest Diversion & NO, FC Act)

Ent. Engr.

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Matrix for ANR-200 Plants/ Ha

In Rupees

Sl. NO.	Commencement Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	Total Cost
Base Norm		9400	21568	8006	6700	4800	4800	4800	4800	4800	4800	4800											
1	2021-22	9400	22646	8826	7756	5834	6126	6432	6754	7092	7446	7819											96131
2	2022-23		9870	23778	9257	8144	6126	6432	6754	7092	7447	7818	8210										100938
3	2023-24			10364	24967	9730	8551	6432	6754	7092	7447	7819	8209	8621									105986
4	2024-25				10882	26215	10217	8979	6754	7092	7447	7819	8210	8619	9052								111286
5	2025-26					11426	27526	10728	9428	7092	7447	7819	8210	8621	9050	9505							116852
6	2026-27						11997	28902	11264	9899	7447	7819	8210	8621	9052	9503	9980						122694
7	2027-28							12597	30347	11827	10394	7819	8210	8621	9052	9505	9978	10479					128829
8	2028-29								13227	31864	12418	10914	8210	8621	9052	9505	9980	10477	11003				135271
9	2029-30									13888	33457	13039	11460	8621	9052	9505	9980	10479	11001	11553			142085
10	2030-31										14582	35130	13691	12033	9052	9505	9980	10479	11003	11551	12131		149137

APCCF (Forest Diversion & NO, FC Act)

THRIVENI EARTHMOVERS PVT. LTD.

Annexure- II

Cost Norms for Creation of Compensatory Afforestation with Stabilization of Soil Moisture Conservation (SMC)

Annexure-11

Cost Norms for creation of Compensatory Afforestation with Stabilization of Soil & Conservation of Moisture (1000

WAGE RATE Rs- 311/- PER DAY

Sl.No	Item of Works	Preferable Period of Executing	Total Cost
	0th Year (Pre-Planting Operation)		
1	Nil		0
	1st Year		
2	Soil Conservation measure structures like Staggered Trench, Percolation pit, Contour trench, Graded earthen bund, LBCD, Wire mesh LBCD, Sub surface Dyke & WHS as per the slope & site requirement on IS	Apr/Sept.	20,215
	2nd Year		
3	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,032
	3rd Year		
4	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,032
	4th Year		
5	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,032
	4th Year		
5	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,032
	Total		32,343.0

Abstract

Sl. No	Year	No. person days	Labour cost @ Rs. 311/-per day	Material Cost	Total cost (Rs.)
1	0th year	0.0	0.0	0.0	0.0
2	1st year	0.0	0.0	20,215.0	20,215.00
3	2nd year	0.0	0.0	3,032.00	3,032.00
4	3rd year	0.0	0.0	3,032.00	3,032.00
5	4th year	0.0	0.0	3,032.00	3,032.00
6	5th year	0.0	0.0	3,032.00	3,032.00
	Total	0.00	0.00	32,343.0	32,343.0

Different types of SMC structures may be taken up as per the scope & requirements of the plantation site out of the design & specification of different structures annexed along this document.

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Matrix for (SMC)

In Rupees

Sl. NO.	Commencement Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	Total Cost
Base Norm		0	20215	3032	3032	3032	3032											
1	2021-22	0	21226	3342	3510	3665	3870											35633
2	2022-23		0	22287	3509	3686	3869	4054										37415
3	2023-24			0	23401	3684	3870	4062	4267									39284
4	2024-25				0	24571	3868	4064	4266	4480								41248
5	2025-26					0	25800	4061	4267	4478	4704							43310
6	2026-27						0	27090	4264	4480	4702	4939						45475
7	2027-28							0	28443	4477	4704	4937	5186					47749
8	2028-29								0	29867	4701	4939	5184	5445				50136
9	2029-30									0	31360	4936	5186	5443	5717			52642
10	2030-31										0	37978	5183	5445	5715	6003		55274

APCCF (Forest Diversion & NO, FC Act)

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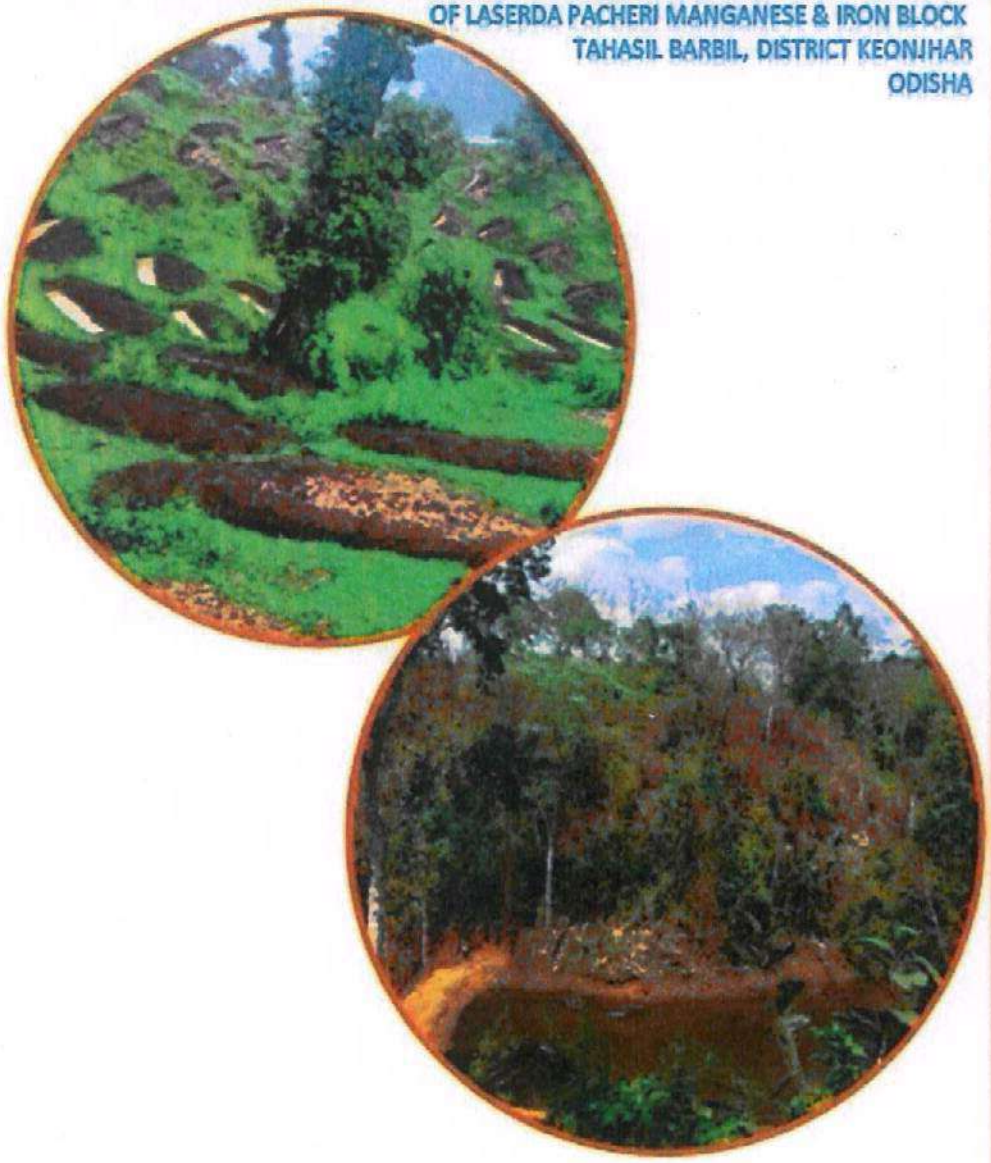
THRIVENI

SCHEME FOR SOIL & MOISTURE CONSERVATION PLAN

TO BE UNDERTAKEN IN AND AROUND 10 KM RADIUS OF THE MINING LEASE

2023-24

OF LASERDA PACHERI MANGANESE & IRON BLOCK
TAHASIL BARBIL, DISTRICT KEONJHAR
ODISHA



(As per condition No.9 of the Stage-I Forest Clearance granted by MoEF&CC, Govt.of India vide F.No.8-02/2023-FC(PT-I), dt. 21.12.2023)
(ON ONE TIME COST NORM BASIS)

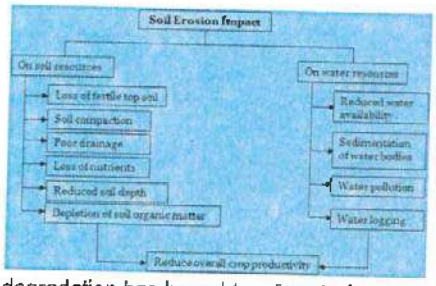
THRIVENI EARTHMOVERS PRIVATE LIMITED
AT. RUGUDIHI, PO. GUALI, BARBIL,

CONTENTS

WHY SOIL AND WATER CONSERVATION?

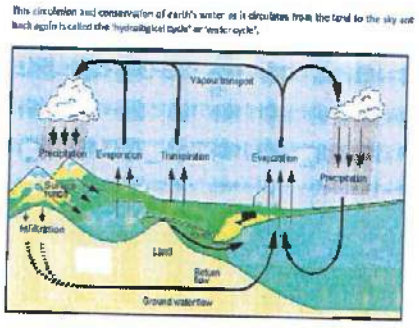
Land, which is the most precious heritage and the physical base of biomass production of life supporting systems, is finite. In this natural non-renewable endow ment, the share of our country is fixed at about 329 million ha. It is not only inelastic but also heterogeneous in different parts and regions of the country with a definite set up, capabilities, suitability for different land resources. Conservation of land resources can promote sound land use to match with the land capabilities or suitability and to initiate correct land resources, development/suitability in the country.

A close look at the present health of the soil and water resources reveals their wanton misuse and degraded environment. About 173 million ha covering slightly half of the country are threatened by various types of degradation like salinity, alkalinity, water logging, ravenous and gullied lands, areas under ravages of shifting cultivation, desertification, etc.



About 800 ha of arable land are being lost annually due to ingress of ravines. There are specific problems of land degradation due to open-cast mining operations, using good productive land for brick kilns, coastal erosion and seawater ingress, excessive erosion and land slides in the crumbling hill areas. Our forests and grass lands have been over exploited.

Frequent occurrences of floods and droughts in different parts of the country are evidence of improper land use in the catchments and inadequate conservation and use of rain water. The problem of land degradation has brought us face to face with the ever increasing depletion of the productivity and the basic land stock through nutrient deficiencies on the one hand and the ever growing demand for food, fodder, fibre, fuel, land based industrial raw materials and many non-farm land uses on the other hand.



Land and water are natural resources that are essential for the existence of life and are the two variable factors for which management has become most essential. Land provides food, fuel, fodder and shelter besides supporting secondary and other economic life supporting system. However there has been a continuous depletion of land resources and the quality of land is deteriorating due to various factors like soil erosion caused mainly due to shifting cultivation, high rainfall, large scale deforestation, reckless mining activities, overgrazing, general mismanagement, etc. Such soil erosion leads to degradation of soils' physical property and loss of plant nutrients.

It takes nature 600-1000 years to build 2.5 cm of top soil but get displaced in a year only due to misuse. It has been reported that 6000 million tones of productive soil are lost every year from about 80 million hectare of cultivated land alone in India. It has also been proved that soil lost from unprotected land is about 120 tonnes /ha/yr and may go as high as 300 tonnes /ha/yr.

Thus, a part from depletion of fertile soil erosion results in the loss of runoff water, plant nutrients and micro flora, siltation of reservoirs and riverbeds thereby adversely affecting irrigation and power potential, causing floods in plain and valley which damage crops, animals, habitation, communication, etc. But most of them adversely affect agricultural production, forest productivity and availability of water both for irrigation and drinking besides bringing about a disturbance in the soil and water balance

1. INTRODUCTION

Thriveni is a diversified miner with operations and projects in India, Indonesia and Africa. We invest downstream in mineral beneficiation, agglomeration and metal manufa cturing. Our operating model is bespoke. From mine development services, to investing in businesses, to managing entities, we have focused and grown in challenging environments. Wherever we operate, we do so in partnership with local communities, creating prospects and economic benefits for all stakeholders.

Our partnerships are at the heart of our business, whether with our customers, ecosystem peers or communities. We treat the interests of partners as our own and work in collaboration to cross any hurdles to our collective growth.Our innovation focus streams across everything we do. We deliver technological solutions that are cost-effective, highly efficient, and appropriate. Our innovative, sustainable rebuild model enshrines the 3Rs (Reduce, Reuse, Recycle), combining sustainable engineering development and creating a circular economy, reducing asset intensity and total life cycle costs.

We maintain a razor-sharp focus on outcomes. We are result-oriented, navigating any challenges that present themselves along the journey to success. We cultivate skill sets. Create ecosystems that foster growth. Generate symbiotic sustenance models. Inspire a demographic makeover. Ensure seamless operations by enabling local communities to become our partners in-growth.

Thriveni, through a successful e-auction, secured the composite license for the Lasarda-Pacheri manganese block. The Lasarda-Pacheri block is known to have significant mineral reserves of manganese. Additionally, it also boasts iron ore reserves which occur in tandem with manganese in this region. The investment plan includes the approval of the mine plan, obtaining environmental clearance, and executing the necessary agreements to commence mining operations.

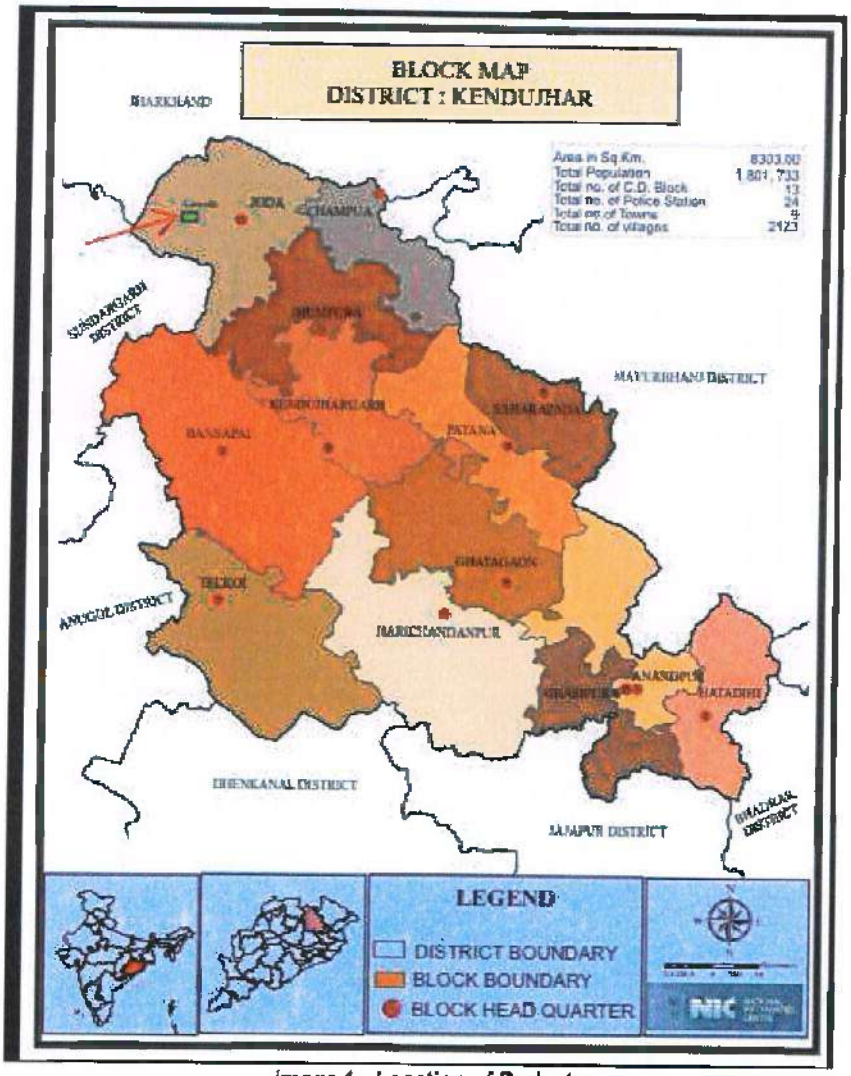
Further was granted LoI by the Government for grant of mining lease vide No. 7731-IV(B)SM-100/2017/SM dated 21.09.2021 for Manganese & Iron ore over an area of 131.889 ha situated in Dhanrjayapur-40, Kanrda -38 & Laserda village under Barbil Tehsil of Keonjhar District, Odisha. Subsequently after conduct of DGPS survey by ORSAC, the area was reduced to 131.800 ha intimated by Director of Mines dated 22.10.2021.

2.0 PROJECT BACKGROUND

We had applied for forest diversion proposal over 94.351 ha of forest including 4.261 ha of safety zone and the Ministry of Environment & forests, Govt. of India have granted Stage–I approval vide their letter No.8-02/2023-FC, dt. 21.12.2023 subject to fulfilment of certain conditions out of which in the following condition we have to prepare a Soil and moisture conservation plan. ***"Condition No.10. Soil and moisture conservation measures shall be undertaken in and around 10 KM radius of the mining lease areas at project cost;***

2.1 LOCATION OF THE BLOCK

The allotted Block area is bounded by latitude 22°04'11.44231" to 22°03'25.92856"N and longitude 85°19'15.99748" to 85° 17'53.81761"E of Survey of India Toposheet No. F45H8 and is bounded by the coordinates shown in table below. The proposed site is situated in village Dhanurjoyapur, Kanarda & Laserda under Barbil Tahasil and under jurisdiction of Barbil Range of Keonjhar District. This site falls under the physiographic- Joda Barbil plateau extending from Chamakpur to the border of Singhbhum of Jharkhand in the north and border of Bonai in the west



. Image 1 - Location of Project

ORSAC JOINT DGPS SURVEYED BLOCK PILLAR CO-ORDINATES					
SL_NO	Point_ID	Geodetic System (WGS-84)		Projection Sytem (UTM-45)	
		Latitude	Longitude	Easting (M.)	Northing(M.)
1	M-1	22°04'11.44231"	85°19'15.99748"	326770.674	2441511.668
2	M-2	22°03'41.46540"	85°18'58.42895"	326256.850	2440595.255
3	M-3	22°03'44.72543"	85°18'51.75926"	326066.745	2440697.632
4	M-4	22°03'52.80955"	85°18'48.42172"	325973.811	2440947.325
5	M-5	22°03'52.48892"	85°18'44.49648"	325861.172	2440938.709
6	M-6	22°03'52.12774"	85°18'39.63839"	325721.775	2440929.143
7	M-7	22°03'50.79430"	85°18'37.36794"	325656.230	2440888.853
8	M-8	22°03'50.72136"	85°18'31.20926"	325479.645	2440888.567
9	M-9	22°03'48.35128"	85°18'31.21044"	325478.870	2440815.672
10	M-10	22°03'41.85747"	85°18'30.67383"	325461.271	2440616.119
11	M-11	22°03'34.52683"	85°18'28.95479"	325409.486	2440391.204
12	M-12	22°03'28.26537"	85°18'21.12817"	325182.962	2440201.117
13	M-13	22°03'16.60991"	85°18'11.18513"	324893.908	2439845.810
14	M-14	22°03'25.92856"	85°17'53.81761"	324399.168	2440137.963
15	M-15	22°03'55.63711"	85°18'11.23140"	324908.590	2441046.119
16	M-16	22°03'56.70078"	85°18'15.83292"	325040.872	2441077.366
17	M-17	22°03'52.00934"	85°18'31.19618"	325479.709	2440928.184
18	M-18	22°03'52.07779"	85°18'36.93551"	325644.270	2440928.465
19	M-19	22°03'53.39000"	85°18'39.42033"	325715.953	2440968.034
20	M-20	22°03'53.71123"	85°18'43.27464"	325826.560	2440976.690
21	M-21	22°03'54.07213"	85°18'47.91582"	325959.738	2440986.317
22	M-22	22°03'59.00540"	85°18'47.98851"	325963.500	2441138.022
23	M-23	22°04'03.85204"	85°18'45.59155"	325896.434	2441287.846
24	M-24	22°04'08.41959"	85°18'51.55429"	326068.925	2441426.434
25	M-25	22°04'08.72237"	85°18'53.42447"	326122.642	2441435.154
26	M-26	22°04'15.51014"	85°18'59.18403"	326290.059	2441642.094
27	M-27	22°04'18.63916"	85°19'00.30051"	326323.128	2441737.976
28	M-28	22°04'19.18502"	85°19'00.80278"	326337.712	2441754.606

2.2 DETAILS OF THE 10 KM AREA OF LASERDA PACHERI BLOCK AREA.:

The 10 km surrounding area of Laserda Pacheri Block coming in both the State of Odisha and Jharkhand. Within Odisha the buffer area covers Keonjhar & Sundargarh Districts and the Forest Divisions of Keonjhar & Bonai.Part of the buffer area is in Jharkhand and comes under West Singhbhum District and Seranda Division. The details are given in the following table.

ODISHA

Sl.No	Particulars	Area in Ha
1	Area coming within state	25770
2	Area coming within Keonjhar Dist	24760
3	Area coming within Sundergarh Dist	1010

JHARKHAND

Sl.No	Particulars	Area
1	Area coming within state	12030
2	Area coming within West Singhbhum Dist	12030

MINING LEASES WITHIN BUFFER AREA

There are no adjoining mining leases to the Laserda Pacheri Block, however in the 10 km radius area coming within the State of Odisha & Jharkhand several mining leases are covered. The details of the surrounding mining leases situated within the 10 km radius of Laserda Pacheri Block is given as under:

WORKING LEASES WITHIN 10 km BUFFER AREA

Sl.No	Name of Lessee	Name of Mines
1	SAIL	Kiriburu & Meghatburu
2	SAIL	Bolani
3	Narbheram Power & Steel Pvt Ltd	Roida-II
4	OMC Ltd	Guali
5	OMC Ltd (IDC Ltd)	Roida
6	Electrosteel Steel Ltd (Vedanta)	Nadidihi
7	Jindal Steel & Power Ltd	Kasia-Barpada
8	JSW Steel Limited	Nuagaon

NEAREST RAILWAY SIDING

Sl.No	Name of Siding	Division
1	Kiriburu	SER
2	Bolani	SER
3	Barbil	SER

RESERVE FORESTS/ PRF WITHIN BUFFER AREA

Sl.No	RF/PRF	Covering Division
1	Karo RF,	Keonjhar Division, Bonai Division, Seranda Division
2	Thakurani RF	
3	Sidhamath RF	
4	Baitrani RF	
5	Lakraghat RF	
6	Uliburu RF	
7	Karo RF	
8	Karampada Rf	
9	Tholkabad RF	
10	Toda RF	

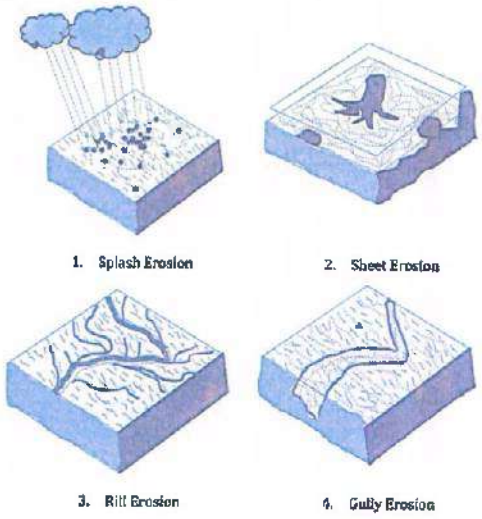
RIVERS/NALLAHS WITHIN BUFFER AREA

Sl.No	Name of River / Nallah	State
1	Karo River	Odisha & Jharkhand

2	Gamlei Nala	Odisha
3	Topadihi Nala	Odisha
4	Panduliposi Nala	Odisha
5	Kundurunala	Odisha
6	Sankajora Nala	Jharkhand
7	Meghahuti Nala	Jharkhand

3. OPEN-CAST MINING SURFACE EROSION PROBLEMS

The problem related to surface erosion during open cast Mine may be due to following factors related to the mining activities, sub grade dumps and overburden dumps are the major factors impacting adversely to 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, sub-grade dumps 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 erosion capacity due to steep gradient and transportation of rock fragments with high velocity of the stream and deposition of same 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.



1. Soil erosion and sediment transport depend on the following factors :
a. Climatic conditions,
b. Soil and spoil erosivity
c. Overland slope and slope length
d. Ground cover
e. Soil conservation control practices
f. Catchment drainage characteristics

1. Open-cast mining activities tend to change radically several of these factors and severe sediment production could occur in the following locations :

a. Topsoil stockpiles
b. Spoil piles
c. Waste dumps
d. Bare topsoil areas
e. Steep out slopes
f. Ramps
g. Haul roads

Scalping, blasting, material handling, heavy vehicular travel over replaced spoils and Top soiling activities generally produce compacted area of soil and spoil materials with a high colloidal content. Colloidal particles require a very long detention time in an impoundment before they will settle out of suspension and frequently deposition does not occur until the sediment laden flows discharge into dams.

4. OBJECTIVE OF SMC PLAN:

The objectives of the proposed scheme are primarily to meet the requirement of condition No. 2(f) of the Stage – I approval of GoI, MoEF & CC, to rejuvenate various potential and degraded ecosystems in the Mine area. Forest area

diverted to non-forest purpose generally for mining activities in Keonjhar District. Due to loss of green coverage, air pollution due to exploration, loading, grading and unloading and road transportation of minerals are some of the major reasons which contribute for the resentment of people living in the mines area. Hence it is important to work towards the protection and retention of a clean environment. This includes activities like restoring the vegetation through plantation and Soil Moisture Conservation (SMC) activities. The opencast mining activities disturb large tracts of land and produced greatly increased downstream sediment load. The objective of this report is to present the outline of opencast coal mining surface erosion problem, method of modelling sediment yield, measures to be taken for reducing or controlling sediment discharges. The action plans have been prepared for this purpose with the following objectives.

- To facilitate the hydrological functioning of the mining area and augment the water quality of the Karo River.
- Conservation of soil cover and to arrest the soil erosion, flood and siltation of the river and its tributaries and consequent relation of siltation in the river of Karo and its reservoir.
- Soil conservation through biological & engineering measures to reduce sediment load in river and tributaries, thus improving quality of water.
- Increase vegetative cover and water retaining properties.
- To restock and rejuvenate the degraded open forest
- Ensuring Soil & Moisture Conservation Measures to enrich the micro-edaphic conditions.
- Tending the existing crop for maximum growth and improving the density condition and composition of the crop.

5. SCOPE OF WORK

The scope of soil and water conservation vastly includes the following not limited to

1. Baseline Survey with use of modern technology

2. Conservation of soil and water resources: Soil and water conservation engineers work to prevent erosion, conserve water, and protect natural resources. They design and implement practices such as terracing, contouring, and strip cropping to reduce soil erosion and improve water management.

3. Design of hydraulic structures: Soil and water conservation engineers design and construct hydraulic structures such as dams, reservoirs, canals, and waterways to manage water resources for irrigation, drinking water supply, and hydroelectric power generation.

4. Watershed management: Soil and water conservation engineers work to manage watersheds, which are areas of land that drain into a common waterway. They design and implement practices to manage water quality and quantity, prevent floods, and promote sustainable use of natural resources.

5. Environmental impact assessment: Soil and water conservation engineers assess the environmental impact of development projects such as roads, mines, and industrial facilities. They develop plans to mitigate environmental dam age and ensure that projects are carried out in an environmentally sustainable manner.

6. Agricultural engineering: Soil and water conservation engineers work with agricultural scientists to design and implement practices to improve crop productivity while conserving natural resources. They develop irrigation systems, drainage systems, and other technologies to support sustainable agriculture.

Overall, soil and water conservation engineering plays a vital role in ensuring the sustainable use of natural resources and promoting environmental conservation. With the growing demand for sustainable development and environmental protection, the scope of soil and water conservation engineering is expected to continue to expand in the coming years.

Soil and water form two major components of a forest ecosystem and they directly influence the status, health and nature of the flora and fauna that such ecosystem is likely to support. It is obvious therefore that while managing the forests the forest officials have to deal with these components and make their best efforts for their conservation to sustain the plants and animals.

6. APPROACH & METHODLOLOGY

The methodology used for preparation of the plan for soil and water conservation vastly includes the following not limited to Baseline Survey, use of modern technology - GIS & Remote Sensing for planning, selection of suitable SMC structures like Drainage, Land capability Class, Soil Depth, slope etc etc. Then based on the same the treatment measures shall be decided and readied for implementation. These will be the Drainage Line Treatment, Ridge Area Treatment , Water Harvesting structure, Diversion Weir, Wiremesh Loose Boulder Check Dams, Diaphragm Wall / Sub Surface dykes, Graden Earthen Bound.

1. Consultation with different stakeholders at different levels;
2. Reconnaissance survey of the vegetation and ground surface area in the forest zones;
3. Demarcation of different types of existing structural measures, water resource development measures and other existing previous SMC structures taken up;
4. Identification of important gullies, sheets, eroded areas within the forest areas and geo- tagging of such area;
5. Collection of climate data (rainfall / temperature), mapping drainage courses (secondary sources) and related aspects;
6. Preparation of suitable SMC measures / structures with its dimension as per the requirement of sites for conservation of water followed by its design (section view, plan view, elevation etc.) & cost- estimate and submission of the same with in time frame for 224-25;
7. Preparation of cost estimation of the proposed structures basing on the cost norm for soil and moisture conservation measures of F&E Dept., Govt. of Odisha;
8. Photographic documentation of the proposed area as well as location for SMC intervention;
9. Preparation of estimated cost for maintenance and protection for long term durability of the structures.

7. TREATMENT MEASURES:

a. Drainage Line Treatment:

Velocity Breaking:

The micro catchments drain the rain into drainage line and rainwater flows from the ridge to bottom and higher slope to lower slope in varying velocity. The primary objective of drainage line treatment is therefore, centres around reducing the velocity and increasing the retention of water at various levels. It is therefore, required to have appropriate interventions along drainage line to alter the pattern of rainwater flow.

Retention and Enhancement of Infiltration:

Enhancement of infiltration is the ultimate objective which facilitates recharging of ground aquifer. Restriction of sub-surface flow also makes water available to the vegetation within root zone. Treatment of forest floor and drainage line with suitable interventions helps in retention of rainwater and depending on the nature of soil profiles allows variable quantities of water to infiltrate.

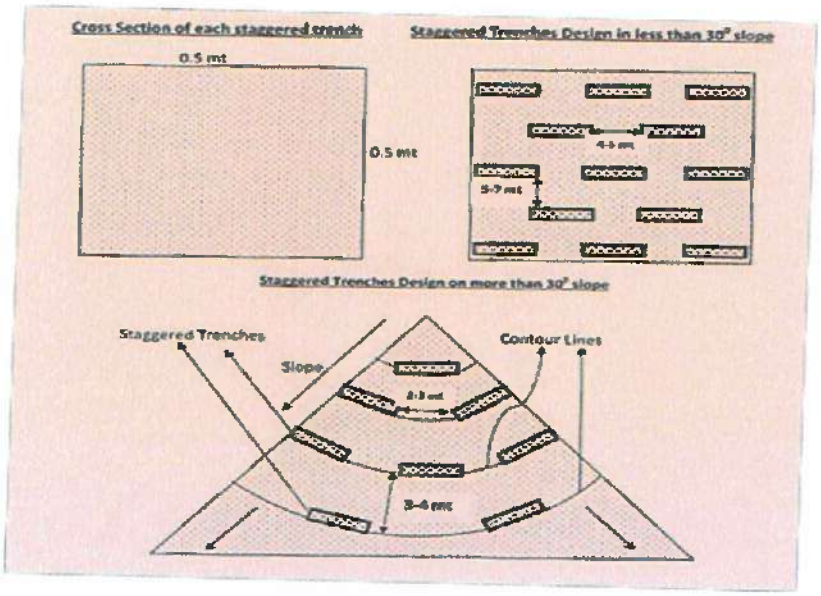
b. Ridge Area Treatment Plans:

Planning:

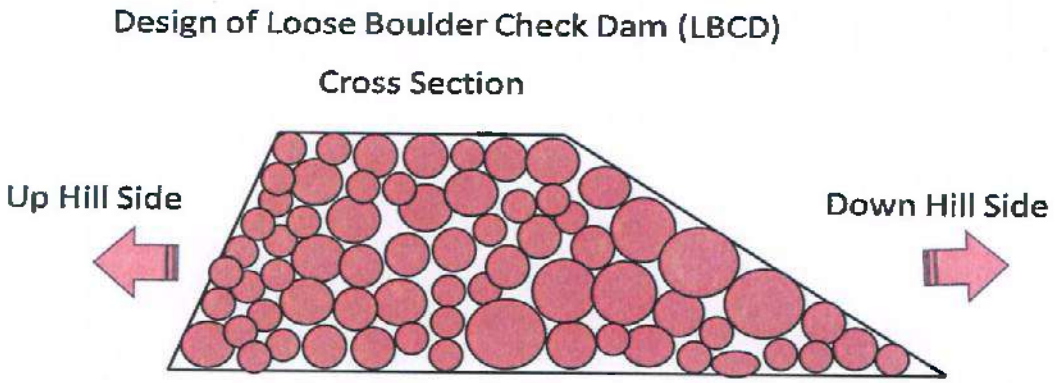
The planning for Soil Moisture Conservation in the above Block is to be taken on a priority basis considering their proximity to identified villages. There are small nallahs in this block which ultimately drain out to Karo river,
Staggered Trench, LBCD Structure and WHS are proposed in the above block area to avoid soil erosion and conserve moisture so as to improve the ground water condition by entertaining infiltration. The treatment will be from ridge to bottom.

Justification for selecting the structures:

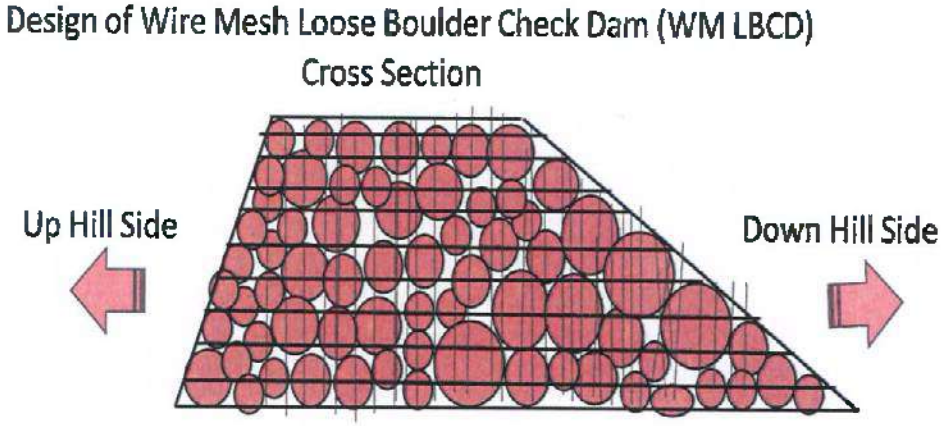
The forest blocks are in various stages of degradation and number of nallahs both seasonal & perennial emerged from various hill forests having varying gradients, the following Soil Moisture Conservation are proposed.



1. Straggered Trench: To slow down surface water run-off and soil erosion



2. Loose Boulder Check Dam: To check velocity of water and silt retention.



3. Wire-Mesh LBCD: To check velocity of water and silt retention.

b(i) Water Harvesting Structure/ Desiltation of Ponds:
This is for storing of surplus water of a catchment area and bringing the same to other areas, where it is necessary for different uses like crop production, domestic, cultivation, pisciculture etc, is known as water harvesting structure. In this structure water is stored and delivered the same through the masonry sluice for supplementary irrigation purposes. The excess runoff coming into the structure is disposed off through masonry surplus attached to the embankment.

b(iii) Loose Boulder Check Dams (LBCD) & Wire Mesh LBCD:

1.This structure is to be created across the drainage line for retention of runoff and reduction of velocity such structures should preferably have top width of one meter with upstream slope of 1:1 and downstream slope of 1:5.

2.The dimensions of each structure are dependent on several factors such as gradient catchment size etc. Hence prescription of a fixed dimension Wire Mesh LBCD is not contemplated. Since the cost norm for such structures are based on volume, the implementing Ranges will have desired flexibility to construct such structures with appropriate dimensions.

3.These structures will be bounded by Wire Mesh to resist the flow of water and to increase the longevity of the structure, so that these structures can function for a long period.

8. BENEFITS OF THE STUDY

Soil moisture plays an important role in agricultural monitoring, drought and flood forecasting, forest fire prediction, water supply management, and other natural resource activities. Soil moisture observations can forewarn of impending drought or flood conditions before other more standard indicators are triggered. The land is finite and diminishing gradually due to the increasing rate of varied kinds of degradation and thus there is no alternative to expend cultivable land area. The only way is either increasing agricultural productivity per unit resource available or restoring the degraded lands. Healthy soil and availability of water are vital for productivity in all kinds of terrestrial ecosystems because plants require fertile soil with improved bio-physico-chemical properties and good quality of water for their growth and development. Use of soil and water conservation measures including biological (agroforestry and agricultural) and mechanical measures (terracing, bunding, trenching, check dams, etc.) is imperative to reduce runoff, soil erosion and to improve soil quality, water quality, moisture conservation, and overall crop productivity in a sustainable way. Biological measures are economically feasible and environmental friendly; also improve soil properties along with the conservation of soil and water resources. Further, the combined use of biological and mechanical measures will help in improving and sustaining agricultural **productivity.**

9. EXPECTED OUTCOMES

1.To reduce the hazardous effect of mining operation on health and environment by improving greenery in the locality.

1. **Create Employment**: The main occupation of the villagers in the forest periphery has been agriculture. Some people also engaged as agricultural labourers / wage labour. Due to different reasons, including undulating land situation and erratic rainfall, agriculture has not been remunerative for the marginal and small land holders. The villagers also do not get enough labour engagement during different periods for which they used to go to near by state like Andhra Pradesh and Jharkhand for their labour employment. The project plans for creation of both wage employment and self employment opportunities
2. **Reduce Migration** : Migration (local / regional) is the major problem in the village because of poor / non-availability of labour/ other employment opportunities throughout the year. As the forest fringe village is less populated, financial support services (institutional / non-institutional) are not available locally.In SMC development programme, many labour intensive works like construction of water bodies, farm pond, earthen check dam, contour

bunding, masonry drop structure, percolation tank, and other soil & water conservation measures would be taken up which will create employment and help to reduce distress migration.

3. **Drinking water** : In the village three nos of tube wells are available for drinking water purpose. This is not sufficient for the use of the villagers. There is pipe water supply facility is available. Another main problem of drinking water is water contamination with flourishes &insufficient water availability in the summer. Execution of different intervention like soil and water conservation measures and plantation programme, expected to increase the ground water table in the area and water availability situation may improve. It may also be proposed to take up water supply facility in a convergence mode with PR Dept. and R.W.S.S.

4. **Ground water table:** Due to high slope percentage, unbunded land, gullies and nallhas, and less vegetation coverage; the runoff from the catchment drains out easily without any in-situ conservation. After taking up various activities like soil & water conservation measures, gully control measures, contour bunding, and plantation programmes, water table is expected to raise, and moisture status of the soil will be increase.

5. **Vegetation/ Crop Related Outcomes** :In agriculture and horticultural activities, irrigation and soil moisture is very much essential. Due to the untreated land like unbunded Slopy land and the degraded land the cropping intensity of the village has been less for which the farmers could not get the good crop from their cultivated land. With SMC works, the situation is expected to increase with availability of more water for irrigation and soil moisture for plant survival.

10. POST-PROJECT MANAGEMENT & MAINTENANCE OF STRUCTURES CREATED FOR SMC

SMC project tends to focus more on execution of works during the implementation period and by the time works are completed, the project period also gets over.. Therefore, it is necessary to put a system in place in such a way that the efforts gone through the project intervention and the benefit of such interventions are sustained in the project areas with an appropriate institutional arrangement with well defined roles and responsibilities at various levels. The post- project activities can be taken up under the following heads.

Post project maintenance of Structures

1. Ensuring completion of the ongoing / incompleted works by the Dept., involving local VSS / EDC and handing over the assets to them after its completion.
2. All the VSS/ EDC members (EC / GB members) may be invited to attend a meeting to understand the objective details and getting a clearer picture of the assets created / inventory of assets. The role and responsibilities of the VSS and local forest officials in maintaining the assets will be clarified and a resolution will be made for future asset maintenance by VSS, following the protocols.
3. The assets created may be categorized into two, i.e., (i) those which are to be used by the households living in the forest fringe villages on a regular basis (water tank, field drain etc.), and (ii) those which can be accessed periodically as the benefit of the created assets may also be utilized for forest and wildlife management.

Convergence of Activities of Different Departments

The local VSS / EDC may be oriented with different Govt. schemes / programs by which convergence with individual oriented and community / area oriented schemes / programs would be easier. The ground force may play a facilitative role in this regard, putting VSS in the fore front.

•Sensitize the groups about the convergence plan and facilities available from different departments.
•Organising interface of the VSS / EDC with line Dept. officials / functionaries of line departments for dovetailing the existing schemes.

Monitoring, Evaluation and Learning

Monitoring: Regular monitoring of the activities will have to be carried out at each stage. Online monitoring must become a feature of all projects. Monitoring shall include process and outcome monitoring. Looking at the importance of creating SMC structures, different streams of monitoring are proposed.

1. Internal monitoring by project teams ;
2. Periodic progress monitoring at forest office level;
3. GIS/web base online monitoring and progress tracking system;

4. Local monitoring by VSS / EDC;
5. Construction quality monitoring;
6. External monitoring by independent third-party agency/ies.

Evaluation: The third-party agency, to be engaged by company for M&E will take up evaluation of the project performance, at least once in two years to examine the benefits of the created structures at different levels (vegetation, wildlife and human habitats). Each evaluation will include physical, financial and benefit assessment of different works.

Learning: Systematic efforts are to be made by the implementing agency to learn from the field experiences as also from feedback of independent sources. The follow up methods are proposed to enable the learning process at different levels.

- Systematic analysis of gathered data (all types of monitoring) on a regular basis by internal team and sharing with project authority .
- Engaging service of independent agencies for taking up action research projects, if required, in convergence with line depts.;
- Initiating pilot or new themes and innovative models;
- Organizing regular sharing, reflective and learning events to learn from field experiences, monitoring experiences and academic/research studies. These events could be organized at the district (including forest ranges) and state level.

11. CONCLUSION

The land is finite and diminishing gradually due to the increasing rate of varied kinds of degradation and thus there is no alternative to expend cultivable land area. The only way is either increasing agricultural productivity per unit resource available or restoring the degraded lands. Healthy soil and availability of water are vital for productivity in all kinds of terrestrial ecosystems because plants require fertile soil with improved bio-physico-chemical properties and good quality of water for their growth and development. Use of soil and water conservation measures including biological (agroforestry and agricultural) and mechanical measures (terracing, bunding, trenching, check dams, etc.) is imperative to reduce runoff, soil erosion and to improve soil quality, water quality, moisture conservation, and overall crop productivity in a sustainable way. Biological measures are economically feasible and environmental friendly; also improve soil properties along with the conservation of soil and water resources. Further, the combined use of biological and mechanical measures will help in improving and sustaining agricultural productivity.Advertisement8. Future perspectives for soil and water conservation The burgeoning world population, food insecurity and natural resource degradation are the major issues in the present era of climate change. It has been projected that the world population will be ~1 billion in 25 [66]. Further, the rapid industrial growth and intensive farming practices are expected to increase the pressure on land and water resources in near future. Therefore, a paradigm shift in soil and water conservation, and its management is needed for agricultural sustainability.

Some of the future concern for soil and water conservation and sustainable agriculture are the following:

- Formulation of new policies and development of new technologies based on social, economical and cultural aspect of a particular regional.
- Implementation and adoption of effective conservation measures for sustaining agricultural productivity.
- Existing soil and water conservation practices should be improved and developed based on the level of natural resources degradation.
- Greater emphasis should be given on participatory approach for effective soil and water conservation.
- Post impact assessment and monitoring of soil and water conservation measures should be done to evaluate their efficacy in increasing productivity, monetary returns, and livelihood of the stakeholders.
- Development of cost effective conservation practices to restore the degraded lands and to sustain agricultural productivity.
- The efficient technologies for soil and water conservation should be demonstrated on farmers' fields with their active participation.
- Emphasis on research, education and extension of soil and water conservation effective technologies to the stakeholders.
- Adoption of efficient management practices and judicious use of soil and water resources.

SOIL & MOISTURE CONSERVATION MEASURES TAKEN UP WITHIN THE LEASE AREA AND 10 KM BUFFER ZONE OF LASERDA PACHERI MANGANESE & IRON BLOCK OF THRIVENI EARTHMOVERS PVT. LTD.

"A"

DETAILS OF ACTIVITIES TAKEN UP FOR IMPLEMENTATIOIN OF VERIOUS SCHEMES AS PER STAGE-I CONDITIONS. WITHIN LASERDA PACHERI MANGANESE & IRON BLOCK BY THRIVENI EARTHMOVRS PRIVATE LIMITED.

A. **DETAILS OF ACTIVITIES TAKEN UP FOR IMPLEMENTATIOIN OF VERIOUS SCHEMES AS PER STAGE-I CONDITIONS. WITHIN LASERDA PACHERI MANGANESE & IRON BLOCK BY THRIVENI EARTHMOVRS PRIVATE LIMITED.**(Location Map Attached as Plate-IA &IB)

Sl.No	Description of Work	Qnty	Rates/UoM	Amount
1	**GAP PLANTING AND SOIL MOISTURE CONSERVATION ACTIVITIES AROUND 100 MTRS FROM ML BOUNDARY (Condition 2.f)**			
	BIOLOGICAL MEASURES			
	RDF Plantation (200 no./ha.) over 55 ha. @ Rs. 1,11,286/-. Enclosed map of 55 ha area and Cost norm as **Annexture-I**	55Ha	1,11286/-	61,20,730.00
	STRUCTURAL MEASURES			
	Soil Moisture Conservation (SMC) over 55 ha @ Rs 41,248/- (**Annexure-II**)	55Ha	**41,248**	22,68,640.00
	Sub-Total (1)			**8389370.00**
	Inspection, monitoring and evaluation @ 15% of the total Project cost			1258405.50
	Sub-Total (2)			**9647775.50**
	Price Escalation Foreseen @ 10%			964777.55
	Grand Total			Rs 1,06,12,553.05 say **Rs1,06,12,600.00**
2	**APPROPRIATE MITIGATIVE MEASURES TO MINIMIZE SOIL EROSION AND CHOKING OF STREAMS (Condition 14.a)**			
	BIOLOGICAL MEASURES			
	Cost for Vetiver Plantation over 18.672 ha @ Rs.1,05,900/- per Ha.**(Annexure-III)**	18.672HA	**1,05,900**	19,77,364.80
	Cost of agave plantation on the toe of Dump 1500m (1.5 km) @ Rs.11,96,500/- per Km .**(Annexure-IV)**	1.50 kms	**11,96,500**	17,94,750.00
	A. Sub-Total			**37,72,114.80**
	STRUCTURAL MEASURES			
	Loose Boulder Structure 2 mtr **(Annexure-V)**	20 nos	**25,900**	5,18,000.00
	Construction of Garland Drain **(Annexure-VI)**	1500 mtrs	**341**	5,11,500.00
	Terracing of OB dump **(Annexure-VII)**	186720 sqm	**134**	2,50,20,480.00
	Construction of Check Dam **(Annexure-VIII)**	10 nos	**2,35,180**	23,51,800.00
	Construction of Retaining Wall **(Annexure-IX)**	1500 mtrs	**2,313**	34,69,500.00
	Construction of Settling Pond @ 645/CuM – 3 nos **(Annexure-X)**	20 CuM	**645**	12,900.00
	B. Sub-Total			**3,18,84,180.00**
	Distillation work for Garland drain settling pond & check dam twice in a year (On LS)			1,00,000
	Maintenances of Retaining wall and Check dam & Check wire (On LS)			10,00,000
	C. Sub-Total			11,00,000
	Total (A+B+C)			**3,67,56,294.80**
	Inspection, monitoring and evaluation @ 15% of the total Project cost			55,13,444.22
	Total			**4,22,69,739.02**
	Price escalation @ 10%			42,26,973.90
	Grand Total			**Rs 4,64,96,712.92 Or Rs 4,64,96,715.00**

Forest Range Officer
Barbil

3	PLANTING OF DROUGHT HARDY PLANT SPECIES AND SOWING OF SEEDS IN THE APPROPRIATE AREA (Condition 14.b)			
	BIOLOGICAL WORKS			
	Cost of Nursery @ 4000 No. seedling @ Rs.67.62/- per sampling. (Annexure-XI)	**4000 nos**	**67.62**	**2,70,480.00**
	Inspection, monitoring and evaluation @ 15% of the total Project cost (a)			40,572.00
	Sub-Total			**3,11,052.00**
	Price Escalation @ 10% of			31,105.20
	Total			**Rs. 3,42,157.20 Or Rs.3,42,160.00**
4	SAFETY ZONE FENCING, PROTECTION AND REGENERATION TO ENSURE DENSE CANOPY (Condition-15.a,b,c)			
	BIOLOGICAL MEASURES			
	Block Plantation (1000 no./ha.) over 6.114 ha. of Safety Zone. **(Annexure-XII)**	6.114 ha.	2,71,716	16,61,271.62
	Sub-Total			**16,61,271.62**
	STRUCTURAL MEASURES			
	6 feet high RCC Boundary Pillar	28 nos	1,200	33,600
	Fencing of 6 feet high in ML boundary & SZ boundary (Base one term norm of PCCF for the year 2024-25)	14,500 mtr	1,442	2,09,09,000
	Maintenance for 10 years			1,40,000
	Sub-Total			**2,10,82,600**
	Total			**2,27,43,871.62**
	Inspection, monitoring and evaluation @ 15% of the total Project cost			34,11,580.74
	Total			**2,61,55,452.36**
	Price Escalation @ 10%			26,15,545.24
	Total			**Rs 2,87,70,997.60 Say Rs 2,87,71,000.00**
5	TOP SOIL MANAGEMENT PLAN (Condition-16)			
	Virgin forest area from where top soil can be collected:75.803 ha Stripping cost: 0.5ha/hr@ Rs 1900.00. Therefore,75.803 ha stripping will take 151.606 hrs. and @ Rs 1900/- per hr.	151.606 ha	1900	2,88,051.40
	Loading & transporting cost from the site to top soil stockpiles comes to be 75.803 ha = 758030 sqm x 0.2m (Collection of top soil) = 1,51,606 cum(0.152 Million Cub.mt.) or 1,52,000 cum x 1.8(tonnage factor) = 2,73,600 mt @ Rs.31/- Loading & Transportation	273600 mt	31	84,81,600.00
	Cost of leveling with 1800 manpower (150 ton/Laboure) @ Rs 450/-:	1800 nos	450	8,10,000.00
	Sub-Total			**95,79,651.40**
	Cost for sowing of grass seeds over 1.0 ha @ Rs 36850/-ha. (Annexure-XIII).	1.0ha	36850	36,850.00
	Maintenance of grass seed @ (3-man days weekly for period of six month). Total 72 man days for six months: @ Rs. 450.00	72 nos	450	32,400.00

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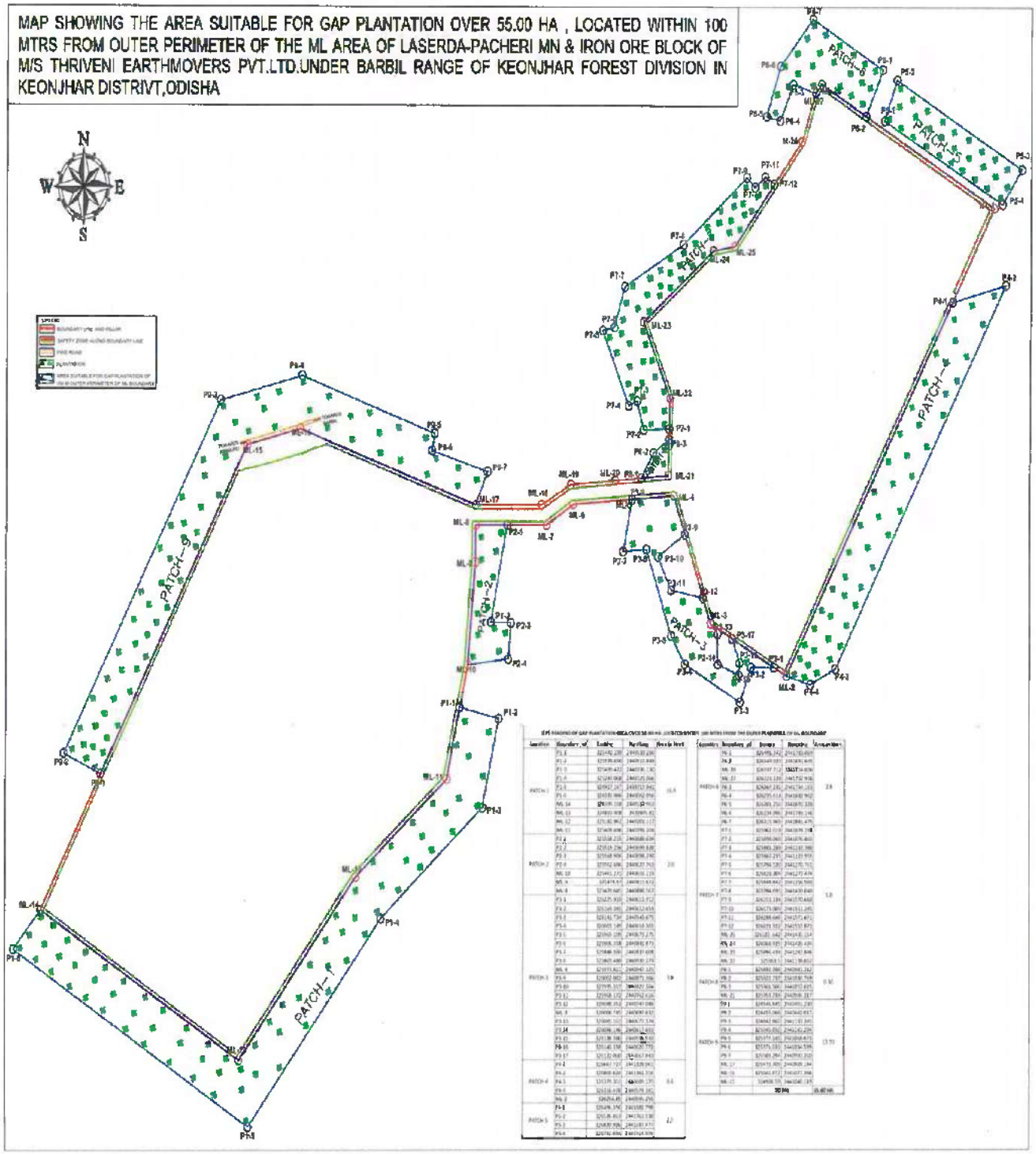
	Retaining wall over a length of 180 meters @ 2313.00/rm (**Annexure-IX**).			4,16,340.00	
	Garland drains over a length of 180 meters@ 341.00/rm (**Annexure-VI**).			61,380.00	
	Sub-Total			5,46,970.00	
	Total			**1,01,26,621.40**	
	Inspection, monitoring & evaluation @15% of the total project cost			15,18,993.21	
	Total			**1,16,45,614.61**	
	Price escalation @10%			1164561.46	
	Grand Total			**Rs 1,28,10,176.07 say Rs 1,28,10,180.00**	
6	**DESILTING ACTIVITIES HAS ALREADY BEEN PROPOSED AROUND 5 KM RADIUS OF LASERDA PACHERI MN & IRON BLOCK . (Condition-17)**				
	Excavation, loading, unloading & carriage by mechanical means of all kinds of soil including stony earth, gravel & morrum etc inter spread with boulders up to 1/2 cum size with all lifts & de-lifts including trimming of slopes & bed to design section & depositing the excavated materials away from work site as per the specification & directed by EIC with an initial lead of 1.00 KM from the place of excavation complete. Location of ponds, Area and Quantity for de-silting enclosed as **Annexture-XIV**	**9076 cum for 5 years**	197.10	89,44,398.00	
	Providing rough stone (15cm-30cm) dry packing in apron & all top four sides berm with local Boulder (boulder supplied by management).	1058 sqm	919.47	9,72,799.00	
	Construction of bathing ghat with local boulder	16 nos.	50,000	8,00,000.00	
	Room near bathing ghat for change of clothes by women. (**Annexture-XV**)	8 Nos.	101356.00	810848.00	
	Construction of Bench on the embankment for sitting (**Annexture-XVI**)	24 Nos.	4628	1,11,072.00	
	Tulsi Chaura (**Annexture-XVII**)	8 Nos.	15950.00	1,27,600.00	
	Preparation of ramp on one side of the pond with slope for the village cattle to go near the water body on L.S. @ 20,000/- per pond	8 Nos	20,000	1,60,000.00	
	Provision for annual maintenance of pond for cleaning aquatic weed, if any from pond & cutting ,of bushes from Apron & Berms @ 30000 per annum for 2 year.	2 years for 8 ponds	30,000	4,80,000.00	
	Maintenance of Bathing Ghat	8 nos.	10,000	80,000.00	
	Maintenance of Boulder Wall	For 5 years	30000	1,50,000.00	
	Total			**1,26,36,717.00 Say 1,26,36,800.00**	

TOTAL (sl no.1 to 6)	**Rs 11,16,69,455.00**

(Rupees Eleven Crore Sixteen lakh Sixty-Nine thousand Four hundred Fifty-Five only)

Forest Range Officer
Barbil

Map Showing Location of the area 55.0 ha With GPS reading of boundary proposed for Gap Plantation within 100mtrs from outer perimeter of ML boundary.



Annexure- I

COST STRUCTURE OF PLANTATION, PROVISION OF FUNDS AND UTILIZATION
COST ESTIMATE FOR BLOCK PLANTATION OF 200 SEEDLINGS / Ha.

ANNEXURE-6

Base Cost Norms for Compensatory Afforestation through Aided Natural Regeneration (ANR) @ 200 Seedlings/Ha. (18 months old seedling)						
WAGE RATE Rs- 311/- PER MANDAY						
Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour Cost (In Rs.)	Matrial Cost (In Rs.)	Total cost (In Rs.)
0th Year (Advance work) Pre-Planting Operation						
1	Survey, Demarcation and Pillar posting	Nov/Dec	2	622	0	622
2	Preparation of Treatment Map (Digital Map)	Nov/Dec	1	311	100	411
3	Site preparation	Nov/Dec	2	622	0	622
4	Silvicultural operations including clearance of weed, cutting of climber, High stump cutting, singling of shoots & removal of cut out after drying from the field to blank space.	Jan/Feb	15	4665	0	4665
5	Alignment and stacking for digging of pits	Feb/Mar	0.5	156	0	156
6	Digging of pits (45 cm x 45 cm X 45 cm) in hard and gravelly soil	Feb/Mar	8	2488	0	2488
	Total		28.5	8863.5	100.0	8963.5
1st Year/Planting Year						
1	Refilling of pits by altering the dugout soil of the pits, application of organic compounds/ CDM/ FYM & mixing the same perfectly.	June/Jul	1.5	466.5	1000	1467
2	Transportation of 18 months old polythene bag seedlings in hired truck /tractor from the permanent/Mega nursery to planting site including Loading & unloading. (Average lead of 10 Km) & Stacking the seedling @ Rs.6/-/ Seedling. (220 nos.)	Jul/Aug	0	0	1320	1320
3	Watering polythene bag seedlings at stacking site of plantation	Jul/Aug	0.5	155.5	0	156
4	Conveyance of polythene bag seedlings on head load from the stacking site to individual dugout pits within the planting site, applying insecticide, fertilizer & planting after scooping the soil with other applied materials and pressing the soil perfectly around the planted seedling.	Jul/Aug	4.5	1399.5	0	1400
5	Cost of Fertilizer & Insecticide (a)NPK/ Bio-fertilizer @ 50 gms/plant as basal dose = 10kg @ Rs.30/- per kg = Rs. 300.0 (b) Urea/Vermicompost/Mo Khata/any other fertilizer @ Rs. 150.00 (c) Insecticide/ Bio-pesticide @ 5 gms/plant= 1 kg @ Rs.150/- per kg = Rs. 150/-	Jul/Aug	0	0	600	600
6	Casualty Replacement @ 10% (20 nos.)	Jul/Aug	0.5	156	0	156
7	1st weeding & Manuring	Aug/Sept	2	622	0	622
8	2nd Weeding, Soil working (1mt. diametre around the plants) & Manuring	Oct/Nov	3	933	0	933
9	Fire line tracing & Inspection path	Feb/Mar	3	933	0	933
10	Watch & Ward including watering as per requirement	Aug-Mar	8	2488	0	2488
	Total		23	7153	2920	10073
2nd Year Maintenance						

Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour Cost (In Rs.)	Matrial Cost (In Rs.)	Total cost (In Rs.)
1	Transportation of 20 seedlings from Nursery to plantation site including loading, unloading & conveyance by Tractor @ Rs.6/- per seedling	Jul	0	0	120	120
2	Planting for casualty replacement	Jul	0.5	155.5	0.0	155.5
3	Cost of Fertilizer & Insecticide- A) Cost of Insecticide/ Bio- pesticide(Themet/ Forate) @ 5 gms/plant = 0.1 Kg @ Rs.150/- per kg = Rs.15/- B) Urea/NPK/Bio-fertilizer/Vermicompost/Mo Khata/any other fertilizer= Rs. 560/-	Jul	0	0	575	575
4	Weeding (Complete weeding), Manuring & Soil working, (1mt. diametre around the plants)	Sep/Oct	4	1244	0.0	1244
5	Fire line tracing (2 m. wide fire line over 400 m long) & Inspection path	Feb/Mar	3	933	0.0	933
6	Watch & Ward including watering as per requirement	Apr/Mar	12	3732	0.0	3732
	Total		19.5	6064.5	695.0	6759.5
	3rd Year Maintenance					
3	Cost of Fertilizer- Urea/NPK/Bio-fertilizer/Vermicompost/Mo Khata/any other fertilizer= Rs. 560/-	Sep/Oct	0	0	560	560
4	Weeding (Complete weeding), Manuring & Soil working, (1mt. Diametre around the plants)	Aug/Sep	4	1244	0	1244
5	Fire line tracing (2 m. wide fire line over 400 m long) & Inspection path	Feb/Mar	3	933	0	933
6	Watch & Ward including watering as per requirement	Apr/Mar	12	3732		3732
	Total		19.0	5909.0	560.0	6469.0
	4th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m long) & Inspection path	Feb/Mar	3	933	0	933
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3732	0	3732
	Total		15	4665	0	4,665
	5th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length) &inspection path	Feb/Mar	3	933.00	0	933
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3732.00	0	3732
	Total		15.0	4665.0	0	4665
	6th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length) &inspection path	Feb/Mar	3	933.00	0	933
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3732.00	0	3732
	Total		15.0	4665.0	0.0	4665.0
	7th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length) &inspection path	Feb/Mar	3	933.00	0	933
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3732.00	0	3732
	Total		15.0	4665.0	0.0	4665.0
	8th Year Maintenance					

Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour Cost (In Rs.)	Matrial Cost (In Rs.)	Total cost (In Rs.)
1	Fire line tracing (2 m. wide fire line over 400 m length) &Inspection path	Feb/Mar	3	933.00	0	933
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3732.00	0	3732
	Total		15.0	4665.0	0.0	4665.0
	9th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length) &Inspection path	Feb/Mar	3	933.00	0	933
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3732.00	0	3732
	Total		15.0	4665.0	0.0	4665.0
	10th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length) &Inspection path	Feb/Mar	3	933.00	0	933
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3732.00	0	3732
	Total		15.0	4665.0	0.0	4665.0

Year wise Abstract of Cost Norm (showing seedling cost separately)

Sl. No	Year	No. person days	Labour cost @ Rs. 311/-per day (Rs)	Material Cost (In Rs.)	Monitoring Evaluation, Learning, Documentation and Other Contingency (5%) of (4+5+6)	Cost of Seedlings @Rs.50.31 per seedlings	TOTAL COST
1	2	3	4	5	7	6	8
1	0th year	28.5	8863.5	100	436.50	0.00	9400.0
2	1st year	23.0	7153.0	2920	427.00	11068.00	21568.0
3	2nd year	19.5	6064.5	695	240.50	1006.00	8006.0
4	3rd year	19.0	5909.0	560	231.00	0.00	6700.0
5	4th year	15.0	4665.0	0	135.00	0.00	4800.0
6	5th year	15.0	4665.0	0	135.00	0.00	4800.0
7	6th year	15.0	4665.0	0	135.00	0.00	4800.0
8	7th year	15.0	4665.0	0	135.00	0.00	4800.0
9	8th year	15.0	4665.0	0	135.00	0.00	4800.0
10	9th year	15.0	4665.0	0	135.00	0.00	4800.0
11	10th year	15.0	4665.0	0	135.00	0.00	4800.0
	Total:	195.0	60645.0	4275.0	2280.0	12074	79274.0

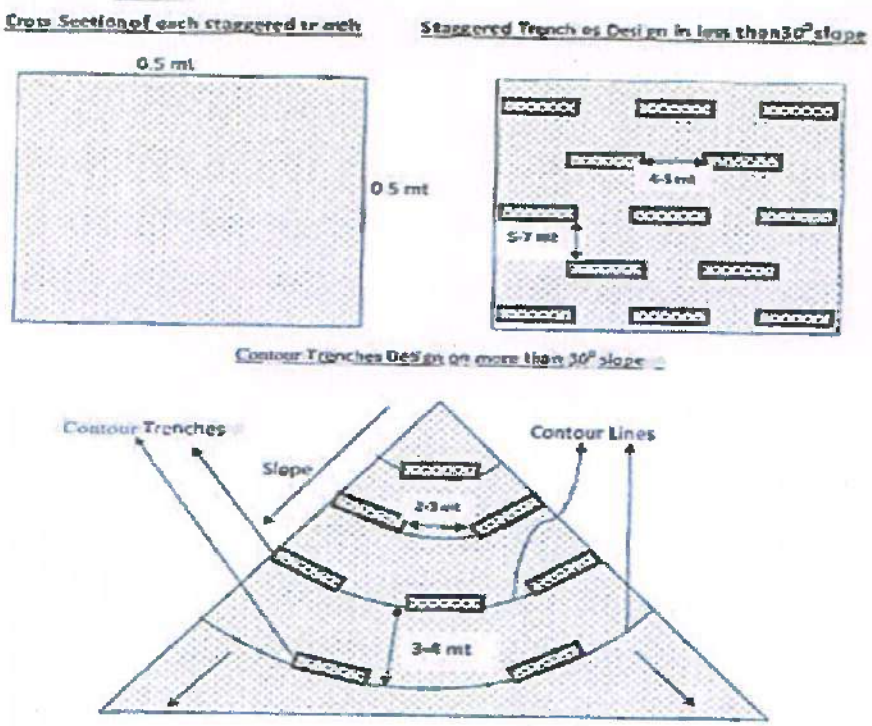
Note:

1. Priority must be given to the indigenous local species available nearby to the site of plantation.
2. 10 % indigenous fruit bearing trees must be preferred in Plantation.
3. Site specific Soil conservation work like CCD, Gully Plugging, Staggered Trench, Contour Trench, Graded Bund, etc. may be taken up.
4. Chain link fencing can be adopted in the CA plantation taken up outside the forest area and Bamboo twigs fencing may be prefered in CA plantations taken up in degraded forest area.
5. Watering facilites for procurement of water & watering may be adopted as per the availability of water.
6. The Cost Norm of various items can be changed with the approval of the concerned RCCFs keeping the overall cost norm fixed for each Financial Year

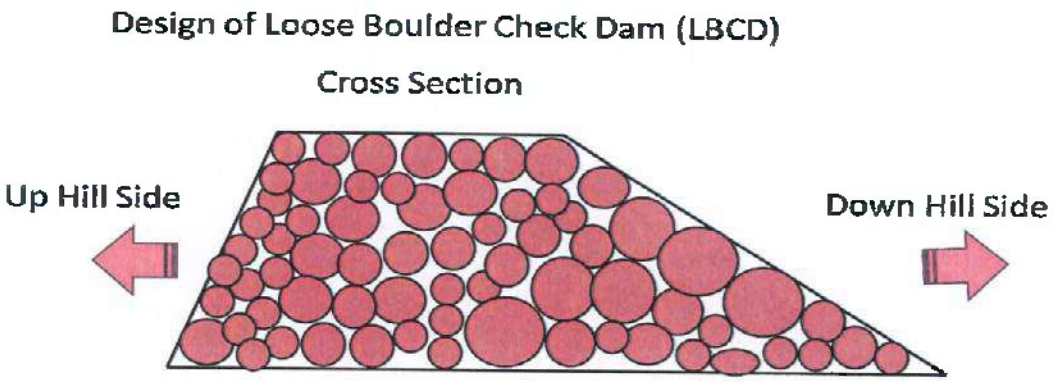
APCCF (Forest Diversion & NO, FC Act)

Soil Moisture Conservation Measures structures

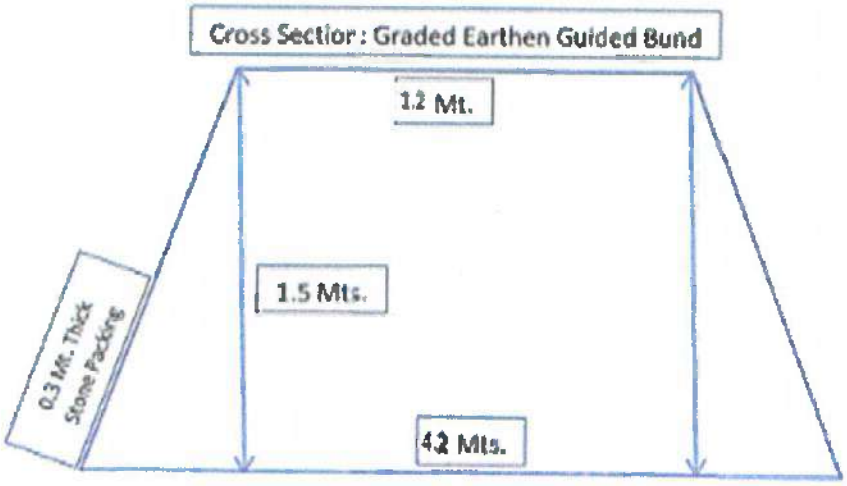
Straggered Trench (ST) and Contour Trench (CT)



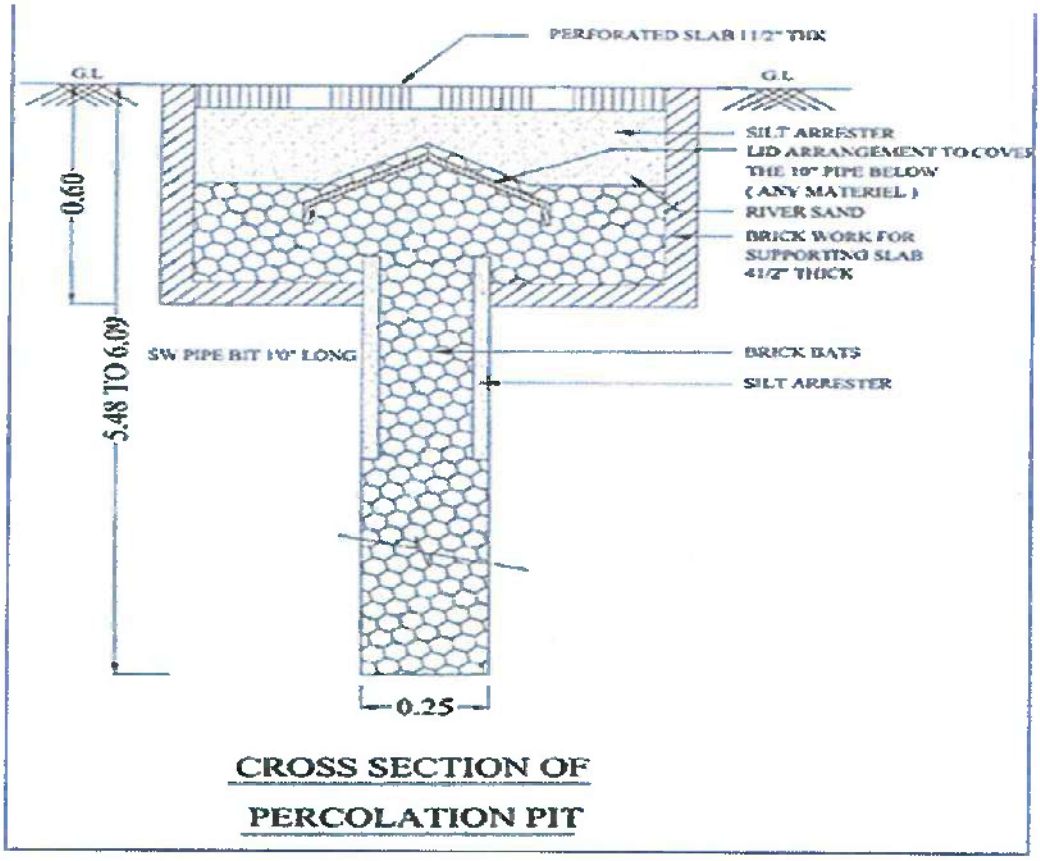
2. Loose Boulder Check Dam (LBCD)



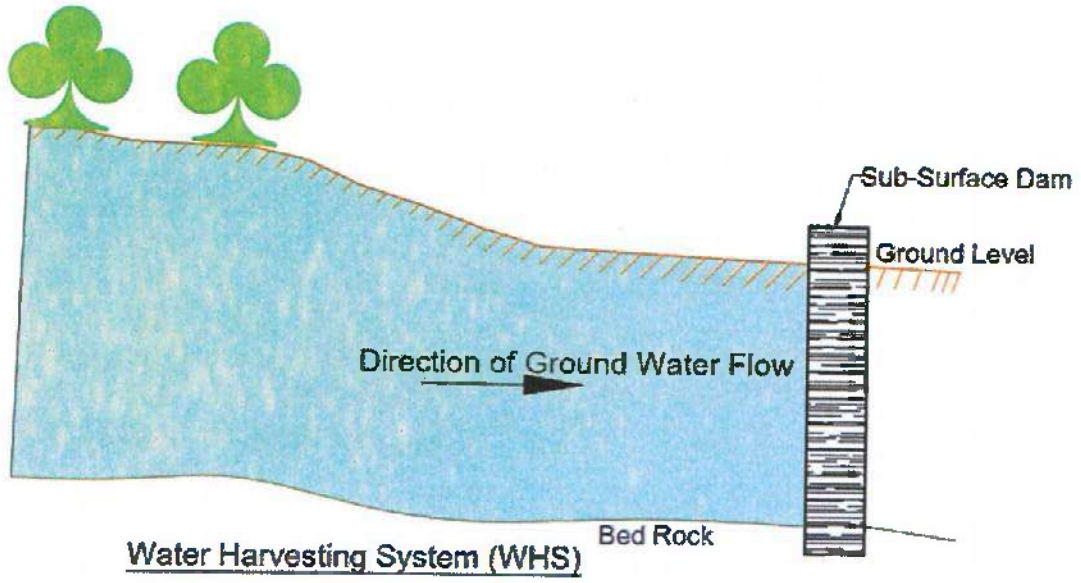
3. Graded Earthen Bund (GEB)



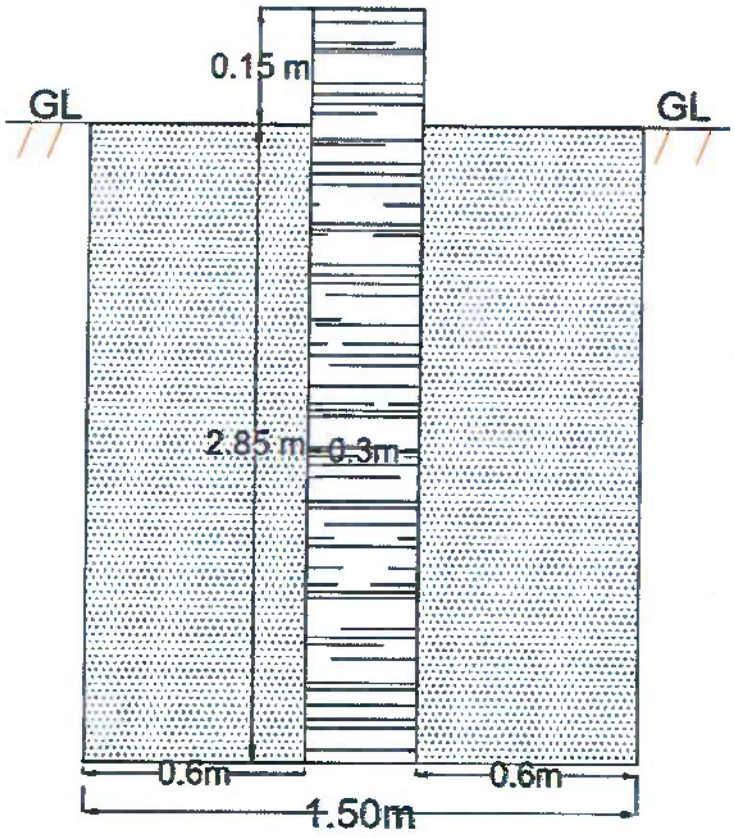
4. Percolation Pit / Tank of Recharging Ground Water



5. Water Harvesting System (WHS) and Sub-Surface Dyke (SSD)



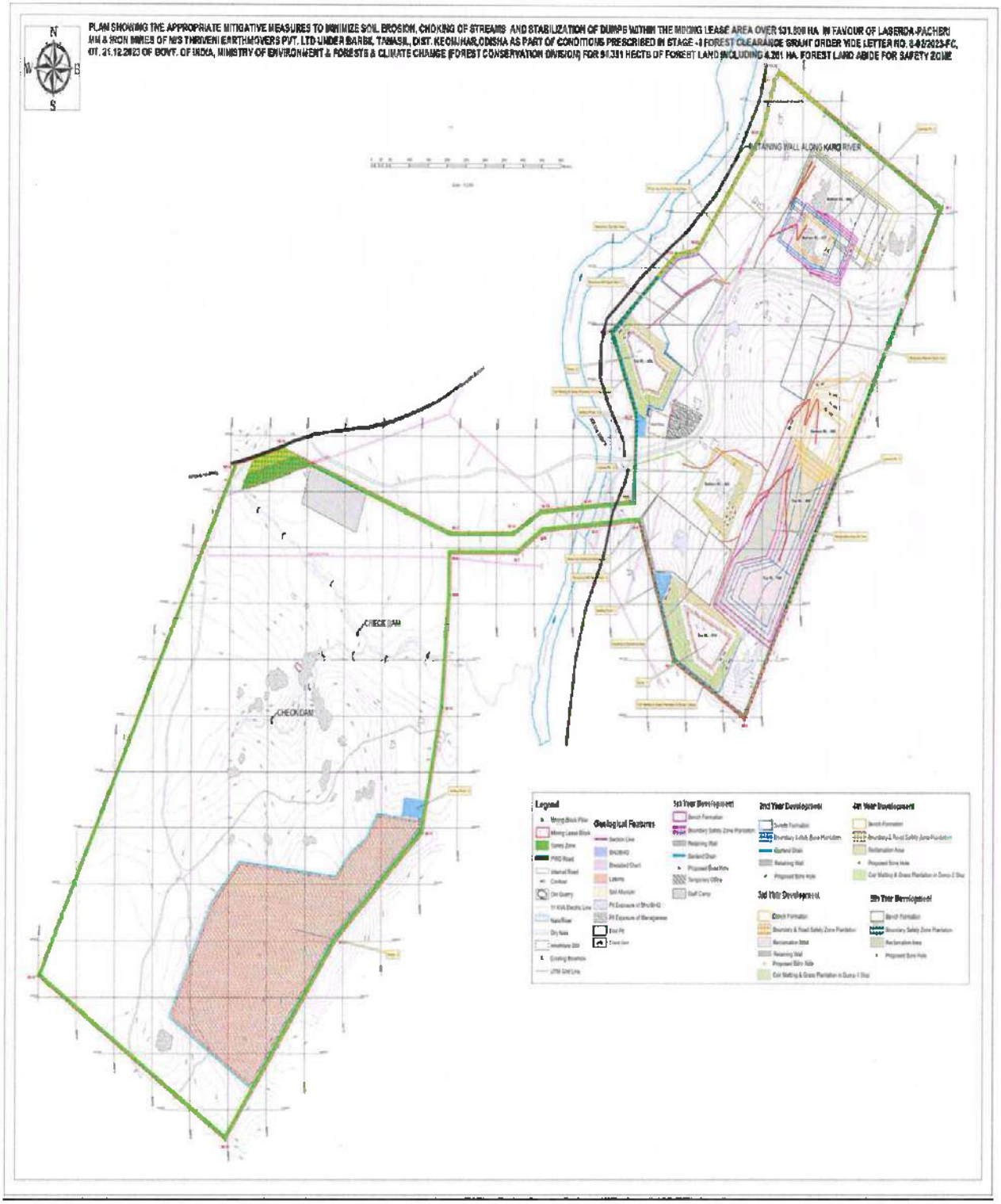
Water Harvesting System (WHS)



Cross Sectional View of SSD

Cost Norms for Creation of Compensatory Afforestation with Stabilization of Soil Moisture Conservation (SMC)

Map showing the location of both biological and structural works within the ML area of Lasarda-Pacheri Mn & Iron ore Block.



Annexure – III

Estimate for Vetiveria Plantation (Bena) on the OB dump slopes.

Cost norm, Wages - Rs.450/-

Sl. No	Name of the Work	Man Days	Manpower Cost	Material Rs.	Total Cost in Rs
1st YEAR OPERATION					
1	Site clearance, alignment and stacking	2	900	0	900
2	Cost of lining materials including transportation.	0	0	1,500	1,500
3	Staking and digging of pits.	20	9,000	0	9,000
4	Cost of Clumps 500 per Ha including transportation.	0	0	15,000	15,000
5	Carriage and planting	30	13,500	0	13,500
6	Soil working and application of fertilisers(twice)	10	4,500	0	4,500
7	Cost of fertiliser	0	0	1,500	1,500
8	Watch and ward	2	900	0	900
	Total	**64**	**28,800**	**18,000**	**46,800**
2nd YEAR OPERATION					
9	Causality replacement (20%) including cost of clumps.	10	4,500	0	4,500
10	Weeding and application of fertilisers	20	9,000	0	9,000
11	Cost of fertilisers and insecticides	0	0	1,500	1,500
12	Watch and ward	2	900	0	900
	Total	**32**	**14,400**	**1,500**	**15,900**
3rd YEAR OPERATION					
13	Weeding, soil working and application of fertilisers.	10	4,500	0	4,500
14	Plant protection measures including watch and ward.	2	900	0	900
	Total	**12**	**5,400**	**0**	**5,400**
4TH YEAR TO 10TH YEAR		**84**	**37,800**	**0**	**37,800**
	Grand Total	**192**	**86,400**	**19,500**	**105,900**

ABSTRACT

Year of operation	Cost norm per Ha
1st year	46800.00
2nd year	15900.00
3rd year	5400.00
4th to 10th year	37800.00
Total	**105900.00**

Annexure – IV

COST NORM FOR AGAVE PLANTATION (FOR 5 ROWS & 40 MTRS.)

Wage Rate : 450.00

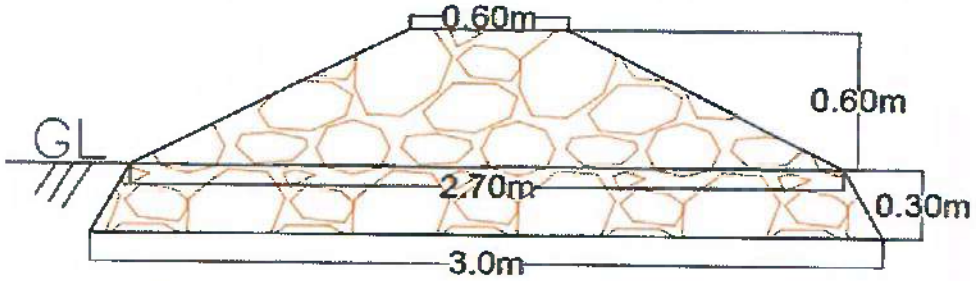
Sl. No	Name of the Work	Man-Day	Man Power Cost	Material	Total
FIRST YEAR OPERATION					
1	Site clearance alignment and stacking	2	900	-	900
2	Cost of lime materials including transportation	-		660	660
3	Digging pits and application of lime	6	2700	-	2700
4	Cost of 200 Ac. (sucker) including transportation	-		3320	3320
5	Carriage and planting	2	900	-	900
6	Soil working and application of fertilizers (twice) and lime	8	3600	-	3600
7	Cost of fertilizer	-		740	740
8	Contingency	-		740	740
	Total:-	**18**	**8100**	**5460**	**13560**
SECOND YEAR OPERATION					
1	Causality replacement (20%) including cost of suckers and pitting	2	900	660	1500
2	Weeding and application of fertilizer and lime	6	2700	-	2700
3	Cost of fertilizer insecticides & lime	-		500	500
	Total:-	**8**	**3600**	**1160**	**4700**
THIRD YEAR OPERATION					
1	Weeding, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**
FOUR YEAR OPERATION					
1	Weeding, cleaning, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**
FIVE YEAR OPERATION					
1	Weeding, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**

SIX YEAR OPERATION					
1	Weeding, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**
SEVEN YEAR OPERATION					
1	Weeding, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**
EIGHT YEAR OPERATION					
1	Weeding, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**
NINE YEAR OPERATION					
1	Weeding, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**
TEN YEAR OPERATION					
1	Weeding, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**
				Grand Total : -	**47860**

Cost norm for agave fencing with five rows per km for 10 Year 47860/40 X 1000
=Rs.11,96,500/-

Annexure –V

Design of Losse Boulder Structures (LBS)



Cross Sectional View of LBS

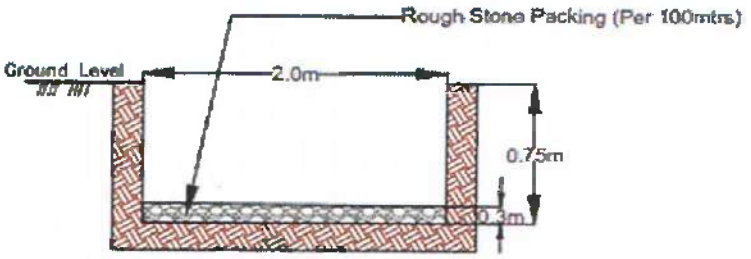
Detail Estimate of Loose Boulder Structure (L.B.S.)

Span of 2 Mtr. Size

Sl. No.	Item of activity	Cost per unit (Rs.)	Total unit(No/ Cum)	Total cost (in Rs.)
1.	Levelling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD.	450	1	450.00
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.	197.10	3.63	715.47
	Base with apron- 1 x 3.70 x 3.00 x 0.30 = **3.33**			
	Wing wall- 4 x 0.50 x 0.50 x 0.30 = **0.30**			
	@ **Rs.19710.00 per 100 cum.**			
3.	**Rough stone dry packing**	2859.35	8.65	24733.38
	up to GL			
	Base with apron- 1 x 3.70 x 3.00 x 0.30 =**3.33**			
	Wing wall- 4 x 0.50 x 0.50 x 0.30 = **0.30**			
	Above GL			
	Super structure 1 x 2.00 x (2.70 + 0.60)/2 x 0.60 =**1.980**			
	Wing wall- 4 x 0.50 x 0.50 x 0.50 =**0.50**			
	Side wall-			
i.	2 x (0.50 + 1.10)/2 x 0.9 x 0.5 =**0.72**			
ii.	2 x (0.5 + 1.10)/2x 1.2 x 0.5 = **0.96**			
iii.	2 x 0.6 x 0.6 x 0.5 =**0.36**			
iv.	2 x 1.0 x 0.5 x 0.5 =**0.50**			
	@ **Rs.2859.35 per cum**			
	G. Total per Loose Boulder Structure of span of 2 Mtrs			**25898.85 or Rs.25900/-**

ANNEXURE: VI

Design of Garland Drain



Cross Sectional View of Garland Drain

Detail Estimate of construction of Garland Drain

Sl No	Description of Items	No	Length	Width	Height	Qty	Unit	Rate	Amount
1	Cleaning of Jungles & bushes	1.0	200.00	7.00		1400.00	Sqm	4.00	5600.00
2	Earth work in hard soil in embankment roads within 50 mtr initial lead &1.50 mtr initial lift including rough dressing &breaking clods to Maximum 5.00c.m. to 7.00 c.m. &laying layers not exceeding 0.30 mtr depth as per specification approved by department along with proper compaction with H.R.R Excavation	**1**	**200.00**	**2.00**	0.75	**300.00**	**Cum**	**197.1**	59130.00
3	Rough Stone Dry Packing with local boulder only labour charges (Local boulder will be Supplied by the Company through contractual manner)	**2**	**3.00**	**2.00**	**0.30**	**3.60**	**Cum**	**919.47**	3310.09
									68040.09
		Rate per two Hundred meter Length				**Total**			**Say Rs. 68040/-**

Rate/Running metre length – Rs. 340.20 or Rs.341/-

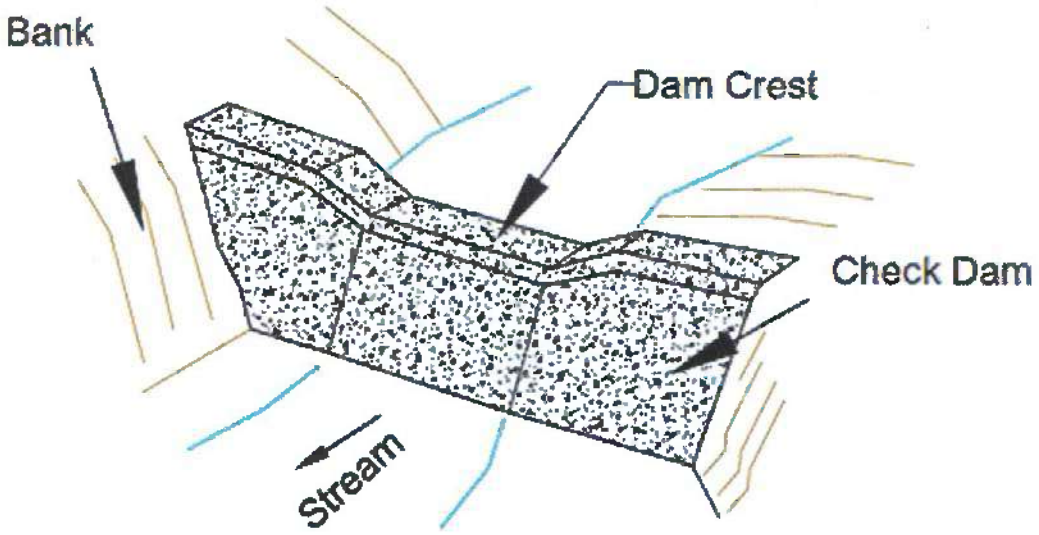
Annexure -VII

ENGAGEMENT OF HEMM (HEAVY EARTH MOVING MACHINERIES) ON THE OB DUMP SLOPE FOR TERRACING

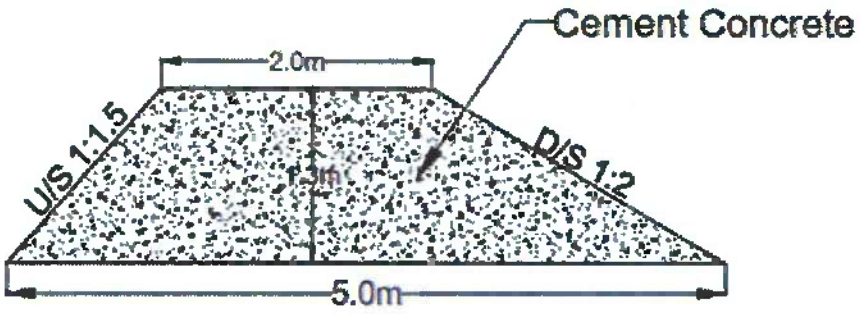
Location – Over Burden Dump –work efficiency per hour – 18 SqM on the dump.
Width & height of the terrace – 5 m. & 5 m.
Rate for engagement of HEM machine per SqM – Rs. 2400/hr.
i.e. Rs. 2400/18
= Rs. 133.33/-, say Rs. 134/-

Annexure -VIII

Design of Check Dam



Side View of Check Dam



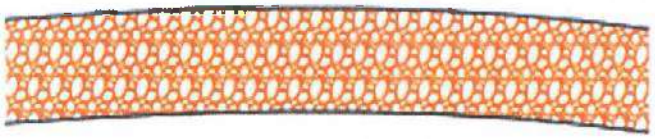
Cross Sectional View of Check Dam

Detail Estimate of Concrete Structure of Check Dam

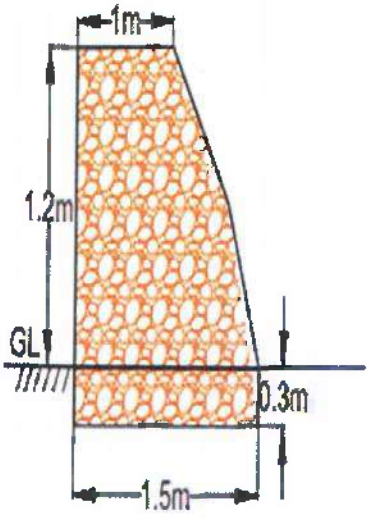
l No	Description of Items	No	Length	Width	Height	Qty	Rate	Amount in Rs
1	2	3	4	5	6	7	8	9
1	Earth working in hard soil embankment roads with in 50 mtr initial lead &1.50 mtr initial lift including rough dressing &breaking clods to Maximum 5.00c.m. to 7.00 c.m. &laying layers not exceeding 0.30 mtr depth as per specification approved by department along with proper compaction with H.R.R Excavation							
	Base	1	5.00	5.50	0.50	13.75		
	Wing Wall	4	2.00	0.50	0.50	2.00		
	Appron	2	3.00	5.00	0.20	6.00		
	Cut of wall	2	5.00	0.45	0.50	2.25		
						24.00	197.10	4730.40
2	Plain cement concrete (1:4:8)							
	Base	1	4.00	5.50	0.075	1.65		
	Wing Wall	4	2.00	0.50	0.08	0.30		
	Appron	2	3.00	5.00	0.08	2.25		
	Cut of wall	2	4.00	0.45	0.08	0.27		
						4.47	4600.00	20562.00
3	Cement concrete (1:2:4)							
	Below Ground Level							
	Base	1	4.00	5.50	0.40	8.80		
	Wing Wall	4	2.00	0.50	0.40	1.60		
	Appron	2	3.00	5.00	0.10	3.00		
	Cut of wall	2	4.00	0.45	0.50	1.80		
						15.20		
	Above Ground Level							
	Base	1	4.00	(2.00+ 5.00)/ 2	1.00	14.00		
	Wing Wall	4	2.00	0.40	1.00	3.20		
					Total	17.20		
				Grand Total		32.40	6478.00	209887.2
	Rate per one No Check Dam. Length=4.00 mtr Ht=1.30 mtr Slope U/S=1:1.5 D/S=1:2					Total		2,35,179.60 Say **Rs. 235180/-**
	(Rupees two lakh thirty five thousand one hundred and eight) only.							

Annexure – IX

Design of RETAIING WALL



PLAN VIEW OF RETAINING WALL



CROSS SECTION VIEW OF RETAINING WALL

Detail Estimate of Retaining wall of loose local Boulder with cement-Sand Patching over the surface of Boulder wall

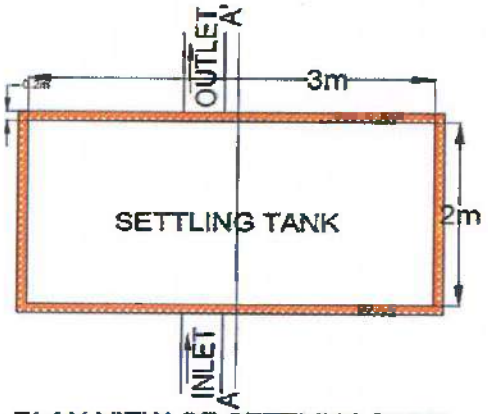
Sl. No.	Description of Items	No	Length	Width	Height	Qty	Unit	Rate	Amount in Rs
1	2	3	4	5	6	7	8	9	10
For one K.M. Length									
1	Cleaning of Jungles & bushes	1	1000	1.5		1500	Sqm	4.00	6000.00
2	Earth work in hard soil in embankment roads with in 50 mtr initial lead &1.50 mtr initial lift including rough dressing &breaking clods to Maximum 5.00c.m. to 7.00 c.m. & laying layers not exceeding 0.30 mtr depth as per specification approved by department along with proper compaction with H.R.R Excavation	1	1000	1.5	0.3	450	Cum	197.1	88,695.00
3	Rough Stone Dry Packing with local boulder only labour charges (Local	1	1000	(1.00+ 1.50	1.20	1500	Cum		

	boulder will be Supplied by our Company)			)/2					
		1	1000	1.50	0.30	450	Cum		
		Total				1950	Cum	919.47	1792966.50
4	Irregular cement sand patches on the both side of the wall with 2" thick cement sand mortar (1:6) on top	1	1000	1.00		1000	Sqm		
		2	1000	1.20		2400	Sqm		
						3400	Sqm	125.00	425000.00
		Rate per one K.M. Length				Total			23,12,661.5 Say **Rs. 23,12,665/-**

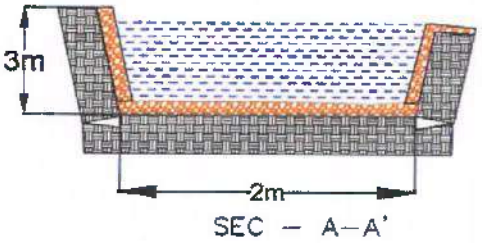
Cost of Running Meter Length Rs. 2313/-

Annexure – X

Design of SETTLING TANK



PLAN VIEW OF SETTLING TANK



CROSS SECTIONAL VIEW OF SETTLING TANK

ESTIMATE FOR PER RMT CONSTRUCTION OF SETTLING TANK
(Length: 3m., width: 2.0m. height: 1m.)

Sl No	Description of Items	No	Length	Width	Height	Qty	Unit	Rate	Amount
1	Earth work in hard soil in embankment roads with in 50 mtr initial lead &1.50 mtr initial lift including rough dressing &breaking clods to Maximum 5.00c.m. to 7.00 c.m. & laying layers not exceeding 0.30 mtr depth as per specification approved by department along with proper compaction with H.R.R Excavation	1	3.00	2.00	1.0	6.00	Cum	197.1	1182.60
2	Rough Stone Dry Packing with local boulder only labour charges (Local boulder will be Supplied by our Company)	1	3.00	4.00	0.20	2.40	Cum	919.47	2206.73
3	Transportation charges for 5.00 K.M. lead by truck load from quarry to work site with all cost of , labour, T. & P. etc. all complete in all respect as per specification and direction of	As same as Item No-2				2.40	Cum	200.00	480.00
								Rate per one No Settling tank of 6 Cum	3869.33
								Cost for Per 1 Cum Rs.645/-	**Rs.3870.0**

ANNEXURE-XI

Nursery Cost Norm for raising of 1000 (18 months) seedlings

		Wage rate @		450	Per Manday			
Sl. No	Items of work	Praferable Period of Execution	Unit	Unit Cost	No./Qty.	Labour Cost	Material Cost	Total Cost
A. 1st Financial Year (Seedlings Cost for 3 Months)								
1	Cost for Polythene (9" X 5"X 200G) 300 nos./Kg. =3.33Kg@RS.208/- per Kg. (including GST)	Nov-Dec	Kg	208	3.33	0	693	693
2	Procurement of raw & crude Polypot Mixture (Soil,Sand, & CDM in ratio (2:1:1)							
	(i) Soil	Nov-Dec	Cft	10	22	0	220	220
	(ii) Sand	Nov-Dec	Cft	16	11	0	176	176
	(iii) CDM/ Vermi compost/ Bio-Fertilizers etc.	Nov-Dec	Cft	25	11	0	275	275
	(iv) Insectide/ Bio-Pesticide	Nov-Dec	Kg	150	2	0	300	300
3	Preparation of Soil Mixture includes Pulverisation, Straining & mixture the ingredients in proper ratio. (2:1:1)	Nov-Dec	MD	450	2	900	0	900
4	Filling of polythene bags & Setting in the bed	Nov-Dec	MD	450	3	1350	0	1350
5	Collection of Seed, Grading & Treatment	Dec	MD	450	2	900	0	900
6	Preparation of germination bed & dibbling of seed.	Jan	MD	450	0.5	225	0	225
7	Pricking out the Seedlings from germination beds & transplanting in the poly bags and providing sheds.	Jan	MD	450	2	900	500	1400
8	Watering (Jan to March)	Jan-Mar	MD	450	9	4050	0	4050
9	Maintenance of Nursery including fencing	Jan-Mar	MD	450	4	1800	500	2300
10	Contingencies (Water can, Buckets, Nursery shed, Electricty charges/ Diseal charges/ Maintenance of pump set/ Maintenance of Nursery, etc.)			0	0	0	461	461
	TOTAL				22.5 nos of manday	10125	3125	13250
B. 2nd Financial Year (Shifting of Seedlings to larrger Polythene bag to avoid root coilling & better growth) Apil-March								

1	Watering for 3 months (April to June)	April-June	MD	550	9	4050	0	4050
2	Cost of Insecticides/ Bio-pesticide	May-June	Kg/ Lt	0	0	0	400	400
3	Application of insecticides/ Bio-Pesticide	May-June	MD	550	1	450	0	450
4	Cost of poly pot (12"x 10" x 300 gauge) 60 nos. =17 Kg & Rs.208 per Kg (including GST)	May-June	Kg	208	17	0	3536	3536
	TOTAL				**10**	**4500**	**3936**	**8436**

C. 2nd Financial Year (Seedlings Cost for 12 Months)

		Wagerate @	**450**	**per Manday**				
Sl. No	**Items of work**	**Preferable Period of Execution**	**Unit**	**Unit Cost**	**No./Qty.**	**Labour Cost**	**Material Cost**	**Total Cost**
5	Procurement of raw & crude Polypot Mixture (Soil,Sand, & CDM in ratio (2:1:1)	Apr/May						
	(i) Soil	Apr/May	Cft	10	100	0	1000	1000
	(ii) Sand	Apr/May	Cft	16	50	0	800	800
	(iii) CDM/ Vermi compost/ Bio-Fertilizers etc.	Apr/May	Cft	25	50	0	1250	1250
	(iv) Insectide/ Bio-Pesticide	Apr/May	Kg	150	3	0	450	450
6	Preparation of Potting mixture including pulverization and straining	Oct-Nov	MD	450	6	2700	0	2700
7	Filling of Polythene bags including reporting and setting	Oct-Nov	MD	450	35	15750	0	15750
8	Watering	Oct-March	MD	450	19	8550	0	8550
9	Sorting, Weeding, grading and resetting over one year period	April-March	MD	450	15	6750	0	6750
10	Contingencies (Water can, Buckets, Nursery shed, Electricty charges/ Diseal charges/ Maintenance of pump set/ Maintenance of Nursery, etc.)						400	400
	TOTAL				**75**	**33750**	**3900**	**37650**
	D. 3rd Financial Year (Maintenance up to planting) April-June							

SOIL MOISTURE CONSERVATION PLAN WITHIN LEASE AREA & IN 10 KM BUFFER AREA FROM OUTER PERIMETER OF THE LASERDA PACHERI MANGANESE & IRON BLOCK

1	Watering for 3 months (April to June)	April-June	MD	450	12	5400	0	6600
2	Weeding, Shifting and grading	April-June	MD	450	4	1800	0	2200
3	Cost of Insecticides/ Bio-Pesticide					0	400	400
4	Application of insecticides/ Bio-Pesticide		MD	450	1	450	0	550
5	Contingencies						230	230
	TOTAL				**17**	**7650**	**630**	**8280**

ABSTRACT

	Item of work	Labour Cost	Material Cost	Total Cost
A	1st Financial Year (Seedlings Cost for 3 Month)	10125	3125	13250
B	2nd Financial Year (12 Month)	4500	3936	8436
C	2nd Financial Year (Seedlings Cost for 12 Month)	33750	3900	37650
D	3rd Financial Year (3 Months)	7650	630	8280
	TOTAL	56025	11591	67616

Cost per 18 months old Seedlings= 67616/1000 = Rs 67.62/-

Annexure-XIII

Estimate for sowing of grass seeds per ha.

Cost of broadcasting of grass seeds per ha. Labour rate Rs.450.00/- per day				
Sl. No.	**Purpose**	**No. of Labour/quantity of materials**	**Rate (in Rs.)**	**Amount in Rs.**
1	Spreading of good top soil	03 Nos	450/- Labour	1350.00
2	Adding FYM and good earth	2 TL FYM	5625/TL FYM	11250.00
		2 TL Good earth	6750/TL Good earth	13500.00
3	Cost of grass seed 25 Kg/per ha		250/Kg	6250.00
4	Broad casting	10 nos	450/-Labour	4500.00
			Total	**36850.00**

Annexture-XIV

LOCATION SELECTED POND FOR DE-SILTING AROUND 5 KM REDIUS

Sl. No.	Name of the Location of the Water Body	One point GPS Reading (UTM)		Dimension in (Length x Breadth x Height)	Remarks
		Easting (M)	Northing (M)		
1	Pundul Village Pond -1	321808.66	2437413.66	27X15X2.5	Scope for De-siltation & construction of Embankment
2	Bolani Bosti Village Pond - 2	327561.04	2444158.34	25x30x2.5	Scope for De-siltation & construction of Embankment
3	Dumurita Tala Sahi Village Pond -3	329030.14	2442631.78	42x30x3.0	Scope for De-siltation & construction of Embankment
4	Dumurita Village Pond -4	328165.32	2442312.06	27x23x2.5	Scope for De-siltation & construction of Embankment
5	Lasarda Buru sahi Village Pond -5	327871.96	2440821.87	38x26x2.5	Scope for De-siltation & construction of Embankment
6	Lasarda Village Pond -6	327390.63	2440047.89	41x25x2.5	Scope for De-siltation & construction of Embankment
7	Lasarda Bhalia dihi Village Pond -7	327464.63	2439664.45	46x38x3.0	Scope for De-siltation & construction of Embankment
8	Kanarda Village Pond -8	326788.14	2440045.72	53x43x3.0	Scope for De-siltation & construction of Embankment

DE-SILTING QUANTITY AND STONE PACKING AREA

Sl. No.	Name of the Location of the Water Body	De-Silting Quantity in Cum	Stone dry packing Area in Sqm
1	Pundul Village Pond -1	27X15X1 = 405	(27+15) X 2 = 84
2	Bolani Bosti Village Pond -2	25x30x1 = 750	(25+30) x 2 = 110
3	Dumurita Tala Sahi Village Pond -3	42x30x1 = 1260	(42+30) x2 = 144
4	Dumurita Village Pond -4	27x23x1 = 621	(27+23) x 1 = 100
5	Lasarda Buru sahi Village Pond -5	38x26x1 = 988	(38+26) x 1 = 128
6	Lasarda Village Pond -6	41x25x1 = 1025	(41+25) x1 = 132
7	Lasarda Bhalia dihi Village Pond -7	46x38x1 = 1748	(46+38) x1 = 168
8	Kanarda Village Pond -8	53x43x1 = 2279	(53+43) x1 = 192
Total		**9076 cum**	**1058 sqm**

Annexure- XV

Room at the Bathing Ghat for change of Clothing by Women

Estimate Of Change room

SL NO	DESCRIPTION OF ITEMS	UNIT	NOS	L	B	H	QUANTITY	Rate	Amount (₹)
1	**Earthwork in excavation**								
	Changing Room	M^3	1	12.00	0.50	0.50	**3.00**		
		M^3	1	2.40	2.40	0.30	**1.73**		
							4.73	**197.1**	**932.28**
2	**Sand Filling**								
	Changing Room	M^3	1	2.40	2.40	0.05	**0.29**		
							0.29	**1200**	**348.00**
3	**Plain cement concrete 1:3:6**								
	Changing Room	M^3	1	12.00	0.50	0.10	**0.60**		
		M^3	1	2.40	2.40	0.10	**0.58**		
							1.18	**4600**	**5428.00**
5	**Brick Work (1:6) (Below G.L)**								
	In Foundation	M^3	1	12.00	0.38	0.40	**1.82**	**5400**	**9828.00**
6	**Brick Work (1:6) (Above G.L)**								
	In Super Structure	M^3	1	12.00	0.25	3.00	**9.00**	**5400**	**48600.00**
7	**R.C.C (1:1.5:3)**								
	Changing Room	M^3	1	12.00	0.25	0.25	**0.75**		
			1	2.40	2.40	0.15	**0.86**		
							1.61	**6478**	**10429.58**
8	**Shuttering with 12 mm thick plywood**								
	Changing Room	M^2	2	12.00		0.25	**6.00**		
							6.00	**300**	**1800.00**
9	**Reinforcement**								
		MT	1		0.10		**0.10**	**70000.00**	**7000.00**
10	**12 mm thick plaster**								
		M^2	4	2.40		3.00	**28.80**		
		M^2	5	2.40		3.00	**36.00**		
							64.80	**120**	**7776.00**
									92141.86
	Contingency 10 %								**9214.19**
									101356.00

Annexure- XVI

Estimate for arrangement of Bench on the periphery of the pond

Estimate Of Bench for sitting									
S.L NO	DESCRIPTION OF ITEMS	UNIT	NOS	L	B	H	QUANTITY	Rate	Amount (₹)
1	Earthwork in excavation								
		M^3	2	0.60	0.60	0.50	0.36	197.1	70.96
2	Plain cement concrete 1:3:6								
	Changing Room	M^3	2	0.60	0.60	0.10	0.07		
							0.07	4600.00	322.00
3	Brick Work (1:6) (Above G.L)								
	In Super Structure	M^3	2	0.60	0.38	0.60	0.27		
							0.27	5400.00	1458.00
4	12 mm thick plaster								
		M^2	4	0.60	0.60		1.44		
							1.44	120.00	172.80
5	RCC	M^3	2	0.45	1.50	0.08	0.10		
							0.10	6478.00	647.80
6	IPS	M^2	2	0.45	1.50		1.35	320.00	432.00
7	Shuttering	M^2	2	0.45	1.50		1.35		
							1.35	300.00	405.00
8	Reinforcement	Kg					10.00	70.00	700.00
	Total Amount								4206.96
	Contigency @10%								420.70
	Total								4628.00

SOIL & MOISTURE CONSERVATION MEASURES TAKEN UP WITHIN THE LEASE AREA AND 10 KM BUFFER ZONE OF LASERDA PACHERI MANGANESE & IRON BLOCK OF THRIVENI EARTHMOVERS PVT. LTD.

"B"

DETAILS OF ACTIVITIES PROPOSED TO BE TAKEN UP WITHIN 10 KM BUFFER AREA OF LASERDA PACHERI MANGANESE & IRON BLOCK BY THRIVENI EARTHMOVERS PRIVATE LIMITED

SOIL MOISTURE CONSERVATION PLAN WITHIN LEASE AREA & IN 10 KM BUFFER AREA FROM OUTER PERIMETER OF THE LASERDA PACHERI MANGANESE & IRON BLOCK

B. DETAILS OF ACTIVITIES PROPOSED TO BE TAKEN UP WITHIN 10 KM BUFFER AREA OF LASERDA PACHERI MANGANESE & IRON BLOCK BY THRIVENI EARTHMOVERS PRIVATE LIMITED. (Location Map Attached as Plate-II)

COST FOR SOIL & MOISTURE CONSERVATION MEASURES AROUND 10 KM REDIUS OF THE ML AREA OF LASERDA PACHERI BLOCK					
SL.NO	TYPE OF STRUCTURE/WORKS	UNITS	TOTAL QTY/AREA IN CUM/SQM	COST /CUM /HA (Rs)	TOTAL COST In RS
1	CCD	1	202.5	6665	13,49,663.00
2	WLBCD	27	709.8	5572	39,55,006.00
3	LBCD	42	1062	1750	18,58,500.00
4	STAGGERED TRENCHES		12.00 ha.	53325	6,39,900.00
5	WATER BODIES	1	3600	375.20	13,50,720.00
6	VETIVER PLANTATION		2.53 ha.	82600	2,08,978.00
			Total		Rs 93,62,767.00
(Rupees ninety-three lakh sixty-two thousand seven hundred sixty seven only)					

1. **CONCRETE CHECK DAM (CCD)**

These are masonry structures constructed with cement concrete across the gullies basically to harvest water, it affording facilities for lift irrigation and also firming up.It also help in recharging the aquifers .The location chosen in Gamlei nala under Sidhamatha RF is suitable for CCD work.

GAMLEI NALA- This is a perennial nala near village kundaroda under Sidhamatha RF and a CCD work is proposed in this location for water harvesting.

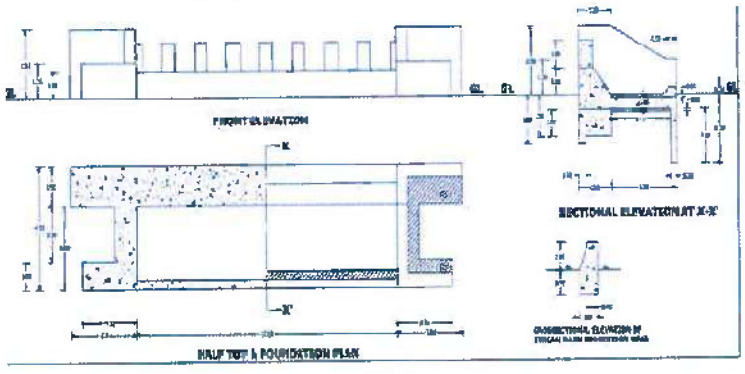
Forest Range Officer
Barbil

SOIL MOISTURE CONSERVATION PLAN WITHIN LEASE AREA & IN 10 KM BUFFER AREA FROM OUTER PERIMETER OF THE LASERDA PACHERI MANGANESE & IRON BLOCK

Following Reinforced Cement Concrete Check Dam (CCD) measures to be taken:

TYPE OF STRUCTURE	CCD
LOCATION	Village-Kundaroda
NAME OF FOREST	Sidhamatha RF
NAME OF STREAM	Gamlei nala
EASTING	326175
NORTHING	2439093
LENGTH	18 M
WIDTH	4.5 M
HEIGHT	2.5 M
VOLUME IN CUM	202.5
UNITS	1
TOTAL QTY IN CUM	202.5
COST /CUM (Rs)	6665.00
TOTAL COST (Rs)	1349663/-

1. Design of Reinforced Cement Concrete Check Dam (RCCD)



Estimate for Reinforced Cement Concrete Check Dam for Keonjhar Forest Division of 168.75 cum (15 mt. x 4.5 mt. x 2.5 mt.)

Sl.No.	Item wise Description	No.	Length	Width	Th/ Ht	Quantity	Unit	Rate (Rs.)	Unit	Amount (Rs.)
1	Earth work excavation in Hard Soil within 50 m. initial lead and 1.5 m. initial lift including rough dressing and breaking clods etc. complete in all respect.									
	Levelling the site	2	5	3	1.5	45.00	Cum			
	Total					45.00	Cum	350.5	per 1Cum	15772.5
2	Earth work excavation in foundation in Hard Soil within 50 m. initial lead and 1.5 m. initial lift including rough dressing and breaking clods etc. complete in all respect.									
	Head Wall	1	15	1.5	1.5	33.75	Cum			
	Extension Wall	2	3	1.5	1.5	13.50	Cum			
	Wing Wall	2	2.5	1	1.5	7.50	Cum			
	Side Wall	2	2	1	1.5	6.00	Cum			
	D/S Cut-off Wall	1	15	0.3	2	9.00	Cum			
	D/S Approne	1	15	2.7	0.6	24.30	Cum			
	U/S Cut-off Wall	1	15	0.3	0.3	1.35	Cum			
	Stream Bank Protection Wall on U/S & D/S	2	5	0.9	0.9	8.10	Cum			
	Total					103.50	Cum	350.5	per 1Cum	36276.75
3	Filling in foundation and plinth with sand watered and rammed including material and labour, etc complete in all respect.									
	D/S Approne	1	15	2.7	0.1	4.05				
	Total					4.05	Cum	516.6	per 1Cum	2092.23
4	Cement Concrete (1:3:6) with 4 cm size hard granite metal including cost of material and labour etc. complete in all respect.									
	Foundation									
	Head Wall	1	15	1.5	1	22.50	Cum			
	Extension Wall	2	3	1.5	1.5	13.50	Cum			
	Wing Wall	2	2.5	1	1.5	7.50	Cum			
	Side Wall	2	2	1	1.5	6.00	Cum			
	D/S Cut-off Wall	1	15	0.3	2	9.00	Cum			
	D/S Approne	1	15	3	0.4	18.00	Cum			
	U/S Cut-off Wall	1	15	0.3	0.3	1.35	Cum			
	Stream Bank Protection Wall on U/S & D/S	2	5	0.9	0.9	8.10	Cum			

	Superstructure									
	Extension Wall W=(1.5+0.5)/2=1 m	2	3	1	2.5	15.00	Cum			
	Wing Wall W=(1+0.5) /2=0.75 m	2	2.5	0.75	1.3	4.88	Cum			
	Side Wall W=(1+0.5)/2=0.75 m	2	1	0.75	2.5	3.75	Cum			
	Side Wall W=(1+0.5)/2 =0.75 m Ht= (2.5+1.3)/2 =1.90 m	2	2.5	0.75	1.9	7.13	Cum			
	Stream Bank Protection Wall on U/S & D/S W=(0.9+0.5)/2=0.7 M	2	5	0.7	1	7.00	Cum			
	Total					**123.70**	**Cum**	**3888**	**per 1Cum**	**480898.59**
5	Rigid and smooth centering and shuttering for C.C. works including false works and dismantling them after casting including cost of materials.									
	C.C. foundation, Plinth band and footings bases of columns mass concrete precast slabs etc.									
	Superstructure									
	Head Wall U/S & D/S	2	15	-	1	30	Sqmt			
	Head wall sides W=(1.5+0.7)/2=1.1 m	2	-	1.1	1	2.2	Sqmt			
	Extension Wall Vertical Portion	4	3		2.5	30	Sqmt			
	Extension Wall Side in S/S W=(1.5+0.5)/2=1 M	2	-	1	2.5	5	Sqmt			
	Wing Wall Vertical Portion	4	2.5	-	1.3	13	Sqmt			
	Wing Wall Side in S/S	2	-	0.75	1.3	1.95	Sqmt			
	Side Wall Inside & Outside	4	1		2.5	10	Sqmt			

	Side Wall Inside & Outside Ht=(Ht of Extension Wall+Ht of Wing Wall)/2 Ht=(2.5+1.3)/2=1.9 m	4	2.5		1.9	19	Sqmt			
	D/S Approne	1	15		0.5	7.5	Sqmt			
	Stream Bank Protection Wall on U/S & D/S	4	5		1	20	Sqmt			
	Total					**138.65**	**Sqmt**	**107.4**	**Per 1 Sqmt**	**14891.01**
6	Cement Concrete (1:2:4) with 12 mm size hard broken granite Chips including all cost of labour and material but excluding cost of Transportation & Royalty etc. complete in all respect.									
	Head Wall Foundation	1	15	1.5	0.5	11.25	Cum			
	Head Wall Superstructure W=(1.5+0.7)/2=1.1 m	1	15	1.1	1	16.50	Cum			
	Pillars	7	0.7	0.6	1	2.94	Cum			
		2	0.7	0.3	1	0.42	Cum			
	Approne	1	15	3	0.1	4.50	Cum			
	Total					**35.61**	**Cum**	**6479**	**per 1Cum**	**230710.42**
7	Supplying, fitting and placing uncoated HYSD bar reinforcement complete as per drawing and technical specification.									
	Foundation									
	Mesh Longitudinal bars of 12 mm @ 0.2 m C/C	15	18			270	Mtr			
	Mesh Distribution Bars of 8 mm @ 0.15 M C/C	110	2.5			275	Mtr			
	Main Bars on Vertical position for Head Wall and Aproone of 12 mm @ 0.2 m C/C	120	9.5			1140	Mtr			
	Distribution bars for Head Wall & Aproon of 8 mm @ 0.15 m C/C	60	16			960	Mtr			
	Pillars Vertical Bars of 12 mm @ 0.15	160	2			320	Mtr			

	m C/C									
	Pillars Distribution Bars of 8 mm @ 0.15 m C/C	70	4.2			294	Mtr			
	Abstract									
	Total length of 12 mm Ø bars					1730	Mtr			
	Required Weight for 12 mm bars = D2/162 Kg/Mtr length i.e. 0.89 Kg/Mtr		1730 x 0.89			1539.70	kg			
	Total length of 8 mm Ø bars					1529	Mtr			
	Required Weight for 8 mm bars = D2/162 Kg/Mtr length i.e. 0.39 Kg/Mtr		1529 x 0.39			596.31	kg			
	Total Reinforcement					**2136.01**	kg			
					Or	**21.36**	qtl	**8745**	**per 1 qtl**	**186796.6**
8	Cement Concrete (1:2:4) with 12 mm size hard broken granite Chips including all cost of labour and material but excluding cost of Transportation & Royalty etc. complete in all respect.									
	Wearing Coat									
	Extension Wall	2	3	0.5	0.05	0.15	Cum			
	Wing Wall	2	2.5	0.5	0.05	0.13	Cum			
	Side Wall	2	3.5	0.5	0.05	0.18	Cum			
	Cushion W=(0.6+0.3)/2=0.45 m	1	15	0.45	0.3	2.03	Cum			
	Stream Bank Protection Wall on U/S & D/S	2	5	0.5	0.05	0.25	Cum			
	Total					**2.73**	**Cum**	**6479**	**Per 1Cum**	**17654.76**

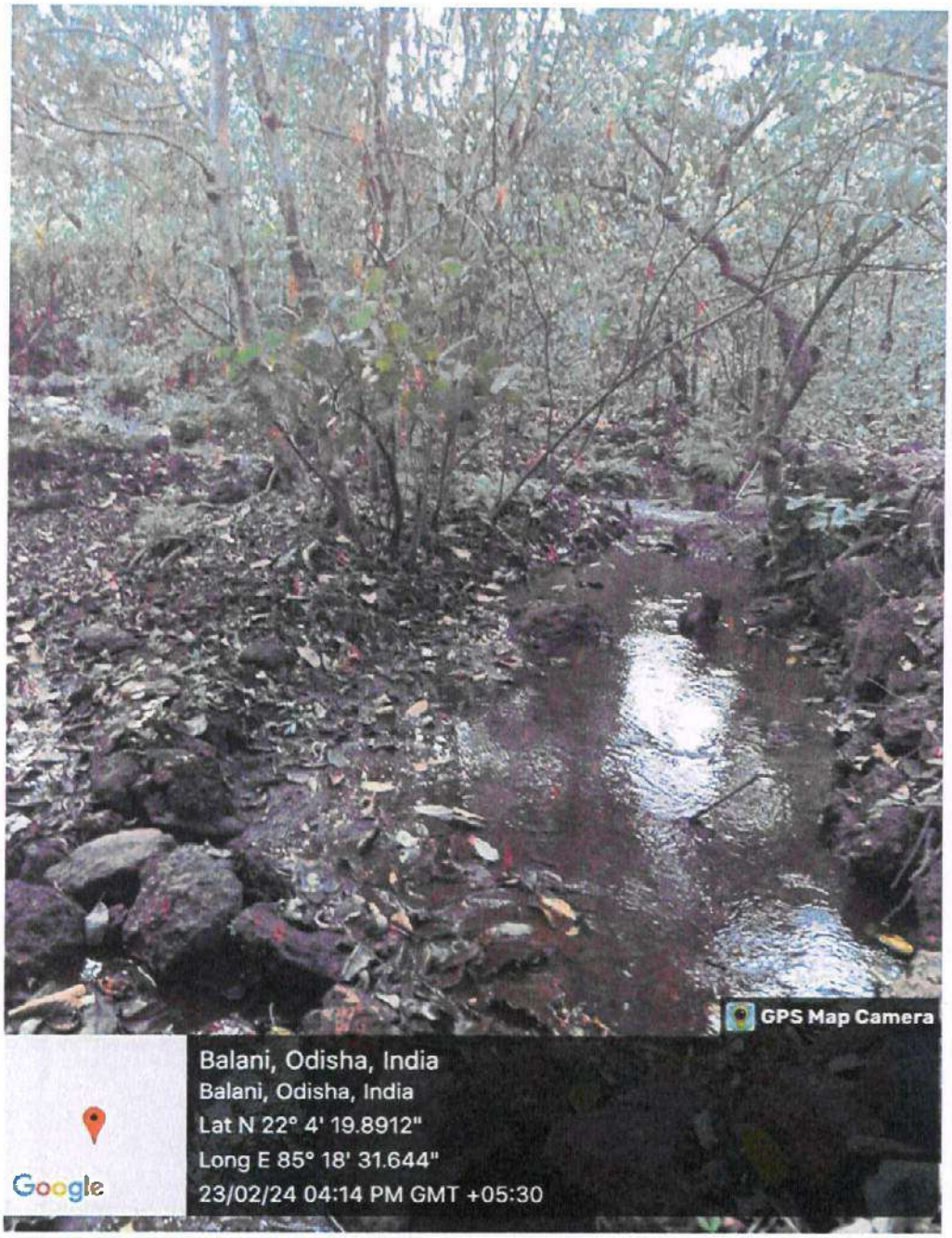
9	16mm thick cement plaster (1:6) including cost for material, labour, etc. complete in all respect.									
	Head Wall U/S portion	1	15		1	15.00	Sqmt			
	Head Wall D/S portion	1	15		1.28	19.20	Sqmt			
	Head Wall Top portion	1	15	0.7		10.50	Sqmt			
	Extension Wall U/S portion	2	3		2.5	15.00	Sqmt			
	Extension Wall Top portion	2	3	0.5		3.00	Sqmt			
	Wing Wall Front Portion	2	2.5		1.3	6.50	Sqmt			
	Wing Wall Top Portion	2	2.5	0.5		2.50	Sqmt			
	Wing Wall side above approne	2		0.5	1.3	1.30	Sqmt			
	Side Wall Front Portion	2	1.5		2.5	7.50	Sqmt			
	Side Wall Slopy Portion Ht =(2.5+1.3)/2 = 1.90 M	2	2.5		1.9	9.50	Sqmt			
	Side Wall Top Portion	2	3.5	0.5		3.50	Sqmt			
	D/S Approne	1	15	3		45.00	Sqmt			
	Stream Bank Protection Wall on U/S & D/S	2	5		1	10.00	Sqmt			
	Pillars	2	5	0.5		5.00	Sqmt			
		14	0.7		1	9.80	Sqmt			
		14		0.6	1	8.40	Sqmt			
	Top portion	7	0.7	0.6		2.94	Sqmt			
		2	0.7		1	1.40	Sqmt			
		4		0.3	1	1.20	Sqmt			
		2	0.7	0.3		0.42	Sqmt			
	Total quantity					177.66	Sqmt			
	Deduction									
	Cross sectional area of Head Wall W= (1.5+0.7)/2 = 1.10 m	2		1.1	1	2.20	Sqmt			
	Cross sectional area of Cushion W= (0.6+0.3)/2=0.45	2		0.45	0.3	0.27	Sqmt			

SOIL MOISTURE CONSERVATION PLAN WITHIN LEASE AREA & IN 10 KM BUFFER AREA FROM OUTER PERIMETER OF THE LASERDA PACHERI MANGANESE & IRON BLOCK

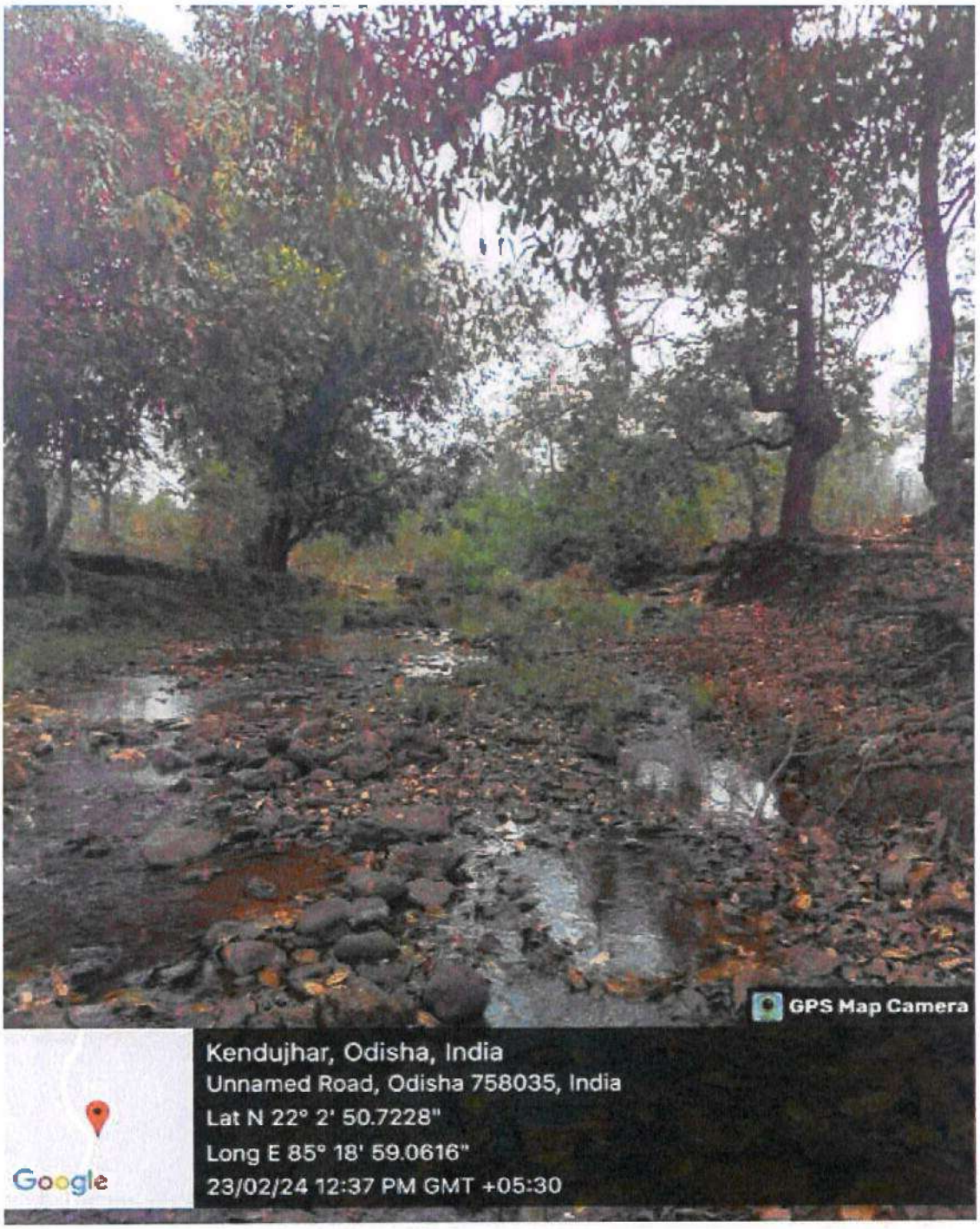
	m									
	Total deduction quantity					2.47	Sqmt			
	Net Quantity					175.19	Sqmt			
	Total					175.19	Sqmt	210.2	per Sqmt	36828.44
	Grand Total									Rs10,21,921.00
	PRICE ESCALATION @ 10%									Rs1,02,192.00
	Grand Total for 168.75 cum									Rs11,24,113/-
	cost Per cum									Rs6,661.41 say Rs 6665/-

2. **WIREMESH LOOSE BOULDER CHECK DAM (WLBCD):**

This structure will be created across the drainage line for retention of runoff and reduction of velocity of precious water. These structures will be bounded by wire mesh to resist the flow of water and increase longevity of the boulder structure so that it may fulfil its purpose for a long time.

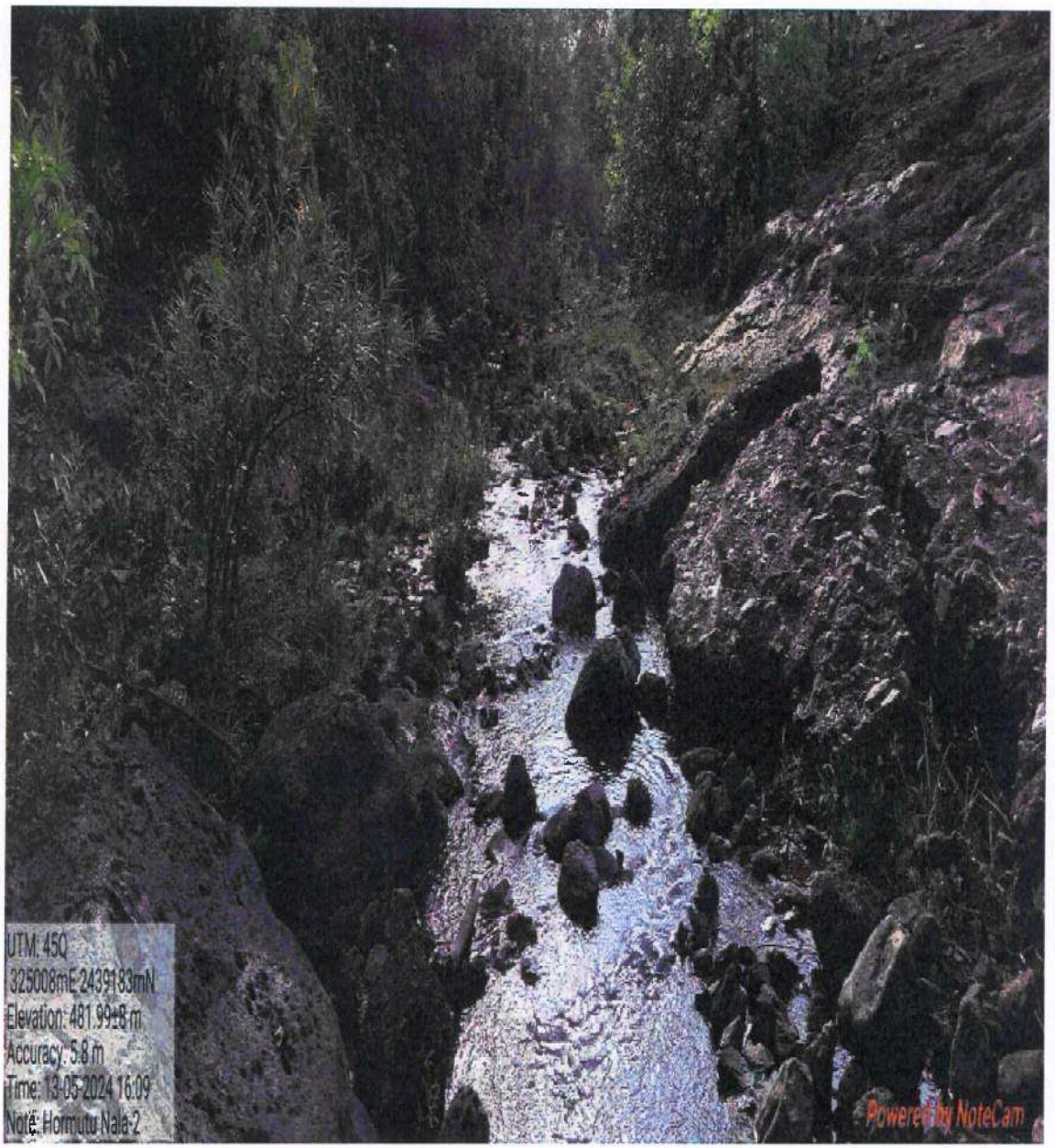


PACHERI NALA: This perennial nallah is located in village Pacheri under Karo RF. WLBCD is proposed to stem the velocity and erosion, this flows into the River Karo.



GOMLEI NALLAH: This is a perennial nallah in village Kundaroda under Sidhamath RF. This nallah flows into the River Karo and WLBCD is proposed to prevent erosion and velocity of the water flow.

SEASONAL NALLAH: This seasaonal nallah is located in Village Gomlei under Karo RF. During rains this nallah carried water and flows into the Karo River, as the flow of water can be seen in 5-6 months of the year WLBCD is proposed on this nallah.



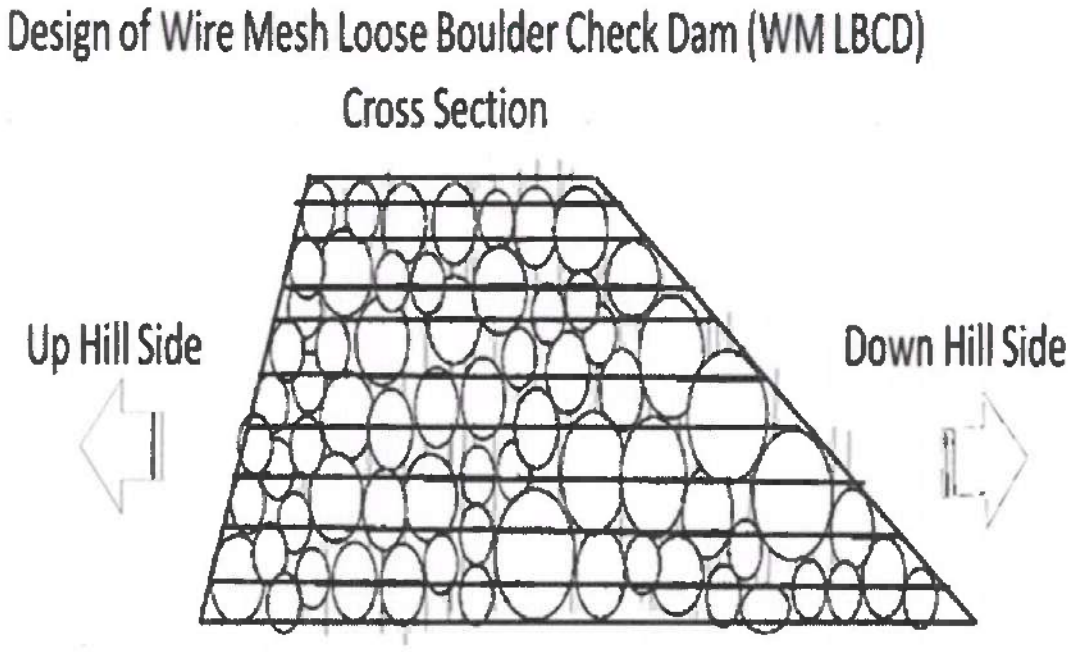
HARMUTU NALA -This perennial nala is near village Harmutu in Uliburu RF. This nala flows into river karo and WLBCD is proposed to prevent erosion and velocity of the water flow.

PANDULIPOSI NALLAH: This is also a perennial nallan flowing into River Karo, coming under Uliburu RF of village Panduliposi and suitable for constructing WLBCD for checking ersosion and water flow velocity.

SOIL MOISTURE CONSERVATION PLAN WITHIN LEASE AREA & IN 10 KM BUFFER AREA FROM OUTER PERIMETER OF THE LASERDA PACHERI MANGANESE & IRON BLOCK

Following Wire-mesh loose boulder check dam (WLBCD) measures to be taken:

TYPE OF STRUCTURE	WLBCD					
LOCATION	Village-Kundaroda	Village-Pacheri	Village-Harmutu	Village-Gadadharpur	Village-Chata hating	Total
NAME OF FOREST	Sidhamatha RF	Karo RF	Uliburu RF	Uliburu RF	Uliburu RF	
NAME OF STREAM	**Gamlei nala**	**Pacheri nala**	**Harmutu nala**	**Gadadharpur nala**	**Seasonal nala**	**5 Nos Location**
EASTING	326253	325505	325009	323286	330259	
NORTHING	2439033	2441791	2439185	2437303	2445789	
LENGTH	9	5	12	8	7	
TOP WIDTH	1.5	1.5	1.5	1.5	1.5	
BOTTOM WIDTH	5.0	5.0	5.0	5.0	5.0	
HEIGHT	1.2	1	1.2	1.2	1.2	
VOLUME IN CUM	35.1	16.25	46.8	31.2	27.3	
UNITS	3	12	3	6	3	27 nos
TOTAL QTY IN CUM	105.3	195	140.4	187.2	81.9	709.80 Cum
COST /CUM (Rs)	5572	5572	5572	5572	5572	
TOTAL COST (Rs)	5,86,732	10,86,540	7,82,309	10,43,078	4,56,347	Rs 39,55,006.00



Model Estimate of Wire Mesh LBCD

Providing & making Gabion structure with Mechanically Woven Double Twisted Hexagonal Shaped Wire mesh Gabion Boxes as per IS 16014:2012,MORTH Clause 2500, of required size, Mesh Type 10x12 (D=100 mm with tolerance of ± 2%) Zinc coated, Mesh wire diameter 3.0 mm, mechanically edged/selvedges with partitions at every 1m Interval and shall have minimum 10 numbers of openings per meter of mesh perpendicular to twist, tying with lacing wire of diameter

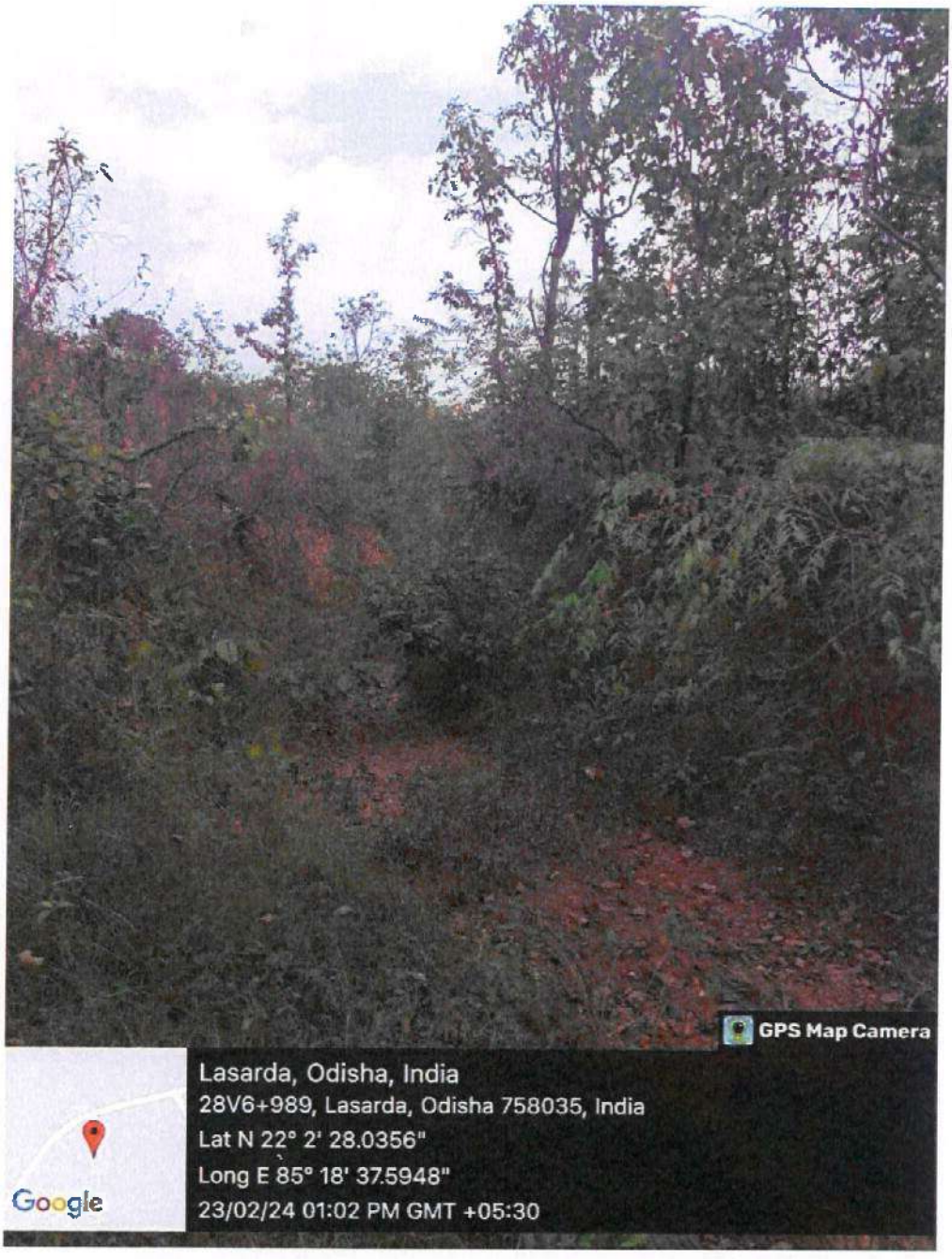
2.2mm,supplied @3% by weight of Gabion boxes, filled with boulders with least dimension of 200 mm,

Details of Cost for: 2.00 Cum

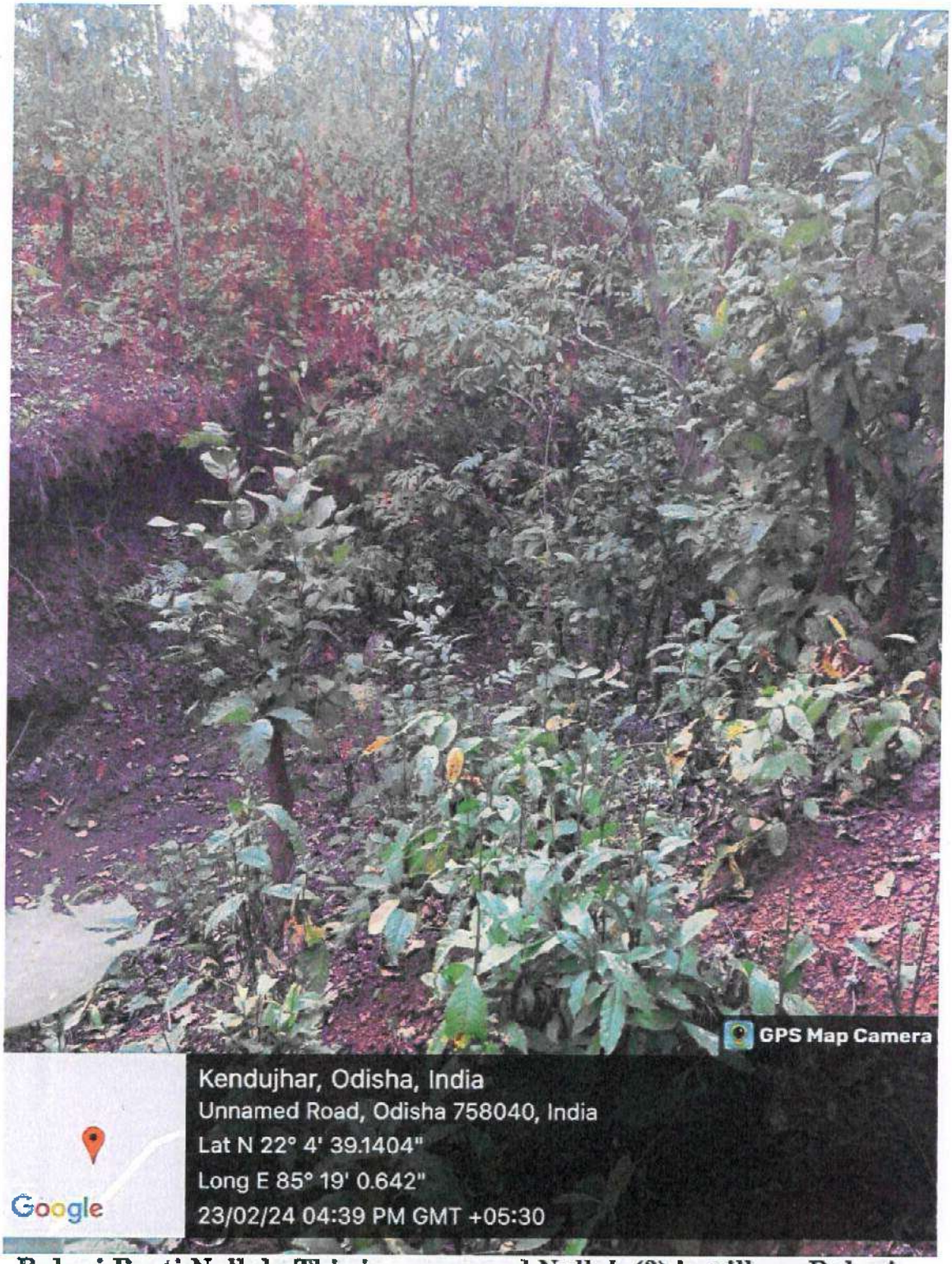
SL No.	Description	Unit	Quantity	Rate (In Rs.)	Amount (In Rs.)
MATERIALS:					
1	Crates made of GI Mesh Type 10x12 (D=100 mm with tolerance of ± 2%) Zinc coated, Mesh wire diameter 3.0 mm) For size 2 m X 1m X 1 m. Surface area is 11.00 Sqm	Sqm	11	600	6600
	Stone boulder with least dimension 200 mm	Cum	2	1000	2000
	Total (A)				**8600**
	LABOUR:				
Mate		Day	0.1	550	55
Mason Second class		Day	0.5	500	250
Man Mulia		Day	1.5	450	675
	Total (B)				**980**
	Total (A+B)				**9580**
Add OH Charges @ 7.5% on (A+B)					718.5
Contractor Profit @ 10 % on (A+B)					958
	Total:-				11256.5
	Add LC @ 1%				112.5
	Total:-				**11,144.00**
	Cost for 2.00 Cum				11,144.00
	Cost for 1.00 Cum				5,572.00

3. LOOSE BOULDER CHECK DAM (LBCD) :

This structure will be made to control the channel erosions and stabilize gully heads and also it helps to check the speed/velocity of the flowing water and silt retention, wherever such a thing is expected.



Seasonal Nallah -2: This seasonal nallah comes under Nawadih village in Lakraghat RF and is waterborne during monsoon season and water flows into the River Karo. LBCD is proposed over this nallah.



Bolani Basti Nallah: This is a seasonal Nallah (3) in village Bolani Basti under Karo RF and the water flows into River Karow during monsoon 3-4 months of the year and LBCD structure is suitable for construction over this seasonal Nallah.

SOIL MOISTURE CONSERVATION PLAN WITHIN LEASE AREA & IN 10 KM BUFFER AREA FROM OUTER PERIMETER OF THE LASERDA PACHERI MANGANESE & IRON BLOCK

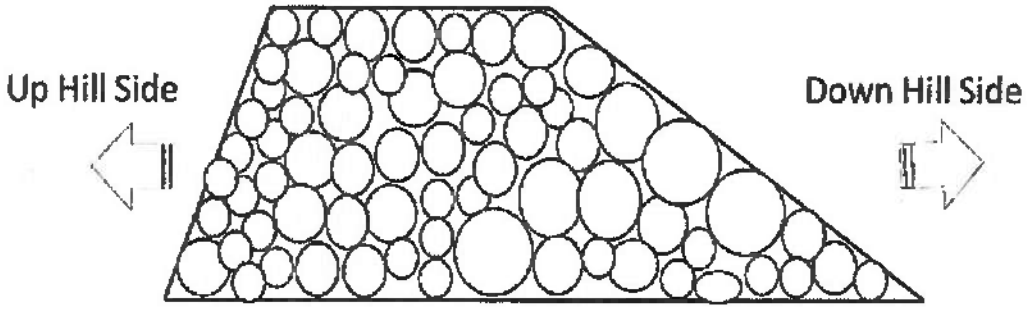
Following loose boulder check dam (LBCD) measures to be taken:

TYPE OF STRUCTURE		LBCD			
LOCATION	Village-Kundaroda	Village- Gamlei	Village-Nawadihi	Village-Nawadihi	Village-Balani basti
NAME OF FOREST	Sidhamath RF	Village Forest	Lakaraghat RF	Lakaraghat RF	karo RF
NAME OF STREAM	Seasonal nala	Seasonal nala	Seasonal nala-1	Seasonal nala-2	Seasonal nala-3
EASTING	326691	327607	325882	325897	326323
NORTHING	2438858	2438234	2437913	2438216	2442383
LENGTH	6	7	6	5	8
TOOP WIDTH	1.5	1.5	1.5	1.5	1.5
BOTTOM WIDTH	5.0	5.0	5.0	5.0	5.0
HEIGHT	1	1	1	1	1.2
VOLUME IN CUM	19.5	22.75	19.5	16.25	31.2
UNITS	6	6	6	6	6
TOTAL QTY IN CUM	117	136.5	117	97.5	187.2
COST /CUM (Rs)	1750	1750	1750	1750	1750
TOTAL COST(Rs)	2,04,750	2,38,875	2,04,750	1,70,625	3,27,600

LOCATION	Village-Pacheri	Village-Roida	Village-Roida	Total
NAME OF FOREST	karo RF	Sidhamath RF	Sidhamath RF	8 nos of Location
NAME OF STREAM	Seasonal nala-1	Seasonal nala-1	Seasonal nala-2	
EASTING	325541	331210	330779	
NORTHING	2441265	2435159	2434802	
LENGTH	8	8	10	
TOOP WIDTH	1.5	1.5	1.5	
BOTTOM WIDTH	5.0	5.0	5.5	
HEIGHT	1.2	1.2	1.2	
VOLUME IN CUM	31.2	31.2	42	
UNITS	6	3	3	42 nos
TOTAL QTY IN CUM	187.2	93.6	126	1062 Cum
COST /CUM (Rs)	1750	1750	1750	
TOTAL COST(Rs)	3,27,600	1,63,800	2,20,500	18,58,500.00

Design of Loose Boulder Check Dam (LBCD)

Cross Section



Model Estimate of LBCD				
Size – 10'X10'X5'	Details of Cost for : 1.00 Cum			
Description	Unit	Quantity	Rate	Amount (Rs)
MATERIALS:				
Requirement of Boulder – Picked up and Broken,½(10'+4')X10'X5' =350 cft or 9.90 Cum, Cost of Boulder @ Rs.215/- per Cum for 9.9 Cum	Cum	9.9	215	2128.5
		Sub Total: (A)		**2128.5**
LABOUR: for construction of 1 Cum				
Stone Packer	Day	0.1	550	55
Mason Second class	Day	0.5	500	250
Man Mulia	Day	1.5	450	675
		Sub Total:		**980**
		For 9.9 cum i.e. 980 X 9.9 (B)		9702
		Total (A+B) for 9.9 cum		**11830.50**
		Cost for 1.00 Cum		1195.00
Cost of transportation with a lead of 5Kms	Cum	1	160	**160.00**
	Total Cost for 1.00 cu.m			**1355**
		Over head Charges @7.5 %		101.63
		Contractor Profit @10 %		135.50
		Royalty		174.50
		Total		1766.63
		Labour Cess 1%		17.67
		G.Total		**1748.96**
		Say		**1750.00**

4. STAGGERED TRENCHES

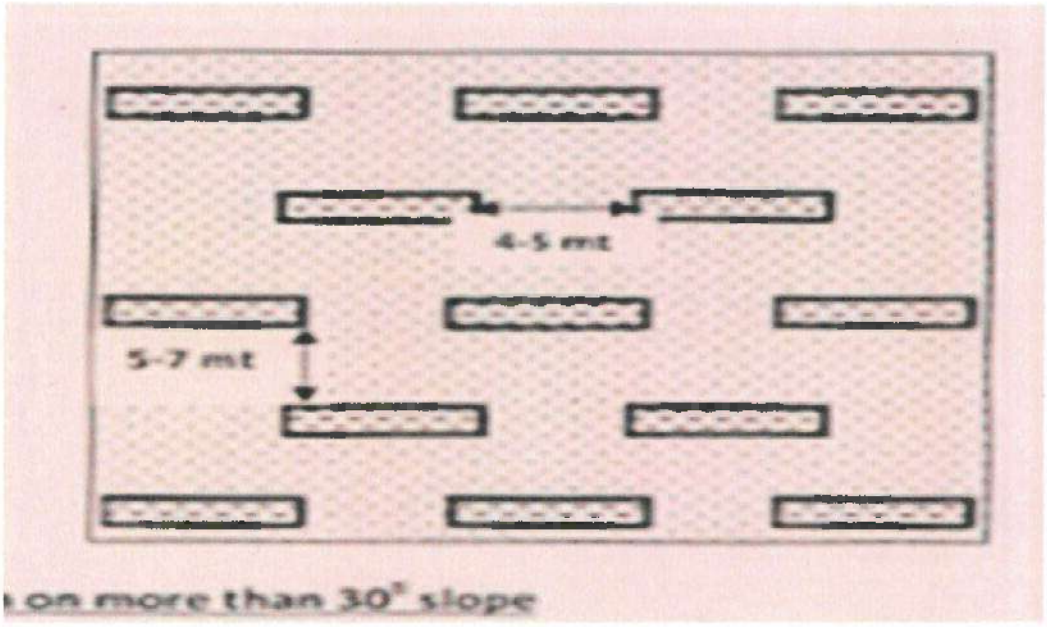
Trench is a trapezoid or cuboid shaped pit dug across the slope along the contour line with specific measurements. The soil taken over from the trenches is deposited on downstream side. Flowing runoff / rain water is collected in these trenches.These trenches reduce speed of rain water and control soil erosion. Trenches are suitable for erosion control in hills / up lands.

STAGGERED TRENCHES: This location in Harmotto & Panduliposi villages in Karo RF is found suitable for constructing staggered trenches which shall help in slowing down the surface runoff water and also prevent soil eroison in a big way..

Following staggered trench measures to be taken:

TYPE OF STRUCTURE	STAGGERED TRENCH
LOCATION	Village-Harmatha & Panduliposhi
NAME OF FOREST	karo RF
NAME OF STREAM	-
EASTING	322934
NORTHING	2438444
LENGTH	400 M
WIDTH	300 M
AREA IN SQM	1,20,000
AREA IN HA	12.00
COST /HA (In Rs)	53,325
TOTAL COST	Rs 6,39,900.00

STAGGERED TRENCHES DESIGN IN LESS THAN 30° SLOPE



ESTIMATE OF STAGGERED TRENCHES	
SPECIFICATION	
Length : 2.5 m	
Width " 0.5 m	
Depth : 0.5 m	
Cross Section : (0.5 m x 0.5 m) = 0.25 sqm	
For Earth Work : (2.5m x 0.25 sqm) = 0.625 cum	
Description	**0 – 30 ° Slope**
Gap between trenches (Horizontal)	4 – 5 metres
Distance between trenches (Vertical)	5 – 7 metres
Cost of Staggered trench per Ha @ 100 PERSON DAYS @ 450/PD	45,000/-(300 pits)
Overhead Charges @7.5 %	3375.00
Contractor Profit @10 %	4500.00
Labour Cess @1%	450.00
G.Total	53,325.00

5. DIGGING WATER BODY (POND) :

The pond will be dug in village Lotapani, below the slope area to harvest the water for making it available for animal use as well as irrigation to nearest agricultural land. It will help in harvesting rain water recharging to nearest well and bore wells

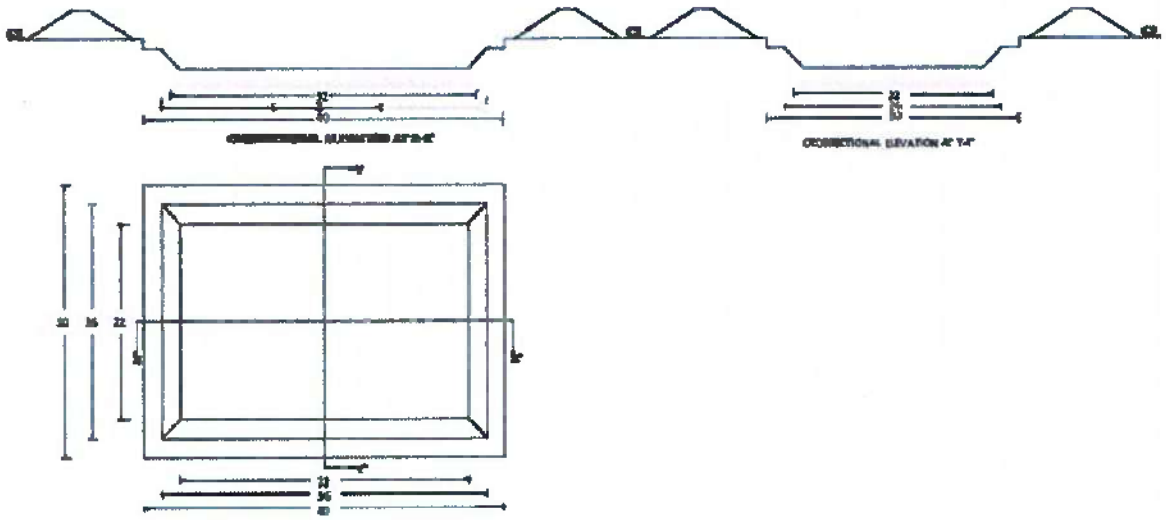
NEW POND/POKHARI SITE: This ara has been found suitable as the water retetion capacity of the soil is good and the inflow will help and is accessible to the villages nearby and year round water is expected to be available.

Measure to be taken for construction of pond:

TYPE OF STRUCTURE	WATER BODY
LOCATION	Village - Lotapani
NAME OF FOREST	Village Forest
NAME OF STREAM	
EASTING	329364
NORTHING	2439162
LENGTH	40
WIDTH	30
HEIGHT	3
VOLUME IN CUM	3600
UNITS	1
TOATAL QTY IN CUM	3600
COST /CUM	375.20
TOTAL COST	13,50,720

DESIGN OF WATER BODY (POND)

WATER BODY (40X30X3)



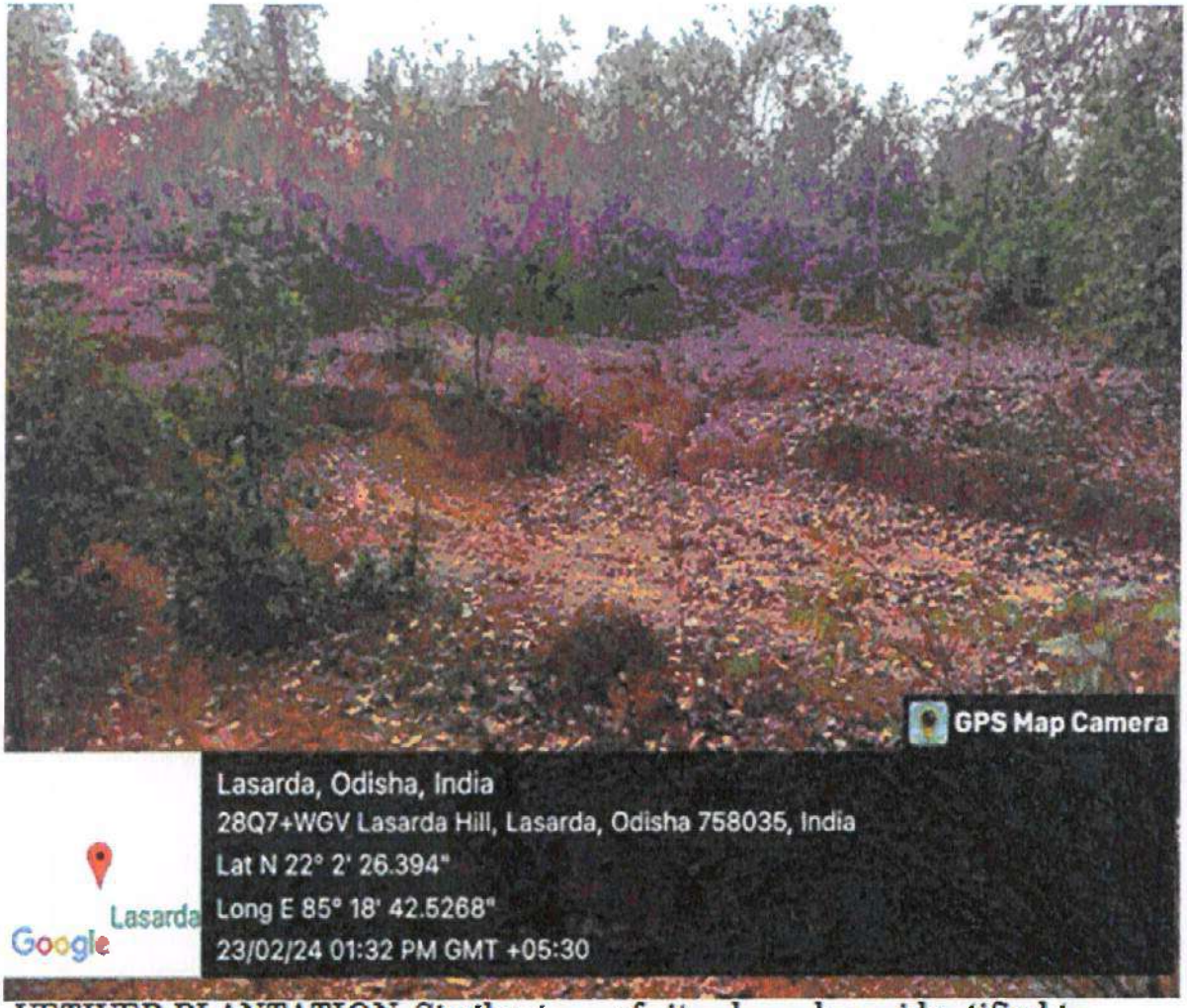
SOIL MOISTURE CONSERVATION PLAN WITHIN LEASE AREA & IN 10 KM BUFFER AREA FROM OUTER PERIMETER OF THE LASERDA PACHERI MANGANESE & IRON BLOCK

WATER BODY (40m X 30m X 3m)					
SL No	Item of Work	Qty	Unit	Rate (in Rs.)	Amount (in Rs.)
1	Earth Work in excavation in stony earth and gravels mixed with stone and boulders not exceeding .014cum in volume within 50met. Initial lead and 1.5met. Initial lift including rough dressing and breaking clods etc. complete.				
	40m x 30m x 3.0m	3600	Cum	363.15	1307340.00
2	Extra lift of 1.5meter or part there of over the initial lift of 1.5meter for earth work in all kinds of embankment and roads works and ordinary earthwork in general.				
		1800	Cum	24.03	43254.00
	Total:-				**13,50,594**
				Say	13,50,600
		Rate for 1cum			375.20

Analysis of Rate for Water Body					
1	Earth Work in excavation in stony earth and gravels mixed with stone and boulders not exceeding .014cum in volume within 50met. Initial lead and 1.5met. Initial lift including rough dressing and breaking clods etc. complete.	M.Mulia	0.34	450	153
		W.Mulia	0.34	450	153
		Total:-			306
		Over head charges 7.5%			22.95
		Contractor Profit 10%			30.6
		Total:-			359.55
		Labour Cess 1%			3.60
		Rate per Cum			**363.15**
2	Extra lift of 1.5meter or part there of over the initial lift of 1.5meter for earth work in all kinds of embankment and roads works and ordinary earthwork in general.	M.Mulia	4.5	450	2025
		Rate for 100 cum			2025
		Over head charges 7.5%			151.88
		Contractor Profit 10%			202.50
		Total:-			2379.38
		Labour Cess 1%			23.79
		Total:-			2403.17
		Rate per Cum			**24.03**

6. VETIVER/GRASS PLANTATION IN HILL SLOPE WASHABLE AREA

The Vetiver System can be an important tool to reduce erosion (by up to 90%), reduce and conserve rainfall runoff (by as much as 70%), improve ground water recharge, remove pollutants from water, reduce the risk of flooding, and improve economic benefits to communities. As researches and field studies in many countries indicate that vetiver grass not only significantly helps reduce landslides and soil erosion but also improves crop yields.



VETIVER PLANTATION: Similar type of sites have been identified to carry our Vetiver Plantation to reduce erosion (by up to 90%), reduce and conserve rainfall runoff (by as much as 70%), improve ground water recharge, remove pollutants from water, reduce the risk of flooding, and improve economic benefits to communities. Village - Nawadih

Measures to be taken for Vetiver Plantation for Cum Cost:

TYPE OF STRUCTURE	GRASS/VETIVER PLANTATION
LOCATION	Village-Nawadihi
NAME OF FOREST	Village Forest
EASTING	325779
NORTHING	2438262
LENGTH	220 m
WIDTH	115 m
AREA IN SQ.M	25,300
AREA IN HA	2.53 ha.
COST /HA	82,600
TOTAL COST	RS. 2,08,978

Estimate for Vetiver Plantation on hill slopes					
Cost norm, Wages - Rs.352/-		Details of Cost for : 1 ha.			
Sl. No	Name of the Work	Man Days	Manpower Cost	Material Rs.	Total Cost in Rs
1st YEAR OPERATION					
1	Site clearance ,alignment and stacking	2	900	-	900
2	Cost of lining materials including transportation.	-		1,500	1,500
3	Staking and Digging of pits.	30	13,500	-	13,500
4	Cost of Clumps 500 per Ha including transportation.	-		25,000	25,000
5	Carriage and planting	30	13,500	-	13,500
6	Soil working and application of fertilisers(twice)	10	4,500	-	4,500
7	Cost of fertiliser	-		1,500	1,500
8	Watch and ward	2	900	-	900
	Total	74	33,300	28,000	61,300
2nd YEAR OPERATION					
9	Causality replacement (20%) including cost of clumps.	10	4,500	-	4,500
10	Weeding and application of fertilisers	20	9,000	-	9,000
11	Cost of fertilisers and insecticides	-	-	1,500	1,500
12	Watch and ward	2	900	-	900
	Total	32	14,400	1,500	15,900

SOIL MOISTURE CONSERVATION PLAN WITHIN LEASE AREA & IN 10 KM BUFFER AREA FROM OUTER PERIMETER OF THE LASERDA PACHERI MANGANESE & IRON BLOCK

ABSTRACT OF TOTAL COSTS FOR THE SCHEMES WITHIN THE LEASE AREA OF LASERDA PACHERI BLOCK AND 10 KMS BUFFER AREA OF THE LEASE AREA

A. COST FOR SOIL & MOISTURE CONSERVATION MEASURES WITHIN MINING LEASE AREA OF LASERDA PACHERI BLOCK.

SL.NO	DESCRIPTION OF WORK	AMOUNT IN RS.
1	GAP PLANTING AND SOIL MOISTURE CONSERVATION ACTIVITIES, INCLUDING BIOLOGICAL & STRUCTURAL MEASURES WITH MAINTENANCE & ESCALATION	1,06,12,600.00
2	MEASURES FOR MINIMISING CHOKING OF STREAMS & SOIL EROSION, INCLUDING BIOLOGICAL & STRUCTURAL MEASURES WITH MAINTENANCE & ESCALATION	4,64,96,715.00
3	PLANTING DROUGHT HARDY SPLANT SPECIES, INCLUDING BIOLOGICAL & STRUCTURAL MEASURES WITH MAINTENANCE & ESCALATION	3,42,160.00
4	SAFETY ZONE FENCING, PROTECTION AND REGENERATION TO ENSURE DENSE CANOPY INCLUDING BIOLOGICAL & STRUCTURAL MEASURES WITH MAINTENANCE & ESCALATION	2,87,71,000.00
5	DESILTING ACTIVITIES IN PONDS WATER BODIES IN 5KM RADIUS OF LASERDA PACHERI BLOCK & ITS MAINTENANCE	1,28,10,180.00
6	TOP SOIL MANAGEMENT	1,26,36,800.00
	TOTAL	Rs11,16,69,455.00

B. COST FOR SOIL & MOISTURE CONSERVATION MEASURES AROUND 10 KM REDIUS OF THE ML AREA OF LASERDA PACHERI BLOCK

SL.NO	DESCRIPTION OF WORK	AMOUNT IN RS.
1	CCD	13,49,663.00
2	WLBCD	39,55,006.00
3	LBCD	18,58,500.00
4	STAGGERED TRENCHES	6,39,900.00
5	WATER BODIES	13,50,720.00
6	VETIVER PLANTATION	2,08,978.00
	TOTAL	Rs 93,62,767.00

GRAND TOTAL (A+B) = 12,10,32,222.00

(Rupees Twelve Crore Ten Lakh Thirty Two Thousand Two Hundred Twenty Two Only)

Techinically Approved

Regional Chief Conservator of Forests
Rourkela Circle

Divisional Forest Officer
Keonjhar Division

Forest Range Officer
Barbil

APPROPRIATE MITIGATIVE MEASURES TO MINIMIZE SOIL EROSION AND CHOKING OF STREAMS

LASERDA PACHERI MANGANESE & IRON BLOCK

THRIVENI EARTH MOVERS PRIVATE LTD

APPROPRIATE MITIGATIVE MEASURES TO MINIMIZE SOIL EROSION AND CHOKING OF STREAMS

1. INTRODUCTION

Government of Odisha issued the Letter of Intent (LoI) vide letter No – IV (MISC) SM-06/2017848/SM, Bhubaneswar dated 27.01.2017 under Rule 18(1) of Mineral Auction Rules 2015 for grant of Composite License (CL) in favor of M/s Thriveni Earthmovers Pvt. Ltd (TEMPL). After complying with the stipulated conditions of LoI, Govt. of Odisha declared M/s Thriveni Earth Movers Pvt. Ltd as the Successful Bidder and Granted the Composite License over 256.304 ha for Manganese vide No.IV (B)SM-100/2007-433/SM, dated 19.01.2019 and the prospecting license deed was executed on 24.01.2019 for 2 years. During the prospecting new minerals (i.e. iron ore) was discovered and it was intimated to Govt. under Rule 11(2) of Minerals (Other than Atomic and Hydro Carbons energy Minerals) Concession Rules, 2016. On due completion of exploration, Mining Lease application over 131.889 ha was submitted and Government of Odisha has awarded the Letter of Intent for grant of mining lease vide No. 7731-IV(B)SM-100/2017/SM dated 21.09.2021 in favour of M/s Thriveni Earthmovers Pvt. Ltd. for Manganese & Iron ore over an area of 131.889 ha situated in Dhanrjayapur-40, Kanrda -38 & Laserda village under Barbil Tehsil of Keonjhar District, Odisha. Subsequently after conduct of DGPS survey by ORSAC, the area now comes to 131.800 ha which has been intimated by Director of Mines vide no. MXIII (b) 80/2015/8031/DM/dated 22.10.2021.

On an application of forest diversion proposal over 94.351 ha of forest land including 4.261 ha of safety zone, the Ministry of Environment & forests, Govt. of India have granted Stage–I approval vide their letter No.8-02/2023-FC, dt. 21.12.2023 subject to fulfillment of certain conditions.

As per condition No. 14 (a) of the Stage-I approval, the User Agency has to ***prepare a plan containing appropriate mitigative measures to minimize soil erosion and choking of streams***. In compliance with this condition, a comprehensive scheme is prepared for implementation of the entire mining lease area over 131.800 ha.

There is no perennial nala within the ML area, 2 nos of dry nala is flowing inside the lease area in Pacheri Block. The length of the dry nala inside the lease area is about 520 m. There is a chance of chocking of Nala during the course of mining.

2. LOCATION OF THE ML AREA

The allotted ML area is bounded by latitude 22°04'11.44231" to 22°03"25.92856"N and longitude 85°19'15.99748" to 85° 17' 53.81761"E of Survey of India Topo-sheet No. F45H8.

3. TOPOGRAPHY

The area exhibits a rugged topography and is dissected by first, second and third order streams. Karo River flowing from south to north serves as the main drainage channel of the area. The influence of lithology on the evolution of topography is well exemplified. The topography in and around Lasarda-Pacheri block represents the gentle slope towards Karo Rever i.e west side of Laserda Block and east side of Pacheri Block.

4. SOIL TYPE

The lateritised surface is covered by a thin veneer of soil with thickness varying from 0.5 m to 4.00 m. The soil is yellowish brown to reddish brown to grey colour. Due to extensive mining activity and deforestation soil has been eroded along the slopes and only preserved in the areas with vegetation cover. The soil/ alluvium is mostly silty and clayey with pebbles and cobbles of chert, jasper, BHJ and iron ore (hematite).

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5. CLIMATE

The tropical climate zone with summer stretching from March to May recording up to 45°C during peak days. Monsoonal rain sets in June and continues up to September. Annual rainfall averages to 1500mm. The winter is restricted to November, December & January with temperature dropping down to minimum of approximately 4°C.

6. DRAINAGE

The area exhibits a rugged topography and is dissected by first, second and third order streams. Karo River flowing from south to north serves as the main drainage channel of the area.

7. EXISTING VEGETATION

There is natural vegetation on the area of dry deciduous species like Sal, Kurum, Kangara, Asan, Dhaura, Kendu, Jamu, Mango etc. with canopy density of below 0.4. In general, various edaphic and climatic factors have also contributed to the development of different types of forests such as Khesra, Reserve forest land.

8. FACTORS RESPONSIBLE FOR SOIL EROSION AND CHOKING OF STREAMS

The mining activities, sub grade dumps and overburden dumps are the major factors impacting adversely to 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, sub grade dumps 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 erosion capacity due to steep gradient and transportation of rock fragments with high velocity of the stream and deposition of same 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. To meet the requirement of condition No. 14 (a) of the Stage – I approval of GoI, MoEF&CC.
2. Prevention of erosion of loose materials from OB dump & erosion of top soil in non- working area which will be chance to chocking the natural streams as well as the effect in agriculture.
3. Prevention of obstruction of natural water sources.
4. Proper Management of overburden materials so as to prevent siltation in the streams
5. Prevention of overflow of eroded soils from the mining areas to the cultivable lands, natural streams and inhabitations.
6. Prevention of overflow of eroded soils from the mining areas to the cultivable lands, natural streams and inhabitations.

Ena. Engr.

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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 of the 3 nos of Over Burden (O.B) dumping sites as per the **approved Mining Plan** . 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 lower reaches such as in the drain & critical points around O.B. dumps. As per the current practice, check dams are constructed across the contour 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. There are no seasonal streams inside the granted M.L boundary. However during monsoon heavy runoff is carries with silts and sediments as well as to reduce the flow velocity of water flown from overburden dump, mining pits, stock piles, haul roads as well as areas clear of vegetation. Masonry check dam is proposed which has been demarcated at suitable location.

2. Periodic Sediment / silt removal / De-silting jobs will be undertaken in those proposed check dam points as well as from garland drains and subsequently plantation will be carried out on these de-silted materials.

3. Along with the above sedimentation control measures erosion from O.B. dump slope areas will be controlled by providing loose boulder structure, retaining wall, garland drain, settling tanks etc. The main purpose of the works is to control soil erosion from OB dump and minerals stock piles etc. and prevent chocking of natural stream flow.

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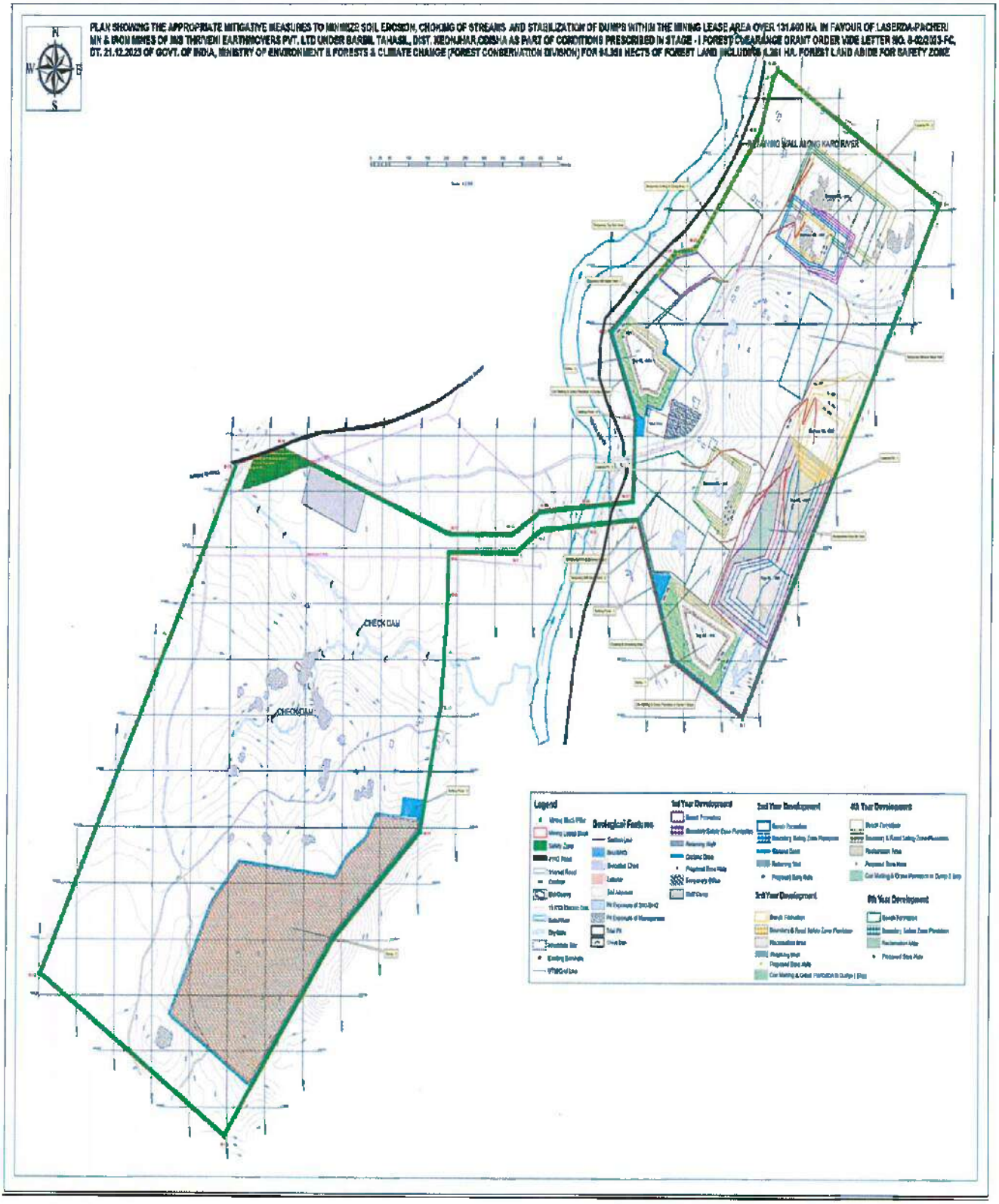
Map showing the location of both biological and structural works within the ML area of Lasarda-Pacheri Mn & Iron ore Block.



Thriveni Earthmovers Pvt. Ltd.

11. MEASURES PROPOSED

A. Biological Measures

a) Plantation

Soil erosion and sediment control in areas covered with forests are very minimum. However it is proposed to undertake block plantation @1000 seedlings per Ha. inside the safety zone area along the lease boundary and PWD road over an area of 6.114 ha. and Vetiver Plantation & Agave Plantation is proposed in 3 nos of proposed dump located central-east & south part of Laserda block and central-east part of Pacheri Block.

Location wise proposed plantation will be as follows:

1	7.5 mtrs SZ area along the lease boundary	**Block Plantation**	5.548 ha (Forest 3.858 ha. + NF. 1.69 ha)	**5548 trees**
2	50 mtrs SZ area along the PWD road	**Block Plantation**	0.566 ha (Forest 0.403 ha + NF. 0.163)	**566 trees**

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

Sl. No.	Local Name	Scientific Name
1	Ainla	*Emblica officinalis*
2	Karanja	Pongamia Pinnata.
3	Asan	*Terminalia elliptica*
4	Kurum	*Adina cordifolia*
5	Simarouba	*Simarouba glauca*
6	Neem	*Azadirachta indica*
7	Bamboo	*Dendrocalamus strictus*
8	Chakunda	*Senna siamea*
9	Sisoo	*Dalbergia sissoo*

Planting shall be done during July in pre-dug pits of size 45 cm X 45 cm X 45 cm. 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.

b) Vetiver & Agave Plantation

The Vetiver plantation on dump no. 1, 2 & 3 over an area of 18.672 ha will be carried out. Similarly extensive plantation of Agave will also be carried out on the dump slopes for stabilization and moisture conservation. The cost norm of block plantation @ 1000 trees per ha has been provided in **Annexure- 1 & 2.**

The details is as follows : -

Category	Location	Area (in Ha.)
Vetiver Plantation	Dump-1, 2 & 3	18.672

Category	Location	Length (Metre)
Agave Plantation	Toe of the Dump-1	1500 m.

CHOICE OF SPECIES:

The choice of species will be based on the following parameters: (i) Drought hardy and (ii) it should resist the xerophytic nature of the locality i.e. with less of rainfall, less of

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soil fertility and to resist biotic interference. Selection of the plant species shall be based on the inventory of the local forest species like Chakunda (*Cassia siamea*) Kusum *(Schleichera oleosa)*, Bel *(Aegle marmelos)*, Karanja *(Pongamia pinnata)*, Kurum *(Adina cordifolia)*, Amla (*Emblica officinalis*) etc. Some soil binding grasses will be introduced. The species of grass seeds to be broadcasted are given in the following table. 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 leaves with smooth surfaces. All these traits are difficult to get in a single species. Therefore, a combination of species has been taken into consideration as stated above.

Name of Grass Species	Usage	Habitat / Soil
Chrysopogon fulvus	**Fodder**	**Red Soil/black cotton soil**
Eremopogon foveolatus	**Fodder**	**Skeletal soil**
Sporobolus marginatus	**Fodder**	**Sandy soil**
Heteropogon contortus	**Non-Fodder**	**Eroded soil**
Cymbopogon martini	**Non-Fodder**	**Eroded soil**
Cynodon dactylon	**Fodder**	**Wide range soil**

c) 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.

d) 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.

e) 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. 1 man day will be utilized for three months in year & the same man power will be engaged for next five years.

B. <u>Structural Measures</u>

Vegetative means of erosion control are the most feasible and economic measures. However, as the pressure on land is increasing, need is felt to bring even highly eroded land underutilization. In these lands vegetative measures are not adequate to

Authd. Engg.

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keep down the erosion. Some structural measures are required to be taken before vegetative measures are adopted. Structural measures, therefore, serve as supplementary to vegetative measures. The objective behind building mechanical structures is to reduce the degree and length of the slope, reducing run-off and consequently, reducing soil erosion.

a) Construction of Loose Boulder Structure:

The User Agency has planned to construct 20 nos. of loose boulder structure across the proposed garland drain. These loose boulder structure across the proposed garland drain at various locations will help in stabilization of silt & sediment as well as prevention of soil erosion & enrichment of vegetation & greenery development & the location is as follows: -

Loose boulder structures across Proposed garland drain of 2 mtr span

Category	Location	Quantity in (Nos.)	Span (Mtr)
Loose boulder structures	Down gradient side of proposed dump No. 1, 2 & 3	15	Each 2mtrs
	Along the down contour	05	Each 2mtrs
		20	

The cost norm and Design of Loose boulder Structure has been provided in **Annexure-3.**

b) Construction of Garland drain:

A shallow trench (2.0 m wide x 1 m deep) over 1500 rmt for draining surface water before it release to the vacant land or natural water course. Details of proposed Garland drain to be constructed around Dump no.1, 2 & 3 summarized as follows:-

Item	Location	Length in mtr	GPS reading
Garland drain	Bottom of proposed dump No. 1	550 x 2 x 1	2440881.49N, 326005.89E To 2440721.94N, 326319.12E
	Bottom of proposed dump No. 2	230 x 2 x 1	2441352.00 N, 324988.75E To 2441137.99N, 325971.17E
	Bottom of proposed dump No. 3	720 x 2 x 1	2439940.15N, 324959.01E To 2440415.49N, 325407.35E

The cost norm & Design of garland drain has been provided in **Annexure-4.**

c) Terracing of OB Dump Slope

It is proposed to construct berm & terraces all three OB dumps during lease period. Considering the volume of OB materials & the area earmarked for dumping. 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 angle of repose to be around 28°. The terracing will be done through the internal resources by deploying the operating mining equipment. The cost norm of Terrace development has been provided in **Annexure-5.**

d)Masonry Check Dams

During mining 10 Nos of Check dam will be constructed outer line of mining area which will be inside the lease area to reduce the flow velocity of runoff & settle the

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silts/sediments flow from up slope/higher elevation. Obtaining the catchment area from the topo sheet, the peak discharge is calculated & then assuming the depth of flow, the span of check dam is being determined. The proper designs of length, top width, bottom width, apron etc. are done with the help of the technical expert. The structure is to be checked against overturning & sliding etc. Proper abutment at both sides is ensured in design with earth filling so that excess run off would pass through only check dams without any breach elsewhere.
The cost norm and design structure of Check Dam has been provided in **Annexure-6.**

Further the existing Check dam and Check wire will be regularly maintained for that annually maintenance expenditure charge will be lump sum **one lakh** per Check dam and Check wire.

(e) Retaining Walls/Toe Walls around OB Dumps

A retaining wall over **1500 rmt** is a structure designed and constructed to resist the lateral pressure of soil when there is a designed change in ground elevation that exceeds the angle of repose of the soil.
The proposed Retaining walls will be constructed around all 3 dumps of 1500 mtrs and 1500 mtrs along the Karo River. The details of retaining wall of proposed dump to be constructed are summarized in the following table

Item	Location	Length in mtr	GPS reading
Retaining wall	Bottom of proposed dump No. 1	550 x 2 x 1	2440881.49N, 326005.89E To 2440721.94N, 326319.12E
	Bottom of proposed dump No. 2	230 x 2 x 1	2441352.00 N, 324988.75E To 2441137.99N, 325971.17E
	Bottom of proposed dump No. 2	720 x 2 x 1	2439940.15N, 324959.01E To 2440415.49N, 325407.35E
	Along the Karo River (Outside of Mining Lease area)	1000 x 2 x 1	2441073.96N, 325893.62E To 2441821.99N, 326250.37E
	Along the Karo River (Outside of Mining Lease area)	500 x 2 x 1	2440462.54N, 325723.68E To 2440938.46N, 325822.72E

The cost norm and design structure of retaining wall has been provided in **Annexure-7.**

f) Construction of Settling tank: -
Three nos. of settling tank will be constructed at lower level of each dump slope of 20 cum to stabilise rainwater properly. The cost norm and design and design structure of Settling tank has been provided in **Annexure-8.**

Dwt. Director

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g) De-siltation

The de-silting works of the settling tank will be taken up at regular intervals to prevent sedimentation and choking of streams. This de-silting of settling tank will provide space and base to hold the sediment laden runoff, thereby allowing settling and clear water to flow down. This de-silting work will be preferably undertaken once in a year before & after monsoon. The implementation of the plans will be site specific in nature depending upon the severity of the sedimentation and choking of stream.

12. 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. Budgetary provision of 15% of the total project cost has been earmarked on this score.

13. EXECUTING AGENCY

The works in the present Scheme shall be executed by the User Agency having specialized departments headed by qualified persons with outsource man and machinery. To facilitate this, the user agency shall establish its 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 in coordination with the Forest Department. The entire work will be completed within a period of 3 years after execution of mines. Maintenance work will be continued regularly.

14. REQUIREMENT OF FUNDS

The total cost of the implementation of mitigative measures to minimize soil erosion and choking of streams will be Rs. **4,84,48,700/-** (Rupees **four crore eighty-four lakh forty-eight thousand seven hundred**) only for implementation of the above mitigation measures, the above expenditure will be made over the next ten years period. Therefore, budget provision of will be kept by the user agency for implementation of the above mitigation measures over a period of next ten years after execution of mines. This budget will be subject to increase in amount considering the increase in materials and labour charges. The tentative annual expenditure planned for the next ten years for the implementation of mitigative measures is given in the following table:-

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TOTAL COST OF THE PROJECT

Sl.No.	Description of the Work	Fund Required (in Rs.)
1.	**Biological Measures**	
A	Block Plantation (1000 no./ha.) over 6.114 ha. of Safety Zone @ Rs. 2,71,716/-	The financial forecast has already been provided in the scheme Safety Zone Fencing, Protection and Regeneration imposed in Condition No.15 (a). So no extra budgetary provision has been suggested
B	Cost for Vetiver Plantation over 18.672 ha @ Rs.1,05,900/- per Ha. **(Enclosed as Annexure-1)**	19,77,364.80
C	Cost of agave plantation on the toe of Dump 1500m (1.5 km) @ Rs.11,96,500/- per Km . **(Enclosed as Annexure-2)**	17,94,750.00
	Sub-Total:	**37,72,114.80**
2.	**Structural Measures**	
A	20 no. of Loose Boulder Structure **2mt @ Rs. 25900/-per no. (Enclosed as Annexure-3)**	5,18,000.00
B	Construction of Garland drain toe of OB dump over a length of **1500 m. @ Rs. 341/- per running meter.(Enclosed as Annexure-4)**	5,11,500.00
C	Terracing of OB dump over area of 18.672 hect. Or 186720 SqM @ **Rs. 134/- per Sq.M.(Enclosed as Annexure-5)**	2,50,20,480.00
D	Construction of 10 **no. of check dam@ Rs.2,35,180/-, (Enclosed as Annexure-6)**	23,51,800.00
E	Construction of **retaining wall over a length of 1500 m. @Rs.2313/-.(Enclosed as Annexure-7)**	34,69,500.00
F	Construction of **retaining wall over a length of 1500 m. along the Karo River**	Budgetary provision has been taken in SSWLMP
G	Construction of 3 no. of Settling Tank of 20 CuM Capacity @645per CuM.**(Enclosed as Annexure-8)**	12,900.00
	Sub-Total:	**3,18,84,180.00**
3.	Distillation work for Garland drain settling pond & check dam twice in a year (On LS)	1,00,000.00
4.	Maintenances of Retaining wall and Check dam & Check wire (On LS)	10,00,000.00
	Sub-Total:	**11,00,000.00**
	Total:	**3,67,56,294.80**
Inspection, monitoring and evaluation @ 15% of the total Project cost		55,13,444.22
	Total:	**4,22,69,739.02**
	Price escalation @ 10%	4226973.90
	GRAND TOTAL	**4,64,96,712.92 OR 4,64,96,715.00**
(Rupees four crore sixty-four lakh ninety-six thousand seven hundred fifteen) only		

Techinically Approved

Regional Chief Conservator of Forests
Rourkela Circle

Forest Range Officer
Barbil

Divisional Forest Officer
Keonjhar Division

Annexure – 1

Estimate for Vetiveria Plantation (Bena) on the OB dump slopes.

Cost norm, Wages - Rs.450/-

Sl. No	Name of the Work	Man Days	Manpower Cost	Material Rs.	Total Cost in Rs
1st YEAR OPERATION					
1	Site clearance, alignment and stacking	2	900	0	900
2	Cost of lining materials including transportation.	0	0	1,500	1,500
3	Staking and digging of pits.	20	9,000	0	9,000
4	Cost of Clumps 500 per Ha including transportation.	0	0	15,000	15,000
5	Carriage and planting	30	13,500	0	13,500
6	Soil working and application of fertilisers(twice)	10	4,500	0	4,500
7	Cost of fertiliser	0	0	1,500	1,500
8	Watch and ward	2	900	0	900
	Total	**64**	**28,800**	**18,000**	**46,800**
2nd YEAR OPERATION					
9	Causality replacement (20%) including cost of clumps.	10	4,500	0	4,500
10	Weeding and application of fertilisers	20	9,000	0	9,000
11	Cost of fertilisers and insecticides	0	0	1,500	1,500
12	Watch and ward	2	900	0	900
	Total	**32**	**14,400**	**1,500**	**15,900**
3rd YEAR OPERATION					
13	Weeding, soil working and application of fertilisers.	10	4,500	0	4,500
14	Plant protection measures including watch and ward.	2	900	0	900
	Total	**12**	**5,400**	**0**	**5,400**
4TH YEAR TO 10TH YEAR		**84**	**37,800**	**0**	**37,800**
	Grand Total	**192**	**86,400**	**19,500**	**105,900**

ABSTRACT

Year of operation	Cost norm per Ha
1st year	46800.00
2nd year	15900.00
3rd year	5400.00
4th to 10th year	37800.00
Total	**105900.00**

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Annexure – 2

COST NORM FOR AGAVE PLANTATION (FOR 5 ROWS & 40 MTRS.)

Wage Rate : 450.00

Sl. No	Name of the Work	Man-Day	Man Power Cost	Material	Total
FIRST YEAR OPERATION					
1	Site clearance alignment and stacking	2	900	-	900
2	Cost of lime materials including transportation	-		660	660
3	Digging pits and application of lime	6	2700	-	2700
4	Cost of 200 Ac. (sucker) including transportation	-		3320	3320
5	Carriage and planting	2	900	-	900
6	Soil working and application of fertilizers (twice) and lime	8	3600	-	3600
7	Cost of fertilizer	-		740	740
8	Contingency	-		740	740
	Total:-	**18**	**8100**	**5460**	**13560**
SECOND YEAR OPERATION					
1	Causality replacement (20%) including cost of suckers and pitting	2	900	660	1500
2	Weeding and application of fertilizer and lime	6	2700	-	2700
3	Cost of fertilizer insecticides & lime	-		500	500
	Total:-	**8**	**3600**	**1160**	**4700**
THIRD YEAR OPERATION					
1	Weeding, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**
FOUR YEAR OPERATION					
1	Weeding, cleaning, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**
FIVE YEAR OPERATION					
1	Weeding, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**

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SIX YEAR OPERATION					
1	Weeding, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**
SEVEN YEAR OPERATION					
1	Weeding, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**
EIGHT YEAR OPERATION					
1	Weeding, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**
NINE YEAR OPERATION					
1	Weeding, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**
TEN YEAR OPERATION					
1	Weeding, soil working and application of fertilizers	6	2700	-	2700
2	Cost of fertilizer and insecticides	-		500	500
3	Plant protection measures including material cost	-		500	500
	Total:-	**6**	**2700**	**1000**	**3700**
				Grand Total : -	**47860**

Cost norm for agave fencing with five rows per km for 10 Year 47860/40 X 1000
=Rs.11,96,500/-

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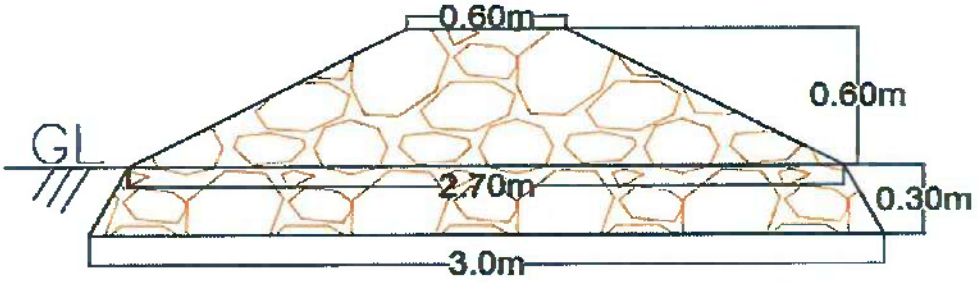
Annexure –3

Design of Losse Boulder Structures (LBS)



Cross Sectional View of LBS

Detail Estimate of Loose Boulder Structure (L.B.S.)

Span of 2 Mtr. Size

Sl. No.	Item of activity	Cost per unit (Rs.)	Total unit(No/ Cum)	Total cost (in Rs.)
1.	Levelling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD.	450	1	450.00
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.	197.10	3.63	715.47
	Base with apron- 1 x 3.70 x 3.00 x 0.30 = **3.33**			
	Wing wall- 4 x 0.50 x 0.50 x 0.30 = **0.30**			
	@ **Rs.19710.00 per 100 cum.**			
3.	**Rough stone dry packing**	2859.35	8.65	24733.38
	up to GL			
	Base with apron- 1 x 3.70 x 3.00 x 0.30 =**3.33**			
	Wing wall- 4 x 0.50 x 0.50 x 0.30 = **0.30**			
	Above GL			
	Super structure 1 x 2.00 x (2.70 + 0.60)/2 x 0.60 =**1.980**			
	Wing wall- 4 x 0.50 x 0.50 x 0.50 =**0.50**			
	Side wall-			
i.	2 x (0.50 + 1.10)/2 x 0.9 x 0.5 =**0.72**			
ii.	2 x (0.5 + 1.10)/2x 1.2 x 0.5 = **0.96**			
iii.	2 x 0.6 x 0.6 x 0.5 =**0.36**			
iv.	2 x 1.0 x 0.5 x 0.5 =**0.50**			
	@ **Rs.2859.35 per cum**			
	G. Total per Loose Boulder Structure of span of 2 Mtrs			**25898.85 or Rs.25900/-**

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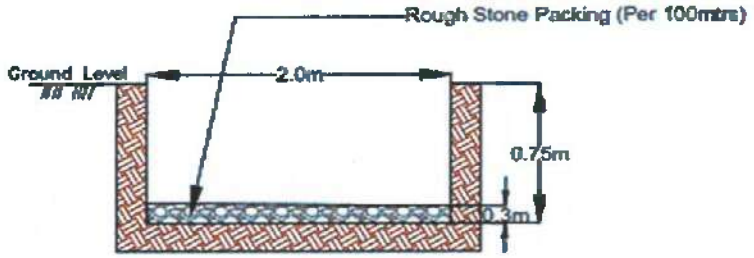
ANNEXURE: 4

Design of Garland Drain



Cross Sectional View of Garland Drain

Detail Estimate of construction of Garland Drain

Sl No	Description of Items	No	Length	Width	Height	Qty	Unit	Rate	Amount
1	Cleaning of Jungles & bushes	1.0	200.00	7.00		1400.00	Sqm	4.00	5600.00
2	Earth work in hard soil in embankment roads within 50 mtr initial lead &1.50 mtr initial lift including rough dressing &breaking clods to Maximum 5.00c.m. to 7.00 c.m. &laying layers not exceeding 0.30 mtr depth as per specification approved by department along with proper compaction with H.R.R Excavation	1	**200.00**	**2.00**	0.75	**300.00**	**Cum**	**197.1**	59130.00
3	Rough Stone Dry Packing with local boulder only labour charges (Local boulder will be Supplied by the Company through contractual manner)	**2**	**3.00**	**2.00**	**0.30**	**3.60**	**Cum**	**919.47**	3310.09
									68040.09
		Rate per two Hundred meter Length				**Total**			**Say Rs. 68040/-**

Rate/Running metre length – Rs. 340.20 or Rs.341/-

Contd Engg.

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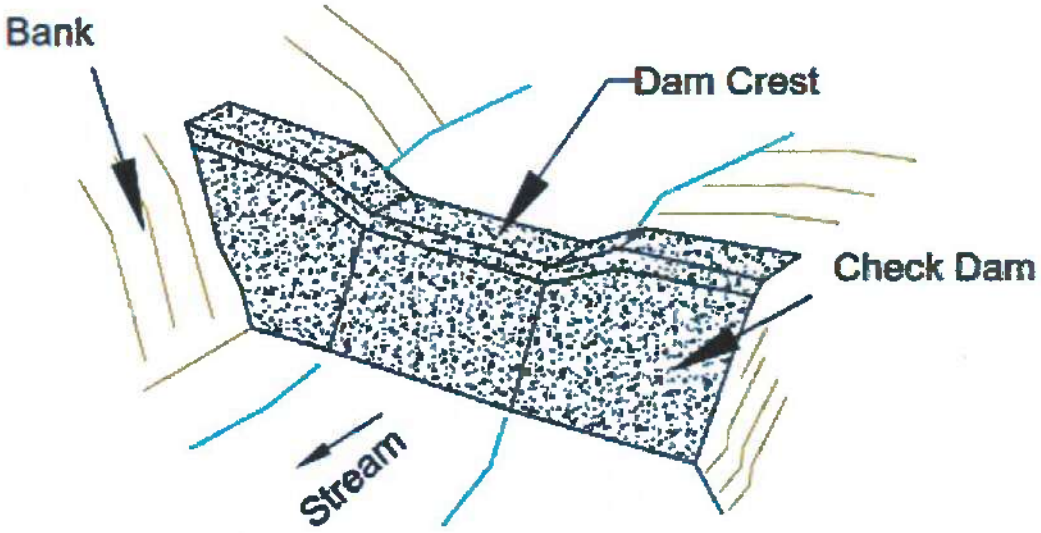
Annexure -5

ENGAGEMENT OF HEMM (HEAVY EARTH MOVING MACHINERIES) ON THE OB DUMP SLOPE FOR TERRACING

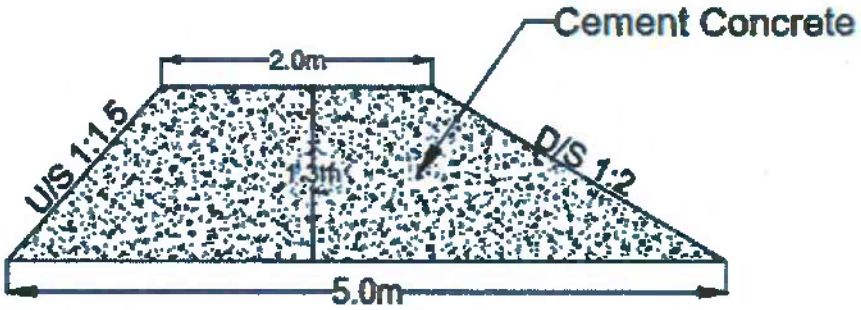
Location – Over Burden Dump –work efficiency per hour – 18 SqM on the dump.
Width & height of the terrace – 5 m. & 5 m.
Rate for engagement of HEM machine per SqM – Rs. 2400/hr.
i.e. Rs. 2400/18
= **Rs. 133.33/-, say Rs. 134/-**

Annexure –6

Design of Check Dam



Side View of Check Dam



Cross Sectional View of Check Dam

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Detail Estimate of Concrete Structure of Check Dam

1 No	Description of Items	No	Length	Width	Height	Qty	Rate	Amount in Rs
1	2	3	4	5	6	7	8	9
1	Earth working in hard soil embankment roads with in 50 mtr initial lead &1.50 mtr initial lift including rough dressing &breaking clods to Maximum 5.00c.m. to 7.00 c.m. &laying layers not exceeding 0.30 mtr depth as per specification approved by department along with proper compaction with H.R.R Excavation							
	Base	1	5.00	5.50	0.50	13.75		
	Wing Wall	4	2.00	0.50	0.50	2.00		
	Appron	2	3.00	5.00	0.20	6.00		
	Cut of wall	2	5.00	0.45	0.50	2.25		
						24.00	197.10	4730.40
2	Plain cement concrete (1:4:8)							
	Base	1	4.00	5.50	0.075	1.65		
	Wing Wall	4	2.00	0.50	0.08	0.30		
	Appron	2	3.00	5.00	0.08	2.25		
	Cut of wall	2	4.00	0.45	0.08	0.27		
						4.47	4600.00	20562.00
3	Cement concrete (1:2:4)							
	Below Ground Level							
	Base	1	4.00	5.50	0.40	8.80		
	Wing Wall	4	2.00	0.50	0.40	1.60		
	Appron	2	3.00	5.00	0.10	3.00		
	Cut of wall	2	4.00	0.45	0.50	1.80		
						15.20		
	Above Ground Level							
	Base	1	4.00	(2.00+ 5.00)/ 2	1.00	14.00		
	Wing Wall	4	2.00	0.40	1.00	3.20		
					Total	17.20		
				Grand Total		32.40	6478.00	209887.2
	Rate per one No Check Dam. Length=4.00 mtr Ht=1.30 mtr Slope U/S=1:1.5 D/S=1:2					Total		2,35,179.60 Say **Rs. 235180/-**
	(Rupees two lakh thirty five thousand one hundred and eight) only.							

Smt. B...

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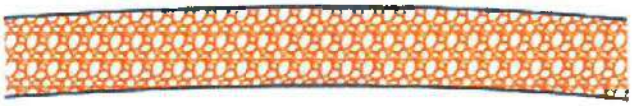
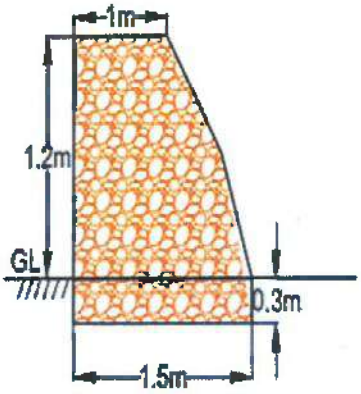
Annexure – 7

Design of RETAIING WALL



PLAN VIEW OF RETAINING WALL



CROSS SECTION VIEW OF RETAINING WALL

Detail Estimate of Retaining wall of loose local Boulder with cement-Sand Patching over the surface of Boulder wall

Sl. No.	Description of Items	No	Length	Width	Height	Qty	Unit	Rate	Amount in Rs
1	2	3	4	5	6	7	8	9	10
For one K.M. Length									
1	Cleaning of Jungles & bushes	1	1000	1.5		1500	Sq m	4.00	6000.00
2	Earth work in hard soil in embankment roads with in 50 mtr initial lead &1.50 mtr initial lift including rough dressing &breaking clods to Maximum 5.00c.m. to 7.00 c.m. & laying layers not exceeding 0.30 mtr depth as per specification approved by department along with proper compaction with H.R.R Excavation	1	1000	1.5	0.3	450	Cu m	197.1	88,695.00
3	Rough Stone Dry Packing with local boulder only labour charges (Local boulder will be Supplied by our Company)	1	1000	(1.00+ 1.50)/2	1.20	1500	Cu m		
		1	1000	1.50	0.30	450	Cu m		
		Total				1950		919.47	1792966.50

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							Cu m		
4	Irregular cement sand patches on the both side of the wall with 2" thick cement sand mortar (1:6) on top	1	1000	1.00		1000	Sq m		
		2	1000	1.20		2400	Sq m		
						3400	Sq m	125.00	425000.00
		Rate per one K.M. Length				Total			23,12,661.5 Say **Rs. 23,12,665/-**

Cost of Running Meter Length Rs. 2313/-

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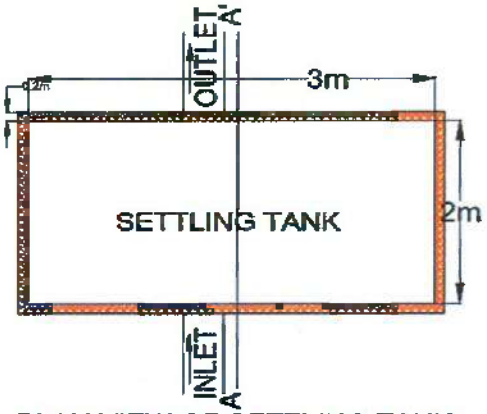
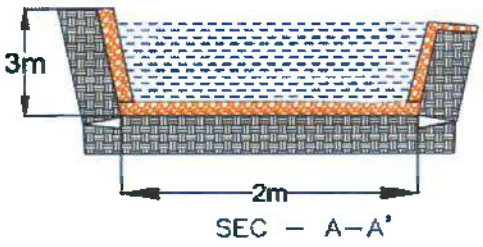
Annexure – 8

Design of SETTLING TANK



PLAN VIEW OF SETTLING TANK



CROSS SECTIONAL VIEW OF SETTLING TANK

ESTIMATE FOR PER RMT CONSTRUCTION OF SETTLING TANK
(Length: 3m., width: 2.0m. height: 1m.)

Sl No	Description of Items	No	Length	Width	Height	Qty	Unit	Rate	Amount
1	Earth work in hard soil in embankment roads with in 50 mtr initial lead &1.50 mtr initial lift including rough dressing &breaking clods to Maximum 5.00c.m. to 7.00 c.m. & laying layers not exceeding 0.30 mtr depth as per specification approved by department along with proper compaction with H.R.R Excavation	1	3.00	2.00	1.0	6.00	Cum	197.1	1182.60
2	Rough Stone Dry Packing with local boulder only labour charges (Local boulder will be Supplied by our Company)	1	3.00	4.00	0.20	2.40	Cum	919.47	2206.73
3	Transportation charges for 5.00 K.M. lead by truck load from quarry to work site with all cost of , labour, T. & P. etc. all complete in all respect as per specification and direction of	As same as Item No-2				2.40	Cum	200.00	480.00
								Rate per one No Settling tank of 6 Cum	3869.33
								Cost for Per 1 Cum Rs.645/-	**Rs.3870.0**

THRIVEN EARTHMOVERS PVT. LTD.

SCHEME FOR PLANTING OF DROUGHT HARDY PLANT SPECIES ANDSOWING OF SEEDS IN THE APPROPRIATE AREA WITHIN THE MININGLEASE TO ARREST SOIL EROSION.

LASERDA PACHERI MANGANESE & IRON BLOCK

THRIVENI EARTH MOVERS PRIVATE LTD

SCHEME FOR PLANTING OF DROUGHT HARDY PLANT SPECIES AND SOWING OF SEEDS IN THE APPROPRIATE AREA WITHIN THE MINING LEASE TO ARREST SOIL EROSION.

1. INTRODUCTION

Government of Odisha issued the Letter of Intent (LoI) vide letter No – IV (MISC) SM-06/2017848/SM, Bhubaneswar dated 27.01.2017 under Rule 18(1) of Mineral Auction Rules 2015 for grant of Composite License (CL) in favor of M/s Thriveni Earthmovers Pvt. Ltd (TEMPL). After complying with the stipulated conditions of LoI, Govt. of Odisha declared M/s Thriveni Earth Movers Pvt. Ltd as the Successful Bidder and Granted the Composite License over 256.304 ha for Manganese vide No.IV (B)SM-100/2007-433/SM, dated 19.01.2019 and the prospecting license deed was executed on 24.01.2019 for 2 years. During the prospecting new minerals (i.e. iron ore) was discovered and it was intimated to Govt. under Rule 11(2) of Minerals (Other than Atomic and Hydro Carbons energy Minerals) Concession Rules, 2016. On due completion of exploration, Mining Lease application over 131.889 ha was submitted and Government of Odisha has awarded the Letter of Intent for grant of mining lease vide No. 7731-IV(B)SM-100/2017/SM dated 21.09.2021 in favour of M/s Thriveni Earthmovers Pvt. Ltd. for Manganese & Iron ore over an area of 131.889 ha situated in Dhanrjayapur-40, Kanrda -38 & Laserda village under Barbil Tehsil of Keonjhar District, Odisha. Subsequently after conduct of DGPS survey by ORSAC, the area now comes to 131.800 ha which has been intimated by Director of Mines vide no. MXIII (b) 80/2015/8031/DM/dated 22.10.2021.

On an application of forest diversion proposal over 94.351 ha of forest lnd including 4.261 ha of safety zone, the Ministry of Environment & forests, Govt. of India have granted Stage–I approval vide their letter No.8-02/2023-FC, dt. 21.12.2023 subject to fulfillment of certain conditions.

As per condition No. 14 (b) of the Stage-I approval, the User Agency has to ***prepare a plan for planting of adequate drought hardy plant species and sowing of seeds in the appropriate area within the mining lease to arrest soil erosion.***

In compliance with this condition, a comprehensive scheme is prepared for implementation of the same over 131.800 ha granted mining lease.

2. 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 greenery development immediately. The concurrent back filling & rehabilitation through plantation in exhausted pits & other structure of permanent in nature such as roads, OB dumps is used for progressive plantation including the intermediate unutilized degraded barren lands.

3. FUTURE PLAN DURING THE LEASE PERIOD:

Planning for plantation is done keeping the following objective:

- To meet the stipulation condition no. 14 (b) of the stage-I approval granted vide letter No.8-02/2023-FC, dt. 21.12.2023 by MOEF & CC, GOI, New Delhi, i.e. **"planting of adequate drought hardy plant species & sowing of seeds within mining lease to arrest soil erosion".**
- Plantation of draught hardy species as mentioned below to attract different species which helps maintaining the bio-diversity of the area.
- Selection of species with good canopy cover to prevent spread of dust.
- Selection of species to reduce soil erosion.
- Selection of species to provide shade during summer.

Attempts will be made for plantation of drought resistant plant such as Neem(*Azadirachtaindica*), Karanja (*Pongamiapinnata*), Asan (*Terminaliaalata*), Kurum (*Schleicheraoleosa*), Amla (*Emblicaofficinalis*), Mundi (*Mitragynaparviflora*), and grass like *Vetiveriazizanioides*, will be selected for degraded lands, which will improve the environment. Plantation of Murga (*Agave sisilana*) will be undertaken along toe of dump 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.

Considering the site specific edaphic condition, indigenous species (as detailed below) are proposed to be planted. It is also proposed to plant draught hardy species such as Agave Plants in degraded and poor soils along the slope & toe of OB dump-1, 2 & 3 for controlling soil erosion.

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

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Sl. No.	Local Name	Scientific Name
1	Ainla	*Emblica officinalis*
2	Karanja	Pongamia Pinnata
3	Asan	*Terminalia elliptica*
4	Kurum	*Adina cordifolia*
5	Neem	*Azadirachta indica*
6	Mundi	*Mitragyna parvifolia*

Planting shall be done during July in pre-dug pits of size 45 cm X 45 cm X 45 cm. A basal dose of N.P.K fertilizer 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.

Similarly extensive plantation of Agave on the dump slopes for stabilization and moisture conservation will also be taken up.

The detail regarding proposed of Afforestation program & broadcasting of grass seeds in Laserda-Pacheri Manganese & Iron Mines is given below:

Location wise proposed plantation is as follows:

Category	Location	Area (in Ha.)
Vetiver Plantation	Dump-1, 2 & 3	18.672
Drought hardy plant species	Along the lease boundary and PWD road	6.114

Category	Location	Length (Metre)
Agave Plantation	Toe of the Dump-1, 2 & 3	1500 m.

CHOICE OF SPECIES:

The choice of species will be based on the following parameters: (i) Drought hardy and (ii) it should resist the xerophytic nature of the locality i.e. with less of rainfall, less of soil fertility and to resist biotic interference. Selection of the plant species shall be based on the inventory of the local forest species like Chakunda (*Cassia siamea*) Kusum *(Schleicheraoleosa)*,Bel *(Aeglemarmelos)*, Karanja *(Pongamiapinnata)*, Kurum *(Adinacordifolia)*, Amla (*Emblicaofficinalis*) etc. Some soil binding grasses will be introduced. The species of grass seeds to be broadcasted are given in the following table. 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 leaves with smooth surfaces. All these traits are difficult to get in a single species. Therefore, a combination of species has been taken into consideration as stated above.

Name of Grass Species	Usage	Habitat / Soil
Chrysopogon fulvus	Fodder	Red Soil/black cotton soil
Eremopogon foveolatus	Fodder	Skeletal soil
Sporobolus marginatus	Fodder	Sandy soil
Heteropogon contortus	Non-Fodder	Eroded soil
Cymbopogon martini	Non-Fodder	Eroded soil
Cynodon dactylon	Fodder	Wide range soil

4. **METHODOLOGY:**

It is proposed to **plant the Seedlings** in pits(45 cm x45 cm x 45 cm) at about 2.5 m intervals along contours. 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

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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.
In order to stabilize the loose soil of the dump **Vetiver** will also be planted intermittently.
At the toe of the dump **Agave** will be planted to prevent flow of soil to the garland drain.
Plantation over 6.114 Ha. will be started in next monsoon of after execution of Mine in safety zone area along the ML boundary and PWD road. Plantation of Vetiver will commence as soon as the first terrace is ready in dump-1, 2 & 3, which is not started yet, will be started after getting Stage II clearance and mine operation. The terraces on the slope will be sloped inward. 45 cm X 45 cmx45 cm pits will be dug at 2.5 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.

PRE-PLANTING AND PLANTING OPERATION

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

i) Raising of nursery:
A nursery with a capacity of 4000 saplings per year is proposed to fulfill the minimum requirement of saplings. Further saplings shall be procured from the state Forest nursery if required. Nursery work is started one year before the year of plantation so that second year seedling will be available for plantation. Bel, Neem, Bija, Mahul, Amla stumps and bamboo rhizomes shall be collected. For other species, seeds shall be collected from 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 is followed for raising such polythene bag nursery. The cost norm has been provided in **Annexure-1**.

ii) Alignment and pitting
Alignment and pitting will be taken up in the month of March-April, Pits of size 45cm X 45cm X 45cm will be dug maintaining a spacing of 2.5mtr X 2.5mtr.

iii) Actual Planting
The seedling will be planted in the dugout pits of size 45cm X 45cm X 45cm 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. Causality 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 carry out two weeding, 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.

vii) 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. In this case provision of fund will be made immediately after planting the seedlings. Watering will be done at a regular interval. 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 Gabion. 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.

5. 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. Budgetary provision of 15% of the total project cost has been earmarked on this score.

6. EXECUTING AGENCY

The works in the present Scheme shall be executed by the User Agency having specialized departments headed by qualified persons with outsourced man and machinery. To facilitate this, the user agency shall establish its 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 in coordination with the Forest Department. The entire work will be completed within a period of 3 years after execution of mines. Maintenance work will be continued regularly.

7. REQUIREMENT OF FUNDS

The total cost of the implementation will be **Rs.3,42,160.00 (Rupees Three lakhs Forty-two thousand one hundred sixty) only**. The above expenditure will be made over every year for the entire period of mines. Therefore, budget provision will be kept by the user agency for implementation of the above plantation program for the entire period of mines. This budget will be subject to increase in amount considering the increase in materials and labour charges.

Engrs.

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MAP SHOWING THE BIOLOGICAL MEASURES OF OVER BURDEN DUMPS TO ARREST SOIL EROSION

THRIVENI EARTHMOVERS PVT. LTD.

TOTAL COST OF THE PROJECT

Sl. No	Description of the work	Funds Required (In Rs)
1	Cost of Nursery @ 4000 No. seedling @ Rs.67.62/- per sampling. The cost norm has been provided in **Annexure-1.**	2,70,480.00
2	Block Plantation of Safety Zone (1000 no./ha.) over 6.114 ha. @ Rs. 2,71,716/-	The financial forecast has already been provided in the scheme imposed in Condition No.15 (a,b &c). So no extra budgetary provision has been suggested.
3	Cost for Vetiver Plantation over 18.672 ha @ Rs.1,05,900/- per Ha.	The financial forecast has already been provided in the scheme imposed in Condition No.14 (a). So no extra budgetary provision has been suggested.
4	Cost of agave plantation on the toe of Dump 1500m (1.5 km) @ Rs.11,98,500/- per Km	
	Sub-Total	**2,70,480.00**
	Inspection, monitoring and evaluation @ 15% of the total Project cost	40,572.00
	Sub-Total	**3,11,052.00**
	Price escalation @ 10%	31,105.20
	Total	**Rs. 3,42,157.20 Or Rs.3,42,160.00**

(Rupees Three lakhs Forty-two thousand one hundred sixty) only.

Techinically Approved

Regional Chief Conservator of Forests
Rourkela Circle

Forest Range Officer
Barbil

Divisional Forest Officer
Keonjhar Division

ANNEXURE-1

Nursery Cost Norm for raising of 1000 (18 months) seedlings

		Wage rate @	450	Per Manday				
Sl. No	Items of work	Preferable Period of Execution	Unit	Unit Cost	No./Qty.	Labour Cost	Material Cost	Total Cost
	A. 1st Financial Year (Seedlings Cost for 3 Months)							
1	Cost for Polythene (9" X 5"X 200G) 300 nos./Kg. =3.33Kg@RS.208/- per Kg. (including GST)	Nov-Dec	Kg	208	3.33	0	693	693
2	Procurement of raw & crude Polypot Mixture (Soil,Sand, & CDM in ratio (2:1:1)							
	(i) Soil	Nov-Dec	Cft	10	22	0	220	220
	(ii) Sand	Nov-Dec	Cft	16	11	0	176	176
	(iii) CDM/ Vermi compost/ Bio-Fertilizers etc.	Nov-Dec	Cft	25	11	0	275	275
	(iv) Insectide/ Bio-Pesticide	Nov-Dec	Kg	150	2	0	300	300
3	Preparation of Soil Mixture includes Pulverisation, Straining & mixture the ingredients in proper ratio. (2:1:1)	Nov-Dec	MD	450	2	900	0	900
4	Filling of polythene bags & Setting in the bed	Nov-Dec	MD	450	3	1350	0	1350
5	Collection of Seed, Grading & Treatment	Dec	MD	450	2	900	0	900
6	Preparation of germination bed & dibbling of seed.	Jan	MD	450	0.5	225	0	225
7	Pricking out the Seedlings from germination beds & transplanting in the poly bags and providing sheds.	Jan	MD	450	2	900	500	1400
8	Watering (Jan to March)	Jan-Mar	MD	450	9	4050	0	4050
9	Maintenance of Nursery including fencing	Jan-Mar	MD	450	4	1800	500	2300
10	Contingencies (Water can, Buckets, Nursery shed, Electricty charges/ Diseal charges/ Maintenance of pump set/ Maintenance of Nursery, etc.)			0	0	0	461	461
	TOTAL				**22.5 nos of manday**	**10125**	**3125**	**13250**
	B. 2nd Financial Year (Shifting of Seedlings to larrger Polythene bag to avoid root coilling & better growth) Apil-March							
1	Watering for 3 months (April to June)	April-June	MD	550	9	4050	0	4050
2	Cost of Insecticides/ Bio-pesticide	May-June	Kg/ Lt	0	0	0	400	400
3	Application of insecticides/ Bio-Pesticide	May-June	MD	550	1	450	0	450
4	Cost of poly pot (12"x 10" x 300 gauge) 60 nos. =17 Kg & Rs.208 per Kg. (including GST)	May-June	Kg	208	17	0	3536	3536
	TOTAL				**10**	**4500**	**3936**	**8436**
	C. 2nd Financial Year (Seedlings Cost for 12 Months)							
	Wagerate @		450	per Manday				
Sl. No	Items of work	Preferable Period of Execution	Unit	Unit Cost	No./Qty.	Labour Cost	Material Cost	Total Cost
5	Procurement of raw & crude Polypot Mixture (Soil,Sand, & CDM in ratio (2:1:1)	Apr/May						
	(i) Soil	Apr/May	Cft	10	100	0	1000	1000
	(ii) Sand	Apr/May	Cft	16	50	0	800	800
	(iii) CDM/ Vermi compost/ Bio-Fertilizers etc.	Apr/May	Cft	25	50	0	1250	1250
	(iv) Insectide/ Bio-Pesticide	Apr/May	Kg	150	3	0	450	450
6	Preparation of Potting mixture including pulverization and straining	Oct-Nov	MD	450	6	2700	0	2700
7	Filling of Polythene bags including reporting and setting	Oct-Nov	MD	450	35	15750	0	15750
8	Watering	Oct-March	MD	450	19	8550	0	8550
9	Sorting, Weeding, grading and resetting over one year period	April-March	MD	450	15	6750	0	6750

10	Contingencies (Water can, Buckets, Nursery shed, Electricty charges/ Diseal charges/ Maintenance of pump set/ Maintenance of Nursery, etc.)						400	400
	TOTAL				**75**	**33750**	**3900**	**37650**
	D. 3rd Financial Year (Maintenance up to planting) April-June							
1	Watering for 3 months (April to June)	April-June	MD	450	12	5400	0	6600
2	Weeding, Shifting and grading	April-June	MD	450	4	1800	0	2200
3	Cost of Insecticides/ Bio-Pesticide					0	400	400
4	Application of insecticides/ Bio-Pesticide		MD	450	1	450	0	550
5	Contingencies						230	230
	TOTAL				17	7650	**630**	**8280**

ABSTRACT

	Item of work	Labour Cost	Material Cost	Total Cost
A	1st Financial Year (Seedlings Cost for 3 Month)	10125	3125	13250
B	2nd Financial Year (12 Month)	4500	3936	8436
C	2ND Financial Year (Seedlings Cost for 12 Month)	33750	3900	37650
D	3rd Financial Year (3 Months)	7650	630	8280
	TOTAL	56025	11591	67616

Cost per 18 months old Seedlings= 67616/1000 = Rs 67.62/-

SCHEME FOR CONSTRUCTION OF CHECK DAMS, RETENTION/TOE WALLS TO ARREST SLIDING DOWN OF THE EXCAVATED MATERIAL ALONG THE CONTOUR

LASERDA PACHERI MANGANESE & IRON BLOCK

THRIVENI EARTH MOVERS PRIVATE LTD

SCHEME FOR CONSTRUCTION OF CHECK DAMS, RETENTION/TOE WALLS TO ARREST SLIDING DOWN OF THE EXCAVATED MATERIAL ALONG THE CONTOUR

1. INTRODUCTION.

Government of Odisha issued the Letter of Intent (LoI) vide letter No – IV (MISC) SM-06/2017848/SM, Bhubaneswar dated 27.01.2017 under Rule 18(1) of Mineral Auction Rules 2015 for grant of Composite License (CL) in favor of M/s Thriveni Earthmovers Pvt. Ltd (TEMPL). After complying with the stipulated conditions of LoI, Govt. of Odisha declared M/s Thriveni Earth Movers Pvt. Ltd as the Successful Bidder and Granted the Composite License over 256.304 ha for Manganese vide No.IV (B)SM-100/2007-433/SM, dated 19.01.2019 and the prospecting license deed was executed on 24.01.2019 for 2 years. During the prospecting new minerals (i.e. iron ore) was discovered and it was intimated to Govt. under Rule 11(2) of Minerals (Other than Atomic and Hydro Carbons energy Minerals) Concession Rules, 2016. On due completion of exploration, Mining Lease application over 131.889 ha was submitted and Government of Odisha has awarded the Letter of Intent for grant of mining lease vide No. 7731-IV(B)SM-100/2017/SM dated 21.09.2021 in favour of M/s Thriveni Earthmovers Pvt. Ltd. for Manganese & Iron ore over an area of 131.889 ha situated in Dhanrjayapur-40, Kanrda -38 & Laserda village under Barbil Tehsil of Keonjhar District, Odisha. Subsequently after conduct of DGPS survey by ORSAC, the area now comes to 131.800 ha which has been intimated by Director of Mines vide no. MXIII (b) 80/2015/8031/DM/dated 22.10.2021.

On an application of forest diversion proposal over 94.351 ha of forest lnd including 4.261 ha of safety zone, the Ministry of Environment & forests, Govt. of India have granted Stage–I approval vide their letter No.8-02/2023-FC, dt. 21.12.2023 subject to fulfillment of certain conditions.

As per condition No. 14 (c) of the Stage-I approval, the User Agency has to ***prepare a plan for construction of Check dams, retention/ toe walls to arrest sliding down of the excavated material along the contour***. In compliance with this condition, a comprehensive scheme is prepared for implementation of the entire mining lease area over 131.800 ha.

There is no perennial water stream in and around the lease area. Therefore,the question of chocking of streams does not arise. There are some cultivated lands in North – east and Eastern sideof the lease area which are 100 m. away from the working area across the nala, therefore there may be very little chance to affect the agriculture land.

2. LOCATION

The allotted ML area is bounded by latitude 22°04'11.44231" to 22°03'25.92856"N and longitude 85°19'15.99748" to 85° 17' 53.81761"E of Survey of India Topo-sheet No. F45H8.

3. TOPOGRAPHY

The area exhibits a rugged topography and is dissected by first, second and third order streams. Karo River flowing from south to north serves as the main drainage channel of the area. The influence of lithology on the evolution of topography is well exemplified. The topography in and around Lasarda-Pacheri block represents the gentle slope towards Karo Rever i.e west side of Laserda Block and east side of Pacheri Block.

4. OBJECTIVE OF THE SCHEME:

a) To meet the requirement of condition No. 14(c) of the Stage –I approval granted by MoEF&CC, Govt. of India.
b) To prevent erosion of sediment due to surface runoff.
c) To prevent obstruction to natural water source.
d) To prevent flow of eroded soil from the mining areas to the cultivable lands, natural streams and habitations.

Enm. Engr.
THRIVENI EARTHMOVERS

5. **PROPOSED METHODOLOGY:**

(a) Propose to construct retaining wall and garland drain around the waste dumping site besides repairing of the existing ones, if required.

(b) Propose to develop the dump by terracing method. The height of all the terraces will vary from 10 to 12 m and width being 6 to 12 m.

(c) Provision of inwardly sloping, soil bund at the edge of each terraced channel at the toe end of terrace will be made following the rain water management.

(d) Propose to construct catch drain on the deep slope.

(e) Propose to develop garland drains with settling tanks at the toe of the dumps to allow the settling of silt.

All the dead slopes of the dumps are proposed to be covered with plantation. The existing plantation of the dump slope will be maintained properly and casualty replacement will also be ensured.

The Salient features of the drainage management plan 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 the 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 purified water will be discharged to natural water source.
3. Grass and bushes in drains hold back solid particles during the flow of water in the drain. Small stone barriers constructed across the drain will check water flow and arrest solids.
4. Stone pitching will be made at suitable places to regulate the slope and hence water flow will not be obstructed.
5. Settling pits and drains shall be cleaned intermittently, especially during monsoon.
6. Outer side of the cross-check dams on the drainage lines shall be re-inforced with green cover of non-browsable species like Jatrophacurcas, Vitexnegundo, Gliricidia maculate.

6. **MEASURES PROPOSED TO BE ADOPTED**

Vegetative means of erosion control are the most feasible and economic measures. However, as the pressure on land is increasing, need is felt to bring even highly eroded land underutilization. In these lands vegetative measures are not adequate to keep down the erosion. Some structural measures are required to be taken before vegetative measures are adopted. Structural measures, therefore, serve as supplementary to vegetative measures. The objective behind building mechanical structures is to reduce the degree and length of the slope, reducing run-off and consequently, reducing soil erosion.

a) Construction of Loose Boulder Structure:

The User Agency has planned to construct 20 nos. of loose boulder structure across the proposed garland drain. These loose boulder structure across the proposed garland drain at various locations will help in stabilization of silt & sediment as well as prevention of soil erosion & enrichment of vegetation & greenery development & the location is as follows:-

Loose boulder structures across Proposed garland drain of 2 mtr span

Category	Location	Quantity in (Nos.)	Span (Mtr)
Loose boulder structures	Down gradient side of proposed dump No. 1, 2 & 3	15	2mtr each
	Along the down contour	5	2 mtr each
		20	

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b) Construction of Garland drain:

A shallow trench (2.0 m wide x 1 m deep) over 1500 rmt for draining surface water before it release to the vacant land or natural water course. Details of proposed Garland drain to be constructed around Dump no.1, 2 & 3 summarized as follows:-

Item	Location	Length in mtr	GPS reading
Garland drain	Bottom of proposed dump No. 1	550 x 2 x 1	2440881.49N, 326005.89E To 2440721.94N, 326319.12E
	Bottom of proposed dump No. 2	230 x 2 x 1	2441352.00 N, 324988.75E To 2441137.99N, 325971.17E
	Bottom of proposed dump No. 2	720 x 2 x 1	2439940.15N, 324959.01E To 2440415.49N, 325407.35E

c) Terracing of OB Dump Slope

It is proposed to construct berm & terraces all three OB dumps during lease period. Considering the volume of OB materials & the area earmarked for dumping. 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 angle of repose to be around 28^0. The terracing will be done through the internal resources by deploying the operating mining equipment.

d) Masonry Check Dams

During the course of mining 10 Nos of Check dam will be constructed outer line of mining area which will be inside the lease area to reduce the flow velocity of runoff & settle the silts/sediments flow from up slope/higher elevation. Obtaining the catchment area from the topo sheet, the peak discharge is being calculated & then assuming the depth of flow, the span of check dam is being determined. The proper designs of length, top width, bottom width, apron etc. are done with the help of the technical expert. The structure is to be checked against overturning & sliding etc. Proper abutment at both sides is ensured in design with earth filling so that excess run off would pass through only check dams without any breach elsewhere.

Further the existing Check dam and Check wire will be regularly maintained for that annually maintenance expenditure charge will be lump sum **one lakh** per Check dam and Check wire.

Authorised Signatory

THRIVENI EARTHMOVERS PVT. LTD.

(e) Retaining Walls/Toe Walls around OB Dumps

A retaining wall over **1500 rmt** is a structure designed and constructed to resist the lateral pressure of soil when there is a designed change in ground elevation that exceeds the angle of repose of the soil.

The proposed Retaining walls will be constructed around all 3 dumps of 1500 mtrs and 1500 mtrs along the Karo river. The details of retaining wall of proposed dump to be constructed are summarized in the following table

Item	Location	Length in mtr	GPS reading
Retaining wall	Bottom of proposed dump No. 1	550 x 2 x 1	2440881.49N, 326005.89E To 2440721.94N, 326319.12E
	Bottom of proposed dump No. 2	230 x 2 x 1	2441352.00 N, 324988.75E To 2441137.99N, 325971.17E
	Bottom of proposed dump No. 2	720 x 2 x 1	2439940.15N, 324959.01E To 2440415.49N, 325407.35E

f) Construction of Settling tank:-

Three nos. of settling tank will be constructed at lower level of the dump slope to stabilise rain water properly.

g) De-siltation

The de-silting works of the settling tank will be taken up at regular intervals to prevent sedimentation and choking of streams. This de-silting of settling tank will provide space and base to hold the sediment laden runoff, thereby allowing settling and clear water to flow down. This de-silting work will be preferably undertaken once in a year before & after monsoon. The implementation of the plans will be site specific in nature depending upon the severity of the sedimentation and choking of stream.

7. 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. Budgetary provision of 15% of the total project cost has been earmarked on this score.

8. EXECUTING AGENCY

The works in the present Scheme shall be executed by the User Agency having specialized departments headed by qualified persons with outsourced man and machinery. To facilitate this, the user agency shall establish its 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 in coordination with the Forest Department. The entire work will be completed within a period of 3 years after execution of mines. Maintenance work will be continued regularly.

Em. Engg.

THRIVENI EARTHMOVERS PVT. LTD. THRIVENI

MAP SHOWING THE STRUCTUAL MEASURES OF OVER BURDEN DUMPS TO ARREST SLIDING DOWN OF THE EXCAVATED MATERIALS.

Exm. Engr.

THRIVENI EARTHMOVERS PVT. LTD.

9. REQUIREMENT OF FUNDS

The financial forecast for construction of Stabilization of over burden Dumps, Retention/ Toe Walls to arrest sliding down of the excavated material along the contour by means of, Construction of Check Dam, Retaining wall, Catch Drain, Settling Tank and Loose Boulder Structure of 4m span has already been provided in the Scheme for mitigative measures to minimize soil erosion and chocking of streams as per condition **No.14 (a) of Stage I approval granted by MoEF&CC in their letter No.** No.8-02/2023-FC, dt. 21.12.2023. **So, in order to avoid repetition of financial forecast no budgetary provision has been furnished here.**

FINANCIAL FORECAST OF THE PROJECT

1.	**Structural Measures**	
A	20 no. of Loose Boulder Structure **2mt @ Rs. 25900/-per no.**	The financial forecast has already been provided in the scheme imposed in Condition No.14 (a). So no extra budgetary provision has been suggested.
B	Construction of Garland drain toe of OB dump over a length of **1500 m. @ Rs. 341/- per running meter.**	
C	Terracing of OB dump over area of 18.672 hect. Or **186720 SqM @ Rs. 134/- per Sq.M.**	
D	Construction of 10 **no. of check dam@ Rs.2,35,180/-,**	
E	Construction of retaining wall over a length of **1500 m. @Rs.2313/-**	
F	Construction of 3 no. of Settling Tank of **20 CuM Capacity @645per CuM**	
	Sub-Total:	
2.	Distillation work for Garland drain , settling pond & check dam twice in a year (On LS)	
3.	Maintenances of Retaining wall and Check dam & Check wire	
	Sub-Total:	
	Total:	
Inspection, monitoring and evaluation @ 15% of the total Project cost		
	Total:	
Price escalation @ 10%		
GRAND TOTAL		

Techinically Approved

Regional Chief Conservator of Forests
Rourkela Circle

Forest Range Officer
Barbil

Divisional Forest Officer
Keonjhar Division

Emm. Engg.

TRIVENI EARTHMOVERS PVT. LTD.

STABILIZING THE OVER BURDEN DUMPS BY APPROPRIATE GRADING/BENCHING SO AS TO ENSURE THAT ANGLES OF REPOSE AT ANY GIVEN PLACE IS LESS THAN 28°

LASERDA PACHERI MANGANESE & IRON BLOCK

THRIVENI EARTH MOVERS PRIVATE LTD

STABILIZING THE OVER BURDEN DUMPS BY APPROPRIATE GRADING/BENCHING SO AS TO ENSURE THAT ANGLES OF REPOSE AT ANY GIVEN PLACE IS LESS THAN 28°

1. INTRODUCTION

Government of Odisha issued the Letter of Intent (LoI) vide letter No – IV (MISC) SM-06/2017848/SM, Bhubaneswar dated 27.01.2017 under Rule 18(1) of Mineral Auction Rules 2015 for grant of Composite License (CL) in favor of M/s Thriveni Earthmovers Pvt. Ltd (TEMPL). After complying with the stipulated conditions of LoI, Govt. of Odisha declared M/s Thriveni Earth Movers Pvt. Ltd as the Successful Bidder and Granted the Composite License over 256.304 ha for Manganese vide No.IV (B)SM-100/2007-433/SM, dated 19.01.2019 and the prospecting license deed was executed on 24.01.2019 for 2 years. During the prospecting new minerals (i.e. iron ore) was discovered and it was intimated to Govt. under Rule 11(2) of Minerals (Other than Atomic and Hydro Carbons energy Minerals) Concession Rules, 2016. On due completion of exploration, Mining Lease application over 131.889 ha was submitted and Government of Odisha has awarded the Letter of Intent for grant of mining lease vide No. 7731-IV(B)SM-100/2017/SM dated 21.09.2021 in favour of M/s Thriveni Earthmovers Pvt. Ltd. for Manganese & Iron ore over an area of 131.889 ha situated in Dhanrjayapur-40, Kanrda -38 & Laserda village under Barbil Tehsil of Keonjhar District, Odisha. Subsequently after conduct of DGPS survey by ORSAC, the area now comes to 131.800 ha which has been intimated by Director of Mines vide no. MXIII (b) 80/2015/8031/DM/dated 22.10.2021.
On an application of forest diversion proposal over 94.351 ha of forest lnd including 4.261 ha of safety zone, the Ministry of Environment & forests, Govt. of India have granted Stage–I approval vide their letter No.8-02/2023-FC, dt. 21.12.2023 subject to fulfilment of certain conditions.

As per condition No. 14 (d) of the Stage-I approval, the User Agency has to ***prepare a scheme to stabilize the Over Burden Dumps by appropriate grading/benching so as to ensure that the angles of repose at any given place is less than 28°.*** In compliance with this condition, a comprehensive scheme is prepared for implementation of the entire mining lease area over 131.800 ha.

There is a proposal of 3 Nos of waste dump from where 2 nos in Laserda block and 1 No in Pacheri block. In total there will be 18.672 ha of land will use for waste dump.

2. LOCATION

The allotted ML area is bounded by latitude 22°04'11.44231" to 22°03'25.92856"N and longitude 85°19'15.99748" to 85° 17' 53.81761"E of Survey of India Topo-sheet No. F45H8.

3. TOPOGRAPHY

The area exhibits a rugged topography and is dissected by first, second and third order streams. Karo River flowing from south to north serves as the main drainage channel of the area. The influence of lithology on the evolution of topography is well exemplified. The topography in and around Lasarda-Pacheri block represents the gentle slope towards Karo Rever i.e west side of Laserda Block and east side of Pacheri Block.

4. SOIL TYPE

The lateritised surface is covered by a thin veneer of soil with thickness varying from 0.5 m to 4.00 m. The soil is yellowish brown to reddish brown to grey colour. Due to extensive mining activity and deforestation soil has been eroded along the slopes and only preserved in the areas with vegetation cover. The soil/ alluvium is mostly silty and clayey with pebbles and cobbles of chert, jasper, BHJ and iron ore (hematite).

5. CLIMATE

The tropical climate zone with summer stretching from March to May recording up to 45oC during peak days. Monsoonal rain sets in June and continues up to September. Annual rainfall averages to 1500mm. The winter is restricted to November, December & January with temperature dropping down to minimum of approximately 4°C.

6. DRAINAGE

The area exhibits a rugged topography and is dissected by first, second and third order streams. Karo River flowing from south to north serves as the main drainage channel of the area.

7. EXISTING VEGETATION

There is natural vegetation on the area of dry deciduous species like Sal, Kurum, Kangara, Asan, Dhaura, Kendu, Jamu, Mango etc. with canopy density of below 0.4. In general, various edaphic and climatic factors have also contributed to the development of different types of forests such as Khesra, Reserve forest land.

8. PHASE WISE MINING ACTIVITY AND MANAGEMENT OF OVER BURDEN DUMP

The lease is confined mining activities for achieving the targeted production quantity. Reclamation and restoration activities could not be undertaken because the ore body persists in depth. It will be our endeavor to extract the ore body at the earliest so that reclamation & rehabilitation can be taken up thereafter immediately.

Waste Generation

During Conceptual period in total 24.497 Million cum waste will be generated, out of which 14.607 Million cum will be back filled in exhausted pits and rest will be dumped in proposed 3 dumps & road maintenance. For that 18.672 ha of land has been earmarked inside the lease area located 2 nos in Laserda block and 1 no in Pacheri block. The maximum height of the dump will be 30 mtrs. in two terraces.

The salient features of OB/waste dump management practices:

1. Retaining wall and garland drain followed with catch drain will be provided around the proposed dumps. Precautionary measures to be adopted during waste disposal are as follows: -

   i) The ultimate dump slope to be maintained around 28^0.
   ii) Terrace should have inward slope with a provision of catch drain.
   iii) The dump edge will be covered with bund. A garland drain will be constructed adjacent to proposed dump, along the contour & different terrace will be connected to the catch drain. The drainage pattern should be such that the runoff will be channelized to the catch drain before releasing to the garland drain outside the periphery of dump. Catch drain preferably to be made up of half concrete with number of cemented stairs to check the heavy flow off of water as well as to reduce gully formation due to constant run off.

9. Objective of the Scheme

The objectives of the proposed plan are as follows:

1. To fulfil the stipulation, i.e., Condition no. 14 (d) of the Stage-I approval, the User Agency has to ***prepare a scheme to stabilize the Over Burden Dumps by appropriate grading/benching so as to ensure that the angles of repose at any given place is less than 28^0.***
2. To adopt proper Management and scheduling of overburden materials so as to minimize external dumping.
3. To provide methodologies and implement the proposed works in time bound manner to prevent slope failures there by providing stable OB dump slopes.
4. To stabilize the over burden dumps by plantation.
5. To prevent overflow of eroded soils from the fines, OB dump areas leading to siltation in the streams / natural streams.

10. MEASURES PROPOSED

A. Biological Measures

a) Plantation

Soil erosion and sediment control in areas covered with forests are very minimum. However it is proposed to undertake block plantation @1000 seedlings per Ha. along the lease boundary and PWD road over an area of 6.114 ha. and Vetiver Plantation & Agave Plantation is proposed in 3 nos of proposed dump located central-east & south part of Laserda block and central-east part of Pacheri Block.

Location wise proposed plantation will be as follows:

1	7.5 mtrs SZ area along the lease boundary	**Block Plantation**	5.548 ha (Forest 3.858 ha. + NF. 1.69 ha)	**5548 trees**
2	50 mtrs SZ area along the PWD road	**Block Plantation**	0.566 ha (Forest 0.403 ha + NF. 0.163)	**566 trees**

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

Sl. No.	Local Name	Scientific Name
1	Amla	Emblica officinalis
2	Karanja	Pongamia Pannata
3	Asan	Terminalia elliptica / arjuna
4	Kurum	Adina cordifolia
5	Simarouba	Simarouba glauca
6	Neem	Azadirachta indica
7	Bamboo	*Dendrocalamus strictus*
8	Chakunda	~~Senna siamea~~ (Samanea Saman)
9	Sisoo	*Dalbergia sissoo*

Planting shall be done during July in pre-dug pits of size 45 cm X 45 cm X 45cm. 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.

b) Vetiver & Agave Plantation

The Vetiver plantation on dump no. 1, 2 & 3 over an area of 18.672 ha will be carried out. Similarly extensive plantation of Agave will also be carried out on the dump slopes for stabilization and moisture conservation.
The details is as follows : -

Category	Location	Area (in Ha.)
Vetiver Plantation	Dump-1, 2 & 3	18.672

Category	Location	Length (Metre)
Agave Plantation	Toe of the Dump-1	1500 m.

CHOICE OF SPECIES:

The choice of species will be based on the following parameters: (i) Drought hardy and (ii) it should resist the xerophytic nature of the locality i.e. with less of rainfall, less of soil fertility and to resist biotic interference. Selection of the plant species shall be based on the inventory of the local forest species likeChakunda (*Cassia siamea*)Kusum(*Schleicheraoleosa*),Bel(*Aeglemarmelos*), Karanja(*Pongamiapinnata*),Kurum(*Adinacordifolia*),Amla (*Emblicaofficinalis*) etc. Some soil binding grasses will be introduced. The species of grass seeds to be broadcasted are given in the following table. 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 leaves with smooth surfaces. All these traits are difficult to get in a single species. Therefore, a combination of species has been taken into consideration as stated above.

Name of Grass Species	Usage	Habitat / Soil
Chrysopogon fulvus	**Fodder**	**Red Soil/black cotton soil**
Eremopogon foveolatus	**Fodder**	**Skeletal soil**
Sporobolus marginatus	**Fodder**	**Sandy soil**

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Heteropogon contortus	**Non-Fodder**	**Eroded soil**
Cymbopogon martini	**Non-Fodder**	**Eroded soil**
Cynodon dactylon	**Fodder**	**Wide range soil**

c) 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.

d) 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.

e) 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. 1 man day will be utilized for three months in year & the same man power will be engaged for next five years.

B. Structural Measures

Vegetative means of erosion control are the most feasible and economic measures. However, as the pressure on land is increasing, need is felt to bring even highly eroded land underutilization. In these lands vegetative measures are not adequate to keep down the erosion. Some structural measures are required to be taken before vegetative measures are adopted. Structural measures, therefore, serve as supplementary to vegetative measures. The objective behind building mechanical structures is to reduce the degree and length of the slope, reducing run-off and consequently, reducing soil erosion.

a) Construction of Loose Boulder Structure:

The User Agency has planned to construct 20 nos. of loose boulder structure across the proposed garland drain. These loose boulder structure across the proposed garland drain at various locations will help in stabilization of silt & sediment as well as prevention of soil erosion & enrichment of vegetation & greenery development & the location is as follows: -

Loose boulder structures across Proposed garland drain of 2 mtr span

Category	Location	Quantity in (Nos.)	Span (Mtr)
Loose boulder structures	Down gradient side of proposed dump No. 1, 2 & 3	15	2mtr each
	Along the down contour	5	2mtr each
		20	

b) Construction of Garland drain:

A shallow trench (2.0 m wide x 1 m deep) over 1500 rmt for draining surface water before it release to the vacant land or natural water course. Details of proposed Garland drain to be constructed around Dump no.1, 2 & 3 summarized as follows:-

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Item	Location	Length in mtr	GPS reading
Garland drain	Bottom of proposed dump No. 1	550 x 2 x 1	2440881.49N, 326005.89E To 2440721.94N, 326319.12E
	Bottom of proposed dump No. 2	230 x 2 x 1	2441352.00 N, 324988.75E To 2441137.99N, 325971.17E
	Bottom of proposed dump No. 2	720 x 2 x 1	2439940.15N, 324959.01E To 2440415.49N, 325407.35E

c) Terracing of OB Dump Slope

It is proposed to construct berm & terraces all three OB dumps during lease period. Considering the volume of OB materials & the area earmarked for dumping. 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 angle of repose to be around 28°. The terracing will be done through the internal resources by deploying the operating mining equipment.

d) Masonry Check Dams

During the course of mining 10 Nos of Check dam will be constructed outer line of mining area which will be inside the lease area to reduce the flow velocity of runoff & settle the silts/sediments flow from up slope/higher elevation. Obtaining the catchment area from the topo sheet, the peak discharge is being calculated & then assuming the depth of flow, the span of check dam is being determined. The proper designs of length, top width, bottom width, apron etc. are done with the help of the technical expert. The structure is to be checked against overturning & sliding etc. Proper abutment at both sides is ensured in design with earth filling so that excess run off would pass through only check dams without any breach elsewhere.

Further the existing Check dam and Check wire will be regularly maintained for that annually maintenance expenditure charge will be lump sum **one lakh** per Check dam and Check wire.

(e) Retaining Walls/Toe Walls around OB Dumps

A retaining wall over **1500 rmt** is a structure designed and constructed to resist the lateral pressure of soil when there is a designed change in ground elevation that exceeds the angle of repose of the soil.

The proposed Retaining walls will be constructed around all 3 dumps of 1500 mtrs. The details of retaining wall of proposed dump to be constructed are summarized in the following table

Item	Location	Length in mtr	GPS reading
Retaining wall	Bottom of proposed dump No. 1	550 x 2 x 1	2440881.49N, 326005.89E To 2440721.94N, 326319.12E
	Bottom of proposed dump No. 2	230 x 2 x 1	2441352.00 N, 324988.75E To 2441137.99N, 325971.17E
	Bottom of proposed dump No. 2	720 x 2 x 1	2439940.15N, 324959.01E To 2440415.49N, 325407.35E

f) Construction of Settling tank:-

Three nos. of settling tank will be constructed at lower level of the dump slope to stabilise rain water properly.

g) De-siltation

The de-silting works of the settling tank will be taken up at regular intervals to prevent sedimentation and choking of streams. This de-silting of settling tank will provide space and base to hold the sediment laden runoff, thereby allowing

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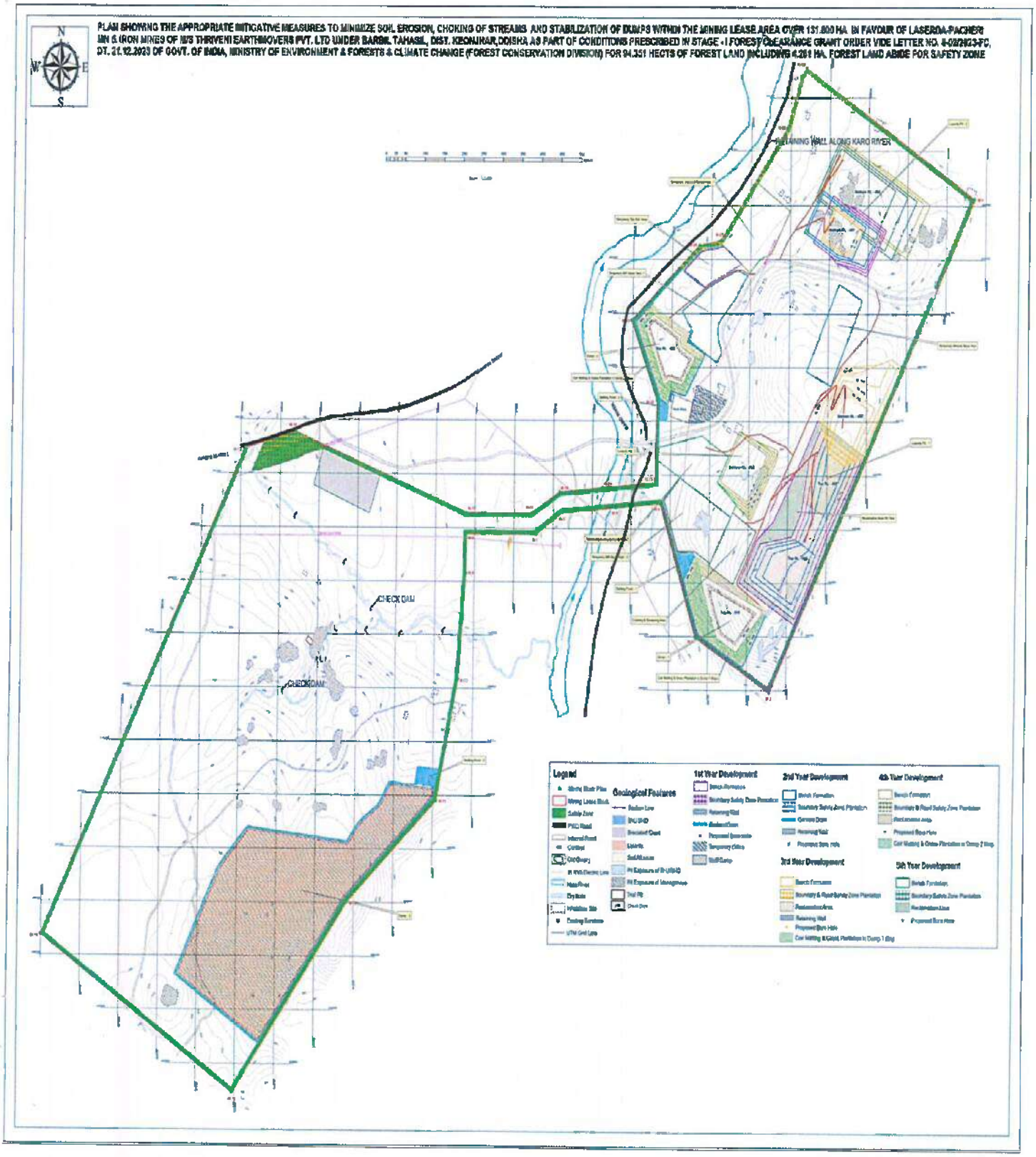
MAP SHOWING THE BIOLOGICAL & STRUCTUAL MEASURES FOR STABLIZING OF OVER BURDEN DUMPS



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settling and clear water to flow down. This de-silting work will be preferably undertaken once in a year before & after monsoon. The implementation of the plans will be site specific in nature depending upon the severity of the sedimentation and choking of stream.

11. 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. Budgetary provision of 15% of the total project cost has been earmarked on this score.

12. EXECUTING AGENCY

The works in the present Scheme shall be executed by the User Agency having specialized departments headed by qualified persons with outsourced man and machinery. To facilitate this, the user agency shall establish its 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 in coordination with the Forest Department.

13. REQUIREMENT OF FUNDS:

The financial forecast for construction of Stabilization of over burden Dumps, Retention/ Toe Walls to arrest sliding down of the excavated material along the contour by means of, Construction of Check Dam, Retaining wall, Catch Drain, Settling Tank and Loose Boulder Structure of 4m span has already been provided in the Scheme for mitigative measures to minimize soil erosion and chocking of streams as per condition **No.14 (a) of Stage I approval granted by MoEF&CC in their letter No.** No.8-02/2023-FC, dt. 21.12.2023. **So, in order to avoid repetition of financial forecast no budgetary provision has been furnished here.**

TOTAL COST OF THE PROJECT

Sl.No.	Description of the Work	Fund Required (in Rs.)
1.	Biological Measures	
A	Block Plantation (1000 no./ha.) over 6.114 ha. of Safety Zone @ Rs. 2,71,716/-	The financial forecast has already been provided in the earlier scheme prepared in compliance with Condition No.14 (a). So no budgetary provision has been suggested.
B	Cost for Vetiver Plantation over 18.672 ha @ Rs.1,05,900/- per Ha.	
C	Cost of agave plantation on the toe of Dump 1500m (1.5 km) @ Rs.11,96,500/- per Km	
	Sub-Total:	
2.	Structural Measures	The financial forecast has already been provided in the earlier scheme prepared in compliance with Condition No.14 (a). So no budgetary provision has been suggested.
A	20 no. of Loose Boulder Structure 2mt @ Rs. 25900/-per no.	
B	Construction of Garland drain toe of OB dump over a length of 1500 m. @ Rs. 341/- per running meter.	
C	Terracing of OB dump over area of 18.672 hect. Or 186720 SqM @ Rs. 134/- per Sq.M.	
D	Construction of 10 no. of check dam@ Rs.2,35,180/-,	
E	Construction of retaining wall over a length of 1500 m. @Rs.2313/-	

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Forest Range Officer
Barbil

F	Construction of 3 no. of Settling Tank of 20 CuM Capacity @645per CuM	
Sub-Total:		
3.	Distillation work for Garland drain settling pond & check dam twice in a year (On LS)	
4.	Maintenances of Retaining wall and existing Check dam & Check wire	
Sub-Total:		
Total:		
Inspection, monitoring and evaluation @ 15% of the total Project cost		
Total:		
Price escalation @ 10%		
GRAND TOTAL		

Forest Range Officer
Barbil

Techinically Approved

Regional Chief Conservator of Forests
Rourkela Circle

Divisional Forest Officer
Keonjhar Division

THRIVENI EARTHMOVERS PVT. LTD.

SAFETY ZONE FENCING, PROTECTION AND REGENERATION TO ENSURE DENSE CANOPY IN ALL ALONG THE INNER BOUNDARY OF THE MINING LEASE AREA

LASERDA PACHERI MANGANESE & IRON BLOCK

THRIVENI EARTH MOVERS PRIVATE LTD

SAFETY ZONE FENCING, PROTECTION AND REGENERATION TO ENSURE DENSE CANOPY IN ALL ALONG THE INNER BOUNDARY OF THE MINING LEASE AREA

1. INTRODUCTION

Government of Odisha issued the Letter of Intent (LoI) vide letter No – IV (MISC) SM-06/2017848/SM, Bhubaneswar dated 27.01.2017 under Rule 18(1) of Mineral Auction Rules 2015 for grant of Composite License (CL) in favor of M/s Thriveni Earthmovers Pvt. Ltd (TEMPL). After complying with the stipulated conditions of LoI, Govt. of Odisha declared M/s Thriveni Earth Movers Pvt. Ltd as the Successful Bidder and Granted the Composite License over 256.304 ha for Manganese vide No.IV (B)SM-100/2007-433/SM, dated 19.01.2019 and the prospecting license deed was executed on 24.01.2019 for 2 years. During the prospecting new minerals (i.e. iron ore) was discovered and it was intimated to Govt. under Rule 11(2) of Minerals (Other than Atomic and Hydro Carbons energy Minerals) Concession Rules, 2016. On due completion of exploration, Mining Lease application over 131.889 ha was submitted and Government of Odisha has awarded the Letter of Intent for grant of mining lease vide No. 7731-IV(B)SM-100/2017/SM dated 21.09.2021 in favour of M/s Thriveni Earthmovers Pvt. Ltd. for Manganese & Iron ore over an area of 131.889 ha situated in Dhanrjayapur-40, Kanrda -38 & Laserda village under Barbil Tehsil of Keonjhar District, Odisha. Subsequently after conduct of DGPS survey by ORSAC, the area now comes to 131.800 ha which has been intimated by Director of Mines vide no. MXIII (b) 80/2015/8031/DM/dated 22.10.2021.

On an application of forest diversion proposal over 94.351 ha of forest lnd including 4.261 ha of safety zone, the Ministry of Environment & forests, Govt. of India have granted Stage–I approval vide their letter No.8-02/2023-FC, dt. 21.12.2023 subject to fulfillment of certain conditions.

As per condition No. 15 (a, b & c) of the Stage-I approval, the User Agency has toprepare a scheme for "*safety zone fencing, protection and regeneration to ensure dense canopy in all along the inner boundary of the mining lease area*". In compliance with this condition, a comprehensive scheme is prepared for implementation of the same.

2. LOCATION OF THE ML AREA

The allotted ML area is bounded by latitude 22º04'11.44231" to 22º03'25.92856"N and longitude 85º19'15.99748" to 85º 17'53.81761"E of Survey of India Topo-sheet No. F45H8.

3. SOIL TYPE

The lateritised surface is covered by a thin veneer of soil with thickness varying from 0.5 m to 4.00 m. The soil is yellowish brown to reddish brown to grey colour. Due to extensive mining activity and deforestation soil has been eroded along the slopes and only preserved in the areas with vegetation cover. The soil/ alluvium are mostly silty and clayey with pebbles and cobbles of chert, jasper, BHJ and iron ore (hematite).

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4. CLIMATE

The tropical climate zone with summer stretching from March to May recording up to 45ºC during peak days. Monsoonal rain sets in June and continues up to September. Annual rainfall averages to 1500mm. The winter is restricted to November, December & January with temperature dropping down to minimum of approximately 4ºC.

Dwt. Engg.

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5. DRAINAGE

The area exhibits a rugged topography and is dissected by first, second and third order streams. Karo River flowing from south to north serves as the main drainage channel of the area.

6. EXISTING VEGETATION

There is natural vegetation on the area of dry deciduous species like Sal, Kurum, Kangara, Asan, Dhaura, Kendu, Jamu, Mango etc. with canopy density of below 0.4. In general, various edaphic and climatic factors have also contributed to the development of different types of forests such as Khesra, Reserve forest land.

7. OBJECTIVE OF THE SCHEME:

The objectives of the proposed scheme are as follows:

1. To meet the requirement of condition No. 15(a, b & c) of the Stage – I approval of GoI, MoEF&CC.
2. To restock and rejuvenate the degraded open forest
3. To ensure Green Belt around Mining Lease.
4. Tending the existing crop for maximum growth and improving the density condition and composition of the crop.

8. MEASURES PROPOSED

A. Biological Measures

a) Plantation

Safety zone fencing, protection and regeneration to ensure dense canopy in all along the inner boundary of the mining lease area it is proposed to undertake block plantation @1000 seedlings per Ha. inside the safety zone area along the lease boundary and PWD road over an area of 6.114 ha.

Location wise proposed plantation will be as follows:

1	7.5 mtrs SZ area along the lease boundary	**Block Plantation**	5.548 ha (Forest 3.858 ha. + NF. 1.69 ha)	**5548 trees**
2	50 mtrs SZ area along the PWD road	**Block Plantation**	0.566 ha (Forest 0.403 ha + NF. 0.163)	**566 trees**

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

Sl. No.	Local Name	Scientific Name
1	Ainla	*Emblica officinalis*
2	Karanja	*Pongamia pinnata*
3	Asan	*Terminalia elliptica*
4	Kurum	*Adina cordifolia*
5	Simarouba	*Simarouba glauca*
6	Neem	*Azadirachta indica*
7	Bamboo	*Dendrocalamus strictus*
8	Chakunda	*Senna siamea*
9	Sisoo	*Dalbergia sissoo*

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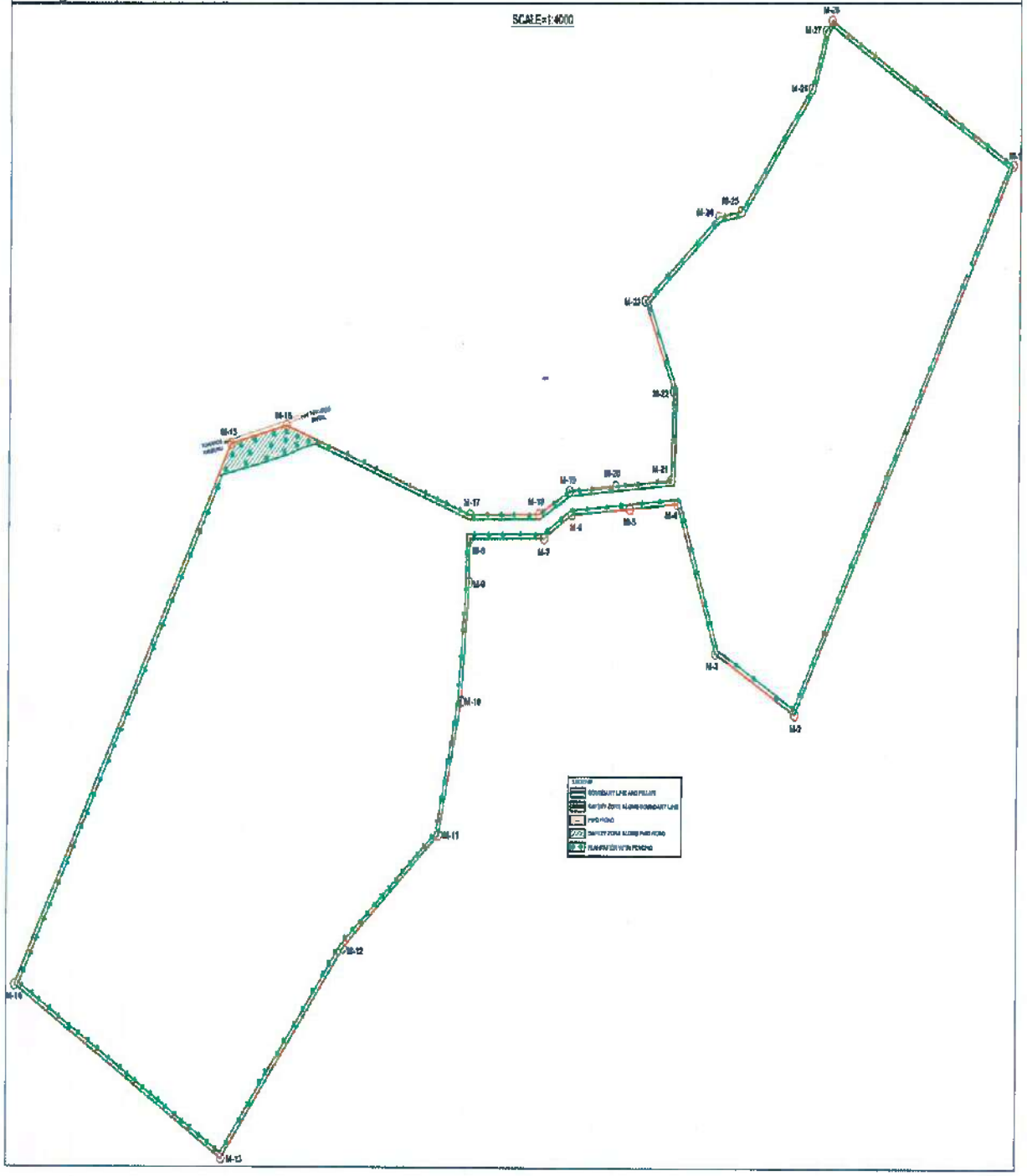
Map Showing the location Safety Zone Area over 6.114 ha for Fencing, Protection & Plantation.

MAP SHOWING THE SAFETY ZONE FENCING,PROTECTION AND REGENERATION TO ENSURE DENSE CANOPY IN 7.5 MTRS STRIP ALL ALONG THE INNER BOUNDARY OF THE MINING LEASE AREA AND 50 MTRS FROM PWD ROAD INSIDE THE ML AREA OF LASERDA-PACHERI MN & IRON ORE BLOCK OF M/S THRIVENI EARTHMOVERS PVT.LTD.UNDER BARBIL RANGE OF KEONJHAR FOREST DIVISION IN KEONJHAR DISTRIVT,ODISHA AS PART OF CONDITION NO.15.a IN STAGE-1 FOREST CLEARANCE.



Thriveni Earthmovers Pvt. Ltd.

Planting shall be done during July in pre-dug pits of size 30 cm X 30 cm X 30 cm. 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.

CHOICE OF SPECIES:

The choice of species will be based on the following parameters: (i) Drought hardy and (ii) it should resist the xerophytic nature of the locality i.e. with less of rainfall, less of soil fertility and to resist biotic interference. Selection of the plant species shall be based on the inventory of the local forest species like:

Sl. No.	Local Name	Scientific Name
1	Chakunda	*Senna siamea*
2	Kusum	*Schleichera oleosa*
3	Bel	*Aegle marmelos*
4	Karanja	*Pongamia pinnata*
5	Ainla	*Emblica officinalis*
6	Neem	*Azadirachta indica*

Some soil binding grasses will be introduced. The species of grass seeds to be broadcasted are given in the following table. 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 leaves with smooth surfaces. All these traits are difficult to get in a single species. Therefore, a combination of species has been taken into consideration as stated above.

Name of Grass Species	Usage	Habitat / Soil
Chrysopogon fulvus	**Fodder**	**Red Soil/black cotton soil**
Eremopogon foveolatus	**Fodder**	**Skeletal soil**
Sporobolus marginatus	**Fodder**	**Sandy soil**
Heteropogon contortus	**Non-Fodder**	**Eroded soil**
Cymbopogon martini	**Non-Fodder**	**Eroded soil**
Cynodon dactylon	**Fodder**	**Wide range soil**

a) 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.

b) 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.

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c) 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. 1 man day will be utilized for three months in year & the same man power will be engaged for next five years.

B. Structural Measures

a) Adequate Number of 6 feet high RCC Boundary Pillar

There are 28 nos of corner boundary pillars; parallel to that i.e 7.5 mtrs inside the ML boundary, the same numbers pillars of 6 feet high RCC pillars will be posted all along the Mining Lease boundary. 7.4 Km, 7.2 Km

b) Fencing of 6 feet high in ML boundary & SZ boundary

Total periphery of the Mining Lease boundary is 7.3 Km excluding road passes and river, similarly periphery of the safety zone boundary inside the ML boundary is 7.2 Km excluding road passes and river. The entire length of 14.5 Km will be fenced within a period of 3 years after execution of mines.

9. 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. Budgetary provision of 15% of the total project cost has been earmarked on this score.

10. EXECUTING AGENCY

The works in the present Scheme shall be executed by the User Agency having specialized departments headed by qualified persons with outsourced man and machinery. To facilitate this, the user agency shall establish its 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 in coordination with the Forest Department.

Ent. Engg.

THIRUVENI EARTHMOVERS PVT. LTD. THIRUVENI

11. REQUIREMENT OF FUNDS

The total cost of the implementation safety zone fencing, protection and regeneration to ensure dense canopy in all along the inner boundary of the mining lease area will be Rs. **2,87,71,000.00** (Rupees Two Crore eight seven Lakh seventy one thousand) only for implementation of the above work, the above expenditure will be made over the next ten years period. Therefore, budget provision of will be kept by the user agency for implementation of the above mitigation measures over a period of next three years. This budget will be subject to increase in amount considering the increase in materials and labour charges. The tentative cost for the above work is in the following table:-

TOTAL COST OF THE PROJECT

Sl.No.	Description of the Work	Fund Required (in Rs.)
1.	**Biological Measures**	
A	Block Plantation (1000 no./ha.) over 6.114 ha. @ Rs. 2,71,716/- (as per base norm of Matrix for the year 2024-25) **(Annexure-I).**	16,61,271.62
	Total:	**16,61,271.62**
2.	**Structural Measures**	
A	6 feet high RCC Boundary Pillar of 28 Nos @ 1200 per Pillar	33,600.00
B	Fencing of 6 feet high in ML boundary & SZ boundary of 14.5 Km @ Rs. 1442/- running Mtrs	2,09,09,000
C	Maintenance for 10 years	1, 40, 000.00
	Total:	**2,10,82,600.00**
	Sub-Total:	**2,27,43,871.62**
Inspection, monitoring and evaluation @ 15% of the total Project cost		34,11,580.74
	Total:	**2,61,55,452.36**
	Price escalation @ 10%	26,15,545.24
	GRAND TOTAL	**2,87,70,997.60 SAY 2,87,71,000.00**
(Rupees Two Crore eight seven Lakh seventy one thousand) only		

Forest Range Officer
Barbil

Techinically Approved
Regional Chief Conservator of Forests
Rourkela Circle

Divisional Forest Officer
Keonjhar Division

THRIVENI EARTHMOVERS PVT. LTD.

Annexure-1

COST ESTIMATE FOR BLOCK PLANTATION OF 1000 SEEDLINGS / Ha.

ANNEXURE-4

BASE COST NORM FOR COMPENSATORY AFFORESTATION (BLOCK PLANTATION)
@ 1000 PLANTS PER HECTARE (18 months old seedling)

WAGE RATE Rs- 311/- PER MANDAY

SL No	Items of work	Preferable Period of Execution	No of Mandays	Labour Cost (In Rs.)	Material Cost (In Rs.)	Total cost (In Rs.)
1	2	3	4	5	6	7
	0th Year (Advance work) Pre-Planting Operation					
1	Survey, Demarcation and Pillar posting	Nov/Dec	2	622	0	622
2	Preparation of Treatment Map (Digital Map)	Nov/Dec	1	311	100	411
3	Site preparation (Cleaning & removal of debrises)	Nov/Dec	12	3732	0	3732
4	Creation of 4.00 mt wide Inspection Path	Feb/Mar	1	311	0	311
5	Alignment and stacking of pits	Feb/Mar	1	311	0	311
6	Digging of pits (45 cm x 45 cm X 45 cm) in hard and gravelly soil	Feb/Mar	40	12440	0	12440
7	Construction of Temporary Labour Shed, Drinking water facility and First-Aid etc.	Jan/Mar	0	0	3500	3500
	Total		57	17727	3600	21327
	1st Year/Planting Year					
1	Refilling of pits by altering the dugout soil of the pits, application of organic compounds/ COM/ FYM & mixing the same properly	Jun/Jul	7.5	2332.50	5000	7332.50
2	Transportation of 18 months old polythene bag seedlings in hired truck /tractor from the Permanent/Mega nursery to planting site including loading & unloading. (Average load of 10 Kms) & stacking the seedling @ Rs.6/- per Seedling (1100 nos.)	Jul/Aug	0	0	6600	6600
3	Watering polypot seedlings at planting site	Jul/Aug	2	622	0	622
4	Conveyance of polypot seedlings on head load from the stacking site to individual dugout pits within the planting site, applying insecticide, fertilizers & planting after scooping the soil with other applied materials & pressing the soil perfectly around the planted seedlings.	Jul/Aug	22.5	6997.50	0	6997.50
5	Cost of Fertilizer & Insecticide (a)NPK/Bio-fertilizer @ 50 gms/plant as basal dose = 50kg @ Rs.30/- per kg = Rs. 1500.00 (b) Urea/Vermicompost/Mo Khata/any other fertilizer in two subsequent doses @ Rs. 750.00 (c) Insecticide/ Bio-pesticide @ 5 gms/plant=5 kg @ Rs.150/- per kg = Rs. 750.00	Jul/Aug	0	0	3000	3000
6	Casualty Replacement @ 10% (100 nos.)	Jul/Aug	2.5	777.5	0	777.5
7	1st weeding & Manuring	Aug/Sept	12	3732	0	3732
8	2nd Weeding, Soil working (1mt. diametre around the plants) & Manuring	Oct/Nov	15	4665	0	4665
9	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
10	Watch & Ward including watering as per requirement	Apr-Mar	12	3732	0	3732
	Total		76.50	23791.50	14600.00	38391.50
	2nd Year Maintenance					
1	Transportation of 100 seedlings from Nursery to plantation site including loading, unloading & conveyance by Tractor @ Rs.6/- per seedling	Jul	0	0	600	600
2	Casualty replacement- 10%	Jul	2.5	777.5	0	777.5
3	Cost of Fertilizer & Insecticide- A) Cost of Insecticide/ Bio-pesticide @ 5 gms/plant = 0.5 Kg @ Rs.250/- per kg = Rs.75/- B) Urea/NPK/Bio-fertilizer/Vermicompost/Mo Khata/any other fertilizer @Rs. 2800/-	July/Aug	0	0	2875	2875
4	Weeding (Complete weeding), Manuring & Soil working (1mt. diametre around the plants)	Sep/Oct	15	4665	0	4665
5	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
6	Watch & Ward including watering as per requirement	Apr-Mar	18	5598	0	5598
7	Maintenance of Temporary Labour Shed, Drinking water facility and First Aid etc.	Apr-Mar		0	1000	1000
	Total		38.5	11973.5	4475	16448.5

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Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour Cost (In Rs.)	Matrial Cost (In Rs.)	Total cost (In Rs.)
1	2	3	4	5	6	7
	3rd Year Maintenance					
1	Cost of Fertilizer(Urea/NPK/Bio-fertilizer/Vermicompost/Mo Khata/any other fertilizer	July/Aug	0	0	2800	2800
2	Weeding (Complete weeding), Manuring & Soil working. (1mt. diametre around the plants)	Sep/Oct	15	4665	0	4665
3	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
4	Watch & Ward including watering as per requirement	Apr/Mar	18	5598	0	5598
5	Maintenance of Temporary Labour Shed, Drinking water facility and First Aid etc.	Apr/Mar	0	0	1000	1000
	Total		36.0	11196	3800	14996
	4th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
2	Watch & Ward including maintenece of vegetative fencing	Apr-Mar	18	5598	0	5598
	Total		21	6531	0	6531
	5th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	933.00	0	933
2	Watch & Ward	Apr/Mar	18	5598.00	0	5598
	Total		21	6531	0	6531
	6th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	933.00	0	933.0
2	Pruning of branches, Singling out of multiple shoots	Jan/Mar	3	933.00	0	933.0
3	Watch & Ward	Apr/Mar	18	5598.00	0	5598.0
	Total		24	7464	0	7464.0
	7th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	933.00	0	933
2	Watch & Ward	Apr/Mar	18	5598.00	0	5598
	Total		21	6531	0	6531
	8th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	933.00	0	933
2	Watch & Ward	Apr/Mar	18	5598.00	0	5598
	Total		21	6531	0	6531
	9th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	933.00	0	933
2	Watch & Ward	Apr/Mar	18	5598.00	0	5598
	Total		21	6531	0	6531
	10th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	933	0	933
3	Watch & Ward	Apr/Mar	18	5598.00	0	5598
	Total		21	6531	0	6531
	Year wise Abstract of Cost Norm (showing seedling cost separately)					

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Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour Cost (In Rs.)	Matrial Cost (In Rs.)	Total cost (In Rs.)	
1	2	3	4	5	6	7	8
Sl. No	Year	No. of Mandays	Labour cost (In Rs)	Material Cost(In Rs.)	Monitoring, Evaluation, Lenrolog, Documentation and Other Contiogency (5%) of (4+5)	Cost of Seedlings @Rs.50.31 per seedlings	TOTAL COST(In Rs)
1	2	3	4	5	6	7	8
1	0th year	57.0	17727.0	3600.0	973.00	0.00	22300.00
2	1st year	76.5	23791.5	14600.0	1918.50	55341.00	95651.00
3	2nd year	38.5	11973.5	4475.0	821.50	5031.00	22301.00
4	3rd year	36.0	11196.0	3800.0	749.00	0.00	15745.00
5	4th year	21.0	6531.0	0.0	326.00	0.00	6857.00
6	5th year	21.0	6531.0	0.0	326.00	0.00	6857.00
7	6th year	24.0	7464.0	0.0	373.00	0.00	7837.00
8	7th year	21.0	6531.0	0.0	326.00	0.00	6857.00
9	8th year	21.0	6531.0	0.0	326.00	0.00	6857.00
10	9th year	21.0	6531.0	0.0	326.00	0.00	6857.00
11	10th year	21.0	6531.0	0.0	326.00	0.00	6857.00
	Total:	358.0	111338.0	26475.0	6791.0	60372.0	204976.0

Note:

1 Priority must be given to the Indigenous local species available nearby to the site of plantation.
2 10 % indigenous fruit bearing trees must be preferred to Plantation.
3 Site specific Soil conservation work like LBCD, Gully Plugging, Staggered Trench, Contour Trench, Graded Bund, etc. may be taken up
4 Chain link fencing can be adopted in the CA plantation taken up outside the forest area and Bamboo twigs fencing may be prefered
5 Watering facilities for procurement of water & watering may be adopted as per the availability of water.
6 The Cost Norm of various items can be changed with the approval of the concerned HCCFs keeping the overall cost norm fixed for each Financial Year

APCCF (Forest Diversion & NO, FC Act)

THRIVENI EARTHMOVERS PVT. LTD.

Metrix for ModeH A Conventional CA Plantation (AR) 1000 plants per Ha

In Rupees

Sl. NO.	Commencement Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	Total Cost (10 Years)
Base Norm		27300	95651	27301	15745	6857	6857	7837	6857	6857	6857	6857											
1	2021-22	27300	100434	24585	18226	8335	8751	10502	9648	10131	10637	11169											234718
2	2022-23		23415	105456	25814	19137	8752	9189	11027	10130	10638	11169	11727										246454
3	2023-24			24586	110729	37103	20094	9190	9648	11578	10637	11170	11727	12313									258777
4	2024-25				25815	116265	28460	21099	9550	10130	13157	11169	11729	12313	12929								271716
5	2025-26					27106	122078	29883	23054	10133	10637	12765	11727	12315	12929	13575							285301
6	2026-27						28461	128182	31377	23767	10640	11169	13403	12313	13931	13575	14254						298567
7	2027-28							29884	134591	32946	24425	11272	11727	14073	12929	13578	14254	14967					314546
8	2028-29								31378	141321	34593	25846	11731	12313	14777	13575	14257	14967	15715				330273
9	2029-30									32947	148387	36333	26928	12313	12929	15516	14254	14970	15715	16502			346788
10	2030-31										34594	155806	38139	28274	12934	13575	16292	14967	15719	16501	17326		364127

APCCF (Forest Diversion & NO, FC Act)

EARTHMOVERS PVT. LTD. THRIVENI

SCHEME FOR

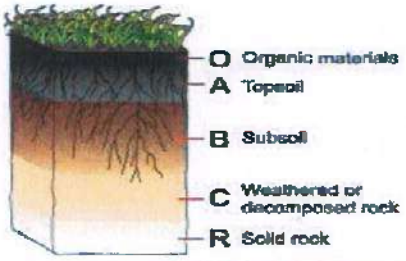
MANAGEMENT OF TOP SOIL

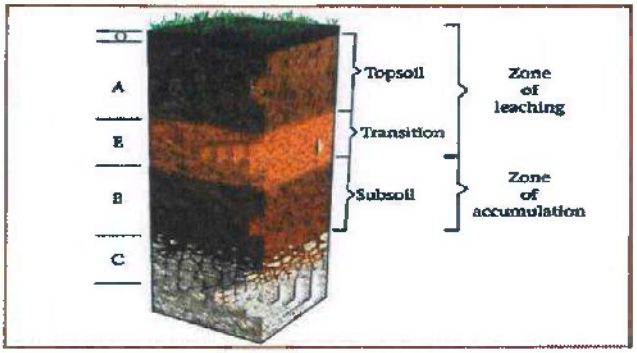
AT

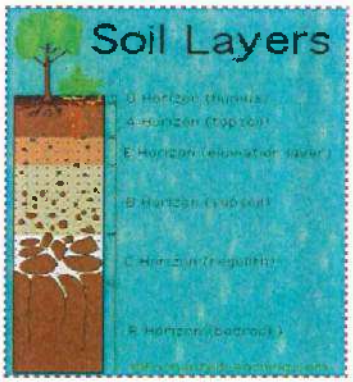
LASERDA PANCHERI MANGANESE & IRON ORE BLOCK

OF

M/S THRIVENI EARTH MOVERS PVT LTD.







Compliance to Condition No.16 of "of stage-1 forest clearance" order vide F.No.8-02/2023-FC Dated 21.12.2023of MoEF&CC, Govt. of India.

For

Diversion of 94.351 ha forest land including 4.261 ha forest land abide for safety zone within the total mining lease area over 131.800 ha.

SCHEMEFOR MANAGEMENT OF TOPSOIL AT
LASERDA- PACHERI MANGANESE & IRON ORE MINE OF
M/S THRIVENI EARTHMOVERS PVT.LTD.

1. INTRODUCTION

Government of Odisha issued the Letter of Intent (LoI) vide letter No – IV (MISC) SM-06/2017848/SM, Bhubaneswar dated 27.01.2017 under Rule 18(1) of Mineral Auction Rules 2015 for grant of Composite License (CL) in favor of M/s Thriveni Earthmovers Pvt. Ltd (TEMPL). After complying with the stipulated conditions of LoI, Govt. of Odisha declared M/s Thriveni Earth Movers Pvt. Ltd as the Successful Bidder and Granted the Composite License over 256.304 ha for Manganese vide No.IV (B)SM-100/2007-433/SM, dated 19.01.2019 and the prospecting license deed was executed on 24.01.2019 for 2 years. During the prospecting new minerals (i.e. iron ore) was discovered and it was intimated to Govt. under Rule 11(2) of Minerals (Other than Atomic and Hydrocarbons energy Minerals) Concession Rules, 2016. On due completion of exploration, Mining Lease application over 131.889 ha was submitted and Government of Odisha has awarded the Letter of Intent for grant of mining lease vide No. 7731-IV(B)SM-100/2017/SM dated 21.09.2021 in favour of M/s Thriveni Earthmovers Pvt. Ltd. for Manganese & Iron ore over an area of 131.889 ha situated in Dhanrjayapur-40, Kanrda -38 & Laserda village under Barbil Tehsil of Keonjhar District, Odisha. Subsequently after conduct of DGPS survey by ORSAC, the area now comes to 131.800 ha which has been intimated by Director of Mines vide no. MXIII (b) 80/2015/8031/DM/dated 22.10.2021.

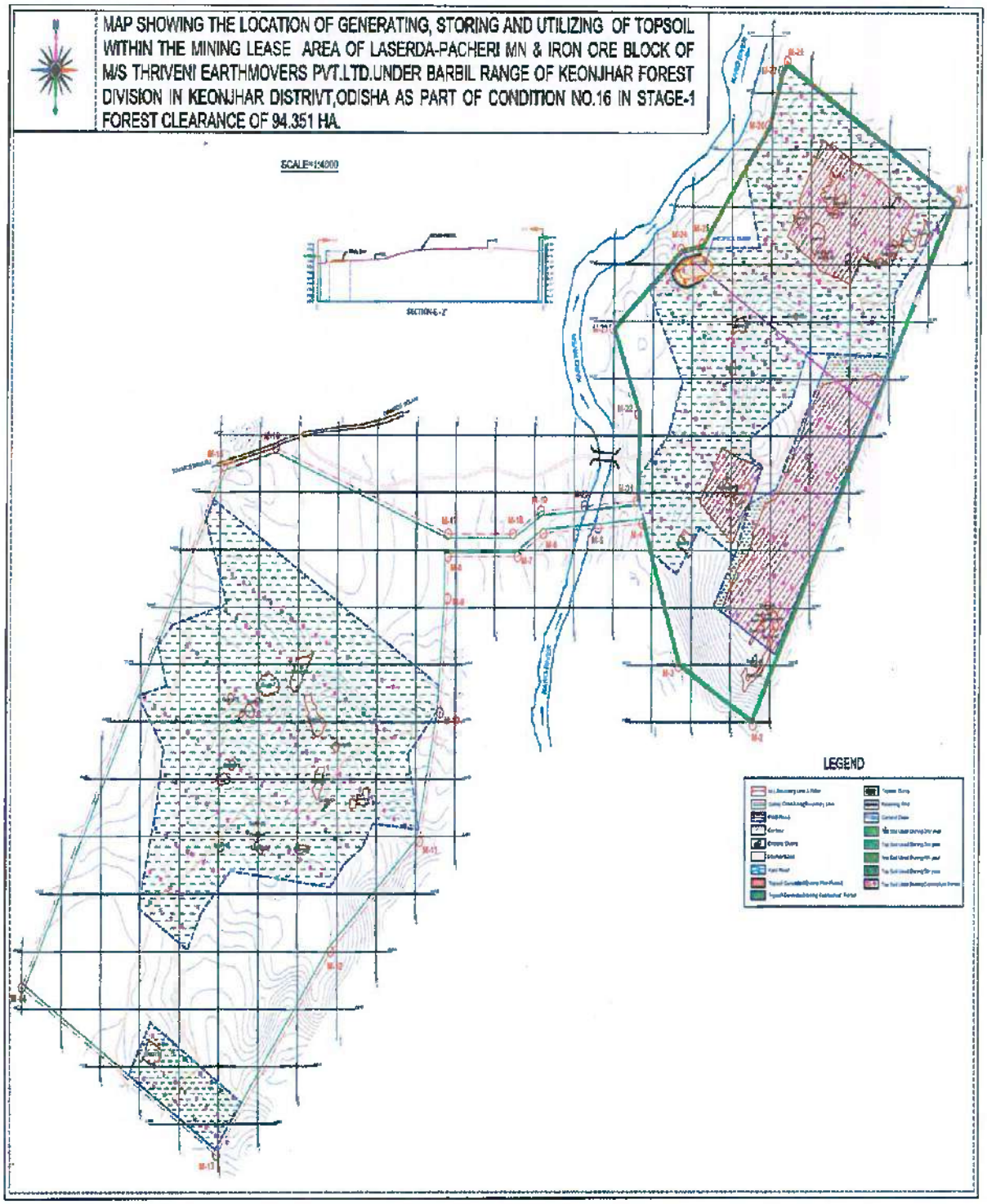
On an ap plication of forest diversion proposal over 94.351 ha of forest lnd including 4.261 ha of safety zone, the Ministry of Environment & forests, Govt. of India have granted Stage–I approval vide their letter No.8-02/2023-FC, dt. 21.12.2023 subject to fulfillment of certain conditions. As per condition No. 16 of the Stage-I approval, *no damage shall be caused to the top-soil and the user agency will follow the topsoil management plan."*

In order to comply the above condition a scheme has been prepared in line with the instruction given by PCCF (FD & NO FC Act) on dt 08.11.2021 and dt 01.12.2021. The purpose of this scheme is to prescribe methods to manage fertile topsoil/sub soil effectively so as to preserve & conserve precious natural resources which have been formed after years of natural process.

2. LOCATION OF THE ML AREA

The allotted ML area is bounded by latitude 22^{0}04'11.44231" to 22^{0}03'25.92856"N and longitude 85^{0}19'15.99748" to 85^0 17'53.81761"E of Survey of India Topo-sheet No. F45H8.

MAP SHOWING THE LOCATION OF TOP SOIL GENERATION, STORAGE & UTILIZATION:



THRIVENI EARTHMOVERS PVT. LTD.

SOIL TYPE

The lateritised surface is covered by a thin veneer of soil with thickness varying from 0.5 m to 4.00 m and from 0.05 m to 0.30m indicated topsoil. The soil is yellowish brown to reddish brown to grey colour. Due to extensive mining activity and deforestation soil has been eroded along the slopes and only preserved in the areas with vegetation cover. The soil/ alluvium are mostly silty and clayey with pebbles and cobbles of chert, jasper, BHJ and iron ore (hematite).

4. TOP SOIL MANAGEMENT.

In order to manage the topsoil the following suggestions are put forth and to be practiced.

- ✓ Topsoil likely to be generated is to be stored at earmarked place.
- ✓ Dump may have a slope less than 28^0
- ✓ Broadcast grass seed over the topsoil.
- ✓ During reclamation process the topsoil may be utilized to cover the top after filling and covering the area under tree planting.
- ✓ Bring the soil under tree planting as soon as possible and cover it with mulch to prevent the soil from washing or blowing away.
- ✓ The generation of Topsoil & its utilization will be recorded in a measurement book and copy of the same to be provided to reviewing authorities annually.

5. PRESENT SCENARIO

As per the approved mining plan, 22,088 cum topsoil will be generated during first 5 years of mining over an area 15.268 ha of virgin land and 16000 cum topsoil to be utilized for plantation propose, balance quantity will be stored at earmarked place of 1.0 ha land (showing plate no.-II) with proper mitigative measures. It is envisaged that approximately 0.152 million cubic meter of top soil will be generated thereafter when virgin area over 75.803 ha will be permitted for mining. Top soil produced will be utilized in reclamation of mine and plantation. The stock register for production and utilization of top soil will be maintained by the User Agency. This quantity will be generated in course of mining activities mostly during expansion of mining area.

6. PLANS FOR TOP SOIL MANAGEMENT:

The topsoil management plan provides description of the soil stripping and stockpiling procedures to minimize topsoil degradation and maximum availability of suitable soil for future rehabilitation within mining lease of Laserda Pacheri Manganese & Iron Ore Block. Topsoil is to be stripped in areas proposed to be distributed. A comprehensive top soil management plan has

been prepared keeping in view of the conservation, regeneration and afforestation in and around the site where top soil will be stored. In non-mineralized area also there is existence of very thin layers of top soil say 0.05m to 0.30 m, varying from site to site, which is very difficult to slice down and will be stored separately for use during future reclamation.

The top soil inside the Mining Lease area is scanty and present in an extremely thin layer. The topsoil will be utilized for concurrent plantation works in the mine as per this plan. It is proposed to use the top soil generated during the mining operation within a period of six months due to its low shelf-life. Some of the top soil will be stored temporarily until it can be used for plantation works & dump plantation. The Topo Sheet showing location of the ML area is enclosed as **Plate No.I.**

Out of the total diverted forest area of 94.351 ha, around 59.303 ha will be utilized as mining and out of non-forest land of 37.449 ha 16.50 ha will be used for mining. Hence, top soil will be collected from balance 75.803 ha (59.303 +16.50) of virgin land.

6. INSPECTION, MONITORING AND EVALUATION

Intensive inspection and technical guidance from concerned technical wing is required for successful implementation of above top soil management. Sufficient fuel/conveyance charges for technical experts shall be provided by the user agency for proper execution of these programmes. Budgetary provision of 15% of the total project cost has been earmarked on this score.

7. BUDGETARY PROVISION.

Topsoil removal/dumping will be as per the mining plan and the soil will be utilized for taking up plantations in backfill and other areas. The total cost of the project is given as below.

Sl. No.	Description of the work	Funds Required
1	Virgin forest area from where top soil can be collected:75.803 ha Stripping cost: 0.5ha/hr@ Rs 1900.00. Therefore,75.803 ha stripping will take 151.606 hrs. and @ Rs 1900/- per hr., the total cost comes to be:151.606 hrs x Rs. 1900	2,88,051.40
	Loading & transporting cost from the site to top soil stockpiles comes to be 75.803 ha = 758030 sqm x 0.2m (Collection of top soil) = 1,51,606 cum(0.152 Million Cub.mt.) or 1,52,000 cum x 1.8(tonnage factor) = 2,73.600 mt x Rs.31/- (Loading & Transportation @ Rs. 31/ton)	84,81,600.00
	Cost of leveling with 1800 manpower (150 ton/Laboure) @ Rs 450/-: Rs. 450 x 1800	8,10,000.00
	Sub-Total	**95,79,651.40**
2	Cost for sowing of grass seeds over 1.0 ha @ Rs 36850/-ha (**Annexure-I**).	36,850.00
3	Maintenance of grass seed @ (3-man days weekly for period of six month). Total 72 man days for six months: 72 x Rs. 450.00 = 32,400/-	32,400.00
4	Retaining wall over a length of 180 meters @ 2313.00/rm (**Annexure-II**).	4,16,340.00
5	Garland drains over a length of 180 meters@ 341.00/rm (**Annexure-III**).	61,380.00
	Sub-total	5,46,970.00
	Total	**1,01,26,621.40**
6	Inspection, monitoring & evaluation @15% of the total project cost	15,18,993.21
	Total	**1,16,45,614.61**
7	Price escalation @10%	1164561.46
Grand Total		**Rs 1,28,10,176.07 say Rs 1,28,10,180.00**
(Rupees one crore twenty-eight lakh ten thousand one hundred eighty) only		

The total cost of the implementation of Topsoil management scheme will be **Rs 1,28,10,180.00** (Rupees one crore twenty-eight lakh ten thousand one hundred eighty) only as detailed above which will be borne by User Agency at their project cost. The cost of the scheme may subject to

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increase in amount considering the increase in materials and labour charges which will also be borne by the User Agency.

8. EXECUTION.

This is a part of the mining operation and to be executed by the User agency.

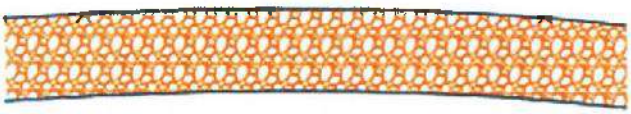
Annexure-I

Estimate for sowing of grass seeds per ha.

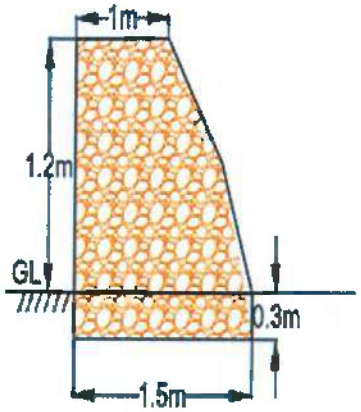
Cost of broadcasting of grass seeds per ha. Labour rate Rs.450.00/- per day				
Sl. No.	**Purpose**	**No. of Labour/quantity of materials**	**Rate (in Rs.)**	**Amount in Rs.**
1	Spreading of good top soil	03 Nos	450/- Labour	1350.00
2	Adding FYM and good earth	2 TL FYM	5625/TL FYM	11250.00
		2 TL Good earth	6750/TL Good earth	13500.00
3	Cost of grass seed 25 Kg/per ha		250/Kg	6250.00
4	Broad casting	10 nos	450/-Labour	4500.00
			Total	**36850.00**

Annexure-II

Design of RETAIING WALL



PLAN VIEW OF RETAINING WALL



CROSS SECTION VIEW OF RETAINING WALL

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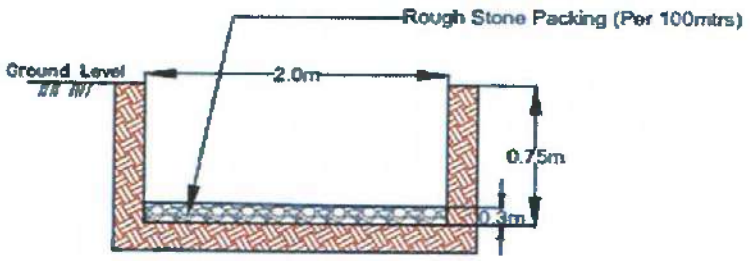
Detail Estimate of Retaining wall of loose local Boulder with cement-Sand Patching over the surface of Boulder wall

Sl. No.	Description of Items	No	Length	Width	Height	Qty	Unit	Rate	Amount in Rs
1	2	3	4	5	6	7	8	9	10
For one K.M. Length									
1	Cleaning of Jungles & bushes	1	1000	1.5		1500	Sq m	4.00	6000.00
2	Earth work in hard soil in embankment roads with in 50 mtr initial lead &1.50 mtr initial lift including rough dressing &breaking clods to Maximum 5.00c.m. to 7.00 c.m. & laying layers not exceeding 0.30 mtr depth as per specification approved by department along with proper compaction with H.R.R Excavation	1	1000	1.5	0.3	450	Cu m	197.1	88,695.00
3	Rough Stone Dry Packing with local boulder only labour charges (Local boulder will be Supplied by our Company)	1	1000	(1.00+ 1.50)/2	1.20	1500	Cu m		
		1	1000	1.50	0.30	450	Cu m		
		Total				1950	Cu m	919.47	1792966.50
4	Irregular cement sand patches on the both side of the wall with 2" thick cement sand mortar (1:6) on top	1	1000	1.00		1000	Sq m		
		2	1000	1.20		2400	Sq m		
						3400	Sq m	125.00	425000.00
		Rate per one K.M. Length				Total			23,12,661.5 Say **Rs. 23,12,665/-**

Cost of Running Meter Length Rs. 2313/-

Annexure-III

Design of Garland Drain



Cross Sectional View of Garland Drain

Detail Estimate of construction of Garland Drain

Sl No	Description of Items	No	Length	Width	Height	Qty	Unit	Rate	Amount
1	Cleaning of Jungles & bushes	1.0	200.00	7.00		1400.00	Sqm	4.00	5600.00
2	Earth work in hard soil in embankment roads within 50 mtr initial lead &1.50 mtr initial lift including rough dressing &breaking clods to Maximum 5.00c.m. to 7.00 c.m. &laying layers not exceeding 0.30 mtr depth as per specification approved by department along with proper compaction with H.R.R Excavation	**1**	**200.00**	**2.00**	0.75	**300.00**	**Cum**	**197.1**	59130.00
3	Rough Stone Dry Packing with local boulder only labour charges (Local boulder will be Supplied by the Company through contractual manner)	**2**	**3.00**	**2.00**	**0.30**	**3.60**	**Cum**	**919.47**	3310.09
									68040.09
		Rate per two Hundred meter Length				**Total**			**Say Rs. 68040/-**

Rate/Running metre length – Rs. 340.20 or Rs.341/-

SCHEME FOR DE-SILTING OF VILLAGE TANKS AND OTHER WATER BODIES LOCATED WITHIN 05 KM FROM THE MINE LEASE BOUNDARY SO AS TO MITIGATE THE IMPACT OF SILTATION OF SUCH TANKS/ WATER BODIES

LASERDA PACHERI MANGANESE & IRON BLOCK

THRIVENI EARTH MOVERS PRIVATE LTD

SCHEME FOR DE-SILTING OF VILLAGE TANKS AND OTHER WATER BODIES LOCATED WITHIN 05 KM FROM THE MINE LEASE BOUNDARY SO AS TO MITIGATE THE IMPACT OF SILTATION OF SUCH TANKS/ WATER BODIES

1. INTRODUCTION

Government of Odisha issued the Letter of Intent (LoI) vide letter No – IV (MISC) SM-06/2017848/SM, Bhubaneswar dated 27.01.2017 under Rule 18(1) of Mineral Auction Rules 2015 for grant of Composite License (CL) in favor of M/s Thriveni Earthmovers Pvt. Ltd (TEMPL). After complying with the stipulated conditions of LoI, Govt. of Odisha declared M/s Thriveni Earth Movers Pvt. Ltd as the Successful Bidder and Granted the Composite License over 256.304 ha for Manganese vide No.IV (B)SM-100/2007-433/SM, dated 19.01.2019 and the prospecting license deed was executed on 24.01.2019 for 2 years. During the prospecting new minerals (i.e. iron ore) was discovered and it was intimated to Govt. under Rule 11(2) of Minerals (Other than Atomic and Hydro Carbons energy Minerals) Concession Rules, 2016. On due completion of exploration, Mining Lease application over 131.889 ha was submitted and Government of Odisha has awarded the Letter of Intent for grant of mining lease vide No. 7731-IV(B)SM-100/2017/SM dated 21.09.2021 in favour of M/s Thriveni Earthmovers Pvt. Ltd. for Manganese & Iron ore over an area of 131.889 ha situated in Dhanrjayapur-40, Kanrda -38 & Laserda village under Barbil Tehsil of Keonjhar District, Odisha. Subsequently after conduct of DGPS survey by ORSAC, the area now comes to 131.800 ha which has been intimated by Director of Mines vide no. MXIII (b) 80/2015/8031/DM/dated 22.10.2021.

On an application of forest diversion proposal over 94.351 ha of forest land including 4.261 ha of safety zone, the Ministry of Environment & forests, Govt. of India have granted Stage–I approval vide their letter No.8-02/2023-FC, dt. 21.12.2023 subject to fulfillment of certain conditions.

As per condition No. 17 of the Stage-I approval, the User Agency has to prepare a ***Scheme for de-silting of village tanks and other water bodies located within 05 km from the mine lease boundary so as to mitigate the impact of siltation of such tanks/ water bodies***. In compliance with this condition, a comprehensive scheme is prepared for implementation of the entire mining lease area over 131.800 ha.

2. LOCATION OF THE ML AREA

The allotted ML area is bounded by latitude 22^{0}04'11.44231" to 22^{0}03'25.92856"N and longitude 85^{0}19'15.99748" to 85^0 17' 53.81761"E of Survey of India Topo-sheet No. F45H8.

3. TOPOGRAPHY

The area exhibits a rugged topography and is dissected by first, second and third order streams. Karo River flowing from south to north serves as the main drainage channel of the area. The influence of lithology on the evolution of topography is well exemplified. The topography in and around Lasarda-Pacheri block represents the gentle slope towards Karo Rever i.e west side of Laserda Block and east side of Pacheri Block.

4. SOIL TYPE

The lateritised surface is covered by a thin veneer of soil with thickness varying from 0.5 m to 4.00 m. The soil is yellowish brown to reddish brown to grey colour. Due to extensive mining activity and deforestation soil has been eroded along the slopes and only preserved in the areas with vegetation cover. The soil/ alluvium is mostly silty and clayey with pebbles and cobbles of chert, jasper, BHJ and iron ore (hematite).

5. CLIMATE

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The tropical climate zone with summer stretching from March to May recording up to 45°C during peak days. Monsoonal rain sets in June and continues up to September. Annual rainfall averages to 1500mm. The winter is restricted to November, December & January with temperature dropping down to minimum of approximately 4°C.

6. DRAINAGE

The area exhibits a rugged topography and is dissected by first, second and third order streams. Karo River flowing from south to north serves as the main drainage channel of the area.

6. Rainfall

There is a wide variation of rainfall in the catchment area and around 10 kms radius of buffer zone of this mine. The average annual rainfall of Keonjhar District has been computed by taking the data of last 7 years which comes to 1523 mm, out of which 92% occurs in monsoon months. The average rainfall in the projected area is **1400.00 mm.**

7. Factors responsible 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 factors are the surface runoff containing silt particles entering into the pond. As the age of the ponds increases, 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 de-silting pond bottom at regular intervals as well as taking adequate preventive measures.

8. Selection of Ponds

For the purpose as mentioned in the condition no. 17 of the stage -1 approval letter, a GPS survey of ponds within the buffer area of 5 Kms from the lease boundary was made. Total 8 numbers of ponds were surveyed within 5 km vicinity of the lease area is situated in villages Pundul, Bolani Bosti, Dumurita Tala Sahi, Dumurita, Lasarda Buru sahi, Lasarda, Lasarda Bhalia dihi, & Kanarda.

The location of the village ponds is shown in the topo sheet No. F45N8 is enclosed.

LOCATION SELECTED POND FOR DE-SILTING

Sl. No.	Name of the Location of the Water Body	One point GPS Reading (UTM)		Dimension in (Length x Breadth x Height)	Remarks
		Easting (M)	Northing (M)		
1	Pundul Village Pond -1	321808.66	2437413.66	27X15X2.5	Scope for De-siltation & construction of Embankment
2	Bolani Bosti Village Pond - 2	327561.04	2444158.34	25x30x2.5	Scope for De-siltation & construction of Embankment
3	Dumurita Tala Sahi Village Pond -3	329030.14	2442631.78	42x30x3.0	Scope for De-siltation & construction of Embankment
4	Dumurita Village Pond -4	328165.32	2442312.06	27x23x2.5	Scope for De-siltation & construction of Embankment
5	Lasarda Buru sahi Village Pond -5	327871.96	2440821.87	38x26x2.5	Scope for De-siltation & construction of Embankment
6	Lasarda Village Pond -6	327390.63	2440047.89	41x25x2.5	Scope for De-siltation & construction of Embankment

7	Lasarda Bhalia dihi Village Pond -7	327464.63	2439664.45	46x38x3.0	Scope for De-siltation & construction of Embankment
8	Kanarda Village Pond -8	326788.14	2440045.72	53x43x3.0	Scope for De-siltation & construction of Embankment

Matrix to indicate the benefits to be derived by individual villagers from pond renovation

DEMOGRAPHIC FEATURES OF HUMAN TO BE BENEFITED BY SELECTED POND

Sl. No	Village	Male	Female	Population
1	Dhanurjayapur	767(49.9)	768(50.1)	1535(100)
2	Dumuria	682(50.8)	658(49.2)	1340(100)
3	Gamulai	135(51.1)	129(48.9)	264(100)
4	Haramutu	287(49.9)	288(50.1)	575(100)
5	Kanarda	193(48.6)	204(51.4)	397(100)
6	Lasarda	392(49.5)	399(50.5)	791(100)
7	Lotapani	81(46.0)	95(54.0)	176(100)
8	Nawdih	170(49.6)	173(50.4)	343(100)
9	Pacheri	430(49.8)	432(50.2)	862(100)
Total		**3137(49.9)**	**3146(50.1)**	**6283(100)**

Name of Water body	Population Benefitted	Cattle to be Benefitted	Irrigation to be Derived	Pisciculture Benefit
Pundul	XXX	XX	Not Possible	X
Bolani Bosti	XXX	XX	Not Possible	X
Dumurita Tala Sahi	XXX	XX	Not Possible	X
Dumurita	XXX	XX	Not Possible	X
Lasarda Buru sahi	XXX	XX	Not Possible	X
Lasarda	XXX	XX	Not Possible	X
Lasarda Bhalia dihi	XXX	XX	Not Possible	X
Kanarda	XXX	XX	Not Possible	X

XXX – Maximum Benefit , XX – Average Benefit , X – Low Benefit .

9. **Methodology**

It is proposed to carry out the total de-siltation of the selected ponds as above every five years 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 silt, small excavators such as back-hoe / small hydraulic shovels or pay loader, depending upon the quantity of silt accumulation shall be used for the purpose of evaluation of work required for de siltation. The work shall comprise: -

a) Total de-siltation in the five-year period.
b) Implementing preventive measures during the following four years to minimize re-siltation of the ponds.
c) To prevent or slowdown future siltation, the embankment stabilization by grass turfing /stone pitching, plantation of suitable species and constructing bathing ghat is also included in the de-silting and improvement plan.

It is proposed that the ponds having accumulation of over 1000 m^3 shall be de-silted by mechanical means and the rest shall be handled manually. It is proposed to deploy one 0.9 m^3 backhoe with one 10 tonne tipper for de-silting 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 smaller ponds, where the accumulation of silt is very small, the de-siltation operation shall be done manually by engaging sufficient manpower.

The ponds shall be allowed to dry up completely during the early summer i.e. during March and April followed by de-siltation in the above-described manner.

The first-year work shall also comprise the following preventive measures to minimize siltation.

- Providing embankment to the ponds wherever necessary.
- Strengthening the existing pond embankment to check external flow of surface run off in to the pond.
- Regular removal of aquatic weeds.
- Plantation of trees on the top of the embankment and stone pitching on the slopes to prevent bank erosion.
- Plantation of non seeding economic trees like Lemon, Custard Apple, Guava, Papaya, Mango, Litchi will be taken up by our CSR wing by involving the villagers.

a) **Subsequent 2 years plan and management:**

In the subsequent 2 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.

b) **Preventive Measures & Maintenance:**

It is essential to take up preventive measures in order to minimize re-siltation of the ponds. Activities like pond bank strengthening and stabilization by way of earth work with stone patching, grass seeding and plantation of appropriate species shall be taken up in the first year followed by their maintenance in successive four years.

c) Dewatering of village pond: This will be carried out by engaging Company pump ,so not included in expenditure .

(d) De-silting: After pumping out the water from the pond, silts are to be removed either manually by deploying labour or excavator & dumper combination.

Sl. No.	Name of the Location of the Water Body	De-Silting Quantity in Cum	Stone dry packing Area in Sqm
1	Pundul Village Pond -1	27X15X1 = 405	(27+15) X 2 = 84
2	Bolani Bosti Village Pond -2	25x30x1 = 750	(25+30) x 2 = 110
3	Dumurita Tala Sahi Village Pond -3	42x30x1 = 1260	(42+30) x2 = 144
4	Dumurita Village Pond -4	27x23x1 = 621	(27+23) x 1 = 100
5	Lasarda Buru sahi Village Pond -5	38x26x1 = 988	(38+26) x 1 = 128

6	Lasarda Village Pond -6	41x25x1 = 1025	(41+25) x1 = 132
7	Lasarda Bhalia dihi Village Pond -7	46x38x1 = 1748	(46+38) x1 = 168
8	Kanarda Village Pond -8	53x43x1 = 2279	(53+43) x1 = 192
Total		9076 cum	1058 sqm

(e) Earthwork Excavation: Wherever required, soil has to be removed for deepening the pond to increase water holding capacity of the pond.

(f) Bathing Ghat – In each pond there is a proposal of 2 nos of bathing ghat for men and women separately by using local boulder and approximate rate Rs 50,000/per bathing Ghat.

(g) Cloth Changing Room- Proposed to construct one room near women bathing ghat of each pond for change of clothes by women after bath. The cost norm has been provided in **Annexure-1.**

(h) Sitting Platform on the embankment of the Pond(s) – In each Pond, a masonry platform will be provided where the villagers (age old persons and youth) can sit during summer evening. This platform will also serve the purpose of puja / karma and Nyaya Nishap etc. The cost norm has been provided in **Annexure-2.**

(i) Tulusi Chaura – Proposal for construction of a Tulusi Chaura at each pond for village people. The cost norm has been provided in **Annexure-3.**

(j) Ramp to water body- Proposed for Preparation of ramp on one side of the pond with slope for the village cattle& Goat to go inside the pond for drinking of water.

9. **Inspection and Monitoring**

All the works under the present scheme shall be executed by the User Agency with outsourced man and machinery. To facilitate this, the User Agency shall establish its 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 in coordination with the local administration.

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For the purpose as mentioned in the condition no. 17 of the stage -1 approval letter, a GPS survey of ponds within the buffer area of 5 Kms from the lease boundary was carried out. Total 8 numbers of ponds were surveyed and measured within 5 km vicinity of the lease area is situated in villages Pundul, Bolani Bosti, Dumurita Tala Sahi, Dumurita, Lasarda Buru sahi, Lasarda, Lasarda Bhalia dihi, & Kanarda.

LOCATION OF IDENTIFIED POND/ WATER BODIES FOR DE-SILTING WITHIN 5 KM FROM MINING LEASE BOUNDARY OF LASERDA-PACHERI MANGANESE & IRON ORE BLOCK.

Sl. No.	Location of the Water Body	One point GPS Reading				Dimension in (Length x Breadth x Height
		UTM-45		WGS-84		
		Easting (M)	Northing (M)	Latitude (N)	Longitude (E)	
1	Pundul Village Pond -1	321808.66	2437413.66	22° 01' 56.42"	85° 16' 24.55"	27X15X2.5
2	Bolani Bosti Village Pond - 2	327561.04	2444158.34	22° 05' 37.77"	85° 19' 42.55"	25x30x2.5
3	Dumurita Tala Sahi Village Pond -3	329030.14	2442631.78	22° 04' 48.66"	85° 20' 34.38"	42x30x3.0
4	Dumurita Village Pond -4	328165.32	2442312.06	22° 04' 37.96"	85° 20' 04.34"	27x23x2.5
5	Lasarda Buru sahi Village Pond -5	327871.96	2440821.87	22° 03' 49.41"	85° 19' 54.67"	38x26x2.5
6	Lasarda Village Pond -6	327390.63	2440047.89	22° 03' 24.08"	85° 19' 38.18"	41x25x2.5
7	Lasarda Bhalia dihi Village Pond -7	327464.63	2439664.45	22° 03' 11.64"	85° 19' 40.91"	46x38x3.0
8	Kanarda Village Pond -8	326788.14	2440045.72	22° 03' 23.79"	85° 19' 17.17"	53x43x3.0

The Location and Measurement of above ponds / Water bodies identified for De-silting within 5km from Mine Lease Boundary of Laserda-Pacheri Manganese & Iron Ore Block is verified by me and the said ponds/Water bodies are having Scope for De-Silting.

Divisional Forest Officer
Keonjhar Division

Forest Range Officer
Barbil

10. Requirement of funds

The total cost of this Scheme for de-silting and improvement of the selected 8 ponds in all villages is ₹ 1,26,36,800.00/- **(Rupees One Crore twenty-six lakh thirty-six thousand eight hundred)** only. The detail estimate of de siltation and ancillary activities has been summarized in Annexure-1, 2 & 3

Detail expenditure of 8 Nos of pond for De-siltation & construction of Embankment and 2 nos of Bathing Ghat of each pond					
Sl.No	**Description of Items**	**Qyt.**	**Unit**	**Rate**	**Amount (₹)**
1	Excavation, loading, unloading & carriage by mechanical means of all kinds of soil including stony earth ,gravel & morrum etc inter spread with boulders up to 1/2 cum size with all lifts & de-lifts including trimming of slopes & bed to design section & depositing the excavated materials away from work site as per the specification & directed by EIC with an initial lead of 1.00 KM from the place of excavation complete.	9076 for 5 years	CuM	197.1	89,44,398.00
2	Providing rough stone (15cm-30cm) dry packing in apron & all top four sides berm with local Boulder (boulder supplied by management).	1058	SqM	919.47	9,72,799.00
3	Construction of bathing ghat with local boulder	16 nos.	Each L.S	50,000	8,00,000.00
4	Room near bathing ghat for change of clothes by women	8 Nos.		101356.00	810848.00
5	Construction of Bench on the embankment for sitting	24 Nos.		4628	1,11,072.00
6	Tulsi Chaura	8 Nos.		15950.00	1,27,600.00
7	Preparation of ramp on one side of the pond with slope for the village cattle to go near the water body on L.S. @ ₹ 20,000/- per pond	8 Nos	L.S.	20,000	1,60,000.00
8	Provision for annual maintenance of pond for cleaning aquatic weed, if any from pond & cutting ,of bushes from Apron & Berms @ ₹ 30000 per annum for 2 year.	2 years for 8 ponds	Per yr	30,000	4,80,000.00
9	Maintenance of Bathing Ghat	8 nos.	Each L.S	10,000	80,000.00
10	Maintenance of Boulder Wall	For 5 years	LS per year	30000	1,50,000.00
		Total			**1,26,36,717.00 Say 1,26,36,800.00**
(Rupees One Crore twenty-six lakh thirty-six thousand eight hundred only)					

Technically Approved

Regional Chief Conservator of Forests
Rourkela Circle

Divisional Forest Officer
Keonjhar Division

Forest Range Officer
Barbil

Annexure- 1

Room at the Bathing Ghat for change of Clothing by Women

Estimate Of Change room									
SL NO	DESCRIPTION OF ITEMS	UNIT	NOS	L	B	H	QUANTITY	Rate	Amount (₹)
1	**Earthwork in excavation**								
	Changing Room	M^3	1	12.00	0.50	0.50	3.00		
		M^3	1	2.40	2.40	0.30	1.73		
							4.73	197.1	932.28
2	**Sand Filling**								
	Changing Room	M^3	1	2.40	2.40	0.05	0.29		
							0.29	1200	348.00
3	**Plain cement concrete 1:3:6**								
	Changing Room	M^3	1	12.00	0.50	0.10	0.60		
		M^3	1	2.40	2.40	0.10	0.58		
							1.18	4600	5428.00
5	**Brick Work (1:6) (Below G.L)**								
	In Foundation	M^3	1	12.00	0.38	0.40	1.82	5400	9828.00
6	**Brick Work (1:6) (Above G.L)**								
	In Super Structure	M^3	1	12.00	0.25	3.00	9.00	5400	48600.00
7	**R.C.C (1:1.5:3)**								
	Changing Room	M^3	1	12.00	0.25	0.25	0.75		
			1	2.40	2.40	0.15	0.86		
							1.61	6478	10429.58
8	**Shuttering with 12 mm thick plywood**								
	Changing Room	M^2	2	12.00		0.25	6.00		
							6.00	300	1800.00
9	**Reinforcement**								
		MT	1		0.10		0.10	70000.00	7000.00
10	**12 mm thick plaster**								
		M^2	4	2.40		3.00	28.80		
		M^2	5	2.40		3.00	36.00		
							64.80	120	7776.00
									92141.86
	Contingency 10 %								9214.19
									101356.00

IHAVENI EARTHMOVERS PVT. LTD. THRISSUR

Annexure- 2

Estimate for arrangement of Bench on the periphery of the pond

Estimate Of Bench for sitting									
S.L NO	DESCRIPTION OF ITEMS	UNIT	NOS	L	B	H	QUANTITY	Rate	Amount (₹)
1	Earthwork in excavation								
		M^3	2	0.60	0.60	0.50	0.36	197.1	70.96
2	Plain cement concrete 1:3:6								
	Changing Room	M^3	2	0.60	0.60	0.10	0.07		
							0.07	4600.00	322.00
3	Brick Work (1:6) (Above G.L)								
	In Super Structure	M^3	2	0.60	0.38	0.60	0.27		
							0.27	5400.00	1458.00
4	12 mm thick plaster								
		M^2	4	0.60	0.60		1.44		
							1.44	120.00	172.80
5	RCC	M^3	2	0.45	1.50	0.08	0.10		
							0.10	6478.00	647.80
6	IPS	M^2	2	0.45	1.50		1.35	320.00	432.00
7	Shuttering	M^2	2	0.45	1.50		1.35		
							1.35	300.00	405.00
8	Reinforcement	Kg					10.00	70.00	700.00
	Total Amount								4206.96
	Contigency @10%								420.70
	Total								4628.00

Ena Engg.

THRIVENI EARTHMOVERS PVT. LTD.

Annexure- 3

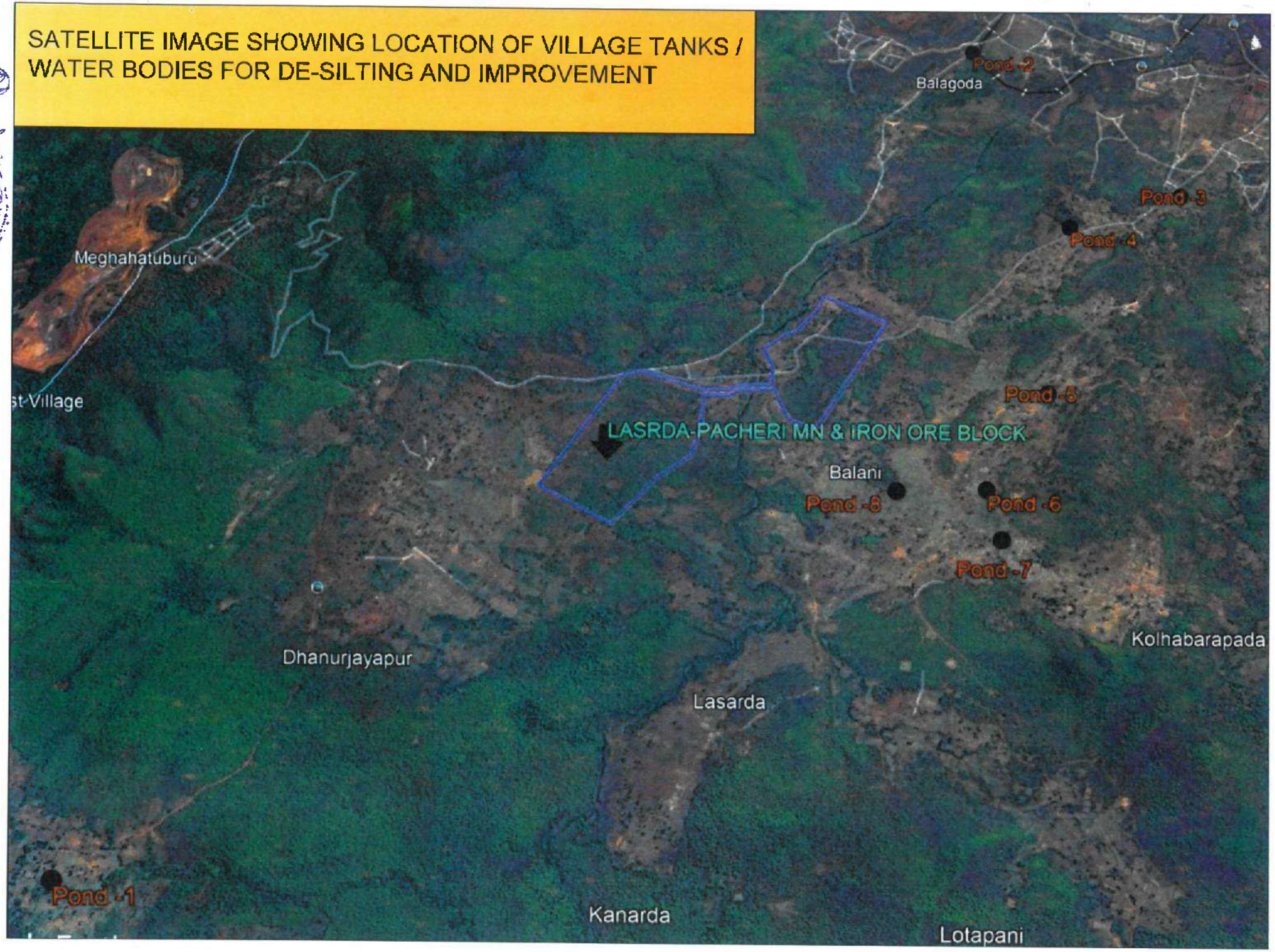
Construction Of Tulasi Chaura On The Bathing Ghat

Estimate Of Pot for Tulshi Tree									
S.L NO	DESCRIPTION OF ITEMS	UNIT	NOS	L	B	H	QUANTITY	Rate	Amount (₹)
1	Earthwork in excavation								
		M^3	1	6.00	0.35	0.30	0.63	197.1	124.17
2	Plain cement concrete 1:3:6								
		M^3	1	6.00	0.35	0.10	0.21		
							0.21	4600.00	966.00
3	Brick Work (1:6) (Above G.L)								
	In Super Structure	M^3	1	6.00	0.25	1.50	2.25	5400.00	12150.00
4	12 mm thick plaster								
		M^2	1	6.00		1.50	9.00		
							9.00	120.00	1080.00
5	Applying Lime Wash								
		M^2		Same qty as item no 4			9.00	20.00	180.00
									14500.00
	Contigency 10 %								1450.00
	Total Amount								15950.00

Govt. Engg.

VENI EARTHMOVERS PVT. LTD. THRISSUR

SATELLITE IMAGE SHOWING LOCATION OF VILLAGE TANKS / WATER BODIES FOR DE-SILTING AND IMPROVEMENT



OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS (WILDLIFE)
& CHIEF WILDLIFE WARDEN, ODISHA
Government of Odisha, Forest, Environment & Climate Change Department
PRAKRUTI BHAWAN, PLOT NO.1459, SAHEED NAGAR, BHUBANESWAR- 751007
Phone: 0674-2602250, Website: www.wildlife.odisha.gov.in, Email: odishawildlife@gmail.com

Memo No. 12142 / CWLW-FDWC-FD-0024-2022
Dated, Bhubaneswar the 09 October, 2024

To

The Divisional Forest Officer
Keonjhar Forest Division

Sub: Scheme for creation and maintenance of alternative habitat / home for avifauna, whose nesting trees are to be cleared in Laserda Pacheri Manganese & Iron Ore Block of M/s. Thriveni Earthmovers Private Limited – Approval thereof.

Ref: Memo No. 5042 dated 07.10.2024 of the RCCF, Rourkela Circle addressed to this office with a copy endorsed to you vide Memo No. 5044 of even date.

I am directed to enclose herewith a copy of the scheme for Creation & maintenance of alternate habitat/ home for the avifauna at a total cost of ₹10.50 Lakh in respect of the above project duly approved by the PCCF (WL) & CWLW, Odisha. Copy of the approved scheme may be provided to the user agency for their reference. Accordingly, demand should be raised upon the User Agency to deposit the amount in CAMPA fund in compliance to condition no. 24 of the Stage-I approval order granted by MoEF&CC vide their Letter dated 21.12.2023.

Encl.: As above.

09/10/2024
Chief Conservator of Forests (WL-III)

Memo. No. 12143 /Dt. 09/10/2024
Copy along with a copy of the enclosure forwarded to the Regional Chief Conservator of Forests, Rourkela Circle for information and necessary action with reference to his office Memo No. 5042 dated 07.10.2024 addressed to this office.

09/10/2024
Chief Conservator of Forests (WL-III)

Annexure-V

Through Special Messenger

OFFICE OF THE TAHASILDAR, BANSPAL

No. 1818 /Rev. dated 27 /08/2024

To

The Divisional Forest Officer, Keonjhar Division.

Sub:- Alienation of non forest Government land for compensatory afforestation- **Submission of R.O.R. thereof.**

Ref :- District Office Memo No.1425/Rev.dt.31.07.2024

Sir,

In inviting a kind reference to the letter on the subject cited above, I am to say that the Collector, Keonjhar has been please to sanction the alienation of the following schedule of land in favour of State Forest, Environment & Climate Change Department for raising compensatory afforestation .

01. Alienation Case No.07/2024
Sanctioned vide District Office Order No. 1423 /Rev.dt.31.07.2024

LAND SCHEDULE

Name of the R.I. Circle : Taramakanta

Name of the village	Khata No.	Plot No.	Total area (in Hc.)	Area(in Hc.)	Kisam
1	2	3	4	5	6
Uparbirikala	35 (AAA)	167 (P)	11.0900	0.7480	Parbat
		168 (P)	6.2400	4.2520	Parbat
TOTAL				**5.0000**	

As per order of the Collector, Keonjhar, the said land is meant for compensatory afforestation and will be exclusively used for the purpose for which it is alienated within 3years, and all precautionary steps may be taken to keep it free from encroachment failing which the said land will be reverted to Government Khata

Further, I am to inform you that as one R.O.R. exist in respect of Mouza-Uparbirikala in Bhulekh software data in the name of State Forest, Environment & Climate Change Department, the below noted plots were included and R.O.R. prepared accordingly vide Khata No.35/1

After receiving of sanction orders alongwith alienation case records referred above the R.O.R. has been prepared by this Office as per rule 20 , 21 & 22 of " Orissa Survey & Settlement rules, 1962" for which the Khata & Plots has been changed in Bhulek Software and the details of schedule of land are given below:-

27/08/2024

(Contd...P/2...)

01. Alienation Case No.07/2024
Sanctioned vide District Office Order No. 1423 /Rev.dt.31.07.2024

LAND SCHEDULE

Name of the R.I. Circle : Taramakanta

Name of the village	Khata No.	Plot No.	Area (in Hc.)	Kisam
1	2	3	4	5
Uparbirikala	35/1	167/178	0.7480	Parbat
		168/179	4.2520	Parbat
TOTAL			**5.0000**	

The R.O.R. bearing No.35/1 in respect of Mouza- Uparbirakala is enclosed herewith the receipt of the same may kindly be acknowledged.

Yours faithfully,

Encl : **As above**

27/08/2024

TAHASILDAR, BANSPAL

Memo No. 1819 /Rev.dated 27 /08/2024

Copy submitted to the Sub-Collector, Keonjhar for favour of kind information and necessary action.

27/08/2024

TAHASILDAR, BANSPAL

Memo No. 1820 /Rev.dated 27/08/2024

Copy submitted to the Addl.District Magistrate, Keonjhar for favour of kind information and necessary action.

27/08/2024

TAHASILDAR, BANSPAL

Memo No. 1821 /Rev.dated 27/08/2024

Copy forwarded to the General Manager, M/s Thriveni Earthmovers Pvt.Ltd. At-Unchabali, P.O-Bamebari, Via-Joda, District-Keonjhar for information and necessary action.

27/08/2024

/TAHASILDAR, BANSPAL

Memo No. 1822 /Rev.dated 27/08/2024

Copy to Revenue Inspector, Tarmakanta for information and necessary action. He is directed to hand over possession of the aforementioned land to authorised Official of the Divisional Forest Officer, Keonjhar Division and report compliance.

27/08/2024

TAHASILDAR, BANSPAL

Through Special Messenger

OFFICE OF THE TAHASILDAR, BANSPAL

No. 681 /Rev. dated 14 /03/2024

To

The Divisional Forest Officer, Keonjhar Division.

Sub:- Alienation of non forest Government land for compensatory afforestation- **Submission of R.O.R. thereof.**

Ref :- District Office Memo No.225/Rev.dt.30.01.2024 and Memo No.231/Rev. dt.30.01.2024

Sir,

In inviting a kind reference to the letter on the subject cited above, I am to say that the Collector, Keonjhar has been please to sanction the alienation of the following schedule of land in favour of State Forest, Environment & Climate Change Department for raising compensatory afforestation .

01. Alienation Case No.01/2024
Sanctioned vide District Office Order No. 223 /Rev.dt.30.01.2024

LAND SCHEDULE

Name of the village	Khata No.	Plot No.	Total area (in Hc.)	Area (in Hc.)	Kisam
1	2	3	4	5	6
Uparbirakala	34 (AJA)	117/172	5.9100	5.9100	Parbat
		109	20.0000	20.0000	Parbat
		110/171	12.3770	12.3770	Parbat
		114	12.3200	12.3200	Parbat
		115	11.6800	11.6800	Parbat
		116	9.1200	9.1200	Parbat
TOTAL				**71.4070**	

01. Alienation Case No.02/2024
Sanctioned vide District Office Order No. 229 /Rev.dt.30.01.2024

LAND SCHEDULE

Name of the village	Khata No.	Plot No.	Total area (in Hc.)	Area (in Hc.)	Kisam
1	2	3	4	5	6
Uparbirakala	35 (AAA)	111	11.7720	11.7720	Parbat
		112 (P)	14.0000	7.8210	Parbat
TOTAL				**19.5930**	

(Contd...P/2...)

As per order of the Collector, Keonjhar, the said land is meant for compensatory afforestation and will be exclusively used for the purpose for which it is alienated within 3years, and all precautionary steps may be taken to keep it free from encroachment failing which the said land will be reverted to Government Khata

Further, I am to inform you that as one R.O.R is prepared in respect of Mouza-Uparbirakala for both the alienation cases in Bhulekh software data in the name of State Forest Environment & Climate Change Department and R.O.R. is prepared accordingly vide Khata No.35/1

After receiving of sanction orders alongwith alienation case records referred above the R.O.R. has been prepared by this Office as per rule 20 , 21 & 22 of " Orissa Survey & Settlement rules, 1962" for which the Khata & Plots has been changed in Bhulek Software and the details of schedule of land are given below:-

01. Alienation Case No.01/2024
Sanctioned vide District Office Order No. 223 /Rev.dt.30.01.2024

LAND SCHEDULE

Name of the village	Khata No.	Plot No.	Total area (in Hc.)	Area (in Hc.)	Kisam
1	2	3	4	5	6
Uparbirakala	35/1	117/172	5.9100	5.9100	Parbat
		109	20.0000	20.0000	Parbat
		110/171	12.3770	12.3770	Parbat
		114	12.3200	12.3200	Parbat
		115	11.6800	11.6800	Parbat
		116	9.1200	9.1200	Parbat
TOTAL				**71.4070**	

01. Alienation Case No.02/2024
Sanctioned vide District Office Order No. 229 /Rev.dt.30.01.2024

LAND SCHEDULE

Name of the village	Khata No.	Plot No.	Total area (in Hc.)	Area (in Hc.)	Kisam
1	2	3	4	5	6
Uparbirakala	35/1	111	11.7720	11.7720	Parbat
		112/177	14.0000	7.8210	Parbat
TOTAL				**19.5930**	

The R.O.R. bearing No.35/1 in respect of Mouza- Uparbirakala is enclosed herewith the receipt of the same may kindly be acknowledged.

Yours faithfully,
14/03/2024

Encl : As above

TAHASILDAR, BANSPAL

(Contd...P/3...)

Memo No. 682 /Rev.dated 14 /03/2024

Copy submitted to the Sub-Collector, Keonjhar for favour of kind information and necessary action.

14/03/2024

TAHASILDAR, BANSPAL

Memo No. 683 /Rev.dated 14 /03/2024

Copy submitted to the Addl.District Magistrate, Keonjhar for favour of kind information and necessary action.

14/03/2024

TAHASILDAR, BANSPAL

Memo No. 684 /Rev.dated 14 /03/2024

Copy forwarded to the General Manager, M/s Thriveni Earthmovers Pvt.Ltd. At-Unchabali, P.O-Bamebari, Via-Joda, District-Keonjhar for information and necessary action.

14/03/2024

/TAHASILDAR, BANSPAL

Memo No. 685 /Rev.dated 14 /03/2024

Copy to Revenue Inspector, Tarmakanta for information and necessary action. He is directed to hand over possession of the aforementioned land to authorised Official of the Divisional Forest Officer, Keonjhar Division and report compliance.

14/03/2024

TAHASILDAR, BANSPAL

Schedule I Form No.39-A

ଖତିୟାନ

ମୌଜା	: ଉପର ବିରକଳା	ତହସିଲ	: ବାଂଶପାଳ
ଥାନା	: ନୟାକୋଟ	ତହସିଲ ନମ୍ବର	: 05
ଥାନା ନମ୍ବର	: 73	ଜିଲ୍ଲା	: କେନ୍ଦୁଝର
ଖତିୟାନର କ୍ରମିକ ନଂ	: 35/1		

ଜମିଦାରଙ୍କ ନାମ ଓ ଖେୱାଟ ବା ଖତିୟାନର କ୍ରମିକ ନମ୍ବର	ଓଡିଶା ସରକାର ପ୍ରଥମ ଭାଗ ଖେୱାଟ ନମ୍ବର 1
୧)ଖତିୟାନର କ୍ରମିକ ନଂ	35/1
୨) ପ୍ରଜାର ନାମ, ପିତାର ନାମ , ଜାତି ଓ ବାସସ୍ଥାନ	ରାଜ୍ୟ ଜଙ୍ଗଲ ଓ ପରିବେଶ ବିଭାଗ ଓଡିଶା

୩)ସ୍ୱତ୍ୱ						
୪)ଦେୟ	ଜଳକର	ଖଜଣା	ସେସ	ନିସ୍ତାର ସେସ ଓ ଅନ୍ୟାନ୍ୟ ସେସ ଯଦି କିଛି ଥାଏ	ମୋଟ	୫) କ୍ରମବର୍ଦ୍ଧନଶୀଳ ଖଜଣାର ବିବରଣୀ
		0.00	0.00	0.00	0.00	

୬) ବିଶେଷ ଅନୁସଙ୍ଗ ଯଦି କିଛି ଥାଏ	Alienation Case No. 1/2024 (ଦା.ଖା କେଶ ନଂ 34/2024) ହୁ.ମୁ ପ୍ଲଟ ନଂ 117/172 ରକବା ହେ 5.9100, ପ୍ଲଟ ନଂ 109 ରକବା ହେ 20.0000, ପ୍ଲଟ ନଂ 110/171 ରକବା ହେ 12.3770, ପ୍ଲଟ ନଂ 114 ରକବା ହେ 12.3200, ପ୍ଲଟ ନଂ 115 ରକବା ହେ 11.6800, ପ୍ଲଟ ନଂ 116 ରକବା ହେ 9.1200 ଖା.ଖା 34 ରୁ । Alienation Case No. 2/2024 (ଦା.ଖା କେଶ ନଂ 35/2024) ହୁ.ମୁ ପ୍ଲଟ ନଂ 111 ରକବା ହେ 11.7720, ପ୍ଲଟ ନଂ 112 ରୁ ରକବା ହେ 7.8210 ଖା.ଖା 35 ରୁ । Alienation Case No. 07/2024 (ଦା.ଖା କେଶ ନଂ 118/2024) ଓ ଜିଲ୍ଲାପାଳ, କେନ୍ଦୁଝରଙ୍କ ଆଦେଶ ସଂଖ୍ୟା 1423/Rev Dt. 31.07.2024 ହୁ.ମୁ ପ୍ଲଟ ନଂ 167/178 ରକବା ହେ 0.7480, ପ୍ଲଟ ନଂ 168/179 ରକବା ହେ 4.2520 ଖା.ଖା 35 ରୁ ।

BLANK SPACE FOR STAMPING

ଅନ୍ତିମ ପ୍ରକାଶନ ତାରିଖ :19/09/1980

ଖଜଣା ଧାର୍ଯ୍ୟ ତାରିଖ :

OFFICE OF THE TAHASILDAR BANSPAL

23/08/2024

ADDL. TAHASILDAR
BANSPAL

ଖତିୟାନର କ୍ରମିକ ନଂ : 35/1		ମୌଜା : ଉପର ବିରକଳା				ଜିଲ୍ଲା : କେନ୍ଦୁଝର
ପ୍ଲଟ ନମ୍ବର ଓ ଚକର ନାମ	କିସମ ଓ ପ୍ଲଟର ଖଜଣା	କିସମର ବିସ୍ତାରିତ ବିବରଣୀ ଓ ଚୌହଦି	ରକବା			ମନ୍ତବ୍ୟ
			ଏକର	ଡ଼ି	ହେକ୍ଟର	
୭	୮	୯	୧	୦	୧୧	୧୨
117/172	ପର୍ବତ		14	603	5.9100	
116	ପର୍ବତ		22	536	9.1200	
115	ପର୍ବତ		28	861	11.6800	
114	ପର୍ବତ		30	443	12.3200	
110/171	ପର୍ବତ		30	584	12.3770	
109	ପର୍ବତ		49	421	20.0000	
111	ପର୍ବତ		29	089	11.7720	
112/177	ପର୍ବତ		19	326	7.8210	
167/178	ପର୍ବତ		1	8483	0.7480	
168/179	ପର୍ବତ		10	506	4.2520	
10 ପ୍ଲଟ			237	2173	96.0000	23/08/2024 ADDL. TAHASILDAR BANSPAL

ରାଷ୍ଟ୍ରୀୟ ସୂଚନା ବିଜ୍ଞାନ କେନ୍ଦ୍ର ,ଓଡିଶା ପ୍ରସ୍ତୁତକାରୀଙ୍କ (ଆମିନ) 23/08/2024

Annexure-VI

FORM NO.II
(for projects other than linear projects)
Government of Odisha
Office of the District Collector, Keonjhar
No. 2824 /Rev/ Dt. 12/08 /2022
XIX-54/2022

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 **94.351 Ha.** of forest land proposed to be diverted in favour of **M/s. Thriveni Earthmovers Pvt. Ltd.** for mining purpose in Lasarda-Pacheri Manganese & Iron Ore Block falls within jurisdiction of village- Dhanurjaypur, Kanarda & Lasarda under **Barbil Tahasil** in Keonjhar District.

It is further certified that,

(a) The complete process of identification and settlement of rights under the FRA has been carried out for the entire **94.351 Ha.** of forest land proposed for diversion. A copy of records of all consultations and meetings of Gram Sabha, Sub-Division Level Committee(s) and the District level Committee are enclosed as annexure- 1 to annexure- 17.

(b) 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 of forest dwellers who are eligible under the FRA.

(c) The each of concerned Gram Sabha, 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. Copies of Gram Sabha Resolution are enclosed as annexure- 6,10 & 14.

(d) 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.

(e) 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.

(f) 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.

(Ashish Thakare)
Collector, Keonjhar

Memo No. 2825 /Rev/ Dt. 12/08 /2022
Copy of Certificate alongwith its enclosures (Annexture-1 to 17) forwarded to the Divisional Forest Officer, Keonjhar for information and necessary action

12/8/2022
Addl. District Magistrate,
Keonjhar

सत्यमेव जयते

File No.: J-11015/113/2021-IA-II(NCM)
Government of India
Ministry of Environment, Forest and Climate Change
IA Division
****

Dated **02/07/2024**

To,

MS THRIVENI EARTHMOVERS PRIVATE LIMITED
22/110, Greenways Road, Fairlands,Salem , SALEM, TAMIL NADU, , 636016
envfor@thriveni.com

Subject: **Laserda - Pacheri Manganese and Iron Ore mining with production capacity of 1.545 MTPA (ROM) of Iron Ore, 1.182 MTPA of waste (Total Excavation of Iron Ore 2.728 MTPA) and 0.110 MTPA (ROM) of Manganese Ore, 0.355 MTPA of waste (Total Excavation of Manganese Ore 0.465 MTPA) along with Dry screening and crushing using 200 TPH x 2 Primary Crushing, 200 TPH x 2 Secondary Crushing, 200 TPH x 2 Tertiary Crushing, 250 TPH x 2 Vibrating Screen and 150 TPH x 1 Vibrating Screen in the ML area of 131.800 ha by M/s Thriveni Earthmovers Private Limited located at Villages Dhanurjaypur, Kanarda and Laserda, Tehsil Barbil, District Keonjhar, Odisha - Environmental Clearance reg.**

Sir/Madam,

This is in reference to your application for IA/OR/MIN/446058/2023 dated 30.12.2023 for grant of environmental clearance to the project for Laserda - Pacheri Manganese and Iron Ore mining with production capacity of 1.545 MTPA (ROM) of Iron Ore, 1.182 MTPA of waste (Total Excavation of Iron Ore 2.728 MTPA) and 0.110 MTPA (RoM) of Manganese ore, 0.355 MTPA of waste (Total Excavation of Manganese Ore 0.465 MTPA) along with Dry screening and crushing using 200 TPH x 2 Primary Crushing, 200 TPH x 2 Secondary Crushing, 200 TPH x 2 Tertiary Crushing, 250 TPH x 2 Vibrating Screen and 150 TPH x 1 Vibrating Screen in the ML area of 131.800 ha by M/s Thriveni Earthmovers Private Limited located at Villages Dhanurjaypur, Kanarda and Laserda, Tehsil Barbil, District Keonjhar, Odisha.

2. The particulars of the proposal are as below :

(i) EC Identification No.	EC23B0000OR5848132N
(ii) File No.	J-11015/113/2021-IA-II(NCM)
(iii) Clearance Type	Fresh EC
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals
(vi) Sector	Non-Coal Mining
(vii) Name of Project	Laserda-Pacheri Manganese and Iron Ore Block of

	M/s. Thriveni Earthmovers Pvt. Ltd.
(ix) Location of Project (District, State)	KENDUJHAR, ODISHA
(x) Issuing Authority	MoEF&CC
(xii) Applicability of General Conditions	No

3. The proposed project activity is listed at schedule no. 1(a) Mining of Minerals and falls under Category "B" of the schedule of the EIA Notification, 2006. However, due to applicability of general conditions as the Odisha – Jharkhand Interstate Boundary is located at a distance of 3.19 km from the mine lease area, the proposal appraised at Central level as Category 'A'.

4. The proposal was considered by the EAC in its 26th and 29th meeting held on 31st January & 1st February, 2024 and 9-10th May, 2024. The EAC noted that an elephant corridor i.e. Karo-Karampada is located at a distance of 2.31 km from the project site, EAC took note of the replies submitted by the PP to the ADS raised during the 26th EAC meeting held during 31st January 2024- 1st February 2024. The EAC noted the comments received from the Project Elephant Division of the Ministry and asked the PP to take measures for the conservation and protection of elephants and their habitats in order to avoid the human-elephant conflict. EAC also noted that there are multiple court cases going on w.r.t. Elephant Corridor, therefore the Project Proponent should be vigilant enough to take note of those cases and be in the compliance of the outcome of the Hon'ble court's decision.

Subsequently, the EAC stated that as per the SOTM recommendation by CSIR-NEERI, the proposal comes under SOTM 3 i.e. EC capacity between 1 MTPA &<3 MTPA. Therefore, the Project Proponent should make the transportation plan with minimum 70% (i.e. upto 1.081 MTPA) by public railway siding and maximum 30% (i.e. upto 0.464 MTPA) by road. Further, the EAC advised the PP to protect and conserve the river Karo which is passing through the mine lease area by prohibiting mining activity 50 m away from the river. The EAC also asked PP to implement the budget of Rs 9.63 Cr which has been earmarked to address the concerns raised during public hearing. EAC also took note of the implementing budget of Rs 966 lakhs which has been earmarked as a capital cost towards Environment Management Plan (EMP) and Rs 88.7 Lakhs as a recurring cost.

After detailed deliberations made by the Project Proponent and the Consultant, the EAC in its EAC (Non-Coal Mining) meeting held during 9-10th May, 2024 **recommended** the proposal under the provisions of EIA Notification, 2006 and its subsequent amendments for grant of Environmental Clearance for Laserda - Pacheri Manganese and Iron Ore mining with production capacity of 1.545 MTPA (ROM) of Iron Ore, 1.182 MTPA of waste (Total Excavation of Iron Ore 2.728 MTPA) and 0.110 MTPA (ROM) of Manganese Ore, 0.355 MTPA of waste (Total Excavation of Manganese Ore 0.465 MTPA) along with Dry screening and crushing using 200 TPH x 2 Primary Crushing, 200 TPH x 2 Secondary Crushing, 200 TPH x 2 Tertiary Crushing, 250 TPH x 2 Vibrating Screen and 150 TPH x 1 Vibrating Screen in the ML area of 131.800 ha by M/s Thriveni Earthmovers Private Limited located at Villages Dhanurjaypur, Kanarda and Laserda, Tehsil Barbil, District Keonjhar, Odisha subject to the certain specific conditions in addition to the standard EC conditions applicable for non-coal mining project.

5. The matter was examined in the EAC in accordance with the Environmental Impact Assessment Notification, 2006 and further amendments thereto and the undersigned is directed to say that the Ministry of Environment Forest & Climate Change after accepting the recommendation of EAC (Non-Coal Mining) during its 26th & 29th meeting held on 31st January & 1st February, 2024 and 9-10th May, 2024, hereby accords environmental clearance in favour of M/s Thriveni Earthmovers Private Limited for Laserda - Pacheri Manganese and Iron Ore mining with production capacity of 1.545 MTPA (ROM) of Iron Ore, 1.182 MTPA of waste (Total Excavation of Iron Ore 2.728 MTPA) and 0.110 MTPA (ROM) of Manganese Ore, 0.355 MTPA of waste (Total Excavation of Manganese Ore 0.465 MTPA) along with Dry screening and crushing using 200 TPH x 2 Primary Crushing, 200 TPH x 2 Secondary Crushing, 200 TPH x 2 Tertiary Crushing, 250 TPH x 2 Vibrating Screen and 150 TPH x 1 Vibrating Screen in the ML area of 131.800 ha located at Villages Dhanurjaypur, Kanarda and Laserda, Tehsil Barbil, District Keonjhar, Odisha subject to compliance of the terms & conditions and the environmental safeguards mentioned at Annexure 1.

6. The details of the project is at Annexure 2.

7. The Ministry reserves the right to stipulate additional conditions, if found necessary.

8. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act,

1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/High Court and any other Court of Law relating to the subject matter.

9. 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.

10. This issue with an approval of the Competent Authority.

Copy To

i. **The Secretary,** Ministry of Mines, Government of India Shastri Bhawan, New Delhi.
ii. **The Chief Secretary,** Government of Odisha, Secretariat, Bhubaneswar.
iii. **The Secretary,** Department of Environment, Government of Odisha, Secretariat, Bhubaneswar.
iv. **The Secretary,** Department of Mines and Geology, Government of Odisha, Secretariat, Bhubaneswar.
v. **The Secretary,** Department of Forests, Government of Odisha, Secretariat, Bhubaneswar.
vi. **The Secretary,** Department of Steel and Mines, Government of Odisha, Secretariat, Bhubaneswar.
vii. **The Member Secretary,** Odisha Pollution Control Board, Parivesh Bhawan, A/118 Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012.
viii. **The Deputy Director General of Forests (C),** Ministry of Environment, Forest and Climate Change, Regional Office, A/3, Chandersekharpur, Bhubaneswar – 751023.
ix. **The Chief Wildlife Warden,** Prakurti Bhawan, 5th floor, BDA Apartment, Nilakanthanagar, Nayapalli, Bhubaneswar-751012, Odisha.
x. **The Chairman,** Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
xi. **The Controller General,** Indian Bureau of Mines, Indira Bhavan, Civil Lines, Nagpur-440001.
xii. **The Member Secretary,** Central Ground Water Board, Ministry of Agriculture and Irrigation, 12/1 Jam Nagar House, Shahjahan road, New Delhi 110011.
xiii. **The District Collector,** Keonjhar District, Govt. of Odisha.
xiv. **Guard File.**
xv. **PARIVESH Portal.**

Annexure 1

Specific EC Conditions for (Mining Of Minerals)

1. Protection Of Elephant Corridor

S. No	EC Conditions
1.1	The Project Proponent shall implement the measures for the conservation and protection of elephant corridor in order to avoid the human-elephant conflict.

2. Sotm Recommendation

S. No	EC Conditions
2.1	The Project Proponent needs to implement the SOTM recommendation by CSIR-NEERI as the proposal comes under SOTM 3 i.e. EC capacity between 1 MTPA &<3 MTPA. Therefore, the Project Proponent should make the transportation plan with minimum 70% (i.e. upto 1.081 MTPA) by public railway siding and maximum 30% (i.e. upto 0.464 MTPA) by road.

3. Six-monthly Report

S. No	EC Conditions
3.1	The Project Proponent needs to submit the six-monthly report upon the progressive status of transportation of mineral through Rail and Road.

4. Action Plan

S. No	EC Conditions
4.1	The Project Proponent shall strictly adhere to the action plan to monitor the movement of wildlife in the vicinity of the mine lease area.

5. Camera Traps

S. No	EC Conditions
5.1	The Project Proponent needs to use modern equipment's such as Camera Traps for ensuring presence and movement of wild animals in the study area in consultation with Wildlife Wing of Forest Department. Appropriate interventions shall be taken to minimise stress conditions for wild animals and to avoid Man Animal conflict.

6. River Karo

S. No	EC Conditions
6.1	The Project Proponent needs to take adequate measures for protection of the river Karo which is passing through the mine lease area. The PP needs to prohibit the mining activity upto 50 m on either side of the river Karo. The natural water bodies and other streams which are flowing in and around the mine lease area should not be disturbed and mining activity shall be prohibited within 50 m from their boundaries.

7. Annual Compliance

S. No	EC Conditions
7.1	The Project Proponent needs to submit the annual compliance of the effectiveness of the Wildlife Conservation Plan to Ministry's Regional Office.

8. Monitoring On Surface Water Flow

S. No	EC Conditions
8.1	Regular monitoring on surface water flow, turbidity & water quality shall be carried out and report shall be submitted quarterly to the Ministry's Integrated Regional Office.

9. Caaqms

S. No	EC Conditions
9.1	The Project Proponent should install the continuous ambient air quality monitoring stations (CAAQMS) as per the scientific study and in consultation with CPCB/SPCB. The real time data so generated should be displayed digitally at entry and exit gate of mine lease area for public display and shall be linked to server of CPCB/SPCB.

10. Monitor

S. No	EC Conditions
10.1	The Project Proponent shall monitor the air quality, noise level, water quality, water level and ground vibration during drilling and blasting at the lease boundary of the mine, near the village, crusher and at other sensitive receptors and such collected data shall be submitted quarterly to the Ministry's Regional Office.

11. Scientific Study

S. No	EC Conditions
11.1	The Project Proponent needs to conduct the scientific study for carrying out blasting by the reputed Institute within a period of six months from the start of mining operations. The ground induced blasting vibrations shall be monitored regularly for every blast performed and the values of "peak particle velocity" and "Air Over Pressure" shall be maintained below the permissible value prescribed by the DGMS, from time to time. The data needs to be maintained and submitted along with the six monthly compliance report. The implementation status of the scientific study to be carried out by the reputed Institute shall be submitted to the Ministry's Regional Office and DGMS.

12. Water Sprinklers

S. No	EC Conditions
12.1	The Project Proponent needs to install the permanent water sprinklers along the haul road and the approach road. Further, 10 nos. of fog canon/mist sprayer of at least 40 m throw shall be installed at various locations in the mine area.

13. Garland Drains

S. No	EC Conditions
13.1	Garland drains and catch drains shall be regularly desilted and maintained periodically at regular intervals.

14. Latest Mining Technologies

S. No	EC Conditions
14.1	The Project Proponent needs to explore the possibility of using advanced/ latest mining technologies available so as to minimize the ecological impacts.

15. Air Pollution

S. No	EC Conditions
15.1	The air pollution control equipment's like bag filters, vacuum suction hoods, dry fogging system etc. shall be installed at Crushers, and other areas prone to air pollution. All the screens and screeing plant should be properly covered and proper arrangement of dust suppression system should be provided for dust control. PP shall take necessary measures to avoid generation of fugitive dust emissions. The dense plantation shall be carried out in the vicinity of the crusher. The Stack emission monitoring of the Crusher/DG set shall be carried out at periodic intervals. Continuous noise monitoring meters shall be established inside and outside of the crusher.

16. 7.5 M Peripheral Plantation

S. No	EC Conditions
16.1	The Project Proponent needs to complete the entire 7.5 m peripheral plantation and safety barrier plantation within three years from the start of mining operations. The Project Proponent should plant quality sapling of 10 m height of native and fruit bearing species. In case of tall transplants (seedlings) the seedlings should have proper trained root stock with root biomass commensurate with seedling height to ensure good growth after out planting. Plantation shall be undertaken in consultation with the State Forest Department. The Project Proponent shall make the actual count on the saplings planted and its survival rate and in case of failure of achievement of 95% survival rate, action plan for achieving the target survival rate shall be submitted to the Ministry's Integrated Regional Office.

17. Public Hearing Budget

S. No	EC Conditions
17.1	The budget of Rs 963.8 Lakhs to address the concerns raised by the public in the public hearing to be completed within 3 years from the date of start of mining operations. PP shall comply with all action plans made for public hearing concerns and make regular maintenance and record the progressive activity outcomes. Activity-wise details of Public Hearing Budget are as follows: S.No. Particulars Budget (Rs. In Lakhs) 1. Employment 504 2. Drinking Water 30 3. Road 50 4. Electricity/Lighting 10 5. Education 135.4

S. No	EC Conditions
	6. Infrastructure 12.4 7. Health 153 8. Plantation 3 9. Self-Employment and SHG support 44 10. Sports 22 Total 963.8

18. Environment Management Plan

S. No	EC Conditions
18.1	The Project Proponent should adopt the proper mitigation measures as proposed under EMP with budgetary provision of Rs 966 Lakh as capital cost and 88.7 lakh as recurring cost. The adoption of mitigation measures and monitoring of the same as proposed in the EMP shall be done under the supervision of the qualified environmental personnel. The implementation status of the same shall be submitted to the Ministry's Regional Office. The item-wise details of the Environment Management Plan is as follows: S.No. Item — Capital Cost (Rs. in Lakhs) — Recurring Cost (Rs. InLakhs) — Timeframe for Capital Cost 1. Mobile Water Sprinkling — 60.0 — 7.20 — 1st year onwards 2. Fixed Water Sprinkling — 20.0 — 2.70 — 1st year onwards 3. Wheel Washing Facility — 35.0 — 5.0 — 1st year onwards 4. Bridge Construction over Karo River — 450.0 — 5.0 — 6 months 5. Greenbelt and Plantation — 15.0 — 1.5 — 5 years 6. Vacuum cleaner — 60.0 — 3.0 — 1st year onwards 7. Dry fog system for crushing and screening plant — 27.0 — 3.0 — 1st year onwards 8. Continuous ambient air quality monitoring station — 60.0 — 9.0 — 1st year onwards 9. Parking Plaza for trucks with proper amenities — 25.0 — 2.5 — 1st year onwards 10. Construction of cement concrete road from mine entrance to exit — 60.0 — 3.0 — 1st year onwards 11. Effluent Treatment Plant — 10.0 — 1.5 — 1st year onwards 12. Sewage Treatment Plant — 15.0 — 2.25 — 1st year onwards 13. Surface Runoff Management Structures – Retaining Wall, Garland Drain, Settling — 110.0 — 7.0 — 1st year onwards

S. No	EC Conditions			
	Ponds			
	14. Rooftop Rainwater Harvesting	5.0	0.75	1st year onwards
	15. Piezometers – 2 Nos.	3.0	0.6	1st year onwards
	16. Electronic Display Board	3.0	0.3	1st year onwards
	17. Environmental Monitoring	8.0	2.4	1st year onwards
	18. EMC Manpower	-	23.0	1st year onwards
	19. Awareness Programs in nearby villages	-	6.0	5 years
	20. ISO Certification	-	3.0	5 years
	Total	966	88.7	

19. Environment Laboratory

S. No	EC Conditions
19.1	The Project Proponent should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground). A dedicated team to oversee environment management shall be setup at site which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis instead of engaging environment monitoring laboratories/consultants. Any non-compliance or infringement should be reported to the concerned authority.

20. Single Use Plastic (Sup)

S. No	EC Conditions
20.1	The Project Proponent shall create awareness among the local people working within the project area as well as its surrounding area on the ban of Single Use Plastic (SUP) in order to ensure the compliance of Notification published by MoEF&CC on 12/08/2021. A report, along with photographs, on the measures taken shall also be included in the six monthly compliance report.

21. Electric Vehicles/cng/solar

S. No	EC Conditions
21.1	The Project Proponent shall explore the possibility of using atleast 20% of Electric vehicles/CNG/Solar instead of diesel operation within three years.

22. Conduct Third Party

S. No	EC Conditions
22.1	The Project Proponent shall conduct third party audit of compliance of EC condition at an interval one year and its report shall be submitted to IRO, MoEF&CC.

23. Central Ground Water Authority (Cgwa)

S. No	EC Conditions
23.1	NoC from the Central Ground Water Authority (CGWA)/ Concerned Local authority, as the case may be, shall be obtained before drawing the ground water for the project activities.

24. Transport Equipment's

S. No	EC Conditions
24.1	Over loading of transport equipment's should be avoided to prevent spillage. Vehicles involved in transporting the material should be covered with tarpaulin to prevent fugitive dust emission.

25. Re-grass

S. No	EC Conditions
25.1	The mining lease holders will undertake to re-grass the mining area after ceasing of the mining operations and any other area which may have been disturbed due to their mining activities. They shall restore the land to a condition which is fit for cultivation, flora, fauna etc. The implementation report of the above said condition shall be submitted to the Ministry's Regional Office within six months.

26. Crushing/screening Activity

S. No	EC Conditions
26.1	The Project Proponent shall adhere to the pollution control measures suggested by the Central Pollution Control Board (CPCB) in the environmental guidelines for crushing/screening activity.

27. Court Order

S. No	EC Conditions
27.1	The Project Proponent shall comply with the directions passed in the matters which are sub-judice before the Hon'ble Supreme Court, High Court and NGT with regard to the elephant corridor.

28. Periodically Monitor

S. No	EC Conditions
28.1	The Project Proponent shall periodically monitor and maintain the health records of the mine workers digitally prior to mining operations, at the time of operation of mine and post mining operations. Regular surveillance on occupational health shall be carried out every year for mine workers. PP will also organize medical camp for the benefit of the local people and also the monitor the health impacts due to mining activity.

Standard EC Conditions for (Mining of minerals)

1. Statutory Compliance

S. No	EC Conditions
1.1	This Environmental Clearance (EC) is subject to orders/ judgment of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, Common Cause Conditions as may be applicable.
1.2	The Project proponent complies with all the statutory requirements and judgment of Hon'ble Supreme Court dated 2nd August, 2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India &Ors before commencing the mining operations.
1.3	The State Government concerned shall ensure that mining operation shall not be commenced till the entire compensation levied, if any, for illegal mining paid by the Project Proponent through their respective Department of Mining & Geology in strict compliance of Judgment of Hon'ble Supreme Court dated 2nd August, 2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India & Ors.
1.4	The Project Proponent shall follow the mitigation measures provided in MoEFCC's Office Memorandum No. Z-11013/57/2014-IA.II (M), dated 29th October, 2014, titled "Impact of mining activities on Habitations-Issues related to the mining Projects wherein Habitations and villages are the part of mine lease areas or Habitations and villages are surrounded by the mine lease area".
1.5	A copy of EC letter will be marked to concerned Panchayat / local NGO etc. if any, from whom suggestion / representation has been received while processing the proposal.
1.6	State Pollution Control Board/Committee shall be responsible for display of this EC letter at its Regional office, District Industries Centre and Collector's office/ Tehsildar's Office for 30 days.
1.7	The Project Authorities should widely advertise about the grant of this EC letter by printing the same in at least two local newspapers, one of which shall be in vernacular language of the concerned area. The advertisement shall be done within 7 days of the issue of the clearance letter mentioning that the instant project has been accorded EC and copy of the EC letter is available with the State Pollution Control Board/Committee and web site of the Ministry of Environment, Forest and Climate Change (www.parivesh.nic.in). A copy of the advertisement may be forwarded to the concerned MoEFCC Regional Office for compliance and record.
1.8	The Project Proponent shall inform the MoEF&CC for any change in ownership of the mining lease. In case there is any change in ownership or mining lease is transferred. PP needs to apply for transfer of EC as per provisions of the para 11 of EIA Notification, 2006 as amended from time to time.

2. Air Quality Monitoring And Preservation

S. No	EC Conditions
2.1	The Project Proponent shall install a minimum of 3 (three) online Ambient Air Quality Monitoring Stations with 1 (one) in upwind and 2 (two) in downwind direction based on long term climatological data about wind direction such that an angle of 120° is made between the monitoring locations to monitor critical parameters, relevant for mining operations, of air pollution viz. PM10, PM2.5, NO2, CO and SO2 etc. as per the methodology mentioned in NAAQS Notification No. B-29016/20/90/PCI/I, dated 18.11.2009 covering the aspects of transportation and use of heavy machinery in the impact zone. The ambient air quality shall also be monitored at prominent places

S. No	EC Conditions
	like office building, canteen etc. as per the site condition to ascertain the exposure characteristics at specific places. The above data shall be digitally displayed within 03 months in front of the main Gate of the mine site.
2.2	Effective safeguard measures for prevention of dust generation and subsequent suppression (like regular water sprinkling, metalled road construction etc.) shall be carried out in areas prone to air pollution wherein high levels of PM10 and PM2.5 are evident such as haul road, loading and unloading point and transfer points. The Fugitive dust emissions from all sources shall be regularly controlled by installation of required equipments/ machineries and preventive maintenance. Use of suitable water-soluble chemical dust suppressing agents may be explored for better effectiveness of dust control system. It shall be ensured that air pollution level conform to the standards prescribed by the MoEFCC/ Central Pollution Control Board.

3. Water Quality Monitoring And Preservation

S. No	EC Conditions
3.1	In case, immediate mining scheme envisages intersection of ground water table, then Environmental Clearance shall become operational only after receiving formal clearance from CGWA. In case, mining operation involves intersection of ground water table at a later stage, then PP shall ensure that prior approval from CGWA and MoEFCC is in place before such mining operations. The permission for intersection of ground water table shall essentially be based on detailed hydro-geological study of the area.
3.2	Project Proponent shall regularly monitor and maintain records w.r.t. ground water level and quality in and around the mine lease by establishing a network of existing wells as well as new piezo-meter installations during the mining operation in consultation with Central Ground Water Authority/ State Ground Water Department. The Report on changes in Ground water level and quality shall be submitted on six-monthly basis to the Regional Office of the Ministry, CGWA and State Groundwater Department / State Pollution Control Board.
3.3	The Project Proponent shall undertake regular monitoring of natural water course/ water resources/ springs and perennial nallahs existing/ flowing in and around the mine lease including upstream and downstream. Sufficient number of gullies shall be provided at appropriate places within the lease for management of water. The parameters to be monitored shall include their water quality vis-à-vis suitability for usage as per CPCB criteria and flow rate. It shall be ensured that no obstruction and/ or alteration be made to water bodies during mining operations without justification and prior approval of MoEFCC. The monitoring of water courses/ bodies existing in lease area shall be carried out four times in a year viz. pre- monsoon (April May), monsoon (August), post-monsoon (November) and winter (January) and the record of monitored data may be sent regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water Authority and Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board. Clearly showing the trend analysis on six-monthly basis.
3.4	Quality of polluted water generated from mining operations which include Chemical Oxygen Demand (COD) in mines run-off; acid mine drainage and metal contamination in runoff shall be monitored along with Total Suspended Solids (TDS), Dissolved Oxygen (DO), pH and Total Suspended Solids (TSS). The monitored data shall be uploaded on the website of the company as well as displayed at the project site in public domain, on a display board, at a suitable location near

S. No	EC Conditions
	the main gate of the Company. The circular No. J- 20012/1/2006-IA.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change may also be referred in this regard.
3.5	Project Proponent shall plan, develop and implement rainwater harvesting measures on long term basis to augment ground water resources in the area in consultation with Central Ground Water Board/ State Groundwater Department. A report on amount of water recharged needs to be submitted to Regional Office MoEFCC annually.
3.6	Industrial waste water (workshop and waste water from the mine) should be properly collected and treated so as to conform to the notified standards prescribed from time to time. The standards shall be prescribed through Consent to Operate (CTO) issued by concerned State Pollution Control Board (SPCB). The workshop effluent shall be treated after its initial passage through Oil and grease trap.
3.7	The water balance/water auditing shall be carried out and measure for reducing the consumption of water shall be taken up and reported to the Regional Office of the MoEF&CC and State Pollution Control Board/Committee.

4. Noise And Vibration Monitoring And Prevention

S. No	EC Conditions
4.1	The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines.
4.2	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day /night hours.
4.3	The Project Proponent shall take measures for control of noise levels below 85 dBA in the work environment. The workers engaged in operations of HEMM, etc. should be provided with ear plugs /muffs. All personnel including laborers working in dusty areas shall be provided with protective respiratory devices along with adequate training, awareness and information on safety and health aspects. The PP shall be held responsible in case it has been found that workers/ personals/ laborers are working without personal protective equipment.

5. Mining Plan

S. No	EC Conditions
5.1	The Project Proponent shall adhere to approved mining plan, inter alia, including, total excavation (quantum of mineral, waste, over burden, inter burden and top soil etc.); mining technology; lease area; scope of working (method of mining, overburden & dump management, O.B& dump mining, mineral transportation mode, ultimate depth of mining, concurrent reclamation and reclamation at mine closure; land-use of the mine lease area at various stages of mining scheme as well as at the end-of-life; etc.).

S. No	EC Conditions
5.2	The land-use of the mine lease area at various stages of mining scheme as well as at the end-of-life shall be governed as per the approved Mining Plan. The excavation vis-à-vis backfilling in the mine lease area and corresponding afforestation to be raised in the reclaimed area shall be governed as per approved mining plan. PP shall ensure the monitoring and management of rehabilitated areas until the vegetation becomes self-sustaining. The compliance status shall be submitted half-yearly to the MoEFCC and its concerned Regional Office.

6. Land Reclamation

S. No	EC Conditions
6.1	The Overburden (O.B.), waste and topsoil generated during the mining operations shall be stacked at earmarked OB dump site(s) only and it should not be kept active for a long period of time. The physical parameters of the OB / waste dumps / topsoil dump like height, width and angle of slope shall be governed as per the approved Mining Plan and the guidelines/circulars issued by D.G.M.S. The topsoil shall be used for land reclamation and plantation.
6.2	The slope of dumps shall be vegetated in scientific manner with suitable native species to maintain the slope stability, prevent erosion and surface run off. The selection of local species regulates local climatic parameters and help in adaptation of plant species to the microclimate. The gullies formed on slopes should be adequately taken care of as it impacts the overall stability of dumps. The dump mass should be consolidated with the help of dozer/ compactors thereby ensuring proper filling/ leveling of dump mass. In critical areas, use of geo textiles/ geo-membranes / clay liners / Bentonite etc. shall be undertaken for stabilization of the dump.
6.3	Catch drains, settling tanks and siltation ponds of appropriate size shall be constructed around the mine working, mineral yards and Top Soil/OB/Waste dumps to prevent run off of water and flow of sediments directly into the water bodies (Nallah/ River/ Pond etc.). The collected water should be utilized for watering the mine area, roads, green belt development, plantation etc. The drains/ sedimentation sumps etc. shall be de-silted regularly, particularly after monsoon season, and maintained properly.
6.4	Check dams of appropriate size, gradient and length shall be constructed around mine pit and OB dumps to prevent storm run-off and sediment flow into adjoining water bodies. A safety margin of 50% shall be kept for designing of sump structures over and above peak rainfall (based on 50 years data) and maximum discharge in the mine and its adjoining area which shall also help in providing adequate retention time period thereby allowing proper settling of sediments/ silt material. The sedimentation pits/ sumps shall be constructed at the corners of the garland drains.

7. Transportation

S. No	EC Conditions
7.1	No Transportation of the minerals shall be allowed in case of roads passing through villages/ habitations. In such cases, PP shall construct a 'bypass' road for the purpose of transportation of the minerals leaving an adequate gap (say at least 200 meters) so that the adverse impact of sound and dust along with chances of accidents could be mitigated. All costs resulting from widening and strengthening of existing public road network shall be borne by the PP in consultation with nodal State Govt. Department. Transportation of minerals through road movement in case of existing

S. No	EC Conditions
	village/ rural roads shall be allowed in consultation with nodal State Govt. Department only after required strengthening such that the carrying capacity of roads is increased to handle the traffic load. The pollution due to transportation load on the environment will be effectively controlled and water sprinkling will also be done regularly. Vehicular emissions shall be kept under control and regularly monitored. Project should obtain Pollution Under Control (PUC) certificate for all the vehicles from authorized pollution testing centers. [If applicable in case of road transport].
7.2	The Main haulage road within the mine lease should be provided with a permanent water sprinkling arrangement for dust suppression. Other roads within the mine lease should be wetted regularly with tanker-mounted water sprinkling system. The other areas of dust generation like crushing zone, material transfer points, material yards etc. should invariably be provided with dust suppression arrangements. The air pollution control equipments like bag filters, vacuum suction hoods, dry fogging system etc. shall be installed at Crushers, belt-conveyors and other areas prone to air pollution. The belt conveyor should be fully covered to avoid generation of dust while transportation. PP shall take necessary measures to avoid generation of fugitive dust emissions.

8. Green Belt

S. No	EC Conditions
8.1	The Project Proponent shall develop greenbelt in 7.5m wide safety zone all along the mine lease boundary as per the guidelines of CPCB in order to arrest pollution emanating from mining operations within the lease. The whole Green belt shall be developed within first 5 years starting from windward side of the active mining area. The development of greenbelt shall be governed as per the EC granted by the Ministry irrespective of the stipulation made in approved mine plan.

9.

S. No	EC Conditions
9.1	The Project Proponent shall carryout plantation/ afforestation in backfilled and reclaimed area of mining lease, around water body, along the roadsides, in community areas etc. by planting the native species in consultation with the State Forest Department/ Agriculture Department/ Rural development department/ Tribal Welfare Department/ Gram Panchayat such that only those species be selected which are of use to the local people. The CPCB guidelines in this respect shall also be adhered. The density of the trees should be around 2500 saplings per Hectare. Adequate budgetary provision shall be made for protection and care of trees.
9.2	The Project Proponent shall make necessary alternative arrangements for livestock feed by developing grazing land with a view to compensate those areas which are coming within the mine lease. The development of such grazing land shall be done in consultation with the State Government. In this regard, Project Proponent should essentially implement the directions of the Hon'ble Supreme Court with regard to acquisition of grazing land. The sparse trees on such grazing ground, which provide mid-day shelter from the scorching sun, should be scrupulously guarded/ protected against felling and plantation of such trees should be promoted.

10. Public Hearing And Human Health Issues

S. No	EC Conditions
10.1	Project Proponent shall make provision for the housing for workers/labors or shall construct labor camps within/outside (company owned land) with necessary basic infrastructure/ facilities like fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche for kids etc. The housing may be provided in the form of temporary structures which can be removed after the completion of the project related infrastructure. The domestic waste water should be treated with STP in order to avoid contamination of underground water.

11. Corporate Environment Responsibility (Cer)

S. No	EC Conditions
11.1	The Project Proponent shall submit the time- bound action plan to the concerned regional office of the Ministry within 6 months from the date of issuance of environmental clearance for undertaking the activities committed during public consultation by the project proponent and as discussed by the EAC, in terms of the provisions of the MoEF&CC Office Memorandum No.22-65/2017-IA.III dated 30 September, 2020. The action plan shall be implemented within three years of commencement of the project.

12. Miscellaneous

S. No	EC Conditions
12.1	The Project Proponent shall prepare digital map (land use & land cover) of the entire lease area once in five years purpose of monitoring land use pattern and submit a report to concerned Regional Office of the MoEF&CC.
12.2	The Project Authorities should inform to the Regional Office regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.
12.3	The Project Proponent shall submit six monthly compliance reports on the status of the implementation of the stipulated environmental safeguards to the MOEFCC & its concerned Regional Office, Central Pollution Control Board and State Pollution Control Board.
12.4	A separate ‘Environmental Management Cell’ with suitable qualified manpower should be set-up under the control of a Senior Executive. The Senior Executive shall directly report to Head of the Organization. Adequate number of qualified Environmental Scientists and Mining Engineers shall be appointed and submit a report to RO, MoEF&CC.
12.5	The concerned Regional Office of the MoEF&CC shall randomly monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the MoEF&CC officer(s) by furnishing the requisite data / information / monitoring reports.
12.6	In pursuant to Ministry's O.M No 22-34/2018-IA.III dated 16.01.2020 to comply with the direction made by Hon'ble Supreme Court on 8.01.2020 in W.P. (Civil) No 114/2014 in the matter Common Cause vs Union of India, the mining lease holder shall after ceasing mining operations, undertake regrassing the mining area and any other area which may have been disturbed due to other mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.

S. No	EC Conditions
12.7	The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.
12.8	Concealing factual data failure to comply with any or submission of false/ fabricated data and of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
12.9	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 there under and also any other orders passed by the Hon'ble Supreme Court of India/High Court and any other Court of Law relating to the subject matter.
12.10	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.

Additional EC Conditions

N/A

Annexure 2

Details of the Project

<table>
<tr><th>S. No.</th><th>Particulars</th><th>Details</th></tr>
<tr><td>a.</td><td>Details of the Project</td><td>Laserda-Pacheri Manganese and Iron Ore Block of M/s. Thriveni Earthmovers Pvt. Ltd.</td></tr>
<tr><td>b.</td><td>Latitude and Longitude of the project site</td><td>22.05461404175962,85.29828280487256
22.07200123317085,85.32111389319846</td></tr>
<tr><td>c.</td><td>Land Requirement (in Ha) of the project or activity</td><td><table><tr><th>Nature of Land involved</th><th>Area in Ha</th></tr><tr><td>Non-Forest Land (A)</td><td>0</td></tr><tr><td>Forest Land (B)</td><td>94.351</td></tr><tr><td>Total Land (A+B)</td><td>131.8</td></tr></table></td></tr>
<tr><td>d.</td><td>Date of Public Consultation</td><td>Public consultation for the project was held on</td></tr>
<tr><td>e.</td><td>Rehabilitation and Resettlement (R&R) involvement</td><td>YES</td></tr>
</table>

S. No.	Particulars	Details
f.	Project Cost (in lacs)	960
g.	EMP Cost (in lacs)	966
h.	Employment Details	

Details of Minerals Products & By-products

Name of the Mineral to be mined	Classification of mineral [Major/Minor]	Production capacity in MTPA	Remarks
Iron and Manganese	Major	1.655	1.545MTPA (ROM) of Iron Ore and 0.11MTPA (ROM) of Manganese Ore

Annexure I

The details of the project as ascertained from the document submitted by the Project Proponent and revealed from the discussions held during the meeting are given as under: -

i. The instant project activity is listed at schedule no. 1(a) Mining of Minerals and attracts the general conditions as the Odisha – Jharkhand Interstate Boundary is located at a distance of 3.19 km from the mine lease area and falls under Category 'A'.

ii. The mine lease area is located between Latitude 22°03'16.60991''N to 22°04'19.18502''N and Longitude 85°17'53.81761'' to 85°19'15.99748'' E. The mine lease area falls under the Survey of India Toposheet No: F 45H8(73F/8) and falls in Seismic Zone-II.

iii. Details of Terms of Reference (ToR):

Date of application	Proposal No & File No	Consideration by EAC	Details of ToR	Date of accord
10.12.2021	IA/OR/MIN/446058/2023 & J-11015/113/20 21-IA-II(NCM)	28-29 Dec, 2021 & 7-9 Mar, 2022	ToR was issued to M/s Thriveni Earthmovers Private Limited for undertaking detailed EIA/EMP study along with recommendation made by NEERI	**28.03.2022**

iv. Details of Mine Lease in chronological manner:

S.No	Prospecting License/ Letter of Intent (LoI)/ Grant of Mine lease and Lr No	Date of the grant	Name of the Mineral & (Major/ Minor)	Period of Grant	Granted by	Mine lease area in Ha
1	Letter of Intent for grant of Composite License No. IV (MISC)SM06/2017848 /SM, Bhubaneswar	27.01.2017	-	1 year from the date of its issuance	Govt. of Odisha	256.304
2	Composite License vide LrNo.IV	19.01.2019	Manganese	24.01.2019 to	Govt. of Odisha	256.304

	(B)SM-100/2007-43 3/ SM,			23.01.2021		
3	Letter of Intent for grant of mining lease vide No.7731-I V(B)SM-100/2017/SM and LoI valid for a period of 3 years from the date of its issuance	21.09.2021	Manganese and Iron	50 years	Govt. of Odisha	131.889
4	Revised Lease and authenticated DGPS Survey map vide Lr No. MXIII (b) 80/2015/8031/DM/ stating that after conduct of DGPS survey by ORSAC the area now comes to 131.800 hects instead of 131.889 hects	22.01.2021	Manganese and Iron	50 years	Govt. of Odisha	131.800

v. Details of Land Use/Land Cover of the Mine Lease Area:

Private land	35.765
Government land	1.684
Breakup of forest land of 94.351 Ha	
Revenue forest	53.467 Ha
Non forest land recorded as forest as on 25.10.1980	40.884 Ha
Total Forest land	94.351
Total Mining lease area (MLA), ha	131.800
Additional information (if any)	Project Proponent submitted that the mine lease involves Revenue and Sabik forest predominantly characterized with scattered growth of Sal, Mahua, Kendu etc. which is a

	tropically dry deciduous open forest. The non-forest land consists of agriculture & non-agriculture land as per revenue record. Project Proponent also submitted the letter from the Office of the Tahasildar, Barbil vide No. 4213/ dated 22.11.2021 showing the status of land schedule of non-forest land as on 25.10.1980 over 131.800 ha. In-principle approval under Section-2 of the Forest (Conservation) Act, 1980 has been granted by MoEF&CC (Forest Conservation Division) vide Lr. No.8-02/2023-FC dated 21.12.2023 for the use of the entire forest land of 94.351Ha.

vi. Details of Mining plan:

Mining Plan including Progressive Mine Closure Plan (approved by Indian Bureau of Mines/DMG)	Letter No.	MP/A/14-ORI/BHU/2021-22
	Date	18.11.2021
	Mineral & (Major/Minor)	Manganese & Iron Ore
	Mine Lease Area, Ha	131.800
	Validity	5 years from the date of lease deed execution
Mining Parameters	Quantitative Description	
Method of Mining	Fully Mechanized (FM) Opencast mining method with drilling and blasting	
Drilling/Blasting	Wet Drilling and Controlled Blasting	
Geological Reserves	Iron – 8.368 Mil. Tonnes Manganese – 7.368 Mil. Tonnes	
Mineable Reserves	Iron – 6.226 Mil. Tonnes Manganese – 6.470 Mil. Tonnes	

	It will be further increase after exploration in future.
Breakup of Total Excavation (Topsoil/OB/SB/IB/Mineral Rejects/ Waste, MTPA)	Iron – 2.728 Mil.T, (ROM -1.545 MTPA + Waste – 1.183 MTPA) Manganese – 0.465 Mil.Ts (ROM - 0.110 MTPA + Waste – 0.355 MTPA)
Life of mine	62 years Life of mine may likely to be changed in future depending upon the future changes in cut-off grade, method of working, future resources and market demand.
Mine Bench Height & Bench Width	Iron - Height -10m, Width-will be equal and more than the height Mn - Height -5m, Width-will be equal and more than the height
No. of Mine Benches	Will be maintained as per the mining plan
Existing Depth, m bgl	--
Ultimate Depth of Mining, m bgl	392m RL
Ground Water Table, m bgl	490m RL
Details of ground water intersection	The groundwater table lies at a depth of 490mRL. Ultimate depth of mining will be 392m RL. Hence groundwater intersection is envisaged.
Individual bench slope	80°
Overall pit slope	37.5 °
Details of existing/ proposed Crusher	Dry screening and crushing using 200 TPH x 2 Primary Crushing, 200 TPH x 2 Secondary Crushing, 200 TPH x 2 Tertiary Crushing, 250 TPH x 2 Vibrating Screen and 150 TPH x 1 Vibrating Screen
Mineral Beneficiation	Dry screening and crushing using 200 TPH x 2 Primary Crushing, 200 TPH x 2 Secondary Crushing, 200 TPH x 2 Tertiary Crushing, 250 TPH x 2 Vibrating Screen and 150 TPH x 1 Vibrating Screen

<table>
<tr><td>RoM output size</td><td>Iron: 5-18mm, Fines - -5mm, -10mm, 10-30mm, Lumps- +30mm

Manganese: Lumps: +30mm,10-30mm</td></tr>
<tr><td>Transportation details including capacity of dumper/tipper, mode of transport and distance</td><td>Iron and Manganese ore from the mines will be transported to Barbil and Bolani Railway Siding through Bolani-Kiriburu PWD road.The railway sidings of Bolani & Barbil are located at a distance of 5.6km and 12.0 km (by road) respectively.</td></tr>
<tr><td>Generation of Topsoil/OB & its Management during plan period & conceptual period</td><td>
<table>
<tr><th>Waste Management</th><th>Plan Period (Mil.cum)</th><th>Conceptual Period (Mil.cum)</th><th>Total (Mil.cum)</th></tr>
<tr><td>Road Maintenance</td><td>0.353</td><td>4.546</td><td>4.899</td></tr>
<tr><td>Dumping</td><td>0.789</td><td>4.201</td><td>4.990</td></tr>
<tr><td>Backfilled in mine void</td><td>--</td><td>13.983</td><td>13.983</td></tr>
<tr><td>Total</td><td>1.142</td><td>22.730</td><td>23.872</td></tr>
</table>
</td></tr>
<tr><td>Generation of Mineral Rejects/ Waste & its Management during plan period & conceptual period</td><td>
<table>
<tr><th>Mineral Reject</th><th>Plan Period (Mil.T)</th><th>Conceptual Period (Mil.T)</th><th>Waste Management</th></tr>
<tr><td>Iron Ore</td><td>0.995</td><td>3.575</td><td rowspan="2">Sold Directly or Blended with High Grade</td></tr>
<tr><td>Manganese Ore</td><td>0.184</td><td>4.714</td></tr>
<tr><td>Total</td><td>1.179</td><td>8.289</td><td></td></tr>
</table>
The mineral reject will be stacked in 3 places. The temporary mineral reject stack – 1 is for manganese ore. The temporary mineral reject stack – 2 & 3 is for iron ore. The temporary mineral reject stack 1 & 2 is on virgin area and mineral reject stack -3 will be on the top of the already refilled and reclaimed area of Laserda pit -1.
<table>
<tr><th>Stack ID</th><th>Height (m)</th><th>Total Stack Quantity (m³)</th></tr>
<tr><td>Temporary MR Stack Yard – 1</td><td>10</td><td>73754</td></tr>
<tr><td>Temporary MR Stack Yard – 2</td><td>30</td><td>260091</td></tr>
<tr><td>Temporary MR Stack Yard – 3</td><td>15</td><td>95465</td></tr>
</table>
</td></tr>
</table>

Additional information(if any)	The Project Proponent submitted the letter from the Directorate of Mines, Odisha vide Lr No. MXIII (b) 36/2021 1197/DM, dated 09.02.2022 stating that the concerned Mining Officer along with the Jr. Mining Officer of Joint Director of Mines, Joda have enquired the matter in the field on 28.12.2021 & 29.12.2021 and it was observed that there are old excavations of low depth in 45 nos of patches of land covering 2.491 ha (approximately) present inside the applied ML area of Lasarda-Pacheri Manganese& Iron Block over an area of 131.800 ha of M/s Thriveni Earthmovers Private Limited. Those excavated areas are filled with thick vegetation growth, as it is evident from the surface map attached during auction of Lasarda-Pacheri Manganese & Iron Block for composite license that many excavated quarry's were previously existed inside the composite license area before the grant of composite license to M/s Thriveni Earthmovers Private Limited. As per the report submitted Jr. Mining Officer of Joint Director of Mines, Joda there is no illegal mining carried out by M/s Thriveni Earthmovers Private Limited within the lease hold area.

vii. Water requirement:

Total water requirement	983 KLD	Fresh water	911 KLD
		Treated water	72 KLD
Source	Borewell – 95 KLD, Mine Pit Water – 888 KLD		
Permission for withdrawal/ intersection along with details of grant and its validity	No Objection Certificate for Groundwater Abstraction from CGWA vide NOC No. CGWA/NOC/MIN/ORIG/ 2024/19982 dated 06.03.2024.		
Additional information (if any)	Based on CGWA Recommendation, the quantity will be optimized.		

viii. Nearestvillage/ town/ highway/ interstate boundary/ railway station/ water bodies/monument/ forest

Particulars	Particular's Name	Distance & Directions
Village	Laserda	<300m
Town	Barbil	5.7Km, NE

Highway	NH-520 SH-10B SH-4	4.8Km, E 6.8Km, E 8.4Km, N
Interstate Boundary	Odisha-Jharkhand Interstate Boundary	3.19Km
Railway Station/Railway line	Barbil	6.3Km, NE
Water Bodies	• Karo River • Seasonal Stream • Ganse Nala • Topadihi Nala	• Passes through lease • Within lease area • 1.4Km, SE • 5.1Km, S
Forest	• Uliburu RF • Karo RF • Siddhamath RF • Lakrhaghat RF • Karampada RF • Thakurani RF	• 0.2Km, SE • <1Km, NW • 1.4Km, SE • 1.8Km, S • 3.4Km, W • 7.4Km,E

ix. Presenceof Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/ Environmental Sensitivity Zone	Yes/No	Details of Certificate/letter issued by the concerned Department mentioning the Lr no, date of grant and remarks
Forest Land within the mine lease area and (if yes) status of Forest Clearance	Yes	The Project Proponent submitted that an area of 94.351 Ha is a forest land. The Project Proponent submitted the in principal approved granted by the Ministry vide Lr. No: 8-02/2023-FC dated 21.12.2023 under Section - 2 of the Forest (Conservation) Act, 1980 in favour of M/s Thriveni Earthmovers Private Limited for non-forestry use of 94.351 ha of forest land including 4.261ha of safety zone (3.858 ha along the ML boundary and 0.403 ha along the PWD road) within the granted LoI

		for ML over 131.800 ha for Laserda Pacheri Manganese & Iron Ore Block in Keonjhar District of Odisha.
National Park	No	Project Proponent reported that there are no National Park, Wildlife Sanctuary, Tiger/Elephant Reserve, Biosphere Reserve, Ramsar site within 10 km radius of the study area.
Wildlife Sanctuary	No	
Eco-Sensitive Zone(ESZ) /Eco-Sensitive Area (ESA)	Nil	
Elephant/Tiger Reserve	No	Karo Karampada – 2.31 km. The Project Proponent has submitted the map authenticated by Divisional Forest Officer, Keonjhar Division.
Coastal Regulation Zone (CRZ)	No	
Schedule-I species (No.s and name of schedule-I species with authenticated letter)	Yes	Authenticated list of Flora and Fauna is obtained from Divisional Forest Officer, Keonjhar vide Letter No. 2044 dated 05.03.2024.
Wildlife Conservation Plan	Yes	Wildlife Conservation Plan approved by PCCF(WL) & CWLW, Odisha vide letter no. 10007/ CWLW-FDWC-FD-0024-2022 dated 11.09.2023 with a financial outlay of Rs. 390.402 Lakhs.

x. Green belt/plantation details:

Proposed area for green belt/plantation and no. of saplings proposed	The Project Proponent has proposed to plant 2923 no. of saplings over an area of 2.923 ha along the Mining Lease boundary and 50 m of road safety zone in Laserda side with expected survival rate of 75% with a budget of Rs 5.84 Lakhs. In the post mining stage, overall an area of 127.29 Ha (96.57% of the total lease area) will be covered under

	vegetation. Plantation will be carried out in places like mined out area, waste dumps, mineral storage, reclaimed infrastructure area, unused and safety zone area etc.
Budget for green plant & plantation till the end of life of mine.	Rs.5.84 Lakhs
No. of tree cuts in the mine lease area and compensatory afforestation	Towards scheme of compensatory afforestation, an area of 91Ha of equal non-forest land and 104Ha of degraded forest land, a total demand of Rs. 5.92 Crores has been raised with the land value of Rs.2.38 Crores additional.
Particulars for Green belt/plantation	Area covered (in Ha)
7.5 m barrier & non-mineralized zone	2.923 Ha in Mine Boundary and 50m safety zone for road.

xi. Baselinedetail**:**

<table>
<tr><td colspan="4">Baseline Data (Air / Water / Noise / Soil / Hydro geological study/ Traffic Study/ others)</td></tr>
<tr><td>Period of baseline data collection</td><td colspan="3">March, 2021 to May, 2021</td></tr>
<tr><td>Season (Summer / Pre-monsoon / Post-monsoon / Winter)</td><td colspan="3">Summer</td></tr>
<tr><td>Predominant Wind direction (From)</td><td colspan="3">SW & W</td></tr>
<tr><td>Ambient Air Quality (no. of locations) and results</td><td colspan="3"><table>
<tr><td>Locations</td><td>Parameters</td><td>Results</td></tr>
<tr><td rowspan="4">10</td><td>PM10</td><td>38.2 – 78.6 µg/m3</td></tr>
<tr><td>PM2.5</td><td>18.9 – 48.5 µg/m3</td></tr>
<tr><td>SO2</td><td>4.2 – 13.5 µg/m3</td></tr>
<tr><td>NOx</td><td>9.6 – 19.2 µg/m3</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>Noise level (no. of locations) and results</td><td>
<table>
<tr><th>Locations</th><th>Parameters</th><th>Results</th></tr>
<tr><td rowspan="2">10</td><td>Day Eq Leq dB(A)</td><td>44.9 – 52.8</td></tr>
<tr><td>Night Eq Leq dB(A)</td><td>37.2 – 43.2</td></tr>
</table>
</td></tr>
<tr><td>Water Quality (no. of locations) and results</td><td>
Surface Water Quality
<table>
<tr><th>Locations</th><th>Parameters</th><th>Results</th></tr>
<tr><td rowspan="7">04</td><td>pH</td><td>7.72 – 7.96</td></tr>
<tr><td>TDS (mg/l)</td><td>136 – 148</td></tr>
<tr><td>Fluoride (mg/l)</td><td>0.12 – 0.2</td></tr>
<tr><td>Chloride (mg/l)</td><td>28 – 32</td></tr>
<tr><td>Fe (mg/l)</td><td>0.4 – 0.48</td></tr>
<tr><td>Dissolved Oxygen (mg/l)</td><td>5.6 – 6.1</td></tr>
<tr><td>Biochemical Oxygen Demand (mg/l)</td><td>2.4 – 2.8</td></tr>
</table>
Ground Water Quality
<table>
<tr><th>Locations</th><th>Parameters</th><th>Results</th></tr>
<tr><td rowspan="6">8</td><td>pH</td><td>7.68 – 8.2</td></tr>
<tr><td>TDS (mg/l)</td><td>282-346</td></tr>
<tr><td>Fluoride (mg/l)</td><td>0.19 – 0.22</td></tr>
<tr><td>Chloride (mg/l)</td><td>32-38</td></tr>
<tr><td>Sulphates (mg/l)</td><td>7.8 – 9.8</td></tr>
<tr><td>Iron (mg/l)</td><td>0.27 – 0.31</td></tr>
</table>
</td></tr>
<tr><td>Soil Quality (no. of locations) and results</td><td>
<table>
<tr><th>Locations</th><th>Parameters</th><th>Results</th></tr>
<tr><td rowspan="4">9</td><td>pH</td><td>5.6 – 6.5</td></tr>
<tr><td>Electrical Conductivity</td><td>1.86 – 2.1</td></tr>
<tr><td>Nitrate %</td><td>0.048 – 0.061</td></tr>
<tr><td>Phosphorous %</td><td>0.016 – 0.022</td></tr>
</table>
</td></tr>
</table>

		Potassium %	0.066 – 0.074
Hydro geological study and results	Project Proponent reported that “Comprehensive report on groundwater conditions in both core and buffer zones with groundwater modeling for Laserda-Pacheri Manganese & Iron Ore Block of M/s. Thriveni Earthmovers Pvt. Ltd.’ prepared by Dr. Nallathambi Varadarajan (CGWA Accredited Ground Water Professional). Pumping test was conducted in an existing bore well in the core zone. Based on the pumping test analysis with various methods, the average K value obtained is 3.318m/d which is in conformity with regional aquifer parameters of shallow aquifer. The parameters for deeper bore wells are inferred from the lithology and an estimated value of 0.3318 m.day is used for deeper confined aquifers. The proposed mining activity at Laserda - Pacheri Manganese and Iron ore block requires mine dewatering to an extend of 1348.8 m3/day for safe mining. Existing one bore well will pump for 6 to 8 hours with 5 HP motor and estimated pumping is 100 to 120 m3/day. The proposed 3 more bore wells will supplement the ultimate domestic water demand of 380 m3/day in the project area.The prevailing hydrogeological conditions and predicted drawdown for the withdrawal of ground water in the project area will have localised draw down and more induced recharge from Karo river.		
Traffic study (no. of locations) and results	Project Proponent reported that Iron and Manganese ore from the mines will be transported to Barbil and Bolani Railway Siding through Bolani-Kiriburu PWD road which is 9m width and strengthened earlier for the meant of transportation of minerals but at present there is no such mineral transportation as no mines are operating in the nearby areas apart from SAIL Bolani and SAIL Kiriburu which has own railway sidings inside their lease area. Near Bolani railway siding the road is touching to the Bolani main road (11m width) which is further connected to Barbil siding through Bolani-Barbil Road. This road further connected to Barjamda-Barbil Bhadrasahi SH-10B. Further SH-10B joined to NH-520 (4 lane) at Bhadrasahi. The nearby railway sidings are Bolani & Barbil which are at a distance of 5.6 km and 12.0 Km (by road) respectively.While passing through Kiriburu Bolani Road, there is a bridge over Karo River with dimensions of around 60m length and 7m width and has the strength to sustain loaded trucks/dumpers.		

	Trucks/Volvos of the local villagers usually pass through the bridge to move towards kiriburu or Barbil. Project Proponent will construct a bridge over river Karo having dimension of 60m length and 11m width. Permission has been obtained from PWD Department vide Letter No.5484 dated 13.07.2023. Bridge construction will start after obtaining EC and execution of lease deed. It is observed that 13 trips/hr for Iron ore and 1 Trip per hour for Manganese ore will be dispatched which is a maximum of 14 Trips/Hr. The road will continue to be in LOS 'A".

xii. Public Hearing (PH) Details:

Advertisement for PH with date (name of major national daily and one regional vernacular daily newspaper)	30.05.2023 (Odisha), 04.06.2023 (Jharkhand), Regional Newspaper - The Sambad (Odisha), The Prabhatkhabar (Jharkhand), English Newspaper - The Times of India (Odisha), The Hindustan Times (Jharkhand)
Date of PH	04.07.2023
Venue	Mouza-Dhanurjaypur (Khata No.122, Plot No.4/1238)
Chaired by	Additional District Magistrate (Revenue), Keonjhar
Main issues raised during PH	Majority of the comments were related to employment to the locals, proper compensation for PAFs, Infrastructural developments, educational facilities, etc.
Budget proposed for addressing issues raised during PH over 3 years	Rs 9.63 Cr

xiii. Rehabilitation & Resettlement (R&R):

R & R details	The Project Proponent reported that an area of 42.242 Ha of land needs to acquired. About 25 houses need to be shifted as per the 'Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013' and 'the Odisha Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules, 2016'.The State Government has granted administrative approval under rule (3) of Odisha Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Rules 2016 (RFCTLAR&R

	Rules 2016) for land acquisition and leasing out the land for mining purpose till the validity of the lease. Land acquisition process by the State Government for handing over the same to proponent is under progress. However, in line with the guidelines given in the above rules, project proponent has worked out compensation package and a comprehensive R & R study was undertaken by Asian Institute for Sustainable Development (AISD), Ranchi, Jharkhand.

Rehabilitation Cost	Rs.39.05 Crores
Periphery Development Cost	As decided and determined by the RPDAC
Support Cost for R&R Implementation (Implementation charges; Administration, Management, Monitoring etc.	10% of the total budget (a+b)

Further, the Project Proponent submitted that for effective implementation of R & R plan as well as the Peripheral Development Plan, Project Proponent will constitute a Rehabilitation & Resettlement Cell (R & R Cell) for the project and Corporate Social Responsibility Cell (CSRC). R & R Cell will be responsible for the effective implementation of R & R entitlements while CSRC will take the responsibility of peripheral development. Both will assist RPDAC in monitoring and evaluation.

xiv. Courtcase details:

Court Case, No and its present status	Project Proponent informed that there is no litigation pending against the project.
Undertaking by Project Proponent w.r.t court case	Submitted

xv. Affidavit/Undertaking details:

Affidavit as per Ministry's OM dated 30.05.2018	The Project Proponent submitted the Affidavit in a Non-judicial stamp paper of Rs. 50 bearing no. D 087496 dated 20.12.2021 to comply with all the statutory requirement & judgment of Hon'ble Supreme Court dated 2nd August 2017 in writ Petition (Civil) No. 114 of 2014 in the matter of common cause versus Union of India & Ors.
Undertaking by Project Proponent in EIA/EMP report	The Project Proponent submitted a declaration stating that they have entrusted the EIA study to M/s. Creative Engineers & Consultants (CEC), Chennai who have been accredited by the National Accreditation Board for Education & Training (NABET),

	Quality Council of India. The Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) have been prepared as per the generic structure proposed in the EIA notification 2006, ToR issued by MoEF&CC. The prescribed ToR along with compliance is also incorporated in the EIA/EMP Report.This report is prepared based on the information and data obtained from the Mining Plan and technical studies undertaken by various consultants/institutes that have been engaged. The data given in the EIA/EMP report are factually correct to the best of knowledge.
Undertaking by Consultant in EIA/EMP report	The EIA Consultant submitted an undertaking stating that M/s Thriveni Earthmovers Pvt. Ltd. obtained ToR under EIA Notification 2006 from MoEF&CC ToR Lr.No: J-11015/113/2021-IA II(NCM) dated 28.03.2022 for Laserda-Pacheri Manganese and Iron Ore Block for the peak production capacity of 1.545 MTPA (ROM) of Iron ore and 0.11 MTPA (ROM) of Manganese ore over an area of 131.800Ha in Dhanurjaypur, Kanarda and Laserda villages, Barbil Tehsil in Keonjhar District in Odisha. The prescribed TOR is complied with and incorporated in the EIA Report. The requirements regarding compliance of ToR has been explained to the project proponent. The present application is being submitted based on directions of the proponent. This report is based on the information and data obtained from approved Mining Plan, site visit & field study carried out by specialized agencies/ experts. The data generated and given in the EIA/EMP Report are factually correct. The sample collection and analyses are carried out by M/s Star Analytical Services, who are an MoEF&CC recognized and NABL accredited Laboratory.
Plagiarism Certificate	The EIA Consultant submitted that the EIA Coordinator (EC) has gone through the report, and the consultant organization shall be fully accountable for any misleading information. It is certified that no unethical practices, plagiarism involved in carrying out the work and external data/ text has not beenused without proper acknowledgement while preparing this EIA report.

xvi. ADS details: Earlier, the proposal was considered in the 26th EAC (Non-Coal Mining) meeting held during 31st January & 1st February, 2024 wherein the Committee has deferred the proposal for submission of additional information. The Project Proponent has submitted their reply vide letter dated 11.03.2024 as mentioned below:

S. No	ADS Point	Reply by Project Proponent
1	The EAC opined that the Ministry may seek comments from the Project Elephant Division in the Ministry in this regard.	Project Elephant Division of the Ministry has given the following Comments: i. As per the authentication of the DFO, Keonjhar the nearest elephant corridor i.e. Karo-Karampada is at a distance of 2.31 km from the project site, the user agency and the State Forest Department must undertake measures for the conservation and protection of elephants and their habitats and ensure to avoid the human-elephant conflict. ii. Considering the migratory nature of the elephants, the user agency should take utmost care for prevention of falling of wildlife including the elephants into the mining pits and should take all the necessary steps so that the movement of elephants in the elephant corridor/ elephant habitat is not affected by the operations of the project. iii. Also, while drafting the Integrated Regional Wildlife Conservation Plan, the elephant conservation and management plan should be made part of the same. iv. Considering the conservation of elephants in the landscape and future perspective also, the Oversight Committee should regularly monitor and review the compliance of the conditions stipulated in the approval for above mentioned mines. v. A proposed Bio-diversity Conservation Plan for this entirel andscape shall also be prepared at the earliest by the State Govt. at the cost of user agency by including the elephant conservation plan. vi. While consideration of the Environment Clearance, the above comments of the Project Elephant and the compliance of the

		conditions mentioned in the office memorandum dated 21.12.2023of Forest Conservation Division shall also be considered for the instant proposal and also for the other similar proposals related to the mining in that elephant landscape. Further, Ministry (Project Elephant Division)received the following comments from Chief Wildlife Warden, Odisha upon the ongoing court case matter related to the project: i. One elephant corridor (Karo-Karampada which one out of 14 elephant corridors of Odisha) is falling within 10 Km of impact zone of the said lease boundary. ii. Wildlife Society of Odisha, a NGO has filed O.A. no. 129/2016/EZ before Hon'ble NGT, Kolkata bench praying for notification of the said corridor as Eco-Sensitive Zone under EPA, 1986. iii. Hon'ble NGT, Kolkata in their order dated 06.04.2023 have directed the state respondents to notify the elephant corridor in one-month time. iv. State Government have filled W.P. (C) no. 1407 of 2023 before Hon'ble High Court of Odisha against order dated 06.04.2023 of Hon'ble NGT. v. Hon'ble High Court of Odisha in its order dated 04.05.2023 in the said W.P. have stayed further proceedings arising out of O.A. no. 129/2016/EZ. As per the Chief Conservator of Forests (Wildlife-II), State Wildlife Headquarters, Odisha information the matter is sub-judice and still pending before the Hon'ble High Court of Odisha.
2	The Project Proponent needs to submit a letter from the State Forest Dept., w.r.t Karo	In this regard, the State Forest Dept. has furnished the letter w.r.t. status of the court cases of Karo-Karampada Corridor.

	Karampada Elephant Corridor and also the present status of the court case w.r.t Karo Karampada Elephant Corridor in WP (C) No. 14057/2023, 14706/2022 before Hon'ble High Court of Orrisa and O.A No:129/2016/EZ & Executive application no. 03/2022 before Hon'ble NGT, Case no: 115/2013 before Judicial Magistrate of First Class (JMFC) Court, Barbil, Orissa and any court of law.	
3	The EAC noted that there is no reference from the Project Proponent regarding list of flora and fauna authenticated by the State Forest Dept. The EAC asked the Project Proponent to submit the authenticated list of Flora and Fauna as per latest Wildlife (Protection) Amendment Act 2022.	Flora and fauna list has been duly authenticated by DFO, Keonjhar vide Lr.No.2044 dated 05.03.2024.
4	The Project Proponent needs to define the exact quantity w.r.t Suggested Ore Transport Mode (SOTM) as per the Recommendation of CSIRNEERI Report on "Carrying Capacity Study for Environmentally Sustainable Iron and Manganese	As per the SOTM recommended by CSIR-NEERI, project proponent informed that proposal comes under SOTM 3 i.e. EC capacity between 1 MTPA &<3 MTPA. So, project proponent will dispatch minimum 70% (Max. 1.081 MTPA) by public railway siding and maximum 30% (Max. 0.464MTPA) by road – direct destination or by other public railway siding or above options.

	Ore Mining Activity in Keonjhar, Sundargarh and Mayurbhanj districts of Odisha State.	
5	The Project Proponent needs to submit the current status of NOC for abstraction of ground water	Project Proponent have obtained No Objection Certificate for Groundwater Abstraction from CGWA vide NOC No. CGWA/NOC/MIN/ORIG/2024/19982 dated 06.03.2024. As per the Recommendation of CGWA, the quantity will be optimized.

xvii. Detailsof the Environmental Management Plan (EMP):

Activities	Capital cost (Crores)	Recurring cost (Lakhs/annum)
Mobile Water Sprinkling	60.0	7.20
Fixed Water Sprinkling	20.0	2.70
Wheel Washing Facility	35.0	5.0
Bridge Construction over Karo River	450.0	5.0
Greenbelt and Plantation	15.0	1.5
Vacuum cleaner	60.0	3.0
Dry fog system for crushing and screening plant	27.0	3.0
Continuous ambient air quality monitoring station	60.0	9.0
Parking Plaza for trucks with proper amenities	25.0	2.5
Construction of cement concrete road from mine entrance to exit	60.0	3.0
Effluent Treatment Plant	10.0	1.5
Sewage Treatment Plant	15.0	2.25
Surface Runoff Management Structures – Retaining Wall, Garland Drain, Settling Ponds	110.0	7.0
Rooftop Rainwater Harvesting	5.0	0.75
Piezometers – 2 Nos.	3.0	0.6

Electronic Display Board	3.0	0.3
Environmental Monitoring	8.0	2.4
EMC Manpower	-	23.0
Awareness Programs in nearby villages	-	6.0
ISO Certification	-	3.0
Total	966	88.7

xviii. Details of project cost and employment:

Particulars	(Rs. In Crore)
Total cost of EMP (Capital Cost of EMP + capital cost of Public hearing)	Rs.19.3 Lakhs (9.66 + 9.64) Capital cost Rs.88.7 Lakhs Recurring Cost
Project Cost	Rs.96 Crores
Employment (No.s)	335

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Signature Not Verified

Digitally Signed by : Mr Pankaj Verma
Member Secretary, MoEFCC (EC)

Date: 02/07/2024