

**BEFORE THE NATIONAL GREEN TRIBUNAL EASTERN
EASTERN ZONE, KOLKATA**

APPEAL NO. 19/2023/EZ

ASISH KUMAR GHOSH AND ANOTHER
...APPELLANTS

VERSUS

STATE OF ODISHA AND ORTHERS
...RESPONDENT

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DATE - 14.10.2023


ADVOCATE FOR THE RESPONDENT NO. 18



**BEFORE THE NATIONAL GREEN TRIBUNAL, EASTERN
ZONE, KOLKATA**

APPEAL NO. 19 / 2023/EZ

Asish Kumar Ghosh and another ...Appellants

-Versus-

State of Odisha and others ...Respondents

COUNTER AFFIDAVIT FILED BY THE REPOSNDENT NO. 18

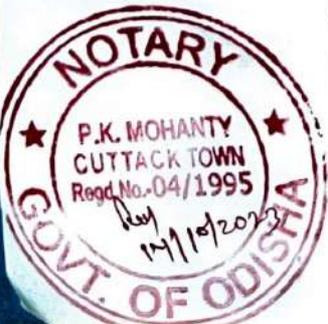
I, Laxmipriya Prusty, aged about 38 years, W/o. Ratikant Rout, At – Balaram Prasad, PO.- Patla, PS.- Motanga, Dist.- Dhenkanal, Odisha, do hereby solemnly affirm and state as follows: -

1. That I am the Respondent No. 18 in this case.
2. That the appellants have filed this case praying interalia to quash the Environment Clearance (EC) dt. 21.06.2023 issued by SEIAA (Respondent No. 6 in favour Respondent No. 18 and a further prayer to restrain the Respondents from carrying out any activity of sand mining in Rajanagar Sand Sairat Source under Jaleswar Tahasil in the district of Balasore. The case filed by the appellant is misconceived and based on falsehood and more particularly the same is tainted with malafides and therefore it is liable to be dismissed with cost.
3. That the appellant in the petition filed by him has mainly urged the following grounds.
 - i) No public hearing was conducted before the approval of District Survey Report (DSR).

Laxmipriya Prusty

Pr
14/10/2023

PRADIPTA KUMAR MOHANTY
Notary, Cuttack Town
Regd. No.-ON-04/1995



ii) The public hearing which was conducted is not in accordance with the guidelines and is in violation of the rules.

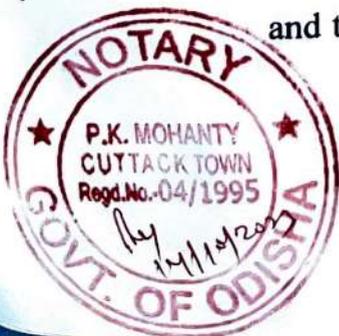
iii) For the aforesaid reasons the auction held by the Tahasildar for the Sairat source in question is void.

4. That as a matter of fact the SEIAA / respondent No. 6 has issued Environment Clearance in favour of the sairat source in question and before the issuance of the same public hearing was duly conducted in accordance with the rules and as per EIA notification. The Collector, Balasore/ Respondent No. 8 filed a counter affidavit in this case wherein it has been narrated as to how such public hearing was conducted in accordance with the law.

5. That besides SEIAA / Respondent No. 6 has also filed a counter affidavit in this case denying the allegations made by the appellants and also justifying the legality of the Environment Clearance (Annexure - 1). The chronological events in issuance of the Environment Clearance (Annexure - 1) are narrated in the counter affidavits filed by Collector, Balasore and SEIAA / Respondent No. 6, hence they need no repetition.

6. That as indicated above the concerned authorities have already placed on record the fact that no illegality or irregularity has been committed in conducting the public hearing. Besides such public hearing was conducted at the appropriate place and in presence of the villagers and local inhabitants as has been mentioned in para - 14 of the counter affidavit filed by Collector, Balasore the villagers welcomed the initiative of granting the lease and the local Sarpanch, PS Members etc. expressed their gratitude

Laxmipriya Prusty



By 14/11/2023
PRADIPTA KUMAR MOHANTI
Notary, Cuttack Town
Regd. No-ON-04/1995

and appreciation for the same. The local community also supported the proposal and the said sairat source is a potential project to contribute positively to the economic development of the locality.

7. That the allegation of the appellants to the effect that the mining plan (Annexure – 5) is illegal, is not at all correct and based on no material on record. The mining plan was approved following the mandatory guidelines and such mining plan was prepared only as per new District Survey Report (DSR).

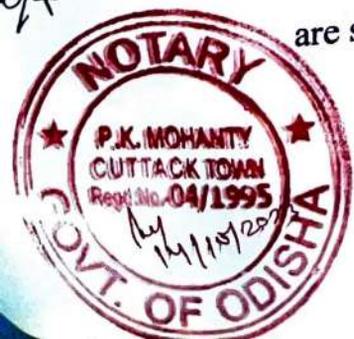
As a matter of fact the new District Survey Report (DSR) was approved by SEIAA, Odisha on 26.04.2023 (Annexure – 4 Series) and after the said date a modified mining plan was obtained by the lessee / Respondent No. 18 on 29.05.2023. The appellants are either not aware of this fact or have deliberately suppressed the same to mislead the Tribunal. Thus, the mandatory requirement of a revised mining plan as per new DSR has been duly complied. A copy of the modified mining plan dt. 29.05.2023 in respect of the sairat source in question is annexed herewith as ANNEXURE-A/19.

8. That in view of the above and due to issuance of a revised mining plan after the date of new DSR it cannot be said that the lessee / Respondent No. 8 has relied upon the mining plan dt. 24.11.2018 (Annexure-5 Series) violating the guidelines of MoEF.

9. That it is not correct to say that the lease was granted close to the upper primary school and primary school of Rajnagar and that the villagers strongly objected it. In fact the said schools are situated near about 350 mtrs away from the sairat source.

Laxmipriya Prusty

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14/11/2023
PRADIPTA KUMAR MOHANTY
 Notary, Cuttack Town
 Regd. No-ON-04/1995

10. That at this stage it is significant to mention here that till date the operation of the sairat source has not been started. Although lease deed has been executed yet due to pendency of the case in this Tribunal the authority is not allowing operation.

11. That it is humbly submitted that as per the modified mining plan (Annexure – A/19) no mining operation will be done on the island (Chadha). There will be no adverse impact of transportation. All these factual allegations are hereby denied.

12. That it is humbly submitted that the leaseholder Respondent No. 18 has to strictly adhere to the approved modified mining plan and committed to the terms and conditions of the environment clearance (Annexure – 1). The appellants before commencement of the mining work have made allegations of violation of the terms and conditions of the environment clearance which is quite absurd. In any case the allegations are unfounded.

13. That the facts stated above are true to the best of my knowledge and belief.

Identified by

Laxmi Praya Prusty



Biswan Chandra Mohanty
Advocate

Laxmi Praya Prusty
DEPONENT

DF - 14.10.23

Solemnly sworn before
me by..... *Laxmi Praya Prusty*
being identified by..... *B.C. Mohanty*
at Cuttack Town Dated..... *14/10/2023*
14/10/2023
P.K. MOHANTY, Notary, Cuttack Town
Regd. No-ON-04/1995



DIRECTORATE OF MINES & GEOLOGY
STEEL AND MINES DEPARTMENT, GOVT. ODISHA, BHUBANESWAR
 Heads of Department Building, Unit-V, Pin-751001
 Tel No.: 0674-2391537, Fax No.: 0674-2391684
 Email ID: dirmines_odisha@rediffmail.com

MGXXXVII (j)-33/23 No. 7389 /DoMG. Dt. 29-05-2023

From

S.K Sahoo, DDG
 Authorised Officer
 Directorate of Mines & Geology, Bhubaneswar

To

The Tahasildar, Jaleswar
 Dist- Balasore, Odisha.

Sub: Approval of mining plan in respect of Subarnarekha River sand bed, Rajnagar over an area of 13.55Acres or 5.48Ha in village Rajnagar of Tahasil Jaleswar, District, Balasore

Sir,

In exercise of powers conferred under Sub Rule 9 of Rule 28 OMMC Rules, 2016 the Mining Plan in respect Subarnarekha River sand bed, over an area of 13.55Acres or 5.48Ha in village Rajnagar of Tahasil, Jaleswar District, Balasore is approved in favour of Smt. Laxipriya Prusty subject to the following conditions.

1. The mining plan is approved without prejudice to any other law applicable to the quarry from time to time, whether made by Central Government, State Government or any other authority.
2. The mining plan is approved subjected to correctness of the precise area granted by the Tahasildar, Jaleswar in terms and conditions fixed by him.
3. The approval of mining plan is based on the information provided by the competent authority to the RQP and if anything is found to be concealed in the contents, the approval shall be deemed to be withdrawn with immediate effect.
4. The mining plan is approved subjected to strict adherence to all necessary provisions under OMMC Rules 2016 and safety measures as per DGMS guideline during its approved plan period.
- 5 The approval is subject to strict compliance by the lessee in respect of observations made in the mining plan which shall be monitored during filed visit by the Competent Authority
6. The boundary pillars of the quarry area shall be maintained in good order throughout the lease period.
7. The approval shall be effective from the date of issue.

Encl. As above


 Deputy Director of Geology
 (Authorised Officer)

Memo No. _____/DoMG Dt. _____

Copy along with the copy of the approved mining plan forwarded Sri Apurba Ranjan Ray, RQP, HIG-407, K-5 kalinga Vihar, Near shiv Temple, Bhubaneswar-751019

Deputy Director of Geology
(Authorised Officer)

Memo No. _____/DoMG Dt. _____

Copy along with the copy of the approved mining plan forwarded Smt. Laxipriya Prusty, W/o-Ratikanta Rout, At-Balaramprasad, Ps-Motanga, Dist-Dhenkanal

Deputy Director of Geology
(Authorised Officer)

EXTENSION/MODIFICATION OF MINING PLAN

(Prepared under Rule 28 (8) of the Odisha Minor Mineral
Concession Rules, 2016)

OF

RAJNAGAR SAND BED

OVER 13.55 ACRES/ 5.48 HECTARES IN VILLAGE RAJNAGAR UNDER
JALESWAR TAHASIL OF BALASORE DISTRICT, ODISHA

Khata No-377, Plot No-1295/1300

LEASE PERIOD-5 YEARS
PLAN PERIOD-5 YEARS

Applicant

Smt. Laxmipriya Prusty

W/o Ratikanta Rout

At-Balaramprasad, Ps - Motanga,
Dist-Dhenkanal, Odisha, 759019.

PREPARED BY
SRI APURBA RANJAN RAY
RQP/OD109/2022

Approved

[Signature]
29-5-23
Deputy Director Geology
Authorised Officer
Directorate of Mines & Geology
Bhubaneswar





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Consent of Lessee

The Extension/ Modification of Mining Plan of **Rajnagar Sand Bed** over **13.55 Acres/ 5.48 Hectares** from village **Rajnagar** under **Jaleswar** Tahasil of **Balasore** district, Odisha has been prepared by **Sri Apurba Ranjan Ray, RQP/OD109/2022**. I request the authorized officer The O/o Directorate of Mines & Geology, Bhubaneswar, Odisha to make further correspondences on his following address:

Sri Apurba Ranjan Ray, RQP
S/o- Late Raghunath Ray,
Plot No-1463, Gandamunda,
Po-Khandagiri, Bhubaneswar,
Dist-Khordha, Odisha-751030

I hereby undertake that the mining plan prepared by **Sri Apurba Ranjan Ray** in accordance with OMMC Rule 2016 shall be acceptable to me and binding on me in all respect.

Laxmipriya Prusty

Place:

Smt. Laxmipriya Prusty

Date:

W/o- Ratikanta Rout

At-Balaramprasad, Ps – Motanga
 Dist-Dhenkanal, Odisha, 759019



Certificate from RQP

Certified that the provisions of Odisha Minor Minerals Concession Rules, 2016 have been observed in the Extension/ Modification of Mining Plan in respect of **Rajnagar Sand Bed** over **13.55 Acres/ 5.48 Hectares** from village **Rajnagar** under **Jaleswar** Tahasil of **Balasore** district Odisha, prepared under Rule 28(8) of OMMC Rules 2016 of **Smt. Laxmipriya Prusty** and wherever specific permission is required, the lessee will approach the concerned statutory authorities.

Certified that the information furnished in the mining plan is correct to the best of my knowledge and belief.

Sri Apurba Ranjan Ray
RQP/OD109/2022

B



Certificate from Revenue Inspector

Certified that the lease area is demarcated and shown in the field by me in respect of **Rajnagar Sand Bed** over an area of **13.55 Acres/ 5.48 Hectares** from village **Rajnagar** under **Jaleswar** Tahasil of **Balasore** district, Odisha of the lessee **Smt. Laxmipriya Prusty** for quarrying and mining the area.

The detail of the land schedule is given in the below table:-

Village	Khata No	Plot No	Area (In Acres)	Kissam
Rajnagar	377	1295/1300	13.55	Nadi

Certified that the information furnished by me is correct to the best of my knowledge.

Revenue Inspector



LIST OF ANNEXURES

- I. Copy of letter of Tahasildar to prepare mining plan
- II. Copy of Previous Approval
- III. Copy of From-F
- IV. Copy of Identity Proof of Lessee
- V. Copy of Proceedings of the First Survey Production SEAC meeting held on 12.04.2023
- VI. Copy of Replacement Study Report
- VII. Copy of RQP Certificate

LIST OF PLATES

LIST OF PLATES		
Plate No.	Description	Scale
I	Key Plan	1 : 50,000
II	Lease Plan	1 : 4000
III	Surface Plan	1 : 1500
IV	Geological Plan	1 : 1500
V	Development Plan	1 : 1500
VI	Environmental Management Plan	1 : 1500
VII	Progressive Mine Closure Plan	1 : 1500

D



CHAPTER -0.0

Introduction:

The area over 5.48 Ha Under reference is located in village Rajnagar of Jaleswar Tahasil in Balasore district of Odisha. Quarry lease for minor mineral (River sand) has been proposed to be granted by the Tahasildar, Jaleswar to the applicant (successful bidder) for minor mineral (River Sand) for five years (**Annexure-I**) after auction.

The area under reference is featured in the Survey of India Toposheet no. 730/1 and bounded between the N21°48'20.9" to N21°48'30.9" and longitudes of E87°12'43.2" to E87°12'52.9".

In absence of boundary description of the area by the competent Authority, the co-ordinates of the boundary pillars/ Corner points have been taken with hand held GPS. The area has been surveyed by the RQP and all spot elevations / thickness of sand with respect to water level have been recorded with the help of hand held GPS & measuring tape. Accordingly the lease area and the surface plan (Plate no-III) have been Prepared.

Previous Mining plan was approved by Mining Officer, Baripada Circle, Baripada vide letter no-XXB-01/2018-3543//Mines on dated 24.11.2018 under Sub Rule 5 of Rule 28(4) of OMMC Rules,2016 for the period of 5 years. The copy of the same is enclosed as **Annexure-II**. But during the plan period EC document could not finished though it is a B1 category project. As per Proceedings of the Meeting of State Level Expert Appraisal Committee, Odisha Held On 12th April 2023, the validity period of mining plan to be expired on 17.04.2023. The SEIAA may consider to issue Environmental Clearance after the lessee submits valid approved mining plan beyond 17.04.2023. The copy of the Proceeding is enclosed as **Annexure-V**. Present Modification/Extension of mining plan has been prepared for 5 year period under Rule 28(8) of OMMC Rules,2016 by Mr. Apurba Ranjan Ray, RQP and submitted for Approval.

Approved

[Signature]
29-5-22
Deputy Director Geology
Authorised Officer
Directorate of Mines & Geology
Bhubaneswar

1

[Signature]

Apurba Ranjan Ray
RQP/OD109/2022

RAJNAGAR SAND BED

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LESSEE-SMT. LAXMIPRIYA PRUSTY



The Co-ordinates as follows,

PILLAR NO	LATITUDE	LONGITUDE
1	N21°48'30.9"	E87°12'43.7"
2	N21°48'30.8"	E87°12'52.2"
3	N21°48'25.8"	E87°12'49.3"
4	N21°48'20.9"	E87°12'49.1"
5	N21°48'20.9"	E87°12'43.2"
6	N21°48'27.6"	E87°12'43.9"

Approved

gale
29-5-13
Deputy Director Geology
Authorised Officer
Directorate of Mines & Geology
Bhubaneswar

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AR Ray

Apurba Ranjan Ray
RQP/OD109/2022

**FORM-O**

[See Rule 28 (8) of the Odisha Minor Mineral Concession Rules, 2016]

**EXTENSION/ MODIFICATION OF MINING PLAN FOR WINNING OF RIVER SAND
FROM SUBARNAREKHA RIVER UNDER RAJNAGAR VILLAGE IN JALESWAR
TAHASIL OF BALASORE DISTRICT.**

[CATEGORY: B1

**As specified by MoEF vide Notification
No-J-13012/12/2013-IA-II (I) dated 24.12.2013]**

CHAPTER - 1

- 1. Name & Address of the Lessee** : Smt. Laxmipriya Prusty
W/o Ratikanta Rout
At-Balaramprasad, Ps – Motanga
Dist-Dhenkanal, Odisha, 759019
- 2. Particulars of the area(Acreage, Boundary Description& Land Area- 5.48hectares. Schedule):** Land schedule mentioned on plan provided by revenue Authority and attached as **Plate no -II**. Location Map- Ref. **Plate no- I**, Surface Plan - Ref. **Plate no- III**.
Plot No-1295/1300
Khata No-377
- 3. Status of the Lessee(Private individual/ Private Company/ Public sector Undertaking / Joint sector Under taking/ Others)** : Private individual
- 4. Period of Concession** : Five years

Approved *29-5-23*

**Deputy Director Geology
Authorised Officer
Directorate of Mines & Geology
Bhubaneswar**

AR Ray
Apurba Ranjan Ray
RQP/OD109/2022



5. Mineral intended to be won :River Sand
6. Name, Address & Regd. No. of RQP preparing the mining plan with validity of Recognition : Name : Sri Apurba Ranjan Ray
Regd. No. RQP/OD109/2022
Address: HIG-407, K-5, Kalinga Vihar, Near Shiv Temple, Bhubaneswar- 751019, Odisha.
Contact- 7008571071
7. Order No. &date of competent Authority granting the Concession (copy of the Order to be attached) :
Vide Letter No.2685, dated. 17.05.2023
(Copy enclosed as Annexure-I)
8. If, forest area, whether forest clearance Obtained (attach copy of forest clearance) : The total area is non-forest Govt. land as envisaged from the land schedule provided by the revenue authority.
Hence, Forest clearance is not required.

Approved
Date 29.5.23
Deputy Director Geology
Authorised Officer
Directorate of Mines & Geolog.
Bhubaneswar


Apurba Ranjan Ray
RQP/OD109/2022



CHAPTER -2

9. Reserve (Estimation to be based on the Exploration, If any, carried out in the area or on local Parameters):

The reserve is estimated based on local parameters. The lease area belongs to recent quaternary River bed deposits consisting of sand, silt, clay, gravel and alluvial deposits.

a. Physiography:

The Sand bed is on the River Subarnarekha. The Rajnagar Sand Bed deposit represents a gently sloping to almost flat terrain with highest altitude of 18mRL. The general slope is towards northeast. Vegetation is scanty with small bushes existing in the auction hold area. There is no human settlement within the area.

b. Regional Geology:

The coastal tract of Orissa is underlain by the Tertiary and Quaternary Formations. Balasore is a unique District in Odisha with varied geology, of these the Tertiaries are the least exposed on the surface, whereas the Quaternaries are extensively developed along the coast and further inland. The Quaternary formations cover almost the entire study area while the Tertiaries are exposed near Baripada town at about 28 km. NNW of the Northern Boundary of the area. The Pre-Cambrian crystalline occur as hills and mounds in the west just outside the present area. Chatterji and Raghava Rao (1960) made studies on the sub-surface Geology and Tectonic Framework of sedimentation in the crescent coastline of Balasore on the basis of the data obtained from the Exploratory Drilling Operations. Exploratory Drilling reveals that in the subsurface the warped Pre-Cambrian basement is overlain by Miocene marine sediments, Mio-Pliocene estuarine sediments, laterites and alluvium. The Mio-Pliocene sediments and alluvial sections contain the principal ground water reservoirs. The marine sediments are dominantly composed of finer elastics and non-

Approved

29-5-23
Deputy Director Geology
Authorised Officer
Directorate of Mines & Geology
Bhubaneswar

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AR Ray

Apurba Ranjan Ray
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elastics (Bhatnagar et al, 1970). Small outcrops of ultramafic rocks are exposed in and around Bhalukasoni (21°29': 86°42') area under Balakrishna Division of Balasore District. Ultramafic rocks comprising serpentinitised dunite, peridotite and pyroxenite largely under soil and laterite cover occur intermittently spreading over an area of 1.8m × 800m. A 100m long E-W trench has exposed two chromite ore bodies on its either end, the dimensions being 500m × 3.5m × 4.5m and 5.5m × 2m × 3.3m. A reserve of the order of 1550 tones was estimated with massive and spotted type of chromite with Cr₂O₃ content ranging from 25.77 to 54.76%. These chromite occurrences along with the associated ultramafic rocks are considered to be xenolithic bodies lying within a plutonic mass of gabbroic rocks.

b. Litho-stratigraphy of Quaternary sequence in Odisha

Upper Gondwana	Migmatitic granitic gneiss, amphibolite, schist and quartzite	Palaeozoic-Mesozoic
	Conglomerate, sandstone, shale fireclay	Lower Cretaceous
Middle Gondwana	Conglomerate, ferruginous sandstone, red shales	Lower to Middle Triassic
	-----Un- conformity-----	
Lower Gondwana	Fine to medium grained sandstone, siltstone, clay-beds, coal	Upper Permian
	Sandstone, shale, clay, ironstone shale	Middle Permian
	Conglomerate, sandstone, shale, fireclay, coal	Lower Permian
	-----Un- conformity-----	
	Boulder Bed, green shale, sandstone, marlstone	Upper carboniferous to lower Permian
	-----Un- conformity-----	
	Grinite, greisses, amphibolites, migmatites	Precambrian

Approved *29.5.23*

29.5.23
Deputy Director Geology
Authorised Officer
Directorate of Mines & Geology
Bhutan

AR Ray

Apurba Ranjan Ray
RQP/OD109/2022



c. Local Geology

The sand deposit in Subarnarekha River near Rajnagar belongs to sub recent deposits of Holocene age. Beach Sand, younger and older alluvium also belongs to the same age. The proposed area is occupied by a gently sloping to almost flat deposits of sand. The basement consists of Tertiary deposits and the sequence of litho-units encountered in the auction hold area is as follows:



d. Lithology:

The characteristic features of the litho units of the area are described below:

Sand: The eastern part of the lease area under reference is covered with grey to white sand deposits with average thickness of 1.6m. Sand by definition is a loose, incoherent mass of mineral materials and is a product of natural processes.

The composition of sand is highly variable in nature, depending on the local rock types/sources and conditions, but the most common constituent of sand in inland continental settings and non-tropical coastal settings is silica (silicon dioxide or SiO_2), usually in the form of quartz which because of its chemical inertness and considerable hardness, is the most common mineral resistant to weathering.

Alluvium: Decomposed vegetal materials admixed with clay and soil constitutes alluvium which is underlain by the sand bed with some clayey matter.

Reserve

The Geological reserve has been estimated by considering the following parameters.

Approved

Deputy Director Geology
Authorised Officer
Directorate of Mines & Geology
Bhutan

APR 23

Apurba Ranjan Ray
RQP/OD109/2022

RAJNAGAR SAND BED

LESSEE-SMT. LAXMI PRIYA RAJNAGAR



- i) Outcome of geological mapping: The particular area is a new source. Fresh patches of unexploited river sand occurrences also observed within the area. The maximum RL of the surface sand zone is around 18 m.
- ii) It is observed that, the difference in elevation between the highest and lowest points is much less. Gradient of the river is also very low. Therefore, Surface area method has been adopted for estimation of reserve for this river bed sand.
- iii) Thickness of sand zone: The mRL of the surface sand zone is around 18m. Considering the observations of thickness of sand bed of the area the maximum possible thickness of sand bed that can be mined out i.e. 1.6m is assumed as the thickness of sand over the area for estimation of reserve.
- iv) The Quarry lease area is a new source. Quarry lease for minor mineral (River sand) has been proposed to be granted by the Tahasildar, Jaleswar to the successful bidder for minor mineral (River Sand) for five years after auction and the present document is being prepared in favour of Tahasildar, Jaleswar and the process would require at least 2 to 3 months from now. At that point of time the position and quantity of the present resource of river sand within the area cannot be calculated now. Also, the pattern of sand deposition in the ensuing years of the lease period is impossible to ascertain right now. To overcome this, the total lease area has been considered as potential zone for sand deposition excluding the water channel areas, if any located within the area (**Plate No IV**) and Geological resource has been calculated based on this area and the present thickness of sand deposit.

Approved
 Deputy Director Geology
 Authorised Officer
 Directorate of Mines & Geology
 Bhutan

8

Apurba Ranjan Ray
 RQP/OD109/2022

RAJNAGAR SAND BED

LESSEE-SMT. LAXMIPRIYA PRASAD



In the absence of any monitored database, it is assumed that 100% of the above calculated resource would be replenished cumulatively within the total QL period of 5 years. Considering the above, the total geological Resource of the QL area for the lease period has been calculated by doubling the above calculated resource.

- v) The resource of river sand over the area has been categorized as probable reserve.
- vi) The foreign particles in the sand such as wood and other floating waste have been considered as waste. However, the volume of waste is negligible in quantity and in practice the waste will not be separated during mining. So recovery factor has been taken as 100% for sand.
- vii) Total volume of excavation of sand is saleable.

Safety zone barrier of 7.5 m has been taken into account all along the lease boundary. So the mineable reserve has been estimated excluding the reserve coming within the safety zone.

Calculation of Reserve:

Based on the above considerations, site specificity & chosen local parameters, the reserve has been calculated for river bed sand zone by surface area method.

Formula adopted for calculation of volume of river sand is $V = A \times T$

Where,

V is total volume of river sand in m^3

A is the surface area of potential sand patch.

T is the average thickness of sand bed in m

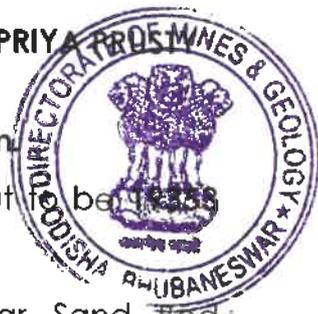
Approved
 Deputy Director Geology
 Authorised Officer
 Directorate of Mines & Geology
 Bhutan

Apurba Ranjan Ray
 RQP/OD109/2022

RAJNAGAR SAND BED

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LESSEE-SMT. LAXMIPRIYA



The total geological resource has been estimated as 27122 Cum.

Similarly, the mineable reserve of river bed sand is worked out to be 19353 Cum.

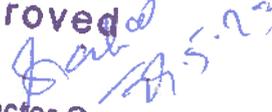
The geological reserve and mineable reserve of Rajnagar Sand Bed calculated under various categories are given in table no.1 & 2 respectively as follows:

**Table.No.1
CATEGORY WISE GEOLOGICAL RESERVE OF SAND BED**

GEOLOGICAL RESOURCE CALCULATION OF QL FOR THE PERIOD FIVE YEAR			
AREA OF POTENTIAL SAND ZONE (m ²)	THICKNESS OF SAND (m)	GEOL RESOURCE OF SAND (m ³)	CATEGORY
A	B	C= A X B	D
16951	1.6	27122	PROBABLE
TOTAL		27122	

**Table No.2
CATEGORY WISE MINEABLE RESERVE OF SAND BED**

MINEABLE RESERVE CALCULATION OF QL FOR THE PERIOD FIVE YEAR			
AREA OF POTENTIAL SAND ZONE EXCLUDING SAFETY ZONE (m ²)	THICKNESS OF SAND (m)	MINEABLE RESERVE OF SAND (m ³)	CATEGORY
A	B	C=A X B	D
12096	1.6	19353	PROBABLE
TOTAL		19353	

Approved

 Deputy Director Geology
 Authorised Officer
 Directorate of Mines & Geology
 Bhutan

10


 Apurba Ranjan Ray
 RQP/OD109/2022

CHAPTER -3



10. Mining

a. **Whether manual or semi-mechanized or mechanized****Manual only:**

Mining shall be undertaken to extract sand, mainly through an open pit spread over the river course devoid of water or nominal water that may be encountered below.

Mining Method:

The mode of the deposit, geomorphology of the area and its hydrological condition are some of the factors that favours the open cast method of mining.

Mining will be done with manual excavation & loading into transporting vehicles and transported from Rajnagar Sand Bed to the users/destination through transporting vehicles. The mining will be undertaken on single shift basis. The local man power shall be engaged in the mine.

b. **If semi-mechanized or mechanized, number, type and capacity of machines to be used:**

Excavation & loading of sand into the transporting vehicles will be done by manual means. The transportation from the Rajnagar Sand Bed site to respective users/destinations shall be achieved by transporting vehicles. The no. of fleets with their capacity is as below:

Sl. no	Name	Capacity	No. of Fleet
1	Transporting vehicles	6Cum/3Cum	4/6
2	Safety gears Helmets, safety shoes, Goggles, & Hand gloves	-----	As required

Approved
[Signature]
 Deputy Director Geology
 Authorised Officer
 Directorate of Mines & Geology
 Bhubaneswar

[Signature]
 Apurba Ranjan Ray
 RQP/OD109/2022



- c. **Whether drilling and blasting will be made use of, If yes, state monthly quantity of explosive consumed:**

As such the river bed sand are loose. No drilling & blasting is required.

- d. **Benching pattern (Height x Width):** Benching pattern is not feasible in case of sand, as the angle of repose of sand is 35° , based on this the Ultimate pit slope Limit has been taken as 35° . The maximum depth of mining will be of 1m or up to water table whichever is less. During Plan period only 1m depth of sand will be excavated.

- e. **Face lay out (attached development plan):**

There will be no existing quarry within the proposed area after replenishment. Total available mineable reserve over the area has been estimated considering the probable zone of occurrence of river sand bed within the proposed area as revealed during field visit and assuming uniform rate of year wise replenishment over the area. Year wise development of quarries for five year plan period will be decided depending upon the occurrences of sand bed over the proposed area during the respective year to achieve the target production. Therefore, quarry lay out will be over the whole proposed area depending upon the probable sand bed after replenishment leaving stipulated safety zones (Ref. Plate V).

- f. **Quarry Floor Level (RL) at the end of the year or period of the concession:**

The present level of the lease area is 18mRL. During plan period, the development will be up to 1m depth. During the end of the plan period quarry floor will be 17 mRL or up to water table whichever is less.

Approved
 Date 27.5.23
 Deputy Director Geology
 Authorised Officer
 Directorate of Mines & Geology
 Bhubaneswar

Apurba Ranjan Ray



g. Quantity of mineral to be won (Annual Level of Production)

Total available mineable reserve over the area has been estimated considering the probable zone of occurrence of river sand bed within the proposed area which will be extracted year wise during the plan period. Based on the total extractable mineable reserve, the MGQ has been fixed by the competent authority and this much quantity of sand has been planned to be extracted each year from the source as mentioned below:

Replenishment procedure will be used in Year wise production.

Table No.3

YEAR WISE PRODUCTION OF SAND DURING PLAN PERIOD

YEAR	Surface area in m ²	Thickness in mtr	Production Planning was Approved in the Mining Plan in Cum/Annum	Modified in Cum/Annum (As per Proceedings of the SEAC meeting held on 12.04.2023 item no.3 point 25.)
1 ST YEAR	11612	1	40002	11612
2 ND YEAR	11612	1	40002	11612
3 RD YEAR	11612	1	40002	11612
4 TH YEAR	11612	1	40002	11612
5 TH YEAR	11612	1	40002	11612
TOTAL			200010	58060

N.B: New Modification of Mining plan has been prepared based upon recent replenishment study report & SEIAA & SEAC decision. Further production may be increased based upon further replenishment study report.

100% of replenishment of sand will be done every year after flood and the same surfacial area will be extracted each successive year during the plan period.

h. Quantity of overburden to be removed(Show location of such disposal in development plan) :

Since the river bed sand deposit is devoid of any over burden, development for over-burden does not arise.

i. Whether heavy blasting to be adopted: If yes, location of nearest habitation(to be shown in the surface plan)

No blasting is required for sand mining.

j. Safety precautions to be adopted:

No safety measures are required as there will no blasting operations.

k. Brief description on the method of Procurement and storage of explosives:

Not applicable.

Approved 13

Deputy Director Geology
Authorised Officer
Directorate of Mines & Geology
Bhubaneswar

Apurba Ranjan Ray
RQP/OD109/2022



CHAPTER -4

11. Waste disposal:

(a) Location (show it in the development plan): No dump has been proposed as there will be no generation of waste in this case.

(b) Area covered: Not applicable as no dump has been proposed.

(c) Environment safeguards for such disposal: Not applicable as no dump has been proposed.

Approved
20/09/22
Deputy Director Geology
Authorised Officer
Directorate of Mines & Geology
Bhubaneswar


Apurba Ranjan Ray
RQP/OD109/2022



CHAPTER -5

12 Mine drainage :

(Give details of total make of water during dry and rainy season and its method of handling)

The shallow depth excavation on dry/nominally wet sand has been proposed, which will have negligible or no impact on drainage. Abandoned stream channels on terrace and inactive flood plains have been preferred rather than active channels.

Water that might percolate (if any) into excavation area has to be pumped out to channelize to river course during excavation. Stream will not be diverted to form inactive channels. Mining below subterranean water level will be avoided as a safeguard against any water contamination. Source has been finalized avoiding concave side of river bank/ channel to prevent bank erosion.

Approved
[Signature]
Deputy Director Geolog
Authorised Officer
Directorate of Mines & Geolo.
Bhubaneswar

[Signature]
Apurba Ranjan Ray
RQP/OD109/2022

CHAPTER -6

13. **Mineral Processing : (Give details of processing including sizing, Sorting, generation of rejects/fines etc)**

Sand excavation from the river bed mining is not required to be processed as the end consumer will purchase the sand as such for their requirement.

Approved
2023-5-23
Deputy Director Geology
Authorised Officer
Directorate of Mines & Geology
Bhutan



CHAPTER -7

14. a) **No. of trees to be uprooted due to mining operation:**

There is no tree within the auction area on the river-bed sand and hence not applicable.

b) **Programme of Plantation:**

It is proposed for planting @50 saplings of suitable species per annum by the lessee in vicinity of the river bank as avenue plantation which is to be undertaken in consultation with the concerned authority.

Approved
Deputy Director Geolog
Authorised Officer
Directorate of Mines & Geol.
Bhubaneswar


Apurba Ranjan Ray
RQP/OD109/2022



CHAPTER -8

15. Manpower:

a) Supervisory (inclusive of statutory personnel's) :

1 (one) number of supervisory personnel preferably Mining Mate with Certificate of Competency from DGMS will be employed.

b) Non- Supervisory (skilled, semi-skilled & unskilled):

Skilled:2

Semi-skilled:7

Unskilled:15

Total- 10+25+45=24

c) OMS

: 2 Cum

Total production during plan period : 58060 Cum

Average ore production /annum : 11612 Cum

Working days in the year : 240 days (on an average)

Production per day : $11612/240= 48.38$ Cum or says as 48 cum

Output per man shift (OMS)= $48/24=2$ Cum

Approved
(Signature)
 Deputy Director Geology
 Authorised Officer
 Directorate of Mines & Geology
 Bhubaneswar

(Signature)



CHAPTER -9

16. Use of Mineral : (Specification and monthly quantity to be dispatched be furnished)

- a) **For domestic use:** For construction purpose the sand of Subarnarekha River will be used 11612 Cum of sand per annum is likely to be dispatched by the lessee (auction holder) to domestic and commercial users. It is suggested to cover the loaded vehicle of river sand very securely by tarpaulin sheet before transportation to the dispatch point.
- b) **For export:** No material will be exported at present. However, if required the sand excavated may be exported to different states or countries within the ambit of prevailing law.

Approved
[Signature]
 29-5-23
 Deputy Director Geology
 Authorised Officer
 Directorate of Mines & Geology
 Bhubaneswar

[Signature]
 Apurba Ranjan Ray
 RQP/OD109/2022

CHAPTER -10



17. Mine Closure Plan:

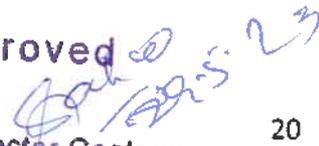
a) Describe the process/activities to be undertaken for reclamation and Rehabilitation in respect of the following:

- i) **Mined out land:** During plan period the probable mined out land will be **1.16 ha.**

The Rajnagar Sand Bed comprises of 5.48 hectares under Jaleswar Tahasil of Balasore district. The entire area is of river bed and devoid of any forest growth. Since it is a River sand bed and the total mining activities will be confined to the river sand bed, no reclamation measure is proposed for mine closure. Therefore, only avenue plantation has been proposed @50 saplings per annum on the river bank adjacent to this leasehold.

The existing land use as well as proposed land use of the area is given as below:

Type of land use	Area (Ha)
Potential Mineable surface area within the plan period	1.16
Quarry Safety zone area including Water channel area	0.26
Untouched Area(Non Mining zone area)	4.06
Total	5.48

Approved

 Deputy Director Geology
 Authorised Officer
 Directorate of Mines & Geology
 Bhubaneswar

20


 Apurba Ranjan Ray
 RQP/OD109/2022



- ii) **Waste/reject dump:** Does not arise as there will be no generation of waste.
- iii) **Topsoil stack and its utilization:** There will be no generation of top soil in this quarry since the mining for sand will be carried out within the river bed

b) Financial assurance: (To be furnished as a bank guarantee in respect of the area to be put to use).

The area to be put to use will be 5.48 Ha in the present plan period. Hence the financial assurance as decided by the competent authority would be submitted by the auction holder on demand. Also, the auction holder has to pay 5% of the royalty towards environment management fund.

Approved

20/9-5-23
Deputy Director Geology
Authorised Officer
Directorate of Mines & Geology
Bhubaneswar

**18. CERTIFICATE;**

I, the holder of minor mineral for River (Subarnarekha River) Sand over 5.48 heccts, in Rajnagar (village) under Jaleswar Tahasil of Balasore District hereby solemnly affirm that the plans and programmes in this Extension/ Modification of Mining Plan will be scrupulously implemented by me and I will be strictly held responsible for any Deviation thereof. I also hereby certify that the provisions of Mines and Minerals (Development & Regulation) Act 1957, and the Mines Act, 1952 and Rules and Regulations made under these Acts, along with the provisions of 28(8)OMMC Rule 2016 will be strictly adhered to while implementing this mining plan and wherever specific permissions will be required, I will approach the concerned authorities of Directorate General of Mines Safety and State Government as the case may be.

Place:
Date:

Laxmipriya Prusty

Smt. Laxmipriya Prusty
W/o- Ratikanta Rout
At-Balaramprasad, Ps – Motanga
Dist-Dhenkanal, Odisha, 759019

Approved
[Signature]
Deputy Director Geology
Authorised Officer
Directorate of Mines & Geology
Bhubaneswar

22

AR Ray
Apurba Ranjan Ray
RQP/OD109/2022



UNDERTAKING

I hereby undertake to submit the financial assurance for 5.48 Ha as decided by the competent authority in form of bank guarantee from any nationalized bank as and when required by the authority concerned.

Laxmipriya Prusty

Place:
Date:

Smt. Laxmipriya Prusty
W/o- Ratikanta Rout
At-Balaramprasad, Ps – Motanga
Dist-Dhenkanal, Odisha, 759019

Approved
9/5/23
Deputy Director Geology
Authorised Officer
Directorate of Mines & Geology
Bhubaneswar

AR Ray
Apurba Ranjan Ray
RQP/OD109/2022

380
OFFICE OF THE TAHASILDAR, JALESWAR.

No: 2685 Date 17/05/2023



To

Smt. Laxmipriya Prusty (Lessee)
Rajnagar Sand Sairat Source
At- Balaramprasad,
G.P.- Motanga
Dist:- Dhenkanal
PIN:- 759121

Sub:- Preparation and approval of mining plan.

Madam,

This is to inform you that, you are the successful bidder for Rajnagar Sand sairat source. The mining plan for the source approved on 24.11.2018 and mentioning that plan period 5 years from 2018-19 to 2022-23 which was expired on 17.04.2023.

In this connection you are hereby requested to take necessary step for extension of time period of mining plan in respect of Rajnagar Sand Sairat Source with stipulated terms & condition and production value as mentioned previous approved mining plan.


Tahasildar, Jaleswar

Memo No. 2686 Dated. 17/05/23

Copy submitted to the Collector & District Magistrate, Balasore for favour of kind information and necessary action.


Tahasildar, Jaleswar

Memo No. 2687 Dated. 17/05/23

Copy submitted to the Sub-Collector, Balasore for favour of kind information and necessary action.


Tahasildar, Jaleswar

OFFICE OF THE MINING OFFICER, BARIPADA
CIRCLE, BARIPADA

E-mail Id: -mo.baripada@orissaminerals.gov.in

No. **XXB-01/2018-3543** //Mines, Date **24.11.18**



From

The Mining Officer,
Baripada Circle, Baripada.

To

The Tahasildar, Jaleswar,
Dist- Balasore.

Sub:

Approval of Mining plan in respect of Rajnagar Sand Bed over 13.55 acres or 5.48 hect., in village - Rajnagar under Jaleswar Tahasil of Balasore District for the year 2018-19 to 2022-23.

Sir,

In exercise of powers conferred by Sub Rule 8 of Rule 28(9) of Odisha, Minor Mineral Concession Rules 2016, Read with Govt. of Odisha, Steel & Mines Department, order No. 5311/SM, dt.11.06.2015, the Mining plan submitted by Sri Pravat Kumar Sahoo, RQP (Regd. No. RQP/OD/025/2015) in respect of above quarry lease is hereby approved for the year 2018-19 to 2022-23 subject to the following conditions.

1. The Mining plan is approved without prejudice to any other law applicable to the quarry / area from time to time, whether made by Central Government., State Government or any other authority.
2. The Mining plan is approved without prejudice to any order of direction from the Court of competent Jurisdiction.
3. The approval of aforesaid Mining plan does not in any way imply the approval of the Government in terms of any other provisions under Odisha Minor Mineral Concession Rules 2016 or any other laws.
4. The approval of Mining plan is subject to provision of Forest (Conservation) Act.1980 & Rules made there under any other relevant statutes & guide lines as they may be applicable to the lease area from time to time.
5. The approval of the Mining plan is based on the information provided by the concerned RQP & if anything is found to be concealed in the contents of the Mining plan, the approval shall be deemed to have been withdrawn with immediate effect.
6. The boundary pillars of the quarry area shall be maintained in good order throughout the tenure of the quarry lease.
7. Forest growth, if any, available in the area shall not be cut or cleared during operation without prior permission from forest Deptt.

Contd.....

11211

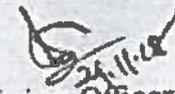


8. The resources have been estimated based on the present conditions which may be changed after rainy seasons. As such, reassessment of resources is required after rainy seasons every year.
9. Provisions of the Mines Act, 1952 & Rules & Regulations made there under including submission of notices of opening, appointment of Managers & others statutory personnel as required by the Act, shall be complied with & if anything is found to be concealed in the contents of the Mining plan, this approval shall be deemed to have been withdrawn with immediate effect.
10. The approval is subject to strict compliance by the lessee in respect of the observation made in the mining plan which shall be monitored during field visit by the competent authority
11. The approval of mining plan is subject to submission of required Financial Assurance in shape of Bank Guarantee in favour of the competent authority before execution of the quarry lease.

You are requested to monitor the commitments made by the concerned RQP on behalf of the applicant in the approved Mining Plan during the concession period. A copy of the approved Mining Plan in respect of the above cited quarry lease is submitted herewith for necessary action.

Encl: As above.

Yours faithfully


Mining Officer,
Baripada Circle, Baripada

Memo No. _____ // Mines, Date _____ //
Copy submitted to the concerned RQP, Sri Pravat Kumar Sahoo, RQP
(Regd. No. RQP/OD/025/2015), Plot No. N/4-289(F), IRC Village, Nayapali,
Bhubaneswar-751015 for information and necessary action.

Mining Officer,
Baripada Circle, Baripada

Memo No. _____ // Mines, Date _____ //
Copy submitted to the Sub Collector, Balasore for information &
necessary action.

Mining Officer,
Baripada Circle, Baripada

383
OFFICE OF THE TAHASILDAR, JALESWAR.

No: 5056 Date 20.11.19



To

Smt. Laxmipriya Prusty (highest tenderer)
 W/o-Ratikanta Rout,
 At-Balaramprasad(Patala), P.S:Motanga
 Dist:Dhenkanal, Mob.8763069507(Wap).

Sub: Environmental Clearance for lease of sand sairat source in respect of "**Rajnagar Sand Sairat Source**" under Jaleswar Tahasil In the District Balasore on long term Lease basis for the year 2018-19 (Sairat Case No-42 /19-20)

Madam,

In inviting reference to the subject cited above, I am to intimate you that as per OMMC (Amendment) 2016 the sand source namely "Rajnagar Sand Source" under this Tahasil is to be settled on long term lease basis In your favour for the year 2018-19 to 2022-23. Which area is covered more than 5 hectares. As per sub-rule 4 of Rule 29 of OMMC (Amendment) Rule-2016, the lessee shall be responsible for obtaining environment clearance and implementing the environment management plan.

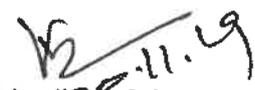
As such you are instructed to take steps for obtaining environment clearance immediately from the office of the Chairman, State Environment Impact Assessment Authority, Bhubaneswar on own cost.

Yours faithfully


 20.11.19
 Tahasildar, Jaleswar-cum
 Competent Authority

Memo No: 5057 Date 20.11.19

Copy submitted to the Chairman, State Environment Impact Assessment Authority, Bhubaneswar for favour of kind information and necessary action with request to issue the Environment Clearance in favour of Smt. Laxmipriya Prusty relating to Sairat Case No-42/19-20. for favour kind information and necessary action.


 20.11.19
 Tahasildar, Jaleswar-cum
 Competent Authority



ଭାରତୀୟ ବିଶିଷ୍ଟ ପରିଚୟ ପ୍ରାଧିକାରଣ

ଭାରତ ସରକାର
Unique Identification Authority of India
Government of India

ନମାଙ୍କନ କ୍ରମାଙ୍କ / Enrolment No.: 2189/76741/32369

To
ଲକ୍ଷ୍ମିପ୍ରିୟା ପୂଷା
Laxmipriya Prusty
W/O Ratikanta Rout
BALARAMPRASAD
Balaramprasad
Balaramprasad
Dhenkanal Odisha - 759019
8763069507

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ଆପଣଙ୍କ ଆଧାର ସଂଖ୍ୟା / Your Aadhaar No. :

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ମୋ ଆଧାର, ମୋ ପରିଚୟ



ଭାରତ ସରକାର
Government of India



ଲକ୍ଷ୍ମିପ୍ରିୟା ପୂଷା
Laxmipriya Prusty
ଜନ୍ମ ତାରିଖ / DOB: 16/05/1985
ସ୍ତ୍ରୀ / FEMALE

2907 6544 6405

ମୋ ଆଧାର, ମୋ ପରିଚୟ



- ଆଧାର ପରିଚୟ ପ୍ରମାଣ ଅଟେ, ନାଗରୀକତା ପ୍ରମାଣ ନୁହେଁ
- ପରିଚୟ ପ୍ରତିଷ୍ଠା ପାଇଁ, ଅନଲାଇନ୍ ରେ ପ୍ରମାଣିକରଣ କରନ୍ତୁ
- ଏହା ଇଲେକଟ୍ରୋନିକ ପ୍ରକାଶା ହାରା ଉତ୍ପନ୍ନ କରାଯାଇଥିବା ଡିଓ ଅଟେ

INFORMATION

- Aadhaar is a proof of identity, not of citizenship.
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- ଭବିଷ୍ୟତରେ ଏହି ଆଧାର, ସମସ୍ତ ସରକାରୀ ଓ ବେସରକାରୀ ସେବା ପ୍ରାପ୍ତ କରିବାରେ ସାହାଯ୍ୟକ ହେବେ ।
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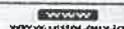


ଭାରତୀୟ ବିଶିଷ୍ଟ ପରିଚୟ ପ୍ରାଧିକାରଣ
Unique Identification Authority of India

Address:
W/O Ratikanta Rout,
BALARAMPRASAD,
Balaramprasad, Dhenkanal,
Odisha - 759019

ଠିକଣା:
W/O ରତିକାନ୍ତ ରାଉତ, ବଳରାମପ୍ରସାଦ,
ବଳରାମପ୍ରସାଦ, ଦେହନାଳ,
ଓଡିଶା - 759019

2907 6544 6405



**PROCEEDINGS OF THE MEETING OF STATE LEVEL EXPERT APPRAISAL
COMMITTEE, ODISHA HELD ON 12TH APRIL 2023**



The SEAC met on 12th April 2023 at 10:30 AM in the Conference Hall of Odisha State Pollution Control Board, Bhubaneswar under the Chairmanship of Sri Sashi Paul. The following members were present in the meeting.

- | | | |
|------------------------------|---|-----------------------|
| 1. Sri Sashi Paul | - | Chairman (through VC) |
| 2. Dr. K. Murugesan | - | Member Secretary |
| 3. Dr. Rabi Narayan Patra | - | Member (through VC) |
| 4. Dr. Chittaranjan Panda | - | Member |
| 5. Prof. (Dr.) H.B. Sahu | - | Member (through VC) |
| 6. Er. Fakir Mohan Panigrahi | - | Member (through VC) |
| 7. Prof. (Dr.) B.K. Satpathy | - | Member |
| 8. Dr. K.C.S Panigrahi | - | Member (through VC) |
| 9. Shri Jayant Kumar Das | - | Member |

Draft proceeding of the meeting was finalized by the members through e-mail and final proceeding of the meeting was confirmed by the members through e-mail. The agenda-wise proceedings and recommendations of the committee are detailed below.

CONSIDERATION OF OLD PROPOSALS (COMPLIANCE RECEIVED): 04 NOS.

ITEM NO. 01

PROPOSAL OF ENVIRONMENTAL CLEARANCE FOR SARUABIL CHROMITE BLOCK (ML AREA: 246.858 HA) WITH A PRODUCTION OF 1.0 MTPA CHROMITE ORE (ROM) WITH MAXIMUM EXCAVATION OF 6.48 MILLION CUM PER ANNUM THROUGH OPENCAST MINING AT VILLAGES SARUABIL, KAMARDA, & TAILANGI UNDER SUKINDA TEHSIL, JAJPUR DISTRICT FOR M/S. TATA STEEL MINING LIMITED OF SRI BIBHU DUTTA NANDA - EC

1. The proposal is for Environmental Clearance for Saruabil Chromite Block (ML Area: 246.858 Ha) with a production of 1.0 MTPA Chromite Ore (ROM) with maximum excavation of 6.48 Million Cum per Annum through Opencast Mining at villages Saruabil, Kamarda, & Tailangi under Sukinda Tehsil, Jajpur District for M/s. Tata Steel Mining Limited of Sri Bibhu dutta Nanda.
2. The project falls under Category-B (≤ 250 ha in respect of major minerals other than Coal) as per MoEF&CC Notification No. S.O. 1886(E) Dated 20th April, 2022.
3. The M/s Misrilall Mining Pvt. Ltd. operated in Saruabil Chromite Block from 15.05.1954 till 31.03.2020. Odisha Government had issued the Letter of Intent (LOI) for Chromite ore mining in Saruabil Chromite Block to Tata Steel Mining Limited (formerly known as M/s T S Alloys Limited) over an area of 246.858 Ha for a period of 50 years vide letter no. 223/SM dated 6th January 2020. In terms of section 8B(2) of MMDR Act, 1957 read with rule 9A(4) of MCR, 2016, the bidder is deemed to have acquired all valid rights, approvals, clearances, licenses and the like vested with the previous lessee for a period of two years from the date of execution of the lease deed or till the date of getting fresh approvals, clearances, licenses, permits and the like whichever is earlier vide letter no. 4174/SM dated 29th May 2020. Lease deed for the Saruabil Chromite Block was executed on 26th June 2020.

Proceedings of the SEAC meeting held on 12.04.2023
(Old Proposals – ADS received)

Environmental Scientist, SEAC



4. Terms of Reference was granted by MoEF & CC dated 29.12.2020. Public Hearing was conducted on 22.12.2021.
5. The proponent has applied to MoEF & CC, Odisha for EC as category B as per MoEF&CC Notification No. S.O. 1886(E) Dated 29th April, 2022.
6. **Location and Connectivity:** The Saruabil Chromite Block is spread over an area of 246.858 Ha and it falls in Survey of India Topo Sheet Open Series Map No. F45N16 (73G/16) with coordinates Latitude: N 21°02'42.64" to 21°03'49.65" and Longitude: E 85°48'35.38" to 85°49'49.92". Saruabil Chromite Block is situated in Jajpur district. Tomka Mangalpur State Highway passes through the lease area. The nearest National highway, NH – 200, is situated about 10.5 Km aerial distance from the proposed area and the Chromite block is at about 23 Km Road distance from Daitari Railway Station and 136 km distance from Biju Patnaik airport, Bhubaneswar.
7. The previous Environment Clearance for the project was granted in the name of M/s Mishrilal Mines Pvt. Ltd. for production of 0.35 MTPA Chromite Ore with expansion of Chromite Ore beneficiation plant from 20 TPH to 30 TPH by MoEF vide letter no. J-11015/72/2010-IA. II(M), dated 20.07.2018.
8. Mining Plan approved by IBM, Bhubaneswar dated 18.05.2018. Mining Plan of TSML was approved on 10.11.2020.
9. Environmental Clearance for production of 0.35 MTPA Chromite Ore and enhancement of Chrome Ore beneficiation plant from 20 TPH to 30 TPH from MoEF&CC dated 20.07.2018. However, COB plant has been dismantled by previous lessee.
10. Forest Diversion over 224.63 Ha of entire forest land involved from MoEF&CC dated 16.01.1997, (As per Sabik settlement application for diversion of 17.14 ha is in process)
11. The proponent has obtained Consent to Establish from SPCB, Odisha dated 29.11.2016 and Consent to Operate from SPCB, Odisha dated 16.03.2022.
12. Surface right from District Collector, Jajpur over 242.581 Ha has been obtained.
13. Ground water with drawl permission has been obtained from CGWA, (GoI) dated 16.07.2019.
14. Deep hole blasting & use of HEMM has been obtained from DGMS, (GoI) dated 19.03.2019 (TSML has also obtained the fresh 106 (2) (B) on 28.05.2021).
15. **Method of Mining** - The current project involves mining of Chrome Ore (Chromite) through a Fully Mechanized Opencast mining method with HEMM and deep hole blasting. The proposed production capacity is 1.0 Million Tonnes Per Annum of Chromite Ore (ROM) with total excavation of 6.48 Million Cubic Meters per Annum. The bench height will be about 6 m with width of 10 m. Bench slope has been designed at 70°. Maximum Overall Pit Slope angle 30°. Study of further slope steepening has been initiated under the guidance of CIMFR, Dhanbad. For Drilling and blasting - 150 mm diameter holes are drilled with depth of 6 to 8 m in ore body. Holes will be charged with SME with booster. Powder factor of 7 MT/kg in Ore. For Transportation - Dumpers (44 nos of 35 tonne capacity) are being used to transport the ore from quarry to stack yard.
16. **Production Details for the plan period (2020-21 to 2024-25)**

Ore & OB Excavation during the plan period (2020-21 to 2024-25)
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Year/ Pit No.	Total ROM Production (MT)	Total ROM Production (CuM)	OB/Waste Volume from Development of Pits (CuM)	Total excavation (CuM)
1 st year (2020-21)/ B & C	150000	44200	1,195,000	12,39,200
2 nd year(2021-22)/ B & C	400000	117800	1,491,000	16,08,800
3 rd year (2022-23)/ B & C	450000	132500	2,007,000	21,39,500
4 th year (2023-24)/ B & C	700000	206100	3,639,000	38,45,100
5 th year (2024-25)/ B & C	900000	264900	5,571,000	58,35,900
5 th year (2024-25)/ D	100000	29400	619,000	6,48,400
Sub Total (5 th Year)	1000000	294300	6,190,000	64,84,300
Total	2700000	794900	14,522,000	1,53,16,900

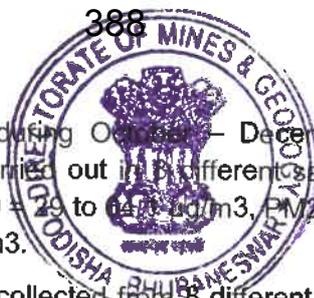
17. **Power Requirement:** The fully mechanized mining will be done in a three shift of 8 hours each. The use of electricity will be for lighting/illumination/pumping purposes in mining operations and will be obtained from CESU/ Tata Power/ Any other. The electricity/DG power will be provided at the office, camp, and mines. Power requirement of ~1000 KVA would be met from local grid maintained by Central Electricity Utility Services (CESU)/ Tata Power/ Any other.

18. **Water Requirement:** Total water requirement has been estimated to be 330 KLD. There are 2 borewells located inside the mine lease area. As the mine workings has intersected the groundwater table, seepage of groundwater is expected. Dewatering of mine will be undertaken and the water will be utilized for various purposes. Water requirement and usage has been detailed in table.

Activities	Daily Water Requirement, KLD	Effluent Generation, KLD	Losses, KLD	Treatment	Source of water
Drinking & Domestic Use, Canteen	40.00	32.00	8.00	Septic tank/ Soak Pit	Ground water from Borewell
Dust suppression	250.00	0.00	250.00	--	Mine pit water
Plantation & Gardening	100.00	0.00	100.00	--	Mine pit water
Workshop, Wheel wash & Vehicle wash	10.00	8.00	2.00	Treatment in Oil & Grease trap, recycled for wheel wash & dust suppression	Mine pit water
ETP wash water	20.00	0.00	20.00	--	Mine Pit water
Total	420.00	40.00	380.00		

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19. Baseline study was conducted during October – December, 2020. The observations are Ambient air quality monitoring carried out in 10 different sampling locations. During the study period, the concentration of PM10 = 29 to 147.60 µg/m³, PM2.5 = 17 to 38.5 µg/m³, SO₂ = <4 to 8.1 µg/m³, NO_x = <9 to 13.6 µg/m³.
20. The ground water samples were collected from 8 different sampling stations and analyzed as per IS 10500:2012 to assess the portability of the ground water. As Per the data it has been observed that the pH ranges from 5.06 to 7.78, total hardness varies from 14 to 180 mg/l, chloride ranges from 3.8 to 38 mg/l, TDS ranges from 20 to 316 mg/l.
21. The surface water samples were collected from 8 different sampling stations. As Per the data it has been observed that the pH ranges from 7.21 to 7.84, DO ranges from 4.4 to 6.3 mg/l, COD ranges from 6.0 to 20 mg/l.
22. The ambient noise levels were measured in 8 sampling locations. As Per the data it has been observed that Ambient noise ranges from 36.7 dBA to 60.4 dBA.
23. The soil samples were collected from 12 different sampling stations. As Per the data it has been observed that pH ranges from 7.03 to 7.24, SAR ranges from 2.6 to 4.4 %, clay percent ranges from 59.8 to 73, all the metals are below detectable level.
24. **Employment Potential** - The project will generate 650 manpower in the mine.
25. Total Cost of the proposed project will be ` Rs 179.91 crore with a recurring cost of 66.93 crores and EMP cost is ` Rs 26.75 crore with a recurring cost of 1.79 crores.
26. The project proponent along with the consultant **M/s Visiontek Consultancy Services Pvt. Ltd., Bhubaneswar** made a detailed presentation on the proposal on 03.08.2022.
27. The SEAC in its meeting held on dated 03-08-2022 decided to take decision on the proposal after receipt of certain information / documents from the proponent.
28. The proponent has furnished the compliance and the SEAC verified the same as follows:

Sl. No.	Information Sought by SEAC	Compliance furnished by the proponent																
1.	Comparative statement of salient physical features and salient features with reference to environmental parameters, pollution load of the existing mines and proposed expansion shall be submitted.	<p>Air Environment</p> <p>Table 1 Comparison in pollution load for existing and proposed production (µg/m³)</p> <table border="1"> <thead> <tr> <th>Parameters</th> <th>Existing</th> <th>Proposed</th> <th>% Increase</th> </tr> </thead> <tbody> <tr> <td>Air Pollution</td> <td>61.2</td> <td>67.2</td> <td>4.67</td> </tr> </tbody> </table> <p>Water Environment</p> <p>Table 2 Water Requirement for existing and proposed production (KL/T)</p> <table border="1"> <thead> <tr> <th>Parameters</th> <th>Existing</th> <th>Proposed</th> <th>% Increase</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Parameters	Existing	Proposed	% Increase	Air Pollution	61.2	67.2	4.67	Parameters	Existing	Proposed	% Increase				
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Sl. No.	Information Sought by SEAC	Compliance furnished by the proponent																				
		Water Requirement	3.03	7.21	40																	
		Power Requirement Table 3 Existing vs proposed Power Requirement (MW) <table border="1"> <thead> <tr> <th>Parameters</th> <th>Existing</th> <th>Proposed</th> <th>% Increase</th> </tr> </thead> <tbody> <tr> <td>Power Requirement</td> <td>1</td> <td>1</td> <td>0</td> </tr> </tbody> </table> Greenbelt Requirement Table 4 Existing vs proposed Greenbelt Requirement <table border="1"> <thead> <tr> <th>Parameters</th> <th>Existing</th> <th>Additional</th> </tr> </thead> <tbody> <tr> <td>Total area of Green Belt in Ha.</td> <td>15.9 Ha</td> <td>8 Ha.</td> </tr> <tr> <td>Total Plantation</td> <td>39000</td> <td>12800</td> </tr> </tbody> </table>				Parameters	Existing	Proposed	% Increase	Power Requirement	1	1	0	Parameters	Existing	Additional	Total area of Green Belt in Ha.	15.9 Ha	8 Ha.	Total Plantation	39000	12800
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2.	Tailing pond and its design existing and proposed and how it will contribute to zero discharge concept.	The previous Environmental Clearance was granted for production of 0.35 MTPA Chromite Ore with expansion of Chromite Ore beneficiation plant from 20 TPH to 30 TPH by MoEF&CC vide letter no. J-11015/72/2010-IA. II(M), dated 20.07.2018 to M/s Misrilal Mines Pvt. Ltd. After TSML leased in Saruabil Chromite Block during the auction process, the same EC was vested to TSML for fifty (50) years as per MMDR Amendment Act, 2021. TSML has not proposed any beneficiation plant within the lease area during Mining Plan approval. Previous lessee has dismantled the COB plant and cleared the area. As reported by previous lessee the EC was approved on 2018 and they have not operated COB plant a single day, thus no tailing was generated, which was also confirmed by TSML during the inspection of ground condition. It is also evident from the below photographs																				
3.	Approval letter for 33KLD usage of ground water and application made for proposed expansion to be submitted.	Previous approval letter from Central Ground Water Authority (CGWA) vide letter No.21- 4(73)/CGWA/SER/2008-686 dated 16.07.2019 for withdrawal of ground water of 147,045 CuM/ year consisting of 12,045 CuM/ year through two existing bore wells and 1,35,000 CuM/ year through dewatering the mine seepage from mine pit (Annexure- I). The same has also been vested to TSML as per the MMDR Amendment Act, 2021 (Annexure - II). Fresh application for withdrawal of 50KLD ground water is attached as Annexure – III.																				
4.	Detailed plan for controlling hexavalent	Major hexavalent Chromium concentration is observed from the mine quarry water and run-off from ore stack yard. There are some traces of hexavalent																				



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Sl. No.	Information Sought by SEAC	Compliance furnished by the proponent												
	Chromium in ground water, surface water and soil surface.	 <p>chromium is found in runoff from overburden dumps. As it is an open cast mines, the seepage water is stored in sumps of quarry floor and is simultaneously pumped to Effluent Treatment Plant (ETP) for treatment. During rainy days the surface run-off from ore stack yard and overburden dumps are channelized through garland drains with check dam & settling pit to mine quarry for storage and afterward pumped to ETP for treatment of Cr+6 and Total Suspended Solid (TSS). The treated water is then used for different process such as dust suppression, vehicle washing, plantation and garden use. On monthly basis the ground water quality is being investigated from bore wells to know any contamination of ground water through MoEF&CC & SPCB certified laboratory. At any point of time, no contaminated water from mines is discharged to any soil surface without treatment. The construction activities for installation of 1200 m³/Hr ETP to treat all the surface run off and mine quarry water without any storage, is in progress.</p>												
5.	<p>Suggestions for adaptation/evaluation of new technologies like Ion Exchange Technology, Membrane technology for removal of hexavalent chromium.</p>	<p>Considering the quality and contamination of the inlet water (high TSS and low Cr+6 concentration) and the previous technical research report from IIT, Kharagpur, the mine quarry water and surface run-off is treated with FeSO₄ at acidic pH for faster the Cr+6 to Cr+3 reduction process.</p> <p>Other treatment technologies used for Cr+6 contaminated water have some limitations which is given below.</p> <table border="1" data-bbox="518 1048 1410 1921"> <thead> <tr> <th data-bbox="518 1048 746 1171">Process Name</th> <th data-bbox="751 1048 963 1171">Type of Process</th> <th data-bbox="968 1048 1203 1171">Description</th> <th data-bbox="1208 1048 1410 1171">Comments/Remarks</th> </tr> </thead> <tbody> <tr> <td data-bbox="518 1178 746 1637">Liquid – Liquid Reduction</td> <td data-bbox="751 1178 963 1637">Physical</td> <td data-bbox="968 1178 1203 1637">Amine-based extractants (Hard bases) preferably long-chain quaternary ammonium or tertiary amine-based compounds</td> <td data-bbox="1208 1178 1410 1637">Not feasible for large volume of water</td> </tr> <tr> <td data-bbox="518 1644 746 1921">Chemical Reduction</td> <td data-bbox="751 1644 963 1921">Chemical</td> <td data-bbox="968 1644 1203 1921">Reduction to Cr(III) using bisulphate/ Ferrous sulphate & subsequent</td> <td data-bbox="1208 1644 1410 1921"> <ul style="list-style-type: none"> Used in the existing ETP plant Comparatively high sludge Generation Treatment of large volume </td> </tr> </tbody> </table>	Process Name	Type of Process	Description	Comments/Remarks	Liquid – Liquid Reduction	Physical	Amine-based extractants (Hard bases) preferably long-chain quaternary ammonium or tertiary amine-based compounds	Not feasible for large volume of water	Chemical Reduction	Chemical	Reduction to Cr(III) using bisulphate/ Ferrous sulphate & subsequent	<ul style="list-style-type: none"> Used in the existing ETP plant Comparatively high sludge Generation Treatment of large volume
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				precipitation using Lime and Alkali.	on water
		Adsorption	Physical	Costly chemical used such as titanium dioxide, Zeolite, Goethite etc	<ul style="list-style-type: none"> • Cost very high • Due to high TSS, technology will not feasible
		Membrane Filtration Technology	Physicochemical	Different membranes like inorganic membrane, liquid membrane, polymeric membrane etc.	<ul style="list-style-type: none"> • Cost very high • Generation of high reject • Short life of membrane • Filter bed chock due to high TSS
		Ion Exchange Technology	Physicochemical	Different ion exchange Resins used	<ul style="list-style-type: none"> • High cost • Selectivity high • Not feasible for high volume of effluent and high TSS
		Electrochemical Process	Physicochemical	Electrocoagulation can remove heavy metals from effluents using electromotive force	<ul style="list-style-type: none"> • pH dependent • High electricity consumption • High silt deposition on electrode and efficiency is low
		Phytoremediation	Biological	Aquatic plant used for extraction of Cr(VI)	<ul style="list-style-type: none"> • Large area needed • Retention time more than 15 days • Not feasible for large volume of effluent



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		The present treatment process/technology is quite viable while treating huge amount of water. However, latest treatment process has been designed by civil department of IIT, Kharagpur for the upcoming ETP and we will continuously explore new technologies for treatment of same in near future.
6.	Effective measures taken safety of Damsala Nala.	It is ensuring that no single contaminated water is being discharge to the Damsala Nalla from the mining area. Water from mine quarry, surface run-off from ore stack yard and overburden dump is being treated at ETP and the excess water from ETP is discharged to the Damsala Nala. Online continuous Effluent Monitoring station is installed at ETP in-let and Out-let to monitor the water quality, which connected to the SPCB server without any intermediated server. We are also continuously analyzing the quality Damsala Nala before and after of the lease area. Quarterly, the flow rate of the Damsala Nala is being monitored and reported to SPCB, Odisha MoEF&CC.
7.	Cross-sectional dimension of retaining wall, check dam and garland drain shall be furnished.	<p>At the toe of the overburden dumps approximately 2804 mtrs of retaining wall, 4159 mtrs of garland drain and 15 nos of settling pits are maintained. As per approved mining plan, protective measures shall also be undertaken during conceptual period and maintained regularly. The details of protective measures to be constructed around proposed dump during the plan period will be as follows (Table 6):</p> <p>At the base of dumps 7 & 8, retaining walls over 2078 m & 1088 m lengths respectively along with garland drains over 1730 m & 1080 m respectively shall be constructed. During the plan period, these retaining walls shall be maintained/ reconstructed. Table 6 shows the details of construction to be undertaken for retaining walls to check rolled down debris from side wall of the dump in a phased manner during the plan period of 5 years (2020-21 to 2024-25). Retaining walls will be 1.5m visible height and 1.0 m thick (Table-1)</p> <p>Followed with retaining wall garland drain shall be constructed which will be 1 m wide x 1.0 m deep to channelize water being drained from dumps phase wise during 5 years (2020-21 to 2024-25) plan period. Check dams at every 300 m in the garland drain shall also be constructed during construction of garland drain. This will help in accumulation of sediments during flow of water which shall be cleaned regularly for easy flow of water to the settling tank.</p>
8.	Report on mining activity done on forest and non-forest area.	Mining activity is being carried out only in diverted forest area (224.63ha) out of total forest land of 241.77Ha as per Mining Plan approved by Indian Bureau of Mines, Govt. of India. During the plan period (2020 – 2025) Mining activity will be carried out in 90.7 ha and waste dump in 100ha. In non-forest land of 5.088 ha, no mining activity is proposed during the plan period. The diversion of non-diverted forest area of 17.14 ha is under process for diversion and the area was kept intact in as is condition. Land details are given below:
9.	Details of Solar generation to be used.	Presently, we are conducting the Energy Audit with the Power Tech Consultants, K-8-82, Kalinganagar, Ghatikia, Bhubaneswar, Odisha-751029. After getting the recommendations we will further working it to reduce the consumption. As per our Sustainability target as "PLAN – A", we have

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		installed the solar lights in mines haul road, and a plan is under process to produce about 30% of the energy requirement from solar installations. In this regard, TSML is involved Tata and Reliance solar power to finalize the work contract for solar installation in both roof top and open areas.
10	Nature of 5ha. Non forest land present in mining area.	Nature of 5 ha of Non Forest land is Patita and Gharabari kism in our mining lease area.
11	Copies of compliance to all ADS by the MoEF&CC, Govt. of India and copies of minutes of all meetings of EAC of MoEF&CC, Govt. of India.	No ADS was requested by MoEF&CC after TOR presentation, copy of EAC meeting is attached as Annexure – IV.
12	Compliance to earlier EC conditions duly certified by the Regional Office, MoEF&CC, Bhubaneswar and Compliance to CTE & CTO conditions duly certified by the SPCB, Odisha.	Certified copy of the previous EC condition and compliance is attached as Annexure – V . Also, Compliance to CTE & CTO conditions duly certified by the SPCB, Odisha is attached as Annexure VI .
13	Tailings pond and ETP management with flow diagram and water balance.	<p>M/S. TSML has not proposed any COB plant during the plan period, thus tailing generation will be zero.</p> <p>Pumped out mine water is allowed in to the Effluent Treatment Plant (ETP) designed by the department of Civil Engineering, IIT, Kharagpur in May, 2013 where dissolved Cr⁶⁺ is precipitated as Chromium hydroxide (Cr(OH)₃) along with Iron hydroxide (Fe(OH)₃) after mixing with ferrous sulphate (FeSO₄) solution and lime (Ca(OH)₂/ sodium hydroxide (NaOH). The precipitates are settled out in the sludge pond and clear supernatant water is discharged for dust suppression on haul roads and green belt development and excess water from ETP water is discharged to Damsal nala. The project design for Chromium Effluent Treatment Plant (ETP) at Saruabil Chromite Mines has been designed and modified by IIT, Kharagpur.</p> <p>Basic Process Methodology</p> <p>The existing treatment technology adopted for hexavalent chromium containing mine drainage water is reduction of hexavalent chromium to trivalent chromium using Ferrous Iron in the form of Ferrous Sulphate. The reduced Chromium is precipitated as Hydroxide form [Cr(OH)₃]. Ferrous Iron added for reduction of Hexavalent Chromium is being oxidized to Ferric Iron</p>

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Sl. No.	Information Sought by SEAC	Compliance furnished by the proponent
		<p>& subsequently precipitated as Hydroxide [Fe(OH)₃].</p> <p>Process Design comprises of the following units:</p> <ol style="list-style-type: none"> i. Rapid mixing unit for chemical dosing: The mine drainage water is directly pumped to the inlet chamber of baffle units where Ferrous Sulphate dosing is done. ii. Collection tank 1 for chemically treated water: The chemically treated water is stored in the existing settling tank. A pump is installed at the sump which is the part of the tank to deliver waste water along with solids to the Flash mixing unit. iii. Flash mixer unit: The waste water is mixed with Polyelectrolyte in the flash mixing unit prior to the clariflocculation. The Flash mixing unit is attached to the clarifloculator with the tank dimension 1.5m (L) x 1.5m (W) x 1.5m (D). iv. Clarifloculator: The flocculator well is designed for a detention time of 20 minutes. The diameter of flocculator unit is 5.6m and depth is 2.5m and 0.5m free board. The clarifier unit is designed for surface overflow rate around 30m³/m²/d. The diameter of clarifier is 15m and side water depth is 3m with 0.5m free board. v. Collection tank 2 for clarified water: The clarified water required storage & the existing lamella clarifier tank serves the purpose of storage. vi. Pressure Sand Filter unit: The pressure sand filter unit operates at a rate of filtration 15m³/m²/h. The treated water from the treated collection tank is further passed through sand filter tanks with high pressure to filter extra TSS in treated water. vii. Filter press: The settled sludge in the bottom of the clarifier is dewatered to sludge chamber from where it is pumped to Filter press achieving a consistency of 40% and then to drying beds & to dispose to hazardous waste management facilities. Filter press containing plate size 1.2m x 1.2m x 0.5m & 36 nos. of chambers is for sludge dewatering. viii. Chemical dosing & electrical panel room: All the dosing work i.e. Ferrous Sulphate, Lime, Polyelectrolyte, etc. are made through dosing pumps. These chemical dosing, electrical work & chemical storing are done from separate buildings. The first floor has dosing solution preparation facility & ground floor has MCC area for Ferrous Sulphate, Polyelectrolyte and lime/NaOH storage.

29. The SEAC in its meeting dated 05-11-2022 recommended for grant of Environmental Clearance with stipulated conditions and following specific conditions.

- i) The mine shall explore implementation of membrane-based technology for removing Hexavalent Chromium from Surface run off & mine drainage water.
- ii) The mine shall take adequate measures to minimize the discharge of treated water to Damsala nallah.

30. The proposal was placed in the meeting of SEIAA held on 13.12.2022 for consideration of EC. The Authority deliberated on the matter and observed the following:

- (i) The present proposal relates to grant of EC for a production capacity of 1.0MTPA from the ML area of 246.858Ha, out of which 17.14Ha is forest land.
- (ii) Further, the proposal involves a violation case of FC involving 17.14Ha of forest land as per Sabik Settlement.

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(iii) As per MoEF & CC, Gol OM dated 09.09.2011, Stage-1 Forest Clearance is a pre requisite for issue of EC.

31. Hence, the Authority decided that the SEAC may re-examine the proposal in light of MoEF & CC, Gol OM dated 09.09.2011. The proposal is referred back to SEAC through online.

32. The SEAC in its meeting held on 14.02.2023 decided to take decision on the proposal after receipt of the following clarification from the proponent. The proponent has furnished the compliance and the SEAC verified the same as follows:

Sl. No.	Information Sought by SEAC	Compliance furnished by the proponent
1.	The present proposal relates to grant of EC for a production capacity of 1.0MTPA from the ML area of 246.858Ha, out of which 17.14Ha is forest land.	The prior lessee had made NPV payment of a total amount of Rs. 17,64,92,100/- towards NPV (Net Present Value) for the total forest area of 241.77 Ha (i.e., 16,39,79,900/- on 27.05.2014 & 1,25,12,200/- on 20.02.2016) within 1 year of the MoEF & CC notification F. No. 8-78/1996-FC, dated 10.03.2015. Out of the total block area of 246.858 Ha area, forest diversion over an area of 224.63 Ha Forest Land (as per HAL settlement) has been accorded from Ministry of Environment & Forest (MoEF& CC), Govt. of India on 30.01.1997 vide Letter No 8-100/95-FC dated 16.01.1997.
2.	Further, the proposal involves a violation case of FC involving 17.14Ha of forest land as per Sabik Settlement.	As per the condition of Vesting Order & recent MoEF & CC, Govt. of India guidelines, Tata Steel Mining Limited has also paid the NPV of Rs 18,13,29,750/- over entire forest land of 241.77 Ha. Therefore, the proposal is not a violation of FC act.
3.	As per MoEF & CC, Gol OM dated 09.09.2011, Stage-1 Forest Clearance is a pre requisite for issue of EC.	Application has been made for the diversion of forest land. The details have been attached with EIA/EMP report as Annexure F. Same has been attached with as Annexure 1 .
4.	The air, water and soil quality data should be provided in tabular format along with Indian Standards.	Attached as Annexure 2 .

Considering the information furnished by the proponent at para 32, the SEAC reiterates its earlier recommendations in its meeting held on 05-11-2022 for grant of Environmental Clearance with following additional condition:

- i) The proponent shall not carry out any activity including mining in non-diverted Forest area of 18.34 ha. till they obtained Forest Clearance. The proponent shall strictly follow the procedure laid down in guidelines for diversion of forest land issued by MoEF&CC, Govt of India vide F. No. 11-599/2014-FC, dated 01.04.2015 (copy enclosed as **Annexure - A**).

ITEM NO. 02

PROPOSAL OF ENVIRONMENTAL CLEARANCE FOR MANGANESE ORE 0.04 MTPA AND IRON ORE 0.3 MTPA AT KOLMONG IRON & MANGANESE BLOCK OVER AN AREA OF 218.481 HA (AS PER DGPS)/218.530 HA (AS PER ROR) (FOREST: 155.326 HA & NON-FOREST: 63.204 HA) IN VILLAGE-KOLMONG UNDER KOIRA TAHASIL OF SUNDARGARH DISTRICT FOR YAZDANI STEEL & POWER LIMITED OF SRI BINODA KUMAR ACHARYA – EC

1. The proposal is for Environmental Clearance of M/s Yazdani Steel & Power Limited for Manganese Ore 0.04 MTPA and Iron Ore 0.3 MTPA at Kolmong Iron & Manganese Block over

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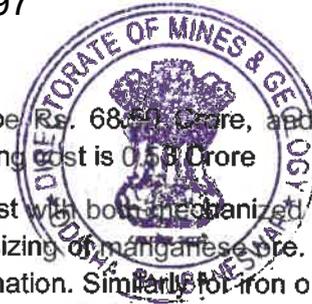


an area of 218.481 ha (as per DGPS)/218.530 ha (as per RoR) (Forest: 155.326 Ha & Non-Forest: 63.204 Ha) in village-Kolmong under Koira Tahasil of Sundargarh District.

2. The project falls under category (B) or activity (a) - Mineral of Minerals under EIA Notification dated 14th September 2006 as amended from time to time.
3. Yazdani Steel & Power LTD. (YSPL) was awarded the Kolmong Iron & Manganese Block over an area of 218.481 ha (as per DGPS)/218.530 ha (as per RoR) in village-Kolmong under Koira Tahasil of Sundargarh district of Odisha being the successful bidder the lease was granted under Non captive category for 50 years.
4. The vesting Order issued by the **Nodal Officer**, Steel and Mines Department, Government of Odisha vide No-4369/SM, dated 02.06.2020. Pursuant to the provisions contained in Rule 9A(2) of the Mineral (Other than Atomic and Hydrocarbon Energy Minerals) Concession Rule, 2016 order that all the valid rights, approvals, clearances, licenses and the like vested in the previous lessee in respect of the Kolmong Iron & Manganese Block are deemed to have vested in favour of the holder of the letter of intent on the same terms and conditions of every rights, approvals, clearances, licenses and the like which vested with previous lessee.
5. Modified Mining Plan along with Progressive Mine Closure plan was obtained under Rule 23 of MCDR, 2017 form IBM, Bhubaneswar vide letter no MP/A/26-OR/BHU/2020-21 date 20.11.2020 for production of 0.04 MTPA Manganese Ore and 0.3 MTPA Iron Ore with Opencast Fully Mechanized Mining Method. for the period of 2020-21-2024-25 .In order to regularize the statutory provisions, it is proposed to obtain Environmental Clearance for proposed production as per approve mining plan and ToRs Vide no F.No.J11015/05/2021-Ia.II(M) dated 4th March, 2021 to prepare EIA/EMP report as requirement of Environmental Clearance. Baseline data for environmental parameters was collected during October to December, 2020 and public hearing was held on 20th December, 2021
6. Kolmong Iron & Manganese Block spreads over an area of 218.481 ha (as per DGPS)/218.530 ha (as per RoR) (Forest: 155.277 Ha & Non-Forest: 63.204 Ha) in village-Kolmong under Koira Tahasil of Sundargarh district of Odisha, The lease area is moderately flat, though there are occasional mounds within the area, studded with flat topped low ridges, reassembling a relict type of topography controlled by differential hardness of rocks. The maximum RL of the area is 654m at the southern part of lease area and the minimum RL of the area is 576m. The area falls in Survey of India Toposheet no.73 G/5. The area is bounded by latitude 21°56'20.01" to 21°57'32.24" N Longitude 85° 18'24.54" to 85°19'22.72"E. The Nearest railway station Barbil is 28 Kms from the lease, to connect Tata Nagar, Kolkata & Bhubaneswar.
7. The nearest important public road is National Highway-215 connecting Panikoili to Rajamunda at an distance of 5 km . Bhubaneswar airport (340 km away) is the nearest airport from the area. There is an airstrip/helipad near Bhadrasahi, Barbil which is around 18 km from the lease area
8. There is no perennial river or water body in the project area. The major drainage channel of the area is kundra nala which is located in the eastern and south-eastern side of the lease hold area.
9. Date of execution of Lease is 30.06.2020 and valid for 50 years upto 30.06.2070.
10. ML area: 218.481 ha(as per DGPS)/218.530 ha(as per RoR) (Forest: 155.277 Ha & Non-Forest: 63.204 Ha)

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11. Capital cost of the project is estimated to be Rs. 68.50 Crore, and Capital cost for EMP is estimated to be 3.16 Crore and annual recurring cost is 0.58 Crore
12. Mining operation is semi mechanized opencast with both mechanized and manual excavation of manganese ore, manual breaking, sorting & sizing of manganese ore. Development work will be done by excavator (0.9 m3) and tipper combination. Similarly for iron ore, the production of ROM will be carried out by dumper shovel configuration and the processing will be carried out by mechanized method. During the proposed mining operation period, total maximum ROM of Iron Ore will be handled 1.0498 Million Ton from in-situ ore zone and Maximum 0.2 Million Ton ROM for Manganese Ore. The mining operation will be of one shift.
13. Total 64.633 ha. Land will be proposed to be excavated to mine the Manganese ore. So, it is estimated that from 2020-21 to end of life of mine 1,03,02,939m³ of waste will be generated during mining operation. Out of total waste generation of waste 95,22,919 m³ will be used for backfilling the exhausted quarry. The balance 7,80,020m³ will be dumped on external dumps.
14. Electricity requirement: The electricity is supplied to the project by WESCO through 1 nos. transformers of capacity 1500 KVA /day inside the lease hold. Solar system shall be installed for lighting at admin building and other mining area. 500KVA of DG Set available in the mine for stand by purpose.
15. H.S.D. requirement: Requirement of H.S.D is 11.0 KLD
16. Manpower requirement of project is 316 nos
17. Peak Water Requirement of the project is 173 KLD and average water requirement of the project is 86 KLDB
18. Before auction and total 53.540 ha of area has been already utilized and as per present mining plan additional 26.417 ha shall be utilized and 138.573 ha shall be remain unutilized
19. Based on the Geological Report as supplied by the State Govt., the total resources of ROM (under G2 Level) for both high grade & low grade of Mn ore as on 01.01.2019 was 37,23,658 (MT) and Iron Ore 13,97,650 (MT). After depletion upto 31.03.2020 by the previous lessee, the resource of Manganese Ore was 3722397 MT and the Iron Ore was 1397650 MT (no depletion of iron ore).
20. As on 01.10.2020, the residual reserved Manganese Ore is 34,24,605 MT and considering the target production of 40,000 MT per year, the life of mine will be 85.66 year.
21. As on 01.10.2020, the residual reserved Iron Ore is 12,57,585 MT and considering the target production of 3,00,000 MT per year, the life of mine will be 4.19 year.
22. The life of mine will be increased, If the reserve will increase due to proposed future exploration
23. The Kolmong Iron & Manganese Ore Mine is 'A'-OTFM category mine and mining operation is semi-mechanized open cast.
24. Manganese ore is soft in nature and generally occurs in small pockets. Grade of the ore also varies widely within the ore pockets. The iron ore deposit has also been proposed for semi-mechanized open cast mining. Excavator (0.9m³) and dumpers combination will be used for development of benches in both waste and ore.

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25. Deep hole drilling & blasting will be occasionally used to dislodge the hard strata. Rock breaker has been utilized in the area where blasting is not possible. As the manganese ore occurs in the form of small and big pockets in this area mining operation is of mixed type.
26. In this mine, Manganese ore pockets and iron ore (ROM) will be excavated out by excavator (0.9m³). Then the excavated ROM ore material goes to manual ore sorting / sizing yard for sorted out the manganese ore lumps from ROM ore material and the iron ore (ROM) shall be crushed and screened in different size and grade as per the nature.
27. These manganese ore lumps will be then stacked separately as per the grade. The sub grade/ low grade manganese ore are stacked separately. Manganese ore fines are also stacked separately. Then the sized manganese ore are loaded into truck either manually or through machine for dispatch to buyer's destination.
28. The waste material is dumped in Dump-D1 & D3 as well as utilized for the backfilling of part of Quarry-6 & 7.
29. Regarding mining operation, excavator of capacity 0.9m³ and tippers of capacity 20 MT will be used for excavation and transportation of wastes & ROM ore. In the quarry bench height will vary from 3 to 4 m and width will vary from 6-10 m. If necessary, 4 m bench will be divided into small benches. Dump leveling and dump terracing will be done through dozer as per requirement. During the proposed plan period maximum annual production of Manganese ore will be 40,000 MT & Iron Ore will be 3,00,000 MT per annum
30. During proposed period of mining operation total handling of Iron Ore (ROM) from the mine will be around 3,00,000 (MT) and the production of Manganese ore will be around 40,000 MT obtained from insitu body.
31. During the proposed period of mining operation four nos of quarry will operate namely New Pit, Quarry 6 & 7, Dhandariya Pit & Magazine Pit for Mn Ore & Quarry namely New Pit & Dhandariya Pit for Iron Ore. The mining operation will be carried out by Sovel & Tipper combination for excavation of both Ore & Waste.
32. The excavator of capacity 0.9 m³ will be used for feeding of ROM to screening & crushing plant for Iron Ore & the Mn ore will be processed manually.
33. Rock breakers are used to avoid secondary blasting as per the requirements.
34. There will be no change in proposed method of mining.
35. This working mine shall bring tremendous benefits in the area like:
36. Direct employment opportunities for more than 500 persons.
37. Indirect employment for more than 3000 persons through various service related activities connected with the project operations
38. Improvements in infrastructure in the area Road Network, Water supply to villages through Water tankers & overhead tanks with pipe lines, Electricity facilitation, Healthcare, Education, Other Social Welfare Activities Providing certain facilities for the local panchayats.
39. Financial gains for the state and central Governments, through collection of various taxes like royalty, GST, DMF and NMET (National Mineral Exploration Trust) etc., Increase in General Awareness of the People

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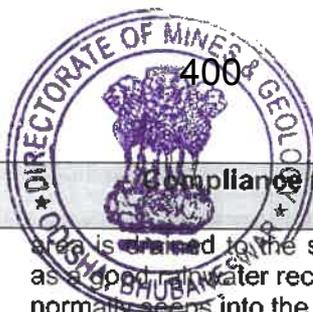


40. Improvement of the General Living Standard of the People in the Vicinity.
41. Generation of self-employment through self-help groups.
42. Improvement in Per Capita Income.
43. The user agency as well as Govt of Odisha will be benefitted due to the commencement of project
44. Environmental protection as well as the development of the people will be worked in a systematic manner at the block/regional level for overall benefit of the society, region, district and state. The Company will extend their co-operation and assistance in sharing the relevant data/ information/ reports/ documents etc. for continuous improvement of Sustainable Environment Development Plan for economic growth in the mining sector.
45. The Environment Consultant **M/S Ardra Consulting Services Pvt. Ltd., A/79, Sahidnagar, Bhubaneswar, Odisha-751007** along with the proponent made a detailed presentation on the proposal before the Committee on 02.09.2022. The SEAC decided to take decision on the proposal after receipt of certain information / documents from the proponent. The proponent has furnished the compliance and the SEAC verified the same as follows:

Sl. No.	Information Sought by SEAC	Compliance furnished by the proponent
i)	Detail of different grades of Iron from 45+ Fe to 55+ Fe to be used, and of non utilised ore and its management. Complete material balance including source, end use and storage and its moving inventory with layout map.	Brief note on mineable reserve and pre-feasibility resource of Iron ore, grades of ore processing and end use products for different industries has been submitted.
ii)	Details of 1100KLD HSD, its procurement and storage.	HSD requirement of the proposed project is 7 KLD, which will be procured from the local filling station. There will be no storage of HSD at Mines.
iii)	Complete water balance	Total quantity of water required for mining and processing is 86 cum/day. The required quantity is being fulfilled from ground water source. The purpose and requirement of water are as follows:
iv)	Water Balance details with focus on rain water harvesting and use, lesser drawl of ground water.	Project had developed four rain water harvesting pits and a pond in the mine lease area. A rainwater harvesting pond is already constructed within the lease area to accumulate the rainwater with dimension 40x40x5 (in meter). The rainwater during the monsoon has tendency to discharge into the natural drainage system of the area. There will be no discharge from the mine. It is required to ensure runoff water quality during rainy season before it joins the seasonal nalla in the core zone. Precautionary measures by constructing check dams & settling sumps at appropriate places will help in making the discharge water free from any silt during rains. Toe walls & garland drains around dumps will be provided to check the run-off. • Presently, during rainy season, the water collected in the mine

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		<p>area is drained to the sump floor of each quarry. The sump acts as a good rain water recharge structure and the collected rainwater normally seeps into the ground within few days</p> <ul style="list-style-type: none"> • Rain water harvesting at mine site is important to conserve the rainwater for reuse and thus reducing the overall raw water consumption for mine requirements. The following methods of water harvesting are carried out: • The mine sump itself acts as a good rain water harvesting pond. Sump is created at the bottom of the working pit and the rainfall directly falling in the mine area is drained towards the sump in the bottom of the mine pit for harvesting it. • Construction of settling pond/percolation pond at various strategic locations across the mine. • Suitable storm water drainage system along the roads are provided to dispose storm water effectively. The surface runoff collected in the storm water drains are channelized through a series of settling cum percolation ponds before discharged. <p>Staggered trenches are proposed to be constructed along the contours so that during sudden storm, good amount of runoff can be harvested which will maintain a good amount of soil moisture</p>
v)	There should be atleast 50% of ground water recharge as per the total water requirement for the project. So design and dimensions of rain water harvesting pond with its capacity that will be put up in the project to hold the rain water.	Total Water requirement for the project will be 20640 KLA, it is proposed to harvest 19285 KLA of rainwater through surface rain water harvesting methods. (Detail report attached as Annexure -1)
vi)	Silt management practice measures to be followed for protecting nala nearby.	Compliance Details given in report prepared for Nala Management (Attached as Annexure-2)
vii)	Compliance to Additional ToR point no. 7 with detail chemical composition of different grades including silica.	<p>Kolmong Manganese Mine supplies mainly two types of ore;</p> <ol style="list-style-type: none"> a. Low grade ore to Ferro Alloys Plants & Steel Plants. b. Medium grade ore to Ferro Alloys Plants. <p>The specification (both mechanical & chemical) is as follows:</p> <ol style="list-style-type: none"> i) Low grade ore: <ul style="list-style-type: none"> Mn. - 24% Max. Fe - 15% Max. Al₂O₃ - 7% Max. SiO₂ - 13% (Max) P - 0.15% (Max) Size - 10-40 mm ii) Medium grade ore: <ul style="list-style-type: none"> Mn. - 38% Min. Fe - 16% Max.

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		<p>A12O3 - 8% Max. SiO2 - 6% Max. P - 0.1% Max. Size - 10-75 mm</p> <p>Kolmong Iron & Manganese Mine dispatches Manganese ore of different size & grade to different industries of the country and abroad. Following processed Manganese ore will be dispatched to different Manganese industries.</p> <p style="text-align: center;">Processed Mn ore:</p> <table border="1" data-bbox="571 526 1241 969"> <thead> <tr> <th>Sl. No.</th> <th>Mn%</th> <th>Fe%</th> <th>SiO2%</th> <th>Size (mm)</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>28-30</td> <td>24-22</td> <td>5-2</td> <td>10-40</td> <td>Will be utilized for ferromanganese production</td> </tr> <tr> <td>2</td> <td>30-35</td> <td>22-20</td> <td>5-2</td> <td>10-40</td> <td>Will be utilized for ferromanganese production</td> </tr> <tr> <td>3</td> <td>35-40</td> <td>18-16</td> <td>5-2</td> <td>10-40</td> <td>Will be utilized for ferromanganese production</td> </tr> </tbody> </table> <p>IRON ORE: The intermediate industries involved in the up-gradation of mineral before its end use is crushing and screening unit, etc. ROM iron ore will be crushed and screened in the M.L area to cater the need of buyers in respect of size and grade. Manganese ore is not supplied to intermediate industries for up-gradation. DRI Plant, palletization plant etc are considered as Intermediate industries for iron ore. The YSPL Steel Plant is situated in Odisha.</p> <p>Sponge iron plant Palletization Plant</p> <table border="1" data-bbox="571 1323 1241 1624"> <tbody> <tr> <td>Fe</td> <td>:60-62%</td> <td>Fe</td> <td>:55-65%</td> </tr> <tr> <td>Sj02</td> <td>:4.0-2.6 %</td> <td>Sj02</td> <td>:3.40-2.98%</td> </tr> <tr> <td>P</td> <td>:0.02-0.045%</td> <td>P</td> <td>:0.011-0.03%</td> </tr> <tr> <td>S</td> <td>:0.005%</td> <td>S</td> <td>:0.005-0.006%</td> </tr> <tr> <td>LOI</td> <td>:3%</td> <td>LOI</td> <td>:3%</td> </tr> <tr> <td>Size</td> <td>:3-15mm/5-</td> <td>Size (fines)</td> <td>:0-10mm</td> </tr> </tbody> </table>	Sl. No.	Mn%	Fe%	SiO2%	Size (mm)	Remarks	1	28-30	24-22	5-2	10-40	Will be utilized for ferromanganese production	2	30-35	22-20	5-2	10-40	Will be utilized for ferromanganese production	3	35-40	18-16	5-2	10-40	Will be utilized for ferromanganese production	Fe	:60-62%	Fe	:55-65%	Sj02	:4.0-2.6 %	Sj02	:3.40-2.98%	P	:0.02-0.045%	P	:0.011-0.03%	S	:0.005%	S	:0.005-0.006%	LOI	:3%	LOI	:3%	Size	:3-15mm/5-	Size (fines)	:0-10mm
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viii)	Layout plan showing Iron and Manganese reserves, its mining areas, storage and dump areas.	Compliance: On account of exposures of Iron & Mn ore and its limited depth of occurrence, opencast method of mining will be continued on three shift basis with the deployment of Pneumatic drills, associated compressors, dumpers, excavators and other auxiliary equipment for development, production, processing, protection of environment and safety. Separate year wise development plan and composite development plans showing pit layouts, dumps, stacks of mineral rejects along with sections are attached with mining plan. Copies of same attached as Annexure-3 .																																																

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ix)	Layout map of total broken up area existing and proposed to be broken.	<p align="center">Compliance - Land use Pattern of lease area:</p> <p>The Kordong Iron & Manganese Mine over 218.481 ha in Kordong village under Koira Tahasil of Sundargarh district of Odisha.</p> <ul style="list-style-type: none"> ➤ The Mines is located in Sundargarh District of Odisha. The NH-215 is about 9 KM from Mine. Koira & the distance of other important towns is Koira- 9 KM, Joda- 25 KM, Barbil- 32 KM. The nearest railway station and International Air Port are at Barbil & Bhubaneswar at a distance of 32 KM & 310 KM, respectively. ➤ There are 4 quarries has been exposed by the previous lessee viz. New Pit, Quarry-6 & 7, Dhandaria Pit and Magazine Pit as on 31.03.2020. ➤ The lease area is an moderately flat, though there are occasional mount within the area studied with flat topped low ridged, re-assembling a relict type of topography controlled by a differential hardness of law. The maximum RL of the area is 654 m at the southern part of the lease area and the minimum RL of the area is 567 m. <p>a. Existing land use pattern:</p> <p>The area occupies low to medium range hill surrounded by plain country. Within the lease, the area occupied by quarries, dumps, roads and structures etc. are as follows:</p> <table border="1" data-bbox="627 958 1225 1518"> <thead> <tr> <th>Sl. No.</th> <th>Head</th> <th>Existing Area (ha)</th> </tr> </thead> <tbody> <tr><td>1.</td><td>Area under mining</td><td>34.479</td></tr> <tr><td>2.</td><td>Storage for top soil</td><td>--</td></tr> <tr><td>3.</td><td>OB Dump Site</td><td>6.660</td></tr> <tr><td>4.</td><td>Mineral storage</td><td>3.560</td></tr> <tr><td>5.</td><td>Infrastructure, workshop, Admin Building etc.</td><td>0.051</td></tr> <tr><td>6.</td><td>Roads</td><td>1.740</td></tr> <tr><td>7.</td><td>Railways</td><td>--</td></tr> <tr><td>8.</td><td>Green Belt</td><td>4.950</td></tr> <tr><td>9.</td><td>Tailing pond</td><td>--</td></tr> <tr><td>10.</td><td>Effluent treatment plant</td><td>--</td></tr> <tr><td>11.</td><td>Mineral separation plant</td><td>--</td></tr> <tr><td>12.</td><td>Mine camp</td><td>2.100</td></tr> <tr><td>13.</td><td>Others (to Specify)</td><td>--</td></tr> <tr><td colspan="2">Total</td><td>5.540</td></tr> </tbody> </table> <p>The existing land use pattern of the leasehold area and approx. 500m around the lease area as under</p> <p>b. Lease area:</p> <p>The approx. land use pattern within the lease area may be summarized as under:</p> <p align="center">Land use pattern within the ML area</p> <table border="1" data-bbox="627 1738 1251 1910"> <thead> <tr> <th>Sl. No.</th> <th>Particulars</th> <th>Percentage</th> </tr> </thead> <tbody> <tr><td>1.</td><td>Pahar/Jungle/Dungri</td><td>64.30</td></tr> <tr><td>2.</td><td>Quarry/Dump cover</td><td>6.27</td></tr> <tr><td>3.</td><td>Waste land</td><td>3.83</td></tr> </tbody> </table>	Sl. No.	Head	Existing Area (ha)	1.	Area under mining	34.479	2.	Storage for top soil	--	3.	OB Dump Site	6.660	4.	Mineral storage	3.560	5.	Infrastructure, workshop, Admin Building etc.	0.051	6.	Roads	1.740	7.	Railways	--	8.	Green Belt	4.950	9.	Tailing pond	--	10.	Effluent treatment plant	--	11.	Mineral separation plant	--	12.	Mine camp	2.100	13.	Others (to Specify)	--	Total		5.540	Sl. No.	Particulars	Percentage	1.	Pahar/Jungle/Dungri	64.30	2.	Quarry/Dump cover	6.27	3.	Waste land	3.83
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x)	Compliance to NEERI recommendation for Manganese mine expansion to be submitted.	Compliance to NEERI recommendation for proposed expansion is attached a Annexure-4 .																																																																					
xi)	Detailed plan for Dump management, dust suppression and mitigation measures suggested.	Breif note on Dump present and management has been submitted in compliance report.																																																																					
xii)	Cross-sectional dimension of retaining wall and garland drain shall be furnished.	Dimension of retaining wall and garland drain has been submitted in compliance report.																																																																					
xiii)	Specific measures taken for Manganese poisoning in that area.	MANGANESE POISONING: Manganese poisoning is referred to as manganism, the result of excessive or prolonged exposure to manganese dust. When the human body absorbs a large amount of manganese there is a toxic effect, resulting in serious health conditions and diseases. Sometimes people use manganism and Parkinson's disease to describe the same adverse manganese effect due to the similarity of the conditions. Manganese has a very long elimination from the central nervous system so the effects of manganism are not always immediately evident. The time weighted average concentration of Mn																																																																					

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		<p>should not be more than 5mg/cum in 8 hours exposures.</p> <p>MANGANISM SYMPTOMS:</p> <p>Miners are considered to be at the highest risk for developing manganism. There are three different stages that are differentiated in manganism, including behavioural changes, parkinsonian features, and dystonia and gait disturbances. The onset of manganism can be observed through symptoms of fatigue, headache, muscle cramps, loss of appetite, apathy, insomnia, and a diminished libido.</p> <p>Other symptoms of manganese may include:</p> <ul style="list-style-type: none"> ➤ Muscle stiffness ➤ Weakness ➤ Tremors ➤ Breathing and swallowing problems <p>PREVENTIVE MEASURES BY YSPL AT KOLMONG IRON & MN MINES:</p> <p>To prevent manganese within miners, YSPL is taking care of all the miners and has adopted various preventive measures like:</p> <ul style="list-style-type: none"> ➤ Wet drilling arrangement ➤ Periodic air monitoring to recognize the content of manganese in the core as well as buffer zone. ➤ Periodic health examination ➤ Change of cloth after coming from the work place ➤ Provision of Nose mask to all the miners. ➤ Provision of bath head room and washing room for cleanliness. ➤ Provision of clean and hygienic room for taking food. ➤ Water sprinkling for dust suppression at manganese handling points.
xiv)	Reclamation Plan for Dump after conceptual plan.	<p>Already carried out by earlier lessee</p> <p>As this mine is operating since last few decades, for the purpose of mining and allied activity and considerable initiatives are already carried out in this mines by earlier Lessee.</p> <ol style="list-style-type: none"> 1. Inactive & non-operational, stabilization will be carried out. 2. Terrace will have developed in all the dumps 3. Plantation is already carried out on the existing 03 nos of waste. Further dump slopes are also planted 4. Boulder retaining wall and garland drain have been provided along all the existing dump toes 5. 03 nos. of settling tanks and 03 nos. of catch drains have been constructed 6. In all the dumps terraces are made inwardly sloping. 7. All the existing retaining walls shall be maintained in good condition and shall be repaired if required. 8. Causality replacement i.e gap plantation will be carried out (if required) on the dump slopes for proper rehabilitation and restoration of flora & fauna. 9. Already 2.5 ha is exhausted and is reclaimed by backfilling in quarry 6 & 7. 10. All along the boundary of mining area (where possible) safety zone green belt of width 7.5 m is developed <p>Proposed during plan period</p>

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		<p data-bbox="571 264 1410 398">During the plan period an area of 3.27 ha will be backfilled. It has been planned to reclaimed the mined out area by Back-filling and plantation. The details of reclamation will be as follows:</p> <p data-bbox="571 405 756 439">(a) Back-filling</p> <p data-bbox="571 445 810 479">During plan period</p> <p data-bbox="799 486 1177 519" style="text-align: center;">Details of backfilling proposal</p> <table border="1" data-bbox="571 519 1410 1352"> <thead> <tr> <th data-bbox="571 519 676 707">Year</th> <th data-bbox="676 519 826 707">Volume of waste to be backfilled (m³)</th> <th data-bbox="826 519 986 707">Backfilling RL</th> <th data-bbox="986 519 1070 707">TRL & BRL</th> <th data-bbox="1070 519 1254 707">Location</th> <th data-bbox="1254 519 1410 707">Remarks</th> </tr> </thead> <tbody> <tr> <td data-bbox="571 707 676 857">2020-21</td> <td data-bbox="676 707 826 857">25,694</td> <td data-bbox="826 707 986 857">TRL-590</td> <td data-bbox="986 707 1070 857">TRL-590</td> <td data-bbox="1070 707 1254 857">326300E TO326550E & 2428710N</td> <td data-bbox="1254 707 1410 857">Increase in height and extended</td> </tr> <tr> <td data-bbox="571 857 676 972">2021-22</td> <td data-bbox="676 857 826 972">37,932</td> <td data-bbox="826 857 986 972">TRL-590</td> <td data-bbox="986 857 1070 972">TRL-590</td> <td data-bbox="1070 857 1254 972">TO 2428900N</td> <td data-bbox="1254 857 1410 972">Extended towards S-W</td> </tr> <tr> <td data-bbox="571 972 676 1086">2022-23</td> <td data-bbox="676 972 826 1086">69,620</td> <td data-bbox="826 972 986 1086">TRL-590</td> <td data-bbox="986 972 1070 1086">TRL-590</td> <td data-bbox="1070 972 1254 1086"></td> <td data-bbox="1254 972 1410 1086">Extended towards S-W</td> </tr> <tr> <td data-bbox="571 1086 676 1200">2023-24</td> <td data-bbox="676 1086 826 1200">65,579</td> <td data-bbox="826 1086 986 1200">TRL-590</td> <td data-bbox="986 1086 1070 1200">TRL-590</td> <td data-bbox="1070 1086 1254 1200"></td> <td data-bbox="1254 1086 1410 1200">Extended towards S-W</td> </tr> <tr> <td data-bbox="571 1200 676 1314">2024-25</td> <td data-bbox="676 1200 826 1314">1,26,906</td> <td data-bbox="826 1200 986 1314">TRL-590</td> <td data-bbox="986 1200 1070 1314">TRL-590</td> <td data-bbox="1070 1200 1254 1314"></td> <td data-bbox="1254 1200 1410 1314">Extended towards S-W</td> </tr> <tr> <td data-bbox="571 1314 676 1352">Total</td> <td data-bbox="676 1314 826 1352">3,24,921</td> <td data-bbox="826 1314 986 1352"></td> <td data-bbox="986 1314 1070 1352"></td> <td data-bbox="1070 1314 1254 1352"></td> <td data-bbox="1254 1314 1410 1352"></td> </tr> </tbody> </table> <p data-bbox="571 1395 1410 1503">The gap plantation will be carried out in the waste dump, safety zone etc area. 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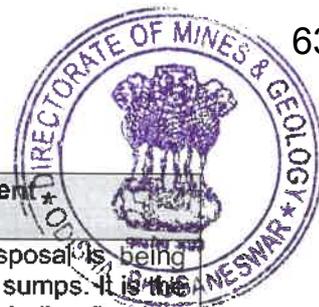
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Sl. No.	Information Sought by SEAC	Compliance furnished by the proponent		
		Total		4000 slopes will be covered with grass
xv)	Revalidation the Site specific wildlife Management plan for entire area duly approved by PCCF wildlife and contribution to Regional Wildlife plan details.	Site specific conservation plan was prepared and approved by Forest department during previous lease period, which is vested in favor of the new Lessee, however we New Lessee also undertakes to pay the cost of Site specific conservation plan freshly prepared by the DFO, Bonai and also contribute the towards Regional Wildlife plan if demand raised by the DFO, Bonai. Copy of SWLP and payment details attached as Annexure-5 and Undertaking regarding same attached as Annexure-6 .		
xvi)	Plot wise kissam of land in tabulated form for non-forest land (63.204ha.) duly certified by concerned Tahasildar and its conversion to mining/industrial use.	Land schedule showing plot wise kissam of Land authenticated by Tahsildar is attached as Annexure-7 .		
xvii)	Unexplored area of 138Ha. can be utilised for installation of solar panels to meet power requirement partially/fully.	Unexplored area of 138 ha shall be utilized for installation of solar panels to meet power requirement partially/fully, if same found to be non-mineralized zone. Undertaking regarding same is attached as Annexure -8 .		
xviii)	No. of check dams/settling ponds with capacity to be constructed for protection of the Nala.	Details of check dams /settling ponds to be constructed for protection of Nala is given Nala Management Plan attached as Annexure-2 .		
xix)	Latest Compliance Report for Previous EC Conditions.	Compliance report of previous EC condition is attached as Annexure-9		
xx)	Proposed R & R plan.	Proposed R& R Plan is attached as Annexure-10 .		



Sl. No.	Information Sought by SEAC	Compliance furnished by the proponent
xxi)	Identification of sources of fluoride and its control.	<p>It may be noted that in this region, Overburden disposal is being carried out in some of abandoned quarries and mines sumps. It is the possible leaching of different hazardous pollutants, including fluoride. However as per it is envisaged there is less chance of fluoride. However it is planned to, removal of fluoride by coagulation process using Alum and 100% of fluoride can be removed with 0.3gm/l of fluoride. In order to reduce the cost, the treatment can also be carried out with 0.1 gm/l of alum, since the fluoride concentration usually comes below the permissible limit after 1 hour of treatment.</p> <p>Fluoride is also found in natural water at some concentration level. In seawater, fluoride is found 1 mg/l. In river and lakes, less than 0.5 mg/l. of fluoride is found and high concentration of fluoride occurs in groundwater. The occurrence of fluoride in groundwater is due to weathering and leaching of fluoride bearing minerals from rocks and sediments. Fluoride when ingested in small quantities (<0.5 mg/L) is beneficial in promoting dental health by reducing dental caries, whereas higher concentrations (>1.5 mg/L) may cause fluorosis. Therefore, an attempt has been made to investigate the concentration of fluoride in the selected location and to find out their source. Additionally an attempt has been made to find out an effective treatment method as well as optimum dose for removal of fluoride from the collected samples.</p>
xxii)	Incremental concentration of PM _{2.5} and PM ₁₀ and their control.	Details has been submitted in compliance report
xxiii)	Regular monitoring of the water quality of discharge and also that of Kundra nana. Since the water is proposed to be discharged to kundra nala, at no pint of time the water quality parameters should exceed the standard limits.	Details has been submitted in compliance report
xxiv)	Bench and dump Slope stability studies	Study on dump slope stability has been carried out by CIMFR, Dhanbad ,Copy attached as Annexure-10.A.
xxv)	Protection measures against hazards arising out of vibration and fly rocks.	Details has been submitted in compliance report
xxvi)	Certificate from the Mining Department regarding the mineralised zone.	Total Mineralized zone is 78.620 Ha, as per Mineral Block Summary published by Govt of Odisha 06.12.2019 as per Directorate of Mines Steel & Mines Department Government of Odisha notification dated December 06, 2019. Copy attached as Annexure-11.
xxvii)	NoC from CGWA for ground water and	Necessary permission was obtained by previous Lessee for drawl of requisite quantity of surface water and groundwater. The same has

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	permission/ Agreement with State Government Water Resource Department.	been vested in favor of M/s MAZDANI Steel Pvt Ltd. Copies of CGWA NOC and surface water permission are attached as Annexure- 12 and vesting order for same is attached as Annexure-12. A .
xxviii)	Biodiversity register for the ML area as per Biodiversity Conservation Act, 2003.	Register shall be maintained on status of plantation carried out by the project, the project will also abide by the any directives as per Biodiversity Conservation Act, 2002. Undertaking regarding same is attached as Annexure-13 .
xxix)	Energy Conservation as per BEE and Energy Conservation Act, 2002.	Regular audit shall be carried out engaging accredited energy auditor and necessary steps shall be taken up as per the recommendation in audit report after commencement of the project. Necessary undertaking is attached as Annexure-14 .
xxx)	On site Emergency plan, Off site Emergency plan linked with District Administration and Disaster Management Plan as per Disaster Management Act, 2005.	Onsite emergency plan and Disaster Management plan is attached as Annexure- 15 .
xxxi)	Permission of District Collector with respect to Forest Right Act, 2006 and compliance of its condition.	Certificate under FRA ACT,2006 was issued in favor of previous Lessee M/s Rungta Mine Ltd for 85.567 ha which is diverted an disused Stage-II clearance under scetion-2 of F.C Act,1980 of forest land involved in the lease area vide letter no F.No 8-94/2003-FC date 25th October,2011 for utilization for mining purpose. The same permission has been vested in favor of M/s YSPL and for balance forest area, application is under active consideration with District collector.
xxxii)	Compliance of condition of Forest Clearance as per Forest Conservation Act, 1980.	Status of compliance to the stage-II clearance accorded is attached as Annexure-16 .
xxxiii)	Site specific, Wildlife Conservation and Management plan as per Wildlife Protection Act, 1972 and Odisha State Government Rule, 2006 along with proof of deposit of funds with respective Authorities.	Site specific conservation plan was prepared and approved by Forest department during previous lease period, which is vested in favor of the new Lessee, however we New Lessee also undertakes to pay the cost of Site specific conservation plan freshly prepared by the DFO, Bonai and also contribute the towards Regional Wildlife plan if demand raised by the DFO, Bonai. Copy of SWLP and payment details attached as Annexure-5 and Undertaking regarding same attached as Annexure-6 .
xxxiv)	To submit a Fire Safety Clearance Certificate for the project.	Fire Safety Clearance Certificate for the project shall be submitted after commencement of project. Undertaking regarding same attached as Annexure-17

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xxxv)	Compliance of Hazardous Waste Rule, 2016, SWM, Hazardous Chemical Rule, Battery Rule, DG Rule, C&D Rule, Electrical & Electronic Rule compliance reports duly Certified by Regional Officer SPCB, Odisha.	There will be no generation of any hazardous waste during mining activity, hence necessary permission has not been obtained from OSPCB, however necessary compliance report regarding Hazardous Waste Rule, 2016, SWM, Hazardous Chemical Rule, Battery Rule shall be submitted to OSPCB. At present there is no DG set present at mines Necessary permission shall be taken from appropriate authority during installation of DG set before commencement of the project. Undertaking regarding same is attached as Annexure-18 .												
xxxvi	Permission of use of explosives from Chief Controller of Explosives and its condition compliance report.	There will be storage of explosive inside mines, hence no permission is required. Undertaking regarding same is attached as Annexure-19 .												
xxxvi	Status of installation of Weather Monitoring System	Weather monitoring system shall be installed after commencement of project. Undertaking regarding same is attached as Annexure-20 .												
xxxvi	Status of Occupational health services for Mine employees and peripheral villagers.	<p>Following measures shall be taken for management of Occupational Health</p> <ul style="list-style-type: none"> • Rules and Safety guidelines will be followed. Dedicated Safety Officer will be employed in the mine. • Awareness creation by displaying banners, posters, slogans etc. awareness for use of the safety equipment will be done. • First-aid boxes shall be kept in the mine office at proposed mine for easy and quick access. • On the regular basis for the proposed mine Occupational Risk assessment will be carried out and the main of the assessment will be to identify hazards, and to determine the risk ratings. On the basis on risk assessment an Annual Plan will be regularly revised to eliminate the risks which are identified. Implementation of safety in the proposed mine for all workers, the safety experience which are followed by nearby mines. • Regular monitoring of environmental parameters shall be done in the work zone. <p>Details of IME/PME don so far is given below</p> <p style="text-align: center;">Details of IME/PME</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Year</th> <th>IME</th> <th>PME</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>2021</td> <td>0</td> <td>NIL</td> <td></td> </tr> <tr> <td>2022</td> <td>27</td> <td>NIL</td> <td></td> </tr> </tbody> </table> <p>Regular health camp shall be arranged for local persons.</p>	Year	IME	PME	Remark	2021	0	NIL		2022	27	NIL	
Year	IME	PME	Remark											
2021	0	NIL												
2022	27	NIL												
xxxix	Organogram for Management of Pollution control,	Inorder to systematic management of the Pollution control, Environment Management, Forest Management and afforestation, Wildlife Management, Safety Management, Occupational Health												

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	Environment Management, Forest Management and afforestation, Wildlife Management, Safety Management, Occupational Health services and social accountability	services and social accountability as separate management cell shall be established
xl)	Clarification on applicability of PESA Act for this project	The project does not involve any issues like customary resources, minor forest produce, minor minerals, minor water bodies, selection of beneficiaries, sanction of projects, and control over local, hence applicability of PESA is not envisaged.

46. The SEAC in its meeting held on 20.02.2023 observed that the **Annexures** as mentioned in the ADS have not been furnished and decided to take decision on the proposal after the proponent upload the ADS once again along with all the **Annexures** as mentioned in ADS. The proponent has furnished the **Annexures** and the SEAC verified the same.
47. Stage – II clearance already approved by previous lessee Rungta and it will be transferred to Yazdani as mentioned in **Annexure 16**.

Considering the information furnished and the presentation made by the consultant **M/S Ardra Consulting Services Pvt. Ltd., A/79, Sahidnagar, Bhubaneswar, Odisha-751007** along with the project proponent, the SEAC recommended for grant of Environmental Clearance with stipulated conditions as per **Annexure – B** and following specific conditions.

- a) The proponent shall utilize different grades of iron ore (ROM) and Manganese ore (ROM) and waste generated according to IBM guidelines.
- b) The proponent shall carryout compensatory afforestation for the project site.
- c) The proponent shall adopt additional measures for dust suppression.
- d) Conversion of Gochar / Grazing land involved if any in lease area shall be made before going for mining activity.
- e) Rainwater harvesting structures shall be implemented.
- f) The lessee shall take adequate safeguard measures to ensure the free flow of the 3 nearby tributaries/nallahs.
- g) Only shrubs can be planted in between stone patching.**
- h) The EC is limited to secondary crushing and screening operations (dry process) as per approved mining plan. Under no circumstances, the lessee shall carry out any beneficiation activity (wet process) of low-grade ore.
- i) All the ores (45-55) and +55 grades shall be used and ores & rejects shall be transported as per approved mining plan for their use. Only temporary stacks shall be operated. The mine shall avoid segregation & generation of fines and flow of silt during rainy session.
- j) Green processes like Controlled drilling, Environment friendly blasting, safe transportation and conveying, silt-management shall be followed as per guidelines.

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- k) Compliance Report specific to water balance as per actual and layout plan as per progressive mining plan shall be submitted periodically and obtain compliance report.
- l) Proper settling pond of adequate capacity shall be provided and water quality of settling pond shall be monitored regularly.



ITEM NO. 03

PROPOSAL OF ENVIRONMENTAL CLEARANCE FOR RAJNAGAR SAND MINE WITH PROPOSED EXCAVATION OF 40,002 m³/year OF SAND, AT SUBARNAREKHA RIVER BED HAVING AN AREA OF 5.48 HA LOCATED AT KHATA NO. - 377, PLOT NO - 1295/1300 VILLAGE - RAJNAGAR, TAHASIL - JALESWAR, DISTRICT - BALASORE OF SMT LAXMIPRIYA PRUSTY- EC

1. This proposal is for environmental clearance for Rajnagar sand mine at Subarnarekha River bed, over a mining lease area of 5.48ha. located at khata no. - 377, plot no - 1295/1300, village - Rajnagar, Tahasil - Jaleswar, District Balasore with proposed excavation of 40,002 m³/year of sand of Smt. Laxmipriya Prusty.
2. **Category:** This proposal falls under Category "B1", 1(a) - Mining of Minerals as the Mining lease area is more than 5.0 Ha. as per the EIA notification 2006 and its subsequent amendments.
3. The mining lease has been granted to Smt. Laxmipriya Prusty, W/o-Ratikant Rout, resident of Balaramprasad village, P.S-Motanga of Dhenkanal district from Tahsildar cum-Competent Authority, Jaleswar, Dist-Baleswar, Odisha vide letter no. 5056 dated 20.11.2019.
4. Mining Plan has been approved by the Directorate of Geology & Mining, Bhubaneswar vide letter No.1061 dated 18.04.2018 for a period of 5 years.
5. The quarry has no other mines within 500 meters. It is a new sand quarry.
6. Mining lease is an identified sairat source in the DSR - page no. 35, sl.no. 23 of Annexure I.
7. **Location:** Rajnagar Sand Mine is at bank of Subarnarekha river on Khata No.377, Plot No.1295/1300 at village - Rajnagar, Tahasil - Jaleswar, District - Balasore (Odisha). The geo coordinates are Latitude: 21°48'30.9" N to 21°48'20.9"N & Longitude: E87°12'52.2" to 87°12'43.2"E. The area falls in Survey of India Topo sheet No.73O/1(F45P1).
8. **Connectivity:** The area is approachable by fair weather road. The nearest National Highway is NH - 60 about 3.25km, nearest railway station is at Jaleswar about 1.30km and nearest Airport is Netaji Subhas Chandra Bose International Airport, Kolkata at about 150 km from the mining site.
9. **TOR Details:** SEIAA has issued the Terms of Reference to quarry vide Proposal No SIA/OR/MIN/54634/2020 & letter no.9237/SEIAA, dated 14.10.2020 & File no: 54634/38-MINB1/09-2020.
10. **Public hearing:** Public hearing was conducted on date 11.05.2022 at 10:00AM, in the locality of the sand quarry, near Shikharpur Gram Panchayat Office, under Jaleswar Block under Balasore district.
11. **Issues raised during public hearing for this project** – Operation of the sand quarry as per the Environmental Rules and Regulation, Dust suppression, safety and protection of road during

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transportation, mode of transportation, cost of Sand, timing of mining and restriction of transportation of sand during night time.

12. **Topography** - The lease area is almost flat land covered with sand, during monsoon season due to heavy flow of water, sand dunes are formed within the lease area. Mining will be carried out at 18mRL upto an maximum depth of 3m; 15 mRL will be the quarry floor at the end of the plan period. The river flows towards NE - SW direction.
13. **Total Reserves and Mining method:** Geological Reserves of project site is 164400m³ and mineable reserves are 139563m³. As per the mining plan, mining will be by means of opencast manual mining method. The proposed annual production capacity is 40,002cum and total production is 200010cum during the plan period.
14. **Water Requirement:** The total water requirement for the project estimated to be 5KLD i.e., for dust suppression (2KLD), greenbelt development (1.5KLD) and domestic uses (1.5KLD) and will be sourced from nearby available water resource and for drinking water it will be sourced from tanker.
15. **Waste water generation:** No liquid waste will be generated from mining activities. A small amount of domestic waste water from office toilet will be discharged into the soak pits/septic tank.
16. **Manpower:** Total manpower of 46 persons will be required for the proposed project.
17. **Power requirement:** No electricity required for operations of the mining, the mining will be worked out during day time only. The power required for office is minimal, shall be taken from the General Electric supply of the area.
18. **Greenbelt:** The plantation will be developed in the haul roads and other places. During plan period, it has been proposed by the lessee to plant 200 nos. of saplings, covering 1000sqm. of area.
19. **Baseline study** has been conducted during Post Monsoon Season of 2020 i.e., 01 October 2020 to 31 December 2020. Ambient Air Quality Monitoring made in 8 locations & the results shows the values of PM10 ranges from – 61.2µg/m³ to 89.8µg/m³, PM2.5 – 19.6µg/m³ to 27.8µg/m³, SO₂ – 5.8µg/m³ to 9.9µg/m³, NO_x – 9.2µg/m³ -13.9 µg/m³. Water Quality Monitoring made in 6 locations for ground water and 4 locations for surface water. For ground water all parameters like TDS (322 to 405mg/l), pH (7.24 to 7.86), Chloride (84 mg/l to 101 mg/l), Fluoride (0.21mg/l to 0.40mg/l) etc. are found within permissible limits & fit for consumption and for surface water values of pH (7.24 to 7.56), Chloride (37– 41 mg/l) DO (6.8 to 7.1 mg/l) etc. are found within permissible limits & fit for consumption. Similarly, noise was monitored at 6 locations and value ranges from 34.2dB(A) – 50.5dB(A) during day time and 40.5dB(A) – 67.8dB(A) during night time.
20. **Project cost:** The estimated cost of the project is 10 lakhs. Cost for implementation of EMP is - Capital cost - Rs 145000 and Recurring cost - Rs 75000/annum. The CER budget allotted – Rs. 20,000.
21. **Environment Consultancy:** The proponent along with the consultant M/s Green Circle Inc, Gujarat, made a detailed presentation before the SEAC.

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22. The SEAC in its meeting held on 29.11.2022 decided to take decision on the proposal after receipt of the following from the proponent
23. The proponent has furnished the compliance and the SEAC verified the same as follows:

Sl. No.	Information Sought by SEAC	Compliance furnished by the proponent	Views of SEAC
i)	Replenishment Study Report details i.e., photographs, co-ordinates of pits, depth and volume of sand before and after monsoon period and correlate the result with the values obtained.	a) Photographs are attached as Annexure-1 . b) Co-ordinates of pits are attached as Annexure -2 . c) Depth of Sand is 1m. d) Volume of Sand before and after monsoon is 15950cum.	
ii)	Kissam details of land and NOC from Tahasildar for usage of approach road from proposed quarry to main road.	Kissam details & NOC from Tahasildar is attached as an Annexure-3 .	complied
iii)	An undertaking that plantation shall be carried out both the side of haulage road.	Undertaking is attached as an Annexure -4 .	complied
iv)	Authorization letter of the project proponent for engagement of Environmental Consultant for execution and monitoring of Environment Management Plan.	Authorization letter is attached as an Annexure -5 .	complied
v)	Since, school and village are nearby, detailed guideline for plying of vehicles on the haulage road near village & school area for safety of school students and nearby habitation.	Authorization Letter as an Annexure-6 .	Undertaking by PP to follow the guideline for plying of vehicles on the haulage road near village & school area.

24. The SEAC in its meeting held on 20.02.2023 opined that this proposal needs further examination. Applied quantity is 40002 cum/annum. Figure given for replenishment in compliance letter is 15950 cum/annum. The Committee could not find replenishment study details in uploaded documents. Quantity to be allowed need to be confirmed. Secondly, there is a NGT case pending for Balasore dist. on DSR. It needs to be examined from that angle also.
25. The SEAC in its meeting held on 20.02.2023 decided to defer the proposal and take decision on the proposal after receipt of the following clarification / documents from the proponent; The proponent has furnished the compliance and the SEAC verified the same as follows:

Sl. No.	Information Sought by SEAC	Compliance furnished by the proponent	Views of SEAC
1.	Applied quantity is 40002 cum/annum. Figure given for replenishment in compliance letter is 15950 cum/annum. The Committee could not find replenishment study details in uploaded documents. Quantity to be allowed need to be confirmed. Secondly, there is a NGT case pending for Balasore dist. on	I. The Mining plan was prepared on the basis of OMMC Rule -2016, having applied quantity of 40002 cum/ annum. But it is not following the Guidelines prepared for sustainable sand mining under MOEF. The Replenishment study report which was prepared in the	As per Replenishment study the project proponent has requested for extraction of 11,612cum/

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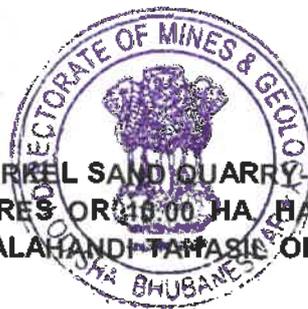
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Sl. No.	Information Sought by SEAC	Compliance furnished by the proponent	Views of SEAC
	DSR.	<p>year-2022 taking all the aspects of advance UAV/Drone survey method. As per the recent replenishment study report which has been prepared on the basis of advance UAV/Drone survey method comes to 11,612cum/ annum may kindly be allowed.</p> <p>ii. When the Proposal for EC was applied, at that time there was no NGT Case pending. As the Proposal for EC was applied for a long time kindly consider our case and issue the EC at an earlier date. We have never violated any rules and regulations of MOEF and assure you to not to violate any rules and regulations framed under MOEF.</p>	annum.

Considering the information furnished and the presentation made by the consultant, **M/s Green Circle Inc, Gujarat**, along with the project proponent, the SEAC recommended the following:

- A. Environmental Clearance may be granted for the proposal valid upto lease period for extraction of 11,612cum/ annum of sand as per the replenishment study report with stipulated conditions as per Annexure – C and following specific conditions:**
- (i) Amended EIA Notification dated 25th July, 2018, Guidelines for sustainable sand mining, 2016 and Enforcement and Monitoring Guidelines for Sand Mining, January 2020 of MoEF&CC, Govt. of India shall be adhered to in execution of Mining.
 - (ii) **Extraction should be limited to annual replenished quantity in workable area only subject to exclusion of safety zone as per Guidelines for sustainable sand mining, 2016 and Enforcement and Monitoring Guidelines for Sand Mining, January 2020 of MoEF&CC, Govt. of India.**
 - (iii) Regular replenishment study to be conducted and report to be submitted.
 - (iv) Provision of Bio-toilet shall be made at the site.
 - (v) Avenue plantation and plantation on both sides of the haulage road in consultation with/ on the advice of concerned Forest Department, Government of Odisha & W.R. Department Government of Odisha as well.
 - (vi) Stone patching with plantation in between along the stretch of the bank associated with sand mining and necessary ramp construction shall be made.
- B. Mining Plan has been approved by the Directorate of Geology & Mining, Bhubaneswar vide letter No.1061 dated 18.04.2018 for a period of 5 years. The validity period of mining plan to be expired on 17.04.2023. The SEIAA may consider to issue Environmental Clearance after the lessee submits valid approved mining plan beyond 17.04.2023.**

ITEM NO. 04**PROPOSAL OF ENVIRONMENTAL CLEARANCE FOR TURKEL SAND QUARRY-1 & 2 (UNDER CLUSTER APPROACH) OVER AN AREA OF 24.70 ACRES OR 10.00 HA, HAVING KHATA NO.221, PLOT NO. 270 IN VILLAGE TURKEL UNDER KALAHANDI TAHASIL OF KALAHANDI DISTRICT OF TAHASILDAR KALAHANDI - EC**

1. This proposal is for Environmental Clearance for Turkel Sand Quarry-1 & 2 (Under Cluster Approach) over an area of 24.70 Acres or 10.00 Ha having Khata No.221, Plot No. 270 in village Turkel under Kalahandi Tahasil of Kalahandi District of Tahasildar Kalahandi.
2. **Category:** As per EIA Notification,2006, and subsequent amendments, the project falls under category B1 of Schedule 1(a)-Mining of minerals as the lease area is more than 5.0 Ha.
3. Quarry lease for minor mineral (River sand) has been proposed to be granted by the Tahasildar, Kalahandi to the successful bidder for minor mineral (River Sand) for five years after auction.
4. Mining Plan with Progressive Mine Closure Plan has been approved by Geologist, O/o Joint Director Geology Zonal Survey, Balangir, Odisha vide letter no. Memo no.-850 dated 01/09/2021.
5. This project is a new proposed sand mine project with the excavation capacity of 34120 m³ /year sand.
6. **TOR details:** Terms of Reference was granted by SEIAA vide File No. SIA/OR/MIN/68237/2022 on dated 22/02/2022 & SIA/OR/MIN/80758/2022 on dated 11/11/2022.
7. **Public hearing details:** Public hearing was held on dated 14.09.2022 at 10.00 AM near Chahagaon Gram Panchyat Office under Kalahandi block of Kalahandi District. During Public Hearing, about 80 local people participated and 33 suggestions/opinions were received by local citizens. Issues raised were regarding transportation of sand, transportation route, sand mining from river bed, control of vehicular emission during transportation, dust suppression measures, road development, provision of drainage facility in the village to avoid water logging problem, plantation, utilization of DMF fund for peripheral development of the village, road development and protection of environment. The amount incurred for action plan of public hearing is Rs. 50,000.
8. **Location and Connectivity:** The cluster lease area is on Khata No. 221, Plot no. 270, Village: Turkel, Tahasil - Kalahandi, District - Kalahandi, Odisha. The mine lease area falls under the Toposheet No. 64P/4. The geo coordinates of the proposed site ranges from Latitude N20° 08' 30.9" to N20° 08'39.8" and Longitude E83° 05' 18.6" to E83° 05' 40.9". Nearest state highway is SH – 16 about 0.7km, nearest village is Turkel about 1km. Nearest railway station is Kesinga at 15km and nearest airport is Biju Patnaik International Airport, Bhubaneswar about 287 km. Nearest reserve forest is Dhanupanchan Reserve Forest about 4 km.
9. **Seismic zone:** The proposed project site falls in Seismic Zone III. Kalahandi is in Zone III of the Bureau of institute of seismological Research (ISR), seismic zone map for India.
10. **Replenishment Study Report** – For Replenishment study, the survey was done by using UAV/Drone which indicates the mineable sand deposit is around 33525 cum. 60% of the above computed mineable reserve has been taken as available mineable reserve over the area as per MoEF Notification dated 25.07.2018. Maximum of 33525 cum of sand per annum may be allowed for mining activities. 60% of the mineable reserve is 20115 cum. The maximum extraction limit as per sustainable sand mining Rule of MoEF Guideline is 20115cum.

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Environmental Scientist, SEAC



11. **Reserves:** Total geological and mineable reserves in the proposed project is 200038 cum and 108384 cum respectively.
12. **Rate of production:** Total production from cluster is 170600cum during the plan period as per the following table.

Name Of The Lease Cluster	Year	Surface Area m ²	Thickness m	Production (m ³)
Turkel sand Quarry-1	1 st Year	10000	1.8	18000
	2 nd Year	10000	1.8	18000
	3 rd Year	10000	1.8	18000
	4 th Year	10000	1.8	18000
	5 th Year	10000	1.8	18000
Total				90,000
Turkel sand Quarry2	1 st Year	8060	2	16120
	2 nd Year	8060	2	16120
	3 rd Year	8060	2	16120
	4 th Year	8060	2	16120
	5 th Year	8060	2	16120
Total				80,600
Turkel Cluster				1,70,600

13. **Mining method:** The mining is confined to extraction of sand from the bed of Tel River. The mining will be opencast, manual method in which the material will be collected in its existing form and transportation through 8 tipper sand 12 trucks. The depth of the mining will be maximum 1.0 meter. The mining will be undertaken on single shift basis.
14. **Baseline study:** Baseline study of the study area was conducted during pre-monsoon from 1st October 2021 to 31st December 2021 for Turkel Cluster Sand quarry-1&2.

Air Quality Monitoring Results - The concentrations of PM10 and PM2.5 for all the 8 AAQM stations were found between 52.30 to 73.8µg/m³ and 16.70 to 23.60 µg/m³ respectively. The concentrations of SO₂ and NO_x were found to be in range of range of 6.4 to 9.1µg/m³ and 9.7 to 13.60 µg/m³ respectively.

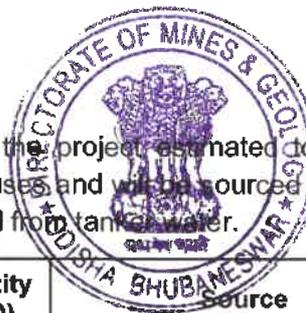
Noise Quality Monitoring Results - Ambient noise levels were measured at 8 locations around the Mine site. Noise levels varied from 42.1dB (A) Leq to 44.6 Leq dB (A) during day time and 39.1 dB (A) Leq to 41.7 Leq dB (A) during night time.

Ground water Quality Monitoring Results - The ground water analysis for all the 7 sampling stations shows that pH varied from 7.14 to 8.10, total hardness varied from 224 mg/l to 382 mg/l & total dissolved solids varied from 376 mg/l to 514 mg/l. The water samples contain chloride 36 mg/L to 94 mg/L, Ca from 44.8 mg/L to 85.6 mg/L, Magnesium varies from 20.9 mg/L to 43.7 mg/L.

Soil Quality Monitoring Results - Samples collected from 8 identified soil locations indicate pH value ranging from 6.8.-7.7. Organic Matter ranges from 0.95 % -2.63 % in the soil samples. Nitrogen is found to be in moderate amount as it ranges from 1213 mg/kg -1628 mg/kg and Phosphorous in less amount i.e. from 241 mg/kg- 386mg/kg, whereas the Potassium is found to be ranging from 543 mg/kg -879 mg/kg.

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15. Water Requirement: The total water requirement for the project, estimated to be 5 KLD for mining, spraying, greenbelt development and domestic uses and will be sourced from the nearby available water source and drinking water will be sourced from tanker water.

S. No.	Particulars	Quantity (KLD)	Source
i)	Dust Suppression (On haul roads etc.)	3.0	Water requirement will be met from nearby available water resource and drinking water will be sourced from tanker.
ii)	Green Belt Development/ Plantation	1.0	
iii)	Drinking/Domestic & Sanitation	1.0	
Total		5.0	

16. Wastewater Management: Domestic wastewater so generated will be disposed-off in soak pit via septic tank.

17. Greenbelt: Greenbelt will be developed along safety zone of the lease area (river bank areas). Native species will be planted like Neem, Mango, Teak, Jhaun and Jammuetc. About 50 nos./year and 250nos. of saplings will be planted by individual mines and in total 500nos. of saplings will be planted by the cluster during the plan period.

18. Manpower: Total manpower of 40 people will be required for the proposed project.

19. Project cost: Total project cost is Rs. 50 lakhs. Capital cost for EMP is Rs. 2,90,000. Recurring cost of EMP is Rs. 1,50,000 per annum.

20. Environment Consultant: The Environment consultant **M/s Green Circle Inc.** along with the proponent made a presentation on the proposal before the Committee.

21. The SEAC in its meeting held on 17.02.2023 decided to take decision on the proposal after receipt of the following from the proponent. The proponent has furnished the compliance and the SEAC verified the same as follows:

Sl. No.	Information Sought by SEAC	Compliance furnished by the proponent	Views of SEAC
1.	Exact span of bridge and distance of the bridge from the lease area.	Length of Tel Bridge -1 k.m and Width-10mtr. Turkel Tel Bridge - 0.20km (Turkel-1) Turkel Tel Bridge - 0.51 km (Turkel-2) Bridge to Turkel-1 sand Quarry exact distance is 200m. After that PP has left area of 200m as restricted zone which is shown in approved mining plan. So total 400m distance is declared as restricted zone from bridge.	Complied
2.	Replenishment study report along with grid readings.	Replenishment study report is attached.	Complied
3.	Rectify the error in table no.2 of approved mining plan.	The Table No-2 of approved mining plan is rectified.	Complied.
4.	Justification for increase in production from 4000cum (previous production) to 18000cum (current proposed)	The PP has mentioned Turkel Sand Quarry 1 was running mines having production of 4000cum of sand. After lease period was	-

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(Old Proposals – ADS received)

Environmental Scientist, SEAC



Sl. No.	Information Sought by SEAC	Compliance furnished by the proponent	Views of SEAC
	production) from the Turkel Sand Quarry 1.	over, it was decided to hike production of 18160cum per annum.	
5.	Copy of previous EC and its compliance to EC conditions certificate.	The copy of EC compliance is attached.	Complied

Considering the Information / documents furnished by the proponent and presentation made by the consultant M/s Green Circle Inc, Gujarat on behalf of the proponent, the SEAC decided to take decision on the proposal after receipt of the following clarification from the proponent:

- a) Bridge is of 1km length and about 200meter from the lease area. As per Enforcement and Monitoring Guidelines for Sand Mining 2020 "Sand and gravel shall not be extracted up to a distance of 5Xof the length of the bridge on the upstream side and 10X on downstream side". Taking this criteria sand extraction is not permissible as bridge length is 1km.


Member Secretary, SEAC

F. No. 11-599/2014-FC
 Government of India
 Ministry of Environment, Forest and Climate Change
 (Forest Conservation Division)



Indira Paryavaran Bhawan
 Aliganj, Jorbagh Road
 New Delhi - 110 003
 Dated: 1st April, 2015

To

The Principal Secretary (Forests)
 All State / Union Territory Governments

Sub: Guidelines for diversion of forest land for non-forest purposes under the Forest (Conservation) Act 1980- Submission of proposals to obtain approval for diversion of entire forest land located within a mining lease.

Sir,

I am directed to refer to this Ministry's letter No. 11-362/2012-FC dated 1st February, 2013 on the above-mentioned subject, wherein this Ministry informed *inter-alia* that in case of mines where approval under the Forest (Conservation) Act, 1980 (FC Act) for diversion of only a part of forest land located within the mining leases has been obtained, after two years from the issue of the said letter mining will be allowed only if the user agency either obtains approval under the FC Act for the entire forest land located within the mining lease or surrenders such forest land for which approval under the FC Act has not been obtained and execute a revised mining lease for the reduced lease area.

2. This Ministry received representations wherein it has *inter-alia* been stated that it is practically not possible to obtain approval under the FC Act for diversion of the entire forest land in two years as the whole process takes more than two years. This Ministry was requested to issue the revised guidelines to prevent disruption in the ongoing mining operations.

3. This Ministry has examined the matter in consultation with the Department of Legal Affairs, Ministry of Law and Justice. After careful examination of the matter and the advice of the Department of Legal Affairs, Ministry of Law and Justice, this Ministry in supersession of the said letter No. 11-362/2012-FC dated 1st February, 2013, hereby decides as below:

- (i) Henceforth, in case of mining leases, including those of Government Authorities, having forest land in part or in full, approval of Central Government under Section-2 (iii) of the FC Act, for the entire forest land located within a mining lease shall be obtained before execution (including by way of renewal) of a mining lease in accordance with the provisions of the Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act) and the Rules framed thereunder.

11/04/2015

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 DIRECTORATE OF MINES & GEOLOGY
 GOVT. OF KARNATAKA
 BANGALORE
- (ii) User agencies while submitting applications to obtain prior approval under Section 2 (iii) of the FC Act, if they so desire, may also seek prior approval of Central Government under Section 2 (ii) of the FC Act for the whole or a part of the forest land located within the mining lease for mining and allied non-forest activities. Area of forest land for which approval under Section 2 (ii) and 2 (iii) is sought shall separately be indicated in the proposals submitted by the user agencies. Where at the time of execution of the mining lease prior approval of Central Government under Section 2 (ii) to use the entire forest land falling in the mining lease for mining and allied non-forest activities is not obtained, the user agencies may submit proposal under Section 2 (ii) of the FC Act for the whole or a part of the remaining forest land falling within the mining lease, as and when such forest land is proposed to be utilised for mining and allied non-forest activities.
- (iii) Central Government after examination of a proposal and after such other enquiry as it may consider necessary, may accord approvals under Section 2 (iii) and 2 (ii) of the FC Act for assigning on lease and to utilize for mining and allied non-forest activities respectively, such areas of forest land, as it may consider expedient, or reject the same.
- (iv) Prior approval of Central Government under Section 2 (iii) of the FC Act shall be subject to payment of Net Present Value (NPV) of the forest land allowed to be assigned on mining lease. Similarly, prior approval of Central Government under Section 2 (ii) shall be subject to other usual conditions apart from realization of NPV of the forest land allowed to be utilised for mining and other allied non-forest activities.
- (v) In case of existing mining leases having forest land in part or in full, where approval under Section 2 of the FC Act for a part of the forest land has only been obtained, Central Government hereby accords general approval under Section 2 (iii) of the FC Act for the remaining area of the forest land falling within such mining leases, subject to following conditions:
- (a) State Government shall, within a period of one year from the date of issue of this letter, realize from the user agency, NPV of the entire forest land falling in the mining lease, in case NPV of such forest land has not already been realised;
 - (b) In case State Government fails to realize from the user agency, NPV of the entire forest land falling in a mining lease within a period of one year from the date of issue of this letter, this general approval in respect of such mining lease, shall be kept in abeyance, and shall be deemed to have been kept in abeyance, and all mining activities in such mining lease shall be stopped, till such time, the NPV of such forest land is realised by the State Government;
 - (c) The general approval shall be valid for a period co-terminus with the period of mining lease in accordance with the provisions of the Mines and Minerals (Development and Regulation) Act, 1957, as amended, and the Rules framed thereunder;



 2/11/11



- (d) This general approval does not, in any manner, exempt a user agency from obtaining prior approval under Section 2(ii) of the FC Act in regard to an area of forest land which is to be used for non-forest purpose;
- (e) Grant of this general approval under Section 2 (iii) does not, in any manner, confer any right or equity in favour of the user agency for grant of approval under section 2 (ii) of the FC Act and decision on proposals under Section 2 (ii) will be taken purely on the merit of each case;
- (f) This general approval will not be applicable to the forest land for which Central Government before the issue of this letter has already declined approval under Section 2 of the FC Act; and
- (g) Grant of this general approval does not in any manner, exonerate the concerned authorities in the State Government or in any other Authority, from the proceedings under Section 3A and 3B of the FC Act, liable to be initiated for violation, if any, of the FC Act committed by them by assigning such forest land on mining lease without obtaining prior approval of Central Government under Section-2 of the FC Act.
- (vi) The user agency shall be responsible for protection of the forest land located in a mining lease for which prior approval of Central Government under Section 2 (iii) of FC Act, including by way of the afore-mentioned general approval, has only been obtained. However, administrative and management control of such forest land will remain with State Forest Department or other forest land owning agencies and the forests will be managed in accordance with the approved management plan till such time it is not diverted for non-forest purpose, i.e., mining and remains unbroken.

This issues with approval of the Hon'ble Minister of State (Independent Charge) for Environment, Forest and Climate Change.

Yours faithfully,

(Signature)
(H.C. Chaudhary)
Director

Copy to:-

1. Prime Minister's Office (*Kind attn.:* Shri Santosh D. Vaidya, Director).
2. Secretary, Ministry of Mines, Government of India.
3. Secretary, Ministry of Coal, Government of India.
4. Secretary, Ministry of Steel, Government of India.
5. Principal Chief Conservator of Forests, all States/UTs.
6. Nodal Officer, the Forest (Conservation) Act, 1980, all States/UTs.
7. All Regional Offices, Ministry of Environment, Forest and Climate Change (MoEFCC).
8. Joint Secretary, In-charge, Impact Assessment Division, MoEF.



4

9. PS to the Hon'ble Minister of State (Department in Charge) of Environment, Forest and Climate Change.
10. Chairman, State Environment Impact Assessment Authority, all States/UTs.
11. Member-Secretary, State Environment Impact Assessment Authority, all States/UTs.
12. All Directors/ Assistant Inspector General of Forests in Forest Conservation Division, MoEFCC.
13. All Advisors/ Directors/ Dy. Directors in the Impact Assessment Division, MoEFCC.
14. Director, Regional Office (Headquarters), MoEFCC. .
15. Sr. Director (Technical), NIC, MoEFCC with a request to place a copy of this letter on website of this Ministry.
16. Sr. PPS to the Secretary, Ministry of Environment, Forest and Climate Change.
17. Sr. PPS to Director General of Forests and Special Secretary, Ministry of Environment, Forest and Climate Change.
18. Sr. PPS to Addl. Director General of Forests (Forest Conservation), Ministry of Environment, Forest and Climate Change.
19. PS to Inspector General of Forests (Forest Conservation), Ministry of Environment, Forest and Climate Change.
20. Guard File.

(H.C. Chaudhary)
Director

**ANNEXURE- B**

CONDITIONS TO BE STIPULATED IN ENVIRONMENTAL CLEARANCE FOR M/S YAZDANI STEEL & POWER LIMITED FOR MANGANESE ORE 0.04 MTPA AND IRON ORE 0.3 MTPA AT KOLMONG IRON & MANGANESE BLOCK OVER AN AREA OF 218.481 HA (AS PER DGPS)/218.530 HA (AS PER ROR) (FOREST: 155.326 HA & NON-FOREST: 63.204 HA) IN VILLAGE-KOLMONG UNDER KOIRA TAHASIL OF SUNDARGARH DISTRICT FOR OF SRI BINODA KUMAR ACHARYA - EC

(I) Statutory compliance

- (i) 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.
- (ii) 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.
- (iii) 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.
- (iv) This Environmental Clearance shall become operational only after receiving formal NBWL Clearance from MoEF&CC subsequent to the recommendations of the Standing Committee of National Board for Wildlife, if applicable to the Project,
- (v) This Environmental Clearance shall become operational only after receiving formal Forest Clearance (FC) under the provision of Forest Conservation Act, 1980, if applicable to the project.
- (vi) Project Proponent (PP) shall obtain Consent to Operate after grant of EC and effectively implement all the conditions stipulated therein. The mining activity shall not commence prior to obtaining Consent to Establish / Consent to Operate from the concerned State Pollution Control Board.
- (vii) The PP shall adhere to the provision of the Mines Act, 1952, Mines and Mineral (Development & Regulation), Act, 2015 and rules & regulations made there under. PP shall adhere to various circulars issued by Directorate General Mines Safety (DGMS) and Indian Bureau of Mines from time to time.
- (viii) The Project Proponent shall obtain consents from all the concerned land owners, before start of mining operations, as per the provisions of MMDR Act, 1957 and rules made thereunder in respect of lands which are not owned by it.
- (ix) The Project Proponent shall follow the mitigation measures provided in MoEF&CC'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".
- (x) The Project Proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water and from CGWA for withdrawal of ground water for the project.



- (xi) A copy of EC letter will be marked in concerned Panchayat / local NGO etc. if any, from whom suggestion / representation has been received while processing the proposal.
- (xii) State Pollution Control Board 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.
- (xiii) 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 and web site of the Ministry of Environment, Forest and Climate Change (www.environmentclearance.nic.in). A copy of the advertisement may be forwarded to the concerned MoEF&CC Regional Office for compliance and record.
- (xiv) The Project Proponent shall inform the MoEF&CC/SEIAA, Odisha for any change in ownership of the mining lease. In case there is any change in ownership or mining lease is transferred than mining operation shall only be carried out after transfer of EC as per provisions of the para 11 of EIA Notification, 2006 as amended from time to time.

(II) Air quality monitoring and preservation

- (i) 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, PM_{2.5}, NO₂, CO and SO₂ etc. as per the methodology mentioned in NAAQS Notification No. B-29016/20/90/PC/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 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.
- (ii) 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 PM_{2.5} 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 MoEF&CC/ Central Pollution Control Board.

(III) Water quality monitoring and preservation

- (i) 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 MoEF&CC 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.
- (ii) Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintain. The natural water bodies and or streams which are flowing in an around the village, should not be disturbed. The Water Table should be nurtured so as not to go down below the pre-mining period. In case of any water scarcity in the area, the Project Proponent has to provide water to the villagers for their use. A provision for regular monitoring of water table in open dug wall located in village should be incorporated to ascertain the impact of mining over ground water table. 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.
 - (iii) 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.
 - (iv) 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 and maintain its records. The project proponent shall undertake regular monitoring of water quality upstream and downstream of water bodies passing within and nearby/ adjacent to the mine lease and maintain its records. Sufficient number of gullies shall be provided at appropriate places within the lease for management of water. PP shall carryout regular monitoring w.r.t. pH and included the same in monitoring plan. The parameters to be monitored shall include their water quality vis-a-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 MoEF&CC / SEIAA, Odisha. 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 be sent regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, SEIAA, Odisha, 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.
 - (v) 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 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.



- (vi) The project proponent shall construct retaining wall and settling pond within the lease area. Further, check dams shall be constructed at strategic locations in which rain water passes in rainy season. Finally, the excess supernatant after sedimentation shall be allowed to spill away through stone pitch structure to the nearby valley.
- (vii) De-silting of agricultural lands in buffer zone and beyond including nearby Nalas/rivers perennially periodically and perpetually caused due to wash up of minerals/OB/dumps shall be done as per SOP submitted. A legal affidavit shall be submitted within 6 months from the date of issue of Environmental Clearance to this effect with periodicity of de-silting.
- (viii) Detail design of the existing retaining wall and the proposed for the expansion from a chartered Civil Engineer shall be submitted within 6 months from the date of issue of Environmental Clearance to ensure that no silt after wash up is escaped from the core / buffer zone of the mines.
- (ix) 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, MoEF&CC annually.
- (x) Industrial waste water (workshop and waste water from the mine) should be properly collected and treated in an ETP as proposed 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.
- (xi) 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.
- (IV) Noise and vibration monitoring and prevention**
- (i) The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines.
- (ii) 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.
- (iii) The Project Proponent shall take measures for control of noise levels below 85 dBA in the work environment. The worker 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.



(V) Mining Plan

- (i) The Project Proponent shall adhere to the working parameters of mining plan which was submitted at the time of EC appraisal wherein year-wise plan was mentioned for total excavation i.e. quantum of mineral, waste, over burden, inter burden and top soil etc.. No change in basic mining proposal like mining technology, total excavation, mineral & waste production, lease area and scope of working (viz. method of mining, overburden & dump management, O.B & dump mining, mineral transportation mode, ultimate depth of mining etc.) shall not be carried out without prior approval of the Ministry of Environment, Forest and Climate Change, which entail adverse environmental impacts, even if it is a part of approved mining plan modified after grant of EC or granted by State Govt. in the form to Short Term Permit (STP), Query license or any other name.
- (ii) The Project Proponent shall get the Final Mine Closure Plan along with Financial Assurance approved from Indian Bureau of Mines/Department of Mining & Geology as required under the Provision of the MMDR Act, 1957 and Rules/ Guidelines made there under. A copy of approved final mine closure plan shall be submitted within 2 months of the approval of the same from the competent authority to the concerned Regional Office of the Ministry of Environment, Forest and Climate Change for record and verification.
- (iii) 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-a-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 MoEF&CC and its concerned Regional Office / SEIAA, Odisha.

(VI) Land reclamation

- (i) The Overburden (O.B.) 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 dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by D.G.M.S w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of top soil/OB dumps. The topsoil shall be used for land reclamation and plantation.
- (ii) The reject/waste generated during the mining operations shall be stacked at earmarked waste dump site(s) only. The physical parameters of the waste dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of waste dumps.
- (iii) The reclamation of waste dump sites shall be done in scientific manner as per the Approved Mining Plan cum Progressive Mine Closure Plan.
- (iv) 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.

- (v) The Project Proponent shall carry out slope stability study in case the dump height is more than 30 meters. The slope stability report shall be submitted to concerned regional office of MoEF&CC, Govt. of India, Bhubaneswar as well as SEIAA, Odisha.
 - (vi) Catch drains, settling tanks and siltation ponds of appropriate size shall be constructed around the mine working, mineral yards and topsoil / OB / waste dumps to prevent runoff 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.
 - (vii) 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.
 - (viii) The top soil, if any, shall temporarily be stored at earmarked site(s) within the mine lease only and should not be kept unutilized for long. The physical parameters of the top soil dumps like height, width and angle of slope shall be governed as per the approved Mining Plan and as per the guidelines framed by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of dumps. The topsoil shall be used for land reclamation and plantation purpose.
 - (ix) The mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
- (VII) Transportation**
- (i) No Transportation of the minerals shall be allowed in case of roads passing through 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 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.



- (ii) The Main haulage road within the mine lease should be provided with a permanent water arrangement for dust suppression. Other roads within the mine lease should be wetted regularly with tanker-mounted water sprinkling system. In 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.
- (iii) Traffic management shall be done as per recommendation of Traffic Management Study Report.
- (iv) The Project Proponent shall provide parking plaza for the heavy vehicles within the lease area as recommendation of NEERI.
- (VIII) Green Belt**
- (i) 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.
- (ii) 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.
- (iii) 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.
- (iv) The Project Proponent shall undertake all precautionary measures for conservation and protection of endangered flora and fauna and Schedule-I species during mining operation. A Wildlife Conservation Plan shall be prepared for the same clearly delineating action to be taken for conservation of flora and fauna. The Plan shall be approved by Chief Wild Life Warden of the State Govt.
- (v) And implemented in consultation with the State Forest and Wildlife Department. A copy of Wildlife Conservation Plan and its implementation status (annual) shall be submitted to the Regional Office of the Ministry.



(IX) Public hearing and human health issues

- (i) The Project Proponent shall appoint an Occupational Health Specialist for Regular as well as Periodical medical examination of the workers engaged in the mining activities, as per the DGMS guidelines. The records shall be maintained properly. PP shall also carryout Occupational health check-ups in respect of workers which are having ailments like BP, diabetes, habitual smoking, etc. The check-ups shall be undertaken once in six months and necessary remedial/ preventive measures be taken. A status report on the same may be sent to MoEF&CC Regional Office and DGMS on half-yearly basis.
- (ii) A commitment in form of an undertaking for periodical occupational health checkup of the employee and the local people shall be done through an occupational health expert as per the detailed action plan submitted with the proposal within 6 months from the date of issue of Environmental Clearance.
- (iii) The Project Proponent must demonstrate commitment to work towards 'Zero Harm' from their mining activities and carry out Health Risk Assessment (HRA) for identification workplace hazards and assess their potential risks to health and determine appropriate control measures to protect the health and wellbeing of workers and nearby community. The proponent shall maintain accurate and systematic records of the HRA. The HRA for neighborhood has to focus on Public Health Problems like Malaria, Tuberculosis, HIV, Anaemia, Diarrhoea in children under five, respiratory infections due to bio mass cooking. The proponent shall also create awareness and educate the nearby community and workers for Sanitation, Personal Hygiene, Hand washing, not to defecate in open, Women Health and Hygiene (Providing Sanitary Napkins), hazard of tobacco and alcohol use. The Proponent shall carryout base line HRA for all the category of workers and thereafter every five years.
- (iv) The Proponent shall carry out Occupational health surveillance which be a part of HRA and include Biological Monitoring where practical and feasible, and the tests and investigations relevant to the exposure (e.g. for Dust a X-Ray chest; For Noise Audiometric; for Lead Exposure Blood Lead, For Welders Full Ophthalmologic Assessment; for Manganese Miners a complete Neurological Assessment by a Certified Neurologist, and Manganese (Mn) estimation in Blood; For Inorganic Chromium- Fortnightly skin inspection of hands and forearms by a responsible person. Except routine tests all tests would be carried out in a Lab accredited by NABH. Records of Health Surveillance must be kept for 30 years, including the results of and the records of Physical examination and tests. The record of exposure due to materials like Asbestos, Hard Rock Mining, Silica, Gold, Kaolin, Aluminium, Iron, Manganese, Chromium, Lead, Uranium need to be handed over to the Mining Department of the State in case the life of the mine is less than 30 years. It would be obligatory for the State Mines Departments to make arrangements for the safe and secure storage of the records including X-Ray. Only conventional X-Ray will be accepted for record purposes and not the digital one). X-Ray must meet ILO criteria (17 x 14 inches and of good quality).
- (v) The Proponent shall maintained a record of performance indicators for workers which includes (a) there should not be a significant decline in their Body Mass Index and it should stay between 18.5 -24.9, (b) the Final Chest X-Ray compared with the base line X-Ray should not show any capacities, (c) At the end of their leaving job there should be no Diminution in their Lung Functions Forced Expiratory Volume in one



second (FEV1), Forced Vital Capacity (FVC), and the ratio) unless they are smokers which has to be adjusted, and the effect of age, (d) their hearing should not be affected. As a proof an Audiogram (first and last need to be presented), (e) they should not have developed any Persistent Back Pain, Neck Pain, and the movement of their Hip, Knee and other joints should have normal range of movement, (f) they should not have suffered loss of any body part. The record of the same should be submitted to the Regional Office, MoEF&CC annually along with details of the relief and compensation paid to workers having above indications.

- (vi) The Project Proponent shall ensure that Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.
- (vii) 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, creche 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.
- (viii) The activities proposed in Action plan prepared for addressing the issues raised during the Public Hearing shall be completed as per the budgetary provisions mentioned in the Action Plan and within the stipulated time frame. The Status Report on implementation of Action Plan shall be submitted to the concerned Regional Office of the Ministry along with District Administration.
- (ix) Issues raised and recorded in proceedings of public hearing w.r.t. environment / pollution / CER shall be complied by the Mining Authority as per OM F. No. 22-65/2017-IA.III, dated 30.09.2020 of MoEF&CC, Govt. of India.

(X) Corporate Environment Responsibility (CER)

- (i) The activities and budget earmarked for Corporate Environmental Responsibility (CER) as per Ministry's O.M No 22-65/2017-IA. II (M) dated 01.05.2018 or as proposed by SEAC should be kept in a separate bank account. The activities proposed for CER shall be implemented in a time bound manner and annual report of implementation of the same along with documentary proof viz. photographs, purchase documents, latitude & longitude of infrastructure developed & road constructed needs to be submitted to Regional Office MoEF&CC annually along with audited statement.
- (ii) Project Proponent shall keep the funds earmarked for environmental protection measures in a separate account and refrain from diverting the same for other purposes. The Year wise expenditure of such funds should be reported to the MoEF&CC and its concerned Regional Office / SEIAA, Odisha.

(XI) Miscellaneous

- (i) 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.
- (ii) 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.

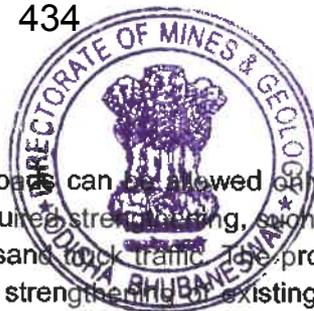


- (iii) The project proponent shall establish a solar power plant with 30KVA capacity within the lease area as proposed.
- (iv) The Project Proponent shall submit six monthly compliance reports on the status of the implementation of the stipulated environmental safeguards to the MoEF&CC & its concerned Regional Office, SEIAA, Odisha, Central Pollution Control Board and State Pollution Control Board.
- (v) 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.
- (vi) The proponent shall comply all the specific conditions as recommended by CSIR-NEERI on carrying capacity study (as applicable) in time bound manner as proposed.
- (vii) The project proponent shall augment infrastructure on drinking water, health care and education in nearby villages as per time bound action plan submitted.
- (viii) The project proponent shall obtain permission from DGMS under 106(2b) to carry out blasting operation within the lease area.
- (ix) 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.
- (x) 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.

**ANNEXURE- C****STANDARD ENVIRONMENTAL CLEARANCE CONDITIONS TO BE STIPULATED IN ENVIRONMENTAL CLEARANCE FOR SAND MINING****Stipulated Conditions:**

1. The project proponent should carry out River bed sand mining manually by engaging local laborers in force to check over exploitation of sand at the source.
2. Any change in the plan or quantity to be produced shall require prior approval of SEIAA.
3. There shall be a 'no working zone' to protect the embankment on both sides, road or rail bridge in the vicinity, if any, dam, weir, water intake structure of irrigation or drinking water project, or any cross-drainage structure. 10 % of the width of river shall be left intact along the embankments on both sides as 'no mining zone'. Further, no mining shall be allowed within 200 m of any existing structures dam, weir, water intake structure of irrigation or drinking water project, or any cross-drainage structure. In case of River Bridge, this no mining zone shall extend upto a minimum stretch of 250 meters from the bridge on the upstream side and 500 meters on the downstream side. The lease area shall be accordingly curtailed to carve out the actual sand mining area within the leasehold. Exact map of the lease area, and the 'no mining zone' shall be drawn to scale, showing the DGPS coordinates of all corner points, and the location of the bridge, embankment, extraction route & other structures; and such map has to be submitted to SEIAA by the project proponent through the Tahasildar within three months of the date of issue of the EC. The quantum of sand allowed to be extracted will be worked out on the basis of the actual working area.
4. The lease area and the actual working area shall be demarcated on the ground by erecting durable masonry /concrete pillars by the project proponent.
5. The project proponent shall take prior statutory and regulatory clearance as required from the concerned authorities in respect of the project, before carrying out any operation.
6. Mining is not permissible within the water channel or stream flow area. No stream shall be diverted for the purpose of mining and no natural water course shall be obstructed. The mining or any ancillary activity shall not in any way disturb the flow pattern of the river water during the non-monsoon period. There shall be no sand mining in the river during the rainy season or when there is flow of water in the river.
7. Sand mining operations shall not affect the existing sources for irrigation / drinking water / industrial purpose.
8. The natural sand dunes, if any, near or surrounding the lease area shall not be disturbed.
9. No transportation of the minerals shall ordinarily be allowed on any road passing through villages/habitations/forest land without prior explicit permission. Transportation

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of minerals through existing rural roads can be allowed only by the concerned Govt. Department/BDO and only after required strengthening, such that the carrying capacity of road is increased to handle the sand truck traffic. The project proponent shall bear the cost towards the widening and strengthening of existing public roads in case the same is proposed to be used for the project. No movement on any road is allowed on existing village road network without appropriately increasing the carrying capacity of such roads. Project proponent shall ensure that the road may not be damaged due to transportation of the mineral and transport of minerals will be as per IRC Guidelines with respect to complying with traffic congestion and traffic density. Plying of sand extraction trucks may be allowed on roads / path ways passing close to schools, temples, hospitals and such other public places only with prior written permission of competent authority.

10. Vehicles hired for transportation of sand from the site should be in good condition and should have pollution check certificate and should conform to applicable air and noise emission standards and should be operated only during non-peak hours.
11. The vehicles shall not be overloaded and shall be covered with Tarpaulin. The Tahasildar may collect an appropriate road maintenance levy from the lessee as part of the lease conditions on the basis of quantum of sand transported, and utilize the proceeds of the levy for proper maintenance of the extraction paths and roads to prevent their degradation on account of plying of sand trucks.
12. The project proponent shall take all precautionary measures against causing damage to flora and fauna of the locality. The PP shall plant and nurse to full establishment a minimum of 50 number of saplings of native tree species along the approach roads, river banks and in community areas in consultation with the Gram Panchayat.
13. Water spray should be made on the road/extraction paths to control dust emission during transportation of sand.
14. The Project Proponent shall undertake phased restoration, reclamation and rehabilitation of land affected by mining and completes this work before abandonment of mine.
15. Environmental Management Plan (EMP) shall be implemented by PP to ensure compliance with the environmental conditions specified above. The year wise funds earmarked for environmental protection measures shall be kept in separate account and shall be spent according to the plan proposed. Year wise progress of implementation of EMP shall be reported to the SEIAA, Odisha and OSPCC along with the compliance report.
16. The proponent shall take necessary measures to ensure that there is no adverse impact of the mining operations on the human habitation if any, existing nearby.
17. It shall be mandatory for the project management to submit quarterly compliance reports on the status of implementation of the above stipulated environmental safeguards to the SEIAA, Odisha / SPCB, Odisha/ Regional Office of the MoEF&CC, Bhubaneswar, in hard and soft copies on 1st day of January, April, July, October of each calendar year, failing which EC is liable to be revoked.



18. River Bank stabilization shall be made through stone patching. Plantation of adequate number native species on river banks and both sides of haulage roads shall be made.
19. Since NH200, Kuccha Road and temple are only at a distance of 800 mtr, 570 mtr and 500 mtr respectively, all traffic safety measures shall be taken to avoid any kind of accidents.
20. Bio - toilet provision shall be made.
21. As raised during public Hearing and committed by PP, Loknathpur Sasan village road shall not be used for transportation of sand.
22. Stone patching on river bank with plantation in-between and the ramp construction shall be done in consultation with and advice of concerned W.R. Deptt, Government of Odisha.
23. Necessary sprinkling on Haulage Road and Avenue plantation shall be done.
24. At the end of mine closure, the proponent shall immediately remove all the sheds put up in the quarry and all the equipment in the area before closure of the quarry.
25. The lessee shall mark the mining lease area boundary by DGPS survey and co-relate the satellite coordinates with the cadastral map.
26. The conditions stipulated in the environmental clearance will be closely monitored on the ground by the lease granting authority, i.e. the Tahasildar, who shall ensure compliance of the stipulated conditions and take corrective measures promptly in case of any non- compliance and also ensure that the project proponent submits quarterly compliance reports.
27. The concerned Regional Office of the MoEF&CC/ SPCB, Odisha shall periodically monitor compliance of the stipulated conditions as applicable for this project. The project authorities should extend full cooperation to the MoEF&CC officer(s)/SPCB officer(s) by furnishing the requisite data / information / monitoring reports.
28. A copy of the clearance letter shall be sent by the proponent to concerned Gram Panchayat /Panchayat Samiti /Zilla Parisad /Municipal Corporation / Urban Local Body as the case may be.
29. Project proponent shall obtain Consent to Operate from the OSPCB and effectively implement all the conditions stipulated therein. The mining activity shall not commence prior to obtaining Consent to Establish / Consent to Operate from the State Pollution Control Board.
30. The SEIAA, Odisha may revoke or suspend this EC, if implementation of any of the above conditions is not satisfactory. The SEIAA, Odisha reserves the right to alter /modify the above conditions or stipulate any further condition in the interest of environment protection.
31. The Project Proponent (lease holder) shall inform the SEIAA of any change in ownership of the mining lease. In case, there is any change in ownership or mining lease is transferred, then mining operation can be carried out only after transfer of EC

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as per provisions of the para 11 of EIA Notification, 2006, as amended from time to time.

32. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this environment clearance besides attracting penal provisions in the Environment (Protection) Act, 1986.
33. 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.
34. 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.
35. 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.

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REPLENISHMENT STUDY REPORT FOR RIVER BED SAND

MINING PROJECT OF MINOR MINERAL

RAJNAGAR SAND BED

AT

Rivers, Subarnarekha, in
Tahasil – Jaleswar of District – Balasore
State – Odisha

NAME OF RIVER – Subarnarekha

Purpose – Fresh ,

APPLIED LEASE AREA – 5.48 Ha.

CATEGORY- 'B1' -

ToR Letter No. -9237/SEIAA Dated 14.10.2020

Replenishment Study Period –

Pre – monsoon and Post – monsoon season of year 2022



APPLICANT

Smt. Laxmipriya Prusty
W/o Ratikanta Rout,
At-Balaramprasad, Ps – Motanga,
Dist-Dhenkanal, Odisha-759019

PREPARED BY

Sri Apurba Ranjan Ray, RQP
S/o- Late Raghunath Ray,
Plot No-1463, Gandamunda,
Po-Khandagiri, Bhubaneswar
Dist-Khordha, Odisha-751030

SURVEY & MAP PREPARED BY



AREAL CONSTRUCTIONS & GEO-INDIA SERVICES

(A CONSTRUCTION & GIS BASED CONSULTANCY)

Head Office

Saraswati Niwas, Nayabazar (Behind Jagannath Temple), Kotasakura, Chaulingitij

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REPLENISHMENT REPORT



RAJNAGAR SAND BED

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LIST OF ANNEXURE

SL. NO.	DESCRIPTION	ANNEXURE
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Postmonsoon Survey		
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II	High Resolution Drone Image	1:1500
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1. INTRODUCTION

1.1 The need for replenishment study for river bed sand is required in order to nullify the adverse impacts arising due to excessing sand extraction. Mining within or near riverbed has a direct impact on the stream's physical characteristics, such as channel geometry, bed elevation, substratum composition and stability, in-stream roughness of the bed, flow velocity, discharge capacity, sediment transport capacity, turbidity, temperature etc. Alteration or modification of the above attributes may cause an impact on the ecological equilibrium of the river line regime, disturbance in channel configuration and flow-paths. This may also cause an adverse impact on in-stream biota and riparian habitats. It is assumed that the riparian habitat disturbance is minimum if the replenishment is equal to excavation for a given stretch. Therefore, to minimize the adverse impact arising out of sand mining in a given river stretch, it is imperative to have a study of replenishment of material during the defined period.

Rajnagar Sand Bed is located in village Rajnagar aunder Jaleswar Tahasil of Balasore district, Odisha consisting over an area of 13.55 Acres/ 5.48 Hectares .The proposed lease area is featured in Survey of India Toposheet no. 73O/1 and bounded between the Latitudes of N21°48'20.9"to 21°48'30.9"N and Longitudes of E87°12'43.2" to 87°12'52.2"E. The proposed lease area is located at a distance of 45 Km from the district head quarters Balasore and is at a distance of 45 Km from city Balasore.

The Quarry lease have been granted by the Tahasildar, Balasore to the successful bidder Smt. Laxmipriya Prusty for five years as per OMMC Rules, 2016. The Mining Plan was also approved from the concerned authority and ToR was also granted for the said quarry. SEIAA has granted ToR with some stipulated conditions which the applicant shall to comply time to time. Smt. Laxmipriya Prusty, successful bidder has engaged Sri Apurba Ranjan Ray(RQP) to carry out the Replenishment Study using volumetric survey method as detailed in Enforcement & Monitoring Guidelines for Sand Mining, 2020. This study has been carried out for obtaining fresh Environmental Clearance.

The 2nd replenishment study report which was prepared in the year 2022 taking all the aspects of advance UAV/Drone survey method. As per the recent replenishment study

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REPLENISHMENT REPORT**RAJNAGAR SAND BED**

report which has been prepared on the basis of advance UAV/Drone survey method. During Pre-monsoon & Post-monsoon period of 2022 financial year by using UAV/Drone technique as per the Enforcement & Monitoring Guidelines for Sand 2020, MoEF. During field survey various images were taken with the Drone and after processing with the image processing software to know the volume sand deposition in the proposed site as per the approved Mining Plan Co-ordinates.

1.2 DETAILS OF THE PROJECT:-

Rajnagar Sand Bed over an area of 13.55 Acres/ 5.48 Hectares is located at Subarnarekha River Bed in village Rajnagar under Jaleswar Tahasil of Balasore district, Odisha. The lease area has been granted for five financial Years.

1.2.1 Name and Address of the Lessee:-

Smt. Laxmipriya Prusty
W/o Ratikanta Rout,
At-Balaramprasad, Ps – Motanga,
Dist-Dhenkanal, Odisha, 759019

1.2.2. Name and Address of the Lease Granting Authority:-

Tahasildar, Jaleswar,
O/o-The Tahasildar, Jaleswar
At/P.O-Jaleswar,
Dist-Balasore, Odisha

1.2.3 Particulars of the Lease area with boundary details:-

**Table No-1
Land Schedule**

Mouza	Name of the Sairat Source	Khata No.	Plot No.	Kissam	Proposed Area (in Hectares)
Rajnagar	Rajnagar Sand Bed	377	1295/1300	Nadi	13.55 Ac
			1 plot		13.55 Ac/ 5.48 Ha

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**1.2.4 Boundary description:-**

Boundary co-ordinates as per the approved mining Plan:-

Table No-2

GPS Co-ordinates		
Pillar ID	Latitudes	Longitudes
1	N21°48'20.9"	E87°12'43.2"
2	N21°48'30.9"	E87°12'43.7"
3	N21°48'30.8"	E87°12'52.2"
4	N21°47'20.9"	E87°12'49.1"

2.0 GEOLOGY**2.1 Physiography:**

The Sand bed is on the River Subarnarekha. The Rajnagar Sand Bed deposit represents a gently sloping to almost flat terrain with highest altitude of 18 mRL. The general slope is towards northeast. Vegetation is scanty with small bushes existing in the auction hold area. There is no human settlement within the area.

2.2 Regional Geology:

Geologically, the area belongs to recent to sub-recent period which is located in the Subarnarekha river bed at Rajnagar, Tahasil-Jaleswar, Dist-Balasore, Odisha. The Quaternaries overlie directly on the territories and are composed of Younger and Older alluvia. The sediments of older alluvia are grayish to brownish in colour, unfossiliferous.

The Stratigraphic succession of the area on regional basis is given below:-

Table No-3		
Upper Gondwana	Migmatitic granitic gneiss, amphibolite, schist and quartzite Conglomerate, sandstone, shale fireclay	Palaeozoic-Mesozoic Lower Cretaceous
Middle Gondwana	Conglomerate, ferruginous sandstone, red shales	Lower to Middle Triassic
Un- conformity		
Lower Gondwana	Fine to medium grained sandstone, siltstone, clay-beds, coal	Upper Permian
	Sandstone, shale, clay, ironstone	Middle Permian

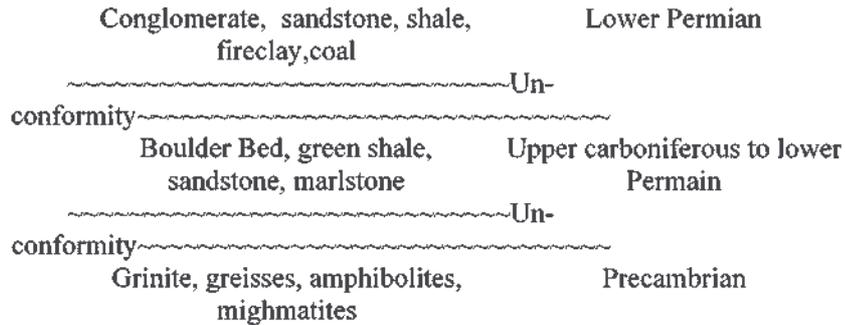
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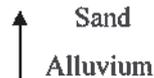


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shale

**2.3 Local Geology**

The sand deposit in Subarnarekha River near Rajnagar belongs to recent to sub recent deposits of Holocene age. Beach Sand, younger and older alluvium also belongs to the same age. The proposed area is occupied by a gently sloping to almost flat deposits of sand. The general elevation remains at 18 mRL. Inside the lease area the highest altitude is 19 mRL and the lowest elevation is 18 mRL. The basement consists of Tertiary deposits and the sequence of litho-units encountered in the auction hold area is as follows:

**2.4 Lithology:**

The characteristic features of the litho units of the area are described below:

Sand: The eastern part of the lease area under reference is covered with grey to white sand deposits with average thickness of 1m. Sand by definition is a loose, incoherent mass of mineral materials and is a product of natural processes.

The composition of sand is highly variable in nature, depending on the local rock types/sources and conditions, but the most common constituent of sand in inland continental settings and non-tropical coastal settings is silica (silicon dioxide or SiO₂), usually in the form of quartz which because of its chemical inertness and considerable hardness, is the most common mineral resistant to weathering.

Alluvium: Decomposed vegetal materials admixed with clay and soil constitutes alluvium which is underlain by the sand bed with some clayey matter.

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2.4.1 Mining:-

In the applied lease area the sand will be extracted by manual method of mining, Handpicks, spade, hand shovel will be used by labourers for extracting & loading of sand. The sand will be loaded in to Tippers/tractors & Hyva and dispatched. The use of machinery if required will be deployed with prior permission from the authority concerned. There area some precautionary measures for the protection of environment in and around the lease area which are described below:-

- i) The boundary pillars will be marked and to be posted in the lease area and will be maintained properly.
- ii) No mining operation will be carried out with in the safety zone boundary of 7.5m and 10 m from the water channel area.
- iii) Mining activities will be carried out with appropriate environment safeguards and shall take such steps for reclamation whenever necessary.
- iv) The extraction limit of sand will be upto the limit of maximum 3.0m depth or upto the water table whichever is less.
- v) The provision of Mines Act, 1952, Mines and Minerals (Development & Regulation) Act, 1957 and the rules & Regulations framed under time to time and rules made there under for development of minor minerals shall be strictly observed by the lessee.

2.5 DETAILS OF ENVIRONMENTAL CLEARANCE:-

ToR of Rajnagar Sand Bed over an area of 13.55 Acres/ 5.48 Hectares at village-Rajnagar, Tahasil-Jaleswar, District-Balasore was granted vide letter No. 9237/SEIAA (SEIAA File No-SIA/OR/MIN/54634/2020) of dated 14.10.2020 in favour of Smt. Laxmipriya Prusty. The copy of the same is enclosed as **Annexure-1**. Pre-monsoon and post-monsoon data were collected by using UAV/ Drone method. The data's were collected and processed through image processing software as per the Enforcement & Monitoring guidelines for Sand Mining, 2020 issued by MoEF& CC, Govt. of India.

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3.0 REPLENISHMENT STUDY

Initially replenishment study requires twice surveys. The first survey is at the time of closing of mines for monsoon season. This survey will provide the quantity of the mineral excavated before the onset of monsoon. The second survey needs to be carried out after the monsoon to know the quantum of material deposited/replenished/washed away in the proposed lease area (**Drone/UAV survey has been taken place for assessment of Reserve**). The third survey at the end of the March to know the quantity of material excavated during the financial year. For the subsequent Years, there will be a requirement of only three surveys. The results of year wise surveys help the state government to establish the replenishment role of the River. Based on the replenishment rate further action may be planned.

For sustainability of river sand mining, it is necessary that the mine pits formed as a result of sand excavation will be refilled with sand by natural process of replenishment in a reasonable period of time so that the area is again available for mining. The rate of excavation should be decided in accordance with the rate of replenishment which is the rate at which sand/gravel is deposited on the river flood plain by the river during monsoon season. The excavation will therefore be limited to estimated replenishment estimated with consideration of other regulatory provisions.

3.1 METHODOLOGY FOR REPLENISHMENT STUDY:-

Out of various methods suggested by the Enforcement & Monitoring Guidelines for Sand 2020 by MoEF, UAV/Drone survey method has been adopted for volumetric sand reserve assessment for the study.

3.2 Use of UAV/Drone and other image data processing techniques:-

With the development in image data processing tools and its accuracy acceptability, Drone/UAV fitted with the advance camera are used for survey purposes. Such technology has promising potential in the survey of sand mining zones due to its fast and reliable output deliveries. The Survey is conducted using a set of instruments and compatible software to utilise the properly referenced data for depicting the topography and its validation area. Instrument calibration and software compatibility and validation with the ground data area an essential requirement for using this technique.

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FIRST SURVEY / PRE-MONSOON TRADITIONAL SURVEY METHOD

Geological & Mineable Reserve as per to be carried out in the month of Premonsoon.

Survey method:- Physical survey of the field by the traditional method.

July Month/ Premonsoon Survey Thickness of the sand will be finalized after

Total Station Survey inside the Lease area. Exploration Date-18.07.2022.

Geological Resources quantity assessment:

TableNo.4

GEOLOGICAL RESOURCE CALCULATION DURING 1st survey 18th July, 2022			
AREA OF POTENTIAL SAND ZONE (m²)	THICKNESS OF SAND (m)	GEOL RESOURCE OF SAND (m³)	CATEGORY
A	B	C= A X B	D
18855	1	18855	PROBABLE
TOTAL		18855	

The Premonsoon date of survey indicates that there is 18855 cum of sand present in the lease area which will be considered as Geological Reserve.

Mineable Reserves & Life of Mine;

TableNo.5

MINEABLE RESERVE CALCULATION DURING 1st survey 18th July, 2022			
AREA OF POTENTIAL SAND ZONE EXCLUDING SAFETY ZONE (m²)	THICKNESS OF SAND (m)	MINEABLE RESERVE OF SAND (m³)	CATEGORY
A	B	C=A X B	D
15950	1	15950	PROBABLE
TOTAL		15950	

The First Survey/ Pre-monsoon Survey July 2022 date of survey indicates that there is 15950cum of sand present in the lease area which will be considered as Geological Reserve.

TableNo.6

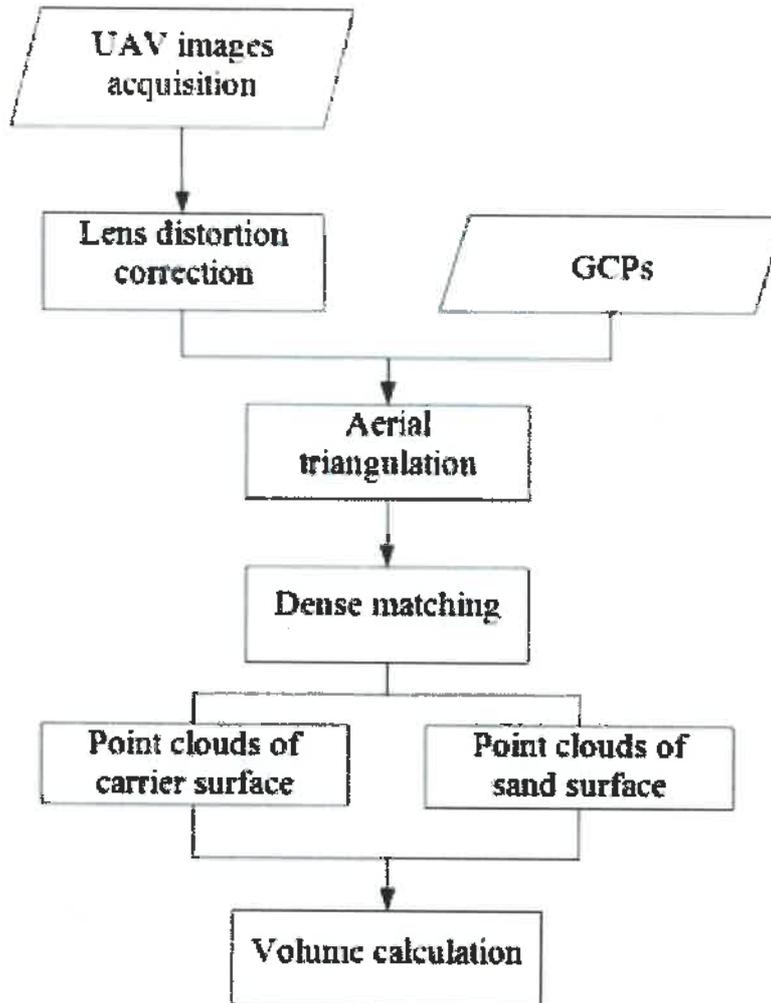
Geological Reserve in Cu.m	Mineable Reserve in Cu.m
18855	15950

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**Second Survey:****Geological & Mineable Reserve as per the Post-Monsoon UAV/Drone Survey.**

Post Monsoon Survey by UAV/Drone survey as per the Enforcement & Monitoring guidelines for Sand Mining, 2020 issued by MoEF & CC, Govt. of India (a real time geo-referenced Ortho image has been attached as Plate No-I for reference). After the field survey the multiple way point images got from the field are being processed in image processing software to generate point clouds to know the volume of deposits within the lease area referring the approved Mining Plan co-ordinates. UAV mapping is highly integrated with the UAV platform, sensors, remote control, communication, navigation and positioning, and image processing techniques. The overlapping images can be acquired by the airborne camera and processed by photogrammetric software, thus the geospatial information of the ground objects can be derived. The volume measurement of this study still requires GCPs to geo reference for absolute orientation. The difference with the common GCPs acquisition is that the GCPs are measured once on a static carrier and then used for absolute orientation regardless of whether the carrier is moving or not. In other words, this study ignores the background information in the overlapping images and only treats the carrier as a relatively stationary object. A schematic workflow diagram of the UAV/Drone survey is given below:-

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(Fig-1 represents the technical workflow of UAV-mapping volume measurement of the sand deposit)

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Fig-2 Represents Contour map overlies in the Ortho image taken UAV/Drone method)

Table no-7: Reserve assessed in the software is: - (Reserve will be calculated by GIS platform) (Date of Survey-21.02.2023)

Dataset	Plane Height	Reference	Z Factor	Area 2D	Area 3D	Volume	Category
Rajnagar	16.5	Above Surface	1	16529.764657209	16649.000554903	27182.202408104	Geological
Rajnagar	16.5	Above Surface	1	12041.812220781	12103.836908985	19353.233125802	Mineable

Table no-8

Geological Reserve in Cu.m	Mineable Reserve in Cu.m
27182	19353

Comparison of Pre-monsoon & Post Monsoon Sand Replenishment within the lease area:-

After processing the image, reserve of above all periodical surveys are taken to a depth upto perennial water surface level.

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Table no-10

Reserve reference	Geological Reserve (in m ³)	Mineable Reserve (in m ³)	60% of Mineable Reserve
Pre-monsoon Survey (First Survey)	18855	15950	9570
Post-Monsoon Survey(Second Survey)	27182	19353	11612

Geologically in nature it is never possible to predict the rate of sand replenishment for future but certainly from a long term systematic replenishment study we can establish an average rate of replenishment for a particular stage of River for a particular stretch given for lease.

3.3 SUGGESTION FOR PRODUCTION AS PER THE PRESENT DATE SURVEY:-

The present date survey by using UAV/Drone indicates the mineable sand deposit is around 19353cu.m. As per Sustainable Sand management guidelines potential sand deposits may be identified and Replenishment study may be done in regular intervals. Besides 60% of the above computed mineable reserve as above has been taken as available mineable reserve over the area as per MoEF Notification dated 25.07.2018. Maximum of 19353 Cu.m of sand per annum may be allowed for mining activities. 60% of the mineable reserve is 11612 cum. The maximum extraction limit as per sustainable sand mining Rule of MoEF Guideline is 11612 cum.

4.0 CONCLUSION:-

The replenishment of sand has been calculated by volumetric survey method and amount of sand deposited in the post monsoon season was calculated. The volumetric measurement of sand deposition is the difference between post-monsoon mineable reserves and Pre-monsoon mineable reserves. Hence, the percentage of replenishment has been calculated by surface area method by the formula as below.

D	=	$\frac{C}{A} \times 100$
Where, D	=	Replenishment Percentage
A	=	Mineable Reserve as per Pre-Monsoon Data (in CuM)
B	=	Mineable Reserve as per Pre-Monsoon Data (in CuM)
C	=	Volume of Sand Deposited During Monsoon (in CuM) (B-A)

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Table - 12

Conclusion on Estimation of Sand Replenishment based upon Pre-Monsoon Reserves			
Mineable Reserve as per Pre-Monsoon Data (in CuM)	Mineable Reserve as per Post-Monsoon Data (in CuM)	Volume of Sand Deposited During Monsoon (in CuM)	Replenishment Percentage (%)
A	B	C = B-A	D = C/B x 100
15950	19353	3403	17.58 or says as 18

Here, the calculated Mineable reserve of Post-Monsoon survey and the Mineable reserve mentioned in Pre-Monsoon are taken for comparing the amount of sand replenished. The sand deposited in the lease area in this monsoon season is exceeded by 18% i.e. 3403CuM of the amount of sand mentioned in the Pre-Monsoon Replenishment Study report.

So, the final mineable reserve of the lease area is said to be 19353 CuM.

Land use pattern of the lease area

Table - 13

Sl. No.	Head	Area During Pre-Monsoon (in Ha.)	Area During Post-Monsoon (in Ha.)
1	Mineable Area	1.59	1.59
2	Safety zone area	0.067	0.067
3	Waterlogged area	0.00	0.00
4	Clay & bushes with Casuarina tree Covered area.(Non mining Zone area)	3.59	3.59
Total		5.247	5.247

Laxmipriya Prusty

Smt. Laxmipriya Prusty , Lessee

Apurba Ranjan Ray

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RQP/OD106/2022
Bhubaneswar

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**State Environment Impact Assessment Authority, (SEIAA),
Odisha**

Qr. No. 5RF-2/1, Unit - IX, Bhubaneswar - 751022, Tel: 0674-2540669

No. 9237/SEIAA

Dt. 14.10.2020

SEIAA File No. SIA/OR/MIN/54634/2020

To

Smt. Laxmipriya Prusty,
W/o-Ratikanta Rout,
At-Balaramprasad, PS-Motanga
Dist - Dhenkanal, Pin-759019

Sub: Proposal for EC for Rajnagar Sand Bed over an area 5.48 Ha at village- Rajnagar, Tahasil- Jaleswar, Dist-Balasore of Smt. Laxmipriya Prusty - Terms of Reference Reg.

Ref: 1) Your online application dated 18.09.2020 for issue of ToR vide Proposal No: SIA/OR/ MIN /54634/2020

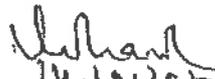
2. SEIAA meeting held on 08.10.2020.

Sir,

This has reference to the online proposal submitted in the Ministry of Environment, Forest and Climate Change (SEIAA, Odisha) to prescribe the Terms of Reference (TOR) for undertaking detailed EIA study for the purpose of obtaining Environmental Clearance in accordance with the provisions of the EIA Notification, 2006. For this purpose, the proponent had submitted online information in the prescribed format. (Form-1) along with Pre-feasibility Report and Approved Mining Plan.

In this regard, under the provisions of the EIA Notification 2006 as amended, the Standard ToR for the purpose of preparing environment impact assessment report and environment management plan for obtaining prior environment clearance is prescribed with public hearing is enclosed in Annexure-I.

Yours faithfully,

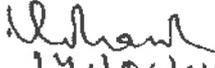

14.10.2020
Member Secretary

Memo No. 9238/SEIAA

Dated 14.10.2020

Copy forwarded to

1. The ADM & Collector, Balasore for information and necessary action.
2. The Deputy Secretary, of MM&S Branch of Revenue and DM Department, Govt. of Odisha Bhubaneswar for information.
3. The Tahasildar, Jaleswar, Dist-Balasore for information and necessary action.


Member Secretary

File No.54634/38-MINB1/09-2020
 Government of India
 State Level Environment Impact Assessment Authority
 Orissa



To,

M/s LAXMIPRIYA PRUSTY
 AT- BALARAMPRASAD, GP- MOTANGA, DIST- DHENKANAL,
 Dhenkanal-759121
 Orissa

Tel.No.0674-2525550; Email:rajnagarsand5@gmail.com

Sub. Terms of Reference to the Rajnagar Sand Bed, 5.48 Ha. At- Rajnagar, Tahasil- Jaleswar, AT- RAJNAGAR, TAHASIL- JALESWAR, DIST- BALESWAR

Dear Sir/Madam,

This has reference to the proposal submitted in the Ministry of Environment, Forest and Climate Change to prescribe the Terms of Reference (TOR) for undertaking detailed EIA study for the purpose of obtaining Environmental Clearance in accordance with the provisions of the EIA Notification, 2006. For this purpose, the proponent had submitted online information in the prescribed format (Form-1) along with a Pre-feasibility Report. The details of the proposal are given below:

- | | |
|---|--|
| 1. Proposal No.: | SIA/OR/MIN/54634/2020 |
| 2. Name of the Proposal: | Rajnagar Sand Bed, 5.48 Ha. At- Rajnagar,
Tahasil- Jaleswar |
| 3. Category of the Proposal: | Non-Coal Mining |
| 4. Project/Activity applied for: | 1(a) Mining of minerals |
| 5. Date of submission for TOR: | 18 Sep 2020 |

Date : 16-11-2020

Dr.K.Murugesan,IFS
(IFS)

Office : Qrt. No. 5RF, 2/1, unit-IX , bhubneswar-751022 odisha
 Phone No : 2525550 Mobile : 7879772448
 Email id : mu6994@gmail.com

Note : This is auto tor granted letter.



In this regard, under the provisions of the EIA Notification 2006 as amended, the Standard TOR for the purpose of preparing environment impact assessment report and environment management plan for obtaining prior environment clearance is prescribed with public consultation as follows:

STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE



Terms of Reference (TOR) for preparation of Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) for "Mining of Minerals" as per the EIA Notification, 2006 has been devised to improve the quality of the reports and facilitate decision-making transparent and easy. TOR will help the project proponents to prepare report with relevant project specific data and easily interpretable information. TOR for mining of minerals is expected to cover all environmental related features.

Mining of minerals plays a positive role in the process of country's economic development. In addition to the contribution towards economic growth, mining can also be a major source of degradation of physical as well as social environment, unless it is properly managed. Environmental impacts can arise during all activities of the mining process. Minimizing the damage due to mining operations depends on sound environmental practices in a framework of balanced environmental legislation. The potential adverse effects of mining activities include air pollution, surface and groundwater pollution, noise and vibration, damage to local ecology, natural topography and drainage, depletion of water resources etc. All these environmental components are required to be considered while selecting a proper methodology of mining, mitigation measures to reduce pollution load, conservation of natural resources etc.

The projects of mining of minerals as stated in the schedule require prior environment clearance under the EIA notification, 2006. Category 'A' Projects are handled in the MoEF&CC and Category 'B' projects are being handled by the respective State Environment Impact Assessment Authorities (SEIAAs) notified by MoEF&CC and following the procedure prescribed under the EIA Notification, 2006. As per this Notification, as amended, the projects of mining of minor minerals with mining lease area equal to or greater than 50 hectare are to be handled at the level of the MoEF&CC for grant of EC. Such projects with mining lease area less than 50 hectare are to be handled by the respective State Environment Impact Assessment Authority (SEIAA).

1(a):STANDARD TERMS OF REFERENCE FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY FOR NON-COAL MINING PROJECTS AND INFORMATION TO BE INCLUDED IN EIA/EMP REPORT

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the areashould be provided. Such an Imagery of



STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ACTIVITIES REQUIRING ENVIRONMENTAL CLEARANCE

- the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
 - 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
 - 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
 - 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
 - 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
 - 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
 - 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
 - 12) A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
 - 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.



STANDARD TERMS OF REFERENCE (TOR) FOR EA/EMP REPORT FOR PROJECTS/ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE

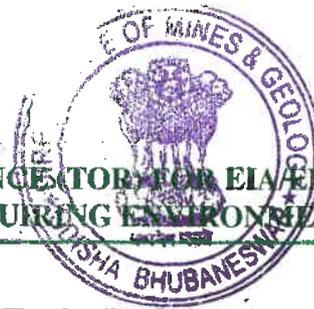
- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan alongwith budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.



STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE

- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered

**STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR
PROJECTS/ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE**



under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.

- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.



STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE

- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
- a) All documents to be properly referenced with index and continuous page numbering.
 - b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
 - c) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
 - d) Where the documents provided are in a language other than English, an English translation should be provided.
 - e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
 - f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
 - g) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
 - h) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
 - i) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON



GOVERNMENT OF ODISHA
DEPARTMENT OF STEEL AND MINES
DIRECTORATE OF MINES

(Under rule 20 (2) of Odisha Minor Mineral Concession Rules, 2016)

This to certify that, **Sri Apurba Ranjan Ray**, S/o Late Raghunath Ray, Plot No.-1463, Gandamunda, PO-Khandagiri, Bhubaneswar-751030, whose photograph and signature are affixed herein, having given satisfactory evidence of his/her qualification and experience, is hereby recognized under rule 20(2) of Odisha Minor Mineral Concession Rules, 2016 as a qualified person to prepare Mining Plans for Minor Minerals within the State of Odisha, India.

APURBA

His/Her Registration No. is

RQP/OD109/2022

This Recognition is valid for a period of 10 years from the date of Issue. This certificate will be liable to be with drawn / cancelled in the event of furnishing wrong information / documents in the Mining Plans to be submitted by him/her.

Place: Bhubaneswar

Date *22.06.2022*

[Signature]
DIRECTOR OF MINES, ODISHA
BHUBANESWAR



ODISHA SPACE APPLICATIONS CENTRE (ORSAC)

Department of Science & Technology, Government of Odisha



No. 460(36)

Date: 28.01.2021

Final List of Empanelled Vendors to undertake DGPS And ETS Geospatial Survey as Per ORSAC's Defined SOP of Geospatial Survey with respect to RFA No. 04/2020 Dated 14.08.2020.

Sl No.	Name of the Firms
1	M/s Ananth Technologies Ltd.
2	M/s Areal Construction and Geo India Services
3	M/s Bhumi Investigation Research & Design(BIRD)
4	M/s Blue Yacht Consultancy Private Limited
5	M/s CADD Consulting Engineers Pvt. Ltd.
6	M/s Centre for Envotech and Management Consultancy Pvt. Ltd.
7	M/s Computer Plus
8	M/s Consultancy for Engineering & Environment Planning(CEEP)
9	M/s Creative Studio
10	M/s Digital Cartography and Services Pvt. Ltd.
11	M/s Earth & Environment
12	M/s Ecometrix Consultants Private Limited
13	M/s Excelinnova Consultancy
14	M/s Gems Projects Pvt.Ltd.
15	M/s Geo Consultants Pvt. Ltd.
16	M/s Geocon Surveys
17	M/s Geoid Resources Pvt. Ltd.
18	M/s Global Business Solution
19	M/s Grow Green Consortium Pvt. Ltd.
20	M/s Idax Consulting & Research Pvt. Ltd.
21	M/s Jagdeep Consultants
22	M/s Maptech Solutions Pvt. Ltd.
23	M/s Natural Resources Mangement & Techno-Consultancy Services
24	M/s Newgen Techno Service Engineers Pvt. Ltd.
25	M/s Pioneer Surveyors
26	M/s Pusshney Infrastructure & Consultancy Services
27	M/s Ray Infratech
28	M/s S S Solution
29	M/s S.M. Consultants
30	M/s Soham Fero Magnese Pvt. Ltd.
31	M/s Spatial Planning & Analysis Research Centre Pvt. Ltd.(SPARC)
32	M/s Subudhi Techno Engineers Pvt. Ltd.
33	M/s Suvadra Cosultant
34	M/s Thriveni Earth Movers Pvt. Ltd.
35	M/s Tricad Design Consultatns Pvt. Ltd.
36	M/s Visiontek Consultancy Services Pvt.Ltd.

VALID UP TO 31.01.2023.

K. K. Mohapatra
27-01-21
CHIEF EXECUTIVE

Quality Report



Generated with Pix4Denterprise version 4.5.6

- Important:** Click on the different icons for:
- Help to analyze the results in the Quality Report
 - Additional information about the sections
- Click [here](#) for additional tips to analyze the Quality Report



Summary

Project	RAJNAGAR
Processed	2023-02-25 13:42:39
Camera Model Name(s)	FC8310_8.8_5472x3648 (RGB)
Average Ground Sampling Distance (GSD)	2.86 cm / 1.12 in
Area Covered	0.208 km ² / 20.8396 ha / 0.08 sq. mi. / 51.5223 acres
Time for Initial Processing (without report)	03m:33s

Quality Check

Images	median of 5348 keypoints per image	
Dataset	174 out of 174 images calibrated (100%), all images enabled	
Camera Optimization	0.53% relative difference between initial and optimized internal camera parameters	
Matching	median of 3094.81 matches per calibrated image	
Georeferencing	yes, no 3D GCP	

Preview

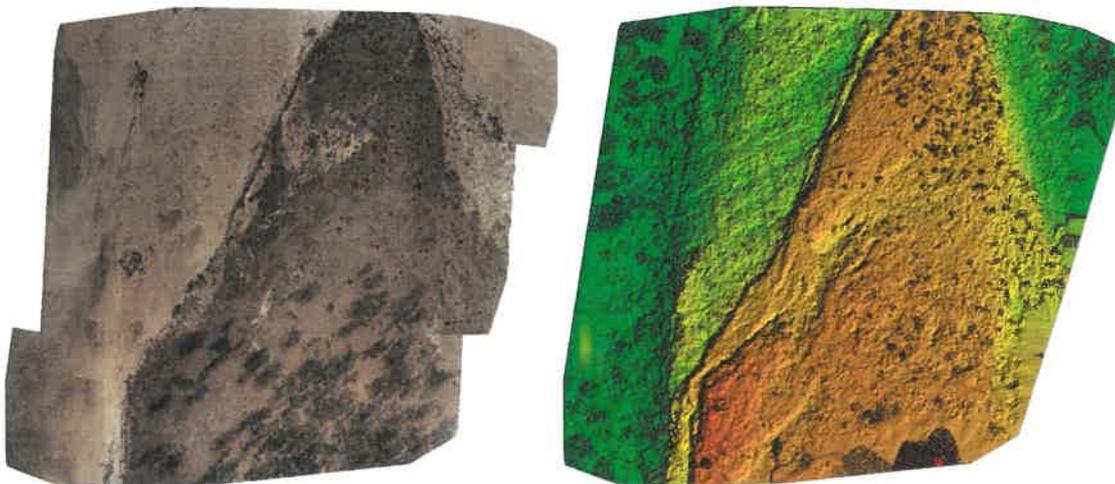


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details

Number of Calibrated Images

174 out of 174



Number of Geolocated Images

174 out of 174

Initial Image Positions

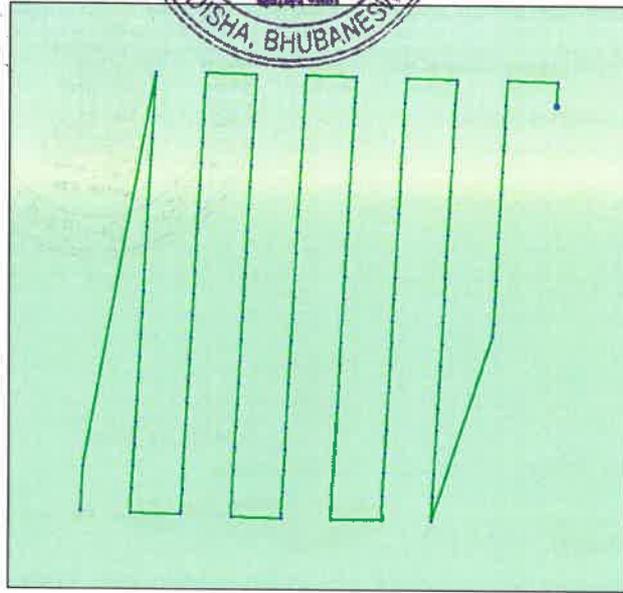
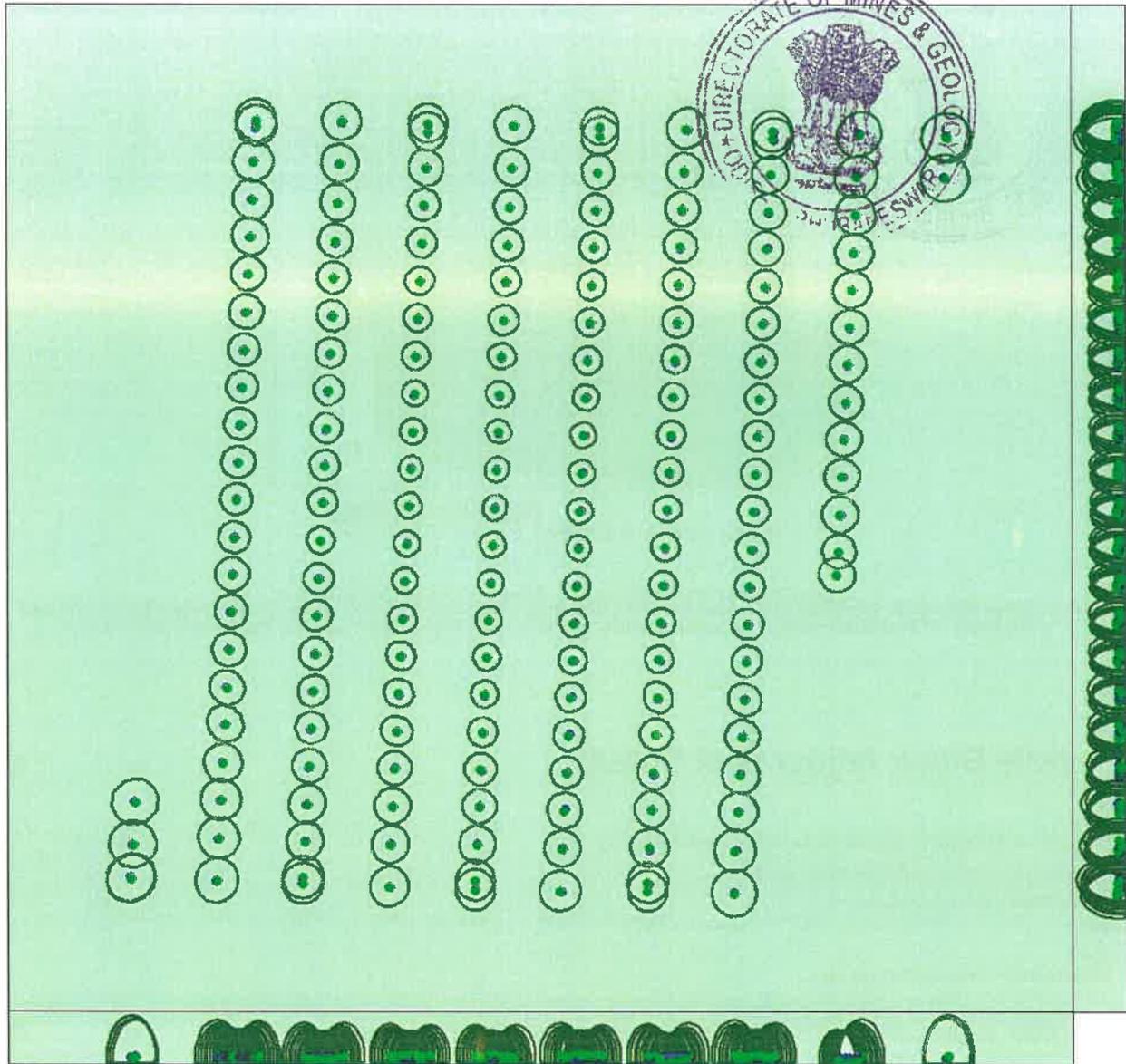


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions



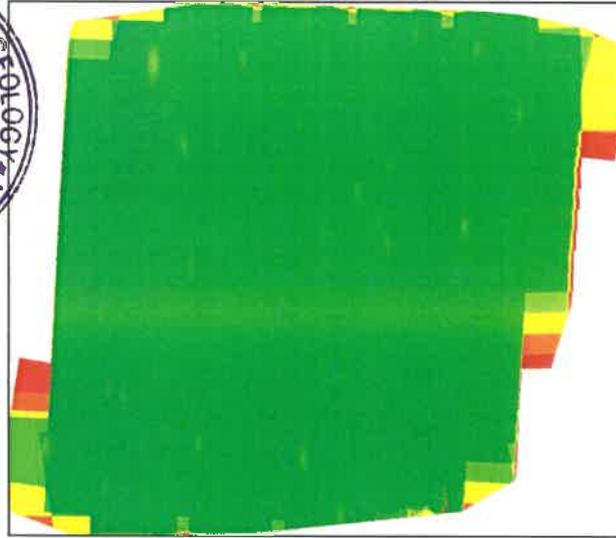
Uncertainty ellipses 100x magnified

Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane). Dark green ellipses indicate the absolute position uncertainty of the bundle block adjustment result.

Absolute camera position and orientation uncertainties

	X[m]	Y[m]	Z[m]	Omega [degree]	Phi [degree]	Kappa [degree]
Mean	0.082	0.083	0.144	0.041	0.039	0.021
Sigma	0.013	0.014	0.018	0.008	0.006	0.000

Overlap



Number of overlapping images: 1 2 3 4 5+

Figure 4: Number of overlapping images computed for each pixel of the orthomosaic. Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

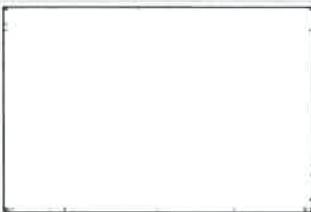
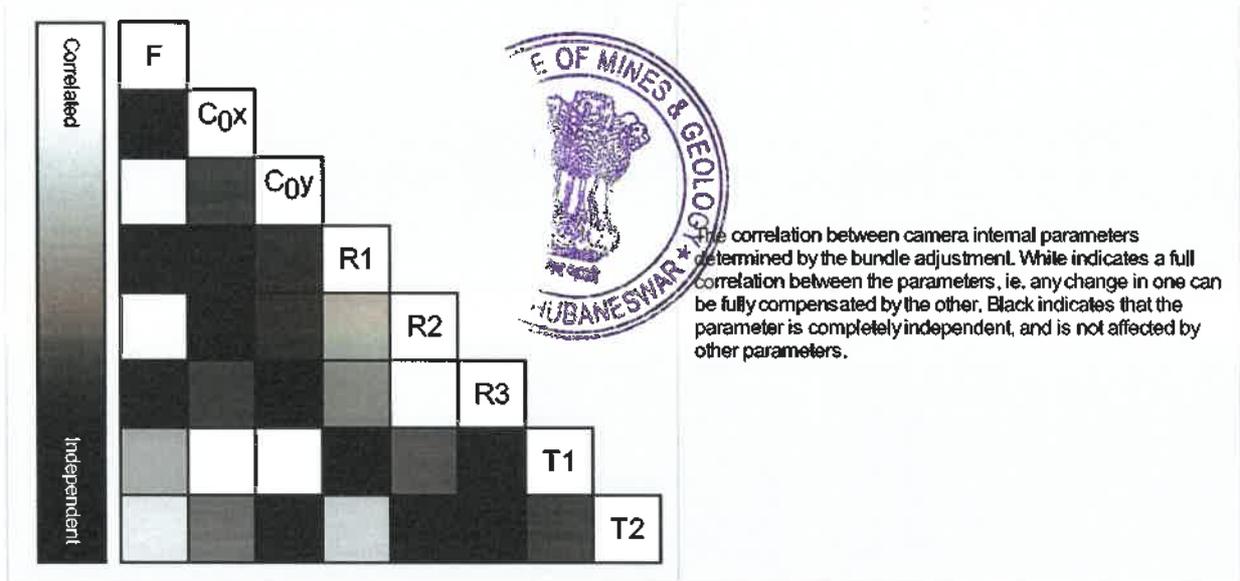
Number of 2D Keypoint Observations for Bundle Block Adjustment	530532
Number of 3D Points for Bundle Block Adjustment	123050
Mean Reprojection Error [pixels]	0.113

Internal Camera Parameters

FC6310_8.8_5472x3648 (RGB). Sensor Dimensions: 12.833 [mm] x 8.556 [mm]

EXIF ID: FC6310S_8.8_5472x3648

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	3668.759 [pixel] 8.604 [mm]	2736.001 [pixel] 6.417 [mm]	1823.999 [pixel] 4.278 [mm]	0.003	-0.008	0.008	-0.000	0.000
Optimized Values	3649.312 [pixel] 8.559 [mm]	2732.035 [pixel] 6.407 [mm]	1788.830 [pixel] 4.195 [mm]	-0.013	0.003	0.006	-0.003	-0.000
Uncertainties (Sigma)	8.796 [pixel] 0.021 [mm]	0.612 [pixel] 0.001 [mm]	0.503 [pixel] 0.001 [mm]	0.000	0.000	0.000	0.000	0.000



The number of Automatic Tie Points (ATPs) per pixel, averaged over all images of the camera model, is color coded between black and white. White indicates that, on average, more than 16 ATPs have been extracted at the pixel location. Black indicates that, on average, 0 ATPs have been extracted at the pixel location. Click on the image to see the average direction and magnitude of the re-projection error for each pixel. Note that the vectors are scaled for better visualization. The scale bar indicates the magnitude of 1 pixel error.

2D Keypoints Table

	Number of 2D Keypoints per Image	Number of Matched 2D Keypoints per Image
Median	5348	3095
Min	3625	667
Max	6345	4573
Mean	5302	3049

3D Points from 2D Keypoint Matches

	Number of 3D Points Observed
In 2 Images	61392
In 3 Images	18894
In 4 Images	10063
In 5 Images	6822
In 6 Images	4959
In 7 Images	3411
In 8 Images	2723
In 9 Images	2312
In 10 Images	1995
In 11 Images	1570
In 12 Images	1377
In 13 Images	1184
In 14 Images	1012
In 15 Images	982
In 16 Images	838
In 17 Images	729
In 18 Images	682
In 19 Images	438
In 20 Images	502
In 21 Images	351
In 22 Images	323
In 23 Images	270



In 24 Images
In 25 Images

204
17

2D Keypoint Matches

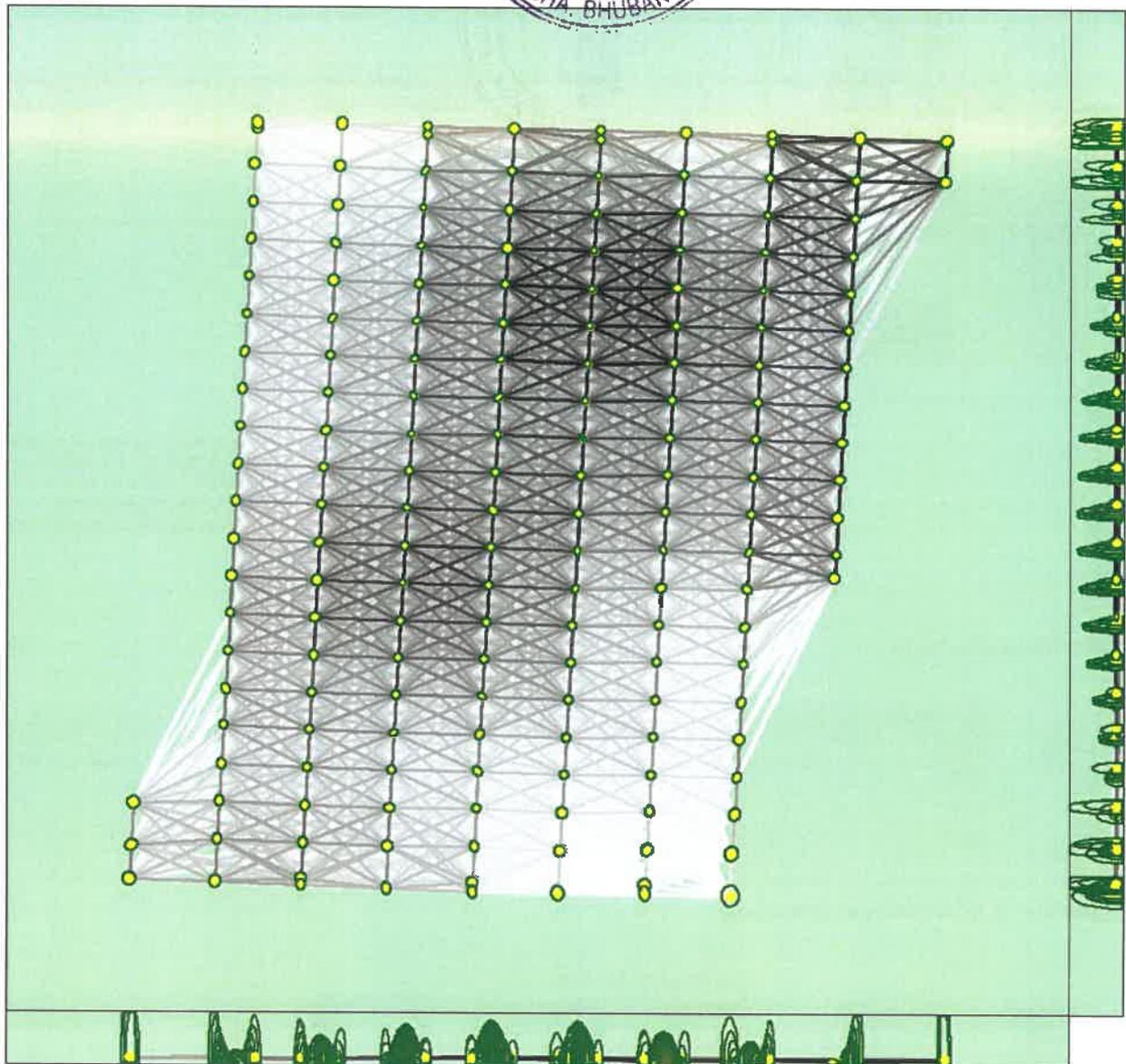


Figure 5: Computed image positions with links between matched images. The darkness of the links indicates the number of matched 2D keypoints between the images. Bright links indicate weak links and require manual tie points or more images. Dark green ellipses indicate the relative camera position uncertainty of the bundle block adjustment result.

Relative camera position and orientation uncertainties

	X[m]	Y[m]	Z[m]	Omega [degree]	Phi [degree]	Kappa [degree]
Mean	0.023	0.023	0.105	0.095	0.079	0.003
Sigma	0.003	0.004	0.079	0.055	0.047	0.001

Geolocation Details



Absolute Geolocation Variance

Min Error [m]	Max Error [m]	Geolocation Error X [%]	Geolocation Error Y [%]	Geolocation Error Z [%]
-	-15.00	0.00	0.00	0.00
-15.00	-12.00	0.00	0.00	0.00
-12.00	-9.00	0.00	0.00	0.00
-9.00	-6.00	0.00	0.00	0.00
-6.00	-3.00	0.00	0.00	0.00
-3.00	0.00	45.98	51.15	52.30
0.00	3.00	54.02	48.85	47.70
3.00	6.00	0.00	0.00	0.00
6.00	9.00	0.00	0.00	0.00
9.00	12.00	0.00	0.00	0.00
12.00	15.00	0.00	0.00	0.00
15.00	-	0.00	0.00	0.00
Mean [m]		-0.000000	-0.000000	-0.000000
Sigma [m]		0.227833	0.363001	0.455200
RMS Error [m]		0.227833	0.363001	0.455200

Min Error and Max Error represent geolocation error intervals between -1.5 and 1.5 times the maximum accuracy of all the images. Columns X, Y, Z show the percentage of images with geolocation errors within the predefined error intervals. The geolocation error is the difference between the initial and computed image positions. Note that the image geolocation errors do not correspond to the accuracy of the observed 3D points.

Relative Geolocation Variance

Relative Geolocation Error	Images X [%]	Images Y [%]	Images Z [%]
[-1.00, 1.00]	100.00	100.00	100.00
[-2.00, 2.00]	100.00	100.00	100.00
[-3.00, 3.00]	100.00	100.00	100.00
Mean of Geolocation Accuracy [m]	5.000000	5.000000	10.000000
Sigma of Geolocation Accuracy [m]	0.000000	0.000000	0.000000

Images X, Y, Z represent the percentage of images with a relative geolocation error in X, Y, Z.

Geolocation Orientational Variance	RMS [degree]
Omega	0.194
Phi	0.440
Kappa	2.102

Geolocation RMS error of the orientation angles given by the difference between the initial and computed image orientation angles.

Initial Processing Details

System Information

Hardware	CPU: 12th Gen Intel(R) Core(TM) i9-12900K RAM 64GB GPU: NVIDIA GeForce RTX 3060 (Driver: 31.0.15.2849), Intel(R) UHD Graphics 770 (Driver: 30.0.101.1273)
Operating System	Windows 10 Pro, 64-bit

Coordinate Systems

Image Coordinate System	WGS 84 (EGM 96 Geoid)
Output Coordinate System	WGS 84 / UTMzone 45N (EGM 96 Geoid)

Processing Options



Detected Template	No Template Available
Keypoints Image Scale	Rapid, Image Scale: 0.25
Advanced: Matching Image Pairs	Aerial Grid or Corridor
Advanced: Matching Strategy	Use Geometrically Verified Matching: no
Advanced: Keypoint Extraction	Targeted Number of Keypoints: Automatic
Advanced: Calibration	Calibration Method: Standard
	Internal Parameters Optimization: All
	External Parameters Optimization: All
	Rematch: Auto, yes

Point Cloud Densification details

Processing Options

Image Scale	multiscale, 1/2 (Half image size, Default)
Point Density	Optimal
Minimum Number of Matches	3
3D Textured Mesh Generation	yes
3D Textured Mesh Settings:	Resolution: Medium Resolution (default) Color Balancing: no
LOD	Generated: no
Advanced: 3D Textured Mesh Settings	Sample Density Divider: 1
Advanced: Image Groups	group1
Advanced: Use Processing Area	yes
Advanced: Use Annotations	yes
Time for Point Cloud Densification	13m:01s
Time for Point Cloud Classification	02m:33s
Time for 3D Textured Mesh Generation	05m:29s

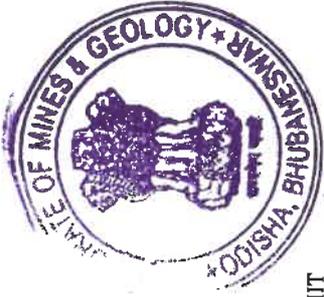
Results

Number of Generated Tiles	1
Number of 3D Densified Points	16914015
Average Density (per m ³)	151.7

DSM, Orthomosaic and Index Details

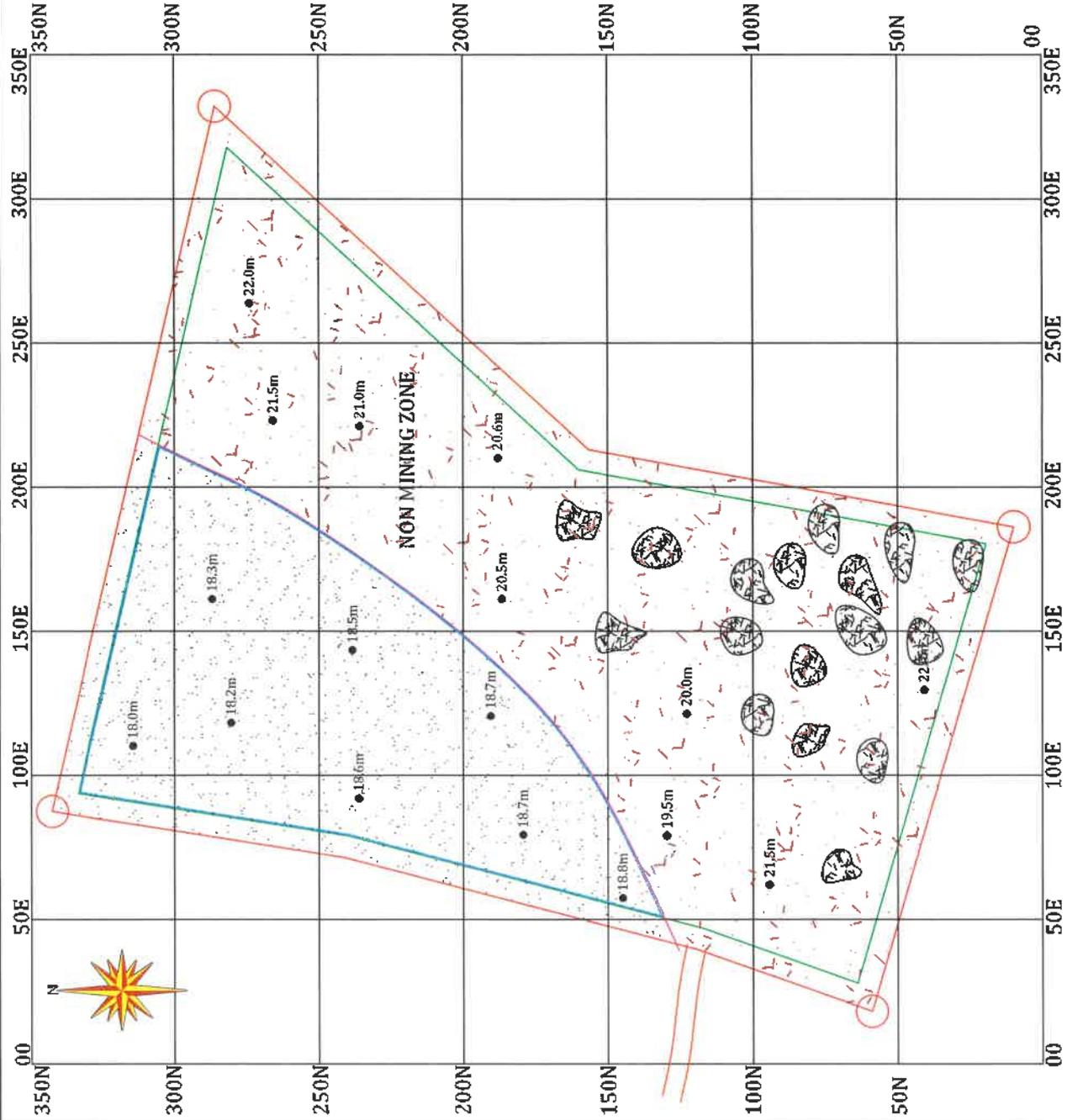
Processing Options

DSM and Orthomosaic Resolution	1 x GSD (2.86 [cm/pixel])
DSM Filters	Noise Filtering: yes Surface Smoothing: yes, Type: Sharp
Orthomosaic	Generated: yes Merge Tiles: yes GeoTIFF Without Transparency: no Google Maps Tiles and KML: no
Time for DSM Generation	00s
Time for Orthomosaic Generation	16m:33s
Time for DTM Generation	00s
Time for Contour Lines Generation	00s
Time for Reflectance Map Generation	00s
Time for Index Map Generation	00s



INDEX

-  Q.L. BOUNDARY
-  SAFETY ZONE
-  APPROACH ROAD
-  SPOT RL
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-  ULTIMATE PIT LIMIT
-  BUSHES
-  CLAY
-  LITHO CONTACT



PREMONSOON SURFACE GEOLOGICAL PLAN

R.F.: 1:1,500

RAJNAGAR SAND BED

OVER AN AREA OF 13.55 ACRES OR 5.48 HECTARES IN RAJNAGAR VILLAGE OF JALESWAR TAHASIL IN BALASORE DISTRICT, ODISHA.

TAHASILDAR, NISCHINTAKOILI

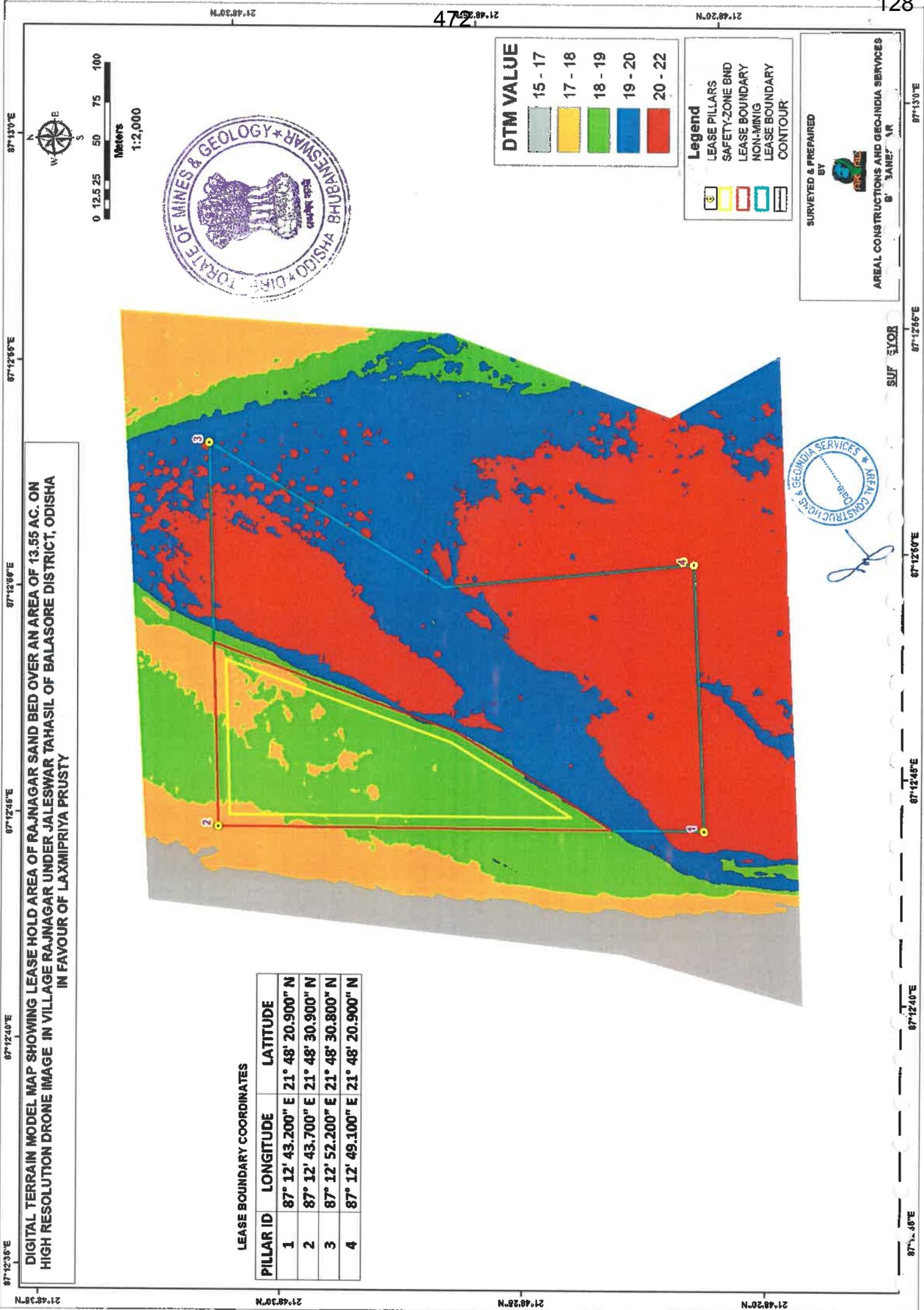
Certified that the plan is up-to-date & correct.

Arday

APURBA RANJAN RAY

REGD.NO.RQP/OD106/2022

DATE OF SURVEY
18.17.2022



DIGITAL TERRAIN MODEL MAP SHOWING LEASE HOLD AREA OF RAJNAGAR SAND BED OVER AN AREA OF 13.55 AC. ON HIGH RESOLUTION DRONE IMAGE IN VILLAGE RAJNAGAR UNDER JALESWAR TAHASIL OF BALASORE DISTRICT, ODISHA IN FAVOUR OF LAXMIPRIYA PRUSTY

LEASE BOUNDARY COORDINATES

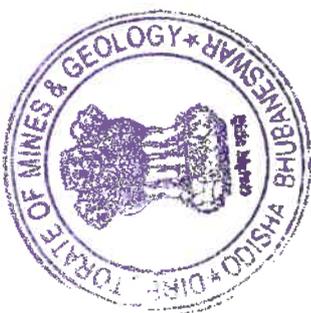
PILLAR ID	LONGITUDE	LATITUDE
1	87° 12' 43.200" E	21° 48' 20.900" N
2	87° 12' 43.700" E	21° 48' 30.900" N
3	87° 12' 52.200" E	21° 48' 30.800" N
4	87° 12' 49.100" E	21° 48' 20.900" N

DTM VALUE

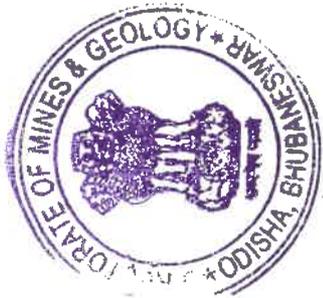
15 - 17	17 - 18	18 - 19	19 - 20	20 - 22
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- Legend
- LEASE PILLARS
 - LEASE BOUNDARY
 - SAFETY-ZONE BND
 - NON-MINING
 - LEASE BOUNDARY
 - CONTOUR

SURVEYED & PREPARED BY
 AREAL CONSTRUCTIONS AND GEODINDIA SERVICES
 B. JANEJA AR



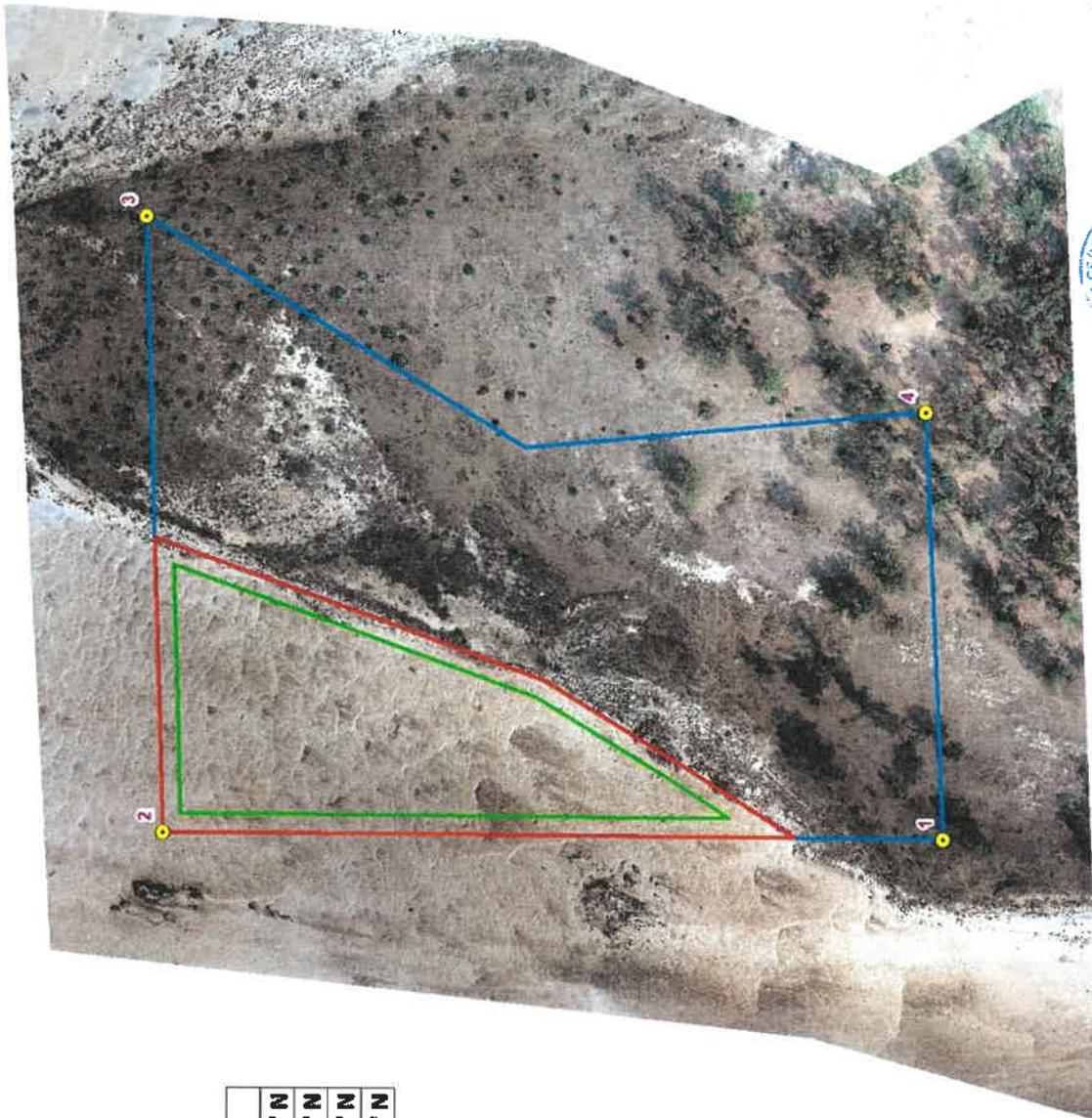
21°48'20"N 21°48'20"N 21°48'20"N 21°48'20"N
 87°12'38"E 87°12'40"E 87°12'45"E 87°12'50"E 87°12'55"E 87°13'00"E
 472



ORTHO MAP SHOWING LEASE HOLD AREA OF RAJNAGAR SAND BED OVER AN AREA OF 13.56 AC. ON HIGH RESOLUTION DRONE IMAGE IN VILLAGE RAJNAGAR UNDER JALESWAR TAHASIL OF BALASORE DISTRICT, ODISHA IN FAVOUR OF LAXMIPRIYA PRUSTY

LEASE BOUNDARY COORDINATES

PILLAR ID	LONGITUDE	LATITUDE
1	87° 12' 43.200" E	21° 48' 20.900" N
2	87° 12' 43.700" E	21° 48' 30.900" N
3	87° 12' 52.200" E	21° 48' 30.800" N
4	87° 12' 49.100" E	21° 48' 20.900" N



Legend

- LEASE PILLARS
- SAFETY-ZONE BND
- LEASE BOUNDARY
- NON-MINIG
- LEASE BOUNDARY

AREAL CONSTRUCTIONS & GEO-INDIA SERVICES
Bhubaneswar

SURVEYED & PREPARED BY

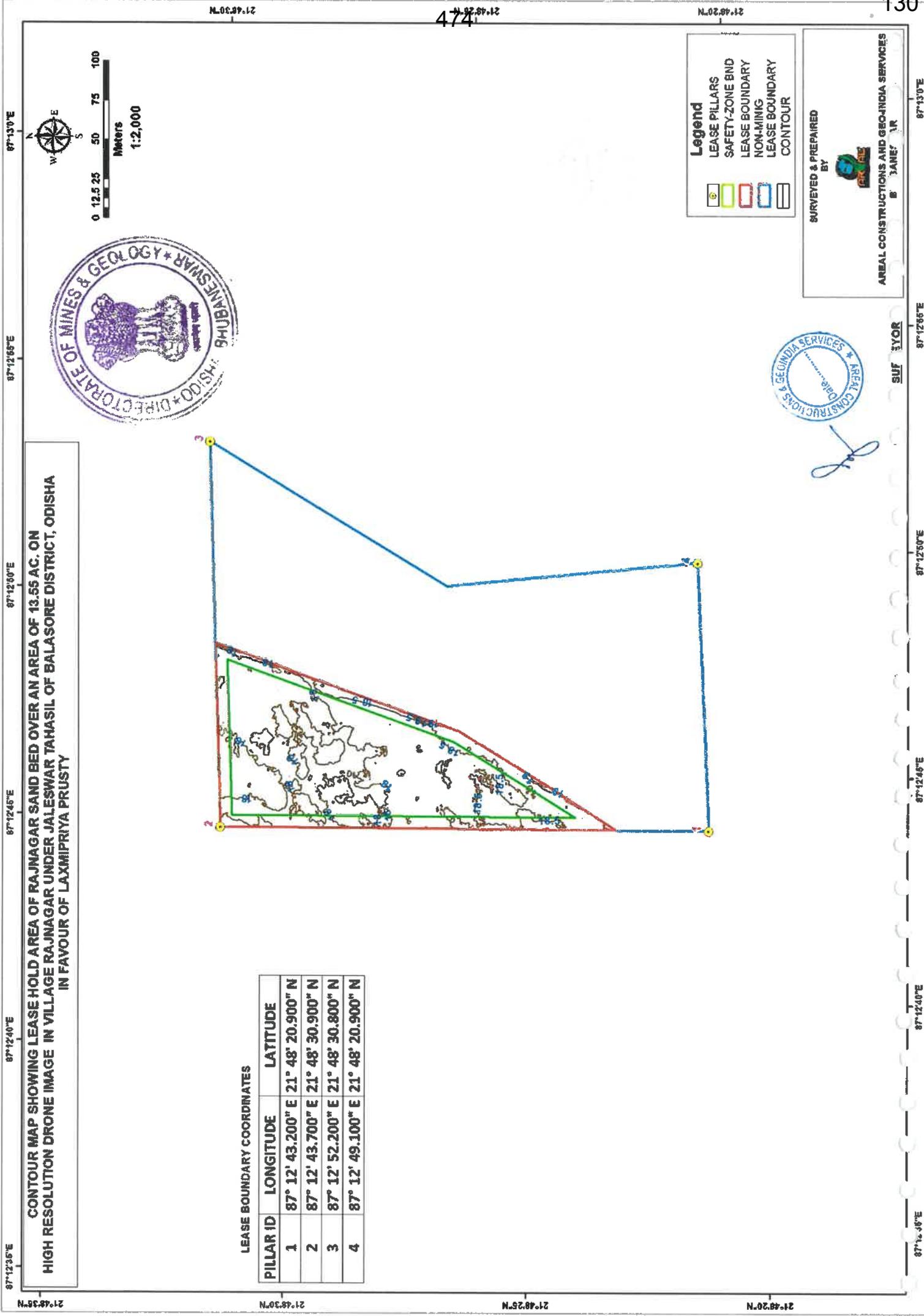


AREAL CONSTRUCTIONS AND GEO-INDIA SERVICES
BHUBANESWAR

SURVEYOR

87°12'38"E 87°12'40"E 87°12'45"E 87°12'56"E 87°13'0"E

21°48'35"N 21°48'30"N 21°48'25"N 21°48'20"N 21°48'20"N



CONTOUR MAP SHOWING LEASE HOLD AREA OF RAJNAGAR SAND BED OVER AN AREA OF 13.55 AC. ON HIGH RESOLUTION DRONE IMAGE IN VILLAGE RAJNAGAR UNDER JALESWAR TAHASIL OF BALASORE DISTRICT, ODISHA IN FAVOUR OF LAXMIPRIYA PRUSTY

LEASE BOUNDARY COORDINATES

PILLAR ID	LONGITUDE	LATITUDE
1	87° 12' 43.200" E	21° 48' 20.900" N
2	87° 12' 43.700" E	21° 48' 30.900" N
3	87° 12' 52.200" E	21° 48' 30.800" N
4	87° 12' 49.100" E	21° 48' 20.900" N



Legend

- LEASE PILLARS
- SAFETY-ZONE BND
- LEASE BOUNDARY
- NON-MINING
- LEASE BOUNDARY
- CONTOUR

SURVEYED & PREPARED BY

AREAL CONSTRUCTIONS AND GEO-INDIA SERVICES
B. JANEJA R



[Handwritten Signature]

SURVEYOR

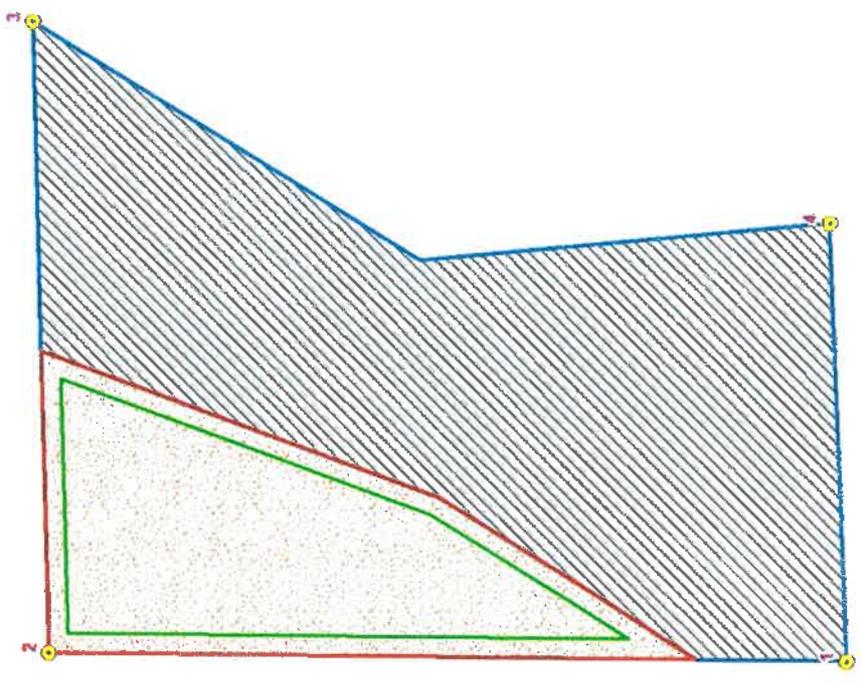
87°12'35"E 87°12'40"E 87°12'45"E 87°12'50"E 87°13'0"E

21°48'35"N 21°48'30"N 21°48'25"N 21°48'20"N

87°12'35"E 87°12'40"E 87°12'45"E 87°12'50"E 87°13'0"E

21°48'36"N 21°48'30"N 21°48'20"N 475

12°40' 87°12'46" 87°12'50" 87°13'00" SURFACE GEOLOGICAL MAP SHOWING LEASE HOLD AREA OF RAJNAGAR SAND BED OVER AN AREA OF 13.55 AC. ON HIGH RESOLUTION DRONE IMAGE IN VILLAGE RAJNAGAR UNDER JALESWAR TAHASIL OF BALASORE DISTRICT, ODISHA IN FAVOUR OF LAXMIPRIYA PRUSTY



LEASE BOUNDARY COORDINATES

PILLAR ID	LONGITUDE	LATITUDE
1	87° 12' 43.200" E	21° 48' 20.900" N
2	87° 12' 43.700" E	21° 48' 30.900" N
3	87° 12' 52.200" E	21° 48' 30.800" N
4	87° 12' 49.100" E	21° 48' 20.900" N

Legend

- LEASE PILLARS
- SAFETY-ZONE BND
- LEASE BOUNDARY
- NON-MINING
- LEASE BOUNDARY
- SAND UNDER
- MINING AREA

SURVEYED & PREPARED BY

AREAL CONSTRUCTIONS AND GEO-INDIA SERVICES
BHUBANESWAR

(Handwritten Signature)

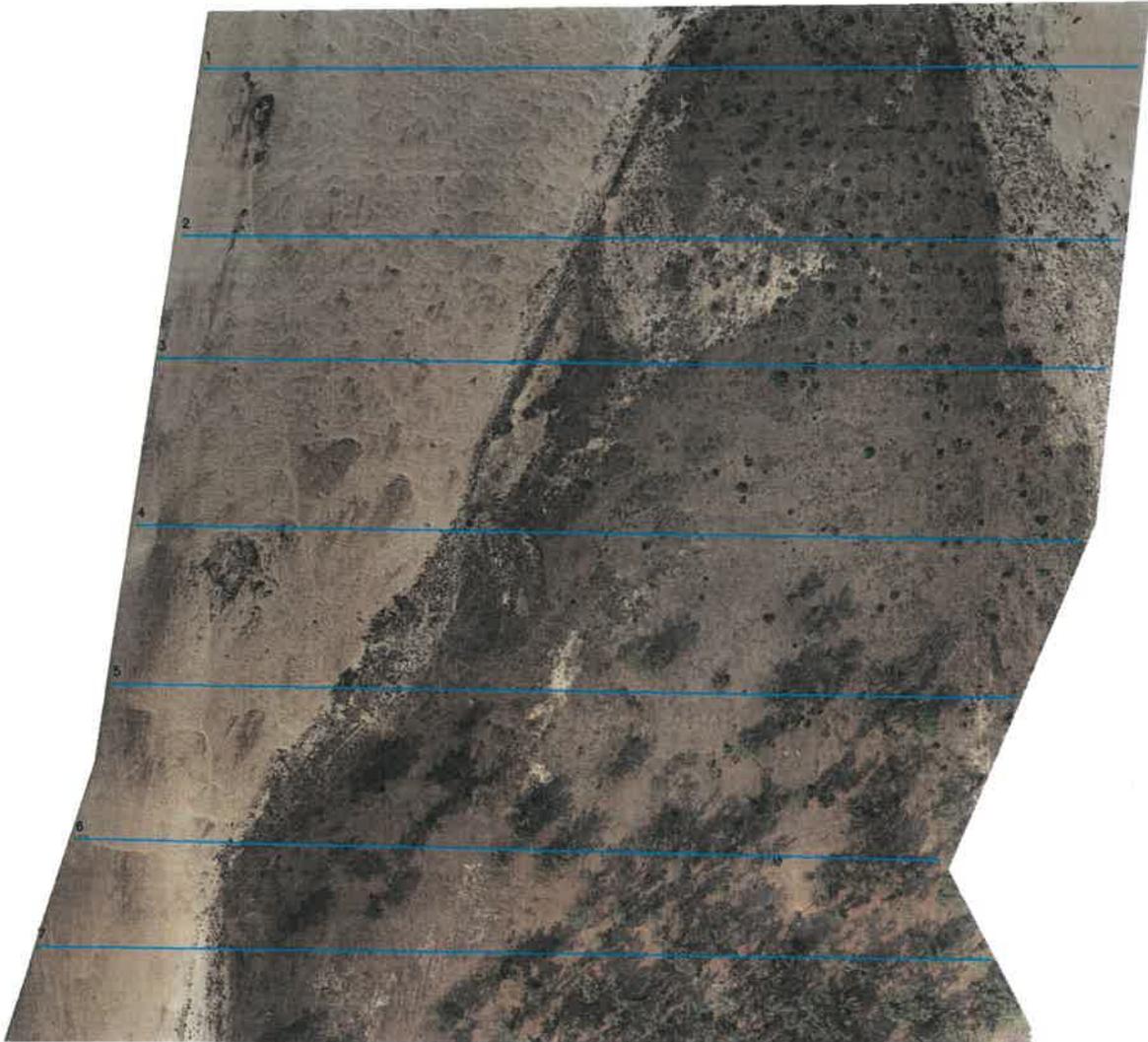
AREAL CONSTRUCTIONS & GEO-INDIA SERVICES

SURVEYOR

21°48'36"N 21°48'30"N 21°48'20"N 87°12'36"E 87°12'40"E 87°12'45"E 87°12'50"E 87°13'00"E



Saved Measurement

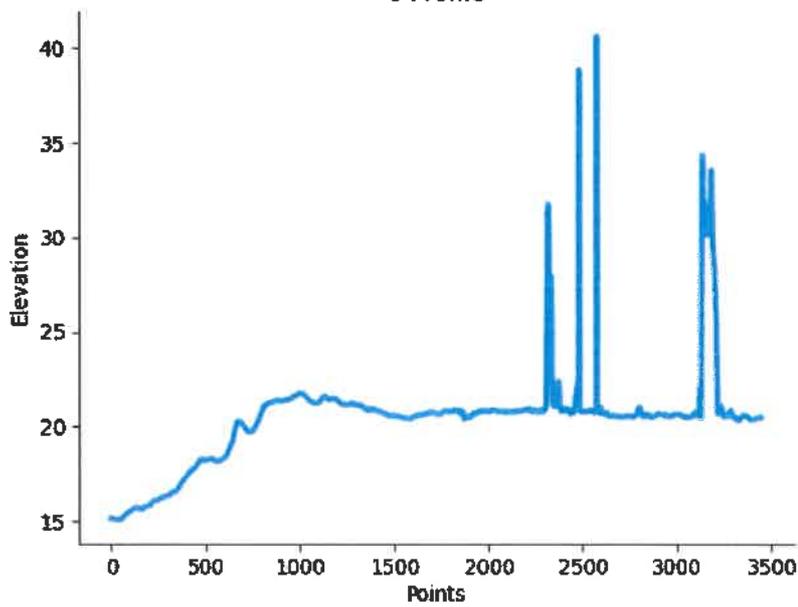


Sl. No.	Label	Measurement Type	Information
1	6	Elevation	Vertical Height: -5.34 m **Profile Shown Below



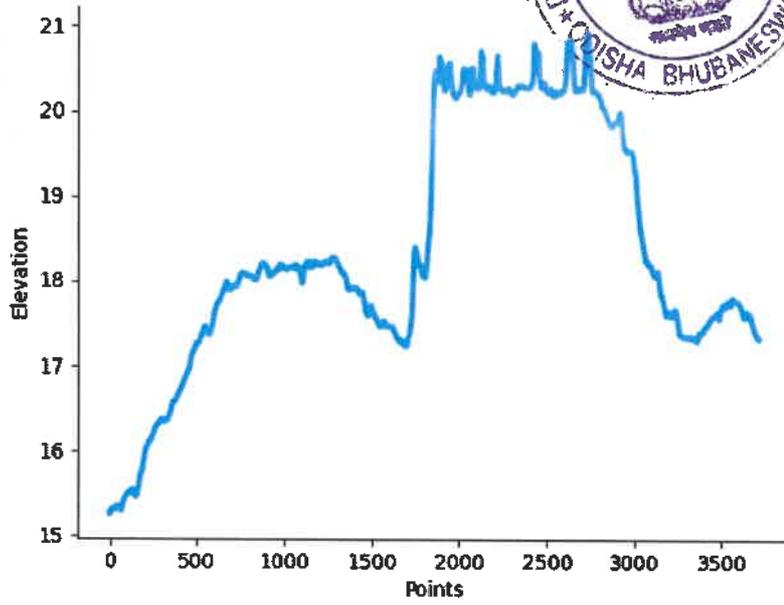
2	1	Elevation	Vertical Height: -2.07 m **Profile Shown Below
3	3	Elevation	Vertical Height: -2.73 m **Profile Shown Below
4	7	Elevation	Vertical Height: -4.83 m **Profile Shown Below
5	5	Elevation	Vertical Height: -3.7 m **Profile Shown Below
6	2	Elevation	Vertical Height: -1.88 m **Profile Shown Below
7	4	Elevation	Vertical Height: -4.02 m **Profile Shown Below

6 Profile

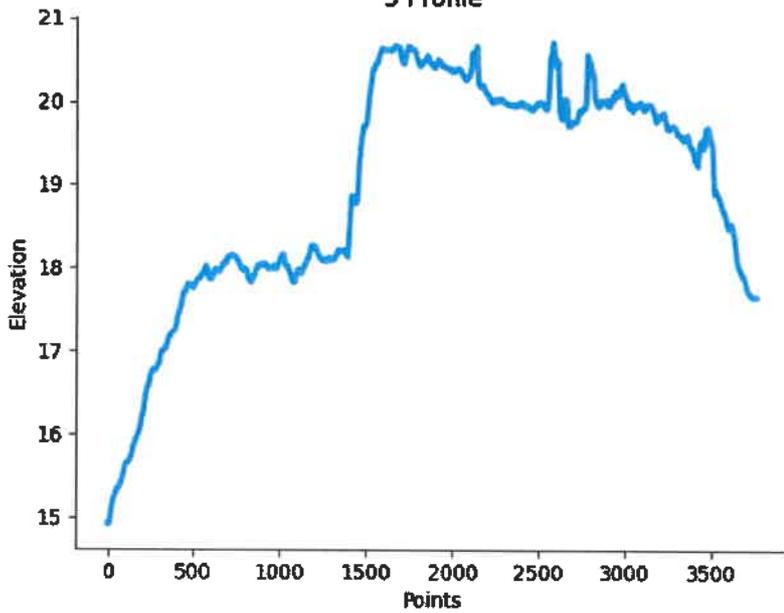


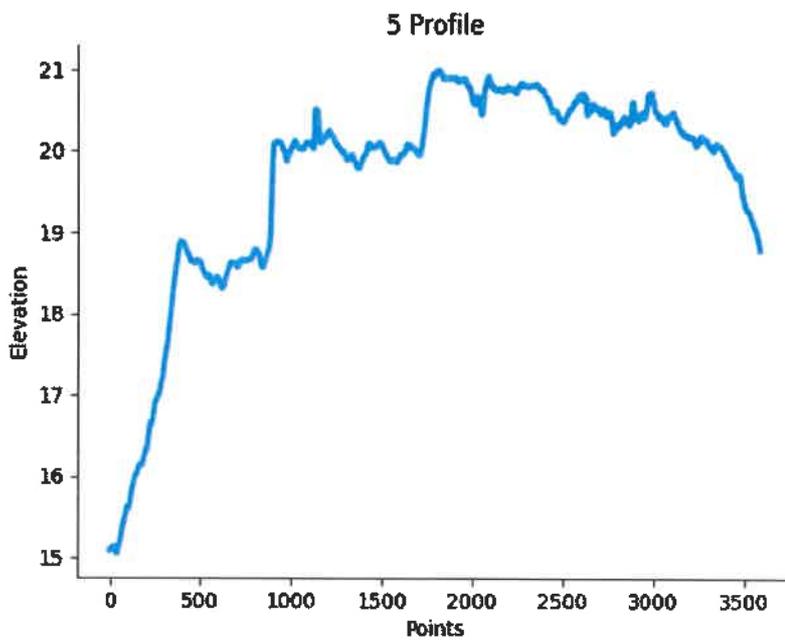
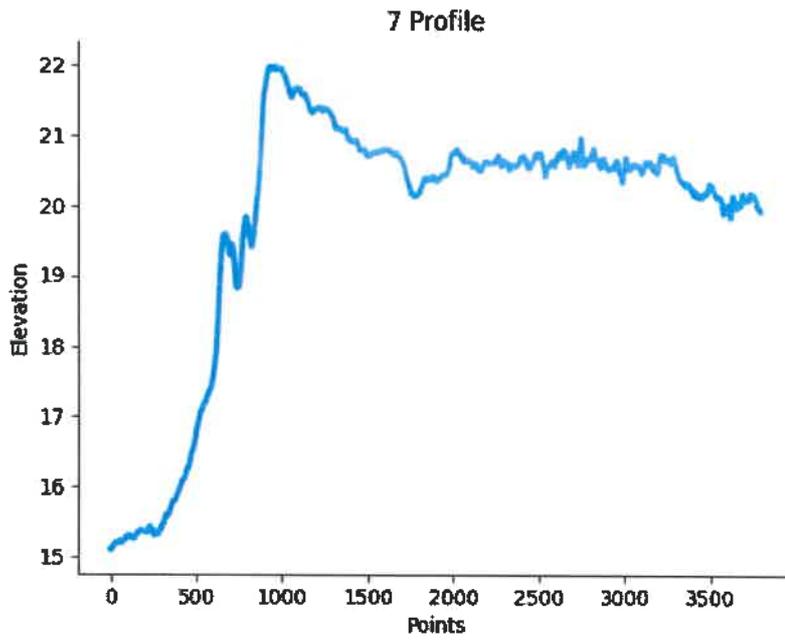


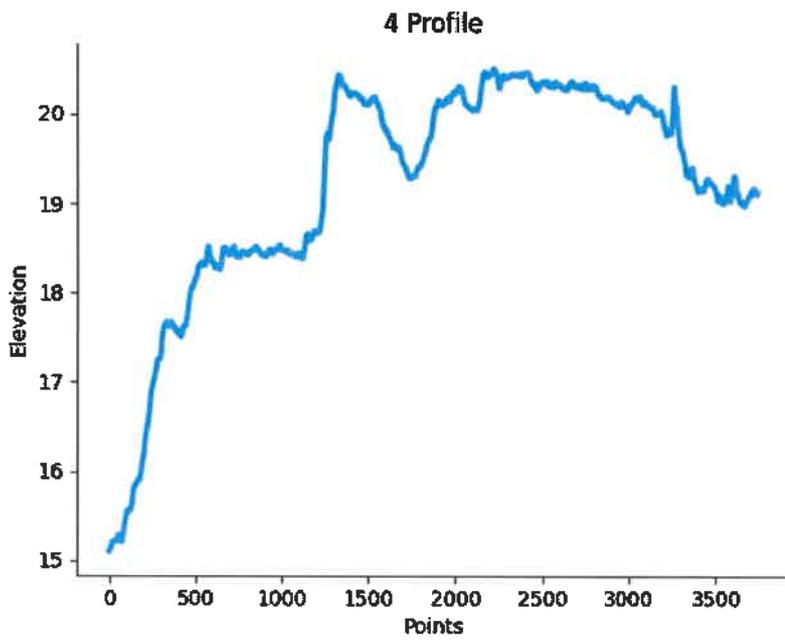
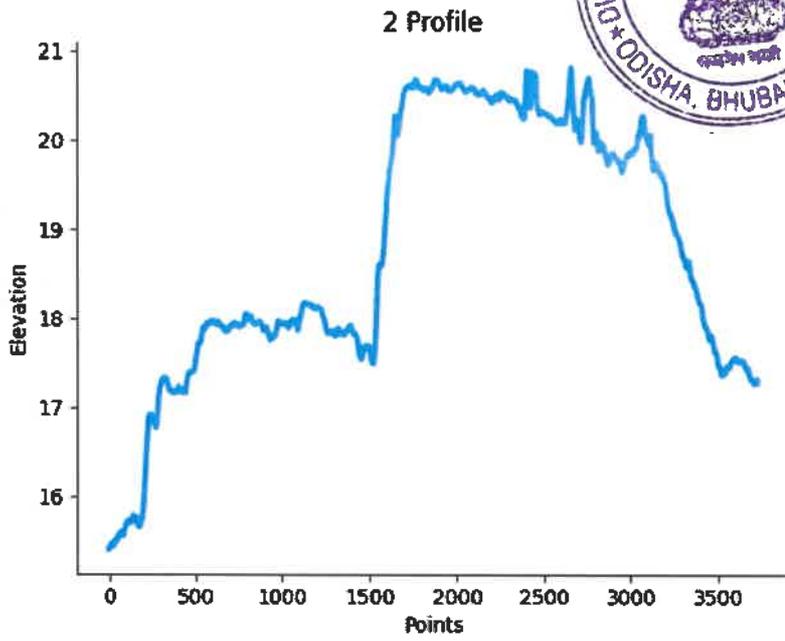
1 Profile



3 Profile







CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON



**GOVERNMENT OF ODISHA
DEPARTMENT OF STEEL AND MINES
DIRECTORATE OF MINES**



(Under rule 20 (2) of Odisha Minor Mineral Concession Rules, 2016)

ADP

This to certify that, **Sri Apurba Ranjan Ray**, S/o Late Raghunath Ray, Plot No.-1463, Gandamunda, PO-Khandagiri, Bhubaneswar-751030, whose photograph and signature are affixed herein, having given satisfactory evidence of his/her qualification and experience, is hereby recognized under rule 20(2) of Odisha Minor Mineral Concession Rules, 2016 as a qualified person to prepare Mining Plans for Minor Minerals within the State of Odisha, India.

RQP/OD109/2022

His/Her Registration No. is

This Recognition is valid for a period of 10 years from the date of Issue. This certificate will be liable to be with drawn / cancelled in the event of furnishing wrong information / documents in the Mining Plans to be submitted by him/her.

Place: Bhubaneswar

Date 22.06.2022.

[Signature]

**DIRECTOR OF MINES, ODISHA
BHUBANESWAR**



INDEX

M.L BOUNDARY



5KM BUFFER ZONE



Approved

[Signature]
Deputy Director Geology
Authorised Officer
Directorate of Mines & Geology
Bhubaneswar

SCALE- 1:50,000

PLATE NO:-I

RAJNAGAR SAND BED
VER AN AREA OF 13.55 AC OR 5.48 HA IN
VILLAGE- RAJNAGAR UNDER TAHASIL
JALESWAR, DISTRICT - BALASORE OF ODISHA

KEY PLAN

Toposheet No-730/1

[Signature]
APURBA RANJAN RAY
REGD. NO.RQP/OD109/2022



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PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT



ଅଫିସ୍: ପ୍ରାକାଶନ ଶିଳା ୨୭
ଆଧାର: ଭୂଗର୍ଭସମ୍ପଦ ବିଭାଗ
ପ୍ରକାର: ଜମିରାଜିରୀ ନକ୍ସା
ସ୍ଥାନ: ଭୁବନେଶ୍ୱର
ପୃଷ୍ଠା ନଂ: ୧୩୫୫



ପ୍ରାକାଶନ
ଅଫିସ୍ ନଂ ୨୭୬ (ପ୍ରାକାଶନ-ଅଫିସ୍)
ପ୍ଲଟ ନଂ ୧୩୫୫/୧୩୫୬ ୧୧୯୯.୩୦ ଛଃ (୧୨୩)
୧୧୯୯.୬୬

ପ୍ରାକାଶନ
ପ୍ରାକାଶନ ବିଭାଗ ଦ୍ୱାରା ପ୍ରସ୍ତୁତ କରାଯାଇଥିବା ଏହି ନକ୍ସା
ଅନୁଯାୟୀ ପ୍ରାକାଶନ
ପ୍ରାକାଶନ ବିଭାଗ ଦ୍ୱାରା ପ୍ରସ୍ତୁତ କରାଯାଇଥିବା ନକ୍ସା

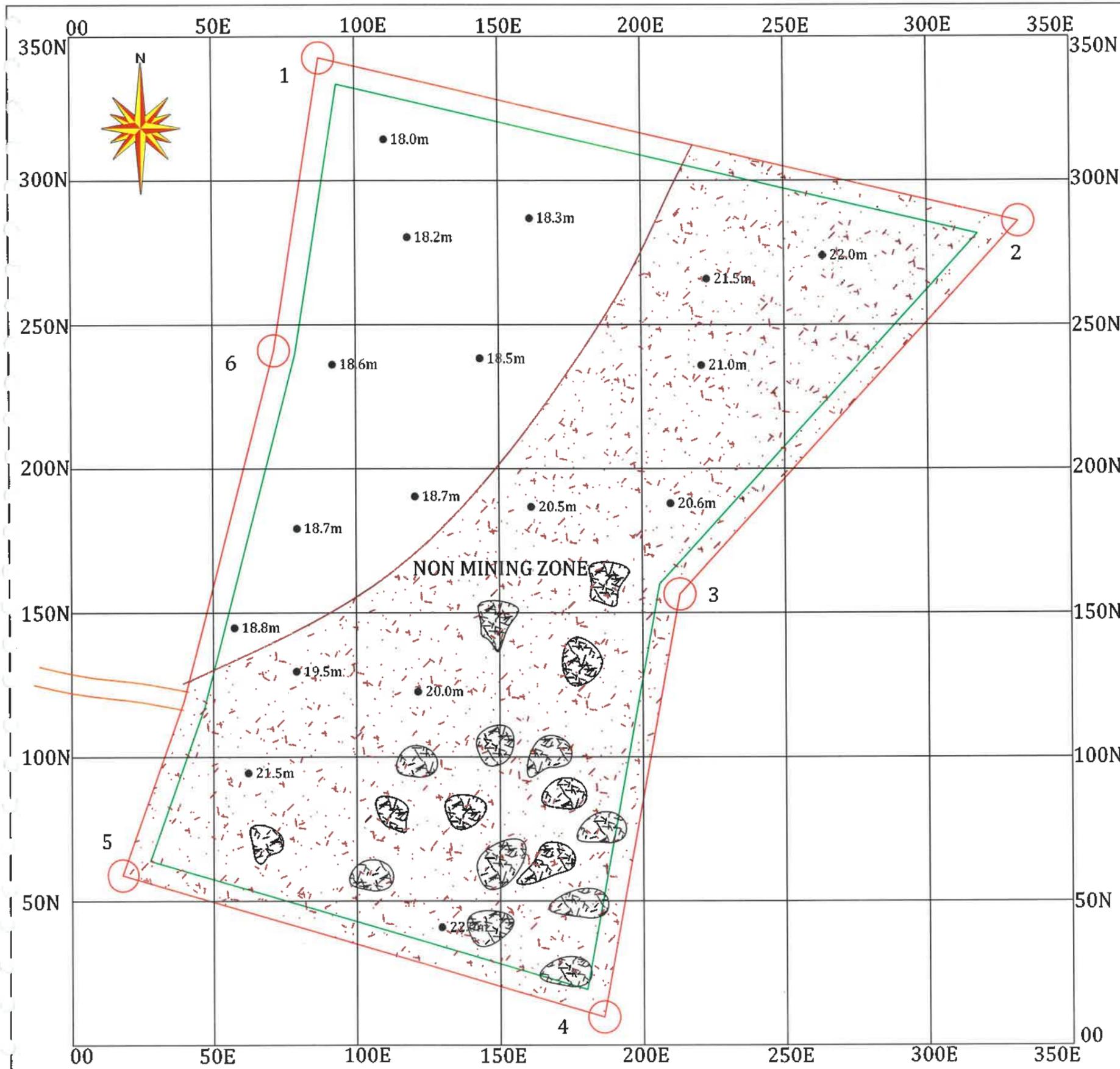
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ଅଫିସ୍ ନଂ: ୧୩୫୫

Approved
[Signature]
29.5.23
Deputy Director Geology
Authorised Officer
Directorate of Mines & Geology
Bhubaneswar

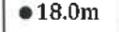
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November 2023

ଅଫିସ୍ ନଂ ୧୩୫୫
ପ୍ରାକାଶନ ବିଭାଗ

ଅଫିସ୍ ନଂ ୧୩୫୫
ପ୍ରାକାଶନ ବିଭାଗ



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-  SPOT RL
-  BUSHES
-  SOIL MIXED SAND-UNUSED MATERIAL



PILLAR NO	LATITUDE	LONGITUDE
1	N21°48'30.9"	E87°12'43.7"
2	N21°48'30.8"	E87°12'52.2"
3	N21°48'25.8"	E87°12'49.3"
4	N21°48'20.9"	E87°12'49.1"
5	N21°48'20.9"	E87°12'43.2"
6	N21°48'27.6"	E87°12'43.9"

Approved

[Signature]
 Deputy Director Geology
 Authorised Officer
 Directorate of Mines & Geology
 Bhubaneswar

SURFACE PLAN

R.F.-1:1,500

RAJNAGAR SAND BED

OVER AN AREA OF 13.55 ACRES OR 5.48 HECTARES IN RAJNAGAR VILLAGE OF JALESWAR TAHASIL IN BALASORE DISTRICT, ODISHA.

OF

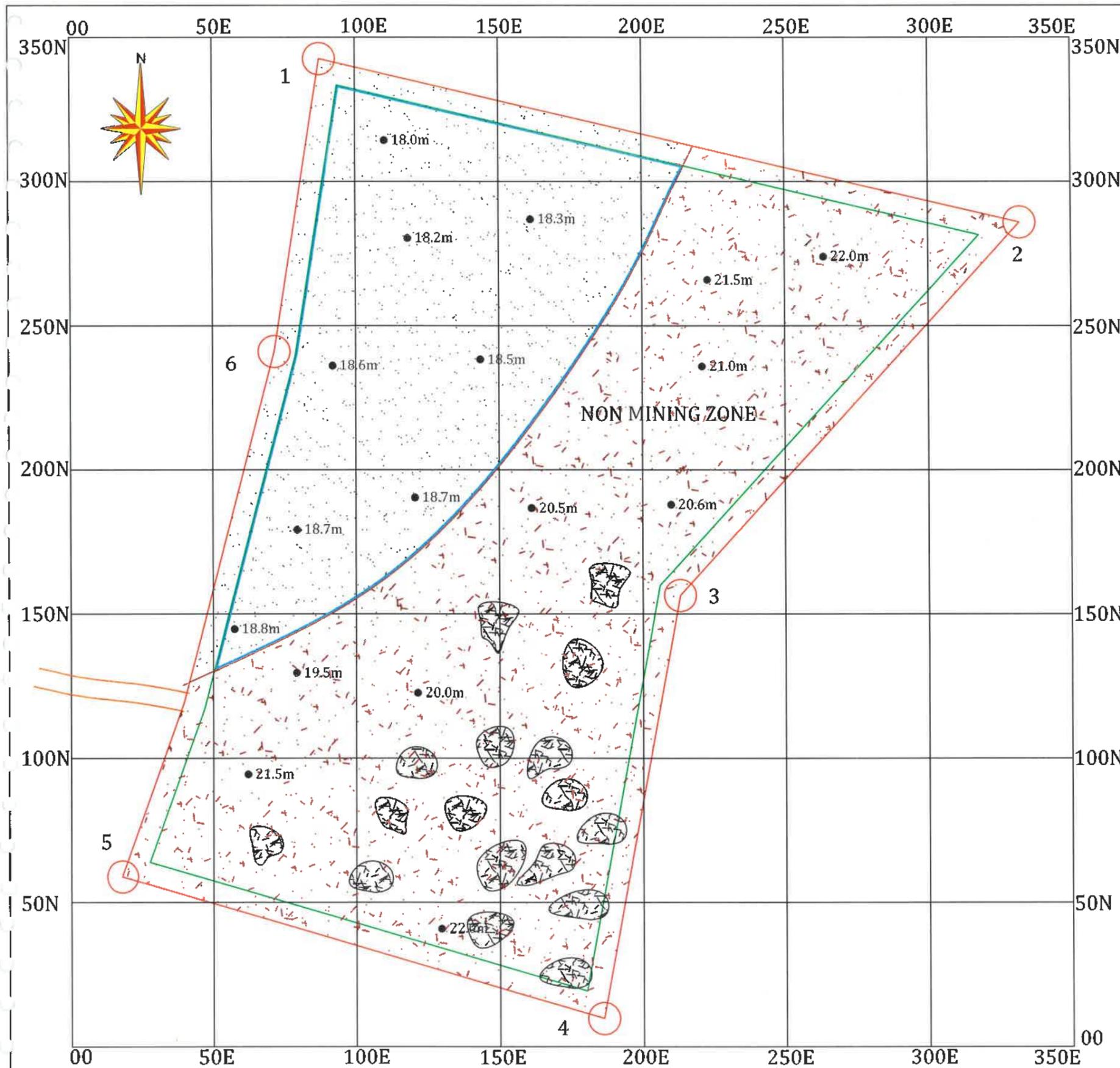
LESSEE: LAXMIPRIYA PRUSTY

Certified that the plan is up-to-date & correct.

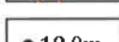
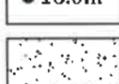
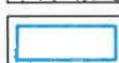
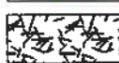
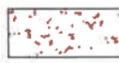
DATE OF SURVEY
18.12.2022

[Signature]

APURBA RANJAN RAY
REGD.NO.RQP/OD109/2022

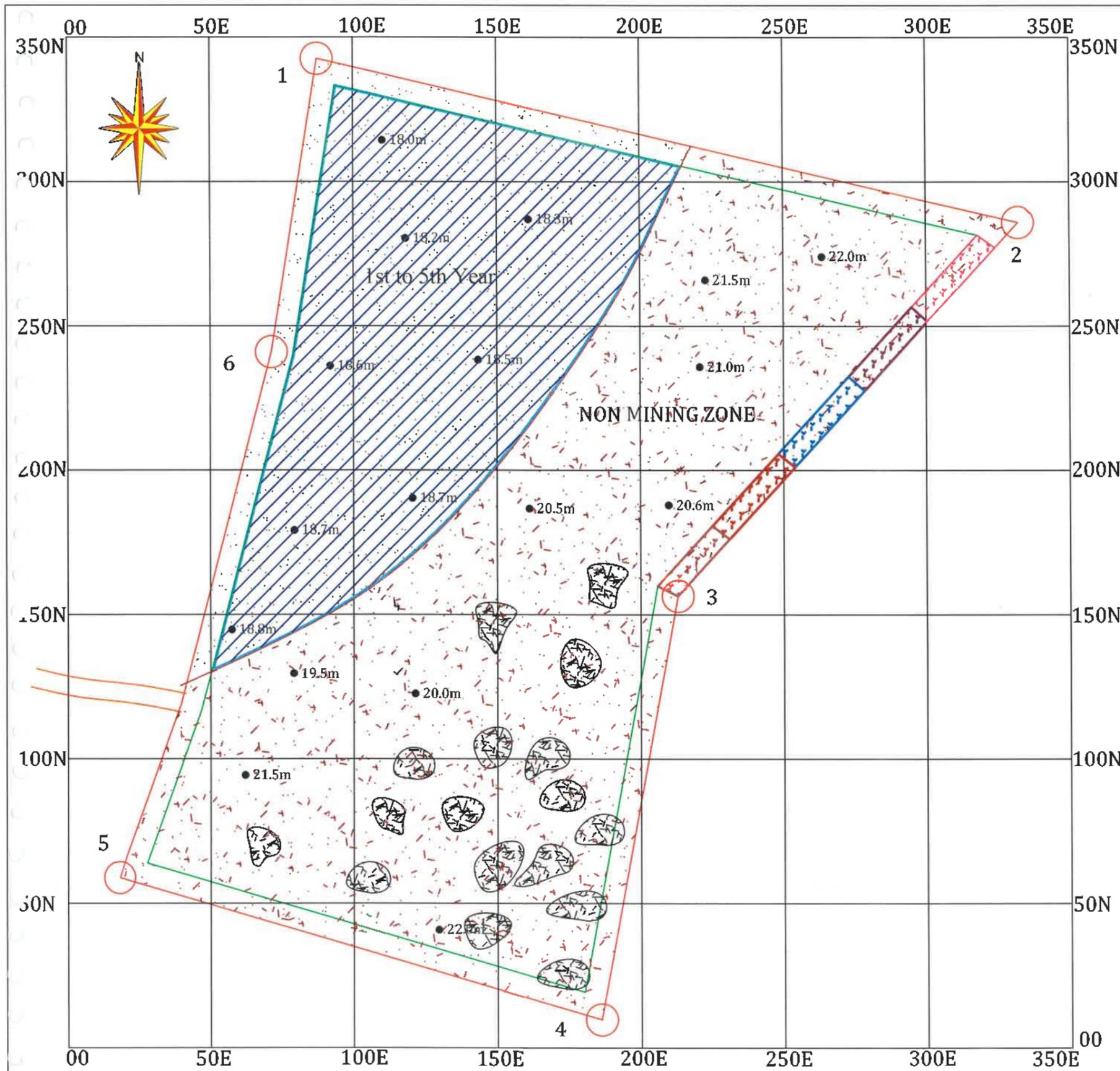


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-  APPROACH ROAD
-  SPOT RL
-  SAND
-  ULTIMATE PIT LIMIT
-  BUSHES
-  SOIL MIXED SAND-UNUSED MATERIAL

Approved
(Signature)
 Deputy Director Geology
 Authorised Officer
 Directorate of Mines & Geology
 Bhubaneswar

GEOLOGICAL PLAN	
R.F.-1:1,500	
RAJNAGAR SAND BED	
OVER AN AREA OF 13.55 ACRES OR 5.48 HECTARES IN RAJNAGAR VILLAGE OF JALESWAR TAHASIL IN BALASORE DISTRICT, ODISHA.	
OF	
LESSEE: LAXMIPRIYA PRUSTY	
DATE OF SURVEY 18.12.2022	Certified that the plan is up-to-date & correct. <i>(Signature)</i> APURBA RANJAN RAY REGD.NO.RQP/OD109/2017



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- Q.L. BOUNDARY
- SAFETY ZONE
- APPROACH ROAD
- SPOT RL
- SAND
- ULTIMATE PIT LIMIT
- BUSHES
- SOIL MIXED SAND-UNUSED MATERIAL

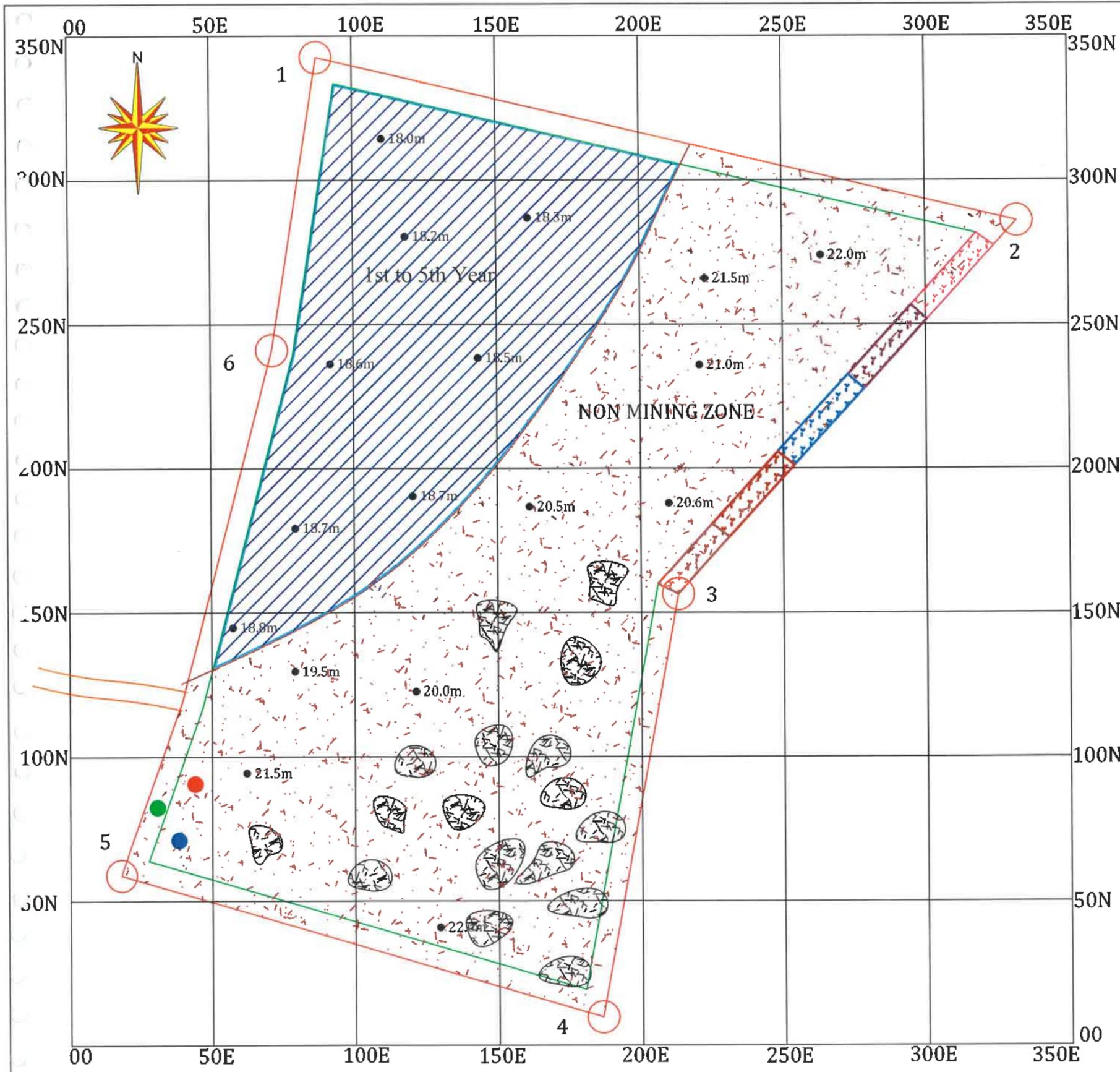
YEAR WISE DEVELOPMENT OF QUARRY
 1ST, 2ND, 3RD, 4TH & 5TH YEAR
 (SAME SURFACE AREA WILL BE REPLENISHED EVERY YEAR DURING FLOOD)

YEAR WISE PLANTATION

- FIRST YEAR
- SECOND YEAR
- THIRD YEAR
- FOURTH YEAR
- FIFTH YEAR

Approved
[Signature]
 Deputy Director Geology
 Authorised Officer
 Directorate of Mines & Geology
 Bhubaneswar

DEVELOPMENT PLAN	
R.F.-1:1,500	
RAJNAGAR SAND BED	
OVER AN AREA OF 13.55 ACRES OR 5.48 HECTARES IN RAJNAGAR VILLAGE OF JALESWAR TAHASIL IN BALASORE DISTRICT, ODISHA.	
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LESSEE: LAXMIPRIYA PRUSTY	
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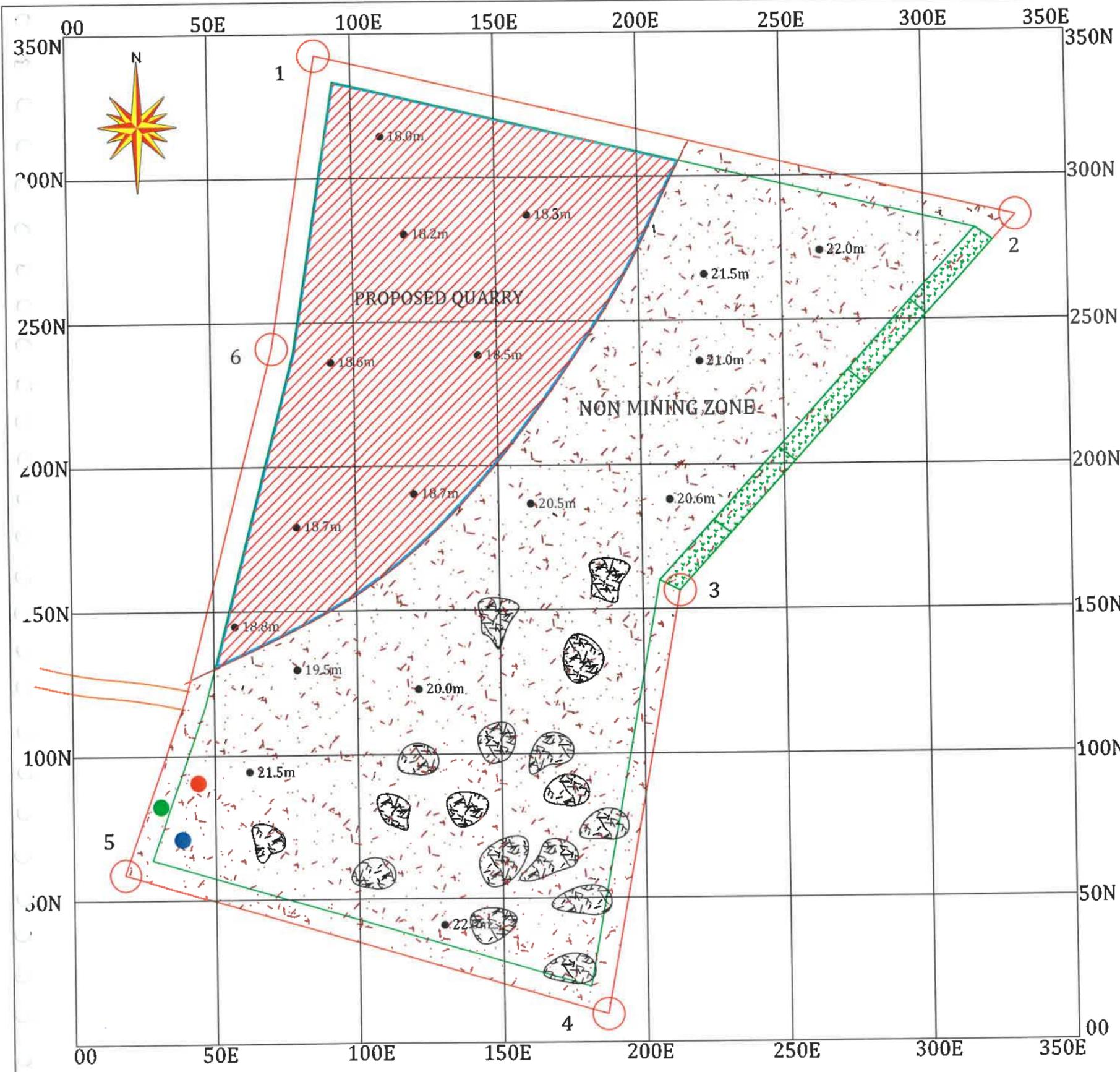
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YEAR WISE DEVELOPMENT OF QUARRY
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 (SAME SURFACE AREA WILL BE REPLENISHED EVERY YEAR DURING FLOOD)

- YEAR WISE PLANTATION**
- FIRST YEAR
 - SECOND YEAR
 - THIRD YEAR
 - FOURTH YEAR
 - FIFTH YEAR

Approved
[Signature]
 Deputy Director Geology
 Authorised Officer
 Directorate of Mines & Geology,
 Bhubaneswar

ENVIRONMENT MANAGEMENT PLAN	
R.F.-1:1,500	
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- PROPOSED FEATURES**
- PROPOSED QUARRY
 - PROPOSED PLANTATION

Approved
[Signature]
 Deputy Director Geology
 Authorised Officer
 Directorate of Mines & Geology
 Bhubaneswar

PROGRESSIVE MINE CLOSURE PLAN	
R.F.-1:1,500	
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