

F. No. 8-22/2023-FC (E-221169)
Government of India
Ministry of Environment, Forest and Climate Change
(Forest Conservation Division)

Indira Paryavaran Bhawan
Aliganj, Jor Bagh Road
New Delhi-110003

Dated: 06-11-2025

To

The Director,
Wildlife Institute of India
Dehradun.

Sub.: Diversion of 146.996 ha forest land under section 2 (1) (ii) of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 for Integrated Coal Mining including post mine reclamation in Marki-Mangli II coal block in Yavatmal District of Maharashtra State in favour of M/s Yazdani International Private Limited (Online No. FP/MH/MIN/145510/2021) - regarding.

Sir,

I am directed to refer to the above mentioned subject and to say that the Wildlife Institute of India vide email dated 10.02.2025 submitted its comments in the instant proposal on the Wildlife Conservation Plan submitted by the State Government. The comments of the WII were forwarded to the State Government with a request to incorporate the suggested revisions into the Wildlife Conservation Plan and submit the revised version, duly reviewed and endorsed by WII, Dehradun.

2. Now, the State Government vide their letter no. Desk-17/FCA-S1/PID-145510/T/2025-26/1460 dated 25.09.2025 (copy enclosed) has submitted revised Wildlife Mitigation plan to the Ministry by incorporated the comments of the WII, Dehradun as sought vide Ministry's letter dated 25.02.2025.

3. In view of the above, you are requested to review the Wildlife Conservation Plan as submitted by the State Government vide letter dated 25.09.2025 for further necessary action in the Ministry.

Yours faithfully,

Sd/-

(Suneet Bhardwaj)

Assistant Inspector General of Forests

Copy to:

1. Principle Secretary (Forests), Government of Maharashtra, Nagpur.
2. The PCCF (HoFF), Government of Maharashtra, Nagpur.
3. The Nodal Officer (FCA), O/o PCCF, Government of Maharashtra, Nagpur.
4. User Agency
5. Monitoring Cell of FC Division, MoEF&CC, New Delhi.



**Office of the Principal Chief Conservator of Forests
(Head of Forests Force), Maharashtra State**

Addl Principal Chief Conservator of Forests & Nodal Officer,
1st Floor, B Wing, Van Bhavan, Ramgiri Road, Civil Lines, Nagpur- 440 001
Tel No 0712- 2556916 , E-mail apccfnodal@mahaforest.gov.in

Email

No - Desk-17/FCA-S1/PID-145510/YT/2025-26/ 1460
Nagpur- 440 001, Dated 25/09/2025

To,

The Assistant Inspector General of Forest
Ministry of Environment, Forest & Climate Change
(Forest Conservation Division), New Delhi.

Sub: Submission of Final Wildlife Conservation and Mitigation Plan for diversion of 146 996 ha forest land under section 2 (1) (ii) of the Van (Sanrakshan Evam Samvardhan) Adhunyam, 1980 for Integrated Coal mining including post mine reclamation in Marka Mangli II Coal Block in Yavatmal District, Maharashtra State in Favour of M/s Yazdani International Pvt Ltd (FP/MH/MIN/145510/2021)- Regarding

Ref: 1 Government of India, Ministry of Environment, Forests and Climate Change, New Delhi letter dated-25 02 2025
2 Principle Chief Conservator of Forests (Wildlife), Maharashtra State, Nagpur vide letter No Desk 23 (2)/WL/Survey/C No149/766, dated 30 05 2025

Sir,

The Government of India, vide letter under reference no 1, has informed that the competent authority of the Ministry desires to obtain comments regarding the Wildlife Conservation Plan submitted by the State Government

Accordingly, the Principal Chief Conservator of Forests (Wildlife), Maharashtra State, Nagpur has already submitted a copy of the mitigation plan A copy of the same is enclosed for further necessary action

(Naresh Zurmure)

Addl. Principal Chief conservator of Forest &
Nodal Officer

Copy to

Principal Chief Conservator of Forests (Wildlife), Maharashtra State, Nagpur

To (Rishu K.)

01/10/24

E-1616323/2025/GR
1/10/25
30/09/2025



Forest Department

Principal Chief Conservator of Forest (Head of Forest Force)
Maharashtra State



Phone No.- 0712-2560953 Principal Chief Conservator of Forest (Wildlife) Maharashtra State.

E-mail - pccfwlmgp@mahaforest.gov.in

I.S.O.9001: 2015 Certified

Website – www.mahaforest.gov.in “Van Bhavan”, 3rd Floor, Ramgiri Road, Civil Lines, Nagpur – 440 001.

Email No :- Desk-23(2)/WL/Survey/C.No.149/766 /2025-26 Date 30/05/2025

To,

The Assistant Inspector General of Forests,
Ministry of Environment Forest & Climate Change
(Forest Conservation Division), New Delhi.

Sub :- Submission of Final Wildlife Conservation and Mitigation Plan for diversion of 146.996 ha forest land under section 2(1) (ii) of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 for Integrated Coal Mining including post mine reclamation in Marki Mangli II coal Block in Yavatmal District, Maharashtra State in favour of M/s Yazdani International Pvt. Ltd. (Online number FP/MH/MIN/145510/2021)- Regarding.

Ref :- 1. Wildlife Institute of India, Dehradun Letter dated 09/02/2025 received through MoEF&CC (FCA Division) dated 25/2/2025.
2. This office letter no. Desk-23(2)/WL/Survey/C.No.149/5673, dated 11/03/2025.
3. Wildlife Institute of India, Dehradun letter no. WII/AE&CB/BH/Dongargaon-Limestone/ 281/2024-01, dated 25/03/2025.
4. Additional Principal Chief Conservator of Forests & Nodal Officer, Nagpur letter no. Desk-17/FCA-S1/PID-145510/Yavatmal/362, dated 20/05/2025.

As per reference letter no.(2) dated 11/03/2025 the revised Wildlife Mitigation Plan for Marki Mangli-II coal block was sent to Wildlife Institute of India, Dehradun.

As per reference letter no.(3) dated 25/03/2025 Wildlife Institute of India, Dehradun has given remarks to revise the mitigation plan. The user agency has submitted revised mitigation plan to office of Additional Principal Chief Conservator of Forests & Nodal Officer, Nagpur vide letter dated 08/05/2025. Additional Principal Chief Conservator of Forests & Nodal Officer, Nagpur has requested vide reference letter no.(4) dated 20/05/2025 for appropriate action.

As project agency has submitted compliance to queries raised by Wildlife Institute of India, Dehradun, the wildlife conservation and mitigation plan is forwarded for further necessary action.

Encl : As above.



(M. Srinivasa Rao)

Principal Chief Conservator of Forests
(Wildlife), Maharashtra State

- Copy to :-
1. Director, Wildlife Institute of India, Dehradun for kind information.
 2. Additional Principal Chief Conservator of Forests & Nodal Office, M.S. for information and necessary further action.
 3. Additional Principal Chief Conservator of Forests (Wildlife) East, Nagpur for information.
 4. Conservator of Forests (T), Yavatmal for information and necessary action.
 5. M/s Yazdani International Private ltd. Bhuvneshwar for information.
Email ID- ashok@yazdaniinternational.com

**Office of the Principal Chief Conservator of Forests (Head of Forests Force),
Maharashtra State, Nagpur**

Additional Principal Chief Conservator of Forests & Nodal Officer, M.S.Nagpur
1st Floor, B Wing, Van Bhavan, Ramgiri Road, Civil Lines, Nagpur- 440 001
Tel.No.: 0712- 2556916 , E-mail: apccfnodal@mahaforest.gov.in

No. : Desk-17/FCA-S1/PID-145510/Yavatmal/362
Nagpur – 440 001, Dated 20/05/2025

To:
Principal Chief Conservator of Forests (Wildlife),
M.S.Nagpur

Sub :- Submission of Final Wildlife Conservation and Mitigation Plan for
Diversion of 146.996 ha. forest land under section 2(1)(ii) of the Van
(Sanrakshan Evam Samvardhan) Adhiniyam, 1980 for Integrated Coal
Mining and Post-Mining Reclamation in Marki Mangli II Coal Block,
Yavatmal District, Maharashtra in favour of M/s Yazdani
International Private Limited (Online No. FP/MH/MIN/145510/2021) –

Ref :- Letter from Vice President, Yazdani International Private Limited,
Bhubaneswar dated 8/5/2025

The request letter dated 8/5/2025 from the User Agency has been received in this office. A
copy of the same is enclosed herewith for necessary action.

You are therefore requested to take appropriate action in the matter and inform this office
accordingly.

Encl :- As above

(Handwritten signature)

(Naresh Zurmure)
Additional Principal Chief Conservator of Forests
& Nodal Officer, Nagpur

Copy to the M/s Yazdani International Private Limited, 7th Floor, C-Wing, Fortune Towers,
Chandrasekharpur, Bhubaneswar -- 751023 (Odisha) for information.

23(2)

(Handwritten initials)
21/5

(Handwritten signature)
22/5

(Handwritten signature)
22/5



Date: 08.05.2025

To

Additional Principal Chief Conservator of Forests (Nodal)
Government of Maharashtra,
Van Bhavan, Civil Lines
Nagpur 440001

Subject: Submission of Final Wildlife Conservation and Mitigation Plan for Diversion of 146.996 ha of Forest Land under Section 2(1)(ii) of the Forest (Conservation) Act, 1980 for Integrated Coal Mining and Post-Mining Reclamation in Marki Mangli II Coal Block, Yavatmal District, Maharashtra in favour of Yazdani International Pvt. Ltd. (Online Proposal No. FP/MH/MIN/145510/2021)

Reference:

1. Letter from AIG of Forests, MoEF&CC dated 25/02/2025
2. Letter from Wildlife Institute of India (WII), Dehradun dated 25/03/2025
3. Letter from the User Agency dated 02/04/2025

Respected Sir/Madam,

With reference to the above, the Assistant Inspector General of Forests, MoEF&CC, vide their letter dated 25/02/2025 (Ref. 1), has requested the submission of a Wildlife Conservation Plan, duly revised as per the suggestions of the Wildlife Institute of India (WII), Dehradun.

Subsequently, WII, vide letter dated 25/03/2025 (Ref. 2), provided their comments on the draft plan. The User Agency, vide letter dated 02/04/2025 (Ref. 3), submitted the revised Wildlife Management Plan (WMP), incorporating inputs from Dr. Habib Bilal, Scientist at WII.

The final Wildlife Conservation and Mitigation Plan has been updated to align with the requirements and suggested framework, including financial provisions. The plan includes mitigation measures at both project and forest division levels and outlines cost allocations to be deposited under CAMPA. Additionally, it incorporates contributions to the Wildlife Conservation Trust as per the directives of the Government of Maharashtra.

The final Wildlife Conservation and Mitigation Plan is now submitted along with an executive summary and the cost estimates of the Wildlife Conservation and Mitigation Plan. The same is enclosed for your ready reference and consideration for approval.

You may kindly note that the issuance of Stage-I Forest Clearance is pending for the endorsement of WII, as per the directive in Ref. 1 though it has been discussed and recommended in FAC held in August 2024 This in turn is holding up further statutory clearances including Environmental Clearance, Wildlife Clearance, and Lease Execution.

In the latest review meeting convened by the Ministry of Coal on 02/05/2025, representatives of MoEF&CC and the APCCF (Nodal) assured that the remaining formalities would be completed shortly.

It is reiterated that all further processing of EC, Lease execution and CTO etc. are on hold for want of stage I approval and impacting performance parameters issued by Ministry of Coal.

We, therefore, request you to kindly review the enclosed final Wildlife Conservation and Mitigation Plan, including its financial components, and forward it with your recommendation for endorsement by the Wildlife Institute of India as per the directives of the AIG, Forest.

Thanking you.

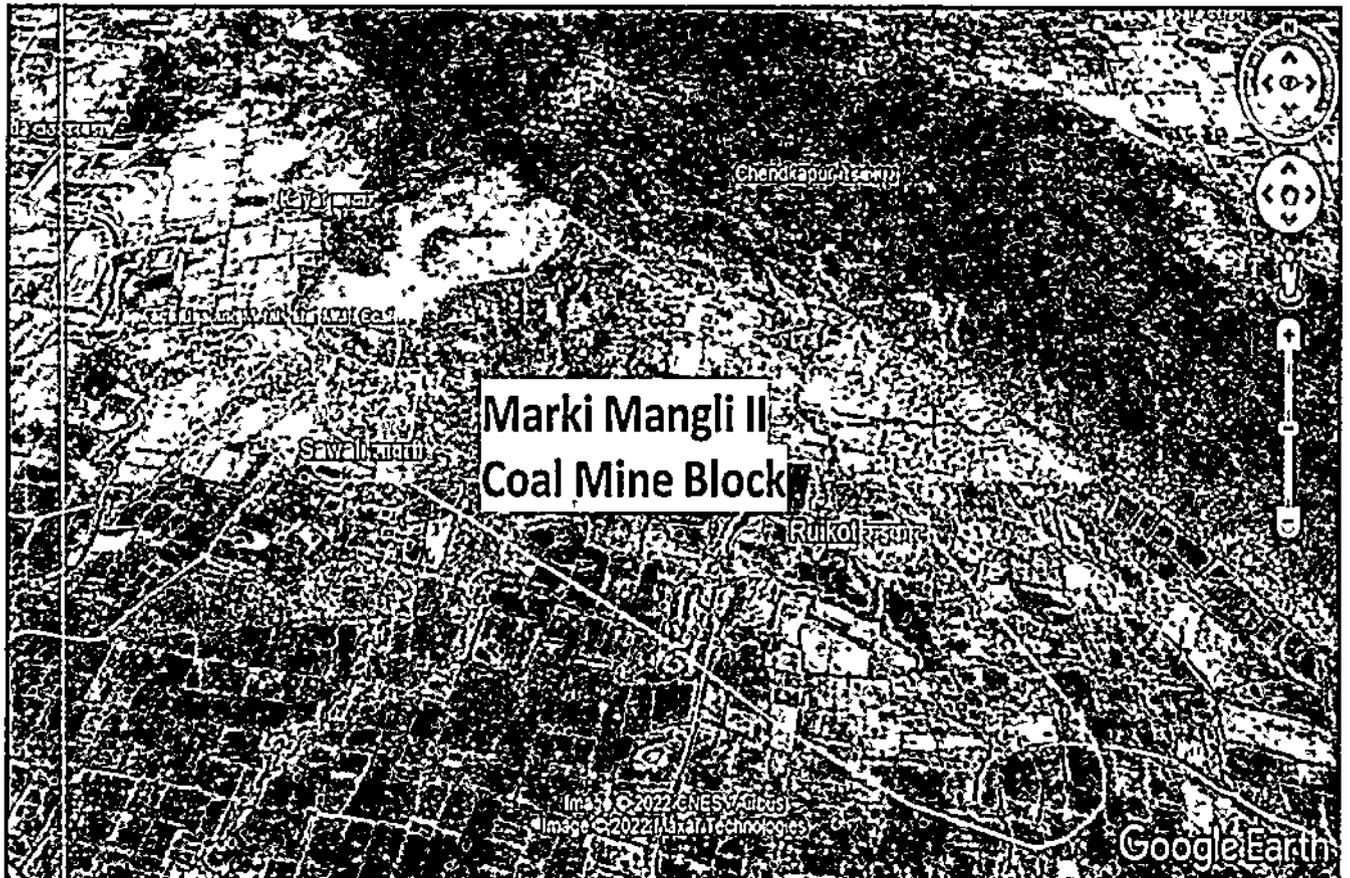


Yours sincerely,
Ashok Kumar Pani
Authorized Signatory
Yazdani International Pvt. Ltd.

Copy to:

1. Assistant Inspector General of Forests (MoEF&CC) – for information with a request to kindly issue stage I letter as per the provision mentioned above.
2. PCCF (WL) and CWL along with two sets of Wildlife Mitigation Plan for further action at your end
3. Director, Wildlife Institute of India, Dehradun with one hard copy for review and endorsement

**Wildlife Mitigation Plan for Marki Mangli II Coal Mine
(updated after incorporating the suggestions by WII dated
25/3/2025)**



Submitted to: DCF, Wildlife Pandarkawda

Prepared by: Dr. Manas Badge (PhD. Forest Ecology & Environment),
Natural Resources Management Consultant, Nagpur

Revised: 5/4/2025

Place: Nagpur



Yazdani
International (P) Ltd.
Steering success, anchoring credibility

To,

Date. 02 04 2025

The Principal Chief Conservator of Forest (Wildlife) & HoFF
Maharashtra State Van Shavan,
3rd Floor Ramgiri Road, Civil Lines
Nagpur- 440 001

Sub Reply to comments received from WII, Dehradun of the Wildlife Mitigation Plan for diversion of 146 996 ha forest land under section 2 (1) (ii) of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 for Integrated Coal Mining including post mine reclamation in Marki-Mangali II coal block in Yavatmal District of Maharashtra State in favour of Mis Yazdani International Private Limited (Online No FP/MH/MIN/14551 0/2021)-regarding

Ref.

- 1 Letter from WII dated 25/3/2025
- 2 Your letter to WII dated 09/02/2025 with revised WMP

We are in receipt of letter from WII under reference 1 and 2 above giving the comments and observations on the revised Wildlife Mitigation Plan submitted to WII. In this connection the revised report, incorporating suggestions, is being submitted for your kind compliance. The paragraph wise comments are also attached for quick understanding.

02.04.2025

Ashok Kumar Pani

Vice President

Authorised Signatory

YAZDANI INTERNATIONAL (P) LTD

Authorised Signatory

PTO

COMPLIANCES OF OBSERVATION/ COMMENTS OF WII DATED 25/3/2025

S. No.	Remarks on revised WMP (February 2025) by WII	Remarks on revised WMP (25 March 2025) by WII	Reply/ Compliances submitted by YIPL on remarks of WII raised on 25.03.25
1	<p>The list of faunal species is not comprehensive, includes only large common mammals/birds/herpetofauna, and omits smaller mammals</p> <p>Further the schedules under which these species are placed are not updated based on the revised WPA, 1972</p>	<p>The schedules are still not as per the 2022 amendment of the WPA, 1972 Further, several faunal species found in the region such as common palm civet, small Indian civet, rusty spotted cat have not been mentioned. Further, several errors have been made in the list of species Common names and vernacular names have been interchanged for many species. The common name of <i>Hyaena hyaena</i> has been given as wild dog</p>	<p>Schedules presented here are as per the 2022 Amendment of WPA, 1972 Act Those faunas, which are found/available in the study area are only mentioned in the Schedule furnished in the <u>Annexure-1</u>.</p> <p>The Annexure has been updated comprising faunal species such as Common Palm Civet on sr no 26, and small Indian civet on sr no. 37 of the <u>Annexure-1</u>. Rusty spotted cat species is not available in our study area. The list of flora and fauna available in the study area authenticated by DFO, Pandharkawd is already been furnished in the WMP. The common name of <i>Hyaena hyaena</i> has been Stipped Hyeana on sr no 14 of <u>Annexure -1</u></p> <p>Updated list is furnished in WMP on page number 58-65</p>
2	<p>In addition to being covered under the</p>	<p>The revision mentioned has not been</p>	<p>Yes it is true that total of 146 996 ha of</p>

	Approved Tiger Conservation Plan of Tadoba Andhari Tiger Reserve, the corridor falls within the modelled tiger corridor as per the publication "Telemetry based tiger corridors of Vidarbha Landscape,	made, and cannot be found on the said page (27, under section 3.1. Tiger Corridor of India)	forest land out of 339 467 ha of the proposed coal block for mining covered under the forest compartments which passes through compartments of forest land covered under approved Tiger Conservation Plan (TCP) of Tadoba Andhari Tiger Reserve (TATR) within the modelled tiger corridor as per the publication "Telemetry based tiger corridors of Vidarbha Landscape Details have been elaborated in Annexure 2 and also incorporated in page number 28-29 of WMP
3	A chapter on impacts of the mine on biodiversity (chapter 5) and one on mitigation measures for wildlife and biodiversity have been added (Chapter 9) However, these chapters lack detailed measures and plans Further, considering that the mine falls within the corridor area, a management plan specifically focused on maintaining the corridor function of the area i.e., maintaining animal movement, is noticeably missing	Adequate measures for noise and light pollution, forest fire prevention and spread of invasive species have not been mentioned Specific measures and their timelines to mitigate these impacts need to be part of the WMP	Details furnished in Annexure 3 for Measures for noise and light pollution, forest fire prevention and spread of invasive species and incorporated in WMP on page no 45-47
4	In addition to measures to control siltation (Page 36 of report), measures to check heavy metal contamination in the	Regular testing has been mentioned as a measure to control heavy metal and other types of water pollution The	The details of schedule and parameters for monitoring of all the environmental parameters furnished in Annexure 4 and

	wastewater from mining activities should be explicitly provided	schedule of testing and the parameters to be tested need to be added here	is added on page 47 of WMP
5	In addition to educating workers about wildlife in the area, awareness about legal and illegal activities as per the Wildlife (Protection) Act, 1972 should be created periodically Further, the report should explicitly state that "Project proponent will make sure that no labour camps are located in the mine area, as well as forest areas surrounding the mine"	In addition to educating workers about wildlife in the area, awareness about legal and illegal activities as per the Wildlife (Protection) Act, 1972 should be created periodically Further, the report should explicitly state that "Project proponent will make sure that no labour camps are located in the mine area, as well as forest areas surrounding the mine"	No further modifications are required as the revisions are adequate
6	In addition to checking siltation, the water from sedimentation tank should be tested for heavy metals and sulphides, as the proponents plan to use the water for green belt development If unchecked, the heavy metals and other pollutants may leach into the groundwater.	The schedule of testing and the parameters to be tested need to be added.	Environment Monitoring Programme for Key Parameters (Water) is given in Annexure 4 and added on page 47 of WMP
7	Measures for maintaining the corridor for movement/dispersal of wildlife is missing from the revised report	Measures for maintaining the corridor for movement/dispersal of wildlife is missing from the revised report	No further modifications are required as the revisions are adequate.
Comments on Additional Observations by WII			
8.	Under heading "Waste Management" on Page 34 (Chapter on Mitigation Measures for Environmental Impact), the various types of wastes anticipated to be generated have been listed. However, an explicit plan to manage this waste is missing	An explicit plan to manage different kinds of solid waste is still missing Instead of "proper handling and management is suggested to avoid such contamination/pollution", a specific plan to handle different kinds of solid waste should be detailed.	Specific plan for handling the solid waste which is Overburden and which shall be utilised in backfilling of mine void is furnished in Annexure 5 and also incorporated in WMP on page 36-38

9	In Annexure 6 (Financial Provision for Mitigation of Impact on Wildlife due to Mining Activity), adequate budgetary provisions for repair and maintenance of the chain-link fence (SN 1) and cattle trenches (SN 2) should be made for subsequent years as well (e.g., on 3 rd and 5 th year) to ensure the effectiveness of the measures	User Agency have included installation and maintenance costs of chain-link fence and cattle trenches in year 1. Annual maintenance costs and details for the next 5 years should be certified by the local DFO	Budget has been updated indicating Annual Maintenance Cost for next 5 years incorporating the provision for annual maintenance of fencing and cattle trenches etc and a copy of budget duly approved by DFO is enclosed as Appendix..... in WMP on page and enclosed as Annexure 6 with the compliance report
10.	Plantation of edible/fruited trees for herbivores should not be done too close to the mining area (Section "Plantation in Buffer Zone" Page 37)	Plantation of edible/fruited trees for herbivores should not be done too close to the mining area (Section "Plantation in Buffer Zone" Page 37).	No further modifications are required as the User Agency have proposed plantation activity in collaboration with Forest Department in the revision
11	There is no mine closure plan, and details of previous mines (closed or functional in the area, if any)	The mine closure plan needs to be certified by the local DFO	The mine plan and mine closure plan has been approved by Ministry of Coal. Further, copy of the approved mine closure plan certified by DFO is enclosed Annexure 12 on page no. 88-89 of WMP vis-à-vis enclosed separately with the WMP as Appendix.... See Annexure 7 attached with the compliance report
12.		Additionally, as per the Wildlife Management Plan submitted for review in December 2024, "Incidentally mine area is well connected to pucca road and hence no new road is required to be constructed for transportation of ore"	Mine area is well connected to pucca road and hence no new road is required to be constructed for transportation of ore. It is proposed to strengthen the existing road only by User Agency/Allottee for ore

Annexure 1:

Faunal Diversity from study area (Core zone & Buffer Zone)

Sr. No.	Scientific name	Common name	Schedules of Wildlife Act/ IUCN Status
1	<i>Anathana elliofi</i>	Indian/Madras Tree Shrew	LC / II
2	<i>Antilope cervicapra</i>	Blackbuck	VU / I
3.	<i>Axis axis</i>	Spotted Deer	LC / II
4	<i>Bos gaurus</i>	Indian Gaur / Bison	VU / I
5	<i>Boselaphus tragocamelus</i>	Blue Bull / Nilgai	LC / II
6	<i>Canis aureus</i>	Golden Jackal	LC / I
7	<i>Canis lupus pallipes</i>	Indian Wolf	VU / I
8	<i>Rusa unicolor</i>	Sambar	LC / I
9	<i>Felis chaus</i>	India Jungle Cat	NT / I
10	<i>Funambulus pennanti</i>	Five striped Squirrel	LC / NL
11	<i>Herpestes auropunctatus</i>	Small Indian mongoose	LC / I
12	<i>Herpestes edwardsi</i>	Common mongoose	LC / I
13	<i>Hipposideros ater</i>	Dusky Leaf-nosed bat	LC / NL
14	<i>Hyaena hyaena</i>	Striped Hyaena	DD / I
15	<i>Hystrix indica</i>	Indian crested porcupine	LC / I
16	<i>Lepus nigricollis</i>	Indian Hare	LC / II
17	<i>Megaderma lyra</i>	Indian false vampire bat	LC / NL
18	<i>Melursus ursinus</i>	Sloth Bear	VU / I
19.	<i>Miniopterus schreibersi</i>	Schreiber's Long-fingered bat	LC / NL
20	<i>Moschiola meminna</i>	Mouse Deer	VU / I
21.	<i>Muntiacus muntjak</i>	Barking Deer	LC / I
22	<i>Mus philipsi</i>	Wroughton's small spiny Mouse	LC / NL
23	<i>Mus platythrix</i>	Indian Brown spiny mouse	LC / NL
24	<i>Panthera pardus</i>	Leopard	VU / I
25.	<i>Panthera tigris</i>	Tiger	EN / I
26	<i>Paradoxurus hermaphroditus</i>	Common Palm civet	LC / I
27	<i>Pipistrellus dormeri</i>	Dormer's bat	LC / NL
28	<i>Pipistrellus coromandra</i>	Coromandel Pipistrelle	LC / NL
29	<i>Prionailurus bengalensis</i>	Leopard Cat	NT / I
30	<i>Pteropus giganteus</i>	Indian flying fox	LC / II
31.	<i>Rhinolophus lucius</i>	Great Eastern Horseshoe bat	NT / NL
32.	<i>Rhinopoma hardwickeri</i>	Mouse-tailed bat	LC / NL
33	<i>Semnopithecus entellus</i>	Hanuman Langur	LC / II
34	<i>Tatera indica</i>	Indian Antelope Rat	LC / NL
35	<i>Tetracerus quadricornis</i>	Four Horned Antelope	VU / I
36	<i>Vandeleura oleracea</i>	Indian Long-tailed Tree Mouse	LC / NL

37	<i>Viverrucula indica</i>	Small Indian civet	NT / I
38	<i>Vulpes bengalensis</i>	Bengal Fox	LC / I

AVES:

Sr. No.	Scientific name	Common name	Schedules of Wildlife Act/ IUCN Status
1	<i>Accipiter badius</i>	Shikra	LC / I
2	<i>Actitis hypoleucos</i>	Common Sandpiper	LC / II
3	<i>Alauda gulgula</i>	Small Skylark	LC / II
4	<i>Alcedo atthis</i>	Small Blue Kingfisher	LC / II
5	<i>Amandava amandava</i>	Red Munia	LC / II
6	<i>Amandava formosa</i>	Green Munia	LC / I
7	<i>Amaurornis phoenicurus</i>	White-breasted Waterhen	LC / II
8	<i>Anas crecca</i>	Common Teal	LC / II
9	<i>Anas poecilorhyncha</i>	Spot-billed Duck	LC / II
10	<i>Anas lomus oscitans</i>	Asian Open Bill Stork	LC / II
11	<i>Anhinga melanogaster</i>	Darter/Snake Bird	LC / II
12	<i>Anthus rufulus</i>	Paddy-field Pipit	LC / II
13	<i>Apus affinis</i>	Indian House Swift	LC / II
14	<i>Ardea cinerea</i>	Grey Heron	LC / II
15	<i>Ardea purpurea</i>	Purple Heron	LC / II
16	<i>Ardeola grayii</i>	Indian Pond Heron	LC / II
17	<i>Aythya fuligula</i>	Tufted Pochard	LC / II
18	<i>Aythya nyroca</i>	Feruginous Pochard	LC / II
19	<i>Bubulcus ibis</i>	Cattle Egret	LC / II
20	<i>Burhinus oedicephalus</i>	Stone-Curlew	LC / II
21	<i>Cacomantis passerinus</i>	Plaintive Cuckoo	LC / II
22	<i>Casmerodius albus</i>	Eastern Large Egret	LC / II
23	<i>Celeus brachyurus</i>	Rufous Woodpecker	LC / II
24	<i>Ceryle rudis</i>	Lesser Pied Kingfisher	LC / II
25	<i>Charadrius dubius</i>	Little -Ringed Plover	LC / II
26	<i>Chrysomma sinense</i>	Yellow-eyed Babbler	LC / II
27	<i>Ciconia episcopus</i>	White-necked Stork	LC / II
28	<i>Cisticola juncidis</i>	Streaked Fantail Warbler	LC / II
29	<i>Clamator jacobinus</i>	Pied-Crested Cuckoo	LC / II
30	<i>Columba livia</i>	Blue Rock Pigeon	LC / II
31	<i>Copsychus saularis</i>	Oriental Magpie-Robin	LC / II
32	<i>Coracias benghalensis</i>	Indian Roller	LC / II
33	<i>Coracina macei</i>	Large Cuckoo Shrike	LC / II
34	<i>Corvus macrorhynchos</i>	Indian Jungle Crow	LC / II
35	<i>Corvus splendens</i>	Indian House Crow	LC / II
36	<i>Coturnix coturnix</i>	Rain Quail	LC / II
37	<i>Coturnix coturnix</i>	Common Quail	LC / II
38	<i>Cuculus canorus</i>	Common Cuckoo	LC / II
39	<i>Cuculus micropterus</i>	Indian Cuckoo	LC / II
40	<i>Cypsiurus batesianus</i>	Palm Swift	LC / II

Sr. No.	Scientific name	Common name	Schedules of Wildlife Act/ IUCN Status
41	<i>Dendrocopos mahrattensis</i>	Yellow fronted Pied Woodpecker	LC / II
42	<i>Dendrocopos nanus</i>	Brown-capped Pygmy Woodpecker	LC / II
43	<i>Dendrocygna javanica</i>	Lesser Whistling Duck	LC / II
44	<i>Dicrurus macrocercus</i>	Black Drongo	LC / II
45	<i>Dinopium benghalense</i>	Lesser Golden-backed Woodpecker	LC / II
46	<i>Dumetia hyperythra</i>	Rufous bellied Babbler	LC / II
47	<i>Egretta garzetta</i>	Little Egret	LC / II
48	<i>Eremopternx gnsea</i>	Ashy-crowned Sparrow Lark	LC / II
49	<i>Eudynamys scolopacea</i>	Asian Koel	LC / II
50	<i>Falco tinnunculus</i>	Common Kestrel	LC / II
51	<i>Francolinus pictus</i>	Painted Francolin	LC / II
52	<i>Francolinus pondicerianus</i>	Grey Francolin	LC / II
53	<i>Fulica atra</i>	Common Coot	LC / II
54	<i>Galanda cnstata</i>	Crested Lark	LC / II
55	<i>Galanda deva</i>	Sykes's Crested Lark	LC / II
56	<i>Gallicrex cinerea</i>	Water Cock	LC / II
57	<i>Gallinago gallinago</i>	Common Snipe	LC / II
58	<i>Gallinula chloropus</i>	Common Moorhen	LC / II
59	<i>Galloperdix spadicea</i>	Red Spur-Fowl	LC / II
60	<i>Gallus sonneratii</i>	Grey Jungle Fowl	LC / I
61	<i>Halcyon capensis</i>	Stork-billed Kingfisher	LC / II
62	<i>Halcyon smymensis</i>	White-breasted Kingfisher	LC / II
63	<i>Hemiprocne coronata</i>	Crested Tree Swift	LC / I
64	<i>Hierococcyx vanus</i>	Common hawk-cuckoo	LC / II
65	<i>Himantopus himantopus</i>	Black-winged Stilt	LC / II
66	<i>Hirundo concolor</i>	Dusky Crag Martin	LC / II
67	<i>Hirundo daurica</i>	Red rumped Swallow	LC / II
68	<i>Hirundo fluvicola</i>	Streak -throated Swallow	LC / II
69	<i>Hirundo rustea</i>	Common Swallow	LC / II
70	<i>Hirundo smithii</i>	Wire-tailed Swallow	LC / II
71	<i>Hydrophasianus chirurgus</i>	Pheasant-tailed Jacana	LC / II
72	<i>Ammomanes phoenicurus</i>	Rufous-tailed Finch-Lark	LC / II
73	<i>Lonchura punctulata</i>	Spotted Munia	LC / II
74	<i>Megalaima haemacephala</i>	Coppersmith Barbet	LC / II
75	<i>Megalaima zeylanica</i>	Brown-headed Barbet	LC / II
76	<i>Merops orientalis</i>	Small Bee- eater	LC / II
77	<i>Merops philippinus</i>	Blue-Tailed bee-eater	LC / II
78	<i>Mesophoyx intermedia</i>	Median Egret	LC / II
79	<i>Metopidius indicus</i>	Bronze-winged Jacana	LC / II
80	<i>Milvus migrans</i>	Black kite	LC / II
81	<i>Motacilla alba</i>	White Wagtail	LC / II

Sr. No.	Scientific name	Common name	Schedules of Wildlife Act/ IUCN Status
82	<i>Motacilla cinerea</i>	Grey Wagtail	LC / II
83	<i>Motacilla maderaspatensis</i>	Large Pied Wagtail	LC / II
84	<i>Muscicapa daunea</i>	Asian Brown Flycatcher	LC / II
85	<i>Nectannia asiatica</i>	Indian Purple Sunbird	LC / II
86	<i>Nettapus coromandelianus</i>	Cotton Teal	LC / II
87	<i>Numenius arquata</i>	Curlew	LC / II
88	<i>Ocyrceros birostris</i>	Indian Grey Hombill	LC / II
89	<i>Orthotomus sutorius</i>	Indian Tailor Bird	LC / II
90	<i>Passer domesticus</i>	Indian House Sparrow	LC / II
91	<i>Pavo cristatus</i>	Peacock	LC / I
92	<i>Perdica asiatica</i>	Jungle Bush Quail	LC / II
93	<i>Pencrocotus cinnaimomeus</i>	Small Minivet	LC / I
94	<i>Pencrocotus lammeus</i>	Scarlet Minivet	LC / II
95	<i>Phalacrocorax niger</i>	Little Cormorant	LC / II
96	<i>Phylloscopus collybita</i>	Common Chiff Chaff	LC / II
97	<i>Pitta brachyura</i>	Indian Pitta	LC / II
98	<i>Ploceus philippinus</i>	Baya Weaver	LC / II
99	<i>Porphyrio porphyrio</i>	Purple Moorhen	LC / II
100	<i>Pnnia socialis</i>	Ashy Pnnia	LC / II
101	<i>Psittacula kramen</i>	Rose-Ringed Parakeet	LC / II
102	<i>Pterocles indicus</i>	Painted Sandgrouse	LC / II
103	<i>Pycnonotus cafer</i>	Red-vented Bulbul	LC / II
104	<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul	LC / II
105	<i>Rhipidura albicollis</i>	White-throated Fantail Flycatcher	LC / II
106	<i>Netta rufina</i>	Red-crested Pochard	LC / II
107	<i>Rostrata benghalensis</i>	Greater Painted Snipe	LC / II
108	<i>Sarkidiornis melanotus</i>	Comb Duck	LC / II
109	<i>Saxicola caprata</i>	Pied Bushchat	LC / II
110	<i>Saxicoloides julicata</i>	Indian Robin	LC / II
111	<i>Sireptopelia decaocto</i>	Eurasian Collared Dove	LC / II
112	<i>Sterna aurantia</i>	River Tern	LC / I
113	<i>Streptopelia chinensis</i>	Spotted dove	LC / II
114	<i>Streptopelia senegalensis</i>	Little brown Dove	LC / II
115	<i>Sturnus pagodarum</i>	Brahminy Starling	LC / II
116	<i>Tactybaptus ruficollis</i>	Little Grebe	LC / II
117	<i>Tadorna ferruginea</i>	Brahminy Shelduck	LC / II
118	<i>Tephrdomis pondicerianus</i>	Common Wood shnke	LC / II
119	<i>Terpsiphone paradisi</i>	Asian Paradise- Flycatcher	LC / II
120	<i>Tringa glareola</i>	Wood Sandpiper	LC / II
121	<i>Tringa nebularia</i>	Common Green Shank	LC / II
122	<i>Tringa ochropus</i>	Green Sandpiper	LC / II
123	<i>Tringa totanus</i>	Common Red Shank	LC / II

Sr. No	Scientific name	Common name	Schedules of Wildlife Act/ IUCN Status
124	<i>Turdoides caudatus</i>	Common Babbler	LC / II
125	<i>Turdoides malcolmi</i>	Large Grey Babbler	LC / II
126	<i>Turdoides striatus</i>	Peninsular Jungle Babbler	LC / II
127	<i>Turnix suscitator</i>	Common Buttonquail	LC / II
128	<i>Upupa epops</i>	Common Hoopoe	LC / II
129	<i>Vanellus indicus</i>	Red-wattled Lapwing	LC / II
130	<i>Vanellus malabaricus</i>	Yellow-wattled Lapwing	LC / II
131	<i>Zoothera citrina</i>	Orange-headed Thrush	LC / II
132	<i>Zosterops palpebrosa</i>	Oriental White Eye	LC / II

HERPETOFAUNA:

Sr. No.	Scientific name	Common name	Schedules of Wildlife Act/ IUCN Status
1	<i>Argyrogena fasciolatus</i>	Banded racer	NT / NL
2.	<i>Boiga irgonala</i>	Cat snake	NT / NL
3	<i>Bungarus caeruleus</i>	Common Indian Krait	LC / NL
4	<i>Calotes versicolor</i>	Indian garden lizard	LC / NL
5	<i>Cyrtodactylus collegalensis</i>	South Indian Rock Gecko	NT / NL
6	<i>Elaphe helena</i>	Trinket Snake	NT / NL
7	<i>Hemidactylus frenatus</i>	Titchy House Gecko	LC / NL
8	<i>Lycodon aulicus</i>	Common wolf snake	LC / IV
9	<i>Mabuya beddomii</i>	Common skink	LC / NL
10	<i>Mabuya cannata</i>	Common Indian skink	LC / NL
11	<i>Mabuya innotata</i>	Bronzy-olive skink	LC / NL
12.	<i>Mabuya macularia</i>	Little skink	DD/ NL
13	<i>Naja naja</i>	Spectacled Cobra	LC / I
14	<i>Psammophilus blanfordanus</i>	Common Indian rock lizard	LC / NL
15.	<i>Ptyas mucosus</i>	Rat Snake	LC / I
16	<i>Python molurus</i>	Rock Python	NT / I
17	<i>Ramphotyphlops braminus</i>	Common Blind snake	VU / II
18	<i>Varanus bengalensis</i>	Bengal Monitor Lizard	LC / I
19	<i>Vipera russelli</i>	Russel's Viper	VU / I
20	<i>Fowlea piscator</i>	Checkered keelback snake	NT / I

Amphibians

Sr. No.	Scientific name	Common name	Schedules of Wildlife Act/ IUCN Status
1	<i>Bufo melanostictus</i>	Common Indian Toad	NE / NL
2	<i>Bufo stolicus</i>	Marbled toad	NE / NL
3	<i>Euphyctis cyanophlyctis</i>	Skipper Frog	NE / NL
4	<i>Hoplobatrachus crassus</i>	Jerdon's Bull Frog	NE / NL
5	<i>Hoplobatrachus tigerrus</i>	Indian Bull Frog	NE / II
6	<i>Limnonectes limnochans</i>	Indian Cricket Frog	NE / NL
7	<i>Microhyla ornata</i>	Ornate Microhylid	NE / NL
8	<i>Polypedates maculatus</i>	Common Tree Frog	NE / NL

PISCES:

Sr No	Scientific name	Common name	IUCN STATUS
1	<i>Ambasis nama</i>	Indian glassy fish	NA
2	<i>Ambasis ranga</i>	Indian glassy fish	NA
3	<i>Banlius barna</i>	River carp banl	LC
4	<i>Catla catla</i>	Major Carp	LC
5	<i>Channa striatus</i>	Banded snake head	LC
6	<i>Cirrhinus mrigala</i>	Major Carp	LC
7	<i>Clarus batracus</i>	Maaur	NA
8	<i>Cyprinus carpio</i>	Cirila	VII
9	<i>Gambusia affinis</i>	Mosquito fish	LC
10	<i>Glossogobius aureus</i>	Tank nabi	NA
11	<i>Heteropneustes fossilis</i>	Stinging cat fish	LC
12	<i>Labeo rohita</i>	Common carp	LC
13	<i>Labeo calbasu</i>	Calbasu	LC
14	<i>Mastacembelus armatus</i>	Spiny eel	LC
15	<i>Mystus cavasius</i>	Cat fish	LC
16	<i>Mystus seenghala</i>	Gangaic mystus	LC
17	<i>Nandus nandus</i>	Leaf fish	LC
18	<i>Osteobrama cotia</i>	Cotia	LC
19	<i>Punctius amphibious</i>	Scarlet Banded barb	NA
20	<i>Rita nia</i>	Rita	LC
21	<i>Salmostoma bacaila</i>	Silver fish	LC
22	<i>Tor khudree</i>	Deccan Mahaseer	LC
23	<i>Xenentodon cancilla</i>	Needle fish	LC

BUTTERFLIES:

Sr. No.	Scientific name	Common Name	Family	IUCN STATUS
1	<i>Aradne merone</i>	Common castor	Nymphalidae	NA
2.	<i>Catopsilia piranthe</i>	Mottled emigrant	Pieridae	NA
3	<i>Catopsilia pomona</i>	Common emigrant	Pieridae	NA
4	<i>Cepora nerissa</i>	Common gull	Pieridae	NA
5	<i>Chilades pandav</i>	Plain cupid	Hesperiidae	NA
6	<i>Danaus chrysippus</i>	Plain tiger	Nymphalidae	LC
7	<i>Euploea core</i>	common indian crow	Nymphalidae	LC
8	<i>Eurema hecabe</i>	Common grass Yellow	Pieridae	NA
9	<i>Hypolimnas misippus</i>	DANNAID EGG FLY	Nymphalidae	NA
10	<i>Junonia anthya</i>	Blue pansy	Nymphalidae	NA
11	<i>Junonia iphita</i>	Chocolate pansy	Nymphalidae	NA
12.	<i>Junonia lemonias</i>	Lemon pansy	Nymphalidae	NA
13	<i>Leptotes plinius</i>	Zebra blue	Lycaenidae	NA
14	<i>Melanitis leda</i>	Common evening brown	Nymphalidae	LC
15.	<i>Pachliopta aristolochiae</i>	Common rose	Papilionidae	LC
16.	<i>Papilio demoleus</i>	Lime	Papilionidae	NA
17	<i>Papilio polytes</i>	Common mormon	Papilionidae	NA
18	<i>Prosotas nora</i>	common line blue	Hesperiidae	NA
19	<i>Tirumala limniace</i>	Blue tiger	Nymphalidae	NA
20	<i>Pachliopta hector</i>	Crimson Rose	Papilionidae	LC
21	<i>Virachola isocrates</i>	Guava Blue	Lycaenidae	II
22.	<i>Castalius rosomon</i>	Common pierrot	Lycaenidae	NA
23	<i>Rapala manea</i>	Slate Flash	Lycaenidae	LC
24	<i>Synthia cardui</i>	Painted Lady	Nymphalidae	NA
25	<i>Ypthima asterope</i>	Common Three Ring	Nymphalidae	NA
26.	<i>Catopsilia pomona</i>	Common emigrant	Pieridae	NA
27	<i>Cepora nerissa</i>	Common Gull	Pieridae	NA
28	<i>Eurema hecabe</i>	Common Grass yellow	Pieridae	NA
29	<i>Danaus chrysippus</i>	Plain Tiger	Nymphalidae	NA
30	<i>Danaus genutia</i>	Striped Tiger	Nymphalidae	NA
31.	<i>Euploea core</i>	Common crow	Nymphalidae	NA
32	<i>Junonia lemonias</i>	Lemon Pansy	Nymphalidae	NA
33	<i>Junonia orithya</i>	Blue Pansy	Nymphalidae	NA
34	<i>Melanitis leda</i>	Common evening brown	Nymphalidae	NA
35	<i>Hypolimnas bolina</i>	Great eggfly	Nymphalidae	NA
36	<i>Tirumala septentrionis</i>	Dark Blue Tiger	Nymphalidae	NA

INSECTS

Sr. No.	Scientific name	Common name	IUCN Status
1	<i>Poduridae</i>	Podura	LC
2	<i>Blatta orientalis</i>	Cockroach	LC
3	<i>Mantodea</i>	Mantis	LC
4	<i>Chinavia hilans</i>	Green Stink Bugs	LC
5	<i>Pyrrhocoridae</i>	Red Bugs	LC
6	<i>Formucidae</i>	Ant	LC
7	<i>Solenopsis spp</i>	Red Ant (fire Ant)	LC
8	<i>Paraponera clavata</i>	Bullet Ant	LC
9	<i>Apis dorsata</i>	Giant Honey Bee	LC
10	<i>Apis dorsata</i>	Rock Bee	LC
11	<i>Apis spp.</i>	Honey Bee	LC
12	<i>Andrenidae</i>	Bee	LC
13	<i>Bombus spp.</i>	Black Bee	LC
14	<i>Vespidae</i>	Yellow Wasps	LC
15	<i>Ichneumonidae</i>	Wasps	LC
16	<i>Chilomenes s. maculate</i>	Ladybird	LC
17	<i>Meloidae</i>	Blister Beetle	LC
18	<i>Honotricha serrate</i>	Grubs	LC


 02.04 2025
 Ashok Kumar Pant
 Vice President
 Authorised Signatory

For YAZDANI INTERNATIONAL (P) LTD.

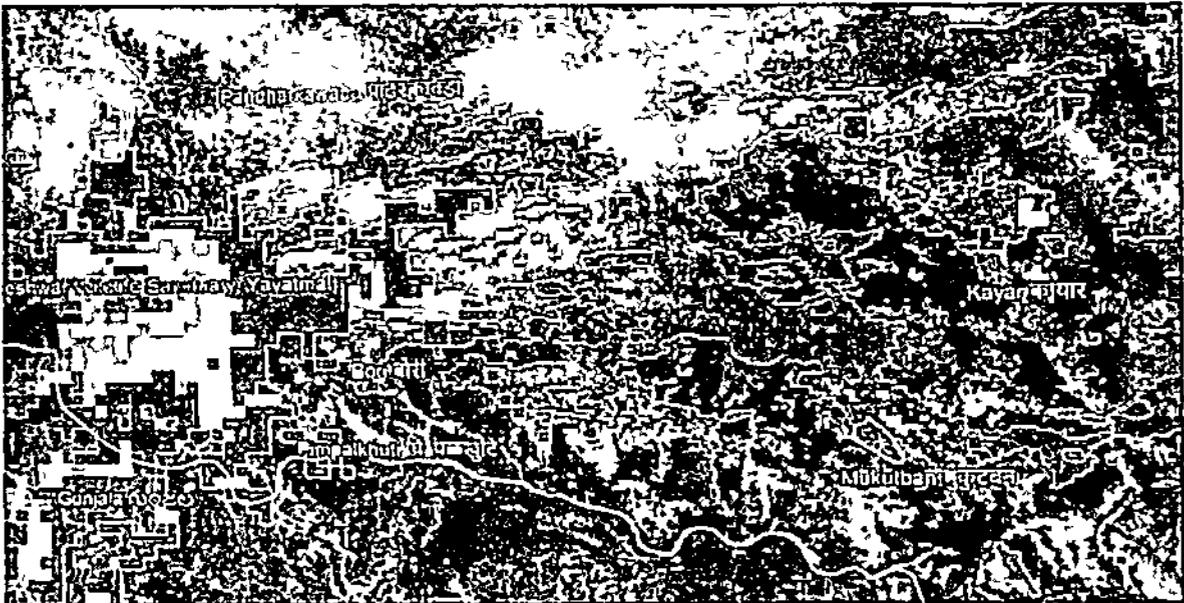
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Annexure 2:

Location of proposed mine along the Identified Tiger Corridor under the 'Telemetry based tiger corridors of Vidarbha Landscape, Maharashtra, India'

Wildlife Institute of India has published a report titled "Telemetry based Tiger Corridors of Vidarbha Landscape, Maharashtra, India" (WII Report) This report is about the delineation/identification of critical tiger corridors in Vidarbha Landscape of Maharashtra. The report is based on monitoring of tiger movement over a long period of time, from 2015 to 2020 which has identified 37,067 square kilometres of tiger movement corridors within the 97,321 square kilometre landscape, revealing the importance of agricultural lands and human-dominated areas for tiger movement. This area with significant Landscape acts as a crucial link between central and southern Indian tiger populations, facilitating gene flow and population viability.

Yes it is true that total of 146.996 ha of forest land out of 339.467 ha of the proposed coal block mining covered under the forest compartments passes through compartments of forest land which are covered under approved Tiger Conservation Plan (TCP) of Tadoba Andhari Tiger Reserve (TATR) within the modelled tiger corridor as per the publication "Telemetry based tiger corridors of Vidarbha Landscape"



Boundary shown in yellow is the location of proposed mine along the Identified Tiger Corridor under the 'Telemetry based tiger corridors of Vidarbha Landscape, Maharashtra, India'


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Vice President
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Measures for noise and light pollution, forest fire prevention and spread of invasive species

- **Forest Fire prevention:** Fire hazard needs to be prevented for survival of Forest as well as Wildlife. Steps will be taken for prevention of forest fire. The user agency shall create awareness among the truck drivers and their labours not to through cigarette of bidi butts in the forest area.

This being a tropical forest with open scrub dominant with grass and sparse shrubs and forest with moist deciduous and dry deciduous forest type, it is prone to fire each year between mid-February to June (until onset of rains). Fire lines are to be cleared around the project area, inside and along the forest boundaries, in addition to cleaning along the roads, footpaths and nullahs to prevent fire. This can be part of the duties of the temporary guards mentioned in the section on tiger and previous section. It is important that these guards should be trained to fight fire and also carry out the fire line clearance/development and maintenance and use of different fire fighting equipments. These fire fighters should be provided with appropriate fire fighting equipments / tools including wireless sets. Based on discussion with the local people and forest department, forest fire map must be prepared so as to identify areas which are prone to frequent fire that are to be treated under the above said management plans. This can be a short project as part of research and monitoring.

- **Invasive Species Management:** An invasive species is an introduced species that harms its new environment. Invasive species adversely affect habitats and bioregions, causing ecological, environmental, and/or economic damage. The major invasive floral species found in the study area are *Lantana camara*, *Parthenium hysterophorus* and *Prosopis juliflora*. The most effective method of managing these species are manual uprooting of *Lantana* and *Parthenium* in core and buffer areas and using heavy machinery for *Prosopis* removal, especially in grassland ecosystems. Post removal of invasive it is important to replant native species to restore ecosystem balance and assisted natural regeneration in degraded areas. Community Participation & Awareness also plays an important role in controlling the invasive species. Engaging local communities, especially through eco-development committees, will help in invasive species removal. Conducting awareness programs on the ecological impacts of invasive plants.
- **Control of Light pollution:** Light pollution near mining areas can negatively impact local wildlife, human health, and even the efficiency of mining operations. To mitigate these effects, the following measures can be implemented- Use fully shielded, downward-facing lights to prevent light from scattering into the sky and surrounding environment, Use low-intensity, warm-colored LED lights to reduce blue light emissions, which are more disruptive to wildlife, Focus lighting only on necessary work areas and avoid over-illumination of roads and non-essential spaces, Use glare-reducing fixtures and visors to limit

excessive brightness that can disturb workers and animals, Plant trees and vegetation buffers around the site to block light from spreading to nearby habitats, Limit artificial lighting during late-night hours in non-essential areas, Educate workers and nearby communities on the importance of reducing light pollution

- Control of Noise pollution Operation of heavy machinery and blasting in the mining area produces large amount of sound which may cause disturbance to wild animals. Periodic maintenance of these machines is important to control the noise levels No mining, blasting or transportation will be allowed from 7 pm to 7 am Control Blasting may be resorted and need to be monitoring on daily basis and keep record for surveillance Development of green belt along the project area is an effective strategy to control the noise pollution It is suggested that a green belt needs to be developed in the safety zone of 7.5m along the mine lease area Only native trees must be planted in the safety area No mining operation must be carried out in this zone; rather dense plantation of evergreen trees must be carried out This will provide a natural screen between the mine and the adjoining area thus reducing the nuisance caused by noise and dust in the vicinity of the mine. Some additional measures to reduce noise pollution are as follows:
 - Secondary blasting will be minimized to the extent possible;
 - Systematic blasting with proper spacing, burden and stemming will be carried out,
 - Minimum quantity of detonating fuse will be consumed by using non-electrical initiation system,
 - Blasting will be carried out during favorable atmospheric conditions and also when human activities are at their minimum,
 - Prime movers/diesel engines will be properly maintained;
 - A buffer barrier of tree belt will be provided in phased manner along the periphery of the mine to attenuate noise,
 - At transfer points, free fall material will be minimized and suitable lining material will be provided
 - Isolation/enclosure of noisy machines/equipment, wherever possible
 - Reducing idling time of machines/equipments.
 - Provision of enclosures, silencers, etc to the possible extent to control noise propagation
 - Use of adequate silencers and practising speed limit for material transport vehicles


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Annexure 4:

Environment Monitoring Programme for Key Parameters (Water)

The details of the suggested Environment Monitoring Programme and The schedule of testing and the parameters to be tested needed for Marki Mangli II Coal Mining Project are provided in Table below

SN	Particular	Monitoring Frequency	Sampling Duration	Monitoring Parameters
1	Surface Water 1) Dadhani Nala (D/S)	Once in 3 month	Grab	As per the parameters specified under IS 2296 (Class-C) As per the parameters specified under IS 10500 - 2012
2.	2) Dadhani Nala(U/S)	Once in 3 month	Grab	
3	3) Penganga River	One/ month	One time	
4	Ground water 5 Stations in Adjoining Villages	Once in 3 month	One time	Ground water quality parameters
5	Well or Bore Wells or piezometers in Mine Lease (2 locations) and surrounding areas (5 locations)	Once in a season	One time	Static water level, pumped water level, seasonal fluctuation and other relevant parameters
6	Mine Effluents	Once in a month	24 hour composite	As per EPA guidelines, 1986

The parameters required to be tested during operation of mine are tested by an Environmental team during field survey for preparation of EIA studies (pre project) and their results are given below for perusal

Physical Parameters:

- **pH Value:** The pH values of all ground water samples ranged between 7.18 to 7.50 pH, whereas those of surface water samples varied between 7.77 to 8.47. These values are within the acceptable pH range of 6.5 to 8.5 as per IS 10500 2012 standards for drinking water

- **Ambient Temperature:** The ambient temperature encompassing all ground water samples varied from 26.7 to 27.2°C while that of surface water samples varied from 27.4 to 27.9°C
- **Turbidity:** Turbidity of all ground water samples observed in the range of 2.2 to 3.5 NTU was lower than the permissible limit (5 NTU) as prescribed in IS 10500 – 2012 and in surface water samples in the range of 6 to 9

Chemical Parameters

- **DISSOLVED Oxygen:** All surface water samples showed dissolved oxygen levels ranging from 5.6 to 6.0 mg/l which is good as expected
- **DISSOLVED Solids:** All ground water samples showed dissolved solids concentration from 380 to 668 mg/l, which are below permissible limit of 2000 mg/l as per IS 10500:2012. Whereas all surface water samples showed dissolved solids ranging from 248 to 298 mg/l which are below permissible limit of 1500 mg/l as per IS 2296 (Class C) for surface water quality standards
- **SUSPENDED Solids:** All ground water samples showed suspended solids concentration from 7.9 to 23.7 mg/l whereas all surface water samples showed suspended solids concentration ranging from 18.8 to 65.5 mg/l
- **CHLORIDES:** The chloride concentrations in all ground water samples were 39.2 to 185.8 mg/l, the values are below acceptable limit of 250 mg/l as prescribed in IS 10500:2012. Chloride concentrations were 40.1 to 60.8 mg/l in surface water which are below permissible limit of 600 mg/l as per IS 2296 (Class C) for surface water quality standards
- **SULPHATES:** The sulphate concentrations in all ground water samples were 26.8 to 104.2 mg/l, These values are below acceptable limit of 200 mg/l as prescribed in IS 10500:2012. In surface water samples sulphate concentrations were 14.4 to 44.5 mg/l which are below permissible limit of 400 mg/l as per IS 2296 (Class C) for surface water quality standards
- **Total Hardness:** All ground water samples showed hardness values ranging from 237 to 418, which are within the permissible limit of 600 mg/l as permissible in IS 10500:2012 and in surface water samples total hardness showed values from 164 to 172 mg/l

Health Related Parameters

- **FLUORIDE:** All ground water samples showed fluoride values ranging from 0.14 to 0.42 mg/l which are below the acceptable limit of 1 mg/l as prescribed in IS 10500:2012 whereas all surface water samples showed fluoride values from 0.08 to 0.18 mg/l, which

are below permissible limit of 1.5 mg/l as Per IS 2296 (Class C) for surface water quality standards

- **NITRATE:** All ground water samples showed nitrate values ranging from 19.1 to 25.6 mg/l which are below the acceptable limit of 45 mg/l as prescribed in IS 10500:2012. Whereas all surface water samples showed nitrate values as 0.032 to 0.048 mg/l.

Trace Metals

- **ARSENIC, Cadmium, Chromium, Mercury, Selenium, Lead:** All ground water and surface water samples showed the concentration of above trace metals as BDL and Nil
- **COPPER:** All ground water samples showed concentration of copper as 0.126 to 0.232 mg/l which are above acceptable limit but below the permissible limit 1.5 mg/l as per IS 10500:2012. Whereas all surface water samples showed concentration of copper as 0.138 to 0.152 mg/l, which are below permissible limit of 1.5 mg/l as Per IS 2296 (Class C) for surface water quality standards
- **IRON:** All ground water samples showed concentration of iron as 0.023 to 0.063 mg/l which is well within the acceptable limit of 0.3 mg/l. The corresponding concentration in surface water samples was observed 0.236 to 0.342 mg/l which are below the acceptable limits
- **MANGANESE:** All ground water samples showed concentration of Manganese as 0.032 to 0.053 mg/l. All the ground water samples have Mn values below acceptable limit 0.1 mg/l of IS 10500:2012. The corresponding concentration in surface water samples was observed as 18.1 to 29.2 mg/l.
- **ZINC:** All ground water samples showed concentration of zinc as 0.136 to 0.235 mg/l which were well below the acceptable limit (5mg/l) of IS 10500:2012. Whereas the zinc concentration in surface water ranged from 0.0 to 0.009 mg/l which are well below permissible limit.

In summary, overall quality of water samples indicated that the water quality of all the sources is satisfactory of the area are not polluted


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Annexure 5

Solid waste Management : The only significant solid waste in mine is overburden and is fully utilised in Backfilling and Dumps. Detail Management of the OB and associated pollution is as under

Overburden dumps management

The management of overburden dumps involves the following

- Stabilization of overburden dumps,
- Construction of retaining boulder walls,
- Construction of garland drains for drainage,
- Provision of jute mesh/ Geotex lining to facilitate grass or vegetative growth on slopes,
- Provision of good soil mixed with manure and subsequent watering for growth of grass for anchorage on slopes. Plantation mixed with indigenous and fast growing plant species,
- Degraded area will be reclaimed and rehabilitated in a phased manner with local plant species,
- Transport roads will be planted with trees on either side
- The Sand Segregation Plant will be having fully covered crusher units, fully covered vibrating screens to reduce air borne dust
- In addition the processing of OB to sand involves use of hydrocyclones wherein water is used and thus eliminating the sources of air pollution
- Transportation of sand is proposed in tarpaulin covered trucks, thereby making the pollution from this transportation insignificant.
- Some successful control techniques used for haul roads are dust suppressant application, paving, route modifications, and soil stabilization; for conveyors, covering and wet suppression, for storage piles, wet suppression, windbreaks, enclosure, and soil stabilizers, for conveyor and batch transfer points, wet suppression and various methods to reduce freefall distances (e.g., telescopic chutes, stone ladders, and hinged boom stacker conveyors), and for screening and other size classification, covering and wet suppression
- Wet suppression techniques include application of water, chemicals and/or foam, usually at crusher or conveyor feed and/or discharge points. Such spray systems at transfer points and on material handling operations have been estimated to reduce emissions 70 to 95 percent. Mist Spray systems can also reduce loading and wind erosion emissions from storage piles of various materials 80 to 90 percent. Control efficiencies depend upon local climatic conditions, source properties and duration of control effectiveness. Wet suppression has a carryover effect downstream of the point of application of water or other wetting agents, as long as the surface moisture content is high enough to cause the fines to adhere to the larger rock particles

Surface Water Pollution Control Measures

Retaining walls will be provided at the toe of dumps to prevent wash off from dumps and sliding of material from benches. This will help in preventing siltation of water drains/channels,

- Water channels/drains carrying the rain water from the mine will be provided with baffles and settling pits to arrest the suspended solids.
- Worked out slopes will be stabilized by planting appropriate shrub/grass species on the slopes. This will help in preventing wash-off of dump from these slopes.
- The mine water will be regularly tested and appropriate measures will be taken in case any element is found exceeding the limits prescribed by CPCB.
- Seepage water and rain water collected in the open pits will be pumped out and used for dust suppression, plantation and in beneficiation process. Excess water, if any, will be discharged into natural drainage system after de-silting in settling ponds.
- The probable cause of surface water pollution in the proposed mining area will be soil erosion and wash off from the waste dumps and mineral stock yards in monsoon season. The run-off water during monsoon season flows through natural water courses into nallas. The surface water entering into the mine during rainy season will be diverted through suitable drains to reduce the wash off of soil. The general drainage direction in the working area will be towards the mine sump, for collection of water. The water will be utilized for greenbelt development, mining operation, which will reduce the fresh water requirement.
- Adequate measures to protect the mine during rains will be taken by providing garland drains around the mine excavations and also providing suitable drainage gradients for mine benches. Sumps of adequate capacity will be provided on the quarry floor.

Following control measures will be adopted to check the wash-off from soil erosion

- Plantation of shrubs on down slope of overburden dump,
- Stabilizing road cutting
- Providing suitable drainage system to prevent surface water from entering into mines directly,
- Providing sufficient number of retaining walls/check walls at OB dump
- Diverting natural drains through the undisturbed areas and connecting to local natural nalla

Ground Water Pollution Control Measures:

- The domestic sewage from the canteen and toilets will be routed to Sewage Treatment Plant (STP). Adequate maintenance of the STP will be carried out to avoid choking with sludge.
- Regular monitoring of water levels and quality of water in the existing open wells and bore well in the project area to study the hydrology of the area. If

necessary, additional observation wells will be sunk for monitoring the water table levels and water quality around the mine both in the upstream and downstream. Opencast mine will act as natural rain water harvesting structure. Rain water falling within the active mine area shall be collected in the mine sump and treated for reuse.

Water Security Plan (WSP):

Agriculture in the area is characterized by wasteful use of groundwater through low-efficiency irrigation practices, leading to drinking water shortage even in normal summers. The area with single crop farming, has failed to utilize its groundwater resources. The agricultural drought is often the result of cropping patterns, which are determined on anticipation of average rainfall and rarely factor rainfall variations. The pattern of rainfall indicates that there is rainfall of 50-60 days/year. 90% of the rainfall is received during the months of June-August of every year. The intensity of rainfall at this time is high leading to high surface run-off. There is considerable scope to improve the output per ha in agriculture sector in the project area by integrating the development of land and water resource. The water harvesting on the principles of watershed management and groundwater recharge techniques need to be implemented in these regions. It is proposed to prepare Water Security Plan for adjoining villages (three villages namely Bhendala, Savali, and Ruikot). WSP aims for drinking water security in selected villages by means of

- Ensuring Quality and quantity of water supply, storage management (aquifer management, demand management), capacity building and training.
- Providing futuristic plan in maintaining sustainable use of water for at least for next 10 years.
- Avoid duplicity of different schemes and provide scope of participation of the local public for their self-reliance.
- The objectives of WSP will include current requirement of water for the villages, practices of water management, and overall development of the selected village in terms of water management.



Ashok Kumar Pani

Vice President

Authorised Signatory

02.04.2024
Pot-GAZDANI INTERNATIONAL (P) LTD.

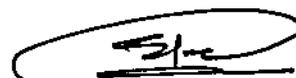
Authorised Signatory

Certified budget from the DFO

Sr. No.	Particulars	Cost Rs.(lakhs)					
		1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year	
	Wildlife Conservation / Mitigation Plan						
1	Fencing (2.5m height) 5200 meter	80					80
2	Cattle trench along the mine boundary with departmental HEMM	12		5		5	22
3 1	Habitat development and plantation	500	200	100	100	100	1000
3.2	Removal of invasive species	50	20	10	10	10	100
4	Nursery development and maintenance of safety zone including green belt development along the lease area	10	5	5	3	2	25
5	Watch tower	10	0	0	0	0	10
6	Soil moisture conservation works	50	20	10	10	10	100
7	Construction of waterholes maintenance	5	5	1	1	1	13
8	Well with solar pumps	0	10				10
9	4% of the project cost to be deposited with wildlife trust as per State Government norm	372	0	0	0	0	372
10	Awareness and training of JFM and Biodiversity committee for wildlife protection and fire control	3	3	3	3	3	15
	Total	1092	263	134	127	131	1747



Sharad Satramwar
Dy. General Manager (Lease & Law)
Yazdani International Pvt Limited

Dahanjay Waybhave
Dy. Conservator of Forests (T)
Pandharkawda Forest Division

Annexure 7

Certified copy of approved mine closure plan from DFO

Mining Plan along with the mine closer plan enclosed herewith the WMP has been approved by Ministry of Coal and vetted by the DFO, Pandharkawda

Enclosed Mine Closer Plan of Marki Mangli II approved by competent authority



Sharad Satramwar
Dy General Manager (Lease & Law)
Yazdani International Pvt Limited



Dy Conservator of Forests (T)
Pandharkawda Forest Division
Dist YAVATMAL

Annexure 8.

Timeline for Implementing wildlife mitigation plan

Sr No	Activities under WMP	TIME LINE FOR IMPLEMENTATION OF WILDLIFE MITIGATION PLAN																									
		Year 1					Year 2					Year 3					Year 4					Year 5					Continue till mine closure
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20						
1	Fencing of proposed mine boundary																										
2	Maintenance and Repairing of Fencing																										
2	Establishing Nursery for saplings, maintenance and propagation																										
3	Construction of Waterholes and its maintenance																										
4	Habitat development and plantation away from the mine boundary																										
5	Plantation in safety zone including green belt development along the lease area																										
6	Watch tower Construction																										
7	Soil moisture conservation works																										
8	Construction of waterholes maintenance																										
9	Well with solar pumps																										
10	4% of the project cost to be deposited with wildlife trust as per State Government norm																										
11	Awareness and training of JFM and Biodiversity committee for wildlife protection and fire control Workshops and campaign in consultation with stakeholder																										
12	Monitoring of Environmental Parameters as per approved																										

Ashok Kumar Pani
02.04.2025

Ashok Kumar Pani
Vice President
Authorised Signatory

For YAZDANI INTERNATIONAL (P) LTD.

Authorised Signatory

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Wildlife Mitigation Plan for Marki Mangli II Coal Mine

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Executive Summary

The Marki Mangli II Coal Mine (ML area 339 467 Ha Forest 146 996 ha & 192 807 ha Non Forest Land as per block summary provided by Ministry of Coal) at village Ruikot, Savli, Tahsil Jhari-jamni, Dist Yavatmal, Maharashtra has been vested in favor of Yazdani International Private Limited, Bhubaneswar, Odisha being the successful bidder Vide no NA-104/3/2020-NA date March 03, 2021

The National Tiger Conservation Authority in collaboration with the Wildlife Institute of India has published a document titled "Connecting Tiger Populations for Long-term Conservation", which has mapped out 32 major corridors across the country, management interventions for which are operationalized through a Tiger Conservation Plan, mandated under section 38V of the Wildlife (Protection) Act, 1972 Proposed project area does not fall in well-established 32 corridors of country nor it is a part of WII and NTCA's publication "Atlas of Tiger Corridor of Eastern Vidarbha Land scape" The location however is covered under Approved Tiger Conservation Plan of Tadoab Andhari Tiger Reserve and Section 38(V (3) (b) of the said Act , provides for tiger conservation plan to ensure ecologically compatible land uses in areas linking one protected areas of tiger reserve with another and therefore need the recommendations of NBWL

User agency accordingly prepared comprehensive plan of wildlife conservation/ mitigation measures after detailed field study Principal Chief Conservator of Forest (Wildlife)/ Chief Wildlife Warden Government of Maharashtra and submitted along with the proposal for obtaining recommendations of NBWL as per guidelines under section 38 -1 (O)(g)

PCCF (WL) vide his letter number 1714 dated 1/9/2023 submitted the WMP submitted by User agency to WII for vetting by expert as the project fall in important corridor area WII, vide their letter communicated their observations/ suggestions The WMP was modified after complying and incorporating the suggestions given by WII and has been submitted to PCCF (WL) for according approval and submission to NBWL through State Government along with the recommendations of SBWL in 22nd meeting held on 16/10/23 (Appendix 1)

Subsequently MoEF desired comments of WII on Wildlife Conservation Plan submitted by State Government vide their letter number 17/12/2024 WII vide their letter dated 9/2/2025 (Appendix 3) communicated their comments along with certain observations Present WMP which forms a part of Conservation Plan has been modified after incorporating extensive details floral and faunal biodiversity study as suggested by WII in core and buffer zone and all the observations and suggestions of WII vide letter 9/2/2025 (Appendix 3)

Project cover the mitigation measures to reduce the impacts of mining on wildlife by practicing sustainable mining practices The objective for this report on Mitigation of impact on environment in general and wildlife in particular will therefore be

- Ensure wildlife safety especially during mining
- Ensure ecological restoration of the mined out area

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

- To provide safe spill over corridors for wildlife from Impact Area to relatively rich neighboring forest areas
- Ensure wild life habitat restoration during and post mine closure plan
- Strict compliances and monitoring of environment mitigation measures especially air, water and noise
- Lawful compliances of Wild Life Protection Act under section 83 (O) (1) (g) as well as compliances of the conditions imposed under Environment Clearance issued to the project by Ministry of Environment, Forest and Climate Change, GOI

Reports elaborate the strategies proposed for reducing the impacts of mining on wildlife through mitigation measures with adequate budgetary support

Strategies within the project area

- Soil and moisture conservation Mining activity in the proposed area will involve clearing of vegetation Mining activity will also involve removal of top soil Due to removal of vegetation cover and top soil, moisture in the soil tends to reduce The following strategies will be to conserve as much moisture as possible
 - Garland drains will be provided around the mine wherever required to arrest any soil from the mine area being carried away by the rain water
 - Toe drains with suitable baffles will be provided all along the toe of the soil dumps to arrest any soil from the dump slopes being carried away by the rain water
 - Bench levels will be provided with water gradient against the general pit slope, to decrease the speed of storm water and prevent its uncontrolled descent
 - Gully formations, if any, on sides of the benches will be provided with check dams of local stone or sand filled bags The inactive slopes will be planted with bushes, grass, shrubs and trees after applying top soil to prevent soil erosion
 - Loose material slopes will be covered by plantation by making contour trenches at 2 m interval to check soil erosion both due to wind and rain
 - Retaining walls (concrete or local stone) will be constructed, around the stockpile or wherever required, to support the benches or any loose material as well as to arrest sliding of loose debris
 - Regular addition of manure and vegetative mulches in soil
- Preventive steps for the animals not to fall in the Mine Pits Chain link fencing around the mine of height 2.5 to 3 meter is proposed to prevent wild life from falling into the mine pit Additional fencing at inner side of the 7.5m green belt is proposed to create green belt to reduce dusts from mining activities Cattle trench around the mine outside the leasehold boundary would help in this direction besides chain link fencing
- Restoration of soil dump Slope stability to reduce erosion would be ensure through bio-engineering , terracing with grassing of slopes besides plantation of native species having deep root systems and besides use of Geo-synthetic fabrics for slope stabilization

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

- Control of siltation Toe drains are proposed along with Gabion wall need to be constructed to control siltation A series of open drains will be provided on dump body to arrest surface run-off and prevent siltation
- Wildlife encounter in the project area Small animals like squirrel, mongoose, and snakes may enter in to the area The user agency will educate the labours and staff to protect these animals and not harm them Contact details of snake rescuers in the area will be available with the security room In case on snake encounter the staff will be trained to report the sighting to the security room

Strategies for area outside project boundary.

- Plantation in Buffer Zone Trees will be planted in the buffer zone also This plantation will be done at selected places only and only local species will be used in the plantation Some of the tree species included will be Saja (*Terminalia tomentosa*), Baheda (*Terminalia bellerica*), Bija (*Pterocarpus masupium*), Bargad (*Ficus benghalensis*), Peepal (*Ficus religiosa*), Mahua (*Madhuca latifolia*), Sal (*Shorea robusta*), etc Care will be taken to include some fruit bearing trees like Gular (*Ficus glomerata*), Aonla (*Emblica officinalis*), Aam (*Mangifera indica*) and such trees to provide food to the herbivores which in turn will be the food source of the carnivores
- Creation of water holes and water sheds at appropriate places If water is available safely, then all other factors become secondary for the presence and survival of the wild life in any forested area Therefore it is suggested that the user agency in association with the forest department will identify strategic locations for development of water holes at least 1000m away from the mine lease boundary
- Forest Fire prevention Fire hazard needs to be prevented for survival of Forest as well as Wildlife Steps will be taken for prevention of forest fire The user agency must create awareness among the truck drivers and their labours not to through cigarette of bidi butts in the forest area
- Make special efforts to create awareness amongst the farmers/ cultivator to reduce the use of chemical in farming and adopt ecofriendly natural farming to create sustainable habitat for movement of wild life
- Establishment of Joint Forest Management and Biodiversity Committees The sense of ownership of the forest and its resources amongst the villagers is very important This can be done by establishing Joint Forest Management and Biodiversity Committees in the nearby villages This will also help to understand the indigenous knowledge of the locals and accordingly the plantation of locally important trees and shrubs can be carried out
- Nursery development It is proposed to enhance the forest area around the mine by carrying out plantation of native trees and shrubs This activity must be done simultaneously with the mining, so that by the end of mining operation good forest cover is developed adjacent to the mine Thus user agency is committed for planning and implementation of the mitigation measures suggested by WII and incorporated in this report

Chapter 1: Introduction

The Marki Mangli II Coal Mine (ML area 339 467 Ha Forest 146 996 ha & 192 807 ha Non Forest Land as per block summary provided by Ministry of Coal) at village Rukot, Savli, Tahsil Jhari-jamni, Dist Yavatmal, Maharashtra has been vested in favor of Yazdani International Private Limited, Bhubaneswar, Odisha being the successful bidder Vide no NA-104/3/2020-NA date March 03, 2021 (Annexure 1)

The mining lease area of 340 00 fall in four revenue villages viz , Pardi, Savli, Rukot and Mukutaban in Yavatmal District of Maharashtra state The total geological reserves of coal are estimated to be 11 34 million tonnes It is proposed to produce 0 30 million tonnes / annum of coal from this mine The life of mine is proposed to be 37 years The nearest Tiger Reserve from the proposed mine is around 28 km The mining operations will be carried out by conventional benching method of opencast with shovel-dumper combination

Figure 1 gives the location of proposed coal deposit The area of 340 Ha is in the Survey of India toposheet No 56 1/13 on a scale of 1 50,000 and is bounded by the Latitude 19°49'2"N to 19°50'31"N and Longitude 78°48'56"E to 78°50'32"E

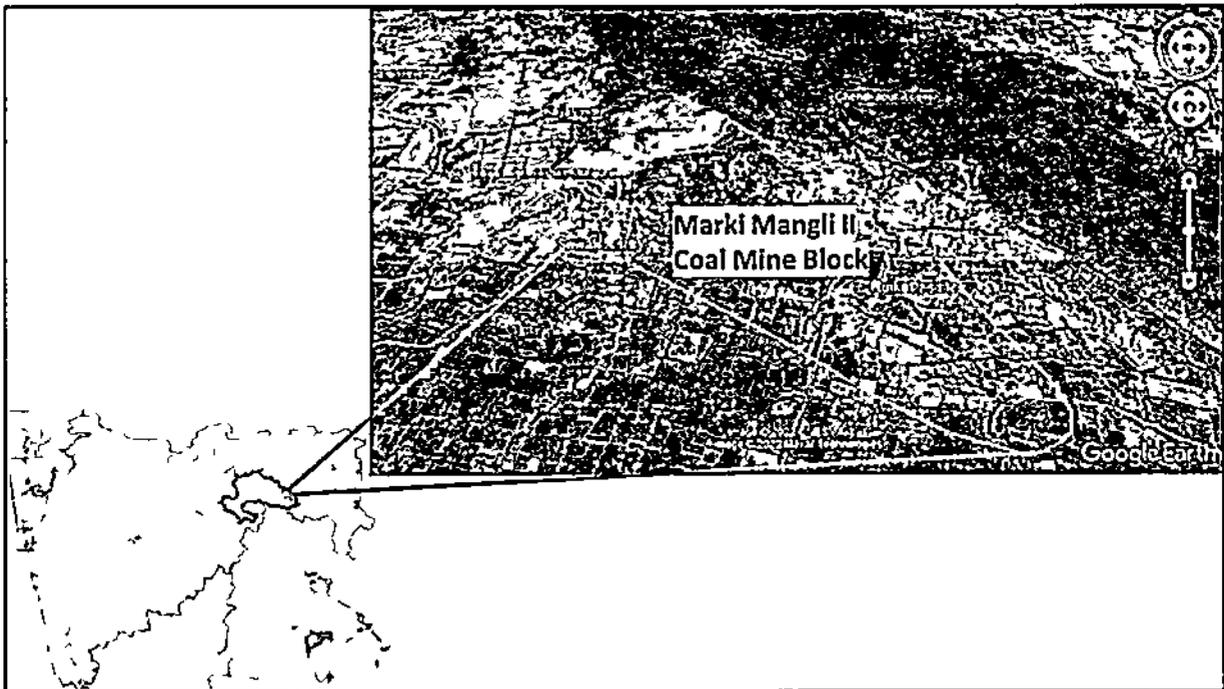


Figure 1: Location of the Marki Mangli II Coal Mine Block

The coal block is located around 35 km from Wani The area can be approached either by Wani-Kayar road Kayar and Ganeshpur are located at a distance of 12 km and 5 km respectively from Marki Mangli - II coal block

1 1 Salient Features

Table 1 Salient features of the project

SN	Particulars	Details
1	Applied Mining Leas Area	339 467 Ha
2	Location	Latitude 19°49'2"N to 19°50'31"N Longitude 78°48'56"E to 78°50'32"E Village Pardi, Savli, Ruikot, Mukutaban District Yavatmal State Maharashtra (Annexure 2)
3	Land ownership	Private Agriculture Land 181 066 ha Government non forest land 11 405 ha Grazing land 7 875 ha Water body 3 530 ha Forest land 146 996 ha Reserve forest 119 078 ha Zari land 27 918 ha
4	Toposheet No	56 I/13
5	Proposed production capacity	0 3 million tonnes/annum
6	Geological reserve	11 34 million tonnes
7	Minable reserve	11 34 million tonnes
8	Life of mine	37 years
9	Project capital cost	189 89 cr
10	Protected area around proposed project	Tipeshwar Tiger Reserve
11	Distance from Tipeshwar Tiger Reserve buffer zone	28 km (Annexure 4)
12	Transportation of coal	Mine area is well connected to pucca road and hence no new road is required to be constructed for transportation of ore It is proposed to strengthen the existing road No new road will be constructed for transportation

1 2 Climate of the Project Area

The area has a hot and dry climate During summer season temperature rises to a maximum of 48°C and humidity falls to a minimum of 10% Monsoon season starts from mid-June and lasts till mid-September Winter is experienced between mid-November to January & temperature generally does not fall below 10°C

- **Rainfall** The average rainfall during 10 year period was 1,036 mm for Yavatmal District. The maximum rainfall was 1,379.8 mm in 1995 while minimum was 716.4 mm in 2004. Records of rainfall in the district are available for 11 stations for 10 to 49 years. The normal annual rainfall in the district is 1012.1 mm. The rainfall generally increases from the northwest towards the southeast. Ner, near the northwestern border of the district receives 870.3 mm annual rainfall while Panderkawda near the southeast border receives 1145.7 mm. The rainfall during southwest monsoon accounts for about 87% of the total annual rainfall, July being the most wet month.

- **Temperature** There are two meteorological observatories in the district, one each at Yavatmal and Pusad. The temperature rises rapidly after the month of February till May which is the hottest month of the year. In May, the mean daily maximum and minimum temperatures recorded are 42.1°C and 27.7°C respectively. On some days in May and June, the maximum temperature rises up to 47°C. Thundershowers sometimes provide relief from intense heat. With the arrival of the southwest monsoon by middle of June, there is an appreciable drop in day temperatures and the weather becomes pleasant. After the end of September, when the southwest monsoon withdraws, the day temperature increases slightly, but the night temperatures decrease progressively. After October both day and night temperatures decrease rapidly. December is usually the coldest month with the mean daily maximum and minimum temperature at 29°C and 13°C respectively.

- **Humidity** Except during the monsoon season when the humidity is high (70- 80%), the air is generally dry. The summer months are the driest, with the relative humidity in the afternoons being about 20%.

- **Wind speed and Wind Direction** Winds are generally light to moderate with some increase in speed during May to August. In the post-monsoon and cold seasons the winds generally blow from east or northeast.

1.3 Socio Economic Status

As per the 2011 Census data the project area comprises of 64 inhabited villages. The village size as estimated from the number of inhabitants as per the census indicated that 28 villages fall within 1- 500 population range, while 16 villages are in the population range of 501-1000, 19 villages fall in 1001-5000 population range and only 1 village has population more than 5000. A village Mehandi with population of 59 is the least populated village whereas Mukutban with population of 6785 is the most populated one.

The study area has 64 inhabited villages with a total population of 56,458 comprising of 28,823 male and 27,635 female. The population is distributed among 13,716 households. The male-female ratio of the society with respect to proportion of males and female is shown in the figure 2.

MALE-FEMALE RATIO IN THE PROJECT AREA

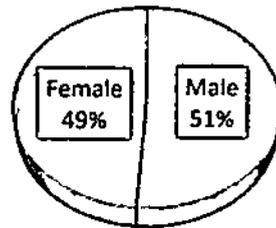


Figure 2: Male-Female ration in the project area

As per the 2011 census the scheduled caste population of the study area is 7.51% of the total population and scheduled tribe population is 23.78%

The people are engaged in agriculture, animal husbandry, weaving and craft-related occupations. Some of them sell vegetables and work as labours.

The overall literacy in the 64 villages of the study area is 77.94%. The male literacy in the study area was 87.18% as compared with State figure 88.38%, the female literacy was 68.01% as compared to 75.87% for the State. It may be noted that percentage of literacy of study area was less than State as a whole in both male and female.

The occupational structure is indicative of overall economy of the project area. In the context of development, structural changes always takes place and shift of resources always occurs away from the primary sectors (Agriculture, forestry, fishery, dairy, poultry, mining etc.) to the manufacturing sector or the secondary sector. Most of the commodities are provided by these two sectors while tertiary sector provides services. The structural transformation sets the economic development process in motion. Occupational structure of the workforce is indicative of the economic activity in the project area. Any changes in the occupational structure are indicative of economical changes. The occupational structure has been worked out for different categories of occupations in the project area which include cultivators, agricultural laborers, household industry workers etc. The families directly engaged in agriculture i.e. cultivators and agriculture labours combined in study area villages were 60.3 per cent, having agriculture as their main source of income, followed by 23.5 per cent who worked as laborers, 1.5 per cent in the services sector, 10.3 per cent were engaged in business, 2.9 per cent were having other occupation and 1.5 per cent were having HH occupation. Data is representative of inclusion of respondents from all occupations and economic activities. In the study area, agriculture is the main source of income for the people. The details indicate that

- Agriculture is purely dependent upon rainfall which is scanty in study area
- The main crop grown in kharif is Cotton, Soyabean, Tur and other Small Millets and Gram and Wheat in Rabi season
- Per acre production is less and there is scope for improvement
- Besides agriculture people are engaged in small and petty business

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

- There are no cottage industries around and hence there is ample scope for its development Project proponent is expected to promote cottage industries with special investment under corporate social responsibility
- The status of marginalized workforce is indicative of high potential for socio-economic development if industrial growth takes place in this area along with natural resources especially agriculture and allied sectors
- As regards to rearing of domestic animals it was observed that bovine animal (Cow, buffalo and bull) were 57.55 per cent, followed by goat/sheep 19.42 per cent and 23.02 per cent poultry
- Drinking Water Sources Information on source of drinking water indicated that 78 per cent respondents had community source of water while 22 % have private source for drinking water

Seasonal diseases are indicative of the fact that precautionary measures are needed in study area villages Villagers, being in close proximity of Wani have always preferred the services of Private Doctors for disease cure Health facilities are the one of the most essential part of livelihood that is needed in this area They include hospitals, clinics, outpatient care centers, and specialized care centers, such as birthing centers and psychiatric care centers Good medical facilities are provided by Government of Maharashtra such as Sub-Health center, health center, Anganwadi etc People are also benefited by various Government health schemes such as Development of Women and Children in Rural areas, Self Help Group, National Rural Health Mission etc The findings from this survey in the 10 km radius area, indicate that medical facilities are needed to be improved by the Government Health Sub-Centre's is available only in some villages i.e. Parsevni, Sali, Nayakund, Amdri villages Primary Health Centre is also available in some villages only In the case of serious condition patients are moved to the nearest villages where hospitals are available Tuberculosis, Asthma and Cancer diseases are reported in some villages The degree of the facility is important, so the area requires better health services

Chapter 2: Biological Environment

2.1 Type of Forests

The study area is located in Yavatmal district of Maharashtra state is a state in the western peninsular region of India occupying a substantial portion of the Deccan Plateau Maharashtra is the second-most populous state in India and the second-most populous country subdivision globally Maharashtra is the third largest state of the country with an area of 3,07,713 km² The State lies between 15°35' N to 22°02' N latitude and 72°36' E to 80°54' E longitude Study area is dominated by the terrestrial vegetation survey, which includes sparse deciduous forests, and degraded forest

The Yavatmal district of Central Vidarbha Zone of Maharashtra State is located between 20 39'25" of North Latitude while 78 11'79" of Eastern Longitude The major area of the district is located in the Southern Plateau of Berar It is surrounded by Amravati districts in the North, Akola and Parbhani districts in the West, Nanded and Adilabad districts in the South and Chandrapur and Wardha districts in the East The district comes under assured rainfall area of VIII th Agroclimatic Zone with average annual rainfall of 1050 mm mostly received during June to September months from the north-eastern monsoon rains Average annual temperature varies from 22°C to 25°C The State is drained by a number of rivers, which include Wardha and Penganga, Narmada, Tapti, Son, Betwa, Shipra and Chambal The State has 50 districts, of which 21 are tribal districts The state of Maharashtra is home to rich biodiversity and unique biological diversity It is significantly rich in endemism with respect to many plants having medicinal properties

As per the Working Plan of Pandharkawada for the period 2012-13 to 2021-22 the forest in the area is falls under following categories of Champion and Seth's Classification

Group 5- Tropical Dry Deciduous Forest,

Sub Group 5A - Southern Tropical Dry Deciduous Forests,

Climax Type -- (1) 5A/C1a - Dry Teak Bearing Forests, Local Sub type Teak Forest and (2) 5A/C1b - Dry Teak Forest,

Local Sub type - Degraded Scrub Forest

2.2 Terrestrial Flora and Fauna

Biological communities are the indicator environmental condition and resource of its distribution and survival Biotic component comprises of both plants (Flora) and animal (Fauna) communities, which interact not only within and between them but also with the Abiotic components, viz physical and chemical components of the environment The changes in biotic community are studied in the pattern of distribution, abundance and diversity

2.2.1 Flora Biodiversity

The Vegetation and plant species composition observed and documented during field visit in and around the proposed location of the project Besides primary surveys in the project sites, published literature

and various floras were consulted to prepare an inventory of plant species growing at project sites. The vegetation of the study area is highly degraded and some areas consisting water bodies. The plant diversity is classified into various plant groups such as tree, shrubs, herbs, climbers, sedges and grasses. The plant diversity survey in the project area was undertaken during the summer season with the objectives of preparing a checklist of flora in the study area which is divided into two parts i.e. Core Zone & Buffer Zone.

2.2.2 Methodology for Terrestrial Flora

Table 0.1 Mode of data collection and parameters considered during the Survey

Sr No.	Aspect	Mode of Data collection	Parameters monitored	Remarks
1	Terrestrial Biodiversity	By field survey	Floral and Faunal diversity	For Floral Diversity: Random survey, sapling survey/forest inventory, walking transect, collection and identification with the help of relevant literature For Faunal Diversity: direct and indirect sampling, walking transect, point sampling and nest sampling etc
2.		From authentic sources like Forests department of Maharashtra and available published literatures from ZSI, BSI etc	Floral and Faunal diversity and study of vegetation, forest type, importance etc	Data collected from the working plan of the region, forest types from the authentic literature of Champion & Seth
3	Aquatic Biodiversity	By field survey	Floral and Faunal diversity	For Plankton Study- Lackey's drops method and light microscope For other aquatic- Random survey, opportunistic observations
4		From authentic sources like Forests department of Maharashtra	Floral and Faunal diversity and study of vegetation, forest type, importance etc	Desktop literature review to identify the representative spectrum of threatened species, population and ecological communities

2.2.3 Selection of Monitoring Location

The selection of terrestrial and aquatic ecological sampling location was based on land use pattern, topography and habitat patterns of the study area. Ecological survey was carried out in forest and non-forest areas (agricultural fields, roadsides, urban & semi-urban wastelands, etc) and the aquatic

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ecological survey was carried out in rivers & ponds/lakes (within the study area) The study area outside the ML area was divided into three buffer zones stretching for 10 Km radially from the core

Table 0 2: List of Biological Environment Survey Stations

Code	Latitude	Longitude	Near Village	Distance (KM)	Direction	Type of Forest
BS-01	19°49'45 25"N	78°49'37 59"E	Ruikot	-	-	Reserved Forest Area
BS-02	19°50'26 82"N	78°49'29 66"E	Ruikot	-	-	Reserved Forest Area
BS -03	19°49'26 85"N	78°51'17 69"E	Mukutban	1 50	EES	Forest Area
BS -04	19°49'35 91"N	78°54'9 48"E	Chilai	6 90	E	Chilai RF
BS -05	19°49'51 34"N	78°55'25 78"E	Chilai	7 1	E	Chilai RF
BS -06	19°46'28 85"N	78°49'34 63"E	Bailampur	4 91	SSW	Reserved Forest Area
BS-07	19°46'32 73"N	78°49'52 63"E	Bailampur	4 80	SSW	Reserved Forest Area
BS -08	19°49'37 46"N	78°45'42 71"E	Khapri	4 50	W	Sekapur Forest
BS-09	19°50'27 43"N	78°44'38 87"E	Khapri	5 23	NW	Paunar Forest
BS -10	19°50'14 10"N	78°43'53 31"E	Khapri	7 9	Nw	Forest Area
BS-11	19°50'43 16"N	78°49'8 87"E	Adakoli	7 4	NNW	Paunar Forest
BS-12	19°53'16 57"N	78°46'25 87"E	Adakoli	7 6	NNW	Paunar Forest
BS-13	19°43'57 27"N	78°50'20 81"E	Chinchgha t	9 8	N	Forest Area
BS-14	19°49'50 65"N	78°55'53 98"E	Chilai	8 9	N	Chilai RF
BS-15	19°51'56 21"N	78°54'5 27"E	Nerad	9 2	SE	Scrub Land

2 2 4 Observations and Results

A total of 198 floral species have been recorded during survey in the Buffer zone of the study area having green cover, out of which 85 are trees, 29 are herbs, 37 are shrubs, 24 are climbers, 23 species of Grasses & bamboos have been recorded from Buffer zone In the Core zone total 171 floral species recorded out of which Tree (65), Shrub (37), Herb (23), climber (23) and Grasses and Bamboos (23)

Table 0 3 List of existing floristic composition within core and Buffer zone

TREES

S No	Botanical Name	Local Name	Family	Core	Buffer
1	<i>Acacia catechu</i> (L f) Willd	Khair	Fabaceae	*	*
2	<i>Acacia concinna</i> (Willd) DC	Sikakai	Fabaceae	*	*
3	<i>Acacia leucophloea</i> (Roxb) Willd	Hiwar/Reunjha	Fabaceae	*	*
4	<i>Aegle marmelos</i> (L) Corrêa	Bel	Rutaceae	-	*
5	<i>Ailanthus excelsa</i> Roxb	Maharukh/ Mahaneem	Simarubiaceae	*	*
6	<i>Albizia lebbek</i> (L) Benth	Kala siris	Fabaceae	*	*
7	<i>Albizia odoratissima</i> (L f) Benth	Chichwa	Fabaceae	*	*
8	<i>Albizia procera</i> (Roxb) Benth	Safed Siris/ Karahi	Fabaceae	*	*
9	<i>Anogeissus latifolia</i> (Roxb ex DC) Wall ex Guillem & Perr	Dhaora/Dhawda	Combretaceae	*	*
10	<i>Azadiracta indica</i> A.Juss	Neem	Meliaceae	*	*
11	<i>Balanites aegyptiaca</i> (L) Del	Hingot	Balanitaceae	*	*
12	<i>Bauhinia malabarica</i> Roxb	Amti	Fabaceae		*
13	<i>Bauhinia purpurea</i> L	Keolar	Fabaceae	*	*
14	<i>Bauhinia racemosa</i> Lam	Asta/Aapta	Fabaceae	*	*
15	<i>Bauhinia variegata</i> L	Kachnar	Fabaceae	*	*
16	<i>Bombax ceiba</i> L	Semal	Malvaceae	*	*
17	<i>Boswellia serrata</i> Roxb ex Colebr	Salai/ Saliha	Burseracea	*	*
18	<i>Bridelia retusa</i> (L) A.Juss	Kasai/Kasahi	Euphorbiacea	*	*
19	<i>Buchanania lanzan</i> (Lour) M R Almeida	Achar/ Char Chiraonji	Anacardiaceae	*	*
20	<i>Butea monosperma</i> (Lam) Taub (Butea Manosperma Kuntze)	Palash/ Parsa/Padas	Fabaceae	*	*
21	<i>Careya arborea</i> Roxb	Kumbhi/ Bhui	Mayrtaceae	-	*
22	<i>Caryota urens</i> L	Fish tail palm	Arecaceae	-	*
23	<i>Casearia graveolens</i> Dalzell	Gilchi	Samydaceae	*	*
24	<i>Casearia tomentosa</i> Roxb	Tondri	Samydaceae	*	*
25	<i>Cassia fistula</i> L	Amaltas/Bahawa	Fabaceae	*	*

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S. No	Botanical Name	Local Name	Family	Core	Buffer
26	<i>Cassine glauca</i> (Rottb) Kuntze	Jamrasi	Celastraceae	*	*
27	<i>Catunaregam spinosa</i> (Thunb) Tirveng	Mainphal	Rubiaceae	*	*
28	<i>Chloroxylon swietenia</i> DC	Bhirra	Meliaceae	*	*
29	<i>Cochlospermum religiosum</i> (L) Alston	Galgala	Bixaceae	*	*
30	<i>Cocos nucifera</i> L	Nariyal	Arecaceae		*
31	<i>Cordia macleodii</i>	Bhokar	Boraginaceae	*	*
32	<i>Dalbergia latifolia</i> Roxb	Shisham	Fabaceae	-	*
33	<i>Dalbergia paniculata</i> (Roxb) Thoth	Dhobin	Fabaceae	*	*
34	<i>Dalbergia sissoo</i> DC	Sissoo/Sisham	Fabaceae	-	*
35	<i>Diospyros melanoxylon</i> Roxb	Tendu	Ebenaceae	*	*
36	<i>Diospyros montana</i> Roxb	Bistendu	Ebenaceae	*	*
37	<i>Dolichandrone falcata</i>	Medsing	Bignoniaceae	*	*
38	<i>Ehretia laevis</i> Roxb	Datranga	Boraginaaceae	*	*
39	<i>Emblica officinalis</i>	Amla	Phyllanthaceae	*	*
40	<i>Erythrina indica</i> Lam	Pangra	Fabaceae	*	*
41	<i>Eucalyptus sp</i>	Nilgiri	myrtaceae	-	*
42	<i>Ficus benghalensis</i> L	Bad	Moraceae	*	*
43	<i>Ficus mollis</i> Vahl	Gular	Moraceae	-	*
44	<i>Ficus racemosa</i> L	Gular	Moraceae	-	*
45	<i>Ficus religiosa</i> L	Pipal	Moraceae	*	*
46	<i>Gardenia latifolia</i> Aiton	Papra	Rubiaceae	-	*
47	<i>Garuga pinnata</i> Roxb	Kekad	Burseraceae	-	*
48	<i>Gmelina arborea</i> Roxb	Khamhar	Verbenaceae	-	*
49	<i>Grewia tilifolia</i> Vahl	Dhaman	Tilliaceae	*	*
50	<i>Haldina cordifolia</i> (Roxb) Ridsdale	Haldu/Kalmi	Rubiaceae	-	*
51	<i>Hymenodictyon orixense</i> (Roxb) Mabb	Bhanwarmal	Rubiaceae	*	*
52	<i>Kydia calycina</i> Roxb	Baranga	Malvaceae	*	*
53	<i>Lagerstroemia parviflora</i> Roxb	Lendia	Lythraceae	*	*

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S. No	Botanical Name	Local Name	Family	Core	Buffer
54	<i>Lannea coromandelica</i>	Jhingan/Movei	Anacardiaceae	*	*
55	<i>Limonia acidissima</i>	Kawat	Rutaceae	*	*
56	<i>Madhuca longifolia</i>	Mahua	Sapotaceae	*	*
57	<i>Mallotus philippensis</i> (Lam) Müll Arg	Sinduri/ Rori	Euphorbiaceae	-	*
58	<i>Mitragyna parvifolia</i> (Roxb) Korth	Kalam/Kadamb	Rubiaceae	*	*
59	<i>Neolamarckia cadamba</i> (Roxb) Bosser	Kadamb	Combretaceae	-	*
60	<i>Ougenia oojeinesis</i>	Tiwas	Fabaceae	*	*
61	<i>Peltophorum ferrugineum</i> (Decne) Benth	Peltaphorum	Fabaceae	*	*
62	<i>Phoenix sylvestris</i> (L) Roxb	Khajur	Palmae	*	*
63	<i>Polyalthia longifolia</i> (Sonn) Thwaites	China ashok	Annonaceae		*
64	<i>Pongamia pinnata</i> (L) Pierre	Karanj	Fabaceae	*	*
65	<i>Prosopis juliflora</i> (Sw) DC	Khejdi	Fabaceae	*	*
66	<i>Psidium guajava</i> L	Jam	myrtaceae	-	*
67	<i>Pterocarpus marsupium</i> Roxb	Bija	Fabaceae	*	*
68	<i>Saccopetalum tomentosum</i> Hook f & Thomson	Kari	Annonaceae	*	*
69	<i>Schleichera oleosa</i> (Lour) Merr	Kusum	Sapindaceae	*	*
70	<i>Schrebera swietenoides</i> Roxb	Mokha	Oleaceae	*	*
71	<i>Semecarpus anacardium</i> L f	Bibba	Anacardiaceae	*	*
72	<i>Senna occidentalis</i> (L) Link	Kasondi	Fabaceae	*	*
73	<i>Senna siamea</i> (Lam) H S Irwin & Barneby	Acacia	Fabaceae	*	*
74	<i>Soymida febrifuga</i> (Roxb) A Juss	Rohan	Meliaceae	*	*
75	<i>Sterculia urens</i> Roxb	Kulu	Sterculiaceae	-	*
76	<i>Stereospermum suaveolens</i> (Roxb) DC	Badapadar	Bignoniaceae	*	*
77	<i>Syzygium cumini</i> (L) Skeels	Jamun	Myrtaceae	*	*
78	<i>Tamarindus indica</i> L	Imli	Fabaceae	*	*
79	<i>Tamilnadia uliginosa</i> (Retz) Tirveng & Sastre	Kala Phetra	Rubiaceae	*	*
80	<i>Tectona grandis</i> L f	Sagaun	Verbenaceae	*	*

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S No	Botanical Name	Local Name	Family	Core	Buffer
81	<i>Terminalia arjuna</i> (Roxb ex DC) Wight & Arn	Arjun	Combretaceae	*	*
82	<i>Terminalia tomentosa</i>	Ain/Saja	Combretaceae	*	*
83	<i>Trema orientalis</i> (L) Blume	Jivan	Urticaeaceae	-	*
84	<i>Vitex negundo</i> L	Morphal	Verbenaceae	-	*
85	<i>Ziziphus jujuba</i> Mill	Ber	Rhamnaceae	*	85
Total				65	85

Note (*) indicates presence of species & (-) indicates absence

SHRUBS

S.No	Botanical Name	Local Name	Family	Core	Buffer
1	<i>Achyranthes aspera</i> L	Chirchira	Amaranthaceae	*	*
2	<i>Balanites aegyptiaca</i> (L) Del	Hingot	Balanitaceae	*	*
3	<i>Calotropis gigantea</i> (L) Dryand	Aak	Asclepiadaceae	*	*
4	<i>Colebrookea oppositifolia</i> Sm	Kalabans	Labiatae	*	*
5	<i>Dodonaea viscosa</i> subsp <i>Aungustifolia</i> (L f) J G WEST	sadabahar	Apocynaceae	*	*
6	<i>Eranthemum pulchellum</i> Andrews	Bantulsi	Acanthceae	*	*
7	<i>Flacourtia indica</i> (Burm f) Merr	Kakai	Bixaceae	*	*
8	<i>Gardenia gummifera</i> L f	Dikamali	Rubiaceae	*	*
9	<i>Grewia hirsuta</i> Vahl	Gutdukri	Tiliaceae	*	*
10	<i>Grewia rothii</i> DC	Bansuli	Tiliaceae	*	*
11	<i>Gymnosporia spinosa</i> (Blanco) Merr & Rolfe	Baikal	Celastraceae	*	*
12	<i>Helicteres isora</i> L	Marophali	Sterculiaceae	*	*
13	<i>Hibiscus rosa-sinensis</i> L	Gudhal	Malvaceae	*	*
14	<i>Holarrhena antidysenterica</i> (Roth) Wall ex A DC	Dhudh	Apocynaceae	*	*
15	<i>Hyptis suaveolens</i> (L) Poit	Van Tulsı	Meliaceae	*	*
16	<i>Indigofera cassioides</i> DC	Gırol	Fabaceae	*	*
17	<i>Ixora parviflora</i>	Lokhandı	Rubiaceae	*	*
18	<i>Jasminum sambac</i> (L) Aiton	Bela	Oleaceae	*	*
19	<i>Justicia adhatoda</i> L.	Adusa	acanthaceae	*	*
20	<i>Martynia annua</i> L	Baghanakha	Martiniaceae	*	*
21	<i>Mimosa pudica</i> L	Chhuimui	Fabaceae	*	*
22	<i>Morinda tinctoria</i>	Bartondi/Aalı	Rubiaceae	*	*
23	<i>Mucuna pruriens</i> (L) DC	Beeja	Fabaceae	*	*
24	<i>Nerium oleander</i> L	Lal Kaner	Apocynaceae	*	*
25	<i>Phoenix acaulis</i> Roxb	Chhind	Palmae	*	*

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S No	Botanical Name	Local Name	Family	Core	Buffer
26	<i>Pithecellobium dulce</i> (Roxb) Benth	Bilayati Imlı	Fabaceae	*	*
27	<i>Prosopis cineraria</i> (L) Druce	Sami/Guguralı	Fabaceae	*	*
28	<i>Ricinus communis</i> L	Arand	Euphorbiaceae	*	*
29	<i>Senna auriculata</i> (L.) Roxb	Takhad	Fabaceae	*	*
30	<i>Solanum virginianum</i> L	Bhatkataiya	Solanaceae	*	*
31	<i>Tephrosia purpurea</i> L.	Sarphonka	Fabaceae	*	*
32	<i>Triumfetta rhomboidea</i> Jacq	Chiptı	Malvaceae	*	*
33	<i>Urena lobata</i> L	Chikti	Malvaceae	*	*
34	<i>Wrightia tinctoria</i>	Dudhi	Apocynaceae	*	*
35	<i>Xanthium strumarium</i> L	Okharu	Asteraceae	*	*
36	<i>Zizyphus mauritiana</i>	Ber	Rhamnaceae	*	*
37	<i>Zizyphus xylopyrus</i>	Ghoti	Rhamnaceae	*	*
Total				37	37

Note (*) indicates presence of species & (-) indicates absence

HERBS:

S. No	Botanical Name	Local Name	Family	Core	Buffer
1	<i>Alternanthera sessilis</i> (L) R Br ex DC	Phool ghans	Amaranthaceaea	*	*
2	<i>Alysicarpus vaginalis</i> (L) DC	Chiptı	Fabaceae	*	*
3	<i>Antidesma acidum</i> Retz	Khatua	Euphorbiaceae	*	*
4	<i>Azanza lampas</i> (Cav) Alef	Bankapas	Malvaceae		*
5	<i>Boerhavia diffusa</i> L	Punarnava	Nictaginaceae	*	*
6	<i>Senna tora</i> (L) Roxb	Panwar	Fabaceae	*	*
7	<i>Andrographis paniculata</i> (Burm f) Wall Ex Nees	Kalmegh	Acanthaceae	*	*
8	<i>Curculigo orchioides</i> Gaertn	Kali mushli	Hypoxidaceae		*
9	<i>Cyperus scariosus</i> R Br	Motha	Cyparaceae	*	*
10	<i>Cyperus dubius</i> Rottb	Motha	Cyparaceae	*	*
11	<i>Desmodium gangeticum</i> (L.) DC	Chaptı	Fabaceae	*	*
12	<i>Desmodium laxiflorum</i> DC	Latkani	Fabaceae	*	*
13	<i>Desmodium triflorum</i> (L) DC	Tinpatiya	Fabaceae	*	*
14	<i>Enicostemma littorale</i> Blume	Naibutı	Gentianaceae	*	*
15	<i>Euphorbia hirta</i> L	Dudhi	Euphorbiaceae	*	*
16	<i>Euphorbia thymifolia</i> L	Chotı dudhi	Euphorbiaceae	*	*

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S. No	Botanical Name	Local Name	Family	Core	Buffer
17	<i>Jatropha gossypifolia</i> L	Jamal ghotā	Euphorbiaceae		*
18	<i>Merremia emarginata</i> (Burm f) Hallier f	Muskani	Fabaceae		*
19	<i>Ocimum basilicum</i> L	Barbari tulsī	Meliaceae	*	*
20	<i>Ocimum sanctum</i> L	RamaTulsī	Meliaceae		*
21	<i>Petalidium angustitubum</i> P G Mey	Indrajata	Acanthaceae		*
22	<i>Phyllanthus amarus</i> Schumach & Thonn	Bhui Aonla	Phyllanthaceae	*	*
23	<i>Sida acuta</i> Burm f	Khakhara	Malvaceae	*	*
24	<i>Sida cordifolia</i> L	Bariyari	Malvaceae	*	*
25	<i>Sida rhombifolia</i> L	Vishkhapadi	Malvaceae	*	*
26	<i>Tagetes erecta</i> L	Genda	Asteraceae	*	*
27	<i>Tephrosia purpurea</i> (L) Pers	Sarphonka	Fabaceae	*	*
28	<i>Tridax procumbens</i> (L) L	Ghamara	Asteraceae	*	*
29	<i>Trigonella sp</i>	Ban methi	Fabaceae	*	*
Total				23	29

Note (*) indicates presence of species & (-) indicates absence

CLIMBERS.

S. No	Botanical Name	Local Name	Family	Core	Buffer
1	<i>Ampelocissus latifolia</i> (Roxb) Planch	Jangli angur	Vitaceae	*	*
2	<i>Antigonon leptopus</i> Hook & Arn		Polygonaceae	*	*
3	<i>Asparagus racemosus</i> Willd	Stawar	Liliaceae		*
4	<i>Spatholobus parviflorus</i> (DC) Kuntze	Nasbel	Fabaceae	*	*
5	<i>Butea superba</i> Roxb	Palas bel	Fabaceae	*	*
6	<i>Capparis zeylanica</i>	Waghati	Capparidaceae	*	*
7	<i>Celastrus paniculatus</i> Willd	Mal Kangni	Celastraceae	*	*
8	<i>Cocculus hirsutus</i> (L) W Theob	Jaljamni	Menispermaceae	*	*
9	<i>Cryptolepis dubia</i> (Burm f) M R Almeida	Karanta	Asclepiadaceae	*	*
10	<i>Dioscorea bulbifera</i> L		Dioscoreaceae	*	*
11	<i>Dioscorea hispida</i> Dennst	Baichandi	Dioscoreaceae	*	*
12	<i>Dioscorea pentaphylla</i> L	Musalkand	Dioscoreaceae	*	*
13	<i>Diplocyclos palmatus</i> (L) C Jeffrey		Cucurbitaceae	*	*
14	<i>Hemidesmus indicus</i> (L) R Br ex Schult		Apocynaceae	*	*
15	<i>Ichnocarpus frutescens</i> (L) W T Aiton	Dhimar Bel	Apocynaceae	*	*

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S No	Botanical Name	Local Name	Family	Core	Buffer
16	<i>Ipomoea pes-tigridis</i> L		convolvulaceae	*	*
17	<i>Pergularia daemia</i> (Forssk) Chiov	Kadukand	Apocynaceae	*	*
18	<i>Rhynchosia minima</i> (L.) DC	Ban sem	Fabaceae	*	*
19	<i>Tinospora cordifolia</i> (Willd) Miers	Giloy	Menispermaceae	*	*
20	<i>Tylophora indica</i> (Burm f) Merr	Dambela	Apocynaceae	*	*
21	<i>Vallis solanacea</i> (Roth) Kuntze	Dudhbela	Apocynaceae	*	*
22	<i>Ventilago denticulata</i> Willd	Keoti	Rhamnaceae	*	*
23	<i>Ampelocissus indica</i> (L) Planch	Jangli angur	vitaceae	*	*
24	<i>Ziziphus oenoplia</i> (L.) Mill	Makor	Rhamnaceae	*	*
Total				23	24

Note (*) indicates presence of species & (-) indicates absence

GRASSES & BAMBOOS.

S No	Botanical Name	Local Name	Family	Core	Buffer
1	<i>Aristida setacea</i> Retz	Bargi Ronda	Poaceae	*	*
2	<i>Arundinella setosa</i> Trin	Sidi	Poaceae	*	*
3	<i>Bothriochloa pertusa</i> (L) A Camus	Bhond grass	Poaceae	*	*
4	<i>Cenchrus purpureus</i> (Schumach) Morrone		Poaceae	*	*
5	<i>Cynodon dactylon</i> L	Doob	Poaceae	*	*
6	<i>Dichanthium annulatum</i> (Forssk) Stapf	Chhoti Marbel	Poaceae	*	*
7	<i>Eragrostis amabilis</i> (L.) Wight & Arn	Bhurbhusi	Poaceae	*	*
8	<i>Eulaliopsis binata</i> (Retz) C E Hubb	Bagai	Poaceae	*	*
9	<i>Heteropogon contortus</i> (L) P Beauv ex Roem & Schult	Kushal, lampa	Poaceae	*	*
10	<i>Imperata cylindrica</i> (L) Raeusch	Chhir	Poaceae	*	*
11	<i>Eulaliopsis binata</i> (Retz) C E Hubb	Sabai	Poaceae	*	*
12	<i>Iseilema laxum</i> Hack	Mushan	Poaceae	*	*
13	<i>Sehima nervosum</i> (Rottler) Stapf	Munsel	Poaceae	*	*
14	<i>Panicum antidotale</i> Retz	Kosra	Poaceae	*	*
15	<i>Panicum sumatrense</i> Roth	Chire Kutik	Poaceae	*	*
16	<i>Panicum repens</i> L		Poaceae	*	*
17	<i>Saccharum spontaneum</i> L	Kans	Poaceae	*	*
18	<i>Sehima nervosum</i> (Rottler) Stapf	Sheda	Poaceae	*	*
19	<i>Setaria verticillata</i> (L) P Beauv	Latkani	Poaceae	*	*
20	<i>Sorghum halepense</i> (L) Pers	Baru	Poaceae	*	*

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S No	Botanical Name	Local Name	Family	Core	Buffer
21	<i>Themeda quadrivalvis</i> (L.) Kuntze	Gunher	Poaceae	*	*
22	<i>Bambusa bambos</i> (L.) Voss	Kanta bans	Graminaeae	*	*
23	<i>Dendrocalamus strictus</i> (Roxb.) Nees	Bans	Graminaeae	*	*
Total				23	23

Note (*) indicates presence of species & (-) indicates absence

(Source Primary Survey Data)

Fauna Biodiversity

The study of fauna takes substantial amount of time to understand the specific faunal characteristic of area. The assessments of fauna were done by extensive field survey of the area. During survey, the presence of wildlife has been confirmed by direct field survey and by the oral information by local inhabitants and data procured from the concerned forest department has been made and given in below.

Total 86 faunal species has been recorded from field survey and from secondary information documented in forest working plan of Pandharkawada forest division of Yavatmal district where Aves (13), Mammals (23), Herpatofauna (8), Butterflies (19) and 23 species of Pisces were recorded.

In the core zone of the study area, the faunal presence has been separately analysed where total 35 faunal species diversity have been recorded. Class wise faunal presence like Aves (8), Mammals (13), Herpatofauna (6), Butterflies (6) and only two species of Pisces were recorded.

Table 0.4: Faunal Diversity from study area (Core zone & Buffer Zone)

MAMMALS.

Sr. No.	Scientific name	Vernacular name	Common name	Schedules of Wildlife Act/ IUCN Status	CORE	BUFFER
1	<i>Antelope cervicapra</i>	Blackbuck		I	*	*
2	<i>Axis axis</i>	Cheetal		III/LC		*
3	<i>Boselaphus tragocamelus</i>	Nilgai	Blue bull	III/LC		*
4	<i>Canis aureus</i>	Kolha	Jackal	II/LC		*
5	<i>Canis lupus pallipes</i>	Indian Wolf		I	*	*
6	<i>Cervus unicolor</i>	Sambar	Sambar	III/VU		*
7	<i>Cuon alpinus</i>	Dhol	Wild Dog	II/EN		*
8	<i>Felis chaus</i>	Ranmanjar	Jungle cat	II/LC	*	*
9	<i>Funambulus tristriatus</i>	Khar	Five striped palm squirrel	IV/LC	*	*
10	<i>Gazella bennettii</i>	Chinkara		I	*	*
11	<i>Herpestes edwardsi</i>	Mongoose	Common mongoose	LC	*	*

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12	<i>Hyaena hyaena</i>	Hyaena		III	*	*
13	<i>Hystrix indica</i>	Indian Porcupine		II	*	*
14	<i>Lupus nigricollis</i>	Sasa	Indian hare	IV/LC		*
15	<i>Melursus ursinus</i>	Sloth bear		I	*	*
16	<i>Panthera tigris</i>	Tiger	Tiger	I		*
17	<i>Panthera pardus</i>	Tendua	Panther	I		*
18	<i>Presbytis entellus</i>	Langur		II	*	*
19	<i>Presbytis pileatus</i>	Common langur		II	*	*
20	<i>Rhesus macaque</i>	Bandar	Monkey	II/LC		*
21	<i>Sus scrofa cristatus</i>	Randukkar	Wild boar	III/LC	*	*
22	<i>Tetracerus quadricornis</i>	Four Horned Antelope		I	*	*
23	<i>Vulpes bengalensis</i>	Indian Fox	Indian Fox	II/LC		*
Total					13	23

AVES:

Sr. No.	Scientific name	Vernacular name	Common name	Schedules of Wildlife Act/ IUCN Status	CORE	BUFFER
1	<i>Acridotheres tristis</i>	Salunki	Indian myna	IV	*	*
2	<i>Alauda gulgula</i>	Turrebaj chandol	Oriental skylark	IV/LC		*
3	<i>Ardeola grayii</i>	Vanchak	Pond heron	IV/LC	*	*
4	<i>Columba livia</i>	Parva	Blue rock pigeon	LC	*	*
5	<i>Corvus splendens</i>	Kawala	House crow	LC	*	*
6	<i>Coturnix coturnix</i>	Rakhi durlav	Grey quail	IV/LC		*
7	<i>Francolinus pondicerianus</i>	Chitur	Grey francolin	IV/LC		*
8	<i>Lanius vittatus</i>	Khatik	Baybacked shrike	LC		*
9	<i>Passer domesticus</i>	Chimni	House sparrow	LC	*	*
10	<i>Pavo cristatus</i>	mor	Peacock	I	*	*
11	<i>Psittacula krameri</i>	Popat	Roseringed parakeet	IV/LC	*	*
12	<i>Saxicoloides fulcata</i>	Chirak	Indian robin	LC	*	*
13	<i>Streptopelia senegalensis</i>	Hola	Laughing dove	IV/LC		*
Total					8	13

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HERPATOFUNA:

Sr. No.	Scientific name	Vernacular name	Common name	Schedules of Wildlife Act/IUCN Status	CORE	BUFFER
1	<i>Calotes versicolor</i>	Sargota	Common garden lizard	LC	*	*
2	<i>Eryx conicus</i>		Red sand boa	IV	*	*
3	<i>Mabuya carinata</i>	Sapsoli	Common skink	LC	*	*
4	<i>Naja naja</i>	Nag	Cobra	II/LC		*
5	<i>Ptyas mucosa</i>	Dhaman	Common rat snake	II/LC		*
6	<i>Python molurus</i>		Rock python	I	*	*
7	<i>Rana hexadactyla</i>	Beduk	Indian Pond Frog	IV/NA	*	*
8	<i>Rana tigerinus</i>	Beduk	Indian Bull Frog	IV/LC	*	*
Total					6	8

(Source Primary Survey & Secondary Data)

Note - NA= Not yet assessed, LC=Least Concern, VU= Vulnerable

PISCES:

Sr. No.	Scientific name	Vernacular name	Common name	IUCN STATUS	CORE	BUFFER
1	<i>Ambasis nama</i>	Zanjad	Indian glassy fish	NA		*
2	<i>Ambasis ranga</i>	Zanjad	Indian glassy fish	NA		*
3	<i>Barillus barna</i>	Batri	River carp baril	LC		*
4	<i>Catla catla</i>	Katla	Major Carp	LC		*
5	<i>Channa striatus</i>	Dhadak	Banded snake head	LC		*
6	<i>Cirrhinus mrigala</i>	Naren	Major Carp	LC	*	*
7	<i>Clarius batracus</i>	Mangur	Magur	NA		*
8	<i>Cyprinus carpio</i>	Cipla	Cipla	VU		*
9	<i>Gambusia affinis</i>	Machar Machli	Mosquito fish	LC		*
10	<i>Glossigobius girus</i>	Kaddu	Tank gobi	NA		*
11	<i>Heteropneustes fossilis</i>	Ingur	Stinging cat fish	LC		*
12	<i>Labeo rohita</i>	Rohu	Common carp	LC	*	*
13	<i>Labeo calbasu</i>	Black rohu	Calbasu	LC		*
14	<i>Mastacembelus armatus</i>	Bamb	Spiny eel	LC		*
15	<i>Mystus cavasius</i>	Singara	Cat fish	LC		*
16	<i>Mystus seenghala</i>	Katwa	Gangatic mystus	LC		*

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Sr. No	Scientific name	Vernacular name	Common name	IUCN STATUS	CORE	BUFFER
17	<i>Nandus nandus</i>	Dukkar	Leaf fish	LC		*
18	<i>Osteobrama cotio</i>	Bhondu	Cotio	LC		*
19	<i>Punctius amphibious</i>	Ghuruti	Scarlet Banded barb	NA		*
20	<i>Rita rita</i>	Bhokhi	Rita	LC		*
21	<i>Salmostoma bacaila</i>	Chal	Silver fish	LC		*
22	<i>Tor khudree</i>	Mahseer	Deccan Mahaseer	LC		*
23	<i>Xenentodon cancilla</i>	Chocha	Needle fish	LC		*
Total					2	23

(Source Primary Survey & Secondary Data)

Note NA= Not yet assessed, LC=Least Concern, VU=Vulnerable

BUTTERFLIES:

Sr No	Scientific name	Vernacular name	Family	IUCN STATUS	CORE	BUFFER
1	<i>Ariadne merione</i>	Common caster	Nymphalidae	NA	*	*
2	<i>Catopsilia piranthe</i>	Mottled emigrant	Pieridae	NA		*
3	<i>Catopsilia pomona</i>	Common emigrant	Pieridae	NA	*	*
4	<i>Cepora nerissa</i>	Common gul	Pieridae	NA		*
5	<i>Chilades pandav</i>	Plain cupid	Hesperiidae	NA	*	*
6	<i>Danaus chrysippus</i>	Plain tiger	Nymphalidae	LC		*
7	<i>Euploea core</i>	common indian crow	Nymphalidae	LC		*
8	<i>Eurema hecabe</i>	Common grass Yellow	Pieridae	NA		*
9	<i>Hypolimnas misippus</i>	DANNAID EGG FLY	Nymphalidae	NA	*	*
10	<i>Junoniya arithya</i>	Blue pansy	Nymphalidae	NA		*
11	<i>Junoniya iphita</i>	Chocolate pansy	Nymphalidae	NA		*
12	<i>Junoniya lemonias</i>	Lemon pansy	Nymphalidae	NA		*
13	<i>Leptotes plinius</i>	Zebra blue	Lycaenidae	NA		*
14	<i>Melanitis leda</i>	Common evening brown	Nymphalidae	LC		*
15	<i>Pachliopta aristolochiae</i>	Common rose	Papilionidae	LC		*
16	<i>Papilio demoleus</i>	Lime	Papilionidae	NA		*
17	<i>Papilio polytes</i>	Common mormon	Papilionidae	NA	*	*
18	<i>Prosotas nora</i>	common line blue	Hesperiidae	NA		*
19	<i>Tirumala limniace</i>	Blue tiger	Nymphalidae	NA	*	*
Total					6	19

(Source Primary Survey & Secondary Data)

Note - NA= Not yet assessed, LC=Least Concern, VU= Vulnerable

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Class	Core Zone	Buffer Zone	TOTAL
Mammals	13	23	23
Herpatofauna	6	8	8
Aves	8	13	13
Pisces	2	23	23
Butterfly	6	19	19
	35	86	86

ENDANGERED FLORA

No endangered or endemic flora was recorded from core and buffer zone of the project area

ENDANGERED FAUNA

A total of 86 faunal species documented through primary and secondary data which could be seen in the vicinity of the project site as well as 10 km area radius following schedule -I species as per WPA 1972 has been listed within the study area (Table 2.6)

Table 0.5: List of Schedule –I species as per WPA, 1972

Sr. No.	Scientific name	Common name	Schedules of Wildlife Act/ IUCN Status
1	<i>Antelope cervicapra</i>	Blackbuck	VU / I
2	<i>Bos gaurus</i>	Indian Gaur / Bison	VU / I
3	<i>Canis aureus</i>	Golden Jackal	LC / I
4	<i>Canis lupus pallipes</i>	Indian Wolf	VU / I
5	<i>Rusa unicolor</i>	Sambar	LC / I
6	<i>Felis chaus</i>	India Jungle Cat	NT / I
7	<i>Herpestes auropunctatus</i>	Small Indian mongoose	LC / I
8	<i>Herpestes edwardsi</i>	Common mongoose	LC / I
9	<i>Hyaena hyaena</i>	Striped Hyaena	DD / I
10	<i>Hystrix indica</i>	Indian crested porcupine	LC / I
11	<i>Melursus ursinus</i>	Sloth Bear	VU / I
12	<i>Moschiola meminna</i>	Mouse Deer	VU / I
13	<i>Muntiacus muntjak</i>	Barking Deer	LC / I
14	<i>Panthera pardus</i>	Leopard	VU / I
15	<i>Panthera tigris</i>	Tiger	EN / I
16	<i>Paradoxurus hermaphroditus</i>	Common Palm civet	LC / I
17	<i>Prionailurus bengalensis</i>	Leopard Cat	NT / I
18	<i>Tetracerus quadricornis</i>	Four Horned Antelope	VU / I
19	<i>Viverricula indica</i>	Small Indian civet	NT / I
20	<i>Vulpes bengalensis</i>	Bengal Fox	LC / I
21	<i>Accipiter badius</i>	Shikra	LC / I
22	<i>Amandava formosa</i>	Green Munia	LC / I

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23	<i>Gallus sonnerati</i>	Grey Jungle Fowl	LC / I
24	<i>Hemiprocne coronata</i>	Crested Tree Swift	LC / I
25	<i>Pavo cristatus</i>	Peacock	LC / I
26	<i>Pericrocotus cinnamomeus</i>	Small Minivet	LC / I
27	<i>Sterna aurantia</i>	River Tern	LC / I
28	<i>Naja naja</i>	Spectacled Cobra	LC / I
29	<i>Ptyas mucosus</i>	Rat Snake	LC / I
30	<i>Python molurus</i>	Rock Python	NT / I
31	<i>Varanus bengalensis</i>	Bengal Monitor Lizard	LC / I
32	<i>Vipera russelli</i>	Russel's Viper	VU / I
33	<i>Fowlea piscator</i>	Checkered keelback snake	NT / I

As per survey we have not seen any direct evidences about presence of these scheduled animal within the study area because more than 3 mining projects are already operational within study area and major land use of area is agriculture Very small patches between human habitation and agricultural land indicate that this area is quite disturbed area for such wildlife

But during survey, the discussion from the local persons about panther / tiger incident were reported in the past and presence are mentioned in working plan of Pandhar Kawada Forest division The National Tiger Conservation Authority in collaboration with the Wildlife Institute of India has published a document titled "Connecting Tiger Populations for Long-term Conservation", which has mapped out 32 major corridors across the country,

Proposed project area does not fall in well-established 32 corridors of country However, WII and NTCA in its publication of Atlas of Tiger Corridor of Eastern Vidarbh Land scape indicated connectivity between different Tiger Reserve in their study

The above lists have been updated as per updated Wildlfie(Protection) Act 1972 is furnished in appendix1 on page number 58-65

Chapter 3: Tiger Corridor and its Importance

Wildlife Corridors/ tiger corridor can be defined as a linear habitat, embedded in a dissimilar matrix, that connects two or more large blocks of habitat and that is proposed for conservation on the premise that it will enhance or maintain the viability of specific wildlife populations in the habitat blocks

These wildlife corridors serve as 'links' to allow the wildlife populations to migrate to the 'sources', where the population can survive and breed Together, they provide the habitats upon which the conservation of much of the flora and fauna in developed landscapes ultimately depends Although corridors may have intrinsic habitat value, their salient wildlife value is that they connect more substantive patches of habitat The dispersal of populations over distant habitats enhances the chances of survival of species due to a reduction in competition for food and space If species are not restricted to smaller areas then the localized extinction of a population will not occur due to an outbreak of epidemics as well as natural calamities such as floods or forest fires In the long run, the chances of extinction of populations due to excessive inbreeding are also reduced The loss of wildlife corridors also results in a steep escalation in human-wildlife conflict Some wildlife corridors are of immense importance as they are crucial for the long-term survival of wildlife, including threatened species such as the Indian tiger (*Panthera tigris*) Areas linking one tiger reserve or protected area with another tiger reserve or protected area are not diverted for ecologically unsustainable uses, except in public interest and with approval of the National Board for Wildlife and on advice of the National Tiger Conservation Authority as per Section 38 O (1) (g) of the Wildlife (Protection) Act, 1972

3 1 Tiger Corridor of India

India is committed to secure the livelihoods of its citizens while simultaneously minimizing its impact on its wildlife conservation goals The National Tiger Conservation Authority in collaboration with the Wildlife Institute of India has published a document titled "Connecting Tiger Populations for Long-term Conservation", which has mapped out 32 major corridors across the country, management interventions for which are operationalized through a Tiger Conservation Plan, mandated under section 38V of the Wildlife (Protection) Act, 1972 Proposed project area does not fall in well-established 32 corridors of country nor it is a part of WII and NTCA's publication "Atlas of Tiger Corridor of Eastern Vidarbha Land scape"

3 2 Corridor identified in Telemetry Study by WII

Wildlife Institute of India has published a report titled "Telemetry based Tiger Corridors of Vidarbha Landscape, Maharashtra, India" (WII Report) This report is about the delineation/identification of critical tiger corridors in Vidarbha Landscape of Maharashtra The report is based on monitoring of tiger movement over a long period of time, from 2015 to 2020 which has identified 37,067 square kilometres of tiger

movement corridors within the 97,321 square kilometre landscape, revealing the importance of agricultural lands and human-dominated areas for tiger movement. This area with significant Landscape acts as a crucial link between central and southern Indian tiger populations, facilitating gene flow and population viability.

Yes it is true that total of 146,996 ha of forest land out of 339,467 ha of the proposed coal block mining covered under the forest compartments passes through compartments of forest land which are covered under approved Tiger Conservation Plan (TCP) of Tadoba Andhari Tiger Reserve (TATR) within the modelled tiger corridor as per the publication "Telemetry based tiger corridors of Vidarbha Landscape"



Boundary shown in yellow is the Location of proposed mine along the Identified Tiger Corridor under the 'Telemetry based tiger corridors of Vidarbha Landscape, Maharashtra, India'

Chapter 4: Need of the project

Coal is one of the major mineral deposits occurring in the Indian sub-continent. It has played a great role in industrial development. There is a significant demand- supply gap in coal which is a key raw material for production of power. It is therefore necessary to increase the production of coal for power generation to make the country self-sufficient in power sector to maintain pace of sustainable industrial development. The government is also providing various subsidies to industrial sector to help Indian industry to grow.

The occurrence and production of coal in the proposed project area will be supplied for steel production and power generation which in turn would result in increasing employment potential, improvement in infrastructure, communication network, and socioeconomic development of the project region.

The Yavatmal region, where the project is located is mostly dependent on agriculture, forest and mineral resources where coal & limestone have a major share. The development of mining in the area will be expected to make significant contribution directly and indirectly to the overall socio-economic development in terms of employment generation, infrastructure, health medical facilities, water supply & sanitation etc.

Chapter 5: Impact of proposed project on biodiversity

The Construction phase involves Site cleaning, Excavation, Construction, Erection or Installation of equipment & machinery, Transportation, Material Handling, etc. During site clearance, the existing trees will have to be removed from the proposed mining area and plant site. Tree cutting will be carried out by the forest department. Dust generated during excavation and construction operations may get deposited on the surrounding vegetation thereby affecting the plant growth. Noise generated during construction operation and due to transport vehicles may drive wild animals away from the plant site. The lights during night time may also disturb the wild animals and may change the behaviour pattern of the animals. Development and working of the mine in the forest area will result in loss of the natural ecosystem standing on the land. Removal of all vegetation from the area required for mining and other purposes alters the availability of food and shelter for faunal population. Increase in turbidity due to runoff from overburden dumps and addition of suspended solids from the other activities will deteriorate the water quality if discharge is allowed without any treatment. Due to mining and associated activities, fugitive dust in the atmosphere may deposit on different parts of the plants in the surrounding area leading to the damage to the flora. During operation phase, various vehicle/machinery movement and blasting activities would create excessive noise that may force the movement of animals from nearby forest patches. The impacts will be minimized by opting for plantation with locally available varieties of species to make up for the lost vegetation. The impact of flora will be limited to core zone only as there will not be any removal of vegetation outside the core zone. There is no Wildlife Sanctuary or National Park in 15 Km radius of the Marki Mangli-II coal mining project. Tipeswar is nearest Wildlife Sanctuary is at distance 30 km. Hence, no impact due to mining and allied activities is envisaged from this project. There is no reported migratory path of wildlife or bird species of threatened or protected species. The transport route of the mineral also lies away from these areas. Plantation activities and creation of water reservoir at the conceptual stage will help to improve the biodiversity of the area. Mining activities though limited to core zone but the impact of noise and blasting vibration as well as movement of vehicle movement may have significant effect on the forest surrounding the mine. Such impact can be minimized only by adoption of various control measures such as controlled blasting, creation of thick green belt around the mining lease with 3 tier arrangement of local trees. M/s YIPL will support Forest Department officials for development of Water holes in reserved forest patches. In addition awareness programs for the workers and villagers will be held on regular basis to highlight importance of protection of forest, use of clean fuel instead of firewood (collection of illicit firewood from forest is reported from the area), supply of gas connection to the needy families etc. Support to Gram panchayat in creation of grassland in village land will also be given to reduce intrusion of cattle's in adjoining forest for food.

5.1 Impact of Proposed Mining on Flora and Fauna

Out of the 339 467 Ha of MLA the forest land is about 146 996 Ha, Private agricultural and is 185 041 Ha and 7 43 ha land is of non-forestry government land. Since the proposed mining is by O/C method, excavations are proposed in the mining lease area. MLA will be excavated in yearly plan wise method mentioned in the approved mining plan. It means not all MLA will be disturbed from the opening of coal mining, some mine lease area will be used for Top soil dump and for OB dump details are in the mining

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plan Major part of MLA is Forest land where scrub vegetation present and it will be removed at the place where mining start and with this proper plantation at safety zone and both side of the approach road will be done prior to mining activity begins as per the specific condition mentioned in the EC Letter FC application has been submitted for the FC Clearance and proper wildlife mitigation plan & wildlife conservation plan has been submitted to the competent authority for approval The wildlife conservation plan has been approved by the competent authority Agricultural land of MLA will be converted into the mining area which will be impacted on the crop productivity at least for the life of mine A part of the generated overburden will be further crushed and screened for the sand generation in a Sand segregation plant installed in Mine Lease area A major portion of OB generated will be utilised for backfilling in decoaled voids A void of 51.78 Ha shall remain at the end of mining activities which will be used for ground water recharge of the area, pisciculture and tourist attraction spot water park for picnic As per the specific point on TOR it is clearly mentioned that the Tar approach road will be made for transportation of produce and a concrete road with Wind Barrier Wall & Vertical Greenery along the transport road connecting SH has been proposed for the purpose in the report, hence it is anticipated there will be no major impact in the local area due to fugitive dust emission This area is known for mining activity and currently 2- coal mining projects are already operational in the vicinity, thus there will be an additional impact on the vehicular traffic density on the existing road when this mining will also become operational, hence there is a need of having alternate route for the transportation to minimize the traffic load on the existing route and this issue has been brought to the knowledge of Competant State Government Authority during Public Hearing After the mining activity finished this area will be developed as good woodland area with major water reservoir to increase their scenic beauty and aesthetic value Transportation will be done by covered tippers of 25 tonne capacity within the ML area to minimize the number of trip and less pollution due to transportation Due to increase in the human activities, negligence etc, forest fire may take place, though otherwise also, it is quite common in tropical forest Fire in such type of deciduous forest is mostly anthropogenic in origin Necessary measures shall be undertaken to control occurrences of such incidences Spreading of obnoxious weeds prevents rejuvenation of the forage thereby effecting the food and shelter Necessary control measures to avoid spreading of weeds shall be undertaken The smoke emanated from burning of coal, fuel wood in rural areas is one of the sources of air pollution particularly in the coal bearing areas Awareness and promotion of gas for domestic / commercial purposes is proposed by M/s Yadzani International Pvt Ltd in CSR activities The Man Animal Conflict is a general impact where any development is undertaken Occurrence of major wildlife is not reported from the nearby areas The proposed plantation within the mining lease as well as outside the mining lease under CSR and Avenue plantation will help in creation of habitats for various faunal assemblage thereby adding to richness of biodiversity

Chapter 6: Sustainable Mining: Right Key for mitigation of negative impacts of mining

Mineral development has a close interface with the issues of environment, development, welfare of local (indigenous) communities and poverty alleviation and its sustainability is crucial for the promotion of inclusive growth. Emerging Issues in India's Mineral Sector' has identified the following elements for Sustainable Mining

- Scientific Mining
 - Mine planning
 - Methods of mining
 - Level of mechanization
 - Technology upgradation
 - Availability, depletion and conservation of mineral resources
 - Mine closure planning and target-setting
 - Progressive implementation of mine closure plan and commitment to rehabilitation
- Environmental protection and mitigation
 - Land use
 - Water use and efficiency
 - Energy use and efficiency
 - Waste minimization
 - Tailings management
 - Air pollution, liquid effluents and solid wastes
 - Dust management
 - Noise and vibration control
 - Biodiversity loss and mitigation
 - Environmental compliance and voluntary activities
 - Conformity to environmental management standards (eg ISO-14001)
- Community stakeholder engagement
 - Policy on and extent of stakeholder involvement in mining operations
 - Mechanisms of stakeholder participation/consultations in decision-making
 - Procedures for attending to stakeholder grievances and concerns
 - Engagement procedures and principles in respect of indigenous people (adivasis)
 - Policy on business ethics
 - Approach to bribery and competition
 - Resettlement of communities affected by mining project
- Local socio-economic development in mining project areas
 - Policy on and procedure for assessing socio-economic impact of mining operations in a project area
 - Mechanisms and procedures for preparing and implementing area development plans and projects
 - Plans for generating local community income
 - Investments in community and mineral wealth distribution
 - Contribution to local employment
 - Level of commitment to education, training and skill development
 - Contribution to the development of physical infrastructure in mining area
- Transparency and Accountability
 - Policy on and approach to public disclosure of key elements of enterprise performance
 - Nature and effectiveness of the reporting system

Chapter 7: Integrating Biodiversity Enhancement with Mining Activity

7.1 During Project Development

In the early stages of exploration, impacts on biodiversity are limited, although they can become more significant as exploration progresses. At a macro-level, however, assuming exploration efforts identify economically viable mineral deposits, the initial choice of exploration area can have a profound long-term influence on the impacts on biodiversity. Therefore even at this very early stage it is critically important to have some appreciation of likely long-term interfaces with biodiversity. At this stage, companies should begin to develop an appreciation of the overall biodiversity importance of the area within which exploration is being undertaken by reviewing legal provisions relating to biodiversity and mapping the occurrence of protected areas.

Following practices are proposed for limiting impacts on biodiversity during exploration include

- Limiting land clearing by using technologies and mining practices that minimize habitat disturbance, Keeping mandatory safety zone of 7.5 meter is sound practice to create green belt to reduce noise and arrest dust from getting airborne outside the work area,
- Avoiding road building wherever possible by using existing tracks – Incidentally mine area is well connected to pucca road and hence no new road is required to be constructed for transportation of ore,
- Using lighter and more efficient equipment to reduce impacts on biodiversity,
- Positioning drill holes and trenches away from sensitive areas,
- Capping or plugging of drill holes to prevent small mammals from becoming trapped,
- Removing and reclaiming roads and tracks that are no longer needed,
- Using native vegetation to revegetate land cleared during exploration

7.2 During Mining Operation

The major potential impacts of ancillary infrastructure occur during design and construction, although a number of operational considerations are also relevant to biodiversity. The potential impacts associated with water and sanitation infrastructure are also present during operations and were dealt with earlier. While the major impacts occur during construction, the continuing presence of physical barriers can present a threat to migratory animal species.

Biodiversity may also be affected by maintenance activities, particularly weed and pest control. This can be minimized by implementing an integrated pest management or integrated vector management approach for all pest management activities. This advocates the use of alternative approaches to chemical controls in the first instance.

The primary impacts on biodiversity result from land clearance for the pit, access routes, and progressive expansion into new areas. Typically, mines undergo many expansions in area and capacity, generating a sequence of events that can be the equivalent of new mines being started, so there may also be a requirement to conduct a new Environmental and Social Impact Assessment or update the initial ESIA.

7.3 During Closure

Achievable objectives and targets for biodiversity re-establishment are essential to give the company a framework on which to base its rehabilitation program and to provide measurable standards against which regulatory authorities and other stakeholders can determine whether the company has met all necessary requirements prior to mine closure and lease relinquishment

The establishment of closure targets and objectives is not a one-shot desk-based exercise, it should be developed through a dynamic and iterative process involving mining stakeholders. When setting biodiversity objectives and targets, the following aspects should always be taken into account:

- Relevant regulatory requirements and other guidelines
- Effective consultation with key stakeholders
- Competing interests need to be understood and reconciled
- All available information on biodiversity
- Technical limitations
- Pre-mining land uses and the extent of biodiversity degradation
- Whether mitigation or enhancement is intended
- Post-mining land tenure and land uses
- Minimizing secondary impacts
- Other opportunities for biodiversity improvement

Chapter 8: Mitigation Measures for Environmental Impact

- **Control water and air pollution** The water accumulated within the mining area is likely to be muddy due to presence of large amount of dust and soil. Strategy will be developed to check the mixing of contaminated water with nearby water source. Mining activity involves use of Heavy Earth Moving Machinery (HEMM) and vehicles. The movement of vehicles laden with ore caused air pollution because of dust flying in the area. Care will be taken to cover these trucks with tarpolin to avoid dust getting airborne and frequent water sprinkling on haul roads, loading and unloading points and crusher sites.
- **Control of Noise pollution** Operation of heavy machinery and blasting in the mining area produces large amount of sound which may cause disturbance to wild animals. Periodic maintenance of these machines is important to control the noise levels. No mining, blasting or transportation will be allowed from 6 pm to 6 am. Control Blasting may be resorted and need to be monitoring on daily basis and keep record for surveillance. Development of green belt along the project area is an effective strategy to control the noise pollution. It is suggested that a green belt needs to be developed in the safety zone of 7.5m along the mine lease area. Only native trees must be planted in the safety area (Annexure 7). No mining operation must be carried out in this zone, rather dense plantation of evergreen trees must be carried out. This will provide a natural screen between the mine and the adjoining area thus reducing the nuisance caused by noise and dust in the vicinity of the mine.
- **Waste Management** Mining process involves movement of large number of work force and vehicles within the mining area, a large quantity of waste and garbage is generated in the mining area. The garbage includes solid waste such as over burden, mine waste, sub-grade ore, some amount of bio degradable waste and hazardous waste such as used oil, used batteries, oily sludge, filter materials containing oil are likely to be generated within the project area. These materials will create pollution leading to various health problems for wild animals. So, proper handling & management is suggested to avoid such contamination/pollution.

Solid waste Management: The only significant solid waste in mine is overburden and is fully utilised in Backfilling and Dumps. Detail Management of the OB and associated pollution is as under

Overburden dumps management

The management of overburden dumps involves the following

- Stabilization of overburden dumps,
- Construction of retaining boulder walls,
- Construction of garland drains for drainage,
- Provision of jute mesh/ Geotex lining to facilitate grass or vegetative growth on slopes,

- Provision of good soil mixed with manure and subsequent watering for growth of grass for anchorage on slopes. Plantation mixed with indigenous and fast growing plant species,
- Degraded area will be reclaimed and rehabilitated in a phased manner with local plant species,
- Transport roads will be planted with trees on either side
- The Sand Segregation Plant will be having fully covered crusher units, fully covered vibrating screens to reduce air borne dust
- In addition the processing of OB to sand involves use of hydrocyclones wherein water is used and thus eliminating the sources of air pollution
- Transportation of sand is proposed in tarpaulin covered trucks, thereby making the pollution from this transportation insignificant
- Some successful control techniques used for haul roads are dust suppressant application, paving, route modifications, and soil stabilization, for conveyors, covering and wet suppression, for storage piles, wet suppression, windbreaks, enclosure, and soil stabilizers, for conveyor and batch transfer points, wet suppression and various methods to reduce freefall distances (e.g., telescopic chutes, stone ladders, and hinged boom stacker conveyors), and for screening and other size classification, covering and wet suppression
- Wet suppression techniques include application of water, chemicals and/or foam, usually at crusher or conveyor feed and/or discharge points. Such spray systems at transfer points and on material handling operations have been estimated to reduce emissions 70 to 95 percent. Mist Spray systems can also reduce loading and wind erosion emissions from storage piles of various materials 80 to 90 percent. Control efficiencies depend upon local climatic conditions, source properties and duration of control effectiveness. Wet suppression has a carryover effect downstream of the point of application of water or other wetting agents, as long as the surface moisture content is high enough to cause the fines to adhere to the larger rock particles

Surface Water Pollution Control Measures

Retaining walls will be provided at the toe of dumps to prevent wash off from dumps and sliding of material from benches. This will help in preventing siltation of water drains/channels,

- Water channels/drains carrying the rain water from the mine will be provided with baffles and settling pits to arrest the suspended solids,
- Worked out slopes will be stabilized by planting appropriate shrub/grass species on the slopes. This will help in preventing wash-off of dump from these slopes,
- The mine water will be regularly tested and appropriate measures will be taken in case any element is found exceeding the limits prescribed by CPCB

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

- Seepage water and rain water collected in the open pits will be pumped out and used for dust suppression, plantation and in beneficiation process. Excess water, if any, will be discharged into natural drainage system after de-silting in settling ponds.
- The probable cause of surface water pollution in the proposed mining area will be soil erosion and wash off from the waste dumps and mineral stock yards in monsoon season. The run-off water during monsoon season flows through natural water courses into nallas. The surface water entering into the mine during rainy season will be diverted through suitable drains to reduce the wash off of soil. The general drainage direction in the working area will be towards the mine sump, for collection of water. The water will be utilized for greenbelt development, mining operation, which will reduce the fresh water requirement.
- Adequate measures to protect the mine during rains will be taken by providing garland drains around the mine excavations and also providing suitable drainage gradients for mine benches. Sumps of adequate capacity will be provided on the quarry floor.

Following control measures will be adopted to check the wash-off from soil erosion:

- Plantation of shrubs on down slope of overburden dump,
- Stabilizing road cutting
- Providing suitable drainage system to prevent surface water from entering into mines directly,
- Providing sufficient number of retaining walls/check walls at OB dump
- Diverting natural drains through the undisturbed areas and connecting to local natural nalla

Ground Water Pollution Control Measures:

- The domestic sewage from the canteen and toilets will be routed to Sewage Treatment Plant (STP). Adequate maintenance of the STP will be carried out to avoid choking with sludge.
- Regular monitoring of water levels and quality of water in the existing open wells and bore well in the project area to study the hydrology of the area. If necessary, additional observation wells will be sunk for monitoring the water table levels and water quality around the mine both in the upstream and downstream. Opencast mine will act as natural rain water harvesting structure. Rain water falling within the active mine area shall be collected in the mine sump and treated for reuse.

Water Security Plan (WSP):

Agriculture in the area is characterized by wasteful use of groundwater through low-efficiency irrigation practices, leading to drinking water shortage even in normal

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summers. The area with single crop farming, has failed to utilize its groundwater resources. The agricultural drought is often the result of cropping patterns, which are determined on anticipation of average rainfall and rarely factor rainfall variations. The pattern of rainfall indicates that there is rainfall of 50-60 days/year. 90% of the rainfall is received during the months of June-August of every year. The intensity of rainfall at this time is high leading to high surface run-off. There is considerable scope to improve the out-put per ha in agriculture sector in the project area by integrating the development of land and water resource. The water harvesting on the principles of watershed management and groundwater recharge techniques need to be implemented in these regions. It is proposed to prepare Water Security Plan for adjoining villages (three villages namely Bhendala, Savali, and Ruikot). WSP aims for drinking water security in selected villages by means of

- Ensuring Quality and quantity of water supply, storage management (aquifer management, demand management), capacity building and training
- Providing futuristic plan in maintaining sustainable use of water for at least for next 10 years
- Avoid duplicity of different schemes and provide scope of participation of the local public for their self-reliance
- The objectives of WSP will include current requirement of water for the villages, practices of water management, and overall development of the selected village in terms of water management

Year/Stage		OB Removal			External Dump		Internal		Embankment	
(Life of the mine plus post closure period)		(Cumulative)			(Cumulative)		(Cumulative)		(Cumulative)	
post closure period)		Top Soil	OB	Total	Top Soil	OB	Top Soil	OB	Top Soil	OB
Up to Base year	2026	0.07	0.35	0.42	0.07	0.35	0	0	0	0
Y-1	2026-27	0.22	1.85	2.07	0.22	1.33	0	0.52	0	0
Y-3	2028-29	0.54	4.73	5.27	0.54	3.41	0	1.32	0	0
Y-5	2030-31	1.03	7.52	8.55	0.54	5.71	0.49	1.81	0	0
Y-10	2035-36	1.38	15.86	17.24	0.54	9.41	0.84	6.33	0	0.12
Y-15	2034-35	1.72	27.24	28.96	0.54	9.41	1.18	17.71	0	0.12
Y-20	2045-46	1.97	40.99	42.96	0.54	9.41	1.43	31.46	0	0.12
Y-25	2050-51	2	56.71	58.71	0.54	9.41	1.46	47.18	0	0.12
Y-30	2055-56	2.05	72.41	74.46	0.54	9.41	1.51	62.88	0	0.12
Y-34	2059-60	2.15	84.91	87.06	0.54	9.41	1.61	75.38	0	0.12
Post Closure										
Y-39	2064-65	2.15	84.91	87.06	0.54	9.41	1.61	75.38	0	0.12

Chapter 9: Mitigation Measures for Impact on Wildlife and Biodiversity

9.1 Objectives of mitigation to address issues of wildlife conservation

Due to the mining operation 151 ha of forest (add additional adjoining areas keeping 50 meter buffer) area will not be available for use by the wild animals till the mining is completed as per mine closure plan. Mine closure land use is presented in Annexure 5. The objective for the project area will therefore be

- Ensure wildlife safety especially during mining
- Ensure ecological restoration of the mined out area
- To provide safe spill over corridors for wildlife from Impact Area to relatively rich neighboring forest areas
- Ensure wild life habitat restoration during and post mine closure plan
- Strict compliances and monitoring of environment mitigation measures especially air, water and noise
- Lawful compliances of Wild Life Protection Act under section 83 (O) (1) (g) as well as compliances of the conditions imposed under Environment Clearance issued to the project by Ministry of Environment, Forest and Climate Change, GOI

9.2 Strategies to mitigate the adverse impacts on wildlife

In order to reduce the impact of the proposed Manganese Ore mining projects of M/s Yazdani International Private Limited, Bhubaneswar at Marki Mangli II Coal Mine on environment and around wildlife areas, following mitigation measures are suggested. The financial provision to be made available for implementation of following measures is given in Annexure 6

Habitat must to be developed as a gradual process side by side with the mining activity

Strategies within the project area

- Soil and moisture conservation. Mining activity in the proposed area will involve clearing of vegetation. Mining activity will also involve removal of top soil. Due to removal of vegetation cover and top soil, moisture in the soil tends to reduce. The following strategies will be to conserve as much moisture as possible
 - Garland drains will be provided around the mine wherever required to arrest any soil from the mine area being carried away by the rain water
 - Toe drains with suitable baffles will be provided all along the toe of the soil dumps to arrest any soil from the dump slopes being carried away by the rain water
 - Bench levels will be provided with water gradient against the general pit slope, to decrease the speed of storm water and prevent its uncontrolled descent
 - Gully formations, if any, on sides of the benches will be provided with check dams of local stone or sand filled bags. The inactive slopes will be planted with bushes, grass, shrubs and trees after applying top soil to prevent soil erosion
 - Loose material slopes will be covered by plantation by making contour trenches at 2 m interval to check soil erosion both due to wind and rain

- Retaining walls (concrete or local stone) will be constructed, around the stockpile or wherever required, to support the benches or any loose material as well as to arrest sliding of loose debris
- Regular addition of manure and vegetative mulches in soil
- Preventive steps for the animals not to fall in the Mine Pits The mine pits are dug with very steep slopes It is necessary to take preventive steps so that, the wild animals/ domestic animals do not fall in the mine pits Therefore chain link fencing around the mine of height 3 meter is proposed to prevent wild life from falling into the mine pit Another chain link fence of one meter height is prescribed on the inner side of the 7.5m green belt Cattle trench around the mine outside the leasehold boundary would help in this direction besides chain link fencing
- Restoration of soil dump Slope instability and erosion is one of the major issue faced by the mining activity The best solution to reduce this is stabilizing the slopes In nature, vegetation is the best way to reduce the risk of slope failures and erosion One of the most useful and environment friendly method for slope stabilization is bioengineering Bioengineering, with respect to this topic, entails the use of living plants and other auxiliary materials for stabilization of hill slopes For the purpose of slope stabilization, native species having deep root systems and simple propagation have to be chosen (Annexure 7) Geo-synthetic fabrics are also proposed for slope stabilization These are porous and flexible material that increases the stability of slopes or any earthen structures The most commonly used geo-synthetic fabric is called geotextile Geotextiles are woven or non-woven synthetic polymers made of polyester, polyamide or polypropylene and polyethylene These materials are highly resistant to biological and chemical degradation One of the natural fibers commonly used as geotextile is jute Plantation of agave along the slopes and adopting method of plantation of bigger trees developed in gunny bags would certainly help in reducing the soil erosion/ gully formation and ensure stability
- Control of water pollution To arrest the silt brought by surface runoff Catch drains will have to be constructed around the OB dumps which have their out let in siltation ponds made to collect these surface runoffs and mine water At the toe of the dump Gabion wall need to be constructed to control siltation A series of open drains will be provided on dump body to arrest surface run-off and prevent siltation In order to discharge clean water outside the lease area provision for sedimentation tank within mine boundary is proposed This sedimentation tank will arrest Total Suspended Solids (TSS) and other unwanted sediments Siltation ponds will have to be properly designed and constructed to collect the runoff from the mine and allow its sedimentation The water so collected can also be utilized for watering the mine area, roads, green belt development, etc
- Surface Water Pollution Control Measures Retaining walls will be provided at the toe of dumps to prevent wash off from dumps and sliding of material from benches This will help in preventing siltation of water drains/channels,
 - Water channels/drains carrying the rain water from the mine will be provided with baffles and settling pits to arrest the suspended solids,

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- Worked out slopes will be stabilized by planting appropriate shrub/grass species on the slopes. This will help in preventing wash-off of dump from these slopes,
 - The mine water will be regularly tested and appropriate measures will be taken in case any element is found exceeding the limits prescribed by CPCB
 - Seepage water and rain water collected in the open pits will be pumped out and used for dust suppression, plantation and in beneficiation process. Excess water, if any, will be discharged into natural drainage system after de-silting in settling ponds
 - The probable cause of surface water pollution in the proposed mining area will be soil erosion and wash off from the waste dumps and mineral stock yards in monsoon season. The run-off water during monsoon season flows through natural water courses into nallas. The surface water entering into the mine during rainy season will be diverted through suitable drains to reduce the wash off of soil. The general drainage direction in the working area will be towards the mine sump, for collection of water. The water will be utilized for greenbelt development, mining operation, which will reduce the fresh water requirement
 - Adequate measures to protect the mine during rains will be taken by providing garland drains around the mine excavations and also providing suitable drainage gradients for mine benches. Sumps of adequate capacity will be provided on the quarry floor. Following control measures will be adopted to check the wash-off from soil erosion
 - Plantation of shrubs on down slope of overburden dump,
 - Stabilizing road cutting
 - Providing suitable drainage system to prevent surface water from entering into mines directly,
 - Providing sufficient number of retaining walls/check walls at OB dump
 - Diverting natural drains through the undisturbed areas and connecting to local natural nalla
- **Ground Water Pollution Control Measures** The domestic sewage from the canteen and toilets will be routed to Sewage Treatment Plant (STP). Adequate maintenance of the STP will be carried out to avoid choking with sludge. Regular monitoring of water levels and quality of water in the existing open wells and bore well in the project area to study the hydrology of the area. If necessary, additional observation wells will be sunk for monitoring the water table levels and water quality around the mine both in the upstream and downstream. Opencast mine will act as natural rain water harvesting structure. Rain water falling within the active mine area shall be collected in the mine sump and treated for reuse

- **Water Security Plan (WSP)** Agriculture in the area is characterized by wasteful use of groundwater through low-efficiency irrigation practices, leading to drinking water shortage even in normal summers. The area with single crop farming, has failed to utilize its groundwater resources. The agricultural drought is often the result of cropping patterns, which are determined on anticipation of average rainfall and rarely factor rainfall variations. The pattern of rainfall indicates that there is rainfall of 50-60 days/year. 90% of the rainfall is received during the months of June-August of every year. The intensity of rainfall at this time is high leading to high surface run-off. There is considerable scope to improve the out-put per ha in agriculture sector in the project area by integrating the development of land and water resource. The water harvesting on the principles of watershed management and groundwater recharge techniques need to be implemented in these regions. It is proposed to prepare Water Security Plan for adjoining villages (three villages namely Bhendala, Savali, and Ruikot). WSP aims for drinking water security in selected villages by means of
 - Ensuring Quality and quantity of water supply, storage management (aquifer management, demand management), capacity building and training
 - Providing futuristic plan in maintaining sustainable use of water for at least for next 10 years
 - Avoid duplicity of different schemes and provide scope of participation of the local public for their self-reliance
 - The objectives of WSP will include current requirement of water for the villages, practices of water management, and overall development of the selected village in terms of water management
- **Wildlife encounter in the project area** Small animals like squirrel, mongoose, and snakes may enter in to the area. The user agency will educate the labours and staff to protect these animals and not harm them. Contact details of snake rescuers in the area will be available with the security room. In case on snake encounter the staff will be trained to report the sighting to the security room.

Strategies for area outside project boundary

- **Plantation in Buffer Zone** Trees will be planted in the buffer zone also. This plantation will be done at selected places only and only local species will be used in the plantation. Some of the tree species included will be Saja (*Terminalia tomentosa*), Baheda (*Terminalia bellerica*), Bija (*Pterocarpus masupium*), Bargad (*Ficus benghalensis*), Peepal (*Ficus religiosa*), Mahua (*Madhuca latifolia*), Sal (*Shorea robusta*), etc. Care will be taken to include some fruit bearing trees like Gular (*Ficus glomerata*), Aonla (*Emblica officinalis*), Aam (*Mangifera indica*) and such trees to provide food to the herbivores which in turn will be the food source of the carnivores. Water, particularly during drier seasons, becomes the most important factor to all types of wild animals including the mammals, birds and reptiles. If water is available safely, then all other factors become secondary for the presence and survival of the wild life in any forested area. Places suitable for mini watersheds will be identified in the core as well as in the buffer zone to store rainwater. Further, to make water available at all the times, throughout the year, some of these water holes will be recharged through artificial means. Proper slope will be given to approach

these water sources so that the wild animals will be able to drink water without any difficulty. Proper cover through vegetation or any other type of even artificial cover will be developed near to these water sources so that the prey species will be able to hide themselves from the predators, at the time of approaching the water sources. To attract the birds, plants yielding food to the birds will be planted on priority basis. If water and food are available to the birds without any anthropogenic disturbances the area can become an ideal place for bird watching. Provision of water for the wild animals by creation of water body. Water is the most important for survival of all wild animals. A habitat having abundant food for wildlife will be of no use if water is not available close by. A good wildlife habitat should have well distributed water points. Animals' dependence on water and the way they replenish their water varies with the nature of habitat and the species. Therefore it is suggested that the user agency in association with the forest department will identify strategic locations for development of water holes atleast 1000m away from the mine lease boundary.

- Development of Grazing Land. Grass & fodder plantation will be taken up in the existing grazing areas in the nearby villages through women SHGs from those villages. This will help in avoiding cattle straying in forest area, thereby controlling spread of diseases in wild animals and will also help in providing employment to local women. Necessary financial assistance will be provided to the SHGs by the company.
- Animal movement. Habitat development for easy and undisturbed movement of animals in the wildlife corridor. The area will be developed by plantation of native fruit trees, shrubs, herbs and grasses at a distance of 1000m away from the boundary of mine lease area. Additionally, water holes at strategic locations with the provision of solar powered hand pumps needs to be developed.
- Forest Fire prevention. Fire hazard needs to be prevented for survival of Forest as well as Wildlife. Steps will be taken for prevention of forest fire. The user agency must create awareness among the truck drivers and their labours not to through cigarette of bidi butts in the forest area.
- Make special efforts to create awareness amongst the farmers/ cultivator to reduce the use of chemical in farming and adopt ecofriendly natural farming to create sustainable habitat for movement of wild life.
- Establishment of Joint Forest Management and Biodiversity Committees. No project is successful without the involvement of the locals. The sense of ownership of the forest and its resources amongst the villagers is very important. In order to make the make the plantation successful it is suggested to involve the locals. This can be done by establishing Joint Forest Management and Biodiversity Committees in the nearby villages. This will also help to understand the indigenous knowledge of the locals and accordingly the plantation of locally important trees and shrubs can be carried out.
- Nursery development. It is proposed to enhance the forest area around the mine by carrying out plantation of native trees and shrubs. This activity must be done simultaneously with the mining, so that by the end of mining operation good forest cover is developed adjacent to the mine. To carry out the plantation it is suggested to develop the nursery in the nearby area, and

also involve the locals by giving them employment opportunity for developing and maintaining the nursery

Measures for noise and light pollution, forest fire prevention and spread of invasive species

- **Forest Fire prevention**

Fire hazard needs to be prevented for survival of Forest as well as Wildlife Steps will be taken for prevention of forest fire The user agency shall create awareness among the truck drivers and their labours not to through cigarette of bidi butts in the forest area

This being a tropical forest with open scrub dominant with grass and sparse shrubs and forest with moist deciduous and dry deciduous forest type, it is prone to fire each year between mid-February to June (until onset of rains) Fire lines are to be cleared around the project area, inside and along the forest boundaries, in addition to clearing along the roads, footpaths and nullahs to prevent fire This can be part of the duties of the temporary guards mentioned in the section on tiger and previous section It is important that these guards should be trained to fight fire and also carry out the fire line clearance/development and maintenance and use of different firefighting equipment These fire fighters should be provided with appropriate firefighting equipment / tools including wireless sets Based on discussion with the local people and forest department, forest fire map must be prepared so as to identify areas which are prone to frequent fire that are to be treated under the above said management plans This can be a short project as part of research and monitoring

- **Invasive Species Management**

An invasive species is an introduced species that harms its new environment Invasive species adversely affect habitats and bioregions, causing ecological, environmental, and/or economic damage The major invasive floral species found in the study area are *Lantana camara*, *Parthenium hysterophorus* and *Prosopis juliflora*. The most effective method of managing the these species are manual uprooting of Lantana and Parthenium in core and buffer areas and using heavy machinery for Prosopis removal, especially in grassland ecosystems Post removal of invasive it is important to replant native species to restore ecosystem balance and assisted natural regeneration in degraded areas Community Participation & Awareness also plays an important role in controlling the invasive species Engaging local communities, especially through eco-development committees, will help in invasive species removal Conducting awareness programs on the ecological impacts of invasive plants

- **Control of Light pollution:**

Light pollution near mining areas can negatively impact local wildlife, human health, and even the efficiency of mining operations. To mitigate these effects, the following measures can be implemented- Use fully shielded, downward-facing lights to prevent light from scattering into the sky and surrounding environment, Use low-intensity, warm-colored LED lights to reduce blue light emissions, which are more disruptive to wildlife, Focus lighting only on necessary work areas and avoid over-illumination of roads and non-essential spaces, Use glare-reducing fixtures and visors to limit excessive brightness that can disturb workers and animals, Plant trees and vegetation buffers around the site to block light from spreading to nearby habitats, Limit artificial lighting during late-night hours in non-essential areas, Educate workers and nearby communities on the importance of reducing light pollution.

- **Control of Noise pollution.**

Operation of heavy machinery and blasting in the mining area produces large amount of sound which may cause disturbance to wild animals. Periodic maintenance of these machines is important to control the noise levels. No mining, blasting or transportation will be allowed from 7 pm to 7 am. Control Blasting may be resorted and need to be monitoring on daily basis and keep record for surveillance. Development of green belt along the project area is an effective strategy to control the noise pollution. It is suggested that a green belt needs to be developed in the safety zone of 7.5m along the mine lease area. Only native trees must be planted in the safety area. No mining operation must be carried out in this zone, rather dense plantation of evergreen trees must be carried out. This will provide a natural screen between the mine and the adjoining area thus reducing the nuisance caused by noise and dust in the vicinity of the mine. Some additional measures to reduce noise pollution are as follows

- Secondary blasting will be minimized to the extent possible,
- Systematic blasting with proper spacing, burden and stemming will be carried out,
- Minimum quantity of detonating fuse will be consumed by using non-electrical initiation system,
- Blasting will be carried out during favorable atmospheric conditions and also when human activities are at their minimum,
- Prime movers/diesel engines will be properly maintained,
- A buffer barrier of tree belt will be provided in phased manner along the periphery of the mine to attenuate noise,

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- At transfer points, free fall material will be minimized and suitable lining material will be provided
- Isolation/enclosure of noisy machines/equipment, wherever possible
- Reducing idling time of machines/equipments
- Provision of enclosures, silencers, etc to the possible extent to control noise propagation
- Use of adequate silencers and practicing speed limit for material transport vehicles

Environment Monitoring Programme for Key Parameters (Water)

The details of the suggested Environment Monitoring Programme for Marki Mangli II Coal Mining Project are provided in Table below

SN	Particular	Monitoring Frequency	Sampling Duration	Monitoring Parameters
1	Surface Water 1) Dadhani Nala (D/S)	Once in 3 month	Grab	As per the parameters specified under IS 2296 (Class-C) As per the parameters specified under IS 10500 – 2012
2	2) Dadhani Nala(U/S)	Once in 3 month	Grab	
3	3) Penganga River	One/ month	One time	
4	Ground water 5 Stations in Adjoining Villages	Once in 3 month	One time	Ground water quality parameters
5	Well or Bore Wells or piezometers in Mine Lease (2 locations) and surrounding areas (5 locations)	Once in a season	One time	Static water level, pumped water level, seasonal fluctuation and other relevant parameters
6	Mine Effluents	Once in a month	24 hour composite	As per EPA guidelines, 1986

Chapter 10: Action Plan for Conservation Plan

Habitat is natural home for wildlife confined in forest areas. Habitat or natural home is territory in which wild animal can walk without fear, enjoy independent breeding activities with availability of food/fodder and water even in Pinch Period and also take rest without disturbance. In the degraded forest, planting in open patches have to be taken to develop the forest areas. Anicuts will be constructed for water availability in forest areas under the guidance of Forest department. To overcome soil erosion, check dams and Gull plugging have to be constructed in the buffer area. It is observed that Village Forest Protection Committees are playing a good role in protection of flora and fauna. It communicates with the local people to protect wild animals because wild animals are our friends and good wealth. Wild animals provide us a healthy environment. VFPMC's supports local people in uplifting their economy, health and livelihood. These committees watch the forest day and night and protect against fire and hunting of wild animals in the area.

Non-formal Education

Conservation education and awareness will be imparted both at the formal and non-formal levels. At the formal level, it will be given at school, colleges and university levels. Formal education, in spite of all the curriculum development and introduction of the study of ecology, wildlife and conservation at the school and college levels, however, largely remains text book and examination oriented. Because of the situation, non-formal education becomes all the more necessary for creating the right kind of awareness and attitude among people at all levels- children, teenagers, adults, family groups, teachers, administrators, politicians and policymakers. To achieve this some local tours of school and college students will be arranged to nearby National Parks.

Institutional Infrastructure

The prime requisite for building up an understanding and awareness about wildlife and conservation is to develop an appreciation, respect and love for nature. Most people lack the curiosity to know even the names of animals and plants they come across in their day-to-day life. Development of an inquisitive mind, a keen sense of observation and curiosity about the fauna and flora are, therefore, very important. Concern for conservation can only emanate from a love for nature and awareness about the interdependence of all species of animals and plants, including the man. To arouse curiosity about the wildlife in the young mind some quiz and essay competitions will be arranged in the schools and colleges of the buffer zone and some nearby areas.

Indian Tradition of Conservation

The theme of conservation, wildlife and reverence for life is reflected in some of the exquisite images in Indian art paintings, sculpture, architecture and decorative art. The most wide-ranging wild life imagery is found in Indian miniature paintings. Early literatures like the Panchatantra and Hitopadesha contain

animal fables that have been used to preach both wisdom and morals. The long-term tradition and abiding faith in conservation of nature is vividly seen in recent times also like the Chipko and Appiko movements. These conservation themes will be popularized through pamphlets and posters.

Role of the Individual

Each individual should develop a personal ethic towards nature and wildlife which could pave the way for commitment and conviction not to destroy wildlife particularly that of not considering hunting as a sport, nor to use products made out of skins or other parts of endangered animals. Unless these products are boycotted by their users, the clandestine killing and poaching of wildlife at the hands of unscrupulous people will continue. Everyone can play an important role in spreading the message of conservation among their friends, family and community at large.

Improvement of Water availability

"Water" is the daily requirement of all wild animals. The scarcity of water leads to the migration of wild animals from forest area towards population and thus increasing dangers to their life by way of man-animal conflict and attracts poaching also. This includes Repair of existing Anicuts, Talai and water pond will be provided every year before rainy season in consultation with forest department. Development of small mud ponds and ensuring the availability of water in pond and tankis (Drinking Water body for Cattle) should be ensured during the pinch period.

Eco-Development Works

People in and around the forest area generally are hostile against the forest department and its staff, because they are prevented from taking out timber and other forest products illegally. Such antagonistic behaviour is mainly because little effort is made to meet their genuine demands either from outside the forest area or from the forest area but in a sustainable manner. Regular interaction with them with agreement for sustainable utilization of forest resources combined with some incentives can completely change their indifferent or even un-concerned attitude to conservative attitude.

Horticultural Nursery

There will be demand for seedling for horticultural species in and around Wani/Mukutban. Nurseries can be raised by villagers for selling the same to different farmers and also to the people in the nearby townships. For this purpose, skill of grafting and budding can also be developed. Ornamental tree species can also be grown for beautification.

Controlled grazing

Over grazing affects the habitat of wild animals, hence controlled grazing is must to conserve and preserve the habitats of the wild animals. For this, villagers will be made educated regarding the negative impacts of over grazing under the guidance of Forest department.

Protection against fire

Generally, fire occurs in summer season. The local people use to take smoking bidi and cigarettes into the forest & throw them there which cause fire. The dry grass catches the fire and in no time, fire spreads in the area. However, fire accidents in forest is severe, it destroys the forest as well as the habitat of wild animals. Fire kills the innocent wild animals and their cubs and chinks specially in nesting and breeding season.

Salt is a very important requirement of most wildlife, which they often meet from natural salt licks available in different forests. A survey of the area revealed that such salt licks are badly needed in the area. Hence, artificial Salt licks must be provided at suitable locations, preferably near water holes, where proper watch & ward is possible. Otherwise these spots shall be misused for poaching animals.

Protection against hunting

Hunting of the wild animals is prohibited in forest and also outside the forest. The local people hunt this wild animal which is a punishable offence. Hunting must not be allowed in the study area. Awareness Camps will be arranged under the guidance of Forest department for labors working in the industry regarding offences against wild animals such as trapping, driving, snaring, capturing, killing, poisoning. They will be made aware that taking any part of the body of wild animals is restricted and is a nonbailable offense. Offended person could be punished with an imprisonment of 7 years. One cause of depletion of wildlife status is due to poaching by local people. Hence, it is necessary both to improve enforcement and create awareness among the people for eliminating poaching and consequently improve the status of wild animals. For this the protection has to be strengthened at project cost. Towards this end the project proponents may need to send their staff to be properly trained by the forest department and also help local forest protection committee youths'. Necessary equipment like a walkie talkie or mobile handsets would also need to be provided to mine security-men to report to the forest department of any poachers or unsocial looking elements in the jungle or its surroundings. The Project staff should also help the Forest staff to prevent poaching and illicit felling whenever needed.

Checks and control on the Movement of Vehicle

Due to movement of vehicles injury to animals and reptiles may take place. For this reason, speed limit of vehicles will be fixed and operators will be educated and advised regularly to drive vehicle safely and slowly. All operators will also be advised to stop the vehicle on seeing such reptiles or animals and let it go away before moving the vehicle further.

Pressure horn

Noise generated by pressure horn disturbs the wildlife and forces them to leave the place. No pressure horn will be fixed on vehicle plying in the area. All the drivers will be advised to make minimum use of horn while working hours.

Vehicles head lights

Efforts will be made to cover the lights suitably with paint so that strong beam of head light is not formed and light falls in front of the vehicle only

People Participation

With the help of the local people and employees of the Company watch will be kept on the wild life as well as illegal tree felling Forest and police department will be informed if such incident occurs, to take legal action against the offenders For this they will be trained for motivation Organizing awareness activities for the wildlife and nature during Wildlife Week (1st Oct to 7th Oct), on 21 st March (The World Forestry day) and on 5th June (The Environment day) every year, Activities may include painting, photography competition, Essay Writing, Slogan writing, trees and bird's identification etc → During the Camps, Publication of Brochure/ Pamphlets regarding Nature and wild life Protection shall be distribution and guidance for protection of Wildlife and environment shall be provided → Display of slogans and signage in the entire core zone and 10-km radius shall be provided and displayed especially along road side regarding Wildlife and Nature

Encourage local villagers to grow trees on their on their field bounds/court yards

In consultation with Forest Department the company will provide some finance, to grow saplings of tree species, having importance for wood, small timber and fuel wood to distribute to the villagers Bamboo will be another important species with a lot of environmental and economic value This no doubt will help reduce dependence of people on RF forest, as a result, the ecological condition of the area will improve so the wild life will be attracted to this area

Reducing Environmental Pollution

To keep the environment frees from smoke, cooking gas cylinders will be provided to all the project workers particularly To control pollution from project measure outlined in EMP will be followed

Provide employment to the villagers

On the basis of their suitability, jobs in project will be provided to the nearby villagers As a result, their economic condition will improve This well keep them busy also, so they will not be tempted/compelled to cause destruction to forest which will help improve the status of wildlife

Annexure 1: Vesting Order

GOVERNMENT OF INDIA
MINISTRY OF COAL
OFFICE OF THE NOMINATED AUTHORITY
(Constituted under Section 6 of The Coal Mines (Special Provisions) Act, 2015)
Shastri Bhawan, New Delhi

VESTING ORDER

(under clause (b) of sub-rule (2) of rule 7 and sub-rule (1) of rule 13 of the Coal Mines (Special Provisions) Rules 2014 read with clause (b) of sub-section (3) of Section 6 and sub-section (3) of Section 8 of the Coal Mines (Special Provisions) Act, 2015)

In re: Marki Mangli II Coal Mine (the "mine") particulars of which is specified in Annexure 1

Order no. NA-104/3/2020-NA

Date March 03, 2021

In favour of: Yazdani International Private Limited, incorporated in India under the Companies Act, 1956 with corporate identity number U13209OR2006PTC009009, whose registered office and principal place of business is at 7th Floor, C Wing, Fortune Towers, Chandrasekharpur, Bhubaneswar, Odisha 751023, India (the "successful bidder")

For the purpose of Sale of coal, including sale to Affiliates and related parties, utilisation of coal for any purpose including but not limited to captive consumption, Coal Gasification, Coal Liquefaction and export of coal

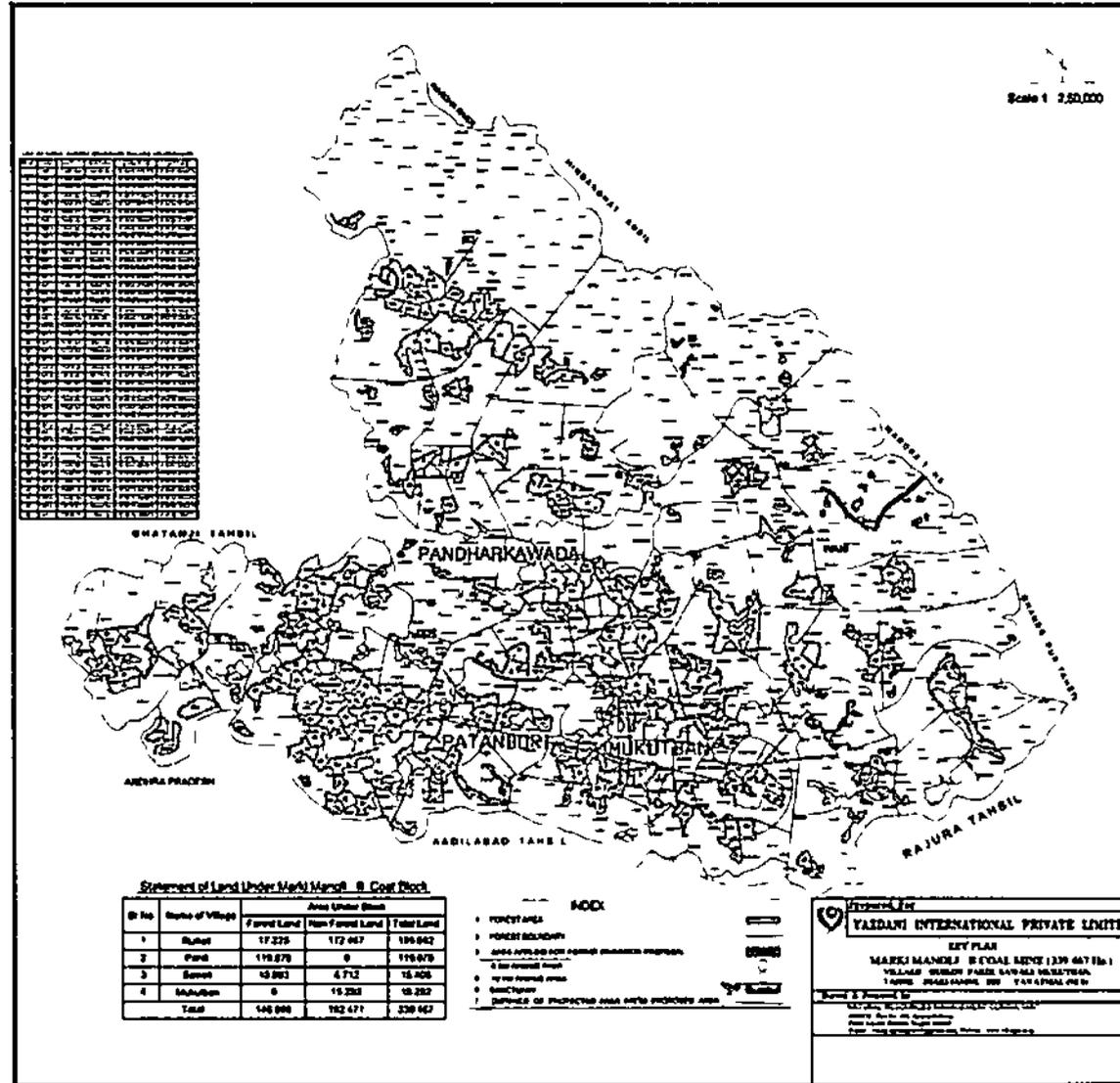
WHEREAS, the nominated authority has, in accordance with provisions of the Coal Mines (Special Provisions) Act, 2015 (the "Act") and the Coal Mines (Special Provisions) Rules 2014 (the "Rules") conducted the auction of the mine;

AND WHEREAS the successful bidder is eligible to receive this vesting order with respect to the mine including, inter-alia, -

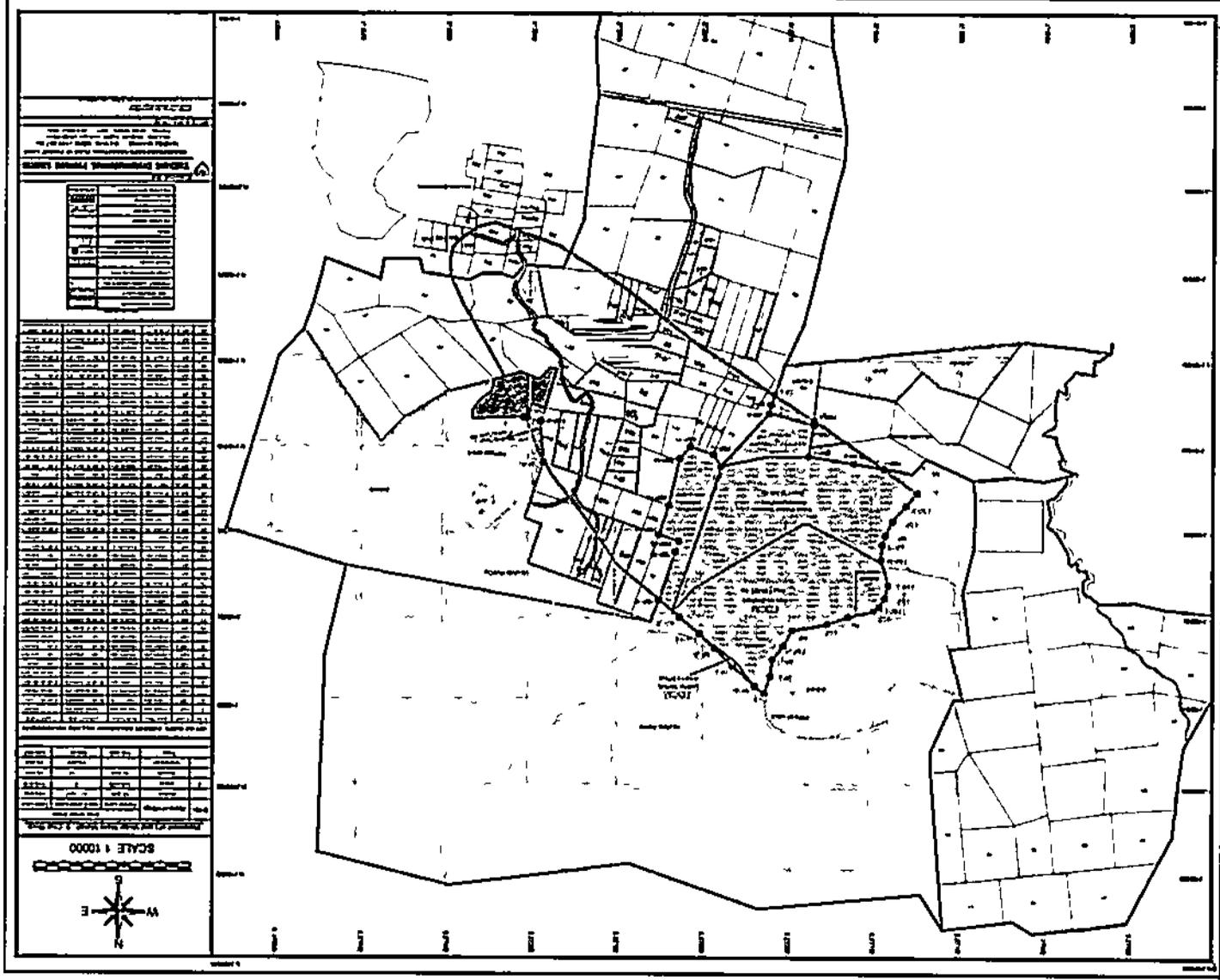
(a) the coal bearing land acquired by the prior allottee and the lands, in or adjacent to the coal mines used for coal mining operations acquired by the prior allottee and



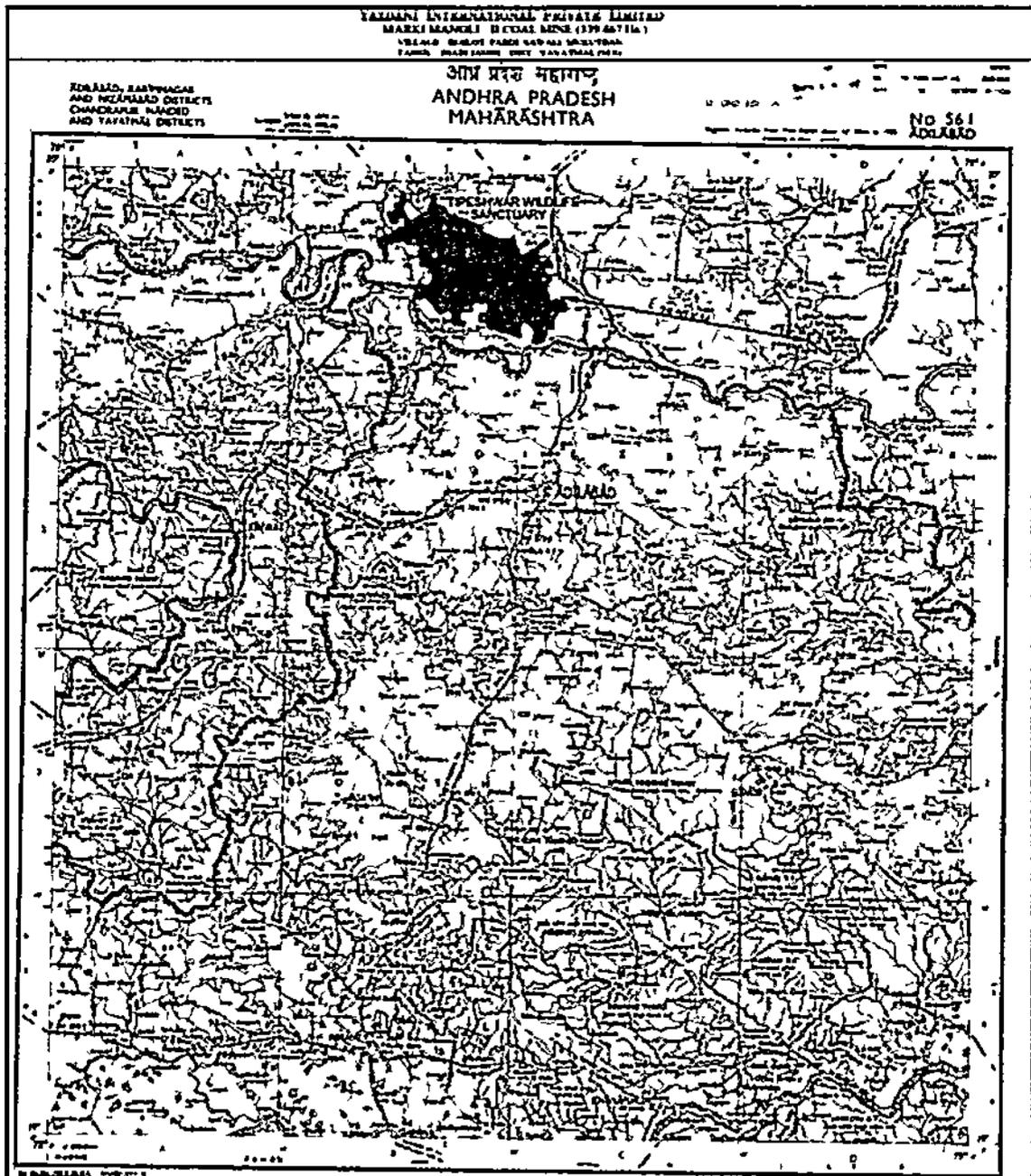
Annexure 2: Location of Marki Mangli II Mine



Annexure 3: Existing Land Ownership of Marki Mangli II Mine



Annexure 4: Distance of Marki Mangli II Mine from Wildlife Sanctuary



Annexure 5: Mine Closure Landuse

Sr.No	Type	Land use (proposed)	Land Use (End of Life)	Land Use (Post Closure)						
				Agriculture Land	Plantation	Water Body	Public/ Company Use	Forest Land (Returned)	Undisturbed	Total
1	Excavation Area	215.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	Backfilled Area	0.00	163.43	126.37	0.00	0.00	0.00	37.06	0.00	163.43
3	Excavated Void	0.00	51.78	0.00	0.00	51.78	0.00	0.00	0.00	51.78
4	Without Plantation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	Top Soil Dump	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	External Dump	52.00	52.00	0.00	0.00	0.00	0.00	52.00	0.00	52.00
7	Safety Zone	6.06	6.06	0.00	0.00	0.00	0.00	6.06	0.00	6.06
8	Haul Road between quarries	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	Road diversion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	Diversion OR Below River Or Nala Or Canal	0.669	0.669	0.00	0.00	0.669	0.00	0.00	0.00	0.67
11	Setting Pond	2.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00
12	Road and Infrastructure Area	12.20	12.20	0.00	0.00	0.00	0.00	12.20	0.00	12.20
13	Rationalization Area	42.797	42.797	3.121	0.00	0.00	0.00	39.676	0.00	42.80
14	Garand Drains	3.011	3.011	0.00	0.00	3.011	0.00	0.00	0.00	3.01
15	Embankment	5.52	5.52	0.00	0.00	0.00	5.52	0.00	0.00	5.52
16	Green Belt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	Water Reservoir Near Pit	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	UG Entry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	Undisturbed or Mining Right For UG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	Resettlement	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	Pit Head Power Plant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	Water Harvesting	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	Agricultural Land, Undisturbed OR Mining Right For UG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	339.47	339.47	129.49	0.00	57.46	5.52	147.00	0.00	339.47

Wildlife Mitigation Plan for Marki Mangli II Coal Mine
Annexure 6:

Certified budget from the DFO

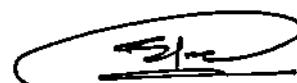
Sr No	Particulars	Cost (Rs lacs)					Total
		1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year	
	Wildlife Conservation / Mitigation Plan						
1	Fencing (2.5m height) 5200 meter	13					13
2	Cattle trench along the mine boundary with departmental HEMM	12		5		5	22
3	Habitat development and plantation	20	20	20	15	10	85
4	Nursery development and maintenance of safety zone including green belt development along the lease area	10	5	5	3	2	25
5	Watch tower	10	0	0	0	0	10
6	Soil moisture conservation works	2	2	1	1	1	7
7	Construction of waterholes maintenance	5	5	1	1	1	13
8	Well with solar pumps	0	10				10
9	4% of the project cost to be deposited with wildlife trust as per State Government norm	372	0	0	0	0	372
10	Awareness and training of JFM and Biodiversity committee for wildlife protection and fire control	3	3	3	3	3	15
	Total						572

Certified budget from the DFO

Sr. No.	Particulars	Cost Rs.(lakhs)					
		1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year	
	Wildlife Conservation / Mitigation Plan						
1	Fencing (2.5m height) 5200 meter	80					80
2	Cattle trench along the mine boundary with departmental HEMM	12		5		5	22
3 1	Habitat development and plantation	500	200	100	100	100	1000
3 2	Removal of invasive species	50	20	10	10	10	100
4	Nursery development and maintenance of safety zone including green belt development along the lease area	10	5	5	3	2	25
5	Watch tower	10	0	0	0	0	10
6	Soil moisture conservation works	50	20	10	10	10	100
7	Construction of waterholes maintenance	5	5	1	1	1	13
8	Well with solar pumps	0	10				10
9	4% of the project cost to be deposited with wildlife trust as per State Government norm	372	0	0	0	0	372
10	Awareness and training of JFM and Biodiversity committee for wildlife protection and fire control	3	3	3	3	3	15
	Total	1092	263	134	127	131	1747



Sharad Satramwar
Dy General Manager (Lease & Law)
Yazdani International Pvt Limited

Dahanjay Waybhase
Dy. Conservator of Forests (T)
Pandharkawda Forest Division

APPENDIX 1 Faunal Diversity from study area (Core zone & Buffer Zone)

Sr No	Scientific name	Common name	Schedules of Wildlife Act/ IUCN Status
1	<i>Anathana ellioti</i>	Indian/Madras Tree Shrew	LC /II
2	<i>Antelope cervicapra</i>	Blackbuck	VU / I
3	<i>Axis axis</i>	Spotted Deer	LC / II
4	<i>Bos gaurus</i>	Indian Gaur / Bison	VU / I
5	<i>Boselaphus tragocamelus</i>	Blue Bull / Nilgai	LC / II
6	<i>Canis aureus</i>	Golden Jackal	LC / I
7	<i>Canis lupus pallipes</i>	Indian Wolf	VU / I
8	<i>Rusa unicolor</i>	Sambar	LC / I
9	<i>Felis chaus</i>	India Jungle Cat	NT / I
10	<i>Funambulus pennanti</i>	Five striped Squirrel	LC /NL
11	<i>Herpestes auropunctatus</i>	Small Indian mongoose	LC / I
12	<i>Herpestes edwardsi</i>	Common mongoose	LC / I
13	<i>Hipposideros ater</i>	Dusky Leaf-nosed bat	LC /NL
14	<i>Hyaena hyaena</i>	Striped Hyaena	DD / I
15	<i>Hystrix indica</i>	Indian crested porcupine	LC / I
16	<i>Lepus nigricollis</i>	Indian Hare	LC / II
17	<i>Megaderma lyra</i>	Indian false vampire bat	LC /NL
18	<i>Melursus ursinus</i>	Sloth Bear	VU / I
19	<i>Miniopterus schreibersi</i>	Schreiber's Long-fingered bat	LC /NL
20	<i>Moschiola meminna</i>	Mouse Deer	VU / I
21	<i>Muntiacus muntjak</i>	Barking Deer	LC / I
22	<i>Mus philipsi</i>	Wroughton's small spiny Mouse	LC / NL
23	<i>Mus platythrix</i>	Indian Brown spiny mouse	LC / NL
24	<i>Panthera pardus</i>	Leopard	VU / I
25	<i>Panthera tigris</i>	Tiger	EN / I
26	<i>Paradoxurus hermaphroditus</i>	Common Palm civet	LC / I
27	<i>Pipistrellus dormeri</i>	Dormer's bat	LC /NL
28	<i>Pipistrellus coromandra</i>	Coromandel Pipistrelle	LC /NL
29	<i>Prionailurus bengalensis</i>	Leopard Cat	NT / I
30	<i>Pteropus giganteus</i>	Indian flying fox	LC / II
31	<i>Rhinolophus lucius</i>	Great Eastern Horseshoe bat	NT / NL
32	<i>Rhinopoma hardwickei</i>	Mouse-tailed bat	LC /NL
33	<i>Semnopithecus entellus</i>	Hanuman Langur	LC / II
34	<i>Tatera indica</i>	Indian Antelope Rat	LC / NL
35	<i>Tetracerus quadricornis</i>	Four Horned Antelope	VU / I
36	<i>Vandeleura oleracea</i>	Indian Long-tailed Tree Mouse	LC / NL
37	<i>Viverricula indica</i>	Small Indian civet	NT / I
38	<i>Vulpes bengalensis</i>	Bengal Fox	LC / I

AVES.

Sr No	Scientific name	Common name	Schedules of Wildlife Act/ IUCN Status
1	<i>Accipiter badius</i>	Shikra	LC / I
2	<i>Actitis hypoleucos</i>	Common Sandpiper	LC / II
3	<i>Alauda gulgula</i>	Small Skylark	LC / II
4	<i>Alcedo atthis</i>	Small Blue Kingfisher	LC / II
5	<i>Amandava amandava</i>	Red Munia	LC / II
6	<i>Amandava formosa</i>	Green Munia	LC / I
7	<i>Amauromis phoenicurus</i>	White-breasted Waterhen	LC / II
8	<i>Anas crecca</i>	Common Teal	LC / II
9	<i>Anas poecilorhyncha</i>	Spot-billed Duck	LC / II
10	<i>Anasomus oscitans</i>	Asian Open Bill Stork	LC / II
11	<i>Anhinga melanogaster</i>	Darter/Snake Bird	LC / II
12	<i>Anthus rufulus</i>	Paddy-field Pipit	LC / II
13	<i>Apus affinis</i>	Indian House Swift	LC / II
14	<i>Ardea cinerea</i>	Grey Heron	LC / II
15	<i>Ardea purpurea</i>	Purple Heron	LC / II
16	<i>Ardeola grayii</i>	Indian Pond Heron	LC / II
17	<i>Aythya fuligula</i>	Tufted Pochard	LC / II
18	<i>Aythya nyroca</i>	Ferruginous Pochard	LC / II
19	<i>Bubulcus ibis</i>	Cattle Egret	LC / II
20	<i>Burhinus oedicephalus</i>	Stone-Curlew	LC / II
21	<i>Cacomantis passerinus</i>	Plaintive Cuckoo	LC / II
22	<i>Casmerodius albus</i>	Eastern Large Egret	LC / II
23	<i>Celeus brachyurus</i>	Rufous Woodpecker	LC / II
24	<i>Ceryle rudis</i>	Lesser Pied Kingfisher	LC / II
25	<i>Charadrius dubius</i>	Little -Ringed Plover	LC / II
26	<i>Chrysomma sinense</i>	Yellow-eyed Babbler	LC / II
27	<i>Ciconia episcopus</i>	White-necked Stork	LC / II
28	<i>Cisticola juncidis</i>	Streaked Fantail Warbler	LC / II
29	<i>Clamator jacobinus</i>	Pied-Crested Cuckoo	LC / II
30	<i>Columba livia</i>	Blue Rock Pigeon	LC / II
31	<i>Copsychus saularis</i>	Oriental Magpie-Robin	LC / II
32	<i>Coracias benghalensis</i>	Indian Roller	LC / II
33	<i>Coracina macei</i>	Large Cuckoo Shrike	LC / II
34	<i>Corvus macrorhynchos</i>	Indian Jungle Crow	LC / II
35	<i>Corvus splendens</i>	Indian House Crow	LC / II
36	<i>Coturnix coturnix</i>	Rain Quail	LC / II
37	<i>Coturnix coturnix</i>	Common Quail	LC / II
38	<i>Cuculus canorus</i>	Common Cuckoo	LC / II
39	<i>Cuculus micropterus</i>	Indian Cuckoo	LC / II
40	<i>Cypsiurus batasiensis</i>	Palm Swift	LC / II
41	<i>Dendrocopos maharattensis</i>	Yellow fronted	Pred LC / II

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

Sr No.	Scientific name	Common name	Schedules of Wildlife Act/ IUCN Status
		Woodpecker	
42	<i>Dendrocopos nanus</i>	Brown-capped Pygmy Woodpecker	LC / II
43	<i>Dendrocygna javanica</i>	Lesser Whistling Duck	LC / II
44	<i>Dicrurus macrocercus</i>	Black Drongo	LC / II
45	<i>Dinopium benghalense</i>	Lesser Golden-backed Woodpecker	LC / II
46	<i>Dumetia hyperythra</i>	Rufous bellied Babbler	LC / II
47	<i>Egretta garzetta</i>	Little Egret	LC / II
48	<i>Eremoptenx grisea</i>	Ashy-crowned Sparrow Lark	LC / II
49	<i>Eudynamis scolopacea</i>	Asian Koel	LC / II
50	<i>Falco tinnunculus</i>	Common Kestrel	LC / II
51	<i>Francolinus pictus</i>	Painted Francolin	LC / II
52	<i>Francolinus pondicerianus</i>	Grey Francolin	LC / II
53	<i>Fulica atra</i>	Common Coot	LC / II
54	<i>Galanda cristata</i>	Crested Lark	LC / II
55	<i>Galanda deva</i>	Sykes's Crested Lark	LC / II
56	<i>Gallicrex cinerea</i>	Water Cock	LC / II
57	<i>Gallinago gallinago</i>	Common Snipe	LC / II
58	<i>Gallinula chloropus</i>	Common Moorhen	LC / II
59	<i>Galloperdix spadicea</i>	Red Spur-Fowl	LC / II
60	<i>Gallus sonneratii</i>	Grey Jungle Fowl	LC / I
61	<i>Halcyon capensis</i>	Stork-billed Kingfisher	LC / II
62	<i>Halcyon smyrnensis</i>	White-breasted Kingfisher	LC / II
63	<i>Hemiprocne coronata</i>	Crested Tree Swift	LC / I
64	<i>Hierococcyx vanus</i>	Common hawk-cuckoo	LC / II
65	<i>Himantopus himantopus</i>	Black-winged Stilt	LC / II
66	<i>Hirundo concolor</i>	Dusky Crag Martin	LC / II
67	<i>Hirundo daunca</i>	Red rumped Swallow	LC / II
68	<i>Hirundo fluvicola</i>	Streak -throated Swallow	LC / II
69	<i>Hirundo rusttea</i>	Common Swallow	LC / II
70	<i>Hirundo smithii</i>	Wire-tailed Swallow	LC / II
71	<i>Hydrophasianus chirurgus</i>	Pheasant-tailed Jacana	LC / II
72	<i>Ammomanes phoenicurus</i>	Rufous-tailed Finch-Lark	LC / II
73	<i>Lonchura punctulata</i>	Spotted Munia	LC / II
74	<i>Megalaima haemacephala</i>	Coppersmith Barbet	LC / II
75	<i>Megalaima zeylanica</i>	Brown-headed Barbet	LC / II
76	<i>Merops orientalis</i>	Small Bee- eater	LC / II
77	<i>Merops philippinus</i>	Blue-Tailed bee-eater	LC / II
78	<i>Mesophoyx intermedia</i>	Median Egret	LC / II
79	<i>Metopidius indicus</i>	Bronze-winged Jacana	LC / II
80	<i>Milvus migrans</i>	Black kite	LC / II

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

Sr No.	Scientific name	Common name	Schedules of Wildlife Act/ IUCN Status
81	<i>Motacilla alba</i>	White Wagtail	LC / II
82	<i>Motacilla cinerea</i>	Grey Wagtail	LC / II
83	<i>Motacilla maderaspatensis</i>	Large Pied Wagtail	LC / II
84	<i>Muscicapa daunea</i>	Asian Brown Flycatcher	LC / II
85	<i>Nectannia asiatica</i>	Indian Purple Sunbird	LC / II
86	<i>Nettapus coromandelianus</i>	Cotton Teal	LC / II
87	<i>Numenius arquata</i>	Curlew	LC / II
88	<i>Ocyrceros birostris</i>	Indian Grey Hornbill	LC / II
89	<i>Orthotomus sutorus</i>	Indian Tailor Bird	LC / II
90	<i>Passer domesticus</i>	Indian House Sparrow	LC / II
91	<i>Pavo cristatus</i>	Peacock	LC / I
92	<i>Perdicula asiatica</i>	Jungle Bush Quail	LC / II
93	<i>Pericrocotus cinnaimomeus</i>	Small Minivet	LC / I
94	<i>Pericrocotus lammeus</i>	Scarlet Minivet	LC / II
95	<i>Phalacrocorax niger</i>	Little Cormorant	LC / II
96	<i>Phylloscopus collybita</i>	Common Chiff Chaff	LC / II
97	<i>Pitta brachyura</i>	Indian Pitta	LC / II
98	<i>Ploceus philippinus</i>	Baya Weaver	LC / II
99	<i>Porphyrio porphyrio</i>	Purple Moorhen	LC / II
100	<i>Prinia socialis</i>	Ashy Prinia	LC / II
101	<i>Psittacula kramen</i>	Rose-Ringed Parakeet	LC / II
102	<i>Pterocles indicus</i>	Painted Sandgrouse	LC / II
103	<i>Pycnonotus cafer</i>	Red-vented Bulbul	LC / II
104	<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul	LC / II
105	<i>Rhipidura albicollis</i>	White-throated Fantail Flycatcher	LC / II
106	<i>Netta rufina</i>	Red-crested Pochard	LC / II
107	<i>Rostrata benghalensis</i>	Greater Painted Snipe	LC / II
108	<i>Sarkidiomis melanotus</i>	Comb Duck	LC / II
109	<i>Saxicola caprata</i>	Pied Bushchat	LC / II
110	<i>Saxicoloides julicata</i>	Indian Robin	LC / II
111	<i>Streptopelia decaocto</i>	Eurasian Collared Dove	LC / II
112	<i>Sterna aurantia</i>	River Tern	LC / I
113	<i>Streptopelia chinensis</i>	Spotted dove	LC / II
114	<i>Streptopelia senegalensis</i>	Little brown Dove	LC / II
115	<i>Sturnus pagodarum</i>	Brahminy Starling	LC / II
116	<i>Tachybaptus ruficollis</i>	Little Grebe	LC / II
117	<i>Tadorna ferruginea</i>	Brahminy Shelduck	LC / II
118	<i>Tephrodornis pondiceranus</i>	Common Wood shrike	LC / II
119	<i>Terpsiphone paradisi</i>	Asian Paradise- Flycatcher	LC / II
120	<i>Tringa glareola</i>	Wood Sandpiper	LC / II
121	<i>Tringa nebulana</i>	Common Green Shank	LC / II

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

Sr No	Scientific name	Common name	Schedules of Wildlife Act/ IUCN Status
122	<i>Tringa ochropus</i>	Green Sandpiper	LC / II
123	<i>Tringa totanus</i>	Common Red Shank	LC / II
124	<i>Turdoides caudatus</i>	Common Babbler	LC / II
125	<i>Turdoides malcolmi</i>	Large Grey Babbler	LC / II
126	<i>Turdoides sinatus</i>	Peninsular Jungle Babbler	LC / II
127	<i>Turnix suscitator</i>	Common Buttonquail	LC / II
128	<i>Upupa epops</i>	Common Hoopoe	LC / II
129	<i>Vanellus indicus</i>	Red-wattled Lapwing	LC / II
130	<i>Vanellus malabancus</i>	Yellow-wattled Lapwing	LC / II
131	<i>Zoothera citrina</i>	Orange-headed Thrush	LC / II
132	<i>Zosterops palpebrata</i>	Oriental White Eye	LC / II

HERPETOFAUNA:

Sr. No	Scientific name	Common name	Schedules of Wildlife Act/ IUCN Status
1	<i>Argyrogena fasciolatus</i>	Banded racer	NT / NL
2	<i>Boiga trigonala</i>	Cat snake	NT / NL
3	<i>Bungarus caeruleus</i>	Common Indian Krait	LC / NL
4	<i>Calotes versicolor</i>	Indian garden lizard	LC / NL
5	<i>Cytodactylus collegalensis</i>	South Indian Rock Gecko	NT / NL
6	<i>Elaphe helena</i>	Trinket Snake	NT / NL
7	<i>Hemidactylus frenatus</i>	Tickticky House Gecko	LC / NL
8	<i>Lycodon aulicus</i>	Common wolf snake	LC / IV
9	<i>Mabuya beddomii</i>	Common skink	LC / NL
10	<i>Mabuya cannata</i>	Common Indian skink	LC / NL
11	<i>Mabuya innotata</i>	Bronzy-olive skink	LC / NL
12	<i>Mabuya macularia</i>	Little skink	DD/ NL
13	<i>Naja naja</i>	Spectacled Cobra	LC / I
14	<i>Psammophilus blanfordanus</i>	Common Indian rock lizard	LC / NL
15	<i>Ptyas mucosus</i>	Rat Snake	LC / I
16	<i>Python molurus</i>	Rock Python	NT / I
17	<i>Ramphotyphlops braminus</i>	Common Blind snake	VU / II
18	<i>Varanus bengalensis</i>	Bengal Monitor Lizard	LC / I
19	<i>Vipera russelli</i>	Russel's Viper	VU / I
20	<i>Fowlea piscator</i>	Checkered keelback snake	NT / I

Amphibians

Sr No	Scientific name	Common name	Schedules of Wildlife Act/ IUCN Status
1	<i>Bufo melanostictus</i>	Common Indian Toad	NE / NL
2	<i>Bufo stonlaticus</i>	Marbled toad	NE / NL
3	<i>Euphlyctis cyanophlyctis</i>	Skipper Frog	NE / NL
4	<i>Hoplobatrachus crassus</i>	Jerdon's Bull Frog	NE / NL
5	<i>Hoplobatrachus tigernus</i>	Indian Bull Frog	NE / II
6	<i>Limnonectes limnochans</i>	Indian Cricket Frog	NE / NL
7	<i>Microhyla ornata</i>	Ornate Microhylid	NE / NL
8	<i>Polypedates maculatus</i>	Common Tree Frog	NE / NL

PISCES

Sr No	Scientific name	Common name	IUCN STATUS
1.	<i>Ambassis nama</i>	Indian glassy fish	NA
2	<i>Ambassis ranga</i>	Indian glassy fish	NA
3.	<i>Bariius bama</i>	River carp bari	LC
4	<i>Catla catla</i>	Major Carp	LC
5	<i>Channa striatus</i>	Banded snake head	LC
6	<i>Cirrhinus mrigala</i>	Major Carp	LC
7	<i>Clarias batracus</i>	Maaur	NA
8	<i>Cyprinus carpio</i>	Catla	VI
9	<i>Gambusia affinis</i>	Mosquito fish	LC
10	<i>Glossogobius aureus</i>	Tank gobi	NA
11	<i>Heteropneustes fossilis</i>	Stinging cat fish	LC
12.	<i>Labeo rohita</i>	Common carp	LC
13.	<i>Labeo calbasu</i>	Calbasu	LC
14	<i>Mastacembelus armatus</i>	Spiny eel	LC
15.	<i>Mystus cavasius</i>	Cat fish	LC
16.	<i>Mystus seenghala</i>	Gangatic mystus	LC
17.	<i>Nandus nandus</i>	Leaf fish	LC
18.	<i>Osteobrama cotio</i>	Cotio	LC
19.	<i>Punctius amphibious</i>	Scarlet Banded barb	NA
20.	<i>Rita nta</i>	Rita	LC
21.	<i>Salmostoma bacaila</i>	Silver fish	LC
22.	<i>Tor khudree</i>	Deccan Mahaseer	LC
23.	<i>Xenentodon cancilla</i>	Needle fish	LC

BUTTERFLIES

Sr. No.	Scientific name	Common Name	Family	IUCN STATUS
1	<i>Anadne merone</i>	Common castor	Nymphalidae	NA
2	<i>Catopsilia piranthe</i>	Mottled emigrant	Pieridae	NA
3	<i>Catopsilia pomona</i>	Common emigrant	Pieridae	NA
4	<i>Cepora nerissa</i>	Common gull	Pieridae	NA
5	<i>Chilades pandav</i>	Plain cupid	Hesperiidae	NA
6	<i>Danaus chrysippus</i>	Plain tiger	Nymphalidae	LC
7	<i>Euploea core</i>	common indian crow	Nymphalidae	LC
8	<i>Eurema hecabe</i>	Common grass Yellow	Pieridae	NA
9	<i>Hypolimnas misippus</i>	DANNAID EGG FLY	Nymphalidae	NA
10	<i>Junonia orithya</i>	Blue pansy	Nymphalidae	NA
11	<i>Junonia iphita</i>	Chocolate pansy	Nymphalidae	NA
12	<i>Junonia lemonias</i>	Lemon pansy	Nymphalidae	NA
13	<i>Leptotes plinius</i>	Zebra blue	Lycaenidae	NA
14	<i>Melanitis leda</i>	Common evening brown	Nymphalidae	LC
15	<i>Pachliopta aristolochiae</i>	Common rose	Papilionidae	LC
16	<i>Papilio demoleus</i>	Lime	Papilionidae	NA
17	<i>Papilio polytes</i>	Common mormon	Papilionidae	NA
18	<i>Prosotas nora</i>	common line blue	Hesperiidae	NA
19	<i>Tirumala limniace</i>	Blue tiger	Nymphalidae	NA
20	<i>Pachliopta hector</i>	Crimson Rose	Papilionidae	LC
21	<i>Virachola isocrates</i>	Guava Blue	Lycaenidae	II
22	<i>Castalius rosmon</i>	Common pierrot	Lycaenidae	NA
23	<i>Rapala manea</i>	Slate Flash	Lycaenidae	LC
24	<i>Synthia cardui</i>	Painted Lady	Nymphalidae	NA
25	<i>Ypthima asterope</i>	Common Three Ring	Nymphalidae	NA
26	<i>Catopsilia pomona</i>	Common emigrant	Pieridae	NA
27	<i>Cepora nerissa</i>	Common Gull	Pieridae	NA
28	<i>Eurema hecabe</i>	Common Grass yellow	Pieridae	NA
29	<i>Danaus chrysippus</i>	Plain Tiger	Nymphalidae	NA
30	<i>Danaus genutia</i>	Striped Tiger	Nymphalidae	NA
31	<i>Euploea core</i>	Common crow	Nymphalidae	NA
32	<i>Junonia lemonias</i>	Lemon Pansy	Nymphalidae	NA
33	<i>Junonia orithya</i>	Blue Pansy	Nymphalidae	NA
34	<i>Melanitis leda</i>	Common evening brown	Nymphalidae	NA
35	<i>Hypolimnas bolina</i>	Great eggfly	Nymphalidae	NA
36	<i>Tirumala septentrionis</i>	Dark Blue Tiger	Nymphalidae	NA

INSECTS

Sr. No.	Scientific name	Common name	IUCN Status
1	<i>Poduridae</i>	Podura	LC
2	<i>Blatta orientalis</i>	Cockroach	LC
3	<i>Mantodea</i>	Mantis	LC
4	<i>Chinavia hilans</i>	Green Stink Bugs	LC
5	<i>Pyrrhocoridae</i>	Red Bugs	LC
6	<i>Formicidae</i>	Ant	LC
7	<i>Solenopsis spp</i>	Red Ant (Fire Ant)	LC
8	<i>Paraponera clavata</i>	Bullet Ant	LC
9	<i>Apis dorsata</i>	Giant Honey Bee	LC
10	<i>Apis dorsata</i>	Rock Bee	LC
11	<i>Apis spp.</i>	Honey Bee	LC
12	<i>Andrenidae</i>	Bee	LC
13	<i>Bombus spp.</i>	Black Bee	LC
14	<i>Vespidae</i>	Yellow Wasps	LC
15	<i>Ichneumonidae</i>	Wasps	LC
16	<i>Chilomenes s. maculate</i>	Ladybird	LC
17	<i>Meloidae</i>	Blister Beetle	LC
18	<i>Honotricha serrate</i>	Grubs	LC



Wildlife Mitigation Plan for Marki Mangli II Coal Mine

Annexure 9: Timeline for implementing wildlife mitigation plan

Sr. No	Activities under WMP	TIME LINE FOR IMPLEMENTATION OF WILDLIFE MITIGATION PLAN																									
		Year 1					Year 2					Year 3					Year 4					Year 5					Continue till mine closure
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20						
1	Fencing of proposed mine boundary																										
2	Maintenance and Repairing of Fencing																										
2	Establishing Nursery for saplings , maintenance and propogation																										
3	Construction of Waterholes and its maintainance																										
4	Habitat development and plantation away from the mine boundary																										
5	Plantation in safety zone including green belt development along the lease area																										
6	Watch tower Construction																										
7	Soil moisture conservation works																										
8	Construction of waterholes maintenance																										
9	Well with solar pumps																										
10	4% of the project cost to be deposited with wildlife trust as per State Government norm																										
11	Awareness and training of JFM and Biodiversity committee for wildlife protection and fire control Workshops and campaign in cosultation with stakeholder																										
12	Monitoring of Environmental Parameters as per approved																										

Annexure 7: Issues to be addressed during Plantation and Species to be planted

Issues to be Addressed	Species to be Planted
1 Soil and water conservation	<i>Dalbergia Sissoo, Albizzia lebbek, Acacia nilotica, Acacia catechu, Azadirachta indica, Eulaliopsis binata,</i>
2 Full protection from grazing and fire	<i>Dendrocalamus strictus, Madhuca indica, Bombax ceiba,</i>
3 Safe disposal of run off	<i>Soymida febrifuga, Cleistanthus collinus, Shorea robusta,</i>
4 Grassland development	<i>Lagerstroemia parviflora, Albizzia lebbek, Agave spp ,</i>
5 Afforestation	<i>Hardwickia binata, Acacia nilotica, Derris indica, Tamarindus indica, Eulaliopsis binata, Ailanthus excelsa Bauhinia</i>
6 Contour bunding, trenching	<i>acuminate, Grewia subinaequalis, Morus alba, Ziziphus jujuba, Cynodon dactylon, Bambusa bambos, Apluda mutica, Cymbopogon martini, Amaranthus sp,</i>

Annexure 8: Authenticated list of flora and fauna for the study area

MARKI MANGLI OPENCAST COAL MINING PROJECT,
Project Area 339.467 Ha Village(s) Savli, Ruikot, Pardi and Mukutban
Tahsil - Jhari Jamal, District - Yavatmal, Maharashtra,

LIST OF FLORA WITHIN CORE AND BUFFER ZONE

TREES

S. No	Botanical Name	Local Name	Family	Core	Buffer
1	<i>Acacia catechu</i> (L.f) Willd.	Khair	Fabaceae	*	*
2	<i>Acacia concinna</i> (Willd.) DC.	Sikari	Fabaceae	*	*
3	<i>Acacia leucophloea</i> (Roxb) Willd.	Hiwar/Reunjha	Fabaceae	*	*
4	<i>Aegle marmelos</i> (L.) Correa	Bel	Rutaceae	*	*
5	<i>Allanthurus excelsa</i> Roxb	Maharukh/ Mahaneem	Simarubiaceae	*	*
6	<i>Albizia lebbek</i> (L.) Benth.	Kala suns	Fabaceae	*	*
7	<i>Albizia odoratissima</i> (L.f) Benth.	Chichwa	Fabaceae	*	*
8	<i>Albizia procera</i> (Roxb.) Benth.	Safed Siris/ Karahi	Fabaceae	*	*
9	<i>Anogeissus latifolia</i> (Roxb ex DC.) Wall. ex Guillem. & Perr	Dhaora/Dhawd a	Combretaceae	*	*
10	<i>Azadirachta indica</i> A.Juss.	Necm	Meliaceae	*	*
11	<i>Balanites aegyptiaca</i> (L.) Del	lingoi	Balanitaceae	*	*
12	<i>Bauhinia malabarica</i> Roxb.	Amri	Fabaceae	*	*
13	<i>Bauhinia purpurea</i> L.	Keolar	Fabaceae	*	*
14	<i>Bauhinia racemosa</i> Lam.	Asta/Aapta	Fabaceae	*	*
15	<i>Bauhinia variegata</i> L.	Kachnar	Fabaceae	*	*
16	<i>Boerhaavia caribaea</i> L.	Samal	Malvaceae	*	*
17	<i>Boswellia serrata</i> Roxb. ex Colebr	Salai/ Saliha	Burseraceae	*	*
18	<i>Bridella retusa</i> (L.) A.Juss.	Kasai/Kasahi	Euphorbiaceae	*	*
19	<i>Buchanania lanzan</i> (Lour) M R Almeida	Achar/ Char Chirronji	Anacardiaceae	*	*
20	<i>Butea monosperma</i> (Lam.) Taub. (<i>Butea Monosperma</i> Kuntze)	Palash/ Parsa/Padas	Fabaceae	*	*
21	<i>Carya arborea</i> Roxb.	Kumbhu/ Bhus	Mayriaceae	*	*
22	<i>Caryota urens</i> L.	Fish tail palm	Arecaceae	*	*
23	<i>Casaria graveolens</i> Dalzell	Gilchi	Samydaceae	*	*
24	<i>Casaria tomentosa</i> Roxb	Tondri	Samydaceae	*	*

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C. J. J. J.
Deputy Conservator of Forest
Yavatmal

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

S. No	Botanical Name	Local Name	Family	Core	Buffer
25	<i>Cassia fistula</i> L.	Amalias/Bahawa	Fabaceae	*	*
26	<i>Cassine glauca</i> (Rottb.) Kuntze	Jamras	Celastraceae	*	*
27	<i>Catunaregam spinosa</i> (Thunb.) Tirveng.	Mainphal	Rubiaceae	*	*
28	<i>Chloroxylon swietenia</i> DC	Bhirra	Meliaceae	*	*
29	<i>Cochlospermum religiosum</i> (L.) Alston	Galgala	Bixaceae	*	*
30	<i>Cocos nucifera</i> L.	Nanyal	Arecaceae		*
31	<i>Cordia macleodii</i>	Bhokar	Boraginaceae	*	*
32	<i>Dalbergia latifolia</i> Roxb	Shisham	Fabaceae	-	*
33	<i>Dalbergia paniculata</i> (Roxb) Thoth	Dhobin	Fabaceae	*	*
34	<i>Dalbergia sissoo</i> DC.	Sissoo/Sisham	Fabaceae	-	*
35	<i>Diospyros melanaxylon</i> Roxb	Tendu	Ebenaceae	*	*
36	<i>Diospyros montana</i> Roxb	Bistendu	Ebenaceae	*	*
37	<i>Dolichandrone falcata</i>	Medsing	Bignoniaceae	*	*
38	<i>Ehretia laevis</i> Roxb.	Datranga	Boraginaceae	*	*
39	<i>Emblica officinalis</i>	Amla	Phyllanthaceae	*	*
40	<i>Erythrina indica</i> Lam	Pangra	Fabaceae	*	*
41	<i>Eucalyptus</i> sp.	Nilgiri	myrtaceae	-	*
42	<i>Ficus benghalensis</i> L.	Bad	Moraceae	*	*
43	<i>Ficus mollis</i> Vahl	Gular	Moraceae		*
44	<i>Ficus racemosa</i> L.	Gular	Moraceae		*
45	<i>Ficus religiosa</i> L.	Pipal	Moraceae	*	*
46	<i>Gardenia latifolia</i> Aiton	Papra	Rubiaceae	-	*
47	<i>Garuga pinnata</i> Roxb	Kekad	Burseracea		*
48	<i>Gmelina arborea</i> Roxb.	Khamhar	Verbenaceae	-	*
49	<i>Grewia tiliifolia</i> Vahl	Dhaman	Tiliaceae	*	*
50	<i>Haldina cordifolia</i> (Roxb.) Ridsdale	Haldu/Kalmi	Rubiaceae	-	*
51	<i>Hymenodictyon orxense</i> (Roxb) Mabb	Bhanwamal	Rubiaceae	*	*
52	<i>Kydia calycina</i> Roxb	Baranga	Malvaceae	*	*

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S No	Botanical Name	Local Name	Family	Core	Buffer
53	<i>Lagerstroemia parviflora</i> Roxb.	Lendia	Lythraceae	*	*
54	<i>Lannea coromandelica</i>	Shingan/Movei	Anacardiaceae	*	*
55	<i>Limonia acidissima</i>	Kawat	Rutaceae	*	*
56	<i>Madhuca longifolia</i>	Mahua	Sapotaceae	*	*
57	<i>Mallotus philippensis</i> (Lam.) Müll Arg.	Sindur/ Ron	Euphorbiaceae	-	*
58	<i>Mitragyna parvifolia</i> (Roxb.) Korth.	Kalam/Kadam b	Rubiaceae	*	*
59	<i>Neolamarckia cadamba</i> (Roxb) Bosser	Kadamb	Combretaceae	-	*
60	<i>Ougenia oofoliosa</i>	Tiwas	Fabaceae	*	*
61	<i>Peltaphorum ferrugineum</i> (Decne.) Benth.	Peltaphorum	Fabaceae	*	*
62	<i>Phoenix sylvestris</i> (L.) Roxb	Khajur	Palmae	*	*
63	<i>Polyalthia longifolia</i> (Sonn.) Thwaites	China ashok	Annonaceae		*
64	<i>Pongamia pinnata</i> (L.) Pierre	Karanj	Fabaceae	*	*
65	<i>Prasopis juliflora</i> (Sw) DC.	Khejdi	Fabaceae	*	*
66	<i>Psidium guajava</i> L.	Jam	myrtaceae	-	*
67	<i>Pterocarpus marzupium</i> Roxb.	Bija	Fabaceae	*	*
68	<i>Saccopetalum tomentosum</i> Hook.f & Thomson	Kan	Annonaceae	*	*
69	<i>Schleichera oleosa</i> (Lour) Merr	Kusum	Sapindaceae	*	*
70	<i>Schrebera swietenoides</i> Roxb	Mokha	Oleaceae	*	*
71	<i>Semecarpus anacardium</i> L.f	Bibba	Anacardiaceae	*	*
72	<i>Senna occidentalis</i> (L.) Link	Kasondi	Fabaceae	*	*
73	<i>Senna siamea</i> (Lam.) H.S Irwin & Bameby	Acacia	Fabaceae	*	*
74	<i>Soymida febrifuga</i> (Roxb.) A Juss	Rohan	Meliaceae	*	*
75	<i>Sterculia urens</i> Roxb.	Kulu	Sterculiaceae	-	*
76	<i>Stereospermum suaveolens</i> (Roxb) DC	Badapadar	Bignoniaceae	*	*
77	<i>Syzygium cumini</i> (L.) Skeels	Jamun	Myrtaceae	*	*
78	<i>Tamarindus indica</i> L.	Imli	Fabaceae	*	*
79	<i>Tamilnadia uliginosa</i> (Retz.) Tirveng. & Sastre	Kala Phetra	Rubiaceae	*	*
80	<i>Tectona grandis</i> L.f	Sagaun	Verbenaceae	*	*

Cumrip

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Deputy Conservator of Forest
Pancharkhawa Division, Pancharkhawa

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

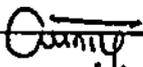
S. No	Botanical Name	Local Name	Family	Core	Buffer
81	<i>Terminalia arjuna</i> (Roxb ex DC) Wight & Arn.	Arjun	Combretaceae	*	*
82	<i>Terminalia tomentosa</i>	Ain/Saja	Combretaceae	*	*
83	<i>Trema orientalis</i> (L.) Blume	Jivan	Urticaceae	.	*
84	<i>Vitex negundo</i> L.	Morphal	Verbenaceae	.	*
85	<i>Ziziphus jujuba</i> Mill.	Ber	Rhamnaceae	*	*
86	<i>Alangium lamarekii</i> , Lamk	Ankura	Comaceae		*
87	<i>Terminalia bellirica</i> , Linn.	Bahera	Combretaceae		*
88	<i>Fraxinus</i>	Ash Tree	Oleaceae		*
89	<i>Mangifera indica</i>	Aam	Anacardiaceae	*	*
90	<i>Terminalia Chebula</i>	Hirda	Combretaceae		*
91	<i>Salvadora persica</i>	Kharyal	Salvadoraceae		*
92	<i>Turnera ulmifolia</i>	Holly	Passifloraceae		*
93	<i>Ceiba pentandra</i>	Cotton	Malvaceae	*	*
94	<i>Casuarina equisetifolia</i>	Jhau	Casuarinaceae		*
95	<i>Streblus asper</i> , Lour	Sheora	Moraceae		*
96	<i>Salix willow</i>	Osiers	Salicaceae		*
97	<i>Phyllanthus emblica</i> , Linn	Amla	Phyllanthaceae	*	*
98	<i>Spondias mangifera</i> , Linn.	Amra	Anacardiaceae		*
99	<i>Hardwickia binata</i> Roxb	Anjan	Fabaceae		*
100	<i>Ficus hispida</i> , Linn.	Dumur	Moraceae		*
101	<i>Cochlospermum gossypium</i> , Kunth.	Gabdi	Cochlosperma ceae		*
102	<i>Cordia myxa</i> , Linn.	Lashora	Boraginaceae		*
103	<i>Erythrina stricta</i> , Linn.	Madar	Fadaceae		*
104	<i>Agloia rexburghiana</i> , Lour	Pryangu	Meliaceae		*
105	<i>Cassia siamea</i> , Linn.	Minjiri	Fabaceae		*
106	<i>Holoptella integrifolia</i> planch.	Paperi	Ulmaceae		*
107	<i>Trewia nudiflora</i> , Linn.	Pitali	Euphorbiaceae		*
108	<i>Diospyos tomentosa</i> , Linn	Tamal	Ebenaceae		*
Total				68	108

Note (*) indicates presence of species & () indicates absence

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

SHRUBS

S No	Botanical Name	Local Name	Family	Core	Buffer
1	<i>Achyranthes aspera</i> L.	Chirchira	Amaranthaceae	*	*
2	<i>Balanites aegyptiaca</i> (L.) Del	Hingot	Balanitaceae	*	*
3	<i>Calotropis gigantea</i> (L.) Dryand.	Aak	Asclepiadaceae	*	*
4	<i>Colebrookea oppositifolia</i> Sm.	Kalabans	Labiatae	*	*
5	<i>Dodonaea viscosa</i> subsp. <i>angustifolia</i> (L.f) J G WEST	sadabahar	Apocynaceae	*	*
6	<i>Eranthemum pulchellum</i> Andrews	Bantulsi	Acanthaceae	*	*
7	<i>Flacourtia indica</i> (Burm.f) Merr	Kaka	Bixaceae	*	*
8	<i>Gardenia gummiifera</i> L.f	Dikamali	Rubiaceae	*	*
9	<i>Grewia hirsuta</i> Vahl	Gutdukn	Tiliaceae	*	*
10	<i>Grewia rothii</i> DC	Bansuli	Tiliaceae	*	*
11	<i>Gymnosporia spinosa</i> (Blanco) Merr & Rolfe	Baikal	Celastraceae	*	*
12	<i>Helicteres isora</i> L.	Marophali	Sterculiaceae	*	*
13	<i>Hibiscus rosa sinensis</i> L.	Gudhal	MALVACEAE	*	*
14	<i>Holarrhena antidiysenterica</i> (Roth) Wall ex A.DC	Dhudh	Apocynaceae	*	*
15	<i>Hypis suaveolens</i> (L.) Poit.	Van Tulsi	Meliaceae	*	*
16	<i>Indigofera cassioides</i> DC.	Girol	Fabaceae	*	*
17	<i>Isora parviflora</i>	Lokhandi	Rubiaceae	*	*
18	<i>Jasminum sambac</i> (L.) Aiton	Bela	Oleaceae	*	*
19	<i>Justicia adhatoda</i> L.	Adusa	acanthaceae	*	*
20	<i>Martynia annua</i> L.	Baghanakha	Martiniaceae	*	*
21	<i>Mimosa pudica</i> L.	Chhummu	Fabaceae	*	*
22	<i>Morinda tinctoria</i>	Bartondi/Aali	Rubiaceae	*	*
23	<i>Mucuna pruriens</i> (L.) DC.	Beejs	Fabaceae	*	*
24	<i>Nerium oleander</i> L.	Lal Kaner	Apocynaceae	*	*
25	<i>Phoenix acaulis</i> Roxb	Chhind	Palmae	*	*
26	<i>Pithecellobium dulce</i> (Roxb) Benth	Bilayati Imh	Fabaceae	*	*
27	<i>Prosopis cineraria</i> (L.) Druce	Sami/Gugurali	Fabaceae	*	*
28	<i>Ricinus communis</i> L.	Arand	Euphorbiaceae	*	*
29	<i>Senna auriculata</i> (L.) Roxb	Takhad	Fabaceae	*	*
30	<i>Solanum virginianum</i> L.	Bhatkatsiya	Solanaceae	*	*
31	<i>Tephrosia purpurea</i> L.	Sarphonka	Fabaceae	*	*
32	<i>Trumfetta rhomboldea</i> Jacq	Chipti	Malvaceae	*	*
33	<i>Urena lobata</i> L.	Chikti	Malvaceae	*	*
34	<i>Wrightia tinctoria</i>	Dudhi	Apocynaceae	*	*


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Wildlife Mitigation Plan for Marki Mangli II Coal Mine

S. No	Botanical Name	Local Name	Family	Core	Buffer
35	<i>Xanthium strumarium</i> L.	Okharu	Asteraceae	*	*
36	<i>Ziziphus mauritiana</i>	Ber	Rhamnaceae	*	*
37	<i>Zizyphus xylopyrus</i>	Ghoti	Rhamnaceae	*	*
38	<i>Sapindus emarginatus</i>	Rithaz	Sapindaceae		*
39	<i>Calotropis gigantea</i>	Akanda	Apocynaceae		*
40	<i>Bauhinia vahlii</i> Linn	Maljra	Fabaceae		*
41	<i>Lantana camera</i>	Common lantana	Verbenaceae		*
42	<i>Lawsonia inermis</i>	Mehandi	Lythraceae		*
43	<i>Clerodendron</i>	Bhant	Lamiaceae		*
44	<i>Asparagus racemosus</i> , Linn.	Satamuli	Asparagaceae		*
45	<i>Dalbergia volubilis</i> Linn.	Birmunga	Fabaceae		*
46	<i>Ephedra gerardiana</i>	Somlata	Ephedraceae		*
47	<i>Flacourtia cataphracta</i>	Common Sainchi	Salicaceae		*
48	<i>Jatropha curcus</i>	Poison nut	Euphorbiaceae		
49	<i>Cardenia qumifera</i>	Bhurur	Rubiaceae		*
50	<i>Ipemeca biloba</i>	Changalkhun	Rubiaceae		*
51	<i>Cassia pumila</i> , Linn	Chota oura	Caesalpiniaceae		*
52	<i>Abutilon hirtum</i> , Goertn.	Jhampi	Malvaceae		*
53	<i>Carissa spinarum</i> , Linn.	Karamcha	Apocynaceae		*
54	<i>Croton oblongifolium</i> , Linn	Putri	Euphorbiaceae		*
55	<i>Flemingia strobilifera</i> , Roxb	Stimbusak	Fabaceae		*
56	<i>Desmodium latifolium</i> , Desy	Sunmathasura	Fabaceae		*
57	<i>Acacia pennata</i> , Willd.	Shembi	Fabaceae		*
58	<i>Milletia auriculata</i> , W & A	Gaj	Fabaceae		*
59	<i>Vitis pedata</i> , Linn.	Colilata	Vitaceae		*
60	<i>Acacia caesia</i> (L.) Willd.	Kendrojanum	Mimosaceae		*
Total				37	59

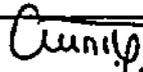
Note (*) indicates presence of species & (-) indicates absence

HERBS

S. No	Botanical Name	Local Name	Family	Core	Buffer
1	<i>Alternanthera sessilis</i> (L.) R.Br ex DC	Phool ghans	Amaranthaceae	*	*
2	<i>Alysicarpus vaginalis</i> (L.) DC	Chupli	Fabaceae	*	*
3	<i>Antidesma acidum</i> Retz.	Khatus	Euphorbiaceae	*	*
4	<i>Azanza lampas</i> (Cav) Alef	Bankapas	Malvaceae		*
5	<i>Boerhavia diffusa</i> L.	Punamava	Nictaginaceae	*	*
6	<i>Senna tora</i> (L.) Roxb.	Panwar	Fabaceae	*	*

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

S. No	Botanical Name	Local Name	Family	Core	Buffer
7	<i>Andrographis paniculata</i> (Burm.f) Wall Ex Nees	Kalmegh	Acanthaceae	*	*
8	<i>Curculigo orchitoides</i> Gaertn.	Kali mushli	Hypoxidaceae		*
9	<i>Cyperus scariosus</i> R.Br	Motha	Cyperaceae	*	*
10	<i>Cyperus dubius</i> Rottb.	Motha	Cyperaceae	*	*
11	<i>Desmodium gangeticum</i> (L.) DC.	Chapli	Fabaceae	*	*
12	<i>Desmodium laxiflorum</i> DC	Lothani	Fabaceae	*	*
13	<i>Desmodium triflorum</i> (L.) DC	Tinpatiya	Fabaceae	*	*
14	<i>Enicostemma littorale</i> Blume.	Naibuti	Gentianaceae	*	*
15	<i>Euphorbia hirta</i> L.	Dudhi	Euphorbiaceae	*	*
16	<i>Euphorbia thymifolia</i> L.	Chotu dudhi	Euphorbiaceae	*	*
17	<i>Jatropha gossypifolia</i> L.	Jamal ghoti	Euphorbiaceae		*
18	<i>Merremia emarginata</i> (Burm. f) Hallier f	Muskani	Fabaceae		*
19	<i>Ocimum basilicum</i> L.	Barbari tulsı	Meliaceae	*	*
20	<i>Ocimum sanctum</i> L.	RamaTulsı	Meliaceae		*
21	<i>Petalidium angustitubum</i> P G Mey	Indrajata	Acanthaceae		*
22	<i>Phyllanthus amarus</i> Schumach. & Thonn.	Bhui Aonla	Phyllanthaceae	*	*
23	<i>Sida acuta</i> Burm f	Khakhara	Malvaceae	*	*
24	<i>Sida cordifolia</i> L.	Banyan	Malvaceae	*	*
25	<i>Sida rhombifolia</i> L.	Vishkhapadi	Malvaceae	*	*
26	<i>Tagetes erecta</i> L.	Genda	Asteraceae	*	*
27	<i>Tephrosia purpurea</i> (L.) Pers.	Sarphonka	Fabaceae	*	*
28	<i>Tridax procumbens</i> (L.) L.	Ghamara	Asteraceae	*	*
29	<i>Trigonella</i> sp.	Ban methi	Fabaceae	*	*
30	<i>Agave</i> spp	Moraba	Asparagaceae		*
31	<i>Aloe Vera</i>	Guar bhata	Aspodelaceae		*
32	<i>Rauwolfia serpentine</i>	White Sarpagandha	Apocynaceae		*
33	<i>Dioscorea humbularia</i> Linn	Shora alu	Dioscoreaceae		*
34	<i>Martynia diandra</i> , Linn.	Bagnoki	Martyniaceae		*
35	<i>Datura stramonium</i> , Linn.	Dhutura	Solanaceae		*


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Wildlife Mitigation Plan for Marki Mangli II Coal Mine

S No	Botanical Name	Local Name	Family	Core	Buffer
36	<i>Abrus precatorius</i> Linn.	Kunxh	Fabaceae		•
37	<i>Girardinia zeylanica</i>	Gand Bichua	Urticaceae		•
38	<i>Casia absus</i> , Linn	Chaksubanar	Fabaceae		•
39	<i>Cassia tora</i> , Linn.	Chakunda	Fabaceae		•
40	<i>Euphorbia microphylla</i> , Linn.	Chotakeru	Euphorbiaceae		•
41	<i>Euphorbia drounculoides</i> , Linn. Jyehi	Khachar Dudhi	Euphorbiaceae		•
42	<i>Indigofera enneophylla</i> , Linn.	Bhingule	Fabaceae		•
43	<i>Drosera burmanni</i> , Linn.	Mukhajali	Fabaceae		•
44	<i>Curcuma angustifolia</i>	Tikhur	Zingiberaceae		•
45	<i>Cuscuta reflexa</i> , Linn.	Algusi	Convolvulaceae		—
46	<i>Vitis latifolia</i> , Linn.	Gobila	Vitaceae		•
47	<i>Spatholobus earburghii</i> , Hassk.	Maula	Fabaceae		•
Total				23	46

Note: (*) indicates presence of species & (-) indicates absence

CLIMBERS:

S. No	Botanical Name	Local Name	Family	Core	Buffer
1	<i>Ampelocissus latifolia</i> (Roxb) Planch.	Jangli angur	Vitaceae	•	•
2	<i>Anilgonon leptopus</i> Hook. & Arn.		Polygonaceae	•	•
3	<i>Asparagus racemosus</i> Willd.	Stawar	Liliaceae		•
4	<i>Spatholobus parviflorus</i> (DC) Kuntze	Nasbel	Fabaceae	•	•
5	<i>Butea superba</i> Roxb.	Palas bel	Fabaceae	•	•
6	<i>Capparis zeylanica</i>	Waghata	Cappandaceae	•	•
7	<i>Celastrus paniculatus</i> Willd.	Mal Kangni	Celastraceae	•	•
8	<i>Cocculus hirsutus</i> (L.) W Theob.	Jaljamni	Menispermaceae	•	•
9	<i>Cryptolepis dubia</i> (Burm. f) M R. Almeida	Karanta	Aselepiadaceae	•	•
10	<i>Dioscorea bulbifera</i> L.		Dioscoreaceae	•	•
11	<i>Dioscorea hispida</i> Dennst.	Baichandi	Dioscoreaceae	•	•
12	<i>Dioscorea pentaphylla</i> L.	Musalkand	Dioscoreaceae	•	•
13	<i>Diplocyclus palmatus</i> (L.) C Jeffrey		Cucurbitaceae	•	•
14	<i>Hemidesmus indicus</i> (L.) R. Br ex Schult		Apocynaceae	•	•
15	<i>Ichnocarpus frutescens</i> (L.) W T. Anton	Dhumar Bel	Apocynaceae	•	•
16	<i>Ipomoea pes tigridis</i> L.		convolvulaceae	•	•
17	<i>Pergularia daemia</i> (Forssk.) Chiov	Kadukand	Apocynaceae	•	•
18	<i>Rhynchosia minima</i> (L.) DC	Ban sem	Fabaceae	•	•
19	<i>Tinospora cordifolia</i> (Willd.) Miers	Giloy	Menispermaceae	•	•
20	<i>Tylophora Indica</i> (Burm. f) Merr	Dambela	Apocynaceae	•	•

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

S. No	Botanical Name	Local Name	Family	Core	Buffer
21	<i>Vallisneria spiralis</i> (L.) Kuntze	Dudhbela	Alismaceae	*	*
22	<i>Vernonia cinerea</i> Willd.	Keoti	Asteraceae	*	*
23	<i>Ampelocissus indica</i> (L.) Planch.	Jangli angur	Vitaceae	*	*
24	<i>Ziziphus oenopolia</i> (L.) Mill.	Makor	Rhamnaceae	*	*
Total				23	24

Note. (*) indicates presence of species & (-) indicates absence

GRASSES & BAMBOOS.

S No	Botanical Name	Local Name	Family	Core	Buffer
1	<i>Aristida setacea</i> Retz.	Bargi Ronda	Poaceae	*	*
2	<i>Arundinella setosa</i> Trin.	Sidi	Poaceae	*	*
3	<i>Bothriochloa pertusa</i> (L.) A Camus	Bhond grass	Poaceae	*	*
4	<i>Cenchrus purpureus</i> (Schumach.) Morrone		Poaceae	*	*
5	<i>Cynodon dactylon</i> L.	Doob	Poaceae	*	*
6	<i>Dichanthium annulatum</i> (Forssk.) Stapf	Chhoti Marbel	Poaceae	*	*
7	<i>Eragrostis amabilis</i> (L.) Wight & Arn.	Bhurbhusi	Poaceae	*	*
8	<i>Eulalopsis binata</i> (Retz.) C.E.Hubb.	Bagai	Poaceae	*	*
9	<i>Heteropogon contortus</i> (L.) P Beauv ex Roem. & Schult.	Kushal, lampa	Poaceae	*	*
10	<i>Imperata cylindrica</i> (L.) Raeusch.	Chhir	Poaceae	*	*
11	<i>Eulalopsis binata</i> (Retz.) C.E.Hubb	Saba	Poaceae	*	*
12	<i>Ischaemum laxum</i> Hack.	Mushan	Poaceae	*	*
13	<i>Setaria nervosa</i> (Rottler) Stapf	Munsel	Poaceae	*	*
14	<i>Panicum antidotale</i> Retz.	Kosra	Poaceae	*	*
15	<i>Panicum sumatrense</i> Roth	Chire Kutik	Poaceae	*	*
16	<i>Panicum repens</i> L.		Poaceae	*	*
17	<i>Saccharum spontaneum</i> L.	Kans	Poaceae	*	*
18	<i>Setaria nervosa</i> (Rottler) Stapf	Sheda	Poaceae	*	*
19	<i>Setaria verticillata</i> (L.) P Beauv	Latkani	Poaceae	*	*
20	<i>Sorghum halepense</i> (L.) Pers	Baru	Poaceae	*	*
21	<i>Themeda quadrivalvis</i> (L.) Kuntze	Gunher	Poaceae	*	*
22	<i>Bambusa bambos</i> (L.) Voss	Kanta bans	Graminaeae	*	*
23	<i>Dendrocalamus strictus</i> (Roxb) Nees	Bans	Graminaeae	*	*
24	<i>Echinochloa colona</i>	Sama	Poaceae	*	*
25	<i>Deschampsia</i>	Chhi	Poaceae	*	*
26	<i>Saccharum bengalense</i>	Munj	Poaceae	*	*
27	<i>Bambusa balcooa</i>	Baro bans	Poaceae	*	*
28	<i>Thysanolaena agrostis</i>	Jharu/Broom grass	Poaceae	*	*
Total				23	28

(Signature)

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Panchakulma Division, Panchakulma

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

AQUATIC FLORA

S. No	Botanical Name	Local Name	Family	Core	Buffer
1	<i>Pistia stratiotes</i>	Water lettuce	Araceae		*
2.	Lemnoideae	Duckweeds	Araceae		*
3	<i>Nelumbo nucifera</i>	Indian lotus	Nelumbonaceae		*
4	Nymphaea	Water lilies	Nymphaeaceae		*
	Total			-	4

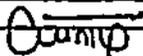
Note: (*) indicates presence of species & (-) indicates absence

(Source Primary Survey Data)

MARKI MANGLI OPENCAST COAL MINING PROJECT,
Project Area 339.467 Ha Village(s) Savli, Ruikot, Pardi and Mukutban
Tahsil - Jhari Jamni, District - Yavatmal, Maharashtra,

**LIST OF FAUNA WITHIN CORE AND BUFFER ZONE
MAMMALS.**

Sr. No	Scientific name	Vernacular name	Common name	Schedules of Wildlife Act/ IUCN Status	Core Zone	Buffer Zone
1	<i>Antelope cervicapra</i>	Blackbuck	Deer	I	*	*
2	<i>Axis axis</i>	Cheetal	Deer	III/LC		*
3	<i>Baselaphus tragocamelus</i>	Nilgai	Blue bull	III/LC		*
4	<i>Canis aureus</i>	Kolha	Jackal	II/LC		*
5	<i>Canis lupus pallipes</i>	Indian Wolf	Kolha	I	*	*
6	<i>Cervus unicolor</i>	Sambar	Sambar	III/VU		*
7	<i>Cuon alpinus</i>	Dhol	Wild Dog	II/EN		*
8	<i>Felis chaus</i>	Ranmanjar	Jungle cat	II/LC	*	*
9	<i>Funambulus tristriatus</i>	Khar	Five striped palm squirrel	IV/LC	*	*
10	<i>Gazella bennettii</i>	Chinkara	Hiran	I	*	*
11	<i>Herpestes edwardsi</i>	Mongoose	Common mongoose	LC	*	*
12	<i>Hyaena hyaena</i>	Hyaena	Wild dog	III	*	*
13	<i>Hystrix indica</i>	Indian Porcupine	Solunki	II	*	*
14	<i>Lupus nigricollis</i>	Sasa	Indian hare	IV/LC		*
15	<i>Melursus ursinus</i>	Sloth bear	Bear	I	*	*
16	<i>Panthera tigris</i>	Tiger	Tiger	I		*
17	<i>Panthera pardus</i>	Tendua	Panther	I		*
18	<i>Presbytis entellus</i>	Langur	Bandar	II	*	*
19	<i>Presbytis pileatus</i>	Common langur	Bandar	II	*	*
20	<i>Rhesus macaque</i>	Bandar	Monkey	II/LC		*
21	<i>Sus scrofa cristatus</i>	Randukkar	Wild boar	III/LC	*	*
22	<i>Tetracerus quadricornis</i>	Four Horned Antelope	Hiran	I	*	*
23	<i>Vulpes bengalensis</i>	Indian Fox	Indian Fox	II/LC		*
24	<i>Funambulus palmarum</i>	Indian Palm Squirrel	Khar	IV	*	*
25	<i>Muntiacus muntjak</i>	Barking Deer	Hann	III	*	*
26	<i>Manis crassicaudata</i>	Indian Pangolin	Ant eater	I	*	*


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Wildlife Mitigation Plan for Marki Mangli II Coal Mine

Sr. No	Scientific name	Vernacular name	Common name	Schedules of Wildlife Act/ IUCN Status	Core Zone	Buffer Zone
27	<i>Cynopterus spilius</i>	Bat, short-nosed fruit	Bat	IV/LC	*	*
28	<i>Pteropus giganteus</i>	Bat, Indian Flying Fox	Bat	IV/LC	*	*
29	<i>Tatera indica</i>	Gerbille, India	Rat	IV/LC	*	*
30	<i>Lepus nigricollis</i>	Hare, Indian	Sasa	IV/LC	*	*
31	<i>Macaca mulatta</i>	Monkey	Macaque Rhesus	II/LC	*	*
32	<i>Herpestes javanicus</i>	Mongoose	Mongoose, Small Indian	II/LC	*	*
33	<i>Mus booduga</i>	Mouse	Mouse, Indian Field	II/LC	*	*
34	<i>Bandicota indica</i>	Rat	Rat, Bandicoot	IV/LC	*	*
35	<i>Golunda ellioti</i>	Rat	Rat, Indian Bush	IV/LC	*	*
Total					25	35

AVES:

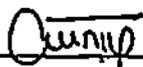
Sr No.	Scientific name	Vernacular name	Common name	Schedules of Wildlife Act/ IUCN Status	Core	Buffer
1	<i>Acridotheres tristis</i>	Salunki	Indian myna	IV	*	*
2	<i>Alauda gulgula</i>	Turrebaj chandoi	Oriental skylark	IV/LC		*
3	<i>Ardeola grayii</i>	Vanchak	Pond heron	IV/LC	*	*
4	<i>Columba livia</i>	Parva	Blue rock pigeon	LC	*	*
5	<i>Corvus splendens</i>	Kavala	House crow	LC	*	*
6	<i>Coturnix coturnix</i>	Rakhi durlav	Grey quail	IV/LC		*
7	<i>Francolinus pondicerianus</i>	Chitur	Grey francolin	IV/LC		*
8	<i>Lanius vittatus</i>	Khatik	Baybacked shrike	LC		*
9	<i>Passer domesticus</i>	Chimni	House sparrow	LC	*	*
10	<i>Pavo cristatus</i>	mor	Peacock	I	*	*
11	<i>Psittacula krameri</i>	Popat	Rosengged parakeet	IV/LC	*	*
12	<i>Saxicoloides fulicata</i>	Chirak	Indian robin	LC	*	*

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

Sr No	Scientific name	Vernacular name	Common name	Schedules of Wildlife Act/ IUCN Status	Core	Buffer
13	<i>Streptopelia senegalensis</i>	Hola	Laughing dove	IV/LC		*
14	<i>Phasianidae</i>		Jungle Fowl	IV/LC	*	*
15	<i>Estrildidae</i>		Munias	IV/LC	*	*
16	<i>Pycnonotidae</i>	Bulbul	Bulbul	IV/LC	*	*
17	<i>Cuculidae</i>	Cuckoo	Cuckoo	IV/LC	*	*
18	<i>Eudynamis</i>	Koel	Koel	IV/LC	*	*
19	<i>Milvus migrans</i>	Kite	Kite	IV/LC	*	*
20	<i>Anser anser</i>	Goose	Goose	IV/LC	*	*
21	<i>Anatidae</i>	Duck	Duck	IV/LC	*	*
22	<i>Turdoides caudata</i>	Common Babbler	Common Babbler	IV/LC	*	*
23	<i>Oriole oriolidae</i>	Golden Oriole	Haldya	IV/LC	*	*
24	<i>Picidae</i>	Woodpecker	Woodpecker	IV/LC	*	*
25	<i>Meropidae</i>	Bee-eater	Bee-eater	IV/LC	*	*
26	<i>Glaucidium radiatum</i>	Jungle Owlet	Jungle Owlet	IV/LC	*	*
27	<i>Necophoron percnopterus</i>	Vulture	Egyptian Vulture	IV/LC	*	*
28	<i>Anatidae</i>	Teal	Teal	IV/LC	*	*
29	<i>Sterna aurantia</i>	River Tern	River Tern	VU		*
Total					23	29

HERPATOFUNA:

Sr No	Scientific name	Vernacular name	Common name	Schedules of Wildlife Act/IUCN Status	Core	Buffer
1	<i>Calotes versicolor</i>	Sargota	Common garden lizard	LC	*	*
2	<i>Eryx conicus</i>	Red sand boa	Ghonas	IV	*	*
3	<i>Mabuya carinata</i>	Sapsoli	Common skink	LC	*	*
4	<i>Naja naja</i>	Nag	Cobra	II/LC		*
5	<i>Ptyas mucosa</i>	Dhaman	Common rat snake	II/LC		*
6	<i>Python molurus</i>	Rock python	Ajgar	I	*	*
7	<i>Rana hexadactyla</i>	Beduk	Indian Pond Frog	IV/NA	*	*
8	<i>Rana tigrinus</i>	Beduk	Indian Bull Frog	IV/LC	*	*


Deputy Conservator of Forests
Pandharkwada Division, Pandharkwada

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

Sr. No	Scientific name	Vernacular name	Common name	Schedules of Wildlife Act/IUCN Status	Core	Buffer
9	<i>Varanus bengalensis</i>	Monitor Lizard	Large Bengal Monitor Lizard	I	*	*
10	<i>Daboia russelii</i>	Viper	Russels Viper	II	*	*
11	<i>Bungarus fasciatus</i>	Krait	Banded Krait	IV	*	*
12	<i>Chameleon calcarata</i>	Lizard	Chameleon	II	*	*
13	<i>Bungarus caeruleus</i>	Snake	Common Krait	II/VU	*	*
Total					11	13

(Source Primary Survey & Secondary Data)

Note - NA= Not yet assessed, LC=Least Concern, VU= Vulnerable

PISCES

Sr No	Scientific name	Vernacular Name	Common Name	Iucn status	Core	Buffer
1	<i>Ambassis nama</i>	Zanjad	Indian glassy fish	NA		*
2	<i>Ambassis ranga</i>	Zanjad	Indian glassy fish	NA		*
3	<i>Basilichthys bairdii</i>	Bairdi	River carp bairdi	LC		*
4	<i>Catla catla</i>	Katta	Major Carp	LC		*
5	<i>Channa striata</i>	Dhadak	Banded snake head	LC		*
6	<i>Cirrhinus mrigala</i>	Naren	Major Carp	LC	*	*
7	<i>Clarias batracus</i>	Mangur	Magur	NA		*
8	<i>Cyprinus carpio</i>	Cipla	Cipla	VU		*
9	<i>Gambusia affinis</i>	Machar Machli	Mosquito fish	LC		*
10	<i>Glossigobius aureus</i>	Kaddu	Tank gobi	NA		*
11	<i>Heteropneustes fossilis</i>	Ingur	Stinging cat fish	LC		*
12	<i>Labeo rohita</i>	Rohu	Common carp	LC	*	*
13	<i>Labeo calbasu</i>	Black rohu	Calbasu	LC		*
14	<i>Mastacembelus armatus</i>	Bamb	Spiny eel	LC		*
15	<i>Mystus cavasius</i>	Singara	Cat fish	LC		*

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

Sr. No	Scientific name	Vernacular Name	Common Name	Iucn status	Core	Buffer
16	<i>Mystus seenghala</i>	Katwa	Gangatic mystus	LC		•
17	<i>Nandus nandus</i>	Dukkar	Leaf fish	LC		•
18	<i>Osteobrama cotlo</i>	Bhundu	Cotlo	LC		•
19	<i>Punctilus amphibious</i>	Ghuruli	Scarlet Banded barb	NA		•
20	<i>Rita rita</i>	Bhokhi	Rita	LC		•
21	<i>Salmostoma bacalla</i>	Chal	Silver fish	LC		•
22	<i>Tor khudree</i>	Mahseer	Deccan Mahaseer	LC		•
23	<i>Xenentodon cancilla</i>	Chocha	Needle fish	LC		•
Total					2	23

(Source: Primary Survey & Secondary Data) Note NA= Not yet assessed, LC=Least Concern, VU= Vulnerable.

BUTTERFLIES.

Sr No.	Scientific name	Vernacular name	Family	Iucn status	Core	Buffer
1	<i>Ariadne merione</i>	Common easter	Nymphalidae	NA	•	•
2	<i>Catopsilla piranthe</i>	Mottled emigrant	Pieridae	NA		•
3	<i>Catopsilla pomona</i>	Common emigrant	Pieridae	NA	•	•
4	<i>Cepora nerissa</i>	Common gul	Pieridae	NA		•
5	<i>Chilades pandav</i>	Plain cupid	Hesperiidae	NA	•	•
6	<i>Danaus chrysippus</i>	Plain tiger	Nymphalidae	LC		•
7	<i>Euploea core</i>	common indian crow	Nymphalidae	LC		•
8	<i>Eurenia hecabe</i>	Common grass Yellow	Pieridae	NA		•
9	<i>Hypolimnas misippus</i>	DANNAID EGG FLY	Nymphalidae	NA	•	•
10	<i>Junonia arithya</i>	Blue pansy	Nymphalidae	NA		•
11	<i>Junonia iphita</i>	Chocolate pansy	Nymphalidae	NA		•
12	<i>Junonia lemonias</i>	Lemon pansy	Nymphalidae	NA		•
13	<i>Leptotes plinius</i>	Zebra blue	Lycanidae	NA		•
14	<i>Melanitis leda</i>	Common evening brown	Nymphalidae	LC		•
15	<i>Pachliopta aristolochiae</i>	Common rose	Papilionidae	LC		•

Deputy Conservator
Pardharkurwada Division, Pardharkurwada

Wildlife Mitigation Plan for Marki Mangli II Coal Mine

Sr. No	Scientific name	Vernacular name	Family	Iucn status	Core	Buffer
16	<i>Papilio demoleus</i>	Lime	Papilionidae	NA		*
17	<i>Papilio polytes</i>	Common mormon	Papilionidae	NA	*	*
18	<i>Prasotas nora</i>	common line blue	Hesperidae	NA		*
19	<i>Tirumala limniace</i>	Blue tiger	Nymphalidae	NA	*	*
20	<i>Pachliopta hector</i>	Crimson Rose	Papilionidae	LC		*
21	<i>Virachola Isocrates</i>	Guava Blue	Lycaenidae	II		*
22	<i>Castalius rosamon</i>	Common pierrot	Lycaenidae	NA		*
23	<i>Rapala manea</i>	Slate Flash	Lycaenidae	LC		*
24	<i>Synthia cardui</i>	Painted Lady	Nymphalidae	NA	*	*
25	<i>Ypthima asterope</i>	Common Three Ring	Nymphalidae	NA	*	*
26	<i>Catopsilia pomona</i>	Common emigrant	Pieridae	NA	*	*
27	<i>Cepora nenssa</i>	Common Gull	Pieridae	NA	*	*
28	<i>Eurema hecabe</i>	Common Grass yellow	Pieridae	NA	*	*
29	<i>Danaus chrysippus</i>	Plain Tiger	Nymphalidae	NA	*	*
30	<i>Danaus genutia</i>	Striped Tiger	Nymphalidae	NA	*	*
31	<i>Euploea core</i>	Common crow	Nymphalidae	NA	*	*
32	<i>Junonia lemonias</i>	Lemon Pansy	Nymphalidae	NA	*	*
33	<i>Junonia orithya</i>	Blue Pansy	Nymphalidae	NA	*	*
34	<i>Melanitis leda</i>	Common evening brown	Nymphalidae	NA	*	*
35	<i>Hypolimnas bolina</i>	Great eggfly	Nymphalidae	NA	*	*
36	<i>Tirumala septentrionis</i>	Dark Blue Tiger	Nymphalidae	NA	*	*
Total					19	36

(Source Primary Survey & Secondary Data)

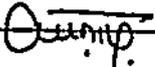
Wildlife Mitigation Plan for Marki Mangli II Coal Mine

INSECTS .

Sr No.	Scientific name	Common name	Incn status	Core	Buffer
1	Poduridae	Podura	LC/UNS	*	*
2	Blatta orientalis	Cockroach	LC/UNS	*	*
3	Mantodea	Mantis	LC/UNS	*	*
4	Chinavia hilaris	Green Stink Bugs	LC/UNS	*	*
5	Pyrrhocoridae	Red Bugs	LC/UNS	*	*
6	Formicidae	Ant	LC/UNS	*	*
7	Solenopsis spp	Red Ant (Fire Ant)	LC/UNS	*	*
8	Paraponera clavata	Bullet Ant	LC/UNS	*	*
9	Apis dorsata	Giant Honey Bee	LC/UNS	*	*
10	Apis dorsata	Rock Bee	LC/UNS	*	*
11	Apis spp	Honey Bee	LC/UNS	*	*
12	Andrenidae	Bee	LC/UNS	*	*
13	Bombus spp.	Black Bee	LC/UNS	*	*
14	Vespidae	Yellow Wasps	LC/UNS	*	*
15	Ichneumonidae	Wasps	LC/UNS	*	*
16	Chilomenes s. maculate	Ladybird	LC/UNS	*	*
17	Meloidae	Blister Beetle	LC/UNS	*	*
18	Honotricha serrate	Grubs	LC/UNS	*	*
Total				18	18

Note - NA= Not yet assessed, LC=Least Concern, VU= Vulnerable, UNS=Unscheduled

Class	Core Zone	Buffer Zone	TOTAL
Mammals	23	33	33
Herpntofauna	11	13	13
Aves	23	29	29
Pisces	2	23	23
Butterfly	19	36	36
Insects	18	18	18
TOTAL	96	152	152


 Deputy Conservator
 Pandharkwada Division, Pandharkwada

LIST OF SCHEDULE -I SPECIES AS PER WPA, 1972

S No	Scientific Name	English / vernacular Name	WPA 72 Schedule	Class
1	<i>Panthera tigris</i>	Tiger	Schedule-I	Mammals
2	<i>Panthera pardus</i>	Leopard	Schedule-I	Mammals
3	<i>Pavo cristatus</i>	Indian Peafowl	Schedule-I	Aves
4	<i>Antelope cervicapra</i>	Blackbuck	Schedule-I	Mammals
5	<i>Canis lupus pallipes</i>	Indian Wolf	Schedule-I	Mammals
6	<i>Gazella bennettii</i>	Chinkara	Schedule-I	Mammals
7	<i>Melursus ursinus</i>	Sloth bear	Schedule-I	Mammals
8	<i>Tetracerus quadricornis</i>	Four Horned Antelope	Schedule-I	Mammals
9	<i>Python molurus</i>	Rock python	Schedule-I	Herpetofauna
10	<i>Varanus bengalensis</i>	Large Bengal Monitor Lizard	Schedule-I	Herpetofauna
11	<i>Manis crassicaudata</i>	Indian Pangolin	Schedule-I	Mammals

Om

Annexure 10: Undertaking for not establishing labour camps in mine lease and well as well as forest land

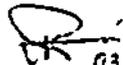


Yazdani
International (P) Ltd.
Steering success, anchoring credibility

Sub Diversion of 146 996 ha forest land under section 2(1) (ii) of the Van (Sanrakshin Evam Sawadhan) Adhiniyam 1980 for Integrated Coal Mining including post mine reclamation in Marki Mangli II coal Block in Yavatmal District, Maharashtra State in favor of Yazdani International Private Limited (Online number FP/MIN/145510/2021)

UNDERTAKING OF USER AGENCY

User Agency M/s Yazdani International Private Limited, hereby give and undertaking that no labour camps would be established either in the lease area nor any of the forest land outside the lease area to ensure that there is no illicit felling of trees and disturbing the wildlife habitat.


03 03 2025

Ashok Kumar Pani
Vice President
Authorized Signatory

Annexure 11: Proposed fence between mine and forest area

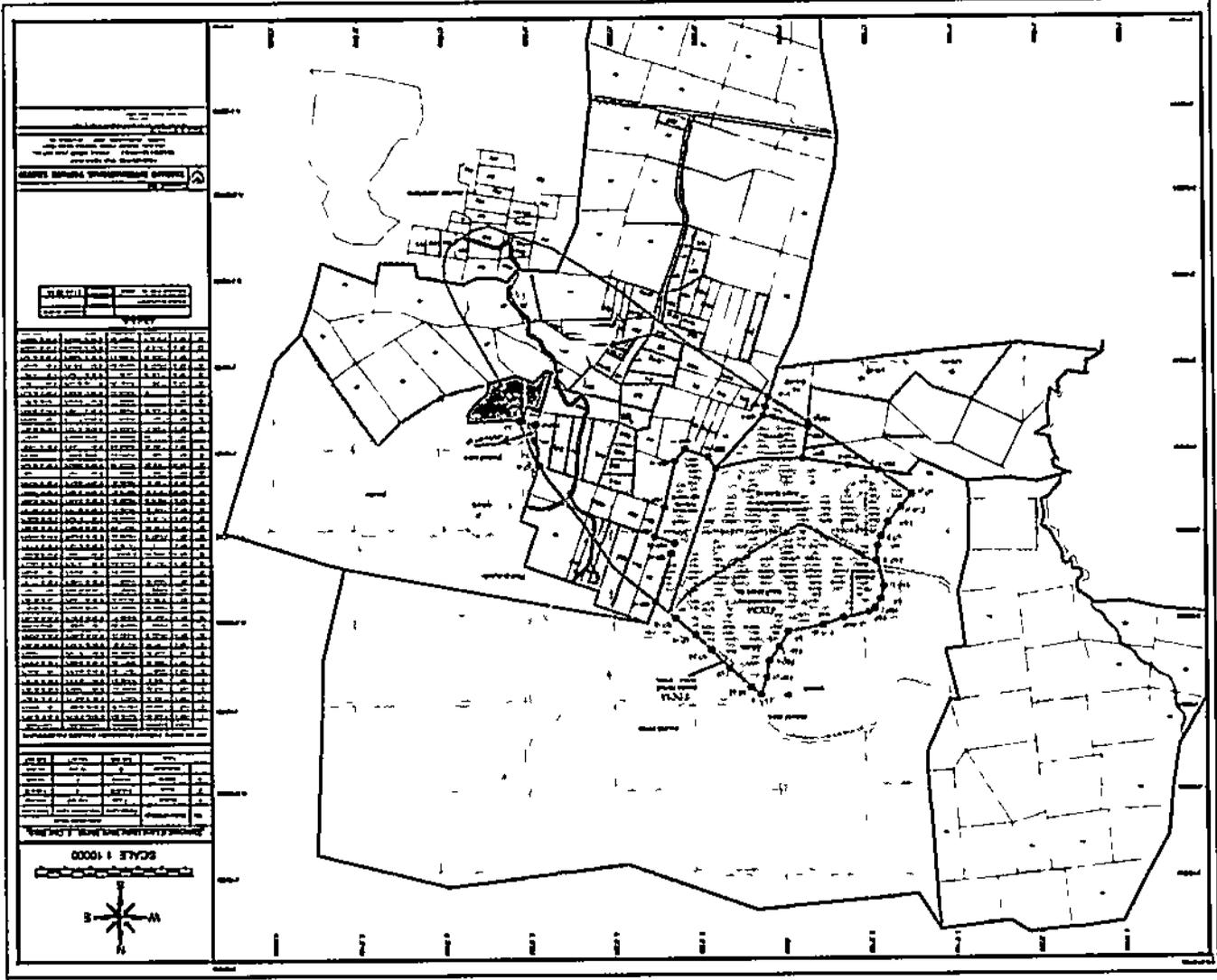
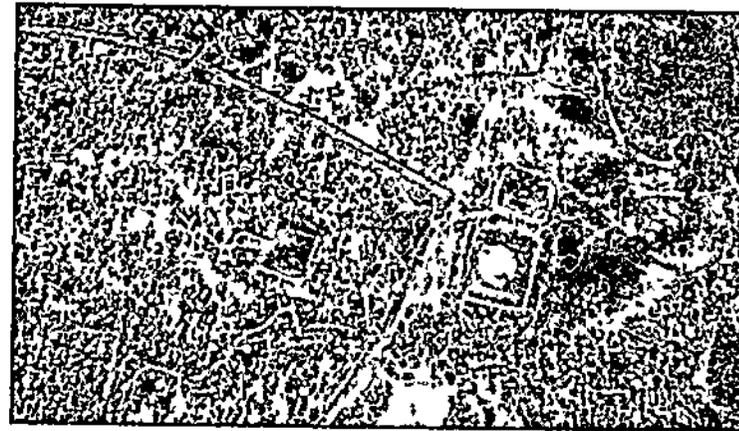
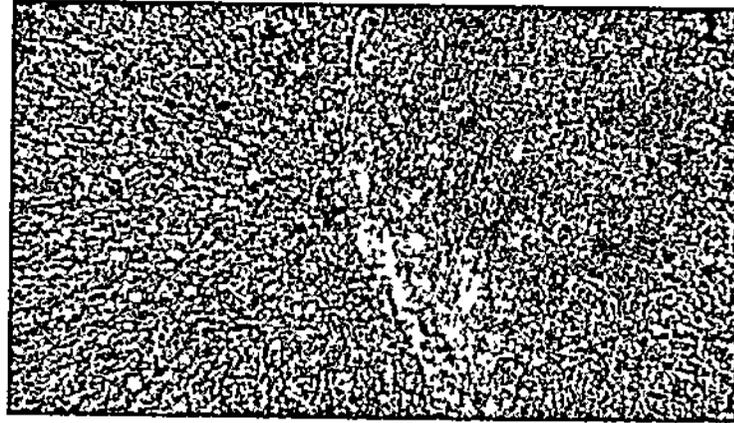
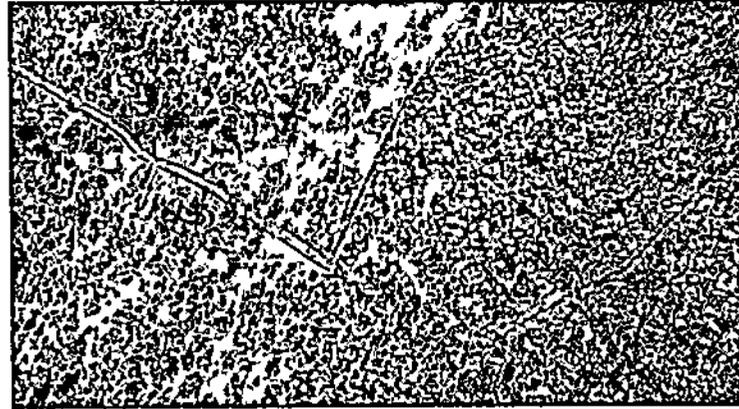
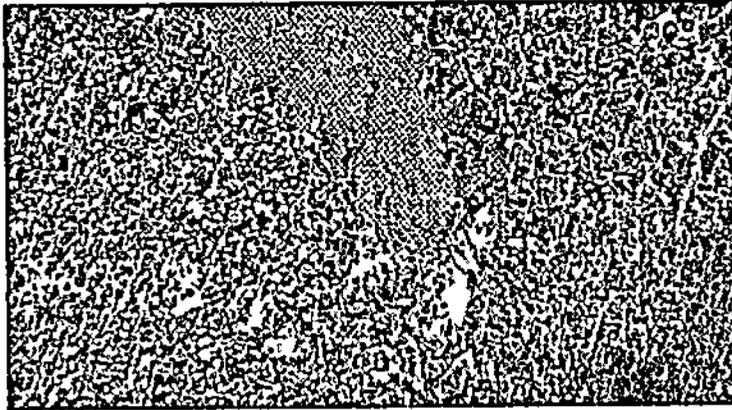


Plate 1: Drone Images of the Proposed Site for Marki Mangli II Coal Mine







Annexure 7

Certified copy of approved mine closure plan from DFO

Mining Plan along with the mine closer plan enclosed herewith the WMP has been approved by Ministry of Coal and vetted by the DFO, Pandharkawda.

Enclosed Mine Closer Plan of Marki Mangli II approved by competent authority



Sharad Satramwar
Dy General Manager (Lease & Law)
Yazdani International Pvt Limited



Dy Conservator of Forests (T)
Pandharkawda Forest Division
Dist YAVATMAL

Mine Plan and Mine Closure Plan
(First Modification/Revision)
For

MARKI MANGLI II COAL MINE

WARDHA VALLEY Coal Field
(Under Rule 22E of MCR 1960)
Yavatmal
Maharashtra

Project area 339 467 ha
Targeted Capacity 0.30 MTPA
Peak Rated Capacity -0.4500MTPA

Prepared By
INDIAN MINE PLANNERS AND CONSULTANTS

Contact No - 7909060885
Email ID - impcon kolkata@gmail com

APPLICANT
YAZDANI INTERNATIONAL PRIVATE LIMITED

Yezdani International Pvt Ltd
7th Floor, C-Wing, Fortune Towers, Chandrasekhpur
Bhubneswar-Odisha 751023



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4	Mining	13 - 20
5	Safety Management	21 - 23
6	Infrastructure Facilities proposed and their Location	24 - 29
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ANNEXURES

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2	Certificate of Qualified person (QP) / Accredited Mining Plan preparing agency (MPPA) and State Government And Geo-reference co-ordinates of the proposed mining lease area	Annexure-2A	cardinal points.xlsx	48 - 50
		Annexure-2B	Annex Certificate MPPA PDF	51 - 60
		Annexure-2C		-
3	Approval of the Company Board Approval	Annexure-3A1	Annexure -3A1-R pdf	61 - 62
4	Copy of earlier approval of mining plan	Annexure-4	Annexure MP pdf	63
5	Plan / chart showing schedule of implementation of Mine closure activities (progressive and final closure) with duration of important activities	Annexure-5	Annexure-V Bar chart 13-09-22 pdf	64
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		Annexure-13	Ann-13 Compliance Mem 10-8 -E.pdf	79
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PLANS / PLATES

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1	Location plan	Plan/Plate 1	Plate 1 pdf	81
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3	KML file of the Proposed lease area Project Area and geological block	Plan/Plate 3A	Plate-3A.pdf	83
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CHECKLIST

Details		Status
Chapter-1	Project Information	<input checked="" type="checkbox"/>
Chapter-2	Exploration Geology, Seam Sequence, Coal Quality and Reserve	<input checked="" type="checkbox"/>
Chapter-3	Mining	<input checked="" type="checkbox"/>
Chapter-4	Safety Management	<input checked="" type="checkbox"/>
Chapter-5	Infrastructure Facilities proposed and their Location	<input checked="" type="checkbox"/>
Chapter-6	Land Requirement	<input checked="" type="checkbox"/>
Chapter-7	Environment Management	<input checked="" type="checkbox"/>
Chapter-8	Progressive & Final Mine Closure Plan	<input checked="" type="checkbox"/>
Annexure	Copy of allotment order /Vesting order	<input type="checkbox"/>
Annexure	Certificate of Qualified person/ Accredited Mining Plan preparing agency (MPPA)if the project area is confined within the vested/allotted block boundary/existing mining lease and Where the project area extends beyond the block boundary, a certificate of Qualified person/ Accredited Mining Plan preparing agency (MPPA)should be supported with a certificate of State Government mines and Geology department must be attached which should specify (a) intent of the state government for grant of lease beyond the vested geological boundary/existing mining lease (b)non-existence of Coal/ Lignite in the area beyond the vested/allotted geological block boundary/existing mining lease to rule out the issue of encroachment and use of coal bearing area (beyond the vested/allotted block boundary/existing mining lease) in the mining plan	<input type="checkbox"/>
Annexure	Approval of the Company Board	<input type="checkbox"/>
Annexure	Copy of earlier approval of mining plan	<input type="checkbox"/>
Annexure	Plan / chart showing schedule of Implementation of Mine closure activities (progressive and final closure) with duration of important activities	<input checked="" type="checkbox"/>
Annexure	Expert-Review Report carried out by an Accredited Mining Plan Preparing Agency (MPPA)	<input checked="" type="checkbox"/>
Annexure	Other document (if any)	<input checked="" type="checkbox"/>
Plates	Location plan	<input checked="" type="checkbox"/>
Plates	Plan certified by Qualified person/ Accredited Mining Plan preparing agency (MPPA)if the project area is confined within the vested/allotted block boundary/existing mining lease and where the project area extends beyond the block boundary, a Plan certified by Qualified person/ Accredited Mining Plan preparing agency (MPPA)should be supported with a plan with cardinal co-ordinates duly certified by the Mines and Geology Department of the State Government. Plan in support of Annexure - II	<input type="checkbox"/>
Plates	Printed copy of the KML file superimposed in the recent (not older than one year from the base date) dated satellite image duly certified by Accredited Agency should also be attached Note The soft copy of the KML file shall also be part of the Soft copy of the mining Plan	<input type="checkbox"/>
Plates	Cadastral plan showing approved block boundary vis-A-vis proposed/existing mining lease & Mine boundary superimposed over it in distinct color, showing land use and infrastructure etc.	<input type="checkbox"/>
Plates	Geological plan showing all the boreholes drilled and proposed to be drilled showing allotted block boundary and required lease area	<input type="checkbox"/>
Plates	Representative Graphic Litholog	<input type="checkbox"/>
Plates	Surface Plan showing drainage system, Contour preferably at 3m interval, location of BH (borehole)	<input type="checkbox"/>
Plates	Conceptual plan showing infrastructure facilities including colony, boundary of mining area mine entries roads including road diversion alignment etc	<input type="checkbox"/>

Plates	Tentative land use plan showing land type (Govt., forest and tenancy land) with its data source	
Plates	Floor contour plan and seam folio plan, iso-grade plan	
Plates	Cross-section showing coal/ignite seam(s)	
Plates	Plan showing existing and proposed surface layout(s)	
Plates	Plan showing total coal thickness and overburden thickness and stripping ratio (in case of opencast (OC) Mines)	
Plates	Final stage quarry plan showing haul road alignment (in case of OC Mines)	
Plates	Plan showing mode and location of entries and surface layouts (in case of underground (UG) Mines)	
Plates	Layout of the panel for each system (like Longwall Continuous Miner Bord & Pillar, road header etc) should be given (in case of UG Mines)	✗
Plates	Layout of pillar extraction (in case of UG Mines)	✗
Plates	Support system (in case of UG Mines)	✗
Plates	Haulage and transport system (in case of UG Mines)	✗
Plates	Post mining land use plan	
Plates	Progressive mine closure plan/ stage plans	✓
Plates	Reclamation plan	✓



Chapter-1: Project Information

1.1 Introduction

S No	Parameters	Details
1.1.1	Name of the Coal/Lignite Block	MARKI MANGLI II COAL MINE
1.1.2	Name of the Coalfield/ Lignite Field	WARDHA VALLEY Coal Field
1.1.3	Base date of Mining Plan/ Mine Closure Plan	04/07/2022
1.1.4	Linked End Use Plant.	For the purpose of Sale of Coal, including sale to Affiliates and related parties, utilization of coal for any purpose including but not limited to captive consumption Coal Gasification Coal Liquefaction and Export of coal
1.1.5	Distance of End Use Plant from the pit head of the project in kkm	Being a Commercial coal Block, the distance of end use will depend on the various location of the customer
1.1.6	Mode of Coal Transport	By Rail or Road

1.2 Location, Topography & Communication

S No	Parameters	Details
1.2.1	Location of coal deposit.	Marki Mangli-II coal block is located 3 km NW of Mukutban village 35 km south of Wari town in Tehsil Jhari-Jammi, Dist Yavatmal, Maharashtra State. It lies in Wardha Valley Coal field and falling in Toposheet No 56I/13 (E44A13). (Plate-1)
	State	Maharashtra
	District	Yavatmal
1.2.2	Communication	The mining block can be accessed through the all-weather tar top road leading to village sawali and before reaching village sawali taking a diversion through a cart track to the east passing through the forest. The block can also be approached from Mukutban after travelling a distance of 3 km on Wardha Patan State Highway no 234 and then accessing the mine through a cart track covering a distance of about 1.5 km
1.2.3	Availability of power supply & water etc.	Power supply will be available from 11kVA substation of Maharashtra State Electricity Development Corporation Ltd (MSEDCL), located nearly 1.2 kms from project site. Water from the reservoir and nalla and mine water can completely cater to the water requirement. However, if required the drinking/domestic water supply can also be arranged through the existing borewell
1.2.4	Prominent physiographic features, drainage pattern, natural water courses, rainfall data, highest flood level	Marki Mangli-II block is in the sloping terrain of Vithal-Rukmai (Highest elevation 301m above MSL) which marks the NW fringe of the block and slopes towards SE (RL of lowest elevation is 225m). The block is drained by a seasonal stream (nala) which flows North to South. The upstream portion of the stream has been blocked by an embankment to form a water tank for the purpose of irrigation and recharge of underground aquifers. Average annual rainfall is 1135.7 mm. Monsoon season lasts from mid June to mid September. During summer, temperature rises to a maximum of 46Deg C and humidity falls to a minimum of 10 percent. Winter is mild between November to January and temperature generally does not fall below 10DegC.
1.2.5	Important surface features within the project area and major diversion or shifting involved	A small seasonal nala flowing from north to south shall be diverted all along the northern boundary of the block and shall meet at the southern part of the block. This nala may be used as garland drain during the mining operation.

1.3 Details of the Allotment Agreement.

S No	Parameters	Details
1.3.1	Name of the Allottee	YAZDANI INTERNATIONAL PRIVATE LIMITED
1.3.2	Details of allotment/Vesting Order	NA-104/3/20-NA
1.3.2(B)	Allocation/Vesting Order Date	2021-03-03
1.3.3	Name and address of the Applicant	Yezdani International Pvt Ltd 7th Floor C-Wing, Fortune Towers Chandrasekhpur Bhubneswar-Odisha 751023
1.3.4	Name of the previous Allottee of the Block	Ms VIRANGANA STEELS Ltd
1.3.5	Starting date of the Mine as per CMDPA/CBDPA	06/06/2026

136	Rated capacity as per CMDPA/CBDPA	0 30
137	Production Schedule as per opening permission (meeting provisions of CMDPA if any)	Opening permission form CCO and DGMS shall be obtained a fresh in due course, after approval of MP-MCP lease, EC, and other statutory approvals, clearances and permissions The Production schedule – Year-1 -0 10 Mty coal Year-2 - 0 20 Mty coal Year 3- 0 30 Mty coal from 4th year to 32 years 0 30 Mty coal, year -33 - 0 20 Mty coal Year 34 0 08 Mty coal
138	End Use of Coal/ Lignite as per allotment order if any	For the purpose of Sale of Coal including sale to Affiliates and related parties, utilization of coal for any purpose including but not limited to captive consumption, Coal Gasification Coal Liquefaction and Export of coal
139	Cardinal points coordinates of the Block Boundary	Cardinal Points files data shown below

Cardinal Points co-ordinates of the Block boundary :

Points	Longitude (WGS84)	Latitude (WGS84)
A	78°48'56.00"E	19°49'2.00"N
B	78°48'56.00"E	19°50'31.00"N
C	78°50'32.00"E	19°50'31.00"N
D	78°50'32.00"E	19°49'2.00"N
ID	WGS84 Longitude	WGS84 Latitude
BP-1	78°50'22.44158"E	19°49'02.17812"N
BP-2	78°50'20.84824"E	19°49'02.71673"N
BP-3	78°50'19.18051"E	19°49'03.33199"N
BP-4	78°50'17.56788"E	19°49'03.86044"N
BP-5	78°50'15.96069"E	19°49'04.35098"N
BP-6	78°50'14.30872"E	19°49'04.89431"N
BP-7	78°50'12.68041"E	19°49'05.37911"N
BP-8	78°50'11.29696"E	19°49'05.86080"N
BP-9	78°50'09.68702"E	19°49'06.33155"N
BP-10	78°50'08.20180"E	19°49'07.16873"N
BP-11	78°50'06.73473"E	19°49'07.98046"N
BP-12	78°50'05.29908"E	19°49'08.83228"N
BP-13	78°50'03.72256"E	19°49'09.66452"N
BP-14	78°50'02.28290"E	19°49'10.53789"N
BP-15	78°50'00.87418"E	19°49'11.37602"N
BP-16	78°49'59.42288"E	19°49'12.20811"N
BP-17	78°49'57.96266"E	19°49'13.07335"N
BP-18	78°49'56.26104"E	19°49'14.04311"N
BP-19	78°49'54.89470"E	19°49'15.04303"N
BP-20	78°49'53.55614"E	19°49'15.99963"N
BP-21	78°49'52.17269"E	19°49'16.99190"N
BP-22	78°49'50.80926"E	19°49'17.99298"N
BP-23	78°49'49.41188"E	19°49'18.94747"N
BP-24	78°49'48.03724"E	19°49'19.98392"N
BP-25	78°49'46.47097"E	19°49'21.05896"N
BP-26	78°49'45.33330"E	19°49'21.88776"N
BP-27	78°49'43.92729"E	19°49'22.86153"N
BP-28	78°49'41.95390"E	19°49'24.33881"N
BP-29	78°49'40.50876"E	19°49'25.22968"N
BP-30	78°49'39.05586"E	19°49'26.09563"N
BP-31	78°49'37.61077"E	19°49'26.96956"N
BP-32	78°49'36.19510"E	19°49'27.81745"N
BP-33	78°49'34.76190"E	19°49'28.69941"N
BP-34	78°49'33.30458"E	19°49'29.54954"N
BP-35	78°49'31.84750"E	19°49'30.45537"N
BP-36	78°49'30.43705"E	19°49'31.32794"N
BP-37	78°49'28.89699"E	19°49'32.24046"N
BP-38	78°49'27.45068"E	19°49'33.12378"N
BP-39	78°49'25.99036"E	19°49'34.01573"N
BP-40	78°49'24.58323"E	19°49'34.92717"N
BP-41	78°49'23.20797"E	19°49'35.71496"N
BP-42	78°49'21.75272"E	19°49'36.52100"N
BP-43	78°49'20.33783"E	19°49'37.39987"N
BP-44	78°49'18.85180"E	19°49'38.25672"N
BP-45	78°49'17.38226"E	19°49'39.16938"N
BP-46	78°49'15.83269"E	19°49'40.03811"N
BP-47	78°49'14.46645"E	19°49'40.88482"N
8	78°49'13.00624"E	19°49'41.91160"N
9	78°49'11.58855"E	19°49'42.75220"N

Points	Longitude (WGS84)	Latitude (WGS84)
BP-50	78°49'10 39532"E	19°49'43 43629"N
BP-51	78°49'08 98799"E	19°49'44 36478"N
BP-52	78°49'07 65194"E	19°49'45 22563"N
BP-53	78°49'06 23943"E	19°49'46 13618"N
BP-54	78°49'04 77672"E	19°49'47 11034"N
BP-55	78°49'03 43862"E	19°49'47 97688"N
BP-56	78°49'02 00897"E	19°49'48 91739"N
BP-57	78°49'00 60130"E	19°49'49 81616"N
BP-58	78°48'59 17200"E	19°49'50 77366"N
BP-59	78°48'57 75234"E	19°49'51 66171"N
BP-60	78°48'56 61658"E	19°49'52 45892"N
BP-61	78°48'57 75941"E	19°49'53 67155"N
BP-62	78°48'58 88125"E	19°49'54 92761"N
BP-63	78°49'00 01134"E	19°49'56 15417"N
BP-64	78°49'00 89113"E	19°49'57 15467"N
BP-65	78°49'01 48934"E	19°49'57 82924"N
BP-66	78°49'02 25396"E	19°49'59 26160"N
BP-67	78°49'02 93216"E	19°50'00 55791"N
BP-68	78°49'03 52336"E	19°50'02 38068"N
BP-69	78°49'03 64572"E	19°50'03 45508"N
BP-70	78°49'03 77311"E	19°50'05.13874"N
BP-71	78°49'03 21194"E	19°50'06 64777"N
BP-72	78°49'02 96841"E	19°50'07 44058"N
BP-73	78°49'02 22749"E	19°50'09 99267"N
BP-74	78°49'02 86890"E	19°50'12 43967"N
BP-75	78°49'04 02208"E	19°50'14 12858"N
BP-76	78°49'05 18893"E	19°50'14 91012"N
BP-77	78°49'06 09083"E	19°50'15 15788"N
BP-78	78°49'07 77360"E	19°50'15 66080"N
BP-79	78°49'10 29653"E	19°50'16 09799"N
BP-80	78°49'11 85776"E	19°50'16 70181"N
BP-81	78°49'14 50747"E	19°50'17 53346"N
BP-82	78°49'16 22052"E	19°50'17 91017"N
BP-83	78°49'17 91529"E	19°50'18 21564"N
BP-84	78°49'19 67704"E	19°50'18 53320"N
BP-85	78°49'21 46621"E	19°50'18 78474"N
BP-86	78°49'22 28188"E	19°50'20 27218"N
BP-87	78°49'23 16345"E	19°50'21 73044"N
BP-88	78°49'24 03731"E	19°50'22 89597"N
BP-89	78°49'25 25949"E	19°50'24 44989"N
BP-90	78°49'25 51021"E	19°50'26 05991"N
BP-91	78°49'25 66172"E	19°50'27 58018"N
BP-92	78°49'26 26177"E	19°50'29 21805"N
BP-93	78°49'26 81726"E	19°50'30 82991"N
BP-94	78°49'27 55353"E	19°50'30 41364"N
BP-95	78°49'28 88520"E	19°50'29 45064"N
BP-96	78°49'30.14270"E	19°50'28 33444"N
BP-97	78°49'31 41722"E	19°50'27 26454"N
BP-98	78°49'33 23545"E	19°50'25 83891"N
BP-99	78°49'34 43222"E	19°50'24 73469"N
BP-100	78°49'35 58659"E	19°50'23 67131"N
BP-101	78°49'36.92334"E	19°50'22 47700"N
BP-102	78°49'38 11969"E	19°50'21.45990"N
BP-103	78°49'39 33885"E	19°50'20 34293"N
BP-104	78°49'40.11029"E	19°50'19 62522"N
BP-105	78°49'41 45504"E	19°50'18 60692"N
BP-106	78°49'42 83323"E	19°50'17 54799"N
BP-107	78°49'44 14722"E	19°50'16 53622"N
BP-108	78°49'45 48386"E	19°50'15 50965"N
BP-109	78°49'46 86487"E	19°50'14 47971"N
BP-110	78°49'48 26606"E	19°50'13 36649"N
BP-111	78°49'49 57085"E	19°50'12 36023"N
BP-112	78°49'50 89725"E	19°50'11 37433"N
BP-113	78°49'52 23522"E	19°50'10 35569"N
BP-114	78°49'53 57138"E	19°50'09 38951"N
BP-115	78°49'55 17122"E	19°50'08 22662"N
BP-116	78°49'56 10302"E	19°50'07 42868"N
17	78°49'57 02719"E	19°50'06 73814"N

Points	Longitude (WGS84)	Latitude (WGS84)
BP-118	78°49'58.02731"E	19°50'05.30781"N
BP-119	78°49'58.98282"E	19°50'04.01377"N
BP-120	78°50'00.01041"E	19°50'02.69917"N
BP-121	78°50'01.01347"E	19°50'01.35641"N
BP-122	78°50'02.01498"E	19°49'59.98879"N
BP-123	78°50'03.41815"E	19°49'58.13983"N
BP-124	78°50'04.48300"E	19°49'56.89850"N
BP-125	78°50'05.57807"E	19°49'55.64762"N
BP-126	78°50'06.63833"E	19°49'54.39360"N
BP-127	78°50'07.37908"E	19°49'53.50036"N
BP-128	78°50'08.88519"E	19°49'51.82602"N
BP-129	78°50'10.40376"E	19°49'50.04787"N
BP-130	78°50'11.26186"E	19°49'48.71834"N
BP-131	78°50'12.25153"E	19°49'47.26923"N
BP-132	78°50'13.14279"E	19°49'45.92176"N
BP-133	78°50'13.80171"E	19°49'44.38453"N
BP-134	78°50'14.48797"E	19°49'42.91881"N
BP-135	78°50'15.08597"E	19°49'41.53088"N
BP-136	78°50'15.85264"E	19°49'39.88420"N
BP-137	78°50'16.44889"E	19°49'38.46273"N
BP-138	78°50'17.13668"E	19°49'36.92090"N
BP-139	78°50'17.63632"E	19°49'35.77593"N
BP-140	78°50'18.46811"E	19°49'34.44267"N
BP-141	78°50'19.33374"E	19°49'33.02101"N
BP-142	78°50'20.15733"E	19°49'31.62286"N
BP-143	78°50'21.03121"E	19°49'30.24202"N
BP-144	78°50'22.38445"E	19°49'28.00625"N
BP-145	78°50'23.28435"E	19°49'26.57285"N
BP-146	78°50'24.14622"E	19°49'25.16817"N
BP-147	78°50'25.06664"E	19°49'23.74780"N
BP-148	78°50'25.93622"E	19°49'22.35058"N
BP-149	78°50'26.85202"E	19°49'20.88447"N
BP-150	78°50'27.74250"E	19°49'19.50013"N
BP-151	78°50'28.81851"E	19°49'17.76541"N
BP-152	78°50'29.52644"E	19°49'16.25255"N
BP-153	78°50'30.25463"E	19°49'14.81084"N
BP-154	78°50'31.34346"E	19°49'12.54062"N
BP-155	78°50'31.40772"E	19°49'10.99402"N
BP-156	78°50'31.54299"E	19°49'09.63526"N
BP-157	78°50'30.95518"E	19°49'07.05644"N
BP-158	78°50'30.17125"E	19°49'06.03261"N
BP-159	78°50'28.61152"E	19°49'04.85802"N
BP-160	78°50'27.08866"E	19°49'03.93322"N
BP-161	78°50'25.73048"E	19°49'03.02563"N
BP-162	78°50'24.11737"E	19°49'02.62934"N

1.4 Details of the Previous Approval of Mining Plan

S No	Parameters	Details
1.4.1	Date of approval	05/02/2008
	Copy of earlier approval of mining plan Upload document	Annexure 4 Document shown in annexure section



142	Conditions, if any	S No	Conditions	Compliance Status	
		1	Mining company shall take all necessary precautions regarding safety of mine workings, persons deployed therewith	Shall be Complied	
		2	The approval of the mining plan is without prejudice to the requirement of approvals from competent / prescribed authority under the relevant rules/ regulations etc	Noted shall be complied	
		3	Mining company shall take all necessary precautions regarding safety of mine workings, persons deployed therewith	Shall be Complied	
		4	The approval of the mining plan is without prejudice to the requirement of approvals from competent / prescribed authority under the relevant rules/ regulations etc	Noted	
		5	Mining company shall take all necessary precautions regarding safety of mine workings, persons deployed therewith	Shall be Complied	
6	The approval of the mining plan is without prejudice to the requirement of approvals from competent / prescribed authority under the relevant rules/ regulations etc.	Noted			
143	Scheduled year of start of production	2012-13			
144	Proposed year of achieving the targeted production	4th Year 2016			
145	Date of actual commencement of mining operations if operations already started	02/04/2013			
146	Likely date of mining operations, if operations not yet started & reasons for non-commencement of operations	Non Operational The mine was operational till 2014 prior to deallocation of the block. Coal produced by prior allottee is 99775 metric Tonne coal and total waste (OB top soil) excavated volume is 421661cum. The Coal block is now allocated as a commercial block and now categorized in Schedule-III coal block as per MoC letter dated 07/03/2022 (enclosed as Annexure-VIII) and 51 months time allowed for complying the efficiency parameters please refer compliance report of Scrutiny Committee Annexure-12			
148	Statutory obligations vis-à-vis compliance status in a tabular form	S No	Clearance Type (Mining Plan, Mining Lease Environment, Forest, CTO etc)	Conditions	Compliance Status
		1	Coal Mines' Act and Mines Regulation 2017	Mining company shall take all necessary precautions regarding safety of mine workings, persons deployed therewith	Shall be Complied
		2	Mining Plan -Mine Closure Plan	The approval of the mining plan is without prejudice to the requirement of approvals from competent / prescribed authority under the relevant rules/ regulations etc	Shall be followed and complied
		3	Others	All conditions of approving and statutory bodies as applicable for making the mine block operation	Shall be complied
149	Reasons for difference between the planned and actual production levels	Only one year coal has been produced during the year 2013-14 to the tune of 99775 metric tonne. Subsequently, the coal block deallocated from prior allottee			

1.5 PARAMETERS OF APPROVED MINING PLAN VIS-À-VIS PROPOSED MINING PLAN

S No	Block Area	Approved Mining Plan	Proposed Mining Plan
151	Geological Block Area HA	330 70	339 4670
152	Geological Block Area Projectised HA	273 00	339 467
153	Lease area HA	261 00	339 4670
154	Project area HA	273	339 4670
155	Life of the Project Yrs	24	34
156	Minimum and Maximum Depth of working	Min 10m Max 70m	Min 11 85 Max 125
157	Geological Block Area yet to be projectised "Ha"	330 70	0 00
158	Production Target MTP	0 30	0 3000
159	Seams Available As per GR	Seam Top and Bottom	Seam -Top,Seam-Bott



1 5 10	Seams not considered for Mining with Reasons		S	Seams	Reason
			No		
			1	Seam-Bott	Seam Bottom not considered as it has not developed and impersistent in major part of the area
1 5 11	Gross Geological Reserve Mte	12 82			12 82
1 5 12	Net Geological Reserve Mte	11 54			11 5400
1 5 13	Blocked Reserve Mte				1 3500
1 5 14	Minable Reserve Mte				10 1900
1 5 15	Extractable Reserve Mte	6 73			9 6800
1 5 16	% of Extraction/ recovery	58 32%			83 8820%
1 5 17	Reserve Depleted (till the base date) Reserves Mte	0 10			0 1000
1 5 18	Balance Extractable Reserve Mte	6 63			9 5800
1 5 19	Average Grade	E F			4707 0000
1.5 20	OB In MM3	50 78			87 0600
1 5 21	SR M3/te	7 55			9 0877
1 5 22	Mining Technology	OC mining with Shovel Dumper for OBR Shovel Dumper for coal			OC mining with Shovel Dumper for OBR Shovel Dumper Surface miner for coal
1 5 23	Coal Beneficiation envisaged				
1 5 24	Handling of Rejects	NIL			Not Applicable
1 5 25	Land use pattern " Ha"				
1	Excavation Area	145 00			215 2100
2	Top Soil Dump	21 50			0 0000
3	External Dump	73 50			52 0000
4	Safety Zone				6 0600
5	Other Use	12 50			53 9970
6	Infrastructure area	20 50			12 2000
7	Green Belt				0 0000
8	Undisturbed Area				0 0000
	Total	273 0000			339 4670
1.5 26	Reasons for revision				i) Change in ML area from 261Ha to 339 467 Ha ii) Change in extractable reserves due to change in depth of working (from 70m to 125m) for higher percentage of extraction 58 32 to 83 88 by adopting scientific mining (MoC guidelines dated 29 5 2009), item no 1 3 (A)(c) (d)iii) Environment Clearance was obtained for Marki Mangli-II,III IV blocks combinedly as cluster of mines As per directives, fresh Environment Clearance to be accorded based on Revised Mining Plan Mine Closure Plan (Revision-01)iv) No forest clearance was obtained for 146 966 Ha of Forest land v) No Mine Closure Plan was prepared as per Guidelines of MoC dated 2009/2013



Chapter-2: Exploration, Geology, Seam Sequence, Coal Quality and Reserve

2.1 Details of the block

S No	Parameters	Details	
211	Particulars of adjacent blocks North, South East, West	North	Fault F1-F1/Talchir Formation
		East	Fault F4-F4, F2-F2 and Incrop of coal seam
		South	Incrop of coal seam
		West	Lease Boundary and Lameta Formation
212	Location of the Block	Marki-Mangli-II coal block is located 3 kms NW of Mukutban village 35 Kms south of Wani town in Tehsil Jhari-Jammi, Dist Yavatmal, Maharashtra State It lies in Wardha Valley Coal field and falling in Toposheet No 56I/13 (E44A13)	
	State	Maharashtra	
	Distinct	Yavatmal	
213	Area of the Block "Ha"	339 467	
214	Area of the geological block projected in "Ha" (Area of the geological block considered for liquidation of coal reserve)	339 467	
215	Balance area yet to be projected "Ha"	0 00	
216	Likely Reserve in the area yet to be projected "Mte"	0 00	
217	Cardinal Point Co-ordinates of the non-coal/lignite bearing area/existing mining lease outside the allotted Geological Coal/Lignite block	No out side lease area is proposed	
	(Duly certified in line with para 1.9 of the Guideline, if fresh minning lease required)	Cardinal Points files data shown below	
218	Certificate of Qualified person/ Accredited Mining Plan preparaning agency (MPPA) if the project area is confined within the vested/allotted block boundary/existing mining lease and Cardinal Points Co-ordinates of the Proposed area outside the non-coal/lignite bearing area outside the allotted Geological Coal/Lignite block	Annexure 2A	Document shown in annexure section
		Annexure 2B	Document shown in annexure section
		The Project area, Lease area and geological block area in Ha shall also be envisaged Certificate attached as Annexure-II (Plate-II) The project area is confined within the vested/allotted block boundary as notified by Ministry of Coal, Govt of India vide its vesting order No NA-104/3/2020-NA dated 03 03 2021 The cardinal point co-ordinates considered for preparation of the Mining Plan Mine Closure Plan (1st Revision) of MarkiMangli-II Coal Mine are in line with the vesting /allotment order and does not encroach any other adjacent block Geological Block Area- 339 467 ha Project Area- 339 467 ha	
219	KML file of the Proposed lease area, Project Area and geological block	File attached in Plates section below	
2110	Whether the proposed project area is confined within the allotted block boundary/existing mining lease, if not, the reason for deviation from allotted block boundary may be given	Yes	
2111	If the project area extends outside the allotted block boundary/existing mining lease, confirmation about non-occurrence of coal/lignite in the area under reference needs to be furnished	Not applicable Project area does not extend outside the allotted block boundary	
2112(1)	Year of Starting	2022	
2112(2)	Type of the Project.	Under Implementation Coal production to start from 06 06 2026 considering base date of proposed revision of mining plan as per MoC letter dated 07 03 2022 (Annexure-VIII)	

(Duly certified in line with para 1.9 of the Guideline, if fresh minning lease required) :

BOUNDARY AS PER VESTING ORDER			
Pints	Longitude (WGS84)	Latitude (WGS84)	
	78°48'56 00"E	19°49'2 00"N	
	78°48'56 00"E	19°50'31 00"N	

BOUNDARY AS PER VESTING ORDER

Point No	Ground Easting (m)	Ground Northing (m)	WGS84 Longitude	WGS84 Latitude
C	78°50'32.00"E	19°49'21.00"N		
D	78°50'32.00"E	19°49'21.00"N		
BP-1/162	273706 215	2192707 681	78°50'22.44"E	19°49'02.17"N
BP-2/162	273660 051	2192724 839	78°50'20.84"E	19°49'02.71"N
BP-3/162	273611 751	2192744 383	78°50'19.18"E	19°49'03.33"N
BP-4/162	273565 021	2192761 236	78°50'17.56"E	19°49'03.86"N
BP-5/162	273518 435	2192776 921	78°50'15.96"E	19°49'04.35"N
BP-6/162	273470 566	2192794 247	78°50'14.30"E	19°49'04.89"N
BP-7/162	273423 363	2192809 764	78°50'12.68"E	19°49'05.37"N
BP-8/162	273383 266	2192825 094	78°50'11.29"E	19°49'05.86"N
BP-9/162	273336 612	2192840 173	78°50'09.68"E	19°49'06.33"N
BP-10/162	273293 712	2192866 474	78°50'08.20"E	19°49'07.16"N
BP-11/162	273251 331	2192891 986	78°50'06.73"E	19°49'07.98"N
BP-12/162	273209 881	2192918 72	78°50'05.29"E	19°49'08.83"N
BP-13/162	273164 323	2192944 904	78°50'03.72"E	19°49'09.69"N
BP-14/162	273122 764	2192972 302	78°50'02.28"E	19°49'10.53"N
BP-15/162	273082 092	2192998 605	78°50'00.87"E	19°49'11.37"N
BP-16/162	273040 179	2193024 738	78°49'59.42"E	19°49'12.20"N
BP-17/162	272998 019	2193051 894	78°49'57.96"E	19°49'13.07"N
BP-18/162	272948 875	2193082 355	78°49'56.26"E	19°49'14.04"N
BP-19/162	272909 501	2193113 618	78°49'54.89"E	19°49'15.04"N
BP-20/162	272870 919	2193143 639	78°49'53.55"E	19°49'15.99"N
BP-21/162	272831 044	2193174 573	78°49'52.17"E	19°49'16.99"N
BP-22/162	272791 756	2193205 872	78°49'50.80"E	19°49'17.99"N
BP-23/162	272751 461	2193235 75	78°49'49.41"E	19°49'18.94"N
BP-24/162	272711 861	2193268 14	78°49'48.03"E	19°49'19.93"N
BP-25/162	272666 698	2193301 789	78°49'46.47"E	19°49'21.05"N
BP-26/162	272633 913	2193327 705	78°49'45.33"E	19°49'21.87"N
BP-27/162	272593 376	2193358 18	78°49'43.92"E	19°49'22.86"N
BP-28/162	272536 523	2193404 353	78°49'41.95"E	19°49'24.38"N
BP-29/162	272494 814	2193432 293	78°49'40.58"E	19°49'25.29"N
BP-30/162	272452 87	2193459 469	78°49'39.05"E	19°49'26.09"N
BP-31/162	272411 156	2193486 888	78°49'37.61"E	19°49'26.96"N
BP-32/162	272370 288	2193513 496	78°49'36.19"E	19°49'27.81"N
BP-33/162	272328 923	2193541 158	78°49'34.76"E	19°49'28.69"N
BP-34/162	272286 844	2193567 85	78°49'33.30"E	19°49'29.54"N
BP-35/162	272244 794	2193596 255	78°49'31.84"E	19°49'30.45"N
BP-36/162	272204 089	2193623 62	78°49'30.43"E	19°49'31.32"N
BP-37/162	272159 626	2193652 263	78°49'28.89"E	19°49'32.24"N
BP-38/162	272117 881	2193679 972	78°49'27.45"E	19°49'33.13"N
BP-39/162	272075 732	2193707 952	78°49'25.99"E	19°49'34.01"N
BP-40/162	272035 139	2193736 512	78°49'24.56"E	19°49'34.92"N
BP-41/162	271995 424	2193761 257	78°49'23.20"E	19°49'35.71"N
BP-42/162	271953 389	2193786 593	78°49'21.75"E	19°49'36.52"N
BP-43/162	271912 557	2193814 154	78°49'20.33"E	19°49'37.39"N
BP-44/162	271869 646	2193841 065	78°49'18.85"E	19°49'38.25"N
BP-45/162	271827 238	2193869 686	78°49'17.38"E	19°49'39.16"N
BP-46/162	271782 483	2193896 986	78°49'15.83"E	19°49'40.03"N
BP-47/162	271743 055	2193923 541	78°49'14.45"E	19°49'40.88"N
BP-48/162	271700 963	2193955 668	78°49'13.06"E	19°49'41.91"N
BP-49/162	271660 036	2193982 054	78°49'11.58"E	19°49'42.75"N
BP-50/162	271625 579	2194003 542	78°49'10.39"E	19°49'43.64"N
BP-51/162	271584 988	2194032 628	78°49'08.98"E	19°49'44.56"N
BP-52/162	271546 445	2194059 606	78°49'07.65"E	19°49'45.53"N
BP-53/162	271505 696	2194088 141	78°49'06.23"E	19°49'46.16"N
BP-54/162	271463 512	2194118 653	78°49'04.77"E	19°49'47.11"N
BP-55/162	271424 912	2194145 807	78°49'03.43"E	19°49'47.97"N
BP-56/162	271383 677	2194175 271	78°49'02.00"E	19°49'48.91"N
BP-57/162	271343 065	2194203 443	78°49'00.60"E	19°49'49.81"N
BP-58/162	271301 847	2194233 429	78°48'59.17"E	19°49'50.77"N
BP-59/162	271260 882	2194261 276	78°48'57.75"E	19°49'51.66"N
BP-60/162	271228 144	2194286 223	78°48'56.61"E	19°49'52.45"N
BP-61/162	271261 887	2194323 088	78°48'57.75"E	19°49'53.67"N
BP-62/162	271295 037	2194361 296	78°48'58.88"E	19°49'54.92"N
BP-63/162	271328 416	2194398 694	78°49'00.13"E	19°49'56.15"N
4/162	271354 419	2194429 777	78°49'00.89"E	19°49'57.15"N
5/162	271372 097	2194449 575	78°49'01.48"E	19°49'57.82"N

BOUNDARY AS PER VESTING ORDER

BP-66/162	21394 921	2194493 321	78°49'02" 25396"E	19°49'59" 26160"N
BP-67/162	21415 174	2194532 935	78°49'02" 93216"E	19°50'00" 55791"N
BP-68/162	21433 105	2194588 772	78°49'03" 52336"E	19°50'02" 38068"N
BP-69/162	21437 094	2194621 77	78°49'03" 64572"E	19°50'03" 45508"N
BP-70/162	21441 471	2194673 504	78°49'03" 77311"E	19°50'05" 13874"N
BP-71/162	21425 739	2194720 127	78°49'03" 21194"E	19°50'06" 64777"N
BP-72/162	21418 957	2194744 602	78°49'02" 96841"E	19°50'07" 44058"N
BP-73/162	21398 418	2194823 372	78°49'02" 22749"E	19°50'09" 99267"N
BP-74/162	21418 059	2194898 389	78°49'02" 86890"E	19°50'12" 43967"N
BP-75/162	21452 292	2194949 899	78°49'04" 02208"E	19°50'14" 12858"N
BP-76/162	21486 557	2194973 557	78°49'05" 18893"E	19°50'14" 91012"N
BP-77/162	21512 908	2194980 777	78°49'06" 09083"E	19°50'15" 15788"N
BP-78/162	21562 077	2194995 672	78°49'07" 77360"E	19°50'15" 66080"N
BP-79/162	21635 681	2195008 109	78°49'10" 29653"E	19°50'16" 09799"N
BP-80/162	21681 352	2195026 153	78°49'11" 85776"E	19°50'16" 70181"N
BP-81/162	21758 801	2195050 674	78°49'14" 50747"E	19°50'17" 53346"N
BP-82/162	21808 801	2195061 677	78°49'16" 22052"E	19°50'17" 91017"N
BP-83/162	21858 245	2195070 435	78°49'17" 91529"E	19°50'18" 21564"N
BP-84/162	21909 643	2195079 54	78°49'19" 67704"E	19°50'18" 53320"N
BP-85/162	21961 817	2195086 544	78°49'21" 46621"E	19°50'18" 78474"N
BP-86/162	21986 141	2195132 045	78°49'22" 28188"E	19°50'20" 27218"N
BP-87/162	22012 381	2195176 503	78°49'23" 16345"E	19°50'21" 73044"N
BP-88/162	22038 27	2195212 082	78°49'24" 03731"E	19°50'22" 89597"N
BP-89/162	22074 46	2195259 354	78°49'25" 25949"E	19°50'24" 44899"N
BP-90/162	22082 39	2195308 838	78°49'25" 51021"E	19°50'26" 05991"N
BP-91/162	22087 407	2195355 477	78°49'25" 66172"E	19°50'27" 58018"N
BP-92/162	22105 515	2195405 686	78°49'26" 26177"E	19°50'29" 21805"N
BP-93/162	22122 325	2195441 912	78°49'26" 81726"E	19°50'30" 82991"N
BP-94/162	22143 587	2195441 912	78°49'27" 55353"E	19°50'30" 41364"N
BP-95/162	22181 955	2195411 855	78°49'28" 88520"E	19°50'29" 45064"N
BP-96/162	22218 113	2195376 993	78°49'30" 14270"E	19°50'28" 33444"N
BP-97/162	22254 78	2195343 61	78°49'31" 41722"E	19°50'27" 26454"N
BP-98/162	22307 13	2195299 082	78°49'33" 23545"E	19°50'25" 83891"N
BP-99/162	22341 521	2195264 673	78°49'34" 43222"E	19°50'24" 73469"N
BP-100/162	22374 695	2195231 535	78°49'35" 58659"E	19°50'23" 67131"N
BP-101/162	22413 125	2195194 302	78°49'36" 92334"E	19°50'22" 47700"N
BP-102/162	22447 579	2195162 573	78°49'38" 11969"E	19°50'21" 45990"N
BP-103/162	22482 527	2195127 763	78°49'39" 33885"E	19°50'20" 34293"N
BP-104/162	22504 744	2195105 4	78°49'40" 11029"E	19°50'19" 62522"N
BP-105/162	22543 477	2195073 578	78°49'41" 45504"E	19°50'18" 60692"N
BP-106/162	22583 167	2195040 494	78°49'42" 83323"E	19°50'17" 54799"N
BP-107/162	22621 007	2195008 885	78°49'44" 14722"E	19°50'16" 53622"N
BP-108/162	22659 501	2194976 812	78°49'45" 48386"E	19°50'15" 50965"N
BP-109/162	22699 285	2194944 619	78°49'46" 86487"E	19°50'14" 47971"N
BP-110/162	22739 624	2194909 857	78°49'48" 26606"E	19°50'13" 36649"N
BP-111/162	22777 199	2194878 421	78°49'49" 57085"E	19°50'12" 36023"N
BP-112/162	22815 412	2194815 773	78°49'50" 89725"E	19°50'11" 37433"N
BP-113/162	22853 948	2194785 558	78°49'52" 23522"E	19°50'10" 35569"N
BP-114/162	22892 453	2194749 195	78°49'53" 57138"E	19°50'09" 38951"N
BP-115/162	22938 553	2194724 306	78°49'55" 17122"E	19°50'08" 22662"N
BP-116/162	22985 357	2194702 723	78°49'57" 02719"E	19°50'07" 42868"N
BP-117/162	23020 522	2194658 359	78°49'58" 98282"E	19°50'06" 73814"N
BP-118/162	23047 82	2194618 203	78°49'58" 98282"E	19°50'04" 01377"N
BP-120/162	23077 207	2194577 388	78°50'00" 01041"E	19°50'02" 69917"N
BP-121/162	23105 869	2194535 716	78°50'01" 01347"E	19°50'01" 35641"N
BP-122/162	23134 477	2194493 281	78°50'02" 01498"E	19°49'59" 98879"N
BP-123/162	23174 585	2194435 891	78°50'03" 41815"E	19°49'58" 13983"N
BP-124/162	23205 086	2194397 316	78°50'04" 48300"E	19°49'56" 89850"N
BP-125/162	23236 463	2194358 436	78°50'05" 57807"E	19°49'55" 64762"N
BP-126/162	23266 826	2194319 472	78°50'06" 63833"E	19°49'54" 39360"N
BP-128/162	23331 206	2194239 667	78°50'07" 37908"E	19°49'53" 50036"N
BP-129/162	23374 701	2194184 413	78°50'10" 40376"E	19°49'50" 04787"N
BP-130/162	23399 152	2194143 203	78°50'11" 26186"E	19°49'48" 71834"N
BP-131/162	23427 384	2194098 266	78°50'12" 25153"E	19°49'47" 26923"N
32/162	273452 792	2194056 777	78°50'13" 14279"E	19°49'45" 92176"N
33/162	273471 364	2194008 5	78°50'13" 80171"E	19°49'44" 38453"N

Local geology, Structure, Stratigraphic sequence, Characteristics of the litho-logical units (coal seams /partings/overburden)

S No	Parameters	Details	2 2 1	
			Regional geological set up of the area, local geology, structure, stratigraphic sequence, characteristics of the litho-logical units (coal seams /partings/overburden)	The stratigraphic sequence in the block as worked out from borehole intersection and the thickness range of different formations are given below
Recent to Sub Recent	Soil/Alluvium	0 00	9 15	Soil is black cotton soil derived from lava flows
				Soil derived from Talchir
Lameta Group (Middle cretaceous)	Infra-Talchir	0 00	15 25	Variagated clay siltstone limestone and subordinate calcareous sandstone Sandstone is fine to medium grained and calcareous
				Coarse gritty pinkish red shales
Up Permian to Lower Triassic	Kamthi	Not Encountered		Brown reddish and greenish clay siltstone and lenticular sandstone bands
				White to grey fine to coarse grained sandstone with inter-banded grey shale carb shale and coal seams
Middle Permian	Molur	Not Encountered		Up carboniferous to Lower Permian
				Up carboniferous to Lower Permian
Pre-Cambrian	Pangang Group	Not Encountered		Unconformity
				Purple shale limestone calc-dolomite dolomite

2 2 EXPLORATION, GEOLOGY AND ASSESSMENT OF RESERVE

BOUNDARY AS PER VESTING ORDER			
BP-134/162	273490 76	2193963 633	78°50'14 4879"E
BP-135/162	273507 618	2193920 725	78°50'15 08597"E
BP-136/162	273529 283	2193869 794	78°50'15 85264"E
BP-137/162	273546 076	2193825 855	78°50'16 44889"E
BP-138/162	273565 487	2193778 179	78°50'17 13668"E
BP-139/162	273579 578	2193742 779	78°50'17 63632"E
BP-140/162	273603 262	2193701 464	78°50'18 46811"E
BP-141/162	273627 896	2193657 418	78°50'19 33374"E
BP-142/162	273651 316	2193614 111	78°50'20 15733"E
BP-143/162	273676 217	2193571 317	78°50'21 03121"E
BP-144/162	273714 713	2193502 052	78°50'22 38445"E
BP-145/162	273740 341	2193457 632	78°50'23 28435"E
BP-146/162	273764 874	2193414 111	78°50'24 14622"E
BP-147/162	273791 104	2193370 084	78°50'25 06664"E
BP-148/162	273815 864	2193326 788	78°50'25 93622"E
BP-149/162	273841 942	2193281 357	78°50'26 85202"E
BP-150/162	273867 316	2193238 45	78°50'27 74250"E
BP-151/162	273897 951	2193184 698	78°50'28 81851"E
BP-152/162	273917 962	2193137 906	78°50'29 52644"E
BP-153/162	273938 59	2193093 295	78°50'30 25463"E
BP-154/162	273969 389	2193023 069	78°50'31 34346"E
BP-155/162	273970 651	2192975 479	78°50'31 40772"E
BP-156/162	273974 055	2192933 64	78°50'31 54299"E
BP-157/162	273955 932	2192854 547	78°50'30 95518"E
BP-158/162	273932 713	2192823 35	78°50'30 17125"E
BP-159/162	273886 853	2192767 806	78°50'28 61152"E
BP-160/162	273842 165	2192759 93	78°50'27 08866"E
BP-161/162	273802 277	2192732 522	78°50'25 73048"E
BP-162/162	273755 169	2192720 934	78°50'24 11737"E

Seam-Bottom	0 15-0 50	0 00					0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	Seam Bottom not considered as it has not developed and impersistent in major part of the area
Total	11 5400	1 2000	0 1500	1 3500	10 1900	0 5100	9 6800	0 1000	9 5800	9 5800											

S No	Parameters	Details																																			
2 2 15	Methodology of reserves estimation (also mention if any software package has been used)	Geological Reserves was estimated by DGM Maharashtra using polygon method with Digital Planimeter (Planix-7) GCV values were calculated by Majumder formula (GCV= 7115 197 - 123 971*M - 81 3121*A + 20 7421*FC) and seam wise borehole wise GCV was plotted and grade wise reserves estimated The reserves of Seam Bottom has not been estimated at it has been intersected in only three Boreholes Seam Folio and Seam Floor Contour plan has also not been given in GR																																			
2 2 16	Average GCV *KCal/kg	4707, Grade- G-9																																			
	<table border="1"> <thead> <tr> <th rowspan="2">Coal Seam/ Section</th> <th rowspan="2">Thickness range (m)</th> <th rowspan="2">Type of Sample</th> <th rowspan="2">Depth Range (m)</th> <th colspan="3">At 60% RH & 40°C</th> <th rowspan="2">Grade</th> <th rowspan="2">Average GCV & Grade</th> </tr> <tr> <th>M %</th> <th>Ash %</th> <th>GCV (Kcal. / kg)</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Top Seam</td> <td>1.80-7 35</td> <td>BCS</td> <td>11.85-120.45</td> <td>3.9-12.8</td> <td>18.7-40.8</td> <td>3816-6057</td> <td>G5-G12</td> <td rowspan="3">4707(G9)</td> </tr> <tr> <td>1.80-7 35</td> <td>I30</td> <td>11.85-120.45</td> <td>3.7 12.8</td> <td>18.7-42.4</td> <td>3694-6057</td> <td>G5-G13</td> </tr> <tr> <td>1.80-7 35</td> <td>I100</td> <td>11.85-120.45</td> <td>3.7 12.8</td> <td>18.7-42.4</td> <td>3694-6057</td> <td>G5-G13</td> </tr> </tbody> </table>	Coal Seam/ Section	Thickness range (m)	Type of Sample	Depth Range (m)	At 60% RH & 40°C			Grade	Average GCV & Grade	M %	Ash %	GCV (Kcal. / kg)	Top Seam	1.80-7 35	BCS	11.85-120.45	3.9-12.8	18.7-40.8	3816-6057	G5-G12	4707(G9)	1.80-7 35	I30	11.85-120.45	3.7 12.8	18.7-42.4	3694-6057	G5-G13	1.80-7 35	I100	11.85-120.45	3.7 12.8	18.7-42.4	3694-6057	G5-G13	
Coal Seam/ Section	Thickness range (m)					Type of Sample	Depth Range (m)	At 60% RH & 40°C			Grade	Average GCV & Grade																									
		M %	Ash %	GCV (Kcal. / kg)																																	
Top Seam	1.80-7 35	BCS	11.85-120.45	3.9-12.8	18.7-40.8	3816-6057	G5-G12	4707(G9)																													
	1.80-7 35	I30	11.85-120.45	3.7 12.8	18.7-42.4	3694-6057	G5-G13																														
	1.80-7 35	I100	11.85-120.45	3.7 12.8	18.7-42.4	3694-6057	G5-G13																														
2 2 17	Gross Geological Reserve of the block "Mte"	12 82																																			
2.2 18	Net Geological Reserve of the block "Mte"	11 5400																																			
2 2 19	Minable Reserve of the block "Mte"	10 19																																			
2 2 20	Blocked Reserve "Mte"	1 3500																																			
2 2 21	Corresponding extractable reserve of the block "Mte"	9 68																																			
2 2 22	Percentage of Extraction	83.882																																			
2.2 23	Reserve already depleted (Base date of Mining Plan)	0 1																																			
2.2 24	Balance Reserve (as on Base Date)	9 5800																																			



Chapter-3: Mining

3.1 Mining Method

S No	Parameters	Details
3.1.1	Existing method of mining if the mine is under operation	The coal block was in operational for a very short period during 2013-14 and OC mining was in practice. After deallocation of block there is no mining operation is carried out till date. The present mine owner shall carry out the mine operation as per directives of allocation and complying statutory approvals as applicable through this revised mine plan.
3.1.2	Proposed method of mining with justification on suitability of method of mining	





Existing Method of Mining

Approved mining plan of Marki Mangli-II(2006) envisaged three isolated quarries as East Central and West quarry leaving barriers in between considering geological structure of the block as per GR prepared by DGM Maharashtra State

The opencast was earlier planned upto a depth of 70m with an extractable reserves of 6.73 Mt and overburden removal of 50.78 Mm³ with a rated production of 0.30Mtpa at an average stripping ratio of 7.55 m³/t. The mine was planned for a life of 24 years

Shovel Dumper with blasting was envisaged for winning of coal and overburden removal

Mine is an operational mine and prior allottee extracted 99775 metric tonnes of coal (0.1Mt) and overburden removed to the tune of 421661 cum (OB + Top Soil) up to 2014

However, the mine closure plan which is an integral part of mining plan as per Guidelines 2013 was not prepared and Environment Clearance was obtained for Marki Mangli II/III & IV blocks combinedly. No Forest Clearance was obtained for 146.996 Ha of forest land. MoC, vide letter dated 7.3.2022, communicated that since the statutory clearances are needed to be obtained afresh by the allottee the efficiency parameter for coal mines other than schedule II coal mines would be applicable for Marki Mangli-II coal mine and 51 months for Milestones MS-2 to MS-5 have been agreed to (Annexure-VIII). Production start envisaged in 2026-27 and base year as 2025-26 or 2028

for Pre-Mining activities to complete validation of Geological Report Preparation Submission and Approval of Revised Mining Plan & Mine closure Plan, Environment Clearance Forest Clearance Stage-I & stage-II, Land Acquisition and Grant of Mining Lease etc

Proposed Method of Mining

Considering the favorable geo-mining characteristics of the block like 1 No. of Coal Horizons of varying thickness, 2.30 km strike length, moderate gradient of about 60-120, and for conservation of resource, it is proposed to extract the coal reserves within the block using open cast mining technology. The entire block is found suitable for exploitation by opencast mining method

Coal will be mined using Combination of Surface Miner and payloader combination for coal winning and wherever the geo-mining condition does not permit application of surface miner, Shovel - Dumper method with drilling and blasting may also be used for coal winning. The OBR would be removed using conventional shovel dumper method with drilling & blasting. Drilling & blasting shall be conducted in scientific way using environment friendly technology

Strategy of Mining Quarriable areas

Strike length of the block is about 2.3 km. A non-coal bearing patch of 52.00 Ha in the southern and eastern corner beyond incrop of seam-ST, is proposed to have the external dump which will be utilized till 10 years

The external dump shall be merged with internal back filling dump from 1st year onwards taking the advantage of shallow depth of de-coaling (less than 30 meter)

Mine Boundaries

It is proposed to mine maximum area leaving a barrier of 7.5 m on surface from block boundary, which is a statutory requirement.

The diversion of road is not required and left as it is in the area named as undisturbed area. Nala diversion is proposed from northern side of block with maintaining 45-meter safety distance as per CMR (119) 2017

The mine boundaries of the OC mine are as follows -

North Fault F1-F1/Talchir Formation

East Fault F4-F4,F2-F2 and Incrop of coal seam

South Talchir Formation and Savali & Mukutban Villages

West Lease Boundary and Lameta Formation

Life of Mine

The rated capacity of the mine is 0.30Mtpa with a life of the mine being estimated as 34 years

Mining System

The geo-mining condition as given below

Sl No	Particulars	Unit	Value
1	Average Gradient of coal seams	Degree	6 to 12
2	No of coal seam (workable)	No	One
3	Coal seam thickness	m	1.80-7.35
4	Thickness of OB	m	11.85-120.45
5	Faults	No	Nine
6	Throw of Faults	m	10-40
7	Quarry Perimeter		
i)	Perimeter along Surface	m	7344
ii)	Perimeter along Floor	m	6918
8	Excavation area at Surface	Ha	215.21
9	Excavation area at floor	Ha	180.61
10	Mineable Reserves	Mt	10.39
11	Extractable Reserves	Mt	9.58
12	Overburden	Mm ³	87.06
13	Stripping Ratio	m ³ /t	9.09
14	Capacity	Mtpa	0.30 (Rated capacity)
15	Life of the mine	Yrs	34
16	Strike length(Along Floor)	m	
i)	Maximum	m	2250
ii)	Minimum	m	600
17	Strike length(Along Surface)	m	
i)	Maximum	m	2300
ii)	Minimum	m	650
18	Dip-Rise Length	m	
	Along Floor	m	985

ii)	Along surface	m	1100
19	Quarry depth		
i)	Maximum	m	125
ii)	Minimum	m	11.85
20	Haul Road/Access Trench		
i)	Total Length	m	1860
ii)	Total Width (Dumper Movement 35Te+Drain both side +Berm both side)	m	20

Coal Winning & OB Removal

Coal will be mined using Combination of Surface Miner and payloader combination for coal winning and wherever the geo-mining condition does not permit application of surface miner, Shovel – Dumper method with drilling and blasting may also be used for coal winning. The OBR would be removed using conventional shovel dumper method with drilling & blasting. Drilling & blasting shall be conducted in scientific way using environment friendly technology.

Bench Height

OBR (2.5 m ³ Hyd Shovel)	8-10 m
Top Soil/Alluvium (0.9 m ³ Backhoe/Pay Loader)	3-6m
Coal	As per thickness

Proposed Bench Width

1 Working Bench Width (for 2.5 m ³ Hyd Shovel)	30m
2 Non-Working Bench Width (for 1.7 m ³ Hyd Shovel)	15m
3 Width of the permanent haul road	30m
4 Width of the temporary transport ramp	20m
5 Usual height of the Top soil dump bench	3m
6 Usual height of the Hard Rock dump bench	30m
7 Bench Slope	
a) OB Bench	70 Deg
b) Coal Bench	60 Deg
c) Dump bench	37 Deg
8 Overall (Ultimate) pit slope	40 Deg

Mining Sequence

Marki Mangala II opencast is proposed to be developed by the access trench of 20 m width. The access trench is to be graded from 233 m R.L.

at 1 in 16 to the mine floor of about 225 m R.L. This would also facilitate extension of coal and OB bench for full development of mine. The mine will advance towards dip direction exposing the floor of Seam-ST. After creation of sufficient de-coaled area of about 100m, internal backfilling of OB will be started.

For better accessibility and to Optimize the lead, the quarry has been divided into two parts (western side and eastern side) by a central access named as Haul road. Both Western side and Eastern side part will be worked simultaneously. During working of the quarry, permanent haul road

along the floor of the quarry will be developed at 1 in 16 gradient.

Mineable Reserves

Only One seam namely Top seam to be worked in this OC mine. The mineable and extractable reserves are 10.19 Mte and 9.68 Mte respectively.

The total volume of external dump has been estimated as 9.95 Mm³. Rest of the OB will be placed as internal dumps (76.99 Mm³) and a small volume shall be used in embankment along nala diversion (0.12 Mm³).

The year wise dump volume is shown below.

Yr	Calendar year	External Dump		Internal Dump		Total OB	
		Prog (Mcum)	Cum (Mcum)	Prog (Mcum)	Cum (Mcum)	Prog (Mcum)	Cum (Mcum)
	upto base year 2026	0.42	0.42	0.00	0.00	0.42	0.42
1	2026-27	1.55	1.55	0.52	0.52	2.07	2.07
2	2027-28	1.16	2.71	0.39	0.91	1.55	3.62
3	2028-29	1.24	3.95	0.41	1.32	1.65	5.27
4	2029-30	1.40	5.35	0.25	1.57	1.65	6.92
5	2030-31	1.39	6.74	0.24	1.81	1.63	8.55
6	2031-32	1.30	8.04	0.23	2.04	1.53	10.08
7	2032-33	1.16	9.20	0.21	2.24	1.37	11.45
8	2033-34	0.25	9.46	1.43	3.67	1.68	13.13
9	2034-35	0.30	9.76	1.71	5.38	2.01	15.14
10	2035-36	0.32	10.07	1.79	7.17	2.10	17.24
11	2036-37	-	10.07	2.18	9.35	2.18	19.42
12	2037-38	-	10.07	2.26	11.61	2.26	21.68
13	2038-39		10.07	2.34	13.95	2.34	24.02
14	2039-40		10.07	2.43	16.38	2.43	26.45
15	2040-41	-	10.07	2.51	18.89	2.51	28.96
16	2041-42		10.07	2.60	21.49	2.60	31.56
17	2042-43	-	10.07	2.67	24.16	2.67	34.23
18	2043-44		10.07	2.76	26.92	2.76	36.99
	2044-45		10.07	2.84	29.76	2.84	39.83



20	2045-46	-	10 07	3 13	32.89	3 13	42 96
21	2046-47	-	10 07	3 40	36.29	3 40	46 36
22	2047-48	-	10 07	3 40	39.69	3 40	49 76
23	2048-49	-	10 07	3 40	43.09	3 40	53 16
24	2049-50	-	10 07	3 40	46.49	3 40	56.56
25	2050-51	-	10 07	3 40	49.89	3 40	59 96
26	2051-52		10 07	3 40	53.29	3 40	63 36
27	2052-53	-	10 07	3 40	56.69	3 40	66.76
28	2053-54	-	10 07	3 40	60.09	3 40	70 16
29	2054-55	-	10 07	3 40	63.49	3 40	73.56
30	2055-56	-	10 07	3 40	66.89	3 40	76 96
31	2056-57	-	10 07	3 30	70 19	3 30	80.26
32	2057-58	-	10 07	3 30	73.49	3 30	83 56
33	2058-59	-	10 07	2 50	75 99	2 50	86 06
34	2059-60		10 07	1 00	76 99	1 00	87 06
Total			10 07		76.99		87.06

Note A small volume of 0 12Mm3 shall be utilized for Earthen Embankment along Nala diversion and is included in External Dump Volume

of 10 07 Mm3 Overburden waste to be removed from Marki Mangli-II coal mine may produce about 70-75% of Fine , medium and coarse grained sandstone which may be crushed to sand particle by setting up a suitable crushing plant nearby places This shall have following advantages

- 1 Infrastructure and road construction besides other use
- 2 This shall meet the statutory requirement of sand production from overburden material as generally stipulated in Environment Clearance Conditions
- 3 The height of external and internal dumps may be maintained at ground level so that major part of the area may be converted to agricultural land
- 4 Production of sand from sandstone by crushing as the amount of sand likely to be produced shall not be used for backfilling

Top Soil Management

Top soil will be excavated and segregated separately Top soil will be scrapped by dozer before the ground preparation for drilling and blasting

Topsoil details

- 1 Height of Topsoil dump 3-6 meters
- 2 Year of reclamation After 6th year of mine operation

3 1 3	Coal production capacity proposed MTPA	0 3000
3 1 4	Justification for optimization Coal production capacity	
Considering the strike length of about 2 30 km and Dip-rise width of about 1km and single seam working the rated capacity of 0.30 Mty is considered to be optimum		
3 1 5	Calendar year from which the production will start	2026-27
3 1 6	Year of Achieving rated production	2028-29

3 1 7 Tentative Coal production Plan MT

Year		Coal Production Schedule			OB MM3	SR
Year of Operation	Calendar Year	UG	OC	Total		
1	2026-27	0 00	0 10	0 1000	2 07	20 7000
2	2027-28	0 00	0 20	0 2000	1 55	7 7500
3	2028-29	0 00	0 30	0 3000	1 65	5 5000
4	2029-30	0 00	0 30	0 3000	1 65	5 5000
5	2030-31	0 00	0 30	0 3000	1 63	5 4333
6	2031-32	0 00	0 30	0 3000	1 53	5 1000
7	2032-33	0 00	0 30	0 3000	1 37	4 5667
8	2033-34	0 00	0 30	0 3000	1 68	5 6000
9	2034-35	0 00	0 30	0 3000	2 01	6 7000
10	2035-36	0 00	0 30	0 3000	2 10	7 0000
11	2036-37	0 00	0 30	0 3000	2 18	7 2667
12	2037-38	0 00	0 30	0 3000	2 26	7 5333
13	2038-39	0 00	0 30	0 3000	2 34	7 8000
14	2039-40	0 00	0 30	0 3000	2 43	8 1000
15	2040-41	0 00	0 30	0 3000	2 51	8 3667
16	2041-42	0 00	0 30	0 3000	2 60	8 6667
17	2042-43	0 00		0 3000	2 67	8 91

18	3043-44	0 00	0 30	0 3000	2 76	9 2000
19	2044-45	0 00	0 30	0 3000	2.84	9 4667
20	2045-46	0 00	0 30	0 3000	3 13	10 4333
21	2046-47	0 00	0.30	0.3000	3 40	11 3333
22	2047-48	0 00	0 30	0 3000	3 40	11 3333
23	2048-49	0 00	0 30	0 3000	3 40	11 3333
24	2049-50	0 00	0 30	0 3000	3 40	11 3333
25	2050-51	0 00	0 30	0 3000	3 40	11 3333
26	2051-52	0 00	0 30	0 3000	3 40	11 3333
27	2052-53	0 00	0 30	0 3000	3 40	11 3333
28	2053-54	0 00	0 30	0 3000	3 40	11 3333
29	2054-55	0 00	0 30	0 3000	3 40	11 3333
30	2055-56	0 00	0 30	0 3000	3 40	11.3333
31	2056-57	0 00	0 30	0 3000	3 30	11 0000
32	2057-58	0 00	0 30	0 3000	3 30	11 0000
33	2058-59	0 00	0 20	0 2000	2 50	12.5000
34	2059-60	0 00	0 08	0 0800	1 00	12 5000

Note: Calendar Plan/Production Plan for the entire life of the mine

3 1 8	Rated Capacity Mtpa	By OC 0 30 By UG 0 Overall 0 3000																																																																	
3 1 9	Life of the mine Years	By OC 34 By UG 0 00 Overall 34																																																																	
3 1 10	Whether the proposed external OB dump site is coal/ lignite bearing. If so, whether coal/lignite below waste disposal area is extractable	No																																																																	
3 1 11	Whether the proposed external OB dump site is coal/ lignite bearing. If so, whether coal/lignite below waste disposal area is extractable	Yes, OB dumping has been proposed in the non coal bearing area and falls within the allocated block area lying beyond the incrop of the workable seam. Four boreholes (MK-13,14,25,36) has been drilled beyond the incrop of the bottom most base seam. Bottom proving the area to be non-coal bearing. Moreover, exposures of lameta beds in the west also confirm the non-coal bearing nature of the zone. The Geological Report has been prepared by Directorate of Geology and Mining Maharashtra State and conforming the non coal bearing in the block. With reference to the Geological Plan (Plate-5) and Conceptual Plan (Plate- VIII), it can be seen that the proposed OB dump and infrastructure area are falling in non-coal bearing zone, beyond the incrops of both the coal seams. The lithologs of all the above four boreholes are provided in plate no- 6A, 6B. It is further proposed that during actual mine operation and making access to the seam few shallow bore holes shall be drilled for exact delineation of coal seam incrop.																																																																	
3 1 12	Results of any investigation carried out for scientific mining, conservation of minerals and protection of environment; future proposals	No																																																																	
3 1 13	Type of Equipment/ HEMM proposed	<table border="1"> <thead> <tr> <th>S No</th> <th>Type of Equipment</th> <th>Capacity</th> <th>Unit</th> <th>Population</th> </tr> </thead> <tbody> <tr><td>1</td><td>Diesel Blackhoe</td><td>0 93</td><td>Cubic Meter</td><td>3</td></tr> <tr><td>2</td><td>Tipping Truck</td><td>8</td><td>tonn</td><td>2</td></tr> <tr><td>3</td><td>Diesel Shovel</td><td>2 5</td><td>Cu M</td><td>5</td></tr> <tr><td>4</td><td>Diesel Dnll</td><td>250</td><td>mm</td><td>3</td></tr> <tr><td>5</td><td>Dozer</td><td>320</td><td>HP</td><td>6</td></tr> <tr><td>6</td><td>Rear Discharge Dumper</td><td>25</td><td>tonn</td><td>4</td></tr> <tr><td>7</td><td>Diesel Dnll</td><td>100</td><td>mm</td><td>2</td></tr> <tr><td>8</td><td>Wheel Dozer</td><td>180</td><td>HP</td><td>2</td></tr> <tr><td>9</td><td>Motor Grader</td><td>145</td><td>HP</td><td>1</td></tr> <tr><td>10</td><td>Mobile Crane</td><td>10</td><td>tonn</td><td>1</td></tr> <tr><td>11</td><td>Explosive Van</td><td>3</td><td>tonn</td><td>1</td></tr> <tr><td>12</td><td>Dump Truck</td><td>15</td><td>tonn</td><td>6</td></tr> </tbody> </table>	S No	Type of Equipment	Capacity	Unit	Population	1	Diesel Blackhoe	0 93	Cubic Meter	3	2	Tipping Truck	8	tonn	2	3	Diesel Shovel	2 5	Cu M	5	4	Diesel Dnll	250	mm	3	5	Dozer	320	HP	6	6	Rear Discharge Dumper	25	tonn	4	7	Diesel Dnll	100	mm	2	8	Wheel Dozer	180	HP	2	9	Motor Grader	145	HP	1	10	Mobile Crane	10	tonn	1	11	Explosive Van	3	tonn	1	12	Dump Truck	15	tonn	6
S No	Type of Equipment	Capacity	Unit	Population																																																															
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12	Dump Truck	15	tonn	6																																																															
3 1 14	Upload Require Document	OC OC files data shown below UG NA																																																																	

OC Document :



Type of Equipment/HEMM proposed

Coal(M.tes)	0.3
Lead for Coal(Km)	0.9 to 2.30
OBR(Mm3)	1.29 to 3.27
Lead for OBR(Km)	1.65 to 1.80

Sl No	Type of HEMM	Size/Cap	Total Provision	
A. For Soil				
1	Desel Backhoe	0.9 m ³	1	
2	Tipping Truck	8 t	2	
B For Overburden Rock				
1	Desel Backhoe	0.9 m ³	1	
2	Desel Shovel	2.5 m ³	5	
3	Desel Drill 250mm	250mm	3	
4	Dozer	320 HP	6	
5	Rear Discharge Dumper	35 t	23	
C. For Coal				
	Surface Miner	140200		SM option 1
	Desel Backhoe	0.9 m ³	1	
	FE Loader	2-3 m ³		1
2	Rear Dis Charge Dumper	25 t	4	4
3	Desel Drill 100mm dia	100mm	2	
4	Wheel Dozer	180 HP	2	2
D For Common				
1	Motor Grader	145 HP	1	
2	Front End loader	2.5 m ³	1	
3	Tractor with trailer		2	
4	Mobile Crane	10T	1	
5	Mobile Crane	5 T	1	
6	Explosive Van	3T	1	
7	Water Sprinkler	10 KJ	2	
8	Water Sprinkler mist spray	28 KJ	1	
9	Wheel Dozer	180 HP	2	
10	Dump Truck	12-15T	6	
11	Desel Browser	18 KJ	2	
12	Fire Tender		2	
13	Hyd. Rock Breaker		1	
14	Cable Handler		2	
15	Tyre Handler		2	
E. For Reclamation				
1	F E Loader	2.5 cum	1	
2	Dozer	180 HP	1	
3	Grader	145 HP	1	
4	Water sprinkler 28 kd	28 KJ	2	
5	Dumper	35T	3	

Note: Since coal winning is proposed to be done by Shovel and expected size of coal shall be •1200, which will be down sized to ()250mm size for which surface crushing arrangement is required may be by Feeder breaker with hopper system. After crushing, the coal will be loaded on to trucks through hoppers for transportation to nearest Railway siding/ consuming point.

As the area for infrastructure being less, CHP with Feeder Breaker arrangement may be avoided by deploying Surface Miner which shall be more beneficial as it is a environment friendly

and may be deployed by contractual means

However, this option may be explored if a less productive Surface Miner is made available in next 4-5 years when mining operation is likely to be commenced.



Chapter-4: Safety Management

4.1 Safety Management

S No	Parameters	Details
4.1.1	Major Risks and uncertainties to the project viz Proximity to nver adjacent working geo-mining disturbances, slope stability and remedial measures suggested It should also include proposed overall slope of the quarry and OB dump dump height strata control, fire and spontaneous heating, gas monitoring, disaster management, danger from innrush of water etc	





Nala Diversion

A seasonal nala originates in the north central part of the block and is flowing from north to south in the eastern part of the block. This nala needs to be diverted and may be utilized as garland drain all along the quarry in the north and east. A safety zone of 45m from the diverted nala/garland drain has been kept as per Reg 119 of CMR 2017

In addition, in view of flood protection from this nala (converted into garland drain of 5m wide) an adequate earthen embankment has been proposed to be constructed along the nala/garland drain to prevent any possible inundation

The earthen embankment shall be made/designed at least 3m height above HFL of 5m width in the top and 25m width at the base all along the diversion length of 3679 m of nala as per Regulation 149(2) of CMR 2017. The said embankment shall be constructed under supervision of a civil engineer considered expert in this regard. The design of embankment is illustrated as given below

HFL of nala is to be determined by detailed survey during high flood season all along the route length of nala diversion

This is a seasonal nala originating from north out side of block where no HFL is available. During the mine opening in 2026 and topographical survey of mine area by the project proponent mark/extend and cooperate the authority for such determination of HFL in diverted route. All statutory precautions as required under CMR 2017 and other statutory provisions shall be complied

The position of original nala and diverted nala /garland drain route have been shown in the relevant plans

Adjacent Working

There is no adjacent operational mine

Geo-mining Disturbances

Geo-mining parameters are favorable. Gradient of seams are 1 in 5 to 1 in 10 (60-120), Strike length along floor is 600m to 2250 m. Quarry depth is varying from 11.85 m to 125 m. Dip rise length along floor is 985m to 1100 m

Block is traversed by four nos of major strike and oblique faults of varying magnitude of throw from 10 to 50m. Mine block is divided into two mining sectors initially upto 5th year such that uniform targeted coal production as well as maintaining smooth coal OB ratio during the life of the

mine is attained. Geo Mining Parameters is given in Chapter-3

Slope stability & remedial measures

i) Scientific study on optimum slope angle for stability of quarry benches, highwalls/ slope batter and spoil dumps along with hydro-geological study shall be done

ii) During actual mining operations systematic observations of the conditions of benches, highwall slopes and spoil dumps should be carried out and the dimensions as given in Chapter-3 (Mining) be modified if necessary to suit the conditions

iii) Other provisions as laid down in Reg 106 & 108 of CMR 2017 shall be strictly adhered

iv) As the gradient of floor of quarry is gentle (8-12%) As such floor blasting is not necessary

Overall slope of the quarry & OB dumps Height of OB dumps

i) External dump height is 60 m above surface level with an individual bench slope angle of 37deg and overall dump slope angle of 27 deg or less. After 5 years, this external dump will be merged with internal dump with top RL being maintained as same

ii) Overall Slope of the quarry at the final stage is maintained at 40 deg with individual OB & Coal bench at 70 deg & 60 deg respectively

iii) Height of External dump upto 4 years shall be maintained at 40m height. This external dump shall be merged with internal dump which shall be maintained at maximum 60m height from actual ground surface

Strata control

All strata control measures shall be taken up. If needed a slope stability study shall be carried out by an authorized scientific organization

Generation of fines and spontaneous heating, gas monitoring

No blasting is proposed within 100m of the Vithal Rukmani Temple situated at the hilltop in the west of the block area. Controlled blasting will be done within a range of 300m from the temple so that the intensity of vibration is reduced to the minimum permissible limit

No crushing and sizing are required. Generation of fines if any beyond -100mm size shall be sprinkled by water in the enclosed CHP upto railway loading site. No spontaneous heating is expected to occur

Disaster management

i) Fencing of mine workings, landslides & cracks between benches to be monitored at close intervals

ii) No working or construction is proposed within 100m toe of OB dump

OB is proposed to be stacked in Internal Dump and external Dump (upto 5 years) with a total maximum height of 60m in three tiers



- iii) Slope of the backfilled dump is dynamic Dump Slope shall be properly maintained with Grass beds for stability
- iv) Slope stability analysis shall be done for any slope failure along high walls, External Dumps and Internal Dumps
- v) Adequate fire-fighting arrangements to be made
- vi) Sufficient pumping arrangements to be made for preventing mine inundation
- vii) Garland drain have been proposed around the mine pit to intercept surface run off

4 1 2	A Commitment from the Company Board that entire mining operation will be carried out as per the Statutory provision given under Mines Act 1952, Coal Mine Regulation 2017 and & wherever specific permission will be required the company will approach the concerned authorities	Commitment from the company board is attached as Annexure- 3A1
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Chapter-5: Infrastructure Facilities proposed and their Location

5 Infrastructure Facilities

S No-	Parameters	Details		
51	Mine infrastructure required	S No	Infrastructure to be retain to be public use	Infrastructure to be dismantle/reclaimed
		1	Approach roads	Sub Station,
		2	Settling Pond	Coal Handling arrangement
		3	Garland Drain	HEMM , E&M workshop
		4	Diverted Nalla	Project Store, All service buildings like PO office VTC, First Aid Centre, Canteen Rest shelter etc
		5	Garland Drain	HEMM , E&M workshop
		6	Diverted Nalla	Project Store All service buildings like PO office VTC, First Aid Centre, Canteen Rest shelter etc
		7	Approach roads	Sub Station,
		8	Settling Pond	Coal Handling arrangement
52	Power supply & illumination			



Source of Power

Power shall be drawn to the proposed 33kV Sub Station located at the project site from nearest sub station of Maharashtra State Electricity Development Corporation located at a distance of 1.2 km by 33 kV over head line for meeting the power requirement of the project. It is also proposed a solar park to be installed in the stabilized dump area to draw power for its internal use

Proposed Power Supply & Distribution Arrangement

Connected load & maximum demand of OCP are as follows

Connected Load = 1770 kW

Maximum Demand = 1280 kW / 1300 kVA

The demand for the project comes to 1300 KVA after improving the power factor to 0.98 by 2 nos of delta connected capacitor bank of (3 x 105) kVAR

Two nos 1600 kVA, 33/6.6KV outdoor type transformers have been selected to cater to the demand. Proper earthing system shall be provided to

keep the earth resistance below 1 ohm. Transformer secondary should be earthed through Neutral Grounding Resistor with fail safe relay to restrict

the earth current below 50 A as per statute. Sub station shall be earthed by earthing grid. Proper lightning protection shall be provided.

6.6 KV Indoor type Switch Boards

One number 6.6 KV indoor type switchboard energized from the secondary of the transformer would feed the power supply to all the power consumers

of the project. 2 nos 500 kVA DG sets with 6.6 kV switch panel as per requirement shall be provided for meeting up emergency requirements.

The Annual Energy Consumption of the project for the targeted year of production is 7.19 MkwH and the specific Energy Consumption is 23.98Kwh/Te

(Annexure-IX)

The supply voltages are as under

Incoming supply voltage	-	33 KV
Supply voltage to workshop	-	6.6 KV
Quarry power supply	-	6.6 kV

Power factor Improvement

In order to improve power factor to a value of 0.98, two delta connected capacitor bank of 3 x 105kVAR at 6.6 KV have been provided in the sub-station.

Power Supply to CHP & Workshop

CHP will be fed from OCP Sub Station at 6.6kV by cable feeder where power shall be stepped down as per requirement to feed the CHP and miscellaneous surface loads. The workshop will be fed power at 6.6kV from OCP sub station by cable feeder. At the workshop power at 3.3KV would be stepped down to 0.415KV by 1 no. 315kVA 6.6/0.415KV transformer for further distribution to different power receivers.

Illumination

250W HPSV lamps with all accessories at suitable intervals has been provided for Haul road lighting. High mast lighting with adequate light fittings and all accessories has been provided for flood lighting of entire quarry area. One no. 250kVA 6.6/0.230 kV (L-L) lighting transformer shall feed the lighting loads of the OCP.

Proposed Communication System

The proposed communication system should cater to the need of voice communication among personnel related to mine operation, administration and equipment maintenance. The system also takes into account the data communication requirement for mine operation and planning along with the latest office automation facilities.

While preparing the system, due consideration has been given to the state-of-art networking architecture involving the communication of voice, data and multimedia over the same network path, so as to avoid duplicated investment in network and proper conservation of bandwidth.

Surface / Administrative Communication

To meet all the requirements of data and voice communication, 100 lines of IP Enable Exchange is proposed having the following main features:

IP Enable Exchange

A 100 line automatic telephone exchange has been envisaged for the effective communication between the various units on the surface.

BSNL Communication

It is proposed to provide 20 nos BSNL telephone extensions to the mine office in order to facilitate external communication and to link the mine with the BSNL's national telephone network. The BSNL telephones shall be provided at the offices and residences of important officials.

Other facilities

Mobile Telephone sets with internet facility shall be provided to important project personnel. Personal computers shall be provided in the administrative building at important locations with Wi-Fi connection. Walkie Talkies shall be provided to key personnel for operational purposes.

5.3 Drainage & Pumping Assessment of Volume of Water for Pumping, Pumping Capacity and Pump Selection





Assessment of Volume of water for pumping

BASIC DATA

- Water level in adjacent Marki Mangli-I mine is shallow in pre monsoon 4.0m to 11.0m below GL (Source Secondary data from Approved EIA report of Marki Mangli-II/III/IV Coal Mine, Yavatmal District Maharashtra)
- Water level in adjacent Marki Mangli-I mine is shallow in post monsoon 1.5m to 10.5m below GL (Source Secondary data from Approved EIA report of Marki Mangli-II/III/IV Coal Mine, Yavatmal District Maharashtra)
- Fluid potential fluctuation between the two extreme climate is around 2.5m
- Average annual rainfall based on rainfall data recorded at Yavatmal for last 10 years has been observed as 1135.7 mm Maximum Rainfall in a month 305mm (July)
- Maximum rainfall in a day 123.0 mm (5.8.2021)
- Maximum depth of proposed mine 120m
- Run off coefficient (i) Mined out area=0.5 (ii) Internal dump=0.10 (iii) Beyond excavation=0.10
- Inflow of water to the quarry due to seepage and UG precipitation 10% of probable water accumulation in Nala
- Source of rainfall data IMD Yavatmal District.
- Recharge of aquifers 15% of annual rainfall
- Mode of occurrence of ground water unconfined semi-confined and confined condition

CALCULATION AND ASSESSMENT OF VOLUME OF WATER TO BE PUMPED

As per Meteorological data, annual average rainfall in the region is 1135.7 mm and monsoon period is between Mid-June and Mid-October. An attempt has been made to estimate volume of water to be pumped out of the OC mine on the basis of surface precipitation. Volume of rain water entering the mine and accumulating in the quarry (make of water) may be assessed on the basis of the following formula

$$Q = A \times H \times R \text{ m}^3/\text{day}$$

where A = Catchment area in m²
 H = Maximum daily precipitation in m
 R = Run-off co-efficient

Run-off co-efficient (R) has been adopted as below

- i For mined out area 0.50
- ii For Internal dump area 0.10
- iii For area beyond excavation 0.10
- iv Normally external dump area is considered as the area beyond excavation

Further, garland drains around the quarry excavation will preclude entry of rain water from area beyond excavation entering the mine

Rainfall Data, Mine Parameters and Excavated Area

i	Average annual rainfall	1135.7 mm
ii	Rainy season (mid-June to Mid-October)	120 days
iii	Maximum rainfall in 24 Hrs (rainy season)	123.0 mm

Year	Cumulative area for pumping		
	Pit Area (Ha)	Void Area(Ha)	Backfill Area(Ha)
1	14.10	13.13	0.97
2	20.06	16.85	3.21
3	28.26	23.29	4.97
4	30.35	24.00	6.35
5	44.87	37.76	7.11
6	66.08	55.86	10.22
7	73.92	40.93	32.99
8	89.60	51.60	38.00
9	98.46	51.73	44.73
10	103.32	51.85	51.47
11	110.18	51.98	58.20
12	117.04	52.11	64.93
13	123.90	52.23	71.67
14	130.76	52.36	78.40
15	137.62	52.49	85.13
16	144.48	52.61	91.87
17	151.34	52.74	98.60
18	158.20	52.87	105.33
19	165.06	52.99	112.07
20	171.92	53.12	118.80

21	178 78	53 25	125 53
22	185 64	53 37	132 27
23	192 50	53 50	139 00
24	192 50	53 50	139 00
25	196 67	50 11	146 56
26	200 83	46 72	154 11
27	205 00	43 33	161 67
28	209 17	45 74	163 43
29	210 11	46 68	163 43
30	211 12	47 69	163 43
31	213 24	49 81	163 43
32	214 28	50 85	163 43
33	215.21	51 78	163 43
34	215.21	51 78	163 43

Water ingress in the mine during rainy season is estimated considering the stage of the mine when maximum void has been created

(A) Quarry Excavation

Water ingress(A) = $0.0123 \text{ m} \times [(\text{max void in Ha} \times 0.50) + (\text{back filled area in Ha} \times 0.10)] \times 104$
 $= 0.0123 \times [215.21 \times 0.50 + (163.43 + 52) \times 0.10] \times 104 \text{ m}^3 / \text{day}$
 $= 15885 \text{ m}^3 / \text{day}$

Sump Capacity

Capacity of sump will be decided to accommodate rain water corresponding to maximum daily rainfall at 10% probability (once in every 10 years) It is assumed that sump will accommodate 70% of maximum rainfall in 24 Hrs (12.30 mm) plus 15% seepage

(B) Sump Capacity [70 % of maximum rainfall in 24 Hrs]	
Quarry	$15885 \times 0.70 = 11120 \text{ m}^3$

Pumping Capacity

Daily capacity of pumping has been kept as difference between ingress of water in the mine in a day and holding capacity of sump Pump will work for 20Hrs /day

(C)	Pumping duty
Quarry	$[A - B] + 20 \text{ m}^3 / \text{Hr}$ $= (15885 - 11120) + 20 \text{ m}^3 / \text{Hr}$ $= 4765 / 20 \text{ m}^3 / \text{Hr}$ $= 238.25 \text{ m}^3 / \text{Hr}$ or say 240 m ³ /Hr

External Dump area is considered as the area beyond excavation In this case external dumps is merged with internal backfilled dump

Selection of Pumps

Excavation operation of a quarry is a dynamic process Gradually the depth of working increases The duty of the pumps particularly the static head increases as the quarry goes deeper and deeper Following stages are stated here

- 1 When advance stripping of weathered mantle is to be done water will accumulate on the lowest bench of OB max 25 m below surface
- 2 which will be drained to quarry floor sump
- 3 Up to a depth of about 120 m, pumps will directly deliver to surface (80 lps x 150m head
Details pumps are given below

Quarry (Peak pumping duty , pumping load assumed 50 % of max pumping duty)	KW	Nos
Slurry Pumps (Face) Pumps 80 lps x 60 m	60	2
Main Pumps 80 lps x 120 m 6.6 KV electrical	150	2
Main Pumps 80 lps x 120 m 6.6 KV electrical(Spare Pump)	150	1



54	Coal Handling Arrangement. Brief detail of the CHP/ Mode of Dispatch, Coal quality and Coal staking and handling arrangement	Brief details of CHP/Mode of Dispatch Coals from the face shall be transported by the central haul road of both the sectors and will be directly collected at the receiving hopper of the CHP complex. Coal from the Top Seam shall be transported through the horizontal flank road to quarry floor of same level along strike to reach central haul road laid on the quarry floor and carried to surface along the main haul road. Coal from the central part of the property shall be transported through flank road to surface. Since coal winning is proposed to be done by Shovel and expected size of coal shall be 1200, which will be down sized to (-)250mm size for which surface crushing arrangement is required may be by Feeder breaker with hopper system. After crushing, the coal will be loaded on to trucks through hoppers for transportation to nearest Railway siding/ consuming point. If Surface Miner option is adapted, no crushing arrangement is required as coal produced will (-) 100 mm size with average G-9 grade coal. However no stacking of coal is suggested for spontaneous heating of coal. Coal shall be directly fed into the one no hopper/bunker of 300 TPH capacities. As the peak rated production is kept at 0.3 Million tonnes per year expected coal production per day is about 900 tonnes per day. Two days of coal production i.e. 1800 t shall be kept on ground stock for emergency transportation directly by road.
55	Coal washing and the proposed handling/ disposal of rejects	Coal washing is envisaged to reduce the sulphur content of coal and to improve quality of coal. Rejects shall be dealt as per Govt policy and rules.



Chapter-6: Land Requirement

6.1 Land requirement

S No	Parameters	Details
6.1.1	Total Land requirement for the mine in "Ha"	Indicative source of data

The Land details required for the block 339.467 Ha is given as below

Land Type	Area (Ha)
Private/Tenancy (185.041 Ha)	185.041
Agricultural	
Township/Village	
Grazing	-
Barron	-
Water bodies	-
Road	-
Community /Other use	-
Govt Non Forest (7.43 Ha)	
Agricultural	
Township	
Grazing (Govt Land)	7.430
Road	-
Water bodies	0.000
Barren/Other use	-
Forest (148.996Ha)	
Jungle Jhan	27.918
Reserve	119.078
Protected	
Freehold	-
Total (Vested Block)	339.467

(Source: RS Map from District Authorities, Forest Survey Map & DGPS survey by Project proponent)

Break up of pre-mining land type (indicative) and source of data	S No	Land Type	Existing/pre-Mining Use	Area
	1	Forest	Jangle Jhan	27.918
	2	Forest	Reserve	119.078
	3	Pvt/Tenancy land	Agricultural	185.041
	4	Govt Non Forest	Grazing	7.43

6.1.2 Dunning mining Land use details

Type	Land use (Proposed)	Land Use (End of Life)	Land Use (Post Closure)						Total
			Agncultural land	Plantation	Water Body	Public/Comp any Use	Forest Land (Returned)	Undisturbed	
Excavation Area	215.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Backfilled Area	0.00	163.43	126.370	0.00	0.00	0.00	37.06	0.00	163.4300
Excavated Void	0.00	51.78	0.00	0.00	51.78	0.00	0.00	0.00	51.7800
Without Plantation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Top Soil Dump	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
External Dump	52.00	52.00	0.00	0.00	0.00	0.00	52.00	0.00	52.0000
Safety Zone	6.06	6.06	0.00	0.00	0.00	0.00	6.06	0.00	6.0600
Haul Road between aries	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	



Road diversion	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
Diversion Or Below River Or Nala Or Canal	0 669	0 669	0 00	0 00	0 669	0 00	0 00	0 00	0 6690
Settling Pond	2 00	2 00	0 00	0 00	2 00	0 00	0 00	0 00	2 0000
Road And Infrastructure Area	12 20	12 20	0 00	0 00	0 00	0 00	12 20	0 00	12 2000
Rationalization Area	42 797	42 797	3 121	0 00	0 00	0 00	39 676	0 00	42 7970
Garland Drains	3 011	3 011	0 00	0 00	3 011	0 00	0 00	0 00	3 0110
Embankment	5 52	5 52	0 00	0 00	0 00	5 52	0 00	0 00	5 5200
Green Belt	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
Water Reservoir Near Pit	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
UG Entry	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
Undisturbed OR Mining Right For UG	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
Resettlement	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
Pit Head Power Plant	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
Water Harvesting	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
Agricultural Land Undisturbed OR Mining Right For UG	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
Total	339 47	339 47	129 49	0 00	57 46	5 52	147 00	0 00	339 47

S No	Parameters	Details
6 1 3	Surface features over the block area	The block is free from habitation, a seasonal nala flows from north to south
6 1 4	No. of villages/Houses to be shifted	NIL
6 1 5	Population to be affected by the project	NIL
6 1 6	Proposed Rehabilitation programme	No rehabilitation is involved.

6 2 DETAILS OF LEASE

S No	Parameters	Details
6 2 1	Status of Lease	
Lease to be applied		
6 2 2	Existing Lease Area "Ha"	Nil
6 2 3	Period for which Mining Lease has been granted/is to be renewed/ is to be applied for.	34 years and to be renewed as per requirement applicable in MMDR Act 1957
6 2 4	Date of expiry of earlier Mining Lease, if any	NA
6 2 5	Whether the lease boundary/ required boundary is same as mentioned in the allotment order.	Yes
6 2 6	Lease Area (applied/ required) as per the Mining Plan under consideration (Ha)	339 467 includes forest land of 146 996 ha
6 2 7	Whether the applied lease area falls within the allotted block	Yes



6 2 8	Area (Ha) of lease which falls outside the delineated Block Boundary/Existing Mining Lease	Nil
6 2 8	Area (Ha) of lease which falls outside the delineated Block Boundary/Existing Mining Lease	Nil
6 2 9	Details of outside area	Not Applicable
	Whether forms part of any other coal block	NA
	Whether it contains any coal/lignite reserves	Nil
	Purpose for which it is required e.g roads/ OB dumps/ service buildings/ colony/ safety zone/ others (specify)	Not applicable
6.2 10	Whether some part(s) of the allotted block has not been applied for mining lease	Not Applicable
	Total area in Ha of such part(s)	Nil
	Total reserves in such part(s) (Mt)	Nil
	Brief reasoning for leaving such part(s)	Not applicable



Chapter-7: Environment Mangement

7 Environment Mangement

S No	Parameters	Details
71	Commitment from the project proponent that the company will comply Environment and Forest Condition stipulated in the respective clearances	The Commitment from the Company Board for compliance of the Environmental and Forest conditions and all prevalent statutory provisions as applicable has been be made and appended as Annexure 3A1 May please refer item 5 of the resolution



Chapter-8: Progressive & Final Mine Closure Plan

8.1.1 Land Degradation and restoration Schedule

Tentative Land Degradation and Technical Reclamation (Cumulative Area Ha)									
Year/Stage		Land Degraded				Technically Reclaimed Area			
(Life of the mine plus post closure period)		Excav	Dump (Extn + Top Soil)	Infra/others	Total	Backfill	Dump (Extn + Top Soil)	Others	Total
Up to Base year	2026	7.37	6.65	0	14.0200	0.00	0.00	0.00	0.0000
Y-1	2026-27	14.10	21.17	29.459	64.7290	0.97	0.00	0.00	0.9700
Y-3	2028-29	28.26	33.74	72.257	134.2570	4.97	0.00	0.00	4.9700
Y-5	2030-31	44.87	37.17	72.257	154.2970	7.11	0.00	6.06	13.1700
Y-10	2034-35	103.32	52.00	72.257	227.5770	51.47	40.05	11.58	103.1000
Y-15	2040-41	137.62	52.00	72.257	261.8770	85.13	52.00	11.58	148.7100
Y-20	2045-46	171.92	52.00	72.257	296.1770	118.80	52.00	11.58	182.3800
Y-25	2050-51	196.67	52.00	72.257	320.9270	146.56	52.00	11.58	210.1400
Y-30	2055-56	211.12	52.00	72.257	335.3770	163.43	52.00	11.58	227.0100
Y-34	2059-60	215.21	52.00	72.257	339.4670	163.43	52.00	11.58	227.0100
Post Closure									
Y-39	2064-65	215.21	52.00	72.257	339.467	163.43	52.00	124.037	339.467

8.1.2 Tentative Biological Reclamation (Cumulative in 'Ha')

Year/Stage		Biologically Reclaimed Area					Forest land (Return)	Un Disturbed/ To be left for Public/com Use	Total
(Life of the mine plus post closure period)		Agriculture	Plantation	Water Body	Public/ Company Use	Total			
Up to Base year	2026	0.00	0.00	0.00	0.00	0.0000	0.00	0.00	0.0000
Y-1	2026-27	0.00	0.00	0.00	0.00	0.0000	0.00	0.00	0.0000
Y-3	2028-29	0.00	0.00	2.00	0.00	2.0000	0.00	0.00	2.0000
Y-5	2030-31	0.00	6.059	5.680	0.000	11.7390	0.00	0.00	11.7390
Y-10	2034-35	0.00	54.714	5.680	0.00	60.3940	0.00	0.00	60.3940
Y-15	2040-41	0.00	85.00	5.68	5.52	96.2000	0.00	0.00	96.2000
Y-20	2045-46	0.00	101.00	5.68	5.52	112.2000	0.00	0.00	112.2000
Y-25	2050-51	0.00	110.00	5.68	5.52	121.2000	0.00	0.00	121.2000
Y-30	2055-56	0.00	129.491	5.68	5.52	140.6910	0.00	0.00	140.6910
Y-34	2059-60	0.00	129.491	5.68	5.52	140.6910	0.00	0.00	140.6910
Post Closure									
Y-39	2064-65	0.00	129.491	57.460	5.52	192.471	146.996	0.00	339.467

S No	Parameters	Details
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82	Post Closure Water Quality management (Existing water bodies available in the lease hold area, Measures to be taken for protection of the same including control of erosion, sedimentation siltation, water	A seasonal nala originates in the north central part of the block and is flowing from north to south in the eastern part of the block. This nala needs to be diverted and may be utilized as garland drain all along the quarry in the north and east. A safety zone of 45m from the diverted nala/garland drain has been kept as per Reg 119 of CMR 2017. In addition, in view of flood protection from this nala (converted into garland drain of 5m wide) an adequate earthen embankment has been proposed to be constructed in the last ten years of mine operation along the nala/garland drain to prevent any possible inundation. The earthen embankment shall be made/designed at least 3m height in the top and 25m at the base, height not less than 1.5m of HFL all along the diversion length of 3679 m of nala as per Regulation 149(2) of CMR 2017. The said embankment shall be constructed under supervision of a civil engineer considered expert in this regard. Measures to be taken for protection of the same including control of erosion, sedimentation, siltation, water treatment, diversion of water course if any Nala needs to be diverted in the form of a suitable garland drain and is proposed to arrest the rainwater entering into the mine. Nala diversion is proposed at the originating point in the Northern part of block boundary maintaining 45m safety distance from the quarry boundary as per CMR (119). Diversion dams/bunding arrangement as part of water course diversions to prevent water entering into mine. Cross drainage structures where haul roads and access roads cross diversions. Various inlet, outlet and erosion protection structures. The box cut is developed in such a manner so as to facilitate the proper drainage of water towards the sump. Garland drain shall be developed in advance for each mine stage such that water is collected in these garland drains and discharged properly outside the pit. Working faces would be laid such that the water from the working areas will flow into the sump by gravity from where it would be pumped out to settling/sedimentation pond. From sedimentation pond/settling tank the overflow water shall be discharged to garland drains. All along the external dump a suitable toe wall shall be constructed to arrest the fall of loose OB waste during rainy season. Slurry pumps shall be used to deal with the slurry formed during rainy season. Regular monitoring of water quality of mine discharges and ground water shall be done to observe any contamination of ground water. Additionally, there exists a number of ponds in the area. Care shall be taken so that no waste material from overflow from sedimentation pond or garland drain are admixed into the surface ponds. All measures shall be maintained to improve the quality of mine discharge water as per statute by provision of WETP, SETP and sludge cleaning in Settling Tank and by lime charging from lime to lime.
83	Post Closure Air Quality management.	Management of Air Quality during post closure of mine. Mine closure activities proposed for the project is oriented to Net Zero emission of the Govt of India. In addition to plantation development and biological and technical reclamation of degraded land, a Solar Park is envisaged in the reclaimed land. Floating Solar Park has also been envisaged for the final mine excavated area over reclaimed land. PPA and other formalities as per the requirement of Ministry of Power, MoEFCC with respect to Solar park shall be taken care of at the time of development of Solar Park. After cessation of mining and its related activities, there will be no effect on ambient air quality due to this project. All the proper mitigatory measures for air pollution control shall be taken in the mines so that there will be no effect on the ambient air quality. However, it is proposed that air quality and dust level is to be monitored at regular intervals. Necessary actions to check the air pollution from the closed mine in respect of air is to be taken after examining the local conditions then prevailing.

8.4 Waste Management (Figures in MM3) (Tentative)

Year/Stage (Life of the mine plus post closure period)	OB Removal (Cumulative)			External Dump (Cumulative)		Internal Backfilling (Cumulative)		Embankment (Cumulative)		
	Top Soil	OB	Total	Top Soil	OB	Top Soil	OB	Top Soil	OB	
	Up to Base year	2026	0.07	0.35	0.42	0.07	0.35	0.00	0.00	0.00
Y-1	2026-27	0.22	1.85	2.07	0.22	1.33	0.00	0.52	0.00	0.00
Y-3	2028-29	0.54	4.73	5.27	0.54	3.41	0.00	1.32	0.00	0.00
Y-5	2030-31	1.03	7.52	8.55	0.54	5.71	0.49	1.81	0.00	0.00
Y-10	2035-36	1.38	15.86	17.24	0.54	9.41	0.84	6.33	0.00	0.12
Y-15	2034-35	1.72	27.24	28.96	0.54	9.41	1.18	17.71	0.00	0.12
Y-20	2045-46	1.97	40.99	42.96	0.54	9.41	1.43	31.46	0.00	0.12
Y-25	2050-51	2.00	56.71	58.71	0.54	9.41	1.46	47.18	0.00	0.12
Y-30	2055-56	2.05	72.41	74.46	0.54	9.41	1.51	62.88	0.00	0.12
Y-34	2059-60	2.15	84.91	87.06	0.54	9.41	1.61	75.38	0.00	0.12
Post Closure										
Y-39	2064-65	2.15	84.91	87.06	0.54	9.41	1.61	75.38	0.00	0.12

8.5 Top Soil Management - (Including Action plan for Top Soil management) (Tentative)

Year/Stage (Life of the mine plus post closure period)	Top Soil Removal Plan	Top Soil Used				
		Spreading Over Embankment	Spreading Over Backfill area	Spreading Over External OB Dump area	Used In Green Belt area	Total Utilised
Up to Base year	2026	0.07	0.00	0.00	0.00	0.00
Y-1	2026-27	0.22	0.00	0.00	0.00	0.00
Y-3	2028-29	0.54	0.00	0.00	0.00	0.00
Y-5	2030-31	1.03	0.00	0.49	0.54	0.00
Y-10	2035-36	1.38	0.00	0.84	0.54	0.00
Y-15	2034-35	1.72	0.00	1.18	0.54	0.00
Y-20	2045-46	1.97	0.00	1.43	0.54	0.00
Y-25	2050-51	2.00	0.00	1.46	0.54	0.00
	2055-56	2.05	0.00		0.54	0.00
	2059-60	2.15	0.00		0.54	0.00

Post Closure							
Y-39	2064-65	2 15	0 00	1.61	0 54	0 00	2 15

S No	Parameters	Details
8 6	Management of Coal Rejects	Not Applicable
8 7	Restoration of Land used for Infrastructure	Infrastructure to be retained and to be dismantled envisaging measures to be taken for their physical stability and maintenance for the retained infrastructure facilities. Marki Mangli-II Coal mine shall develop lot of infrastructure for sustaining their mining operations. These include Workshop, CHP, Office Complex, Roads, Pipe lines and Transmission line. Decommissioning of the infrastructure shall be planned in such a way that the land occupied by these infrastructure is released. Moreover, as the block area covers 146.996 Ha of forest land which needs to be returned to forest authorities, most of the service structures are to be dismantled as under: 1. HEMM workshop 2. E M workshop 3. Project Store 4. All Service Buildings 5. Office VTC First Aid Centre 6. Canteen, Rest Shelter etc 7. Sub station 8. CHP. However, the following infrastructures are proposed to be retained for the public use for the neighboring common people in future: 1. Garland Drain around dumps 2. Diverted Nala and embankment after beautification 3. Approach roads and connecting roads 4. Settling tanks. All other service structures are to be dismantled.
8 8	Disposal of Mining Machinery	The mine development and mining operation shall be done by engaging Mine Developer Operator (MDO). After the mine closure, all mining machinery shall be shifted to elsewhere by the mine developer.
8 9	Safety & Security	After attaining the final stage dump, the remaining portion between dump toe and final stage Quarry floor should be fenced properly so that no human or stray animals should be trapped within as stipulated in CMR 108(6) 2017. Internal dumps are proposed to be suitably re-graded to avoid deep trenches. Toe wall of all spoil dumps shall not be extended to any point within 100m of mine opening and public roads or building or other permanent structure not belonging to owner of mine as per CMR 108(5) 2017.

8 10 Abandonment Cost and Financial Assurance

8 10 1 Abandonment Cost Cost of Activities to be taken up for closure of the mine

Head	Activities	Unit	Quantity	Rate RS/Unit	Amount RS Cr
Progressive Closure	Water quality management	Ls	34	150000	0.51
	Air quality management	Ls	34	300000	1.02
	Waste Management	M CUM	30	2500000	7.50
	Barbed wire fencing around dump	m	7165	250	1.79125
	Barbed wire fencing around the pit	m	7805	250	1.95125
	Filling of Void - Rehandling of Crown dump	MM3			
	Top Soil Management	MM3	2.1	1000000	0.21
	Technical And Biological Reclamation of Mined out of land and OB Dump	Ha	215	250000	5.375
	Plantation over virgin area including green belt	Ha	129.50	250000	3.2375
	Manpower Cost and Supervision	Month	1020	50000	5.10
	Total wall around the dump	m	7165	250	0.1791
	Garland drain	m	16482	300	0.4945
	Garland drain around the dump	m	7175	300	0.2153
	Any other Activity	LS			0.20
	Any other Activity - 2				
	Any other Activity - 3				
	Any other Activity - 4				
Any other Activity - 5					
Dismantling of infrastructure & Disposal/ rehabilitation of mining Machinery	Dismantling of workshop	Ls			0.15
	Rehabilitation of the dismantled facilities	Ls	0.00		0.10
	Dismantling of pump and pipes/ other facilities	Ls	0.00		0.15
	Dismantling of stowing bunker, provisioning of pumps for borewell pumping arrangement	Ls	0.00		0.00
	Dismantling of UG equipment	Ls			0.00



	Rearranging water pipeline to dump top park/Agriculture land	Ls			0 10
	Dismantling of power lines	Ls			0 15
	Any other Activity	LS			0 10
Safety and Security	Barbed wire fencing around dump	Ls			0 35
	Barbed wire fencing around the pit	m	0 00	0 00	0 35
	Barbed wire fencing with Masonary pillar	Ls	0 00		0 50
	Concrete wall with Masonary pillars around the pit	m	7500	1000	0 75
	Securing air shaft and installation of borewall pump	Ls			0 00
	Securing of incline	Cr			0 00
	Concrete wall fencing around the water body	m	7500	1000	0 750
	Boundary wall around the water body	m			0 00
	Stabilisation (viz benching, pitching etc) of side walls of the water body	Ls			0 40
	Toe wall around the dump	Ls			0 30
	Garland Drain	Ls	0 00	0 00	0 25
	Garland Drain around the dump	Ls			0 00
	Drainage channel from main Ob dump	Ls			0 00
	Any other Activity				0,00
Technical and Biological Reclamation of mined out of land and OB Dump	Filling of Void	Ha			0 50
	Top soil management	MM3	2 1	7000000	1 505
	OB Rehandling for backfilling	MM3	9 41	5000000	4 705
	Terracing, blanketing with soil and vegetation of External OB Dump	Ha	52	250000	1 30
	Paripharel road, gates, view point, cemented steps on bank	Cr			1 0
	Expenditure on development of Agriculture land	Ha	140	600000	8 40
	Landscaping and Plantation	Ls			0 75
Post Closure management and supervision	Any other Activity				0 00
	Power Cost	Ls	5	200000	0 10
	Post mining water quality management	Ls	5	75000	0 0375
	Post mining air quality management	Ls	5	100000	0 050
	Subsidence monitoring for 5 years	Ls	5	660000	0 33
	Waste management	Ls	50	2500000	12 50
	Manpower Cost and supervision	Ls	350	60000	2 10
	Manpower Cost and supervision	Misc			1 50
Others	Any other Activity - 2				
	Enterprenuership development(vocational/skilled development training for sustainable income of affected people)	LS			2 5
	Golden Handshake/Retrenchment benefits to 100 employees of OC	LS			2 5
	Golden Handshake/Retrenchment benefits to 200 employees of UG	Cr			0 00
	Onetime financial grant to societies/ institutions/ organisations which is dependent upon the project	Ls			1 75
	Provide Jobs in other mines of company	LS			1 5

	Continuation of other services like running of school etc	LS		2 25
	Any other Activity	Miscellaneous		2 5
Total				79 98

8 10 2 Financial Assurance Amount to be deposited in Escrow account as a security against the mine activities to be carried out for the closure of the mine

WPI as on	Apr-19	121 10
WPI as on base date	July2022 provn	153 80
Escalation rate of Closure cost		1 27
	UG	OC
Base Cost *Rs Crs/Ha	0	0 09
Closure Cost *Rs Crs/Ha	0	0 114
Project Area *Ha	0	339 467
Amount to be deposited into Escrow Account *Rs in Crs	0	38 699
Amount already deposited into Escrow Account *Rs in Crs	0	0
Net Amount to be deposited into Escrow Account *Rs in Crs	0	38 699
Rate of compounding of Annual Closure Cost		5 00%
Balance Life of the project *in Yrs	0	34
Annual Closure Cost *Rs in Crs	0	1 138
Amount to be deposited into Escrow Account after compounding @ of 5% *Rs in Crs		96 804

Amount to be deposited into Escrow

Year	OC	Year	UG	Total
1	1,138			1 138
2	1 195			1 195
3	1 255			1 255
4	1 317			1 317
5	1 383			1 383
6	1 452			1 452
7	1 525			1 525
8	1 601			1 601
9	1 681			1 681
10	1,765			1 765
11	1 854			1 854
12	1 946			1 946
13	2 044			2 044
14	2 146			2 146
15	2 253			2 253
16	2 366			2 366
17	2 484			2 484
18	2 608			2 608
19	2 739			2 739
20	2 876			2 876
21	3 019			3 019
22	3,17			3 17
23	3 329			3 329
24	3 495			3 495
25	3 67			3 67
26	3 854			3 854
27	4 046			4 046
28	4 249			4 249
29	4 461			4 461
30	4 684			4 684
31	4 918			4 918
32	5,164			5 164
33	5,423			5 423
34	5 694			5 694
Total	96 804		0 000	96 804



Annexures

Annexure 1A1

GOVERNMENT OF INDIA
MINISTRY OF COAL
OFFICE OF THE NOMINATED AUTHORITY
(Constituted under Section 6 of The Coal Mines (Special Provisions) Act, 2015)
Shastri Bhawan, New Delhi

VESTING ORDER

(under clause (b) of sub-rule (2) of rule 7 and sub-rule (1) of rule 13 of the Coal Mines (Special Provisions) Rules 2014 read with clause (b) of sub-section (3) of Section 6 and sub-section (3) of Section 8 of the Coal Mines (Special Provisions) Act, 2015)

In re. Marid Mangli II Coal Mine (the "mine") particulars of which is specified in Annexure I

Order no. NA-104/3/2020-NA

Date March 03, 2021

In favour of: Yazdani International Private Limited, incorporated in India under the Companies Act, 1956 with corporate identity number U13209OR2006PTC009009, whose registered office and principal place of business is at 7th Floor, C-Wing, Fortune Towers, Chandrasekharpur, Bhubaneswar, Odisha 751023, India (the "successful bidder")

For the purpose of: Sale of coal, including sale to Affiliates and related parties, utilisation of coal for any purpose including but not limited to captive consumption, Coal Gasification, Coal Liquefaction and export of coal.

WHEREAS, the nominated authority has, in accordance with provisions of the Coal Mines (Special Provisions) Act, 2015 (the "Act") and the Coal Mines (Special Provisions) Rules 2014 (the "Rules") conducted the auction of the mine;

AND WHEREAS the successful bidder is eligible to receive this vesting order with respect to the mine including, inter-alia, -

(a) the coal bearing land acquired by the prior allottee and the lands, in or adjacent to the coal mines used for coal mining operations acquired by the prior allottee, and



(b) any existing mine infrastructure as defined in clause (j) of sub-section (1) of section 3 of the Act,

AND WHEREAS the successful bidder has furnished a performance bank guarantee dated February 18, 2021 for an amount equal to INR 20,17,06,066 40 (Indian Rupees Twenty Crore Seventeen Lakh Six Thousand Sixty Six and Forty Paise) issued by Punjab National Bank in accordance with the tender document and in accordance with the provisions of sub-section (6) of section 8 of the Act and sub-rule (4) of rule 13 of the rules.

AND WHEREAS the successful bidder has entered into a Coal Mine Development and Production Agreement dated January 11, 2021 ("CMDPA") (as amended) with the nominated authority in accordance with the provisions of sub-rule (5) of rule 13

NOW, THE NOMINATED AUTHORITY DOES ORDER.

1 On and from March 03, 2021 ("vesting date") and in accordance with the provisions of sub-section (4) of section 8 of the Act, with respect to the mine, the following shall stand fully and absolutely transferred and vested in the successful bidder, namely -

(a) all the rights, title and interest of the prior allottee in and over the land and mine infrastructure free from all encumbrances,

(b) entitlement to a prospecting license, mining lease or prospecting license-cum-mining lease to be granted by the State Government with the terms and conditions of CMDPA forming a part of it on making an application,

(c) all statutory licences, permits, permissions, approvals or consents as per rules, required to undertake coal mining operations in the mine, if already issued by the Central Government, to the prior allottee on the same terms and conditions as were applicable to the prior allottee, as listed in the Annexure 2,

(d) entitlement to any statutory licence, permit, permission, approval or consent required to undertake coal mining operations in the mine, if already issued by the Central Government, to the prior allottee on making an application on the same terms and conditions as were applicable to the prior allottee, as listed in the Annexure 3,

(e) entitlement to any statutory licence, permit, permission, approval or consent required to undertake coal mining operations in the mine, if already issued by the State Government, to



the prior allottee on making an application on the same terms and conditions as were applicable to the prior allottee, as listed in the Annexure 4,

(f) rights appurtenant to the approved mining plan of the prior allottee,

(g) any subsisting contract in relation to coal mining operations, to which the prior allottee was a party and which is assumed, adopted and continued by the successful bidder and listed in the Annexure 5 shall stand novated (by virtue of a deemed consent from the relevant party(ies)), in accordance with the provisions of sub-section (1) of section 11 of the Act in favour of the successful bidder for the residual term or residual performance of such contract,

2 The successful bidder may seek any change in the terms and conditions attached to such licence, permit, permission, approval or consent by making an application in accordance with applicable laws;

3. Hereinafter, the successful bidder shall be entitled to take possession of the mine as specified in Annexure 1 without let or hindrance;

4 This vesting order is liable to be cancelled in accordance with the provisions of sub-rule (6) of rule 13



(By the nominated authority)





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SI	Mouza	Surrey No	Area as in deed (hectares)	Deed No	Date of agreement
1	Ruitkot	5/1	2.680	193/2013	16-03-2013
2	Ruitkot	5/2	1.340	78/2013	14-02-2013
3	Ruitkot	9/1	3.100	108/2013	08-06-2012
4	Ruitkot	9/1	1.240	780/2009	30-11-2009
5	Ruitkot	9/2	2.850	781/2009	30-11-2009
6	Ruitkot	28/3	1.510	474/2008	23-09-2005
7	Ruitkot	28/3	1.210	475/2008	23-09-2008
8	Ruitkot	28/3	1.210	476/2008	23-09-2008
9	Ruitkot	56/1	1.620	692/2013	01-10-2013
10	Ruitkot	60/1	2.460	290/2008	26-05-2008
11	Ruitkot	60/2	1.250	382/2013	17-05-2013
12	Ruitkot	60/3	1.230	291/2013	23-04-2013
13	Ruitkot	60/4	1.230	289/2013	23-04-2013
14	Ruitkot	61/2	1.620	748/2010	27-10-2010
15	Ruitkot	61/2	1.620	747/2010	27-10-2010
16	Ruitkot	61/3	2.030	156/2010	25-02-2010
17	Ruitkot	61/3	2.020	155/2010	25-02-2010
18	Ruitkot	61/4-A	2.330	693/2013	01-10-2013
19	Ruitkot	61/4-B	2.320	261/2013	09-04-2013
20	Ruitkot	63	1.820	585/2012	26-07-2012
21	Ruitkot	64/1	1.630	538/2008	12-11-2008
22	Ruitkot	64/1	1.630	537/2008	12-11-2008
23	Ruitkot	64/2	1.610	195/2009	26-03-2009
24	Ruitkot	65/2	2.810	536/2008	26-03-2008
25	Ruitkot	10/1	2.480	94/2014	09-12-2014

Part B - Description of Land in relation to the mine

Name of Coal Mine	Marki Mangli-II
Coal Field	Wardha Valley
Latitude	19°49'2"N to 19°50'31"N (Provisional)
Longitude	78°48'56"E to 78°50'32"E (Provisional)
Villages	Ruitkot, Savh
Tehsil/Taluka	Jhan-Jamni
District	Yavnal
State	Maharashtra

Part A - Description of the mine

Annexure 1: Particulars of the mine

Annexures



S No	Head of Assets	Description (Nature of Assets)
1	Buildings, Approach & Internal Roads	Approach & Internal Roads
2	Buildings, Approach & Internal Roads	Approach & Internal Road (Hume Pipes)
3	Buildings, Approach & Internal Roads	Fencing
4	Buildings, Approach & Internal Roads	Access Trench
5	Buildings, Approach & Internal Roads	Security Check Post
6	Electrical Installation	High Mast Towers - 2 nos. - 10 metres height each

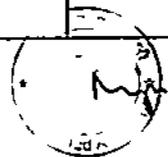
CI - Mine Infrastructure Immovable Assets

Part C - Description of Mine Infrastructure in relation to the mine

SI	Mouza	Survey No	Area as in deed (hectares)	Deed No	Date of agreement
26	Rukoi	10/1-B	1.240	217/2014	12-03-2014
27	Rukoi	10/2-A	1.250	98/2014	06-02-2014
28	Rukoi	11/1	2.770	631/2009	02-09-2009
29	Rukoi	13/1	2.020	573/2009	29-07-2009
30	Rukoi	13/2	2.020	514/2009	03-06-2009
31	Rukoi	13/3-A	1.760	99/2014	06-02-2014
32	Rukoi	20/2	1.210	689/2014	09-12-2014
3 Agreement to Purchase - within ML Area of MM-II					
33	Rukoi	3	5.990		09-04-2009
34	Rukoi	5/2	1.340		27-11-2011
35	Rukoi	28	1.250		05-01-2011
36	Rukoi	28	1.250		05-01-2011
37	Rukoi	28	1.250		05-01-2011
38	Rukoi	28	1.900		05-01-2011
39	Rukoi	28	1.900		05-01-2011
40	Rukoi	32	7.000		15-07-2009
41	Rukoi	64/3	1.610		22-07-2011
4 Agreement to Purchase - outside ML Area of MM-II					
42	Rukoi	10/1-A	1.240		06-03-2014
43	Rukoi	10/2-K	1.500		13-05-2014
44	Rukoi	10/2-B	1.500		13-05-2014
45	Rukoi	10/2	1.500		13-05-2014
46	Rukoi	14/1-B	2.020		29-12-2012
47	Rukoi	14/1-K	2.020		29-12-2012
48	Rukoi	20/1	2.770		28-12-2012
49	Rukoi	20/1-A	1.620		29-12-2012
50	Rukoi	23/2	1.260		29-12-2012
51	Rukoi	23/3	1.260		29-12-2012
52	Rukoi	23/1-A	1.310		28-12-2012
100 61					

Annexure 2 Particulars of statutory licences, permits, permissions, approvals or consents issued by the Central Government which are being transferred along with this vesting order

S. No	Statutory Clearance	Ministry/ Agency	Letter No	Date
1	Approval of Mining Plan and Mine Closure Plan	Ministry of Coal	13016/9/2004-CA-I	31 01.2008 /05 02.2008
2	Mining Lease - Administrative Approval of the Central Government under Section 5 (1) and/ or Section 6 (1) of MMDR Act, 1957	Ministry of Coal	13016/9/2004-CA-I (Vol-III)	16 12.2009



Annexure 3. Particulars of statutory licences, permits, permissions, approvals or consents issued by the Central Government to be obtained on application by the successful bidder.

S No	Statutory Clearance	Ministry/ Agency	Letter No	Date
1	Environment Clearance	Ministry of Environment and Forests	J-11015/425/2007-1A.II (M)	27.01.2011
2	Mine opening permission	Ministry of Coal - CCO	CC/Tech/Open. Perm/Marka Mangli II OC/ '11-'12	28 11.2011
3	Permission from DGMS for Mine Opening	Ministry of Labour - DGMS	Kshetra Sankhya - II/010980/C/E/08/ 2013 /730	24 05.2013



Annexure 4. Particulars of statutory licences, permits, permissions, approvals or consents issued by the State Government to be obtained on application by the successful bidder

S No	Statutory Clearance	Ministry/ Agency	Letter No.	Date
1	Consent to Operate	State Pollution Control Board	BO/RO (P&P)/EIC No CH-0166-09/E/CC-444	24 11 2009
2	Grant of Mining Lease	Government of Maharashtra	MMN-1008/C.R.2431/IND-9	04 03.2010
3	Land Ownership - Permission to purchase Agriculture Land for Mining Operation was granted by State Government under Mumbai Tenancy and Agriculture Land (BTAL) Act, 1958 for combined for Marki Mangli - II, III & IV Coal Blocks Land purchased through Sale Deed by direct negotiation with land owners	Government of Maharashtra	D/Land/Permission/68(2011)/2012/C-6069	06 07.2012



Annexure 5 Particulars of the contracts adopted by the successful bidder

The Successful Bidder does not intend to adopt and continue with any of the contracts of the Prior Allottee.



Annexure 2A

BOUNDARY AS PER VESTING ORDER				
Pints	Longitude (WGS84)	Latitude (WGS84)		
A	78°48'56 00"E	19°49'2 00"N		
B	78°48'56 00"E	19°50'31 00"N		
C	78°50'32 00"E	19°50'31 00"N		
D	78°50'32 00"E	19°49'2 00"N		
Point No	Ground Easting (m)	Ground Northing (m)	WGS84 Longitude	WGS84 Latitude
BP-1/162	273706 215	2192707 681	78°50'22 44158"E	19°49'02 17812"N
BP-2/162	273660 051	2192724 839	78°50'20 84824"E	19°49'02 71673"N
BP-3/162	273611 751	2192744 383	78°50'19 18051"E	19°49'03 33199"N
BP-4/162	273565 021	2192761 236	78°50'17 56788"E	19°49'03 86044"N
BP-5/162	273518 435	2192776 921	78°50'15 96069"E	19°49'04 35098"N
BP-6/162	273470 566	2192794 247	78°50'14 30872"E	19°49'04 89431"N
BP-7/162	273423 363	2192809 764	78°50'12 68041"E	19°49'05 37911"N
BP-8/162	273383 286	2192825 094	78°50'11 29696"E	19°49'05 86080"N
BP-9/162	273336 612	2192840 173	78°50'09 68702"E	19°49'06 33155"N
BP-10/162	273293 712	2192866 474	78°50'08 20180"E	19°49'07 16873"N
BP-11/162	273251 331	2192891 986	78°50'06 73473"E	19°49'07 98046"N
BP-12/162	273209 881	2192918 72	78°50'05 29908"E	19°49'08 83228"N
BP-13/162	273164 323	2192944 904	78°50'03 72256"E	19°49'09 66452"N
BP-14/162	273122 764	2192972 302	78°50'02 28290"E	19°49'10 53789"N
BP-15/162	273082 092	2192998 605	78°50'00 87418"E	19°49'11 37602"N
BP-16/162	273040 179	2193024 738	78°49'59 42288"E	19°49'12 20811"N
BP-17/162	272998 019	2193051 894	78°49'57 96266"E	19°49'13 07335"N
BP-18/162	272948 875	2193082 355	78°49'56 26104"E	19°49'14 04311"N
BP-19/162	272909 501	2193113 618	78°49'54 89470"E	19°49'15 04303"N
BP-20/162	272870 919	2193143 539	78°49'53 55614"E	19°49'15 99963"N
BP-21/162	272831 044	2193174 573	78°49'52 17269"E	19°49'16 99190"N
BP-22/162	272791 756	2193205 872	78°49'50 80926"E	19°49'17 99298"N
BP-23/162	272751 461	2193235 75	78°49'49 41188"E	19°49'18 94747"N
BP-24/162	272711 881	2193268 14	78°49'48 03724"E	19°49'19 98392"N
BP-25/162	272666 698	2193301 789	78°49'46 47097"E	19°49'21 05896"N
BP-26/162	272633 913	2193327 705	78°49'45 33330"E	19°49'21 88776"N
BP-27/162	272593 376	2193358 18	78°49'43 92729"E	19°49'22 86153"N
BP-28/162	272536 523	2193404 353	78°49'41 95390"E	19°49'24 33881"N
BP-29/162	272494 814	2193432 293	78°49'40 50876"E	19°49'25 22968"N
BP-30/162	272452 87	2193459 469	78°49'39 05586"E	19°49'26 09563"N
BP-31/162	272411 156	2193486 888	78°49'37 61077"E	19°49'26 96956"N
BP-32/162	272370 288	2193513 496	78°49'36 19510"E	19°49'27 81745"N
BP-33/162	272328 923	2193541 158	78°49'34 76190"E	19°49'28 69941"N
BP-34/162	272286 844	2193567 85	78°49'33 30458"E	19°49'29 54954"N
BP-35/162	272244 794	2193596 255	78°49'31 84750"E	19°49'30 45537"N
BP-36/162	272204 089	2193623 62	78°49'30 43705"E	19°49'31 32794"N
BP-37/162	272159 626	2193652 263	78°49'28 89699"E	19°49'32 24046"N
BP-38/162	272117 881	2193679 972	78°49'27 45068"E	19°49'33 12378"N
BP-39/162	272075 732	2193707 952	78°49'25 99036"E	19°49'34 01573"N
BP-40/162	272035 139	2193736 512	78°49'24 58323"E	19°49'34 92717"N
BP-41/162	271995 424	2193761 257	78°49'23 20797"E	19°49'35 71496"N
BP-42/162	271953 389	2193786 593	78°49'21 75272"E	19°49'36 52100"N
BP-43/162	271912 557	2193814 154	78°49'20 33783"E	19°49'37 39987"N
BP-44/162	271869 646	2193841 065	78°49'18 85180"E	19°49'38 25672"N
BP-45/162	271827 238	2193869 686	78°49'17 38226"E	19°49'39 16938"N
BP-46/162	271782 483	2193896 986	78°49'15 83269"E	19°49'40 03811"N
BP-47/162	271743 055	2193923 541	78°49'14 46645"E	19°49'40 88482"N
BP-48/162	271700 963	2193955 668	78°49'13 00624"E	19°49'41 91160"N
BP-49/162	271660 036	2193982 054	78°49'11 58855"E	19°49'42 75220"N
BP-50/162	271625 579	2194003 542	78°49'10 39532"E	19°49'43 43629"N
BP-51/162	271584 988	2194032 628	78°49'08 98799"E	19°49'44 36478"N
BP-52/162	271546 445	2194059 606	78°49'07 65194"E	19°49'45 22563"N
BP-53/162	271505 696	2194088 141	78°49'06 23943"E	19°49'46 13618"N
BP-54/162	271463 512	2194118 653	78°49'04 77672"E	19°49'47 11034"N
BP-55/162	271424 912	2194145 807	78°49'03 43862"E	19°49'48 97688"N
BP-56/162	271383 677	2194175 271	78°49'02 00897"E	19°49'48 91739"N
BP-57/162	271343 065	2194203 443	78°49'00 60130"E	19°49'49 81616"N
8/162	271301 847	2194233 4	78°48'59 17200"E	19°49'50 77366"N

BOUNDARY AS PER VESTING ORDER				
BP-59/162	271260 882	2194261 276	78°48'57 75234"E	19°49'51 66171"N
BP-60/162	271228 144	2194286 223	78°48'56 61658"E	19°49'52 45892"N
BP-61/162	271261 887	2194323 088	78°48'57 75941"E	19°49'53 67155"N
BP-62/162	271295 037	2194361 296	78°48'58 88125"E	19°49'54 92761"N
BP-63/162	271328 416	2194398 594	78°49'00 01134"E	19°49'56 15417"N
BP-64/162	271354 419	2194429 034	78°49'00 89113"E	19°49'57 15467"N
BP-65/162	271372 097	2194449 556	78°49'01 48934"E	19°49'57 82924"N
BP-66/162	271394 921	2194493 321	78°49'02 25396"E	19°49'59 26160"N
BP-67/162	271415 174	2194532 935	78°49'02 93216"E	19°50'00 55791"N
BP-68/162	271433 105	2194588 772	78°49'03 52336"E	19°50'02 38068"N
BP-69/162	271437 094	2194621 77	78°49'03 64572"E	19°50'03 45508"N
BP-70/162	271441 471	2194673 504	78°49'03 77311"E	19°50'05 13874"N
BP-71/162	271425 739	2194720 127	78°49'03 21194"E	19°50'06 64777"N
BP-72/162	271418 967	2194744 602	78°49'02 96841"E	19°50'07 44058"N
BP-73/162	271398 418	2194823 372	78°49'02 22749"E	19°50'09 99267"N
BP-74/162	271418 059	2194898 389	78°49'02 86890"E	19°50'12 43967"N
BP-75/162	271452 292	2194949 899	78°49'04 02208"E	19°50'14 12858"N
BP-76/162	271486 557	2194973 557	78°49'05 18893"E	19°50'14 91012"N
BP-77/162	271512 908	2194980 777	78°49'06 09083"E	19°50'15 15788"N
BP-78/162	271562 077	2194995 672	78°49'07 77360"E	19°50'15 66080"N
BP-79/162	271635 681	2195008 109	78°49'10 29653"E	19°50'16 09799"N
BP-80/162	271681 352	2195026 153	78°49'11 85776"E	19°50'16 70181"N
BP-81/162	271758 801	2195050 674	78°49'14 50747"E	19°50'17 53346"N
BP-82/162	271808 801	2195061 677	78°49'16 22052"E	19°50'17 91017"N
BP-83/162	271858 245	2195070 435	78°49'17 91529"E	19°50'18 21564"N
BP-84/162	271909 643	2195079 54	78°49'19 67704"E	19°50'18 53320"N
BP-85/162	271961 817	2195086 544	78°49'21 46621"E	19°50'18 78474"N
BP-86/162	271986 141	2195132 045	78°49'22 28188"E	19°50'20 27218"N
BP-87/162	272012 381	2195176 503	78°49'23 16345"E	19°50'21 73044"N
BP-88/162	272038 27	2195212 082	78°49'24 03731"E	19°50'22 89597"N
BP-89/162	272074 46	2195259 354	78°49'25 25949"E	19°50'24 44989"N
BP-90/162	272082 39	2195308 838	78°49'25 51021"E	19°50'26 05991"N
BP-91/162	272087 407	2195355 477	78°49'25 66172"E	19°50'27 58018"N
BP-92/162	272105 515	2195405 686	78°49'26 26177"E	19°50'29 21805"N
BP-93/162	272122 325	2195454 991	78°49'26 81726"E	19°50'30 82991"N
BP-94/162	272143 587	2195441 912	78°49'27 55353"E	19°50'30 41364"N
BP-95/162	272181 955	2195411 855	78°49'28 88520"E	19°50'29 45064"N
BP-96/162	272218 113	2195376 993	78°49'30 14270"E	19°50'28 33444"N
BP-97/162	272254 78	2195343 61	78°49'31 41722"E	19°50'27 26454"N
BP-98/162	272307 13	2195299 082	78°49'33 23545"E	19°50'25 83891"N
BP-99/162	272341 521	2195264 673	78°49'34 43222"E	19°50'24 73469"N
BP-100/162	272374 695	2195231 535	78°49'35 58659"E	19°50'23 67131"N
BP-101/162	272413 125	2195194 302	78°49'36 92334"E	19°50'22 47700"N
BP-102/162	272447 539	2195162 573	78°49'38 11969"E	19°50'21 45990"N
BP-103/162	272482 577	2195127 763	78°49'39 33885"E	19°50'20 34293"N
BP-104/162	272504 744	2195105 4	78°49'40 11029"E	19°50'19 62522"N
BP-105/162	272543 477	2195073 578	78°49'41 45504"E	19°50'18 60692"N
BP-106/162	272583 167	2195040 494	78°49'42 83323"E	19°50'17 54799"N
BP-107/162	272621 007	2195008 885	78°49'44 14722"E	19°50'16 53622"N
BP-108/162	272659 501	2194976 812	78°49'45 48386"E	19°50'15 50965"N
BP-109/162	272699 285	2194944 619	78°49'46 86487"E	19°50'14 47971"N
BP-110/162	272739 624	2194909 857	78°49'48 26606"E	19°50'13 36649"N
BP-111/162	272777 199	2194878 421	78°49'49 57085"E	19°50'12 36023"N
BP-112/162	272815 412	2194847 602	78°49'50 89725"E	19°50'11 37433"N
BP-113/162	272853 948	2194815 773	78°49'52 23522"E	19°50'10 35569"N
BP-114/162	272892 453	2194785 558	78°49'53 57138"E	19°50'09 38951"N
BP-115/162	272938 553	2194749 195	78°49'55 17122"E	19°50'08 22662"N
BP-116/162	272965 357	2194724 306	78°49'56 10302"E	19°50'07 42868"N
BP-117/162	272991 98	2194702 723	78°49'57 02719"E	19°50'06 73814"N
BP-118/162	273020 522	2194658 359	78°49'58 02731"E	19°50'05 30781"N
BP-119/162	273047 82	2194618 203	78°49'58 98282"E	19°50'04 01377"N
BP-120/162	273077 207	2194577 388	78°50'00 01041"E	19°50'02 69917"N
BP-121/162	273105 869	2194535 716	78°50'01 01347"E	19°50'01 35641"N
BP-122/162	273134 477	2194493 281	78°50'02 01498"E	19°49'59 98879"N
BP-123/162	273174 585	2194435 891	78°50'03 41815"E	19°49'58 13983"N
BP-124/162	273205 086	2194397 316	78°50'04 48300"E	19°49'56 89850"N
25/162	273236 463	2194358 477	78°50'05 57807"E	19°49'55 64762"N
26/162	273266 826	2194319 477	78°50'06 63833"E	19°49'54 39360"N

BOUNDARY AS PER VESTING ORDER				
BP-127/162	273288 033	2194291 724	78°50'07 37908"E	19°49'53 50036"N
BP-128/162	273331 206	2194239 667	78°50'08 88519"E	19°49'51 82602"N
BP-129/162	273374 701	2194184 413	78°50'10 40376"E	19°49'50 04787"N
BP-130/162	273399 152	2194143 203	78°50'11 26186"E	19°49'48 71834"N
BP-131/162	273427 384	2194098 266	78°50'12 25153"E	19°49'47 26923"N
BP-132/162	273452 792	2194056 492	78°50'13 14279"E	19°49'45 92176"N
BP-133/162	273471 364	2194008 968	78°50'13 80171"E	19°49'44 38453"N
BP-134/162	273490 76	2193963 633	78°50'14 48797"E	19°49'42 91881"N
BP-135/162	273507 618	2193920 725	78°50'15 08597"E	19°49'41 53088"N
BP-136/162	273529 283	2193869 794	78°50'15 85264"E	19°49'39 88420"N
BP-137/162	273546 076	2193825 855	78°50'16 44889"E	19°49'38 46273"N
BP-138/162	273565 487	2193778 179	78°50'17 13668"E	19°49'36 92090"N
BP-139/162	273579 578	2193742.779	78°50'17.63632"E	19°49'35 77593"N
BP-140/162	273603 262	2193701 454	78°50'18 46811"E	19°49'34 44267"N
BP-141/162	273627.896	2193657 418	78°50'19 33374"E	19°49'33 02101"N
BP-142/162	273651 316	2193614.111	78°50'20.15733"E	19°49'31.62286"N
BP-143/162	273676 207	2193571 317	78°50'21 03121"E	19°49'30 24202"N
BP-144/162	273714 713	2193502 052	78°50'22 38445"E	19°49'28 00625"N
BP-145/162	273740.341	2193457 632	78°50'23 28435"E	19°49'26 57285"N
BP-146/162	273764 874	2193414.11	78°50'24 14622"E	19°49'25 16817"N
BP-147/162	273791.104	2193370 084	78°50'25 06664"E	19°49'23.74780"N
BP-148/162	273815 864	2193326 788	78°50'25 93622"E	19°49'22 35058"N
BP-149/162	273841 942	2193281 357	78°50'26 85202"E	19°49'20 88447"N
BP-150/162	273867 316	2193238 45	78°50'27 74250"E	19°49'19 50013"N
BP-151/162	273897 951	2193184 698	78°50'28 81851"E	19°49'17 76541"N
BP-152/162	273917 962	2193137 906	78°50'29 52644"E	19°49'16 25255"N
BP-153/162	273938 59	2193093 295	78°50'30 25463"E	19°49'14 81084"N
BP-154/162	273969 389	2193023 069	78°50'31.34346"E	19°49'12 54062"N
BP-155/162	273970 651	2192975 479	78°50'31 40772"E	19°49'10 99402"N
BP-156/162	273974 055	2192933 64	78°50'31 54299"E	19°49'09 63526"N
BP-157/162	273955 932	2192854 547	78°50'30 95518"E	19°49'07 05644"N
BP-158/162	273932 713	2192823 35	78°50'30 17125"E	19°49'06 03261"N
BP-159/162	273886 853	2192787 806	78°50'28 61152"E	19°49'04 85802"N
BP-160/162	273842 165	2192759 93	78°50'27 08866"E	19°49'03 93322"N
BP-161/162	273802 277	2192732 522	78°50'25 73048"E	19°49'03 02563"N
BP-162/162	273755 169	2192720 934	78°50'24 11737"E	19°49'02 62934"N



Annexure 2B



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Annexure-II

Certification of Project Area, Proposed Mining Lease area and Geological Block area

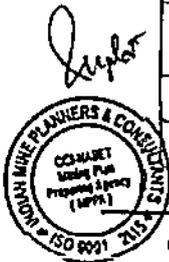
Certified that the Cardinal Points considered for preparation of the Mining Plan and Mine Closure Plan (Revision-01) of Marki Mangli-II Coal Mine situated in Wardha Valley Coalfield Dist- Yavatmal, Maharashtra State is in line with the vesting order No NA-104/3/2020-NA dated 03.03.2021 and does not encroach any other adjacent block. All proposed mining activities, overburden dumping area and infrastructure locations are within the cardinal point coordinates of vested geological block. The geological block area and the project area of Marki Mangli II Coal Mine are as under

- 1) Geological Block area – 339 467 Ha
- 2) Project area – 339 467 Ha

Vesting Order Coordinates vide order No NA-104/3/2020-NA dated 03.03.2021 and Cardinal Points Coordinates of the Geological Block Boundary by DGPS WGS_84 system are as under

BOUNDARY AS PER VESTING ORDER	
Longitude (WGS84)	Latitude (WGS84)
78°48'56.00"E	19°49'2.00"N
78°48'56.00"E	19°50'31.00"N
78°50'32.00"E	19°50'31.00"N
78°50'32.00"E	19°49'2.00"N

Geological Vested Block Boundary Coordinates by DGPS WGS_84 System					
Sl. No.	Point No.	Ground Easting (m)	Ground Northing (m)	WGS84 Longitude	WGS84 Latitude
1	BP 1/162	273706.215	2192707.681	78°50'22.44158"E	19°49'02.17812"N
2	BP 2/162	273660.051	2192724.839	78°50'20.84824"E	19°49'02.71673"N



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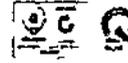


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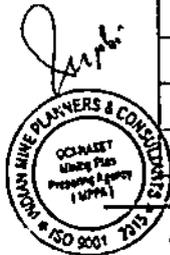
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Geological Vested Block Boundary Coordinates by DGPS WGS_84 System

Sl. No.	Point No.	Ground Easting (m)	Ground Northing (m)	WGS84 Longitude	WGS84 Latitude
3	BP-3/162	273611.751	2192744.383	78°50'19.18051"E	19°49'03.33199"N
4	BP-4/162	273565.021	2192761.236	78°50'17.56788"E	19°49'03.86044"N
5	BP-5/162	273518.435	2192776.921	78°50'15.96069"E	19°49'04.35098"N
6	BP-6/162	273470.566	2192794.247	78°50'14.30872"E	19°49'04.89431"N
7	BP-7/162	273423.363	2192809.764	78°50'12.68041"E	19°49'05.37911"N
8	BP-8/162	273383.286	2192825.094	78°50'11.29696"E	19°49'05.86080"N
9	BP-9/162	273336.612	2192840.173	78°50'09.68702"E	19°49'06.33155"N
10	BP-10/162	273293.712	2192866.474	78°50'08.20160"E	19°49'07.16873"N
11	BP-11/162	273251.331	2192891.986	78°50'06.73473"E	19°49'07.98046"N
12	BP-12/162	273209.681	2192918.720	78°50'05.29908"E	19°49'08.83228"N
13	BP-13/162	273164.323	2192944.904	78°50'03.72256"E	19°49'09.66452"N
14	BP-14/162	273122.764	2192972.302	78°50'02.28290"E	19°49'10.53789"N
15	BP-15/162	273082.092	2192993.605	78°50'00.87418"E	19°49'11.37602"N
16	BP-16/162	273040.179	2193024.738	78°49'59.42288"E	19°49'12.20811"N
17	BP-17/162	272998.019	2193051.894	78°49'57.96266"E	19°49'13.07335"N
18	BP-18/162	272948.875	2193082.355	78°49'56.26104"E	19°49'14.04311"N
19	BP-19/162	272909.501	2193113.618	78°49'54.89470"E	19°49'15.04303"N
20	BP-20/162	272870.919	2193143.539	78°49'53.55614"E	19°49'15.99963"N
21	BP-21/162	272831.044	2193174.573	78°49'52.17269"E	19°49'16.99190"N



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Geological Vested Block Boundary Coordinates by DGPS WGS_84 System

Sl No.	Point No.	Ground Easting (m)	Ground Northing (m)	WGS84 Longitude	WGS84 Latitude
22	BP-22/162	272791.756	2193205.872	78°49'50.80926"E	19°49'17.99298"N
23	BP-23/162	272751.461	2193235.750	78°49'49.41188"E	19°49'18.94747"N
24	BP-24/162	272711.861	2193263.140	78°49'48.03724"E	19°49'19.98392"N
25	BP-25/162	272666.698	2193301.789	78°49'46.47097"E	19°49'21.05896"N
26	BP-26/162	272633.913	2193327.705	78°49'45.33330"E	19°49'21.88776"N
27	BP-27/162	272593.376	2193358.180	78°49'43.92729"E	19°49'22.86153"N
28	BP-28/162	272536.523	2193404.353	78°49'41.95390"E	19°49'24.33881"N
29	BP-29/162	272494.814	2193432.293	78°49'40.50876"E	19°49'25.22968"N
30	BP-30/162	272452.870	2193459.469	78°49'39.05586"E	19°49'26.09563"N
31	BP-31/162	272411.156	2193486.888	78°49'37.61077"E	19°49'26.96956"N
32	BP-32/162	272370.288	2193513.496	78°49'36.19510"E	19°49'27.81745"N
33	BP-33/162	272328.923	2193541.158	78°49'34.76190"E	19°49'28.69941"N
34	BP-34/162	272286.844	2193567.850	78°49'33.30458"E	19°49'29.54954"N
35	BP-35/162	272244.794	2193596.255	78°49'31.84750"E	19°49'30.45537"N
36	BP-36/162	272204.089	2193623.620	78°49'30.43705"E	19°49'31.32794"N
37	BP-37/162	272159.626	2193652.263	78°49'28.89699"E	19°49'32.24046"N
38	BP-38/162	272117.881	2193679.972	78°49'27.45068"E	19°49'33.12378"N
39	BP-39/162	272075.732	2193707.952	78°49'25.99036"E	19°49'34.01573"N
40	BP-40/162	272035.139	2193736.512	78°49'24.58323"E	19°49'34.92717"N



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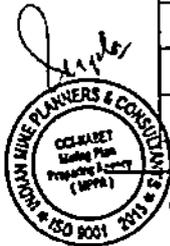
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Geological Vested Block Boundary Coordinates by DGPS WGS_84 System

Sl. No	Point No	Ground Easting (m)	Ground Northing (m)	WGS84 Longitude	WGS84 Latitude
41	BP-41/162	271995.424	2193761.257	78°49'23.20797"E	19°49'35.71496"N
42	BP-42/162	271953.389	2193786.593	78°49'21.75272"E	19°49'35.52100"N
43	BP-43/162	271912.557	2193814.154	78°49'20.33783"E	19°49'37.39987"N
44	BP-44/162	271869.646	2193841.065	78°49'18.85180"E	19°49'38.25672"N
45	BP-45/162	271827.238	2193869.686	78°49'17.38226"E	19°49'39.16938"N
46	BP-46/162	271782.483	2193896.986	78°49'15.83269"E	19°49'40.03811"N
47	BP-47/162	271743.055	2193923.541	78°49'14.46645"E	19°49'40.88432"N
48	BP-48/162	271700.963	2193955.668	78°49'13.00624"E	19°49'41.91160"N
49	BP-49/162	271660.036	2193982.054	78°49'11.58855"E	19°49'42.75220"N
50	BP-50/162	271625.579	2194003.542	78°49'10.39532"E	19°49'43.43629"N
51	BP-51/162	271584.988	2194032.628	78°49'08.98799"E	19°49'44.36478"N
52	BP-52/162	271546.445	2194059.606	78°49'07.65194"E	19°49'45.22563"N
53	BP-53/162	271505.696	2194088.141	78°49'06.23943"E	19°49'46.13618"N
54	BP-54/162	271463.512	2194118.653	78°49'04.77672"E	19°49'47.11034"N
55	BP-55/162	271424.912	2194145.807	78°49'03.43862"E	19°49'47.97688"N
56	BP-56/162	271383.677	2194175.271	78°49'02.00897"E	19°49'48.91739"N
57	BP-57/162	271343.065	2194203.443	78°49'00.60130"E	19°49'49.81616"N
58	BP-58/162	271301.847	2194233.429	78°48'59.17200"E	19°49'50.77366"N
59	BP-59/162	271260.882	2194261.276	78°48'57.75234"E	19°49'51.66171"N



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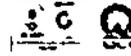




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1971

Geological Vested Block Boundary Coordinates by DGPS WGS_84 System

SL No	Point No	Ground Easting (m)	Ground Northing (m)	WGS84 Longitude	WGS84 Latitude
60	BP-60/162	271228.144	2194286.223	78°48'56.61658"E	19°49'52.45892"N
61	BP-61/162	271261.887	2194323.088	78°48'57.75941"E	19°49'53.67155"N
62	BP-62/162	271295.037	2194361.296	78°48'58.88125"E	19°49'54.92761"N
63	BP-63/162	271328.416	2194398.594	78°49'00.01134"E	19°49'56.15417"N
64	BP-64/162	271354.419	2194429.034	78°49'00.89113"E	19°49'57.15467"N
65	BP-65/162	271372.097	2194449.556	78°49'01.48934"E	19°49'57.82924"N
66	BP-66/162	271394.921	2194493.321	78°49'02.25396"E	19°49'59.26160"N
67	BP-67/162	271415.174	2194532.935	78°49'02.93216"E	19°50'00.55791"N
68	BP-68/162	271433.105	2194588.772	78°49'03.52336"E	19°50'02.38068"N
69	BP-69/162	271437.094	2194621.770	78°49'03.64572"E	19°50'03.45508"N
70	BP-70/162	271441.471	2194673.504	78°49'03.77311"E	19°50'05.13874"N
71	BP-71/162	271425.739	2194720.127	78°49'03.21194"E	19°50'06.64777"N
72	BP-72/162	271418.967	2194744.602	78°49'02.96841"E	19°50'07.44058"N
73	BP-73/162	271398.418	2194823.372	78°49'02.22749"E	19°50'09.99267"N
74	BP-74/162	271418.059	2194898.389	78°49'02.86890"E	19°50'12.43967"N
75	BP-75/162	271452.292	2194949.899	78°49'04.02208"E	19°50'14.12858"N
76	BP-76/162	271486.557	2194973.557	78°49'05.18893"E	19°50'14.91012"N
77	BP-77/162	271512.908	2194980.777	78°49'06.05083"E	19°50'15.15788"N
78	BP-78/162	271562.077	2194995.672	78°49'07.77360"E	19°50'15.66080"N



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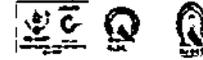
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Geological Vested Block Boundary Coordinates by DGPS WGS_84 System

Sl. No	Point No.	Ground Easting (m)	Ground Northing (m)	WGS84 Longitude	WGS84 Latitude
79	BP 79/162	271635.681	2195008.109	78°49'10.29653"E	19°50'16.09799"N
80	BP-80/162	271681.352	2195026.153	78°49'11.85776"E	19°50'16.70181"N
81	BP-81/162	271758.801	2195050.674	78°49'14.50747"E	19°50'17.53346"N
82	BP 82/162	271808.801	2195061.677	78°49'16.22052"E	19°50'17.91017"N
83	BP 83/162	271858.245	2195070.435	78°49'17.91529"E	19°50'18.21564"N
84	BP-84/162	271909.643	2195079.540	78°49'19.67704"E	19°50'18.53320"N
85	BP-85/162	271961.817	2195086.544	78°49'21.46621"E	19°50'18.78474"N
86	BP-86/162	271986.141	2195132.045	78°49'22.26188"E	19°50'20.27218"N
87	BP-87/162	272012.381	2195176.503	78°49'23.16345"E	19°50'21.73044"N
88	BP-88/162	272038.270	2195212.082	78°49'24.03731"E	19°50'22.89597"N
89	BP-89/162	272074.460	2195259.354	78°49'25.25949"E	19°50'24.44989"N
90	BP-90/162	272082.390	2195308.838	78°49'25.51021"E	19°50'26.05991"N
91	BP-91/162	272087.407	2195355.477	78°49'25.66172"E	19°50'27.58018"N
92	BP-92/162	272105.515	2195405.686	78°49'26.26177"E	19°50'29.21805"N
93	BP 93/162	272122.325	2195454.991	78°49'26.81726"E	19°50'30.82991"N
94	BP 94/162	272143.587	2195441.912	78°49'27.55353"E	19°50'30.41364"N
95	BP 95/162	272181.955	2195411.855	78°49'28.88520"E	19°50'29.45064"N
96	BP-96/162	272218.113	2195376.993	78°49'30.14270"E	19°50'28.33444"N
97	BP-97/162	272254.780	2195343.610	78°49'31.41722"E	19°50'27.26454"N



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Geological Vested Block Boundary Coordinates by DGPS WGS_84 System

Sl No	Point No.	Ground Easting (m)	Ground Northing (m)	WGS84 Longitude	WGS84 Latitude
98	BP-98/162	272307.130	2195299.032	78°49'33.23545"E	19°50'25.83891"N
99	BP-99/162	272341.521	2195264.673	78°49'34.43222"E	19°50'24.73469"N
100	BP-100/162	272374.695	2195231.535	78°49'35.58659"E	19°50'23.67131"N
101	BP-101/162	272413.125	2195194.302	78°49'36.92334"E	19°50'22.47700"N
102	BP-102/162	272447.539	2195162.573	78°49'38.11969"E	19°50'21.45990"N
103	BP 103/162	272482.577	2195127.763	78°49'39.33885"E	19°50'20.34293"N
104	BP-104/162	272504.744	2195105.400	78°49'40.11029"E	19°50'19.62522"N
105	BP 105/162	272543.477	2195073.578	78°49'41.45504"E	19°50'18.60692"N
106	BP-106/162	272583.167	2195040.494	78°49'42.83323"E	19°50'17.54799"N
107	BP-107/162	272621.007	2195008.885	78°49'44.14722"E	19°50'16.53622"N
108	BP-108/162	272659.501	2194976.812	78°49'45.48386"E	19°50'15.50965"N
109	BP-109/162	272699.285	2194944.619	78°49'46.86487"E	19°50'14.47971"N
110	BP-110/162	272739.624	2194909.857	78°49'48.26606"E	19°50'13.36649"N
111	BP-111/162	272777.199	2194878.421	78°49'49.57085"E	19°50'12.36023"N
112	BP-112/162	272815.412	2194847.602	78°49'50.89725"E	19°50'11.37433"N
113	BP-113/162	272853.948	2194815.773	78°49'52.23522"E	19°50'10.35569"N
114	BP 114/162	272892.453	2194785.558	78°49'53.57138"E	19°50'09.38951"N
115	BP 115/162	272938.553	2194749.195	78°49'55.17122"E	19°50'08.22662"N
116	BP 116/162	272965.357	2194724.306	78°49'56.10302"E	19°50'07.42868"N



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Sl. No.	Point No.	Ground Easting (m)	Ground Northing (m)	WGS84 Longitude	WGS84 Latitude
117	BP 117/162	272991.980	2194702.723	78°49'57.02719"E	19°50'06.73814"N
118	BP-118/162	273020.522	2194658.359	78°49'58.02731"E	19°50'05.30781"N
119	BP 119/162	273047.820	2194618.203	78°49'58.98282"E	19°50'04.01377"N
120	BP 120/162	273077.207	2194577.388	78°50'00.01041"E	19°50'02.69917"N
121	BP 121/162	273105.869	2194535.716	78°50'01.01347"E	19°50'01.35641"N
122	BP 122/162	273134.477	2194493.281	78°50'02.01498"E	19°49'59.98879"N
123	BP 123/162	273174.585	2194435.891	78°50'03.41815"E	19°49'58.13983"N
124	BP 124/162	273205.086	2194397.316	78°50'04.48300"E	19°49'56.89850"N
125	BP-125/162	273236.463	2194358.436	78°50'05.57807"E	19°49'55.64762"N
126	BP 126/162	273266.826	2194319.472	78°50'06.63833"E	19°49'54.39360"N
127	BP-127/162	273288.033	2194291.724	78°50'07.37908"E	19°49'53.50036"N
128	BP-128/162	273331.206	2194239.667	78°50'08.88519"E	19°49'51.82602"N
129	BP 129/162	273374.701	2194184.413	78°50'10.40376"E	19°49'50.04787"N
130	BP 130/162	273399.152	2194143.203	78°50'11.26186"E	19°49'48.71834"N
131	BP-131/162	273427.384	2194098.266	78°50'12.25153"E	19°49'47.26923"N
132	BP-132/162	273452.792	2194056.492	78°50'13.14279"E	19°49'45.92117"N
133	BP 133/162	273471.364	2194008.968	78°50'13.80171"E	19°49'44.38453"N
134	BP-134/162	273490.760	2193963.633	78°50'14.48797"E	19°49'42.91881"N
135	BP-135/162	273507.618	2193920.725	78°50'15.08597"E	19°49'41.53088"N



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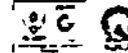
Website: www.impcn.co In E mail:impcn.kolkata@gmail.com





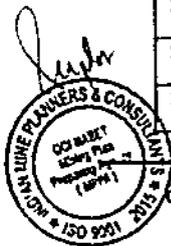
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Sl. No.	Point No.	Ground Easting (m)	Ground Northing (m)	WGS84 Longitude	WGS84 Latitude
136	BP-136/162	273529.283	2193869.794	78°50'15.85264"E	19°49'39.88420"N
137	BP-137/162	273546.076	2193825.855	78°50'16.44889"E	19°49'38.46273"N
138	BP-138/162	273565.487	2193778.179	78°50'17.13668"E	19°49'36.92090"N
139	BP-139/162	273579.578	2193742.779	78°50'17.63632"E	19°49'35.77593"N
140	BP-140/162	273603.262	2193701.464	78°50'18.46811"E	19°49'34.44267"N
141	BP-141/162	273627.896	2193657.418	78°50'19.33374"E	19°49'33.02101"N
142	BP-142/162	273651.316	2193614.111	78°50'20.15733"E	19°49'31.62286"N
143	BP-143/162	273676.207	2193571.317	78°50'21.03121"E	19°49'30.24202"N
144	BP-144/162	273714.713	2193502.052	78°50'22.38445"E	19°49'28.00625"N
145	BP-145/162	273740.341	2193457.632	78°50'23.28435"E	19°49'26.57285"N
146	BP-146/162	273764.874	2193414.110	78°50'24.14622"E	19°49'25.16817"N
147	BP-147/162	273791.104	2193370.084	78°50'25.06664"E	19°49'23.74780"N
148	BP-148/162	273815.864	2193326.788	78°50'25.93622"E	19°49'22.35058"N
149	BP-149/162	273841.942	2193281.357	78°50'26.85202"E	19°49'20.88447"N
150	BP-150/162	273867.316	2193238.450	78°50'27.74250"E	19°49'19.50013"N
151	BP-151/162	273897.951	2193184.698	78°50'28.81851"E	19°49'17.76541"N
152	BP-152/162	273917.962	2193137.906	78°50'29.52644"E	19°49'16.25255"N
153	BP-153/162	273938.590	2193093.295	78°50'30.25463"E	19°49'14.81084"N
154	BP-154/162	273969.389	2193023.069	78°50'31.34346"E	19°49'12.54062"N



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Sl No.	Point No.	Ground Easting (m)	Ground Northing (m)	WGS84 Longitude	WGS84 Latitude
155	BP-155/162	273970.651	2192975.479	78°50'31.40772"E	19°49'10.99402"N
156	BP-156/162	273974.055	2192933.640	78°50'31.54299"E	19°49'09.63526"N
157	BP-157/162	273955.932	2192854.547	78°50'30.95518"E	19°49'07.05644"N
158	BP-158/162	273932.713	2192823.350	78°50'30.17125"E	19°49'06.03261"N
159	BP-159/162	273886.853	2192787.806	78°50'28.61152"E	19°49'04.85802"N
160	BP-160/162	273842.165	2192759.930	78°50'27.08866"E	19°49'03.93322"N
161	BP-161/162	273802.277	2192732.522	78°50'25.73048"E	19°49'03.02563"N
162	BP-162/162	273755.169	2192720.934	78°50'24.11737"E	19°49'02.62934"N

Plan showing the Geological Block boundary & Proposed ML boundary are given in Plate-II & III and Conceptual Plan envisaged in the mining plan depicting OB area, Infrastructure locations and cardinal point co-ordinates of the lease area, block area, project area are shown in Conceptual Plan (Plate-VII)




(Pramod Prasad)

Coordinator (Mining)
Indian Mine Planners & Consultants (MPPA)
Mining Plan Preparing Agency (MPPA)

Certificate No NABET/APA-MPPA/IA/002 dated Jan 13, 2024

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Annexure-3A1



Yazdani
International (P) Ltd
Steering success, anchoring credibility

Annexure-III

Company Board of Directors of Yazdani International Private Limited CIN U13209OR2006PT C009009 having registered office at 7th Floor, C-wing, Fortune Towers, Chandrasekharpur, Bhubaneswar, Odisha-751023, India, the block allottee of Marid Mangli-II Coal Mine as per Vesting Order No NA-104/3/2020-NA dated 3rd March 2021 by the Nominated Authority of Ministry of Coal, Govt of India hereby give the following undertakings and approved as follows.

1. The Mining Plan & Mine Closer Plan of Marid Mangli-II Coal mine (Revision-01) covering an area of 339 467 Ha (Geological Block) located in Wardha Valley Coalfield, Yavatmal district, Maharashtra state prepared by Indian Mine Planners & Consultants, a QCI-NABET accredited Mining Plan Preparing Agency (MPPA) and correctness of data used in preparation of the mining plan has been verified by us
2. Details and eligibility of Indian Mine Planners & Consultants, a QCI-NABET accredited Mining Plan Preparing Agency (MPPA) has been verified
3. Mining Plan and Mine Closure Plan (Revision-01) as prepared by Indian Mine Planners & Consultants, a QCI-NABET accredited Mining Plan Preparing Agency (MPPA) has been accepted by us.
4. Company gives undertakings that the mine will be developed as per the approval of the mining plan from Ministry of coal and all other approvals as required will be obtained from relevant authorities
5. Commitment is given that entire mining operation will be carried out as per the Statutory provision given under Mines Act 1952, Coal Mine Regulation 2017, EP Act 1986 and FC Act 1980 and wherever specific permission will be required the company will approach the concerned authorities
6. Company confirms that entire Progressive and Final activities shall be implemented as per the approved mining plan and mine closure plan by the concerned competent authorities.
7. The Board hereby accepts and undertakes the financial assurance for implementation in accordance with the Approved Mining plan (Including mine Closure Plan) / Final Mine Closure Plan or any financial liability which may be incidental during implementation of MP-MCP due to change in prevailing laws and rules

Corporate Office 7th Floor, C-Wing, Fortune Towers, Chandrasekharpur Bhubaneswar - 751023, Odisha, India
Phone +91 674 6750200 2301897, Fax +91 674 2301898, Web www.yazdaniinternational.com





Yazdani
International (P) Ltd.
Steering success, anchoring credibility

- 8 Company gives undertakings that the reclamation & rehabilitation work shall be carried out in accordance with the approved Mine Closure Plan and any modification/ amendments which may be made in the mine Closure Plan by Ministry of Coal from time to time
- 9 Company give undertakings that the protective measures contained in the mine closure plan including mine closure plan, reclamation and rehabilitation works will be carried out in accordance with the approved mine closure plan and final mine closure plan and undertake to submit a yearly report before 1st July of every year to the Coal Controller setting forth the extent of protective and rehabilitative works carried out as envisaged in the approved mine closure plans (Progressive and Final Closure)
- 10 Company gives undertakings that they will obtain a mine closure certificate from Coal Controller to the effect that the protective, reclamation and rehabilitation works carried out in accordance with the approved mine closure plan/final mine closure plan and will surrender the reclaimed land to the State Government concerned

For and on behalf of the Board of Directors of Yazdani International Private Limited

Authorized Signatory

Maraj Yusha

Name Maraj Yusha

Designation Managing Director



Corporate Office 7th Floor, C-Wing Fortune Towers Chandrasekharpur, Bhubaneswar - 751023, Odisha India
Phone +91 674 8750200 2301897, Fax +91 674 2301898, Web www.yazdaniinternational.com



Annexure 4

No. 130169/2004-CA-I
Government of India
Ministry of Coal

New Delhi, dated 31st January 2008

To

M/s. Dhruv Virogana Steel Ltd.,
Office No. 126-121,
1st Floor, Shriam Tower,
Kingsway, Salar,
N. NUT Office,
District - 412 001.

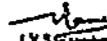
Subject: Approval of Mining Plan for Marli-Mangli coal Block II, III & IV
Tahsil-Thari-Jamal, Tahsil-Ward, Dist.-Yavatmal, Maharashtra.

It:

I am directed to refer to your letter No. SVSL/MQZ/2007/20184 dated 01.01.2007 and No. SVSL/MQZ/2007/2007/009 dated 07.04.2007 submitting mining plan for Marli-Mangli coal block II, III & IV for approval of the Central Government and to state that the mining plan for Marli-Mangli coal block II (December, 2006) to be read with compliance report (May, 2007), Marli-Mangli coal block III (February, 2007) and Marli-Mangli IV (March, 2007) to be read alongwith compliance report (August, 2007) of Marli-Mangli III & IV) of M/s. Dhruv Virogana Steel Ltd., has been considered and the approval of the Central Government thereon is hereby conveyed under Section 3 (1) of the Mines & Minerals (Development & Regulation) Act, 1927 subject to the following condition:-

- 1. The mining company shall take all necessary precautions regarding safety of mine workings, persons employed therein.
- 2. The approval of the mining plan is without prejudice to the requirement of approval from competent/prescribed authority under the relevant regulations etc.
- 3. Two copies of the approved mining plans duly signed by the competent authority are retained herewith with the request that a copy of the approved mining plan may be submitted to the concerned S.A.S Government for necessary action and also a photocopy of the approved mining plan may be sent to the Coal Controller for monitoring of the block.

Yours faithfully

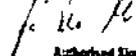

(V.S. Ghose)

Under Secretary to the Gov. of India.

Encls. As above.



TOPWORTH URJA & METALS LTD.


Authorized Signatory

133



Annexure 6



bharatkos v.i
Government of India Receipt Portal

RECEIPT

Transaction Ref No 0507220007000

Dated Jul 5 2022 12 01PM

Received from M/S YAZDANI INTERNATIONAL PVT LTD with

Transaction Ref No 0507220007000

Dated Jul 5 2022 12 01PM the sum of INR 84967 (Eighty-Four Thousand Nine Hundred Sixty-Seven Only) through Internet based Online payment in the account of

Coal and Lignite.

Disclaimer- This is a system generated electronic receipt, hence no physical signature is required for the purpose of authentication

Printed On 07-07-2022 04 46 51

Courtesy: Controller General of Accounts



Annexure 7

TO WHOM IT MAY CONCERN

The Mining Plan & Mine Closure Plan of MARKI MANGLI II COAL MINE Coal Mine formulated by Mining Plan Preparing Agency INDIAN MINE PLANNERS AND CONSULTANTS QCI Number- NABET/APA-MPPA/IA/002 Dated 28-01-2021 which was sent for expert review to Mining Plan Preparing Agency-Min Mec Consultancy Pvt Ltd QCI Number- NABET/APA-MPPA/IA/004

The Mining Plan & Mine Closure Plan of MARKI MANGLI II COAL MINE Coal Mine has been review from Technical and administrative angle and has found to be prepared in line with the guideline for formulation processing, scrutiny and approval of Mining Plan and Mine Closure Plan circulated vide OM dated 29th May 2020. The subject mining plan is found to be in order and is recommended for consideration of the Approving Authority for approval.

Digital Signature



Min Mec Consultancy Pvt Ltd

A-121 Paryavaran Complex

IGNOU Road

New Delhi, 110030

NABET/APA-MPPA/IA/004

9811030881



Additional Annexure-8

F No.NA-104/3/2020-NA
Government of India/ भारत सरकार
Ministry of Coal/ कोयला मंत्रालय
O/o Nominated Authority / नामनिर्दिष्ट प्राधिकारी का कार्यालय

R.No 120- 1st Floor, F-Wing
Shastri Bhawan, New Delhi,
Dated 07th March, 2022

To,

Shri Meraj Yusha,
Managing Director,
Yazdani International Private Limited,
Office Address 7th Floor, C-Wing, Fortune Towers,
Chandrasekharpur, Bhubaneswar,
Odisha - 751023, India
Email. meraj@yazdaniinternational.com

Subject. Revised Mining Plan and Mine Closure Plan of Marki Mangli-II
Coal Mine - reg

Ref. Letter of even no dated 14.02.2022 from O/o NA (enclosed)

Sir,

This is in reference to the letter dated February 14, 2022 from the O/o Nominated Authority and subsequent communication received from M/s Yazdani International Pvt Ltd vide letter dated February 24, 2022, you are hereby informed that since the statutory clearances are needed to be obtained afresh by the allocatee, the efficiency parameters for coal mines other than Schedule-II coal mines would be applicable for the Marki Mangli-II Coal Mine. The same has been placed at Annexure

Yours faithfully,



(Manish Uniyal)
Under Secretary to the Government of India
Tel 011-23384106



ANNEXURE I: EFFICIENCY PARAMETERS

For Coal Mines other than Schedule II coal mines

Activities	Completion time	Milestone (MS) No.	% of Performance Security to be appropriated for delay in completion of MS
Prospecting Licence or Notification under section 4 of the CBA Act, 1957, as applicable	-	MS-1	Not Applicable
Completion of Drilling/ Exploration in accordance with the provisions of Clause 14	-		
Preparation of Geological Report (GR)	Within 15 months from the date of allocation		
	After 15 months upto 24 months from the date of allocation		
	After 24 months upto 30 months from the date of allocation		
Mining Lease Application	-	MS-2	-
Submission of Mining Plan subject to the provisions of Clause 15	-		-
Approval of Mining Plan/Project Report subject to the provisions of Clause 15	6 months from the completion of previous MS/ If MS-1 is not applicable, 6 months from the date of allocation		10%
Forest Clearance Application	-		-



Environment Clearance Application	-	MS-3	-
Forest Clearance (FC)-stage 1	-		-
Forest Clearance (FC)-stage 2	-		-
Wildlife Clearance	-		-
Approval under PESA	-		-
Environment Clearance (EC)	18 months from the completion of previous MS		10%
Approval for Nallah /River Diversion	-	MS-4	-
Approval for diversion of Power line/Rail/Road	-		-
Permission to draw Water	-		-
Permission to draw Power	-		-
Consent to Establish /Operate	-		-
Grant of Mining Lease or order by the Central Government under section 11 of CBA Act, 1957, as applicable	-		-
Land Acquisition & possession of land and R&R required to reach rated capacity as per approved mining plan	21 months from the completion of previous MS		25%
Intimation to DGMS for Mine opening	-	MS-5	-
Approval for use of Explosive & Licence for Storage of Petroleum	-		-
Permission under Factories Act, 1948	-		-
Permission for use of Radio Frequency Communication System	-		-
Labour related	-		-



Estimated amount	-	-
Application for Opening permission	-	-
Mine Opening Permission	6 months from the completion of previous MS	25%

Note:

- 1 Only the activity within the Milestone Number, against which percentage of appropriation of performance security has been assigned in the last column ('Main Activity'), will be monitored for the purpose of appropriation of performance security.
- 2 Activities other than Main Activity, against which percentage of appropriation of performance security has not been assigned, will be monitored for the purpose of early development of mines. However, in case of default in such activities, penalty will not be imposed.
- 3 The completion time provided for the Milestones does not bar the successful bidder from obtaining clearances concurrently, if allowed under the Applicable Laws.
4. In *bona fide* cases of delays not attributable to the Successful Bidder the Nominated Authority will decide on case to case basis the extension of timeline in Efficiency Parameters from the total time granted for all the Milestones, i.e. 66 months in case of mine where GR is to be prepared (Partially Explored Mines) and 51 months in case of mines where GR is not required to be prepared (Fully Explored Mines). For the said purpose, the Nominated Authority may refer the matter to Scrutiny Committee which will consider the delay caused on case to case basis and furnish its recommendation to the Nominated Authority for taking a decision.
- 5 For Partially Explored Mines, appropriation for delay in completion of MS-1 and MS-2 shall be from the performance security submitted pursuant to clause 6.1.3 of the Agreement and appropriation for delay in completion of remaining milestones shall be from the revised performance security submitted pursuant to the said clause.
- 6 If the Successful Bidder is able to complete the last Milestone (i.e. Mine Opening Permission/ MS-5) within the total time granted for all the Milestones, i.e. 66 months in case of mine where GR is to be prepared (partially explored mines) and 51 months in case of mines where GR is not required to be prepared (fully explored mines), then the amount of performance security appropriated for delay in completion of any previous Milestone (if any) may be refunded to the Successful Bidder.



Additional Annexure-9

Annexure-XII

MARKI MAHOLI II OCP (0.3 MTY)									
Power & Energy Balance for the Loads of Marki Maholi II OCP									
		kW		kWh		kVA		MVA	
A	DB								
	Total (DB)	0.00	0.00			0.00	0.00	0.00	0.00
B	COAL								
1	CHP	700.00	700.00	0.70	0.70	140.00	147.00	700.00	0.80
	TOTAL (COAL)	700.00	700.00			140.00	147.00	700.00	
C	CONCRETE								
1	Workshop	470.00	470.00	0.47	0.40	470.00	300.00	464.47	1.33
2	Pumping	170.00	470.00	0.60	0.80	336.00	717.00	470.00	7.43
	80 gpa x 120 m hd main pump (2) 1 p- 150 kw each, 80 gpa x 80 m hd slurry pump (2 nos- 80 kw) each								
3	Quarry (1 nos)	400.00	300.00	0.40	0.40	710.00	133.50	400.00	1.44
4	Others (Lighting & Others)	30.00	240.00	0.30	0.30	72.00	106.71	250.00	1.15
b	Maintenance loads	200.00	200.00	0.80	0.80	160.00	170.00	200.00	0.80
	TOTAL (CONCRETE)	1970.00	1970.00			1991.00	617.21	1642.97	
	TOTAL (A+B+C)	2970.00	1970.00			1531.00	1053.21	1642.97	
	Total main 11 kV (Overhead) Supply	2970.00	1970.00			1279.83	877.71	1548.94	
	After incorporating losses & safety margin	3178.84	1778.08			1278.84	946.57	1361.87	7.10
	Transformer Selected 2 x 1.5 MVA, 33/0.6 kV						617.21		
						2 nos (1 p 1011)	Capacity 1.5 MVA	1 nos	0.8



Additional Annexure-10

Annexure 10

List of PC, TAE and TM in the preparation of Mining Plan & Mine Closure Plan

- 1 Mr P P Gupta (IH), Project Coordinator
- 2 Dr N B Chanda (IH), TAE-ESH
- 3 Mr B N Basu (IH), TAE-ME
- 4 Mr D Bhadra (IH), TAE-CEM
- 5 Mr A Chattopadhyay (EMP), TAE-CEM
- 6 Mr A Choudhury (EMP), TAE-CEM
- 7 Mr H K Sinha (EMP), TAE-SUR
- 8 Mrs Bipasa Banerjee (IH), TAE-MG
- 9 Mrs Monika Sarkar (IH), AutoCAD Drawings



Additional Annexure-11

Annexure-11

Observations made by Expert/Peer Reviewing MPPA(Min Mec) and Compliance of the same by Mine Plan Project Proponent/Consultant(MPCON) to Project Proponent

Item/Ref	Observations/Comments/Feedback by Expert Reviewing Agency(ERA)	Action	Compliance by PP/Consultant MPPA
1.2.4	I) A. Average annual rainfall is 1135.7 mm in monsoon season lasts from mid June to mid September. Pts check whether there will be full stop in place of "in" B) highest flood level (HFL) of the seasonal nala may be.	Approve	Remarks complied
Plate-1	a. State map showing Districts. Should also show other districts besides YAVATMAL. b. India map showing States. Should also show other states besides Maharashtra. c. Direction North may be marked.	Approve	Complied.
1.4.6	Non operational as per 1.4.6 but it is written that Mine is an operational mine under para 3.1.2. May be reconciled.	Reject	Mine is non operational since 2014 and suitably modified in chapter 3.
1.5.9	Two seams Top and Bottom mentioned in Para 2.2.2. All the seams mentioned in GR shall be mentioned under para 1.5.9.	Approve	Complied
1.5.10	Seam Top written under column Seam though Seam Bottom is written under column Reason.	Approve	Seems to be portal issue necessary correction made in inputs.
1.5.11	1.5.11 & 1.5.12 The Geological Block area and geological block area project used were less in AMP than present proposal, how does the Gross Reserve and Net Reserves are same in AMP and present proposed MP?	Reject	Net geol. reserve taken 90% of gross GR applicable for AMP and RMP.

2.2.5	Area to be mentioned in Sq Km	Approve	Complied
2.2.11	Two seams Top and Bottom mentioned in Para 2.2.2. All the seams mentioned in GR shall be mentioned.	Approve	Complied
2.2.14.1	Seam Bottom may be mentioned also and Reason not considered for mining for seam bottom is to be written against seam bottom.	Approve	Complied part is portal issue.
Plans/Plates	I) Plate-3A BHs and block boundary may be removed, only ML boundary may be kept. Keep bounding coordinates as such. II) Plate-3B Show only Project boundary and coordinates. Keep bounding coordinates as such. III) Plate-3C Show only Block boundary and coordinates. Keep bounding coordinates as such.	Approve	complied
Plans/Plates	Plate-4 Nothing may be shown outside the project boundary. Pit boundary Dumps, Facilities etc may be shown.	Approve	Complied
Plans/Plates	Plate-5A1 Title may be retained only "Geological Plan"	Approve	Complied
Plans/Plates	Plate-10A1 Some stray lines are there. Only floor contours, Faults and BHs no. may be retained, the other lines to be deleted.	Approve	Complied
Plans/Plates	Plate-11 Only longitudinal section is given. Cross sections along dip also may be given.	Approve	Complied
Plans/Plates	I) Plate-2A Bore Holes and their coordinates Table given. BH and their coordinates Table not required. Pit boundary Dumps, Facilities etc may be shown in Index only. Block boundary is mentioned. It may be Block/project ML boundary.	Approve	Complied



3 1 2	I Under heading 'Proposed method of mining' gradient of seam is to be corrected as 6° 12' II Parameters under heading 'Mining System' a. Coal seam thickness mentioned as 1.60-7.35, though under para 2.2.2 & 2.2.14 it is 0.4-8.35 Pls correct. b. No. of Faults written as 4 though under para 2.2.2 F1-F9 nine faults are mentioned pls check. c. Please relook figures of 'Excavation area at surface' Mineable Reserve Extractable reserves 'OB' 'SR' 'Life' etc of the table and reconcile in line with figures mentioned at other paras III Under heading 'Mineable Reserve' the mineable and extractable reserves are 10.19 m3 and 9.68 m3 to be corrected as 'MT' IV Bench height For OBR (2.5 m3 Hyd. Shovel) 10-12m. Please review if it will be 8-10m	Approve	The corrected table reprocessed
Plans/Plates	Plate-13 Title is "Total excavation Plan" May be changed to "Total Coal, O B Ratio Plan"	Approve	Complied
6 1 2	129.49 Ha 'Agricultural land' should be booked under 'Plantation' in line with table under para 8.1.2 Pls reconcile	Reject	It has been proposed to do plantation in the reclaimed area or other area which shall be developed to agricultural land at the end use
6 1 3	Surface features over the block area may be mentioned and not only about the diversions.	Approve	Complied
Plans/Plates	Plate-9 Nothing may be shown outside the project boundary Title may be 'Tentative Land use Plan'	Approve	Complied
Post Closure	Technically reclaimed land is less than degraded land	Approve	Complied (typo error)
8 1 2	6.059 Ha Forest land return is mentioned in Y-5, if it is Safety zone area, it shall be returned to forest department only after mine closure period	Reject	Complied

8 10 3	87.06 M3 is mentioned in progressive and in post closure period also, pls relook.	Approve	Corrected suitably
8 10 2.2	WPI for May-2022 Provisional is adopted March-22 final maybe considered for escrow calculation	Reject	Present escrow amount is tentative based on prevailing WPI (prov) Mo C directs to update even at approval stage and actual escrow amount shall be on base date of opening
Annexure / Plate	Plate-20 Reclamation Plan has been put here - It should be replaced by Post Mining Land use Plan with relevant Tables	Approve	Complied
Annexure / Plate	Plate-21A to 21D a. Road Road connecting Pit mouth to Stack/ CHP facility not shown b. Haul Road - Upto Dump top may be shown c. Surface Contours May not be shown within excavated area d. Benches Finishing may be done	Approve	Complied
Annexure / Plate	Plate-21E Reclaimed /Planted area may also be shown	Approve	Complied
Annexure / Plate	Plate-22 - Forest area returned is not marked on Plate The Table shows Forest returned in 5th year Pls check if it will be returned in Post Closure Stage Technically reclaimed land is less than degraded land in Table	Approve	Complied
Plate	Plate-23 - It seems to be same plan as Plate 14	Approve	Noted and modified Plate 23 has been renamed and uploaded as Dump Plan



Plate	Plate nos. I, II, III etc. Should be 1, 2, 3 etc. in Monogram/ Emblem	Approve	All the plans have been revised as suggested
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(PC MPPA-IMPCON)



Additional Annexure-12

Annexure 12

Compliance of Observations of Hon'ble Scrutiny Committee Mine Plan & Mine Closure Plan of Marki MangD-JI Coal block (Application APP00210)

Sl No	Parameters	Final Observation Details	Reply/Compliance
INPUT SHEET			
6	a. Targeted capacity b. Peak rated capacity (150% of the rated capacity)	Rated capacity and Peak capacity shall be furnished	In the input sheet the rated capacity and peak rated capacity have been furnished on portal, seems to be portal issue (Snap shot of para is as below)
11	Chapter 1 Project Information		
139	Cardinal Points co-ordinates of the Block boundary	The table shall be as per the format given in the guidelines.	Revised table of the cardinal points as per guidelines has been uploaded
146	Likely date of mining operations, if operations not yet started & reasons for non-commencement of operations	Has the stated coal excavated and overburden removed certified by any authority?	Yes The production in the mine started in the year 2013-14 by the previous allocatee i.e. M/s Shree Virangana Steels Ltd. The mine was operational till 2014. The coal and OB production from the mine was 0.10 Mtpa and 0.42 MCUM respectively. The subject Coal and OB production from the mine have been certified by Ministry of Coal. In

151	Block Area in Ha	Geological Block area has increased as compared to the Earlier approved mining plan? To be explained	the mine dossier received at the time of bidding As per approved Mining Plan geological block area mentioned is 330.70 Ha. However prior to issuance of vesting order MoC has provided a file named Mine Cardinal Points to the project proponent through which the coordinates of the block cardinal points as well as block summary was available. Subsequently DGPS survey has been carried out based on the boundary co-ordinates provided by MoC and it has been found that the block area is 339.467 Ha (~3.4 sq km as per block summary document)
2.1 DETAILS OF THE BLOCK			
2.2.12	Seams not considered for Mining with reasons	Seam Folio plan and floor contour plan of Bottom Seam shall be furnished (if present in the GR)	Bottom Seam is impersistent and intersected in only 3 borsholes, in GR no seam folio and floor contour plan of bottom seam have been made/available
3.1 MINING METHOD			
3.1.2	Proposed method of mining with justification with justification on suitability of method of mining	(a) Sand from OB has been proposed to be mined. It shall be noted that necessary approvals/ permissions regarding extraction/ processing/ other details of sand extraction from OB shall be taken from the competent authority (as per statute). (b) Height of top soil dump to be specified.	a) The Project proponent shall comply all the prevailing statutory clearances/ permissions and approvals as required during actual implementation of the proposed scheme of sand from OB. b) The height of top shall be 3m for single tier and 6m for two tier maximum. This has also been



		<p>(c) Observations made by Accredited MPPA and point-wise compliance done by the project proponent, during Expert Review shall be furnished</p> <p>(d) The project proponent shall submit an undertaking that the mine shall be operated as per the Environment Clearance (EC) & Forestry Clearance (FC) for the project (refer Para 116 of the Guidelines for preparation of Mining Plan of MoC dated 29.05.2020)</p> <p>(e) The company board shall give financial assurance for implementation (refer Para III Annexures of the Guidelines for preparation of Mining Plan of MoC dated 29.05.2020)</p>	<p>mentioned at para 3.1.2 (appearing just before text of 3.1.3 para of the report).</p> <p>c) The observations/feedback made by Expert Reviewing MPPA has been compiled online in swcs portal. The captured para wise observations/feedback and compliance made thereon by the Project Proponent and its MPPA consultant is now being annexed as Annexure-11</p> <p>d) The undertakings required as per guideline is covered in Annexure 3A1 under item 5 of the Board's resolution which is already uploaded in the portal.</p> <p>e) The contents of the para-III Annexure of guideline have been fully covered and committed for compliance (Refer item 6,7,8 and 9 of the Board's resolution) which is uploaded as Annexure-3A1</p>
3.1.11	Whether negative proving for coal/firnite in the proposed site for OB dump/infrastructure has been done	Parameters should be according to the guidelines. To be corrected	Yes OB dumping has been proposed in the non coal bearing area and falls within the allocated block area lying beyond the incrop of the workable seam. Four boreholes MK 13 14,25 36 have been drilled beyond the

			<p>incrop of the bottom most base Seam. Moreover exposures of Lameta beds in the west, also confirm the non-coal bearing nature of the zone. The geological Report has been prepared by Directorate of Geology and Mining Department, Maharashtra State conforming the non coal bearing area within the geological block and proposed lease area. With reference to the Geological Plan (Plate-5) and Conceptual Plan (Plate- 8) It can be seen that the proposed OB dump and infrastructure area are falling in non-coal bearing zone beyond the incrop of both the coal seams. The lithology of all the above four boreholes are provided in plate no- 6A, 6B.</p> <p>It is further proposed that during actual mine operation and making access to the seam few shallow bore holes shall be drilled for exact delineation of coal seam incrop.</p>
4.1	<p>Safety Management</p> <p>Important safety aspects: Major Risks and uncertainties to the project viz. Proximity to river adjacent working, go-mining disturbances, slope stability and remedial measures suggested. It should also include proposed overall</p>	<p>(a) Timeline for HFL determination of nala to be specified? All safety precautions shall be taken against inundation</p>	<p>(a) This is a seasonal nala originating from north out side of block where no HFL is available. During mine opening in 2026 and topographical survey of mine area by the project, proponent shall mark/demand and cooperate the authority for such determination of HFL in the diverted</p>



<p>slope of the quarry and OB dump dump height, strata control, fire and spontaneous heating gas monitoring disaster management, danger from inrush of water etc.</p>	<p>(b) Nala diversion route and safety precaution taken against inundation to be elaborated /shown on plan</p>	<p>route All statutory precautions as required under Coal Mines Regulation 2017 and other statutory provisions shall be complied and have been suitably addressed in the para 4.1.1 of Safety Chapter. The said para is further supplemented with this compliance.</p> <p>(b) The Nala diversion route has been shown in all relevant plans of the mining plan.</p>
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Additional Annexure-13

ANNEXURE 13

COMPLIANCE TO THE OBSERVATIONS OF THE INTERNAL COMMITTEE ON MINUTES OF MEETING OF VIDEO CONFERENCE DATED 10-08-2022 FOR APPROVAL OF MINING PLAN MINE CLOSURE PLAN OF MARKI MANGLI-II COAL MINE (APP00210) OF M/s YAZDANI INTERNATIONAL PRIVATE LIMITED

A. After due deliberation the Mining Plan & Mine Closure Plan (Application No APP00210) was recommended for additional clarification from the project proponent.

ITEM	OBSERVATIONS	COMPLIANCES
1	Annexure 3A1 Company Board approval shall specify Financial Assurance for implementation (refer Parameter III Annexures of the of the Guidelines for Preparation, Processing Scrutiny Approval and Revision of Mining Plan for the Coal and Lignite Blocks of MoC circulated vide OM F No. 34011/28/2019-CPAM dated 29.05.2020	The updated Annexure 3A1 covering the para of "financial Assurance for implementation is being appended and uploaded as compliance
2	Table 8.10.1 (a) Under Progressive Mine closure 50 mm ³ has been proposed under Filling of Void- rehandling of Crown dump and 87.06 M Cum have been considered under "Waste Management" These shall be explained/ corrected (b) Under Corpus RR 15 Cr Expenditure has been proposed This shall be explained/ corrected (In this regard it shall be noted that in Para 2.3 of the Guidelines for Preparation, Processing Scrutiny Approval and Revision of Mining Plan for the Coal and Lignite Blocks of MoC circulated vide OM F No 34011/28/2019-CPAM dated 29.05.2020 it is stated that "where the backfilling of the mine void is being carried out as part of regular mining operations, it shall not be included in the list of progressive mine closure activities. However in case where the backfilling of mine voids to be carried out specifically for closure of the mine quantum of such	(a) Provisioning of 50 mm ³ proposed under Filling of void -rehandling of Crown Dump and 87.06 mm ³ "Waste Management under Progressive Mine Closure at para 8.10.1 was reconciled and rectified in line with the extent provisions made in para 2.3 of the Guidelines for preparation Processing Scrutiny Approval and Revision of the Mining Plan for the Coal and Lignite Blocks of MoC circulated vide OM F No 34011/28/2019-CPAM dated 29.05.2020 Provisioning of 50 mm ³ proposed under Filling of Void-rehandling of Crown dump and 87.06 mm ³ under Waste management has been incorporated as a part of Post Mine Closure activities. (b) A provisioning of Rs 15 Cr under RR has been

overburden and the mine closure fund earmarked for the purpose must be included in the list of activities to be taken up for mine closure in the mining plan)	incorporated for financial assistance post closure of mine for people likely to be affected directly or indirectly as a part of initiative of Govt. of India for Just Transition Policy This provisioning has been made under the head Post Closure activities
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Additional Annexure-14

Annexure-14

Compliance of the Observations of the Internal Committee constituted under MMDR Act 1957 for approval of Mining Plan / Mine Closure Plan was held on 30/08/2022 through Video Conference (VC) to consider Mining Plan and Mine Closure Plan for MARKI MANGLI II COAL MINE of M/s YAZDANI INTERNATIONAL PRIVATE LIMITED

Following members of the Internal Committee attended the meeting

- 1 Shri Joginder Singh, OSD Member
- 2 Shri MARAPALLY VENKATESHWARLU Director Technical, Member
- 3 Shri. AJITESH KUMAR, Deputy Secretary (NA), Member

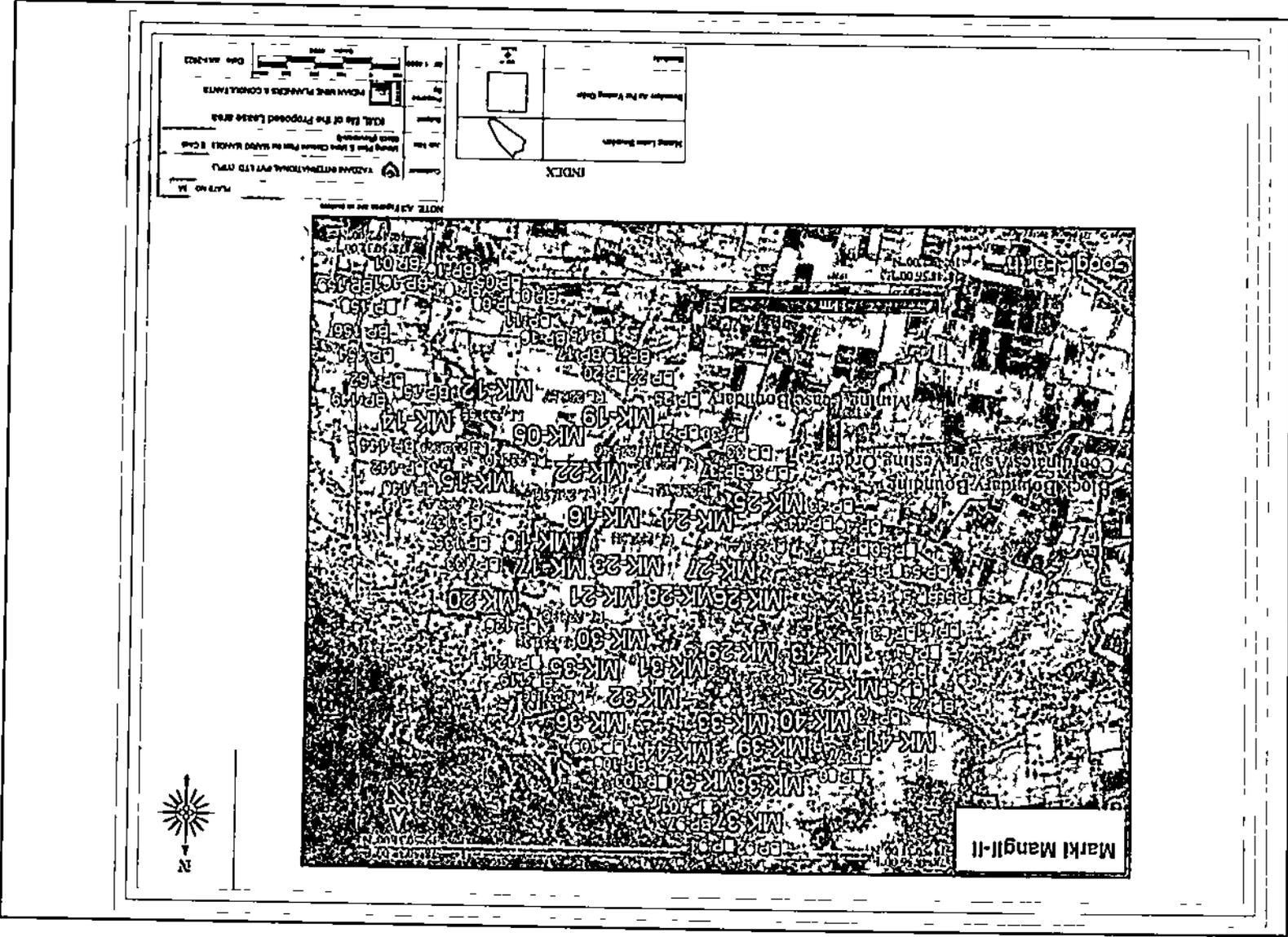
After due deliberation the Mining Plan & Mine Closure Plan (Application No APP00210) was recommended for additional clarification from the project proponent.

The compliance of observations are given as below

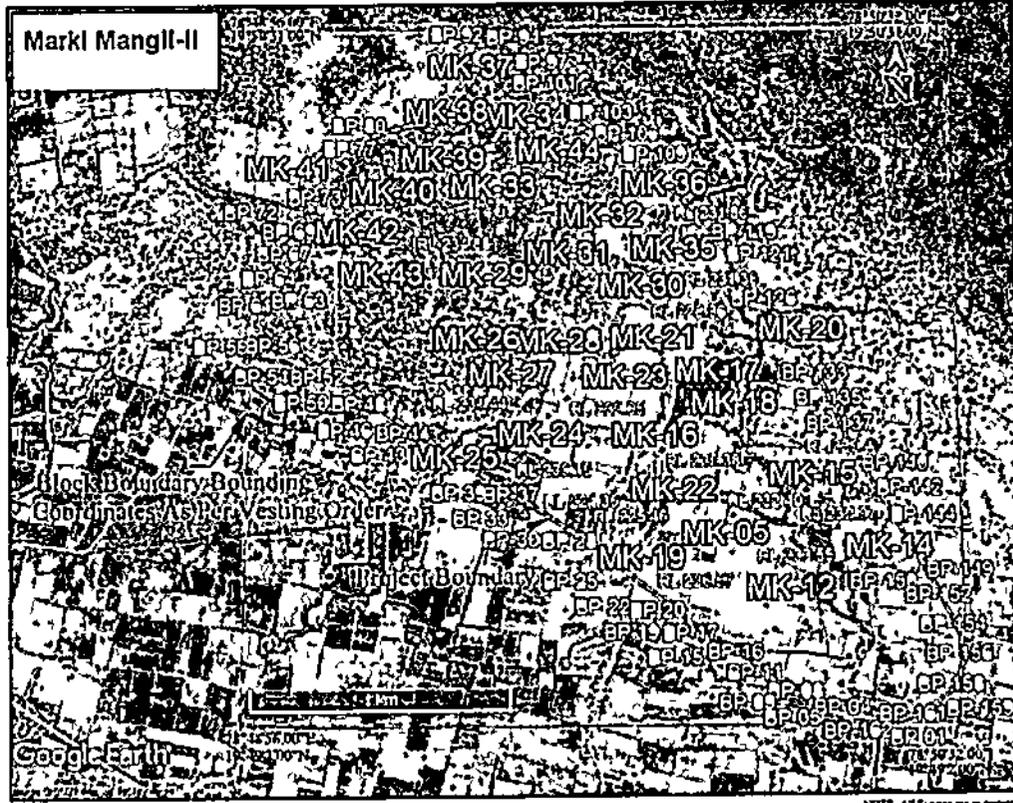
Sl No	Observations	Compliance
1	It is observed that compliance to the following clarifications communicated vide MoM of Internal Committee for approval of Mining Plan and Mine Closure Plan held on 10.08.2022 through VC to consider Mining Plan and Mine Closure Plan (First modification) for Marki Mangli II Coal Mine have not been done by the project proponent:	It is submitted that the Compliance of the observations of Internal committee held on 10.08.22 communicated vide MoM has been submitted and uploaded as annexure-13 for kind consideration. However as advised in the observations and communicated vide this MoM of the Internal committee held on 30.08.22 is being submitted a fresh with explanation and corrections in the relevant portions of the table and annexure for further kind consideration and approval.
	Table 8.10.1 (a) Under Progressive Mine closure 50 mm ³ has been proposed under 'Filling of Void- re-handling of Crown dump and 87.05 M ³ cm have been considered under 'Waste Management' has been proposed. These shall be explained/ corrected (In this regard it shall be noted that in Para 2.3 of the Guidelines for Preparation, Processing, Scrutiny Approval and Revision of Mining Plan for the Coal and Lignite Blocks of MoC circulated vide	a) The quantity of 50mm ³ earlier proposed for 'Filling Void-re-handling of crown dump Taking the note of observations of the Hon'ble committee members and prevailing guidelines O.M F No. 34011/28/2019-CPAM dated 29.05.2020 the activity is now placed as 'Waste management' activity

	OM F No. 34011/28/2019-CPAM dated 29.05.2020. It is stated that "where the backfilling of the mine void is being carried out as part of regular mining operations, it shall not be included in the list of progressive mine closure activities. However in case where the backfilling of mine voids to be carried out specifically for closure of the mine quantum of such overburden and the mine closure fund earmarked for the purpose must be included in the list of activities to be taken up for mine closure in the mining plan" (Note: The activities/ parameters along with the quantity and timing shall be in accordance with the stage plans/ excavation schedules envisaged in the mining plan. The related bar chart shall also be modified/ corrected)	at Post closure stage where quarry void of 125 m depth(max) shall be backfilled with existing waste (internal) dump and about 50 mm ³ of waste will required be handled by dozing and grading as post closure activity so that the depth of Void(water body) shall reduce to be about 30m or with statutory permissible safe depth. Since transportation of waste is not involved, a nominal provision of @ 2.5m ³ has only been considered for the same Earlier 87 05mm ³ of waste considered under 'waste management' has been relooked and now assessed that only 30 mm ³ of waste will be required to be rehandled and dozed from the internal dump to maintain permissible height of the backfilled area as a Progressive mine closure activities -Waste management. The provision @ 2.5m ³ has been made, and figures have been accordingly corrected/modified The related bar chart(Annexure-6) has been suitably corrected and modified
	(b) Under Corpus RR. 15Cr expenditure has been proposed. This shall be explained/ corrected (Note: The expenditure proposed shall be according to the list of activities/ parameters as shown in table 8.10.1 Appendix-4, of the Guidelines for Preparation, Formulation, Submission, processing, Scrutiny Approval and Revision of Mining Plan for the Coal and Lignite Blocks of MoC circulated vide OM F No. 34011/28/2019-CPAM dated 29.05.2020.) The project proponent shall make desired changes in the mining plan and upload on SYCS portal for further processing	(b) Considering the prevailing guidelines and observations of the Committee figures have been relooked and corrected. The provisions meant for miscellaneous activities for the people who will be directly or indirectly affected due to operation and closure of mine and other unforeseen reasons, now the financial provision is made to take care of the same and the activities enlisted in the head "Other" of table 8.10.1 of the guideline. The total provision in this head now works out to Rs 13 Cr. After incorporating the modification and correction as mentioned above the mining plan along with this compliance Annexure-14 being uploaded for further kind consideration and approval.





Plan / Plate 3B (Project Area)



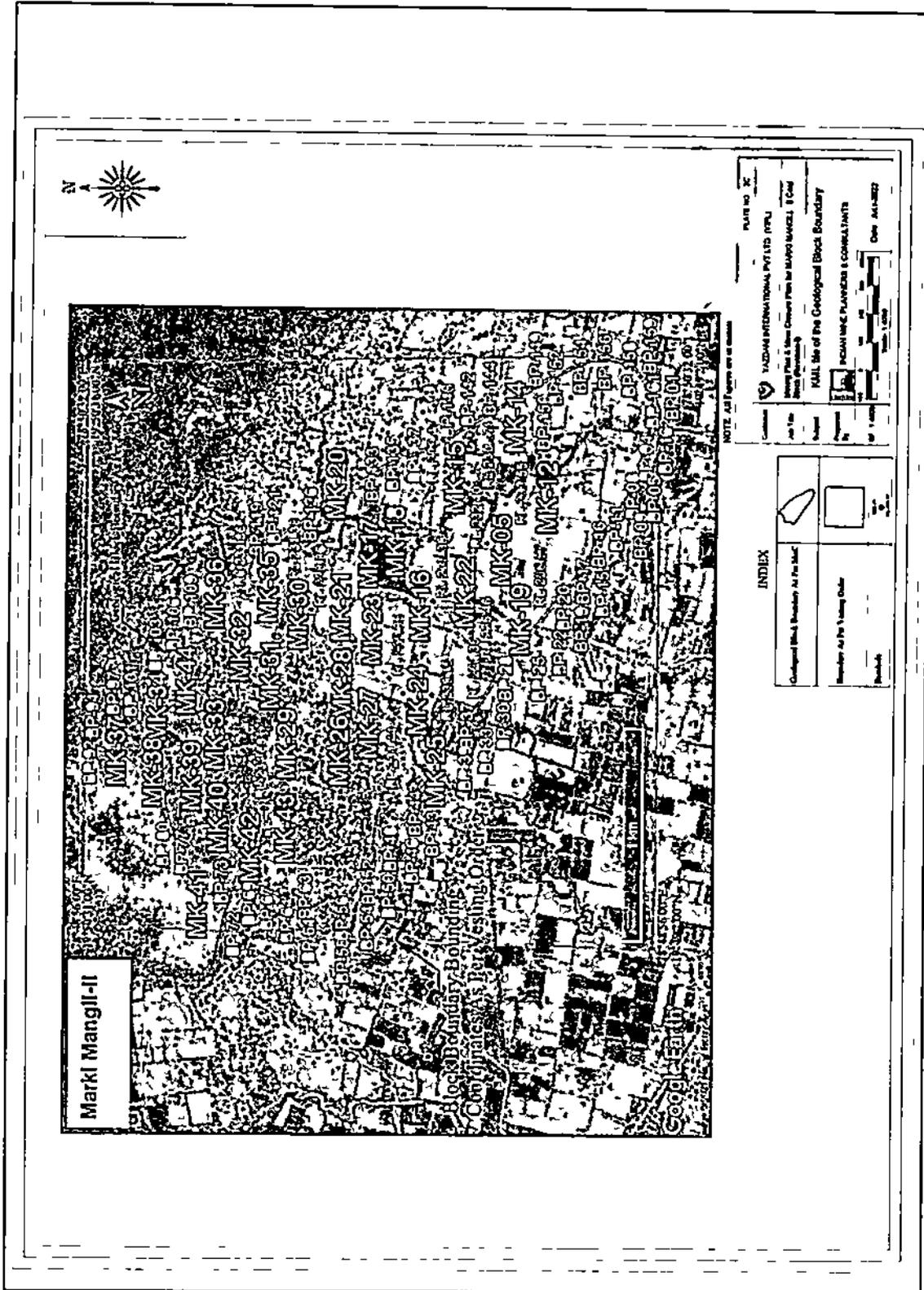
NOTE: All Figures are in meters

PLATE NO. 3B

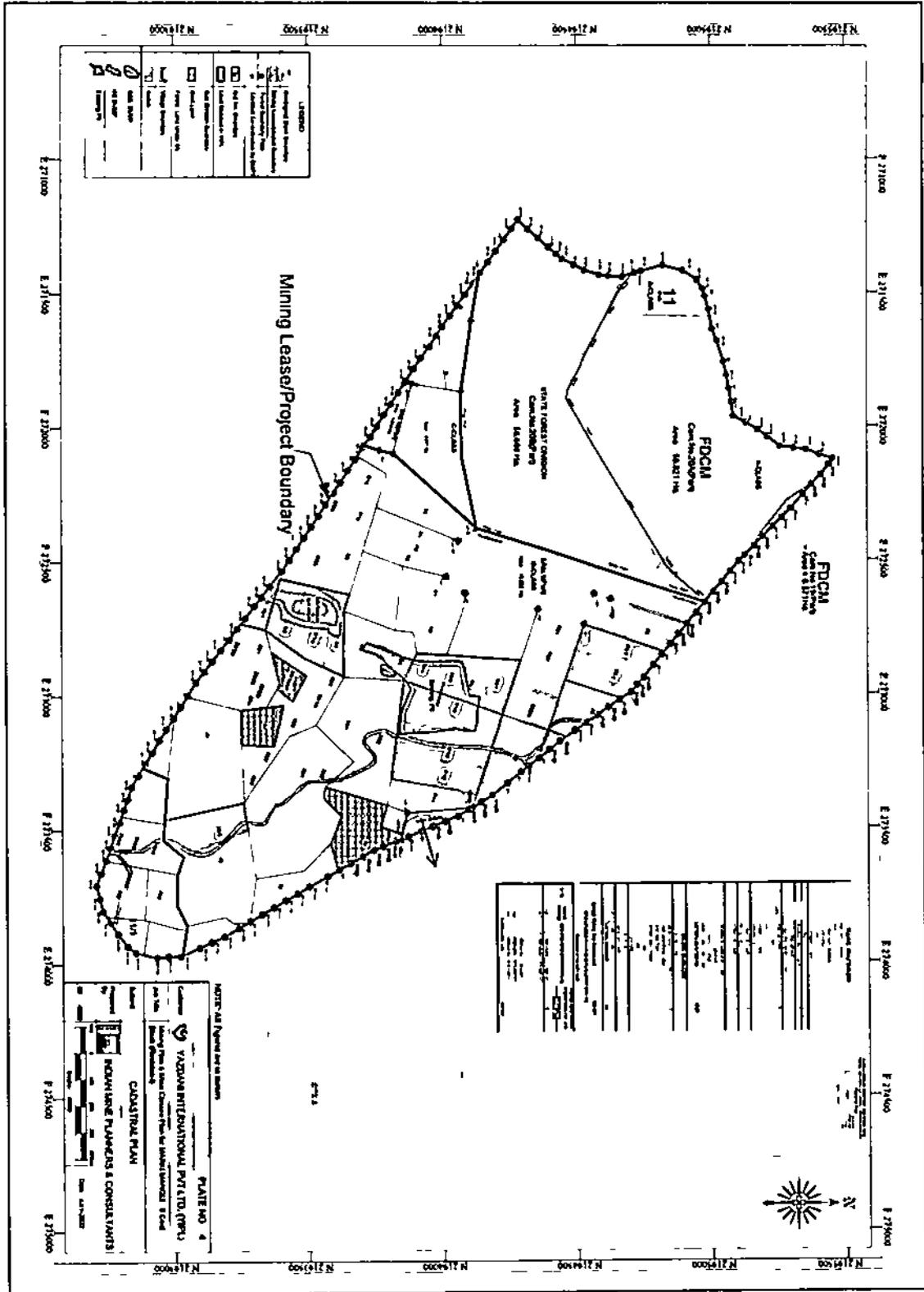
INDEX	
Project Boundary	
Boundary As Per Vesting Order	
Block	

Customer	TAJDAM INTERNATIONAL PVT LTD (TJPL)
Job Title	Mining Plan & Mine Closure Plan for MARKL MANGLI - II Coal Block (Proposed)
Subject	KML file of the Proposed Project Area
Prepared By	INDIAN MINE PLANNERS & CONSULTANTS
Date	JULY-2022

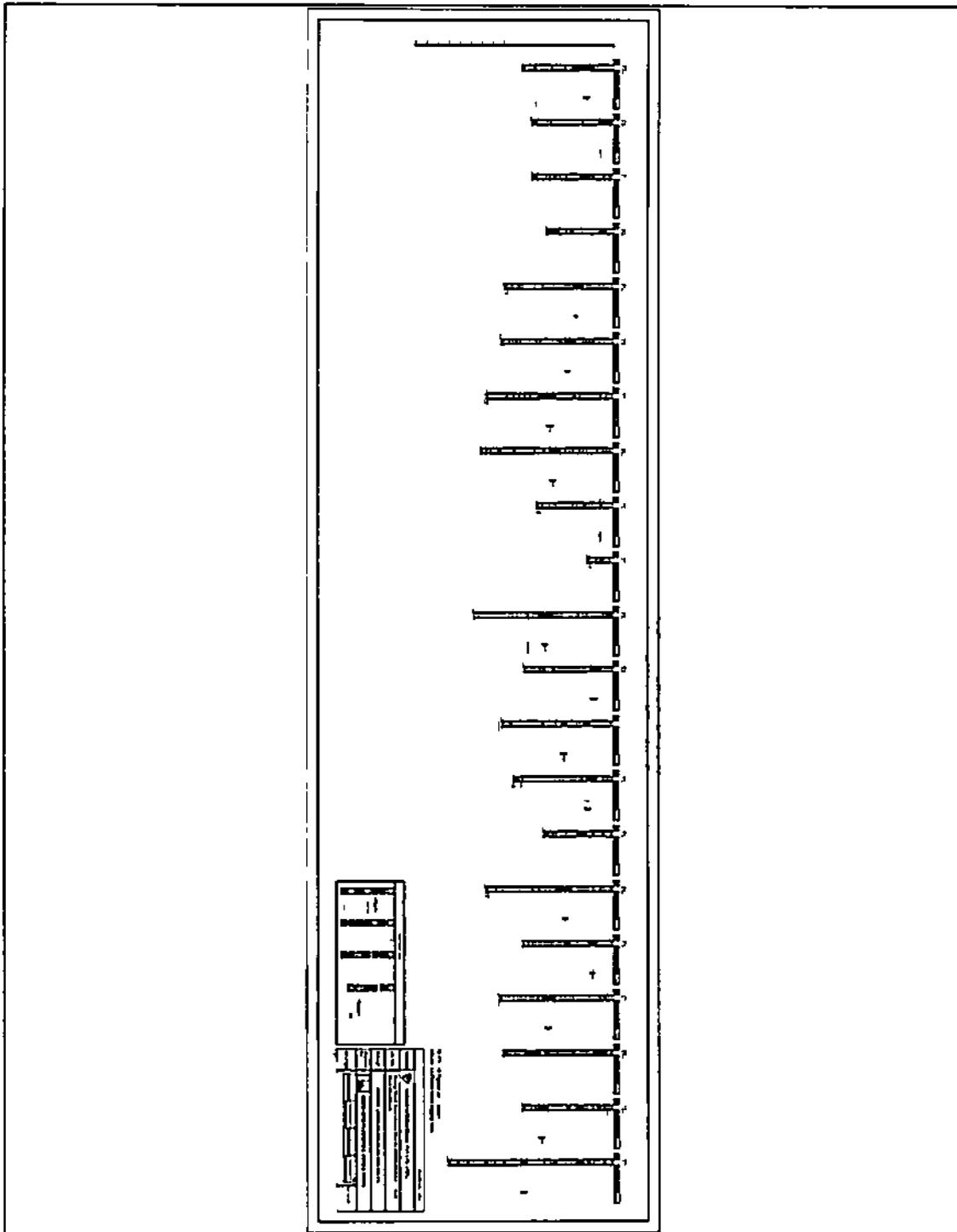
Plan / Plate 3C (Geological Block)



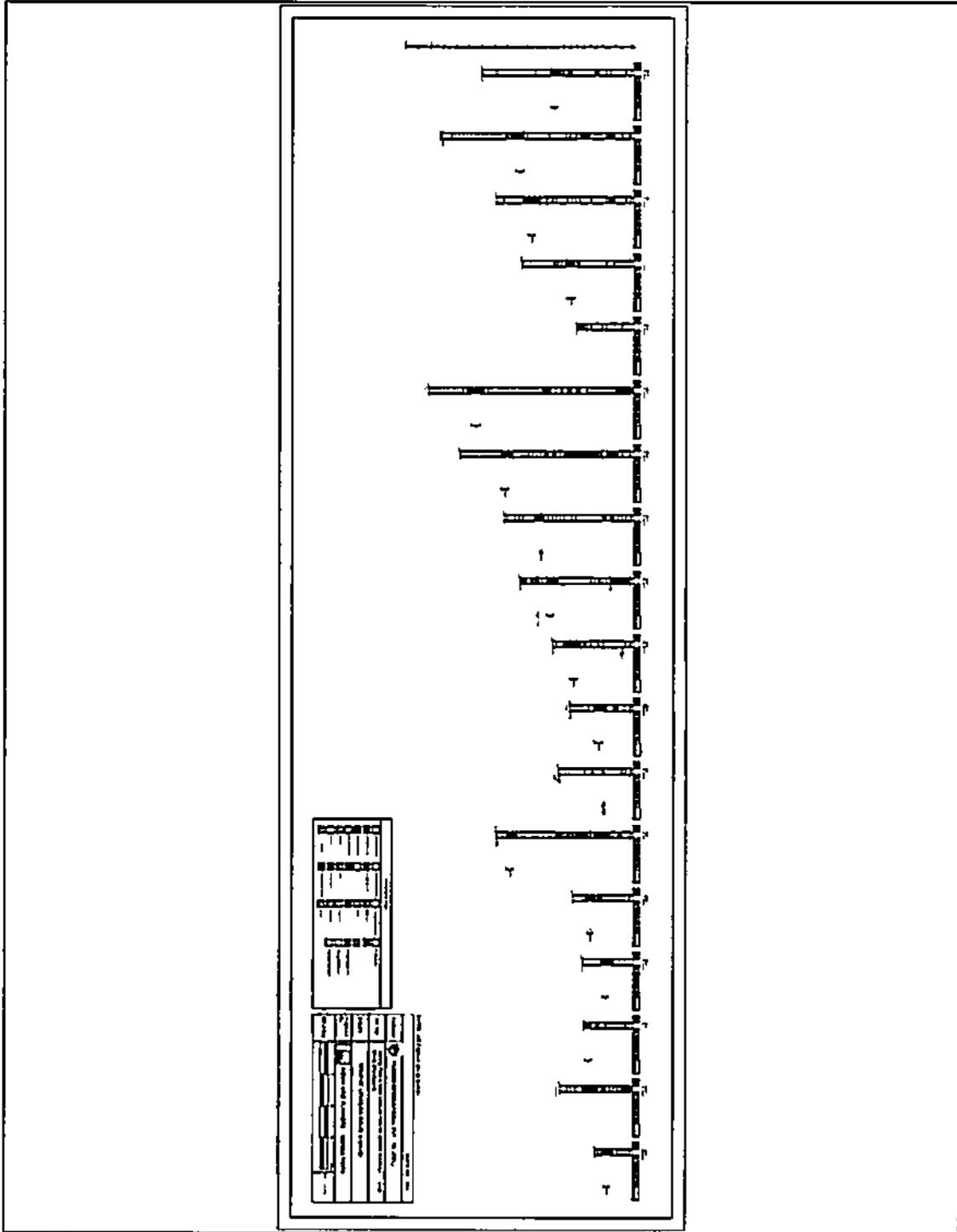
Plan / Plate 4



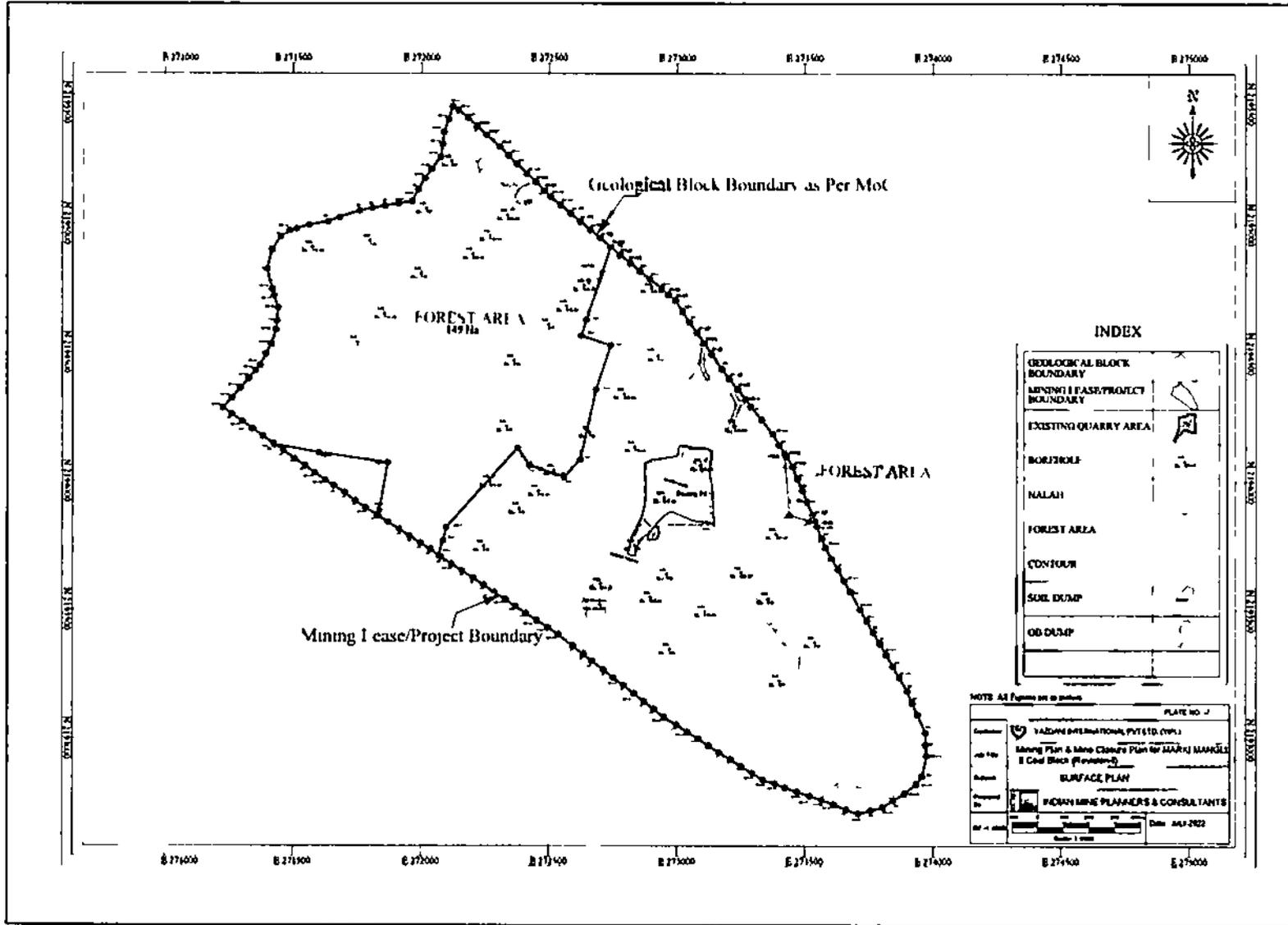
Plan / Plate 6A1



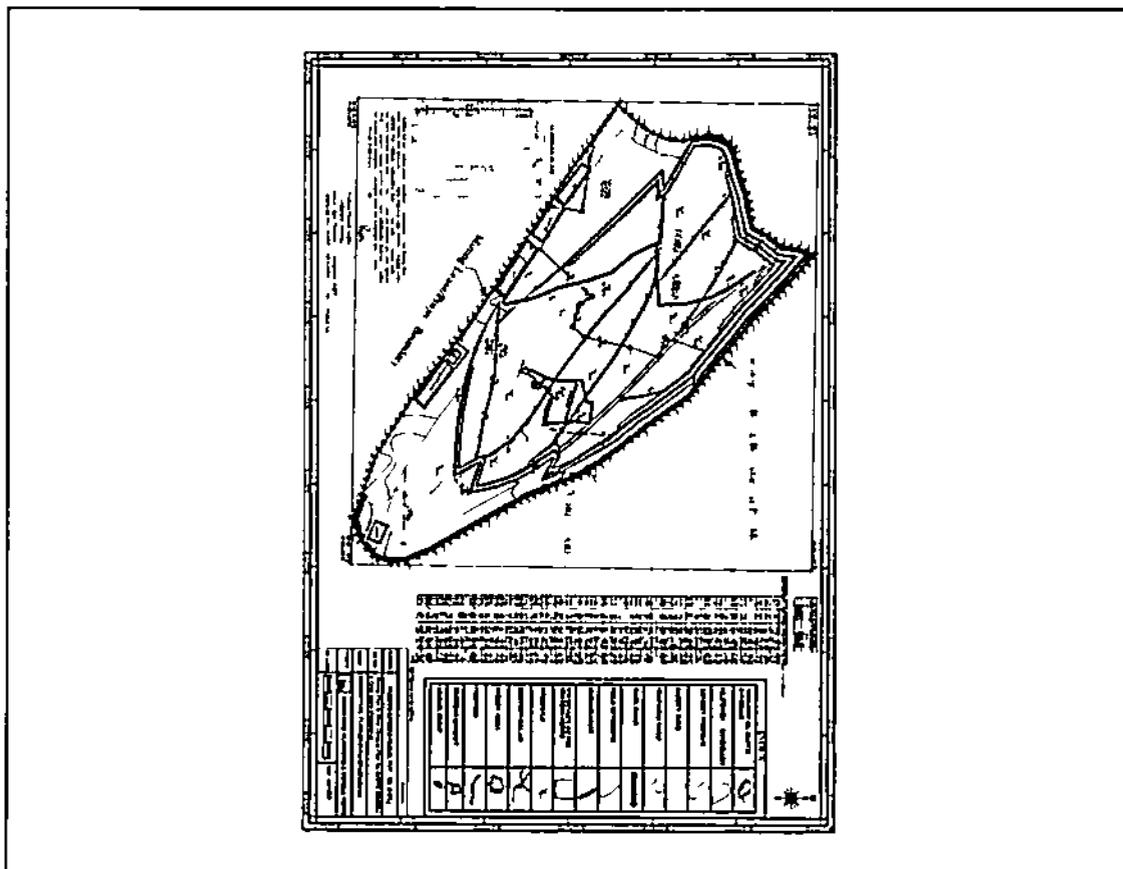
Plan / Plate 6A2



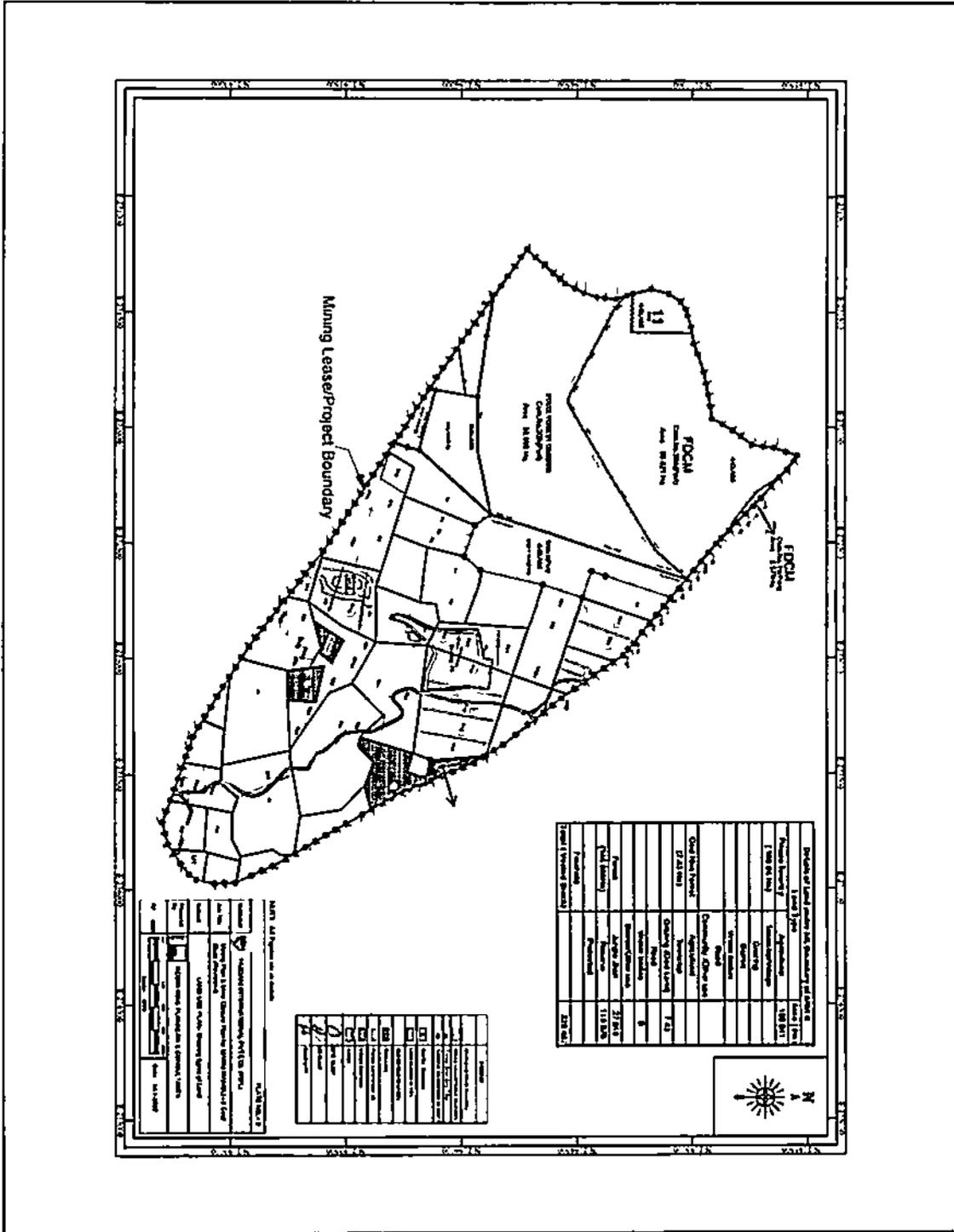
Plan / Plate 7



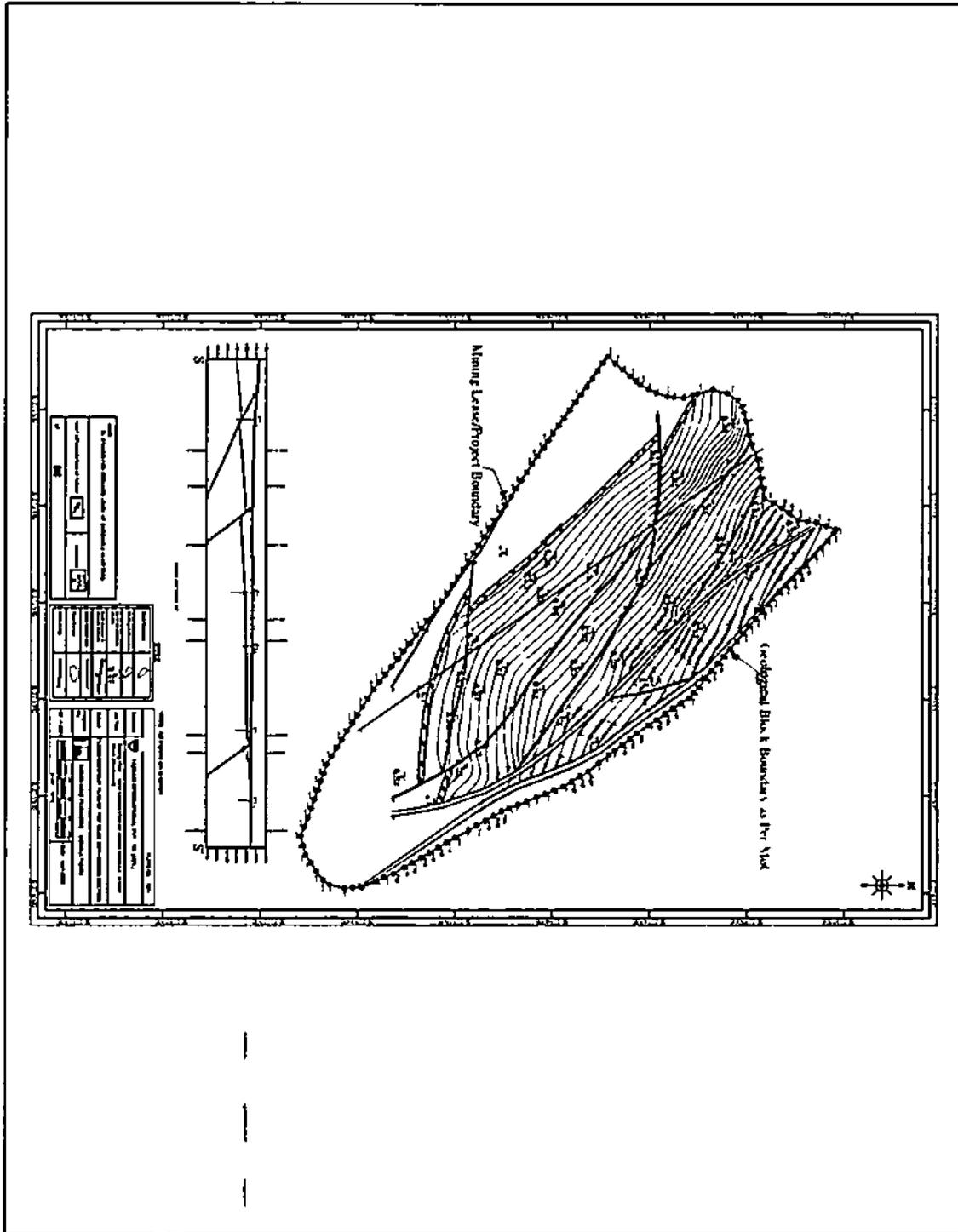
Plan / Plate 8



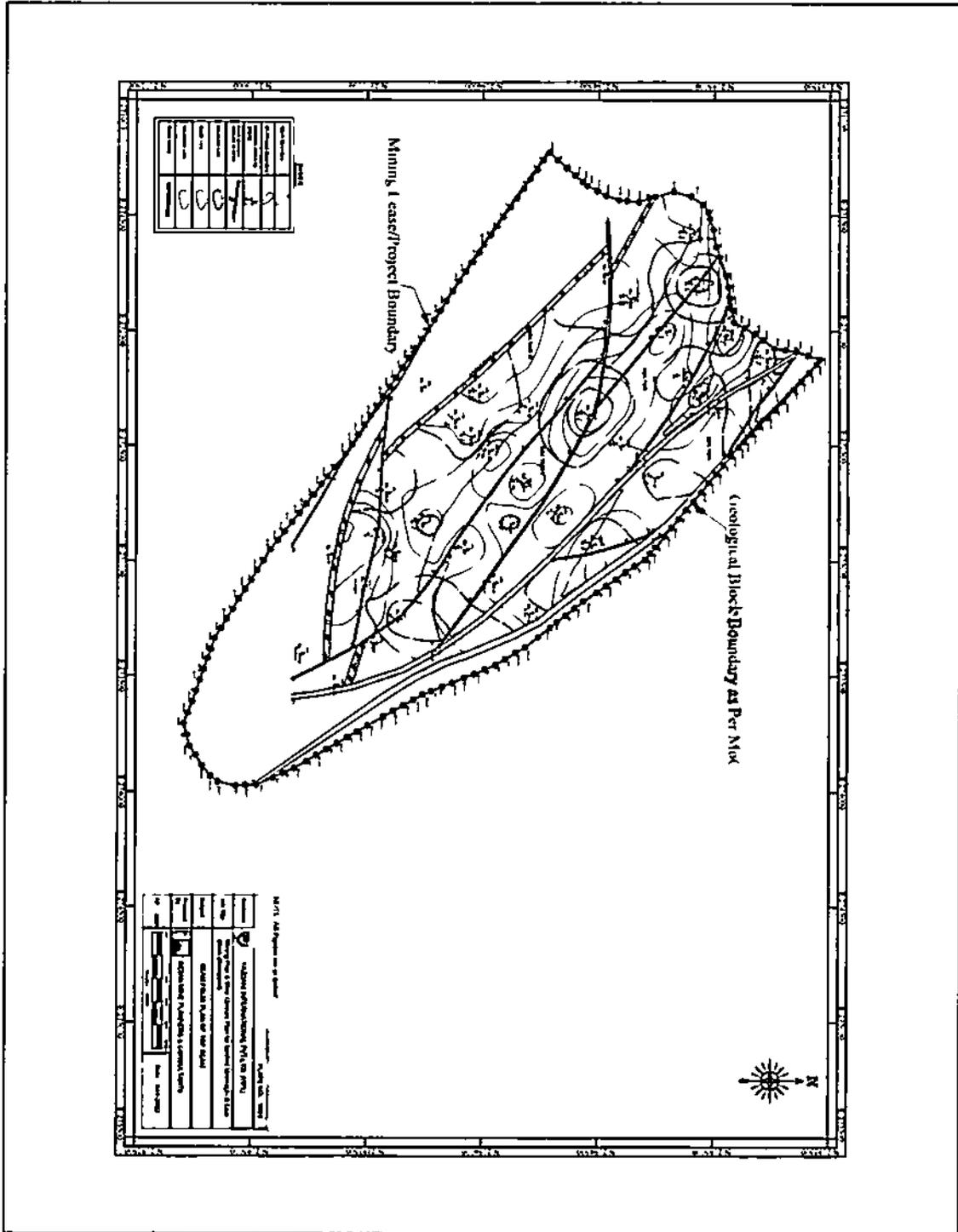
Plan / Plate 9



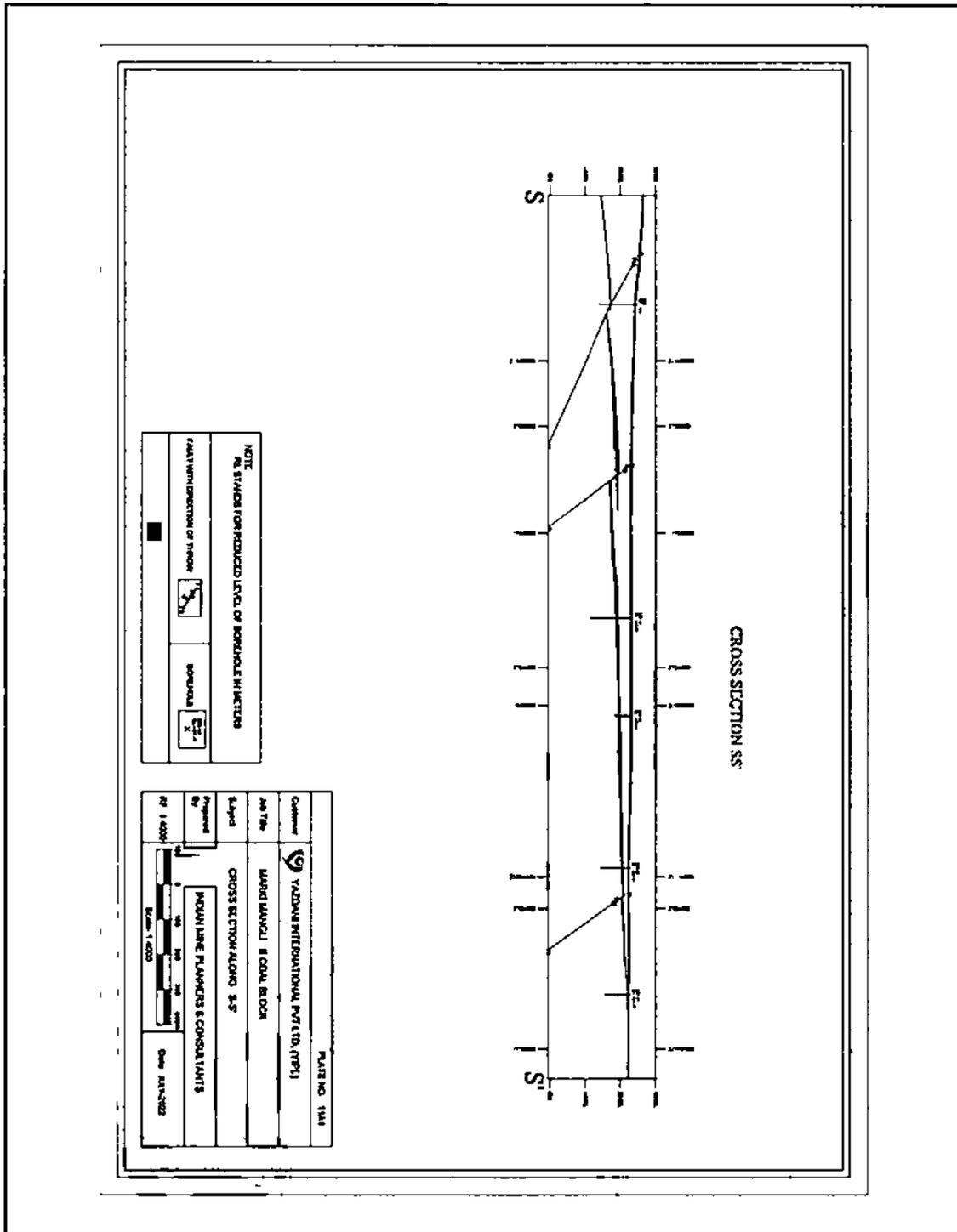
Plan / Plate 10A1



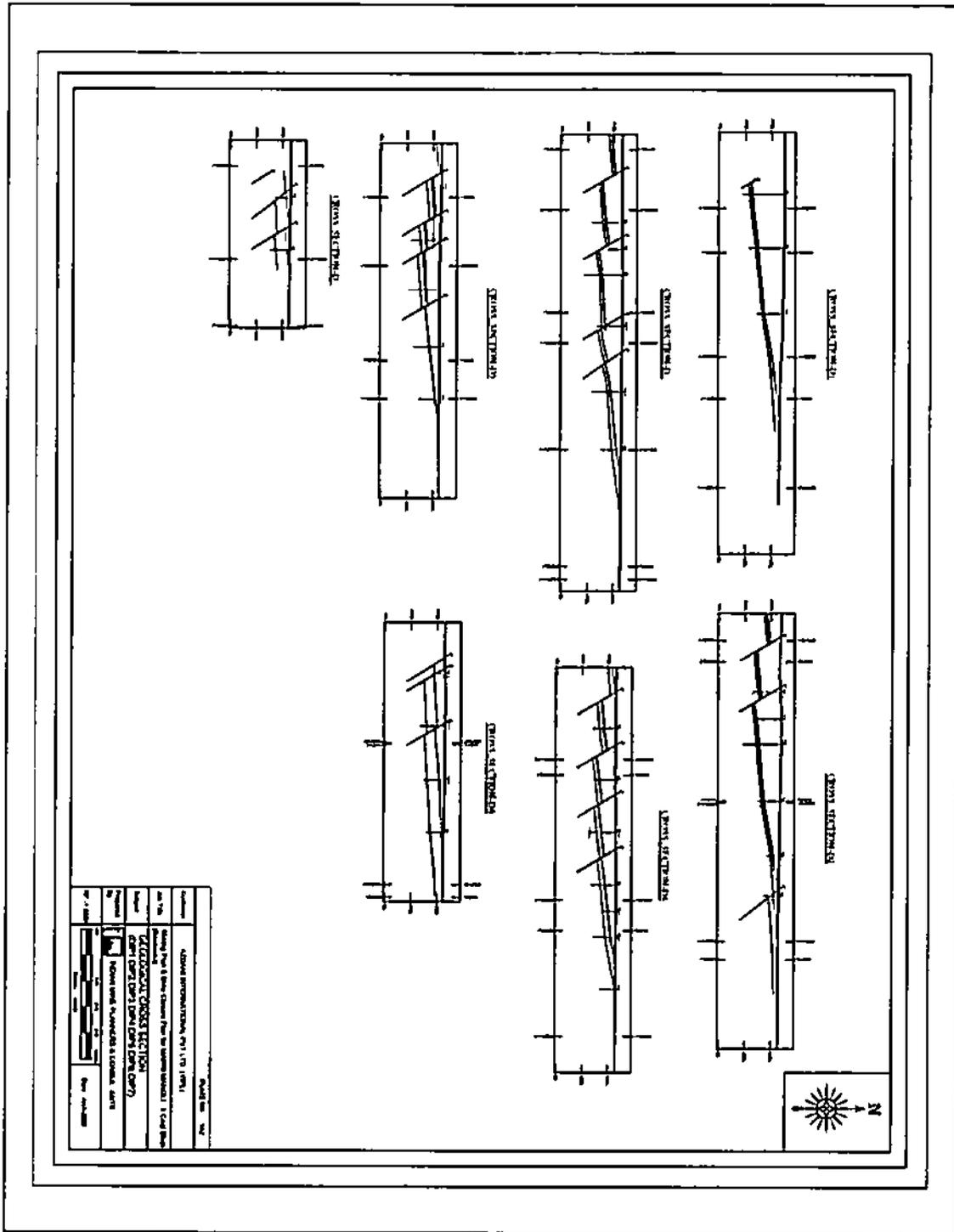
Plan / Plate 10B1



Plan / Plate 11A1



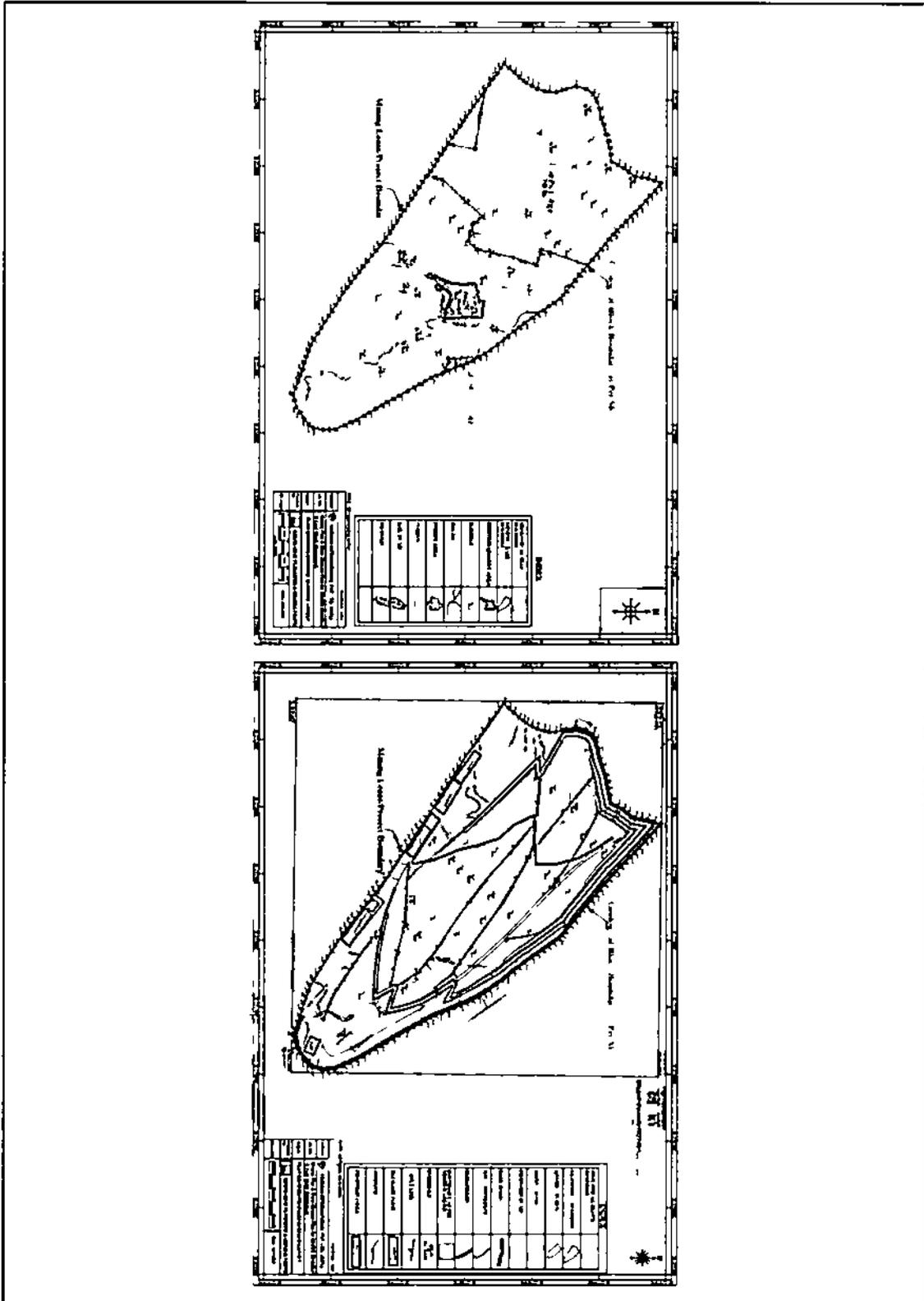
Plan / Plate 11A2



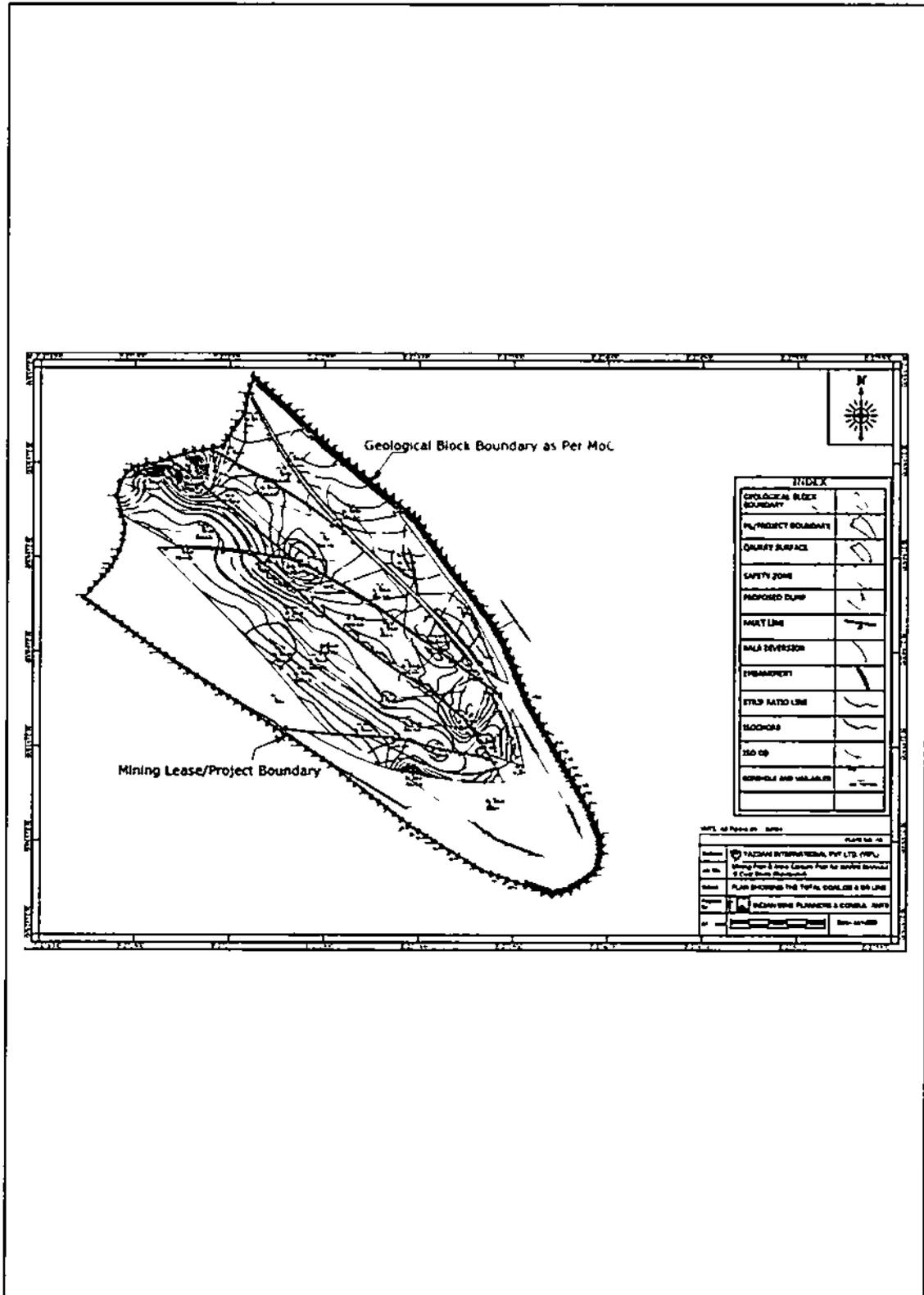
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Checked	As per drawing
Approved	As per drawing
Date	As per drawing
Sheet No.	As per drawing
Total No. of Sheets	As per drawing
Project Name	As per drawing
Client Name	As per drawing
Project Location	As per drawing
Project No.	As per drawing
Revision	As per drawing



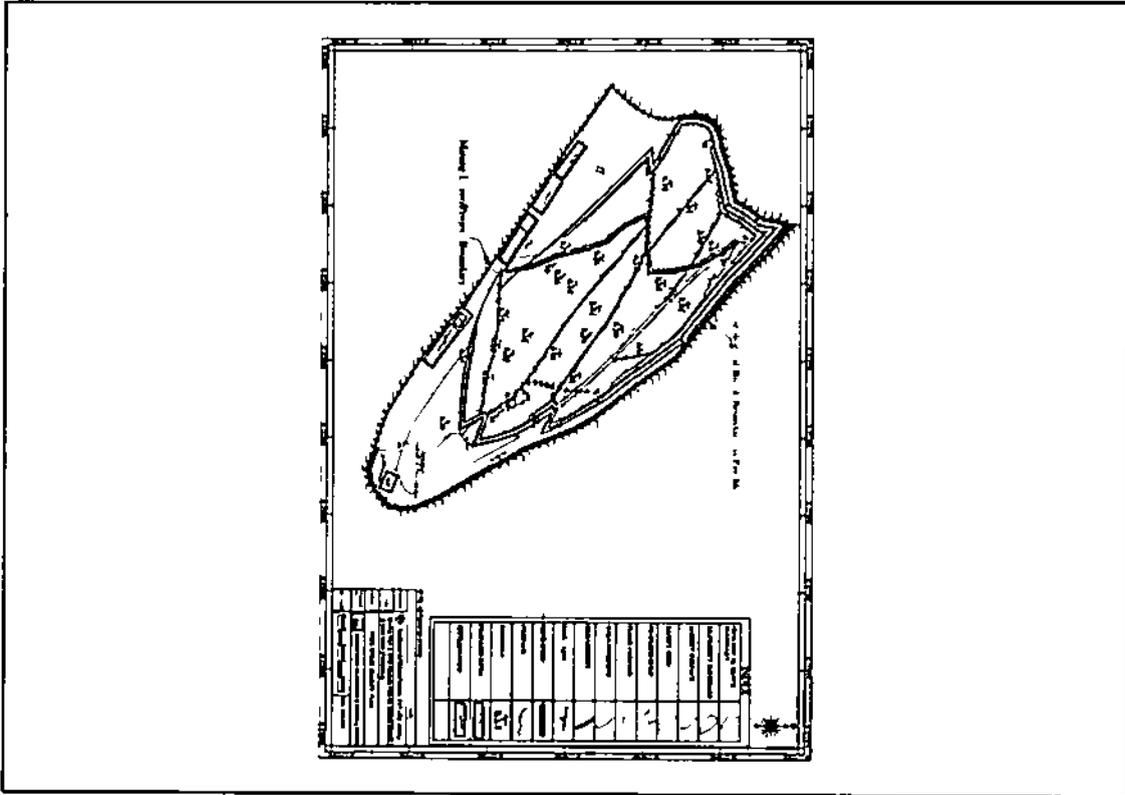
Plan / Plate 12



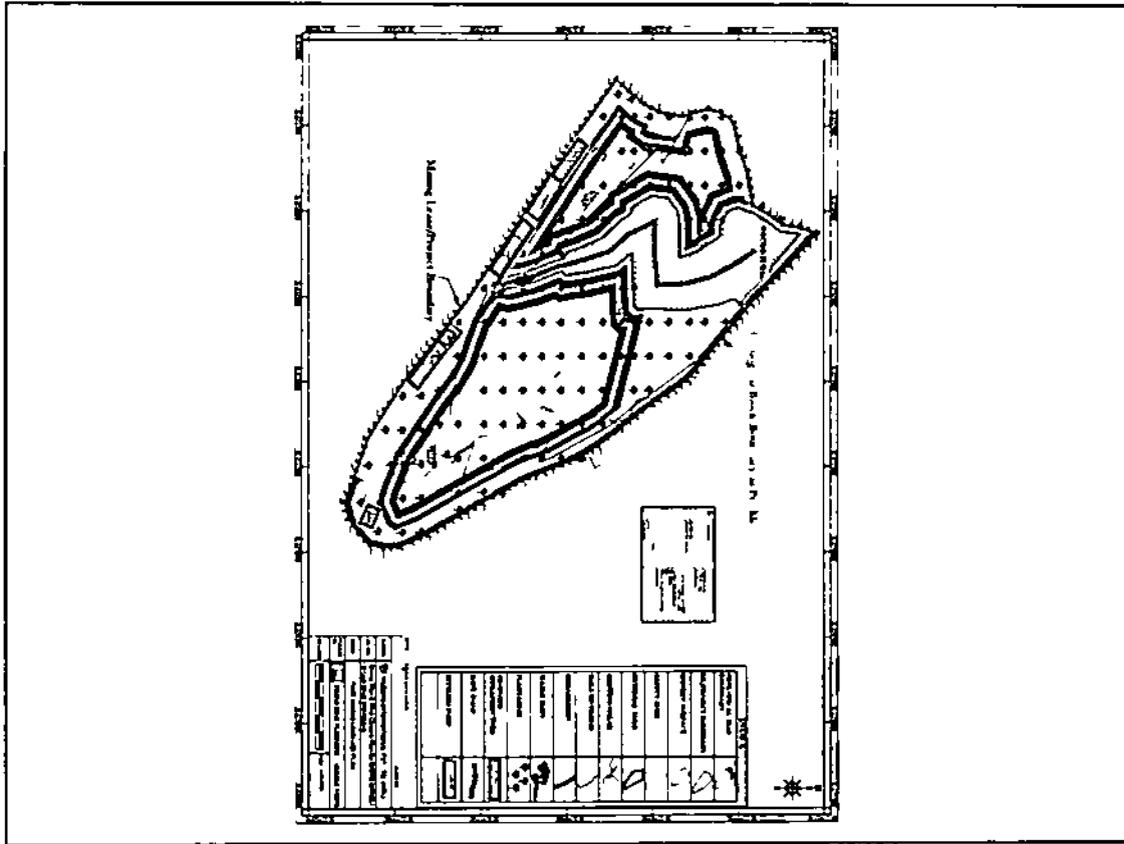
OC Plate-13



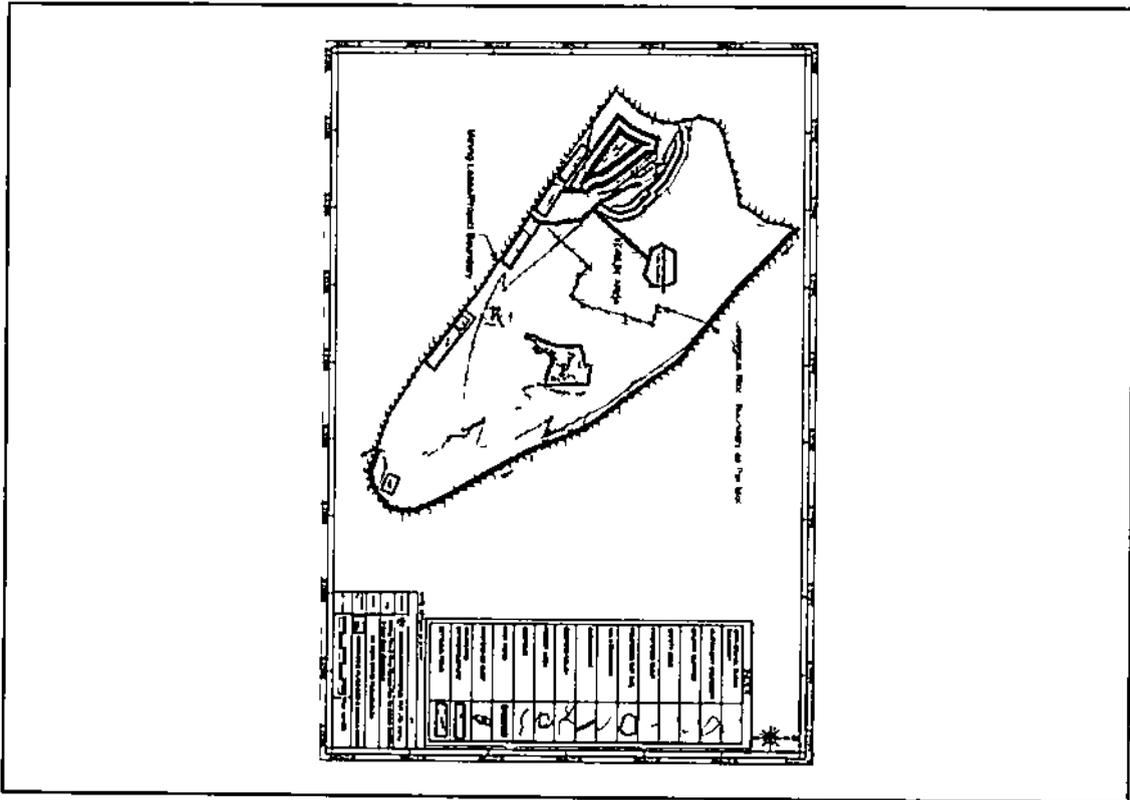
OC Plate-14



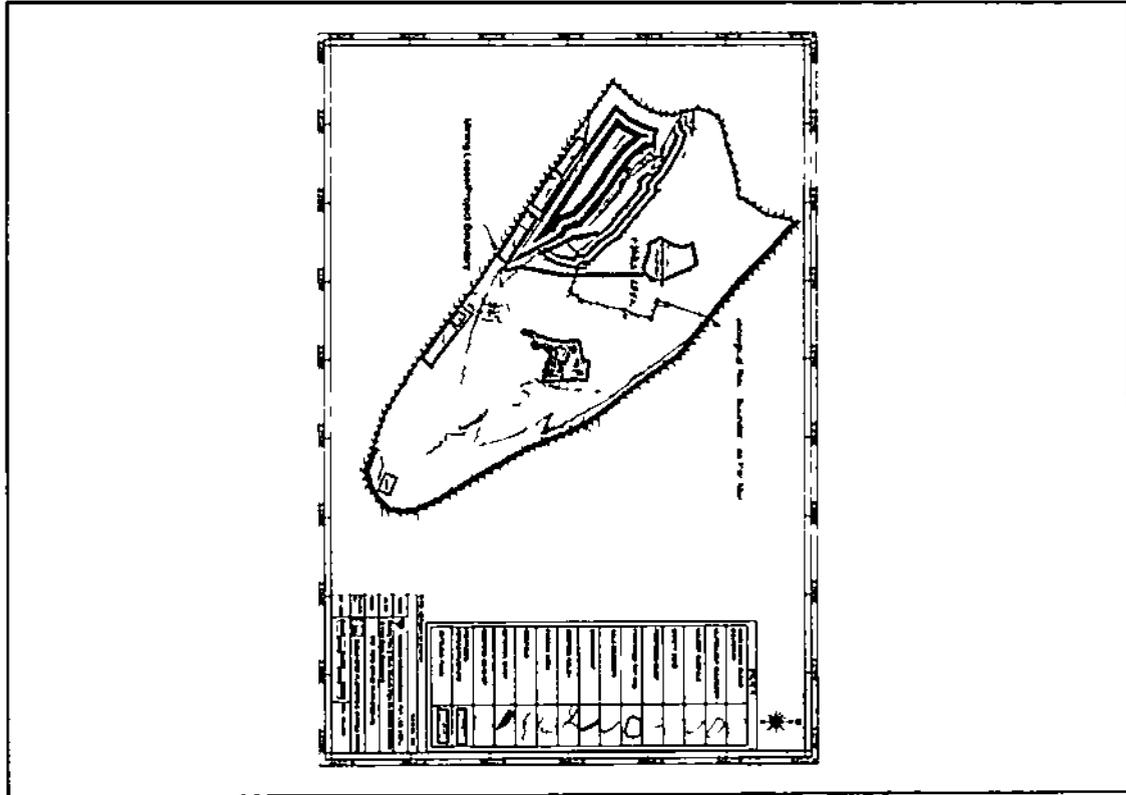
Plan / Plate 20



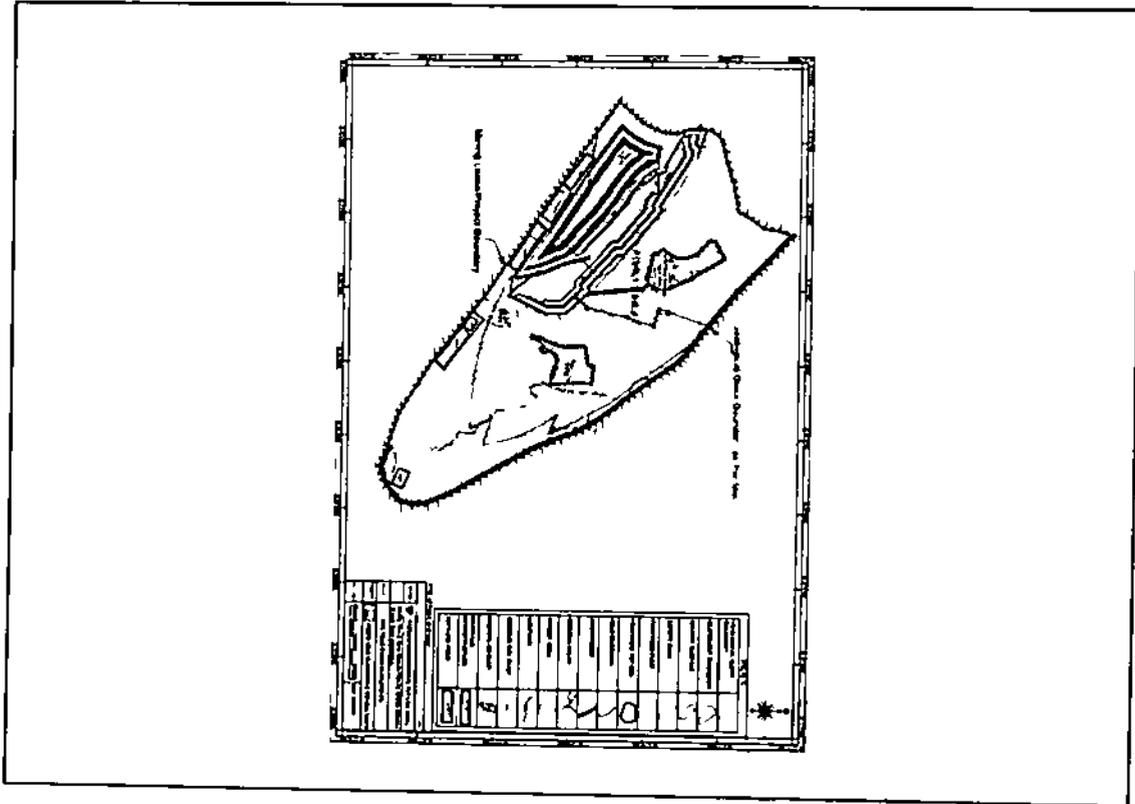
Plan / Plate 21A

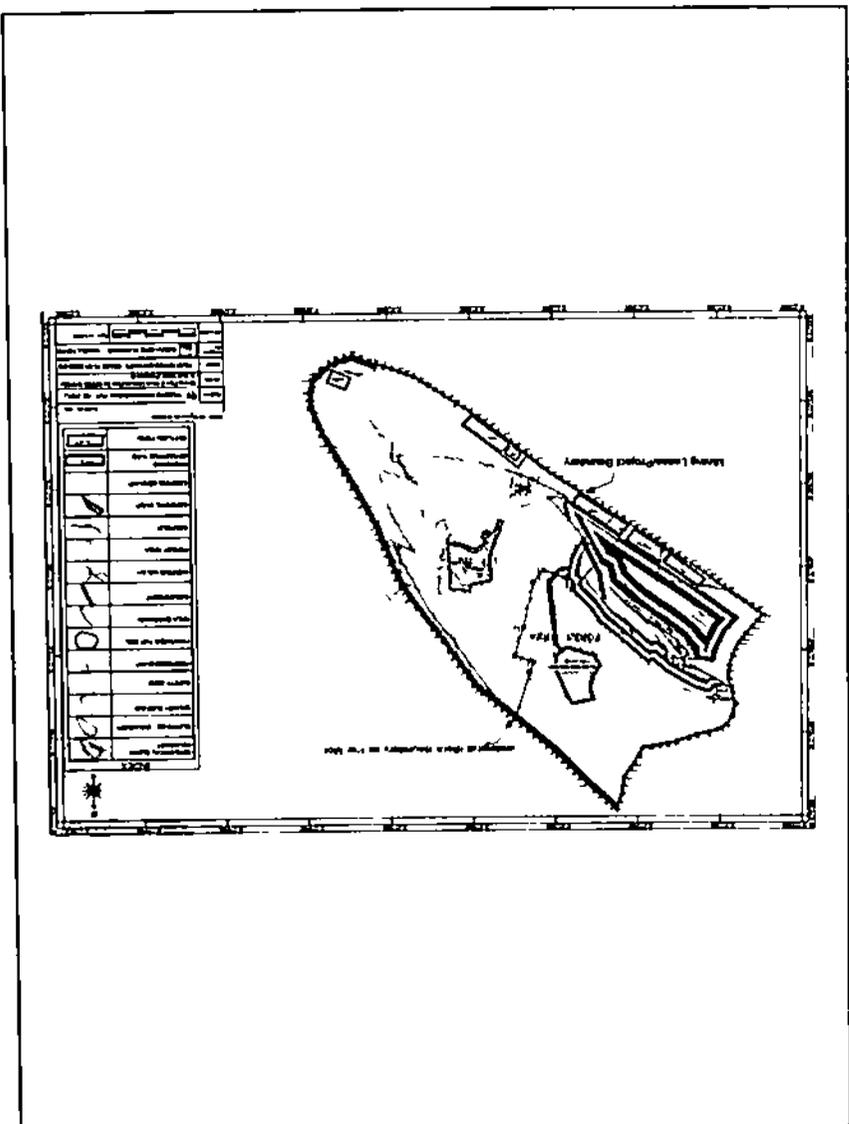


Plan / Plate 21B

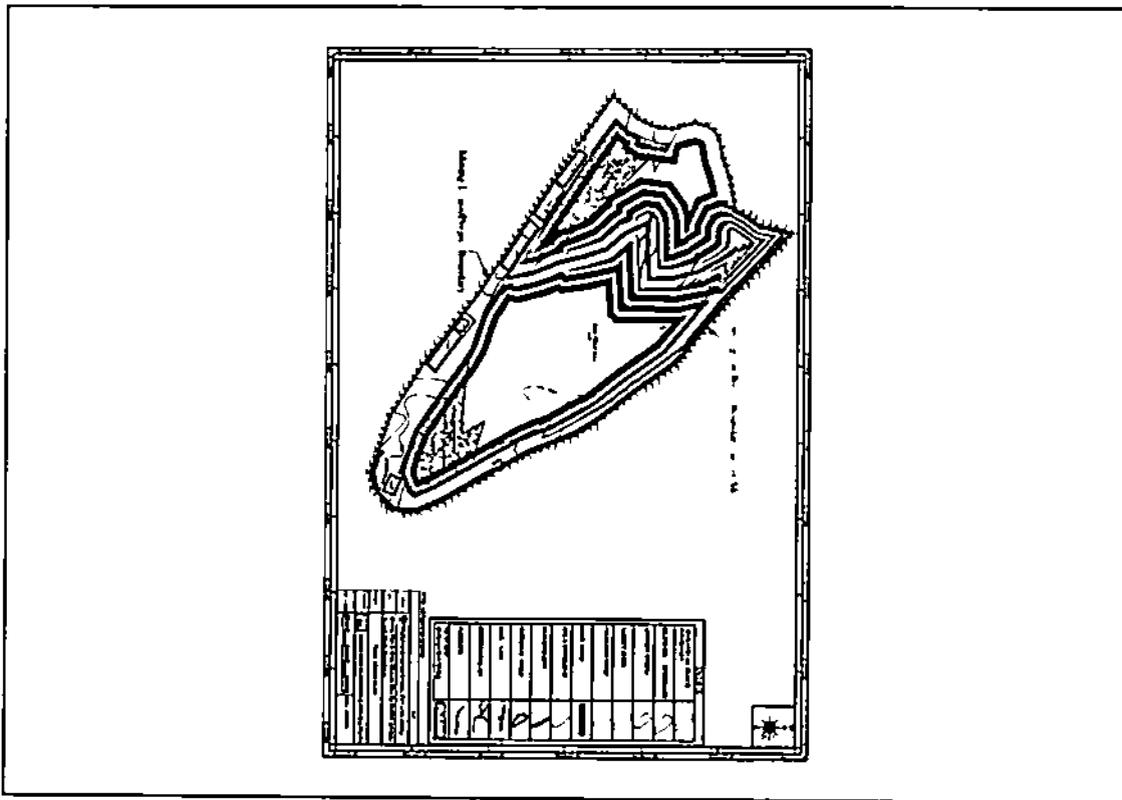


Plan / Plate 21C

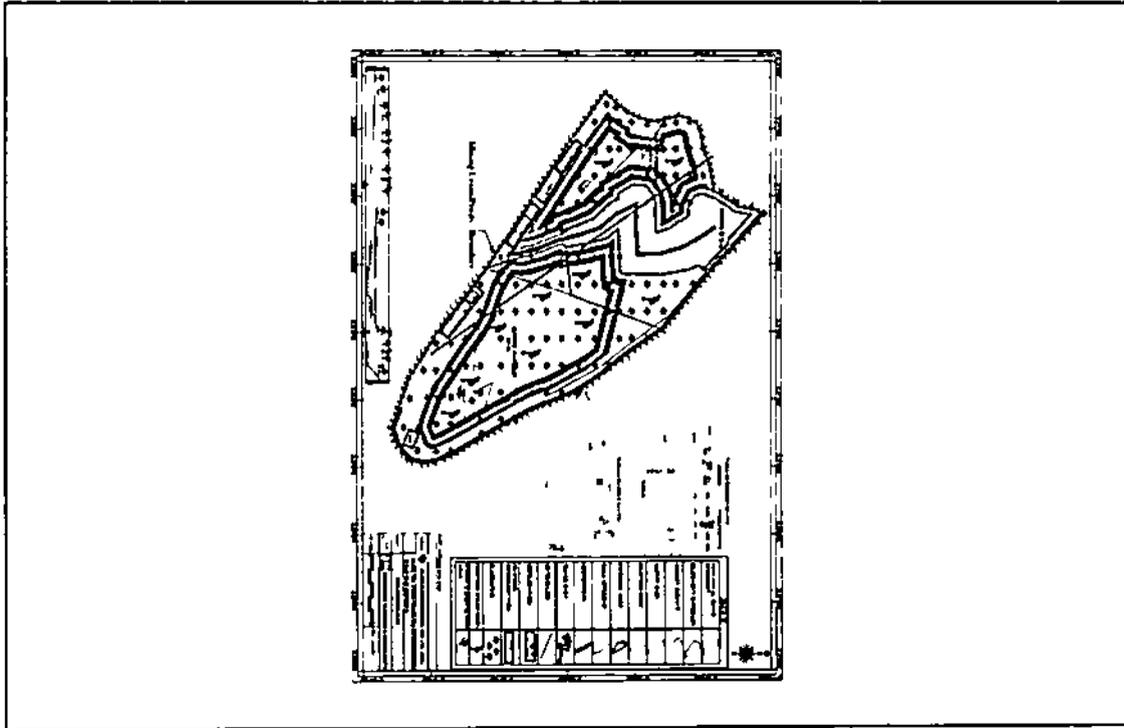




Plan / Plate 21E



Plan / Plate 22



Additional Plan / Plates-23

