I/405614/2024

GOVERNMENT OF ASSAM
ENVIRONMENT AND FOREST DEPARTMENT
JANATA BHAWAN, DISPUR, GUWAHATI-6

eCF No.288519/116 Dated Dispur, the January, 2024

To : The Deputy Inspector General of Forests (C),
Government of India,
Ministry of Environment, Forest & Climate Change,
Sub office, Guwahati,
4th Floor, Housefed Building,
G.S Road, Rukminigaon, Guwahati-781022

Sub : Proposal for diversion of 5.40 ha of forest land for operation of Gopeswar Stone Quarry & Mining Zone Area under North Kamrup Division in favour of Sri Fatik Das, Guwahati –reg.

Ref : Government of India letter F.No.3-AS C/173/2023/GHY/4548-49 dated 11.09.2023.

Sir,

In inviting reference to your letter on the subject cited above, I am directed to furnish herewith the following additional information/document as sought vide letter under reference for favour of your kind information and necessary action: -

Govt. of India letter No.3-AS C/173/2023/GHY/4548-49 dated 11.09.2023	**Information Provided**
No. (1)	The DFO, North Kamrup Division has intimated that the proposed area is a part of the Mining Zone area vide letter No. A/MHL/NKD/1149-50 dated 05.01.2024. A Geo-reference map of showing 56.72 Ha. Gopeswar mining area in Gopeswar Reserved Forest which is attached herewith **(copy enclosed).**
No. (2)	The DFO, North Kamrup Division has submitted the Cumulative Impact Study on Flora and Fauna due to Mining of Stone from Gopeswar Stone Quarry and Mining Zone under Kamrup District vide letter No. A/MHL/NKD/1149-50 dated 05.01.2024 **(copy enclosed).**
No. (3)	The DFO, North Kamrup Division has

I/405614/2024

	intimated that the proposed area does not fall under any No-development Zone vide letter No. A/MHL/NKD/1149-50 dated 05.01.2024 **(copy enclosed).**
No. (4)	The DFO, North Kamrup Division has intimated that the proposed area does not fall under any Eco-Sensitive Zone or nearby protected area vide letter No. A/MHL/NKD/1149-50 dated 05.01.2024 **(copy enclosed).**
No. (5)	The DFO, North Kamrup Division has intimated that the proposed area does not fall under any Elephant Corridor and no record of Human Elephant conflict in the said area vide letter No. A/MHL/NKD/1149-50 dated 05.01.2024 **(copy enclosed).**
No. (6)	The DFO, North Kamrup Division has intimated that the CA land has been allotted to the Forest Department and notification as RF/PRF of the non-forest land is under process vide letter No. A/MHL/NKD/1149-50 dated 05.01.2024 **(copy enclosed).**
No. (7)	The estimated amount for plantation in the safety zone area is Rs.22,24,865/-

Enclo : As stated above.

Yours faithfully,

Signed by
Neera Daulagupu
Date: 11-01-2024 17:26:18

Secretary to the Govt. of Assam,
Environment and Forest Department

Memo eCF No.288519/116 -A Dated Dispur, the January, 2024

Copy to:-

The Principal Chief Conservator of Forests & HoFF, Assam, Panjabari, Guwahati-37.

e-signed
Secretary to the Govt. of Assam,
Environment and Forest Department

Secy.(ND)

GOVERNMENT OF ASSAM
OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS AND HEAD OF FOREST FORCE, ASSAM
ARANYA BHAWAN, PANJABARI, GUWAHATI-37

Email: addlpccf.nodal@gmail.com

No. FG.27/Nodal/Proposal/Gopeswar MCA/N.K. Divn. *Dated 08.01.2024*

To,

The Additional Chief Secretary to the Government of Assam,
Environment and Forest Department, Dispur, Guwahati-6.

Sub: **Proposal for diversion of 5.40 Ha. of forest land for operation of Gopeswar Stone Quarry & Mining Zone Area under North Kamrup Division in favour of Sri Fatik Das, Guwahati.**

Ref: Government of India letter No. 3-AS C/173/2023/GHY/4548-49 dated 11.9.2023.

Sir,

With reference to the above, I am submitting herewith the information/documents as sought by the Government of India, MoEF & CC, Sub Office, Guwahati vide their letter No. 3-AS C/173/2023/GHY/4548-49 dated 11.9.2023 as under-

Govt. of India letter No. 3-AS C/173/2023/ GHY/4548-49 dated 11.9.2023	Information Provided
No. (1)	The DFO, North Kamrup Division has intimated that the proposed area is a part of the Mining Zone area vide letter No. A/MHL/NKD/1449-50 dated 05.01.2024. A Geo-reference map of showing 56.72 Ha. Gopeswar mining area in Gopeswar Reserved Forest which is attached herewith **(copy enclosed).**
No. (2)	The DFO, North Kamrup Division has submitted the Cumulative Impact Study on Flora and Fauna due to Mining of Stone from Gopeswar Stone Quarry and Mining Zone under Kamrup District vide letter No. A/MHL/NKD/1149-50 dated 05.01.2024 **(copy enclosed).**
No. (3)	The DFO, North kamrup Division has intimated that the proposed area does not fall under any No-development Zone vide letter No. A/MHL/NKD/1149-50 dated 05.01.2024 **(copy enclosed)**.
No. (4)	The DFO, North Kamrup Division has intimated that the proposed area does not fall under any Eco-Sensitive Zone or nearby protected area vide letter No. A/MHL/NKD/1149-50 dated 05.01.2024 **(copy enclosed).**
No. (5)	The DFO, North kamrup Division has intimated that the proposed area does not fall under any Elephant Corridor and no record of Human Elephant conflict in the said area vide letter No. A/MHL/NKD/1149-50 dated 05.01.2024 **(copy enclosed)**.
No. (6)	The DFO, North Kamrup Division has intimated that the CA land has been allotted to the Forest Department and notification as RF/PRF of the non-forest land is under process vide letter No. A/MHL/NKD/1149-50 dated 05.01.2024 **(copy enclosed)**.

64

10 JAN 2024

SO(SC) 10.01.24

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No. (7)	The estimated amount for plantation in the safety zone area is Rs. 22,24,865/-

The above-mentioned information may kindly be sent to the Government of India, MoEF&CC, Sub Office, Guwahati (Under Regional Office, Shillong), Guwahati accordingly.

Encl: As stated above.

Yours faithfully,

(Dr. C Muthukumaravel, IFS)
Chief Conservator of Forests &
Nodal Officer (FC Act), Assam
O/o the Principal Chief Conservator of Forests and
Head of Forest Force, Assam

Copy to:

1. The Deputy Director General of Forest (Central), Sub office, Guwahati (Under Regional office, Shillong), Government of India, Ministry of Environment, Forest & Climate Change, 4th Floor, Housefed Building, G.S. Road, Rukminigaon, Guwahati-781022 for kind information.
2. The Divisional Forest Officer, North Kamrup Division, Rangia for information.
3. Sri Fatik Das, S/o Lt. Fanidhar Das, P.O. Bamunimaidam, P.S. Chandmari, Dist. Kamrup, Pin-781021 for information.

Chief Conservator of Forests &
Nodal Officer (FC Act), Assam
O/o the Principal Chief Conservator of Forests and
Head of Forest Force, Assam

GOVT. OF ASSAM

OFFICE OF THE DIVISIONAL FOREST::OFFICER :: NORTH KAMRUP DIVISION, RANGIA

Letter No. A/MHL/NKD/ 1149-50 Date: 05/1/2024

To,

The Chief Conservator of Forests &
Nodal Officer, (FC Act), Assam
O/o the Principal Chief Conservator of Forests &
Head of Forest Force, Assam
Panjabari, Aranya Bhawan, Guwahati- 37

06/01/2024

Sub: Proposal for diversion of 5.40 Ha. of forest land for operation of Gopeswar Stone Quarry & Mining Zone area under North Kamrup Division in favour of Sri Fatuk Das, Guwahati.

Ref: Your office letter no. FG.27/Nodal/Proposal/Gopeswar MCA/N.K. Divn, dtd. 26.09.2023. — 173

Sir,

With reference to the subject cited above, I have the honour to furnish herewith the required information point wise as sought for.

1. It is a part of the Mining Zone, a map of which is attached for reference as Annexure-I.
2. The cumulative impact has been attached as Annexure-II.
3. The proposed area doesn't fall under any no-development Zone.
4. The proposed area does not fall under any Eco-Sensitive Zone or nearby protected area. The aerial distance of the proposed area from the nearest Wildlife Sanctuary was also furnished in Form-A Part-I by the user agency.
5. The proposed area doesn't fall under any elephant corridor. Also this Division doesn't have any record of human elephant conflict in the said area.
6. The CA land has been allotted to the forest department. The proposal to constitute the area into Reserved Forest will be sent soon to the Govt.
7. The copy of estimate for plantation in the safety zone area is enclosed as Annexure-III.

Enclo:- As stated above.

Yours faithfully

(Sunnydeo I. Choudhary, IFS)
Divisional Forest Officer
North Kamrup Division, Rangia

Copy to the Chief Conservator of Forests(T), Central Assam Circle, Guwahati-29 for favour of his kind information.

Divisional Forest Officer
North Kamrup Division, Rangia

Memo No. B/MHL/NKD/ 5195 Date: 05/1/2024

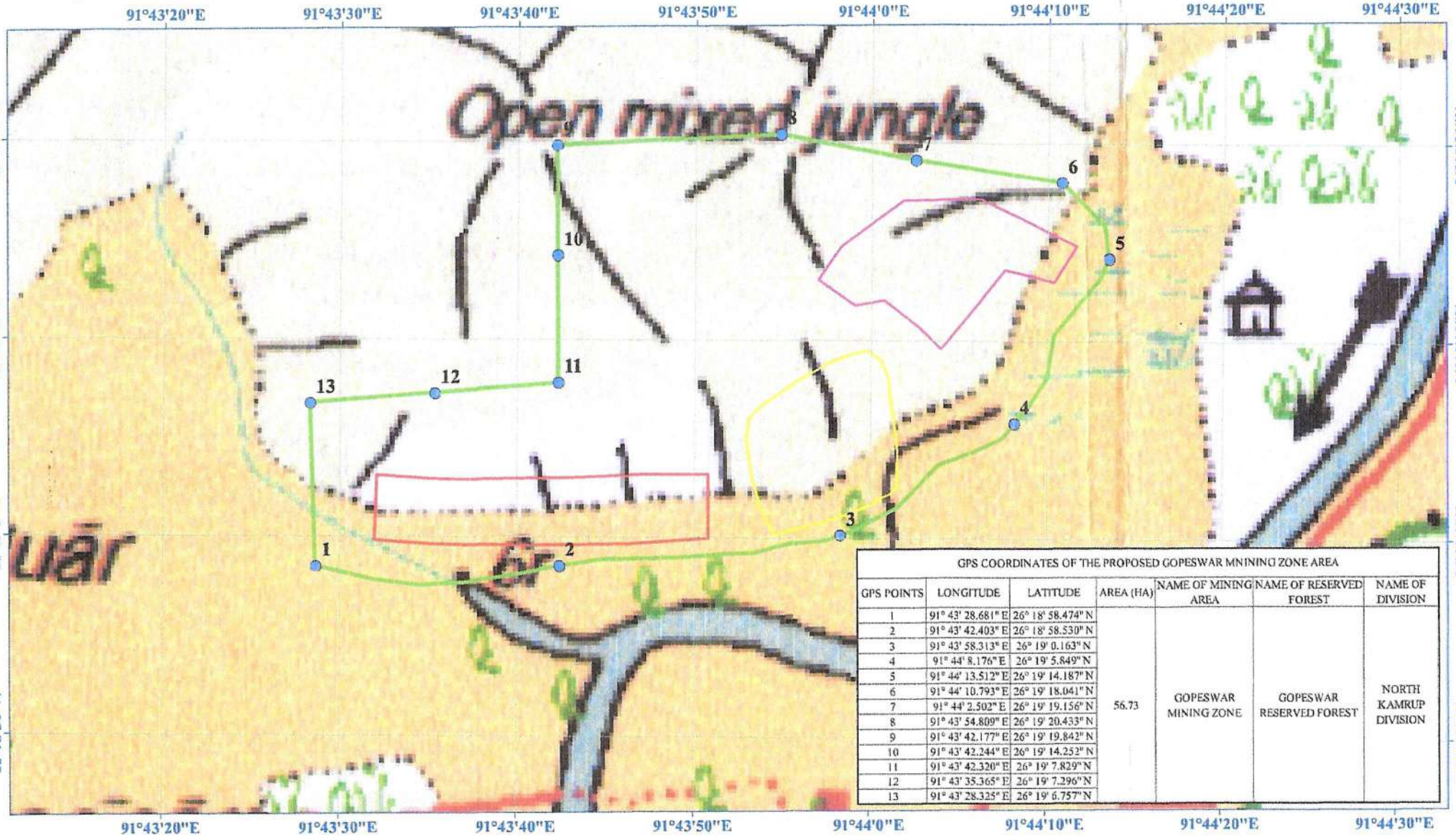
Copy to Sri Fatik Das, LOI holder for information.

Divisional Forest Officer
North Kamrup Division, Rangia

Annexure – I

GEOREFERENCED MAP SHOWING THE 56.73 HECTARE GOPESWAR MINING ZONE AREA AT GOPESWAR RF UNDER NORTH KAMRUP FOREST DIVISION,RANGIA

SCALE: 1:4,000



GPS COORDINATES OF THE PROPOSED GOPESWAR MNINING ZONE AREA						
GPS POINTS	LONGITUDE	LATITUDE	AREA (HA)	NAME OF MINING AREA	NAME OF RESERVED FOREST	NAME OF DIVISION
1	91° 43' 28.681" E	26° 18' 58.474" N	56.73	GOPESWAR MINING ZONE	GOPESWAR RESERVED FOREST	NORTH KAMRUP DIVISION
2	91° 43' 42.403" E	26° 18' 58.530" N				
3	91° 43' 58.313" E	26° 19' 0.163" N				
4	91° 44' 8.176" E	26° 19' 5.849" N				
5	91° 44' 13.512" E	26° 19' 14.187" N				
6	91° 44' 10.793" E	26° 19' 18.041" N				
7	91° 44' 2.502" E	26° 19' 19.156" N				
8	91° 43' 54.809" E	26° 19' 20.433" N				
9	91° 43' 42.177" E	26° 19' 19.842" N				
10	91° 43' 42.244" E	26° 19' 14.252" N				
11	91° 43' 42.320" E	26° 19' 7.829" N				
12	91° 43' 35.365" E	26° 19' 7.296" N				
13	91° 43' 28.325" E	26° 19' 6.757" N				

Legend

- G.P.S. POINTS OF THE GOPESWAR MINING ZONE AREA
- PROPOSED GOPESWAR MINING ZONE AREA
- PROPOSED 5.4 HA GOPESWAR STONE QUARRY & MINING ZONE AREA
- PROPOSED 5.47 HA GOPESWAR EAST STONE QUARRY NO.1 AREA
- PROPOSED 5.73 HA GOPESWAR STONE QUARRY NO.4 AREA

Annexure – II

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Cumulative Impact Study on Flora and Fauna due to Mining of Stone from 5.38 Hectares Gopeswar Stone Query and Mining Zone under Kamrup District, Assam

Prepared by

Abhijit Bora

Abhijit Bora, Ph. D
Director
EcoRescue Enviro Consulting Services Private Limited
Guwahati, Assam

CONTENTS

Chapter 1 : Introduction

Kamrup is a hilly district in the state of Assam. It is located between 25°43' and 26°51'N latitude and 90°36' to 92°12 E longitude. The district is bounded by Darrang district to the

east, State of Meghalaya to the south, Udalgiri and Baska districts in the north, Goalpara and Nalbari districts in the west.
Kamrup district occupies an area of 4,345 square kilometers.

Kamrup is an administrative district in the State of Assam with its head quarter at Amingaon. It came into being on 31st day of March 2003 and has proved to be an exemplary and model civil district.

Kamrup district is famous for many historic places like Hajo, Sualkuchi, Chhayagaon, Chamaria, Rangia, Palashbari, Boko and north Guwahati. Hajo is famous for many religious shrineslike Ganesh temple, Kedar temple, Hayagriba Madhava temple etc.

The Mining Plan related to this stone mining project was prepared by Dr. Abhijit Bora, RQP and Director of EcoRescue Enviro Consulting Services Private Limited and was duly approved by Directorate of Geology and Mining, Guwahati.

1.1 Objective :

According to the ICSSR (Institute of Social Sciences and Research), the total forest area in the Kamrup district is 1,22905.105 hactares, excluding the unclassed state forest. The forest resource of the district comprises of 23 reserve forests under three forest divisions of Kamrup East, Kamrup West and North Kamrup.
Although the total under reserve forest in the district is 151446.375 hectares, the rate of deforestation in the district is 2.5% per annum and rate of urbanization is about 7% per annum.
The district has also several stone quarries available for mining purpose
Section 2 of the Forest Conservation Act is about the restriction on the State Government for dereservation of forests or use of forest for non-forest purpose. Non-forest purpose means the breaking up or cleaning up of any forest land or portion thereof for (a) for cultivation of crops (b) any purpose other than reafforestation. Due to above, special provisional permission has been obtained from the Principal Chief Conservator of Forest and Head of Forest Force, Assam towards operation at Gopeswar Stone Quarry and Mining Zone Area covering 5.38 hactares near Deuduar Gaon.
Kamrup district is also rich in flora and fauna. This report assesses the impact of such mining activity on the flora and fauna at the quarry site, being near to Deuduar Gaon, under North Kamrup Division.

This report also focusses on environmental consequences and mitigation measures. Moreover, our study penetrates into the intricate ecological dynamism of this region and evaluates the consequences of human intervention during the mining activities. We have thoroughly studied and analyzed the probable environmental changes which may affect the habitat and also identified strategies for sustainable coexistence between rich biodiversity and mining activities
We have also identified possible hazards which may arise during mining

activities and planned adequate mitigation measures.
Mined out stone boulders will be used mainly for construction of roads and buildings while rock boulders will be processed in Stone Crusher unit to manufacture road metals and stone chips of different sizes to make it suitable for various road construction and other construction purposes.

1.2 Study Area :

The proposed quarry site falls under Gopeswar Reserve Forest under Sila Range of North Kamrup Divisiont and about 2 km away from National Highway 31, connected by a motorable road. Nearest railway station is Changsari. The proposed quarry side is free from human habitat within a radius of 400 meters.

The Latitudes and Longitudes of the mining permit area is given below :

GPS Points	Longitude	Latitude
M 1	90° 43' 32.000" E	26° 18' 59.800" N
M 2	90° 43' 35.500" E	26° 18' 59.600" N
M 3	90° 43' 40.825" E	26° 18' 59.583" N
M 4	90° 43' 46.601" E	26° 18' 59.651" N
M 5	90° 43' 50.810" E	26° 18' 59.940" N
M 6	90° 43' 50.770" E	26° 19' 03.180" N
M 7	90° 43' 45.968" E	26° 19' 03.108" N
M 8	90° 43' 41.025" E	26° 19' 02.983" N
M 9	90° 43' 35.700" E	26° 19' 02.900" N
M 10	90° 43' 32.100" E	26° 19' 03.100" N

The mining area falls under Survey Toposheet no. 78 N / 11.
The area is about 5.38 hectares and is a degraded forest area. The area is covered by small vegetation like grasses and shrubs. There is no growth of valuable big trees. The proposed site is not within any protected area under Archeological, Religious, Cultural heritage or Defense establishments.
The geology of the Mining Permit area is a massive granitic body comprising of Grey coloured hard medium to coarse grained granite with high quantity of quartz, plagioclase, microcline, biotite etc. Joints are present in the depositwhich will be very helpful during mining operation.

1.3. Background :

The detailed exploration of the mineral in this area has not been carried out. Therefore, the estimation of the Mineral Reserve has been made considering the deposit to be massive and continuous and taking into account DFO letter no. B/MHL/Gopeswar SQ/7897 dated 01.10.2018.
The Mineable reserve calculated roughly up to the lowest level is approximately 2,50,000 cu. m. within a period of five (5) years with considerable amount of overburden.

This report is prepared in context of the essential details sought by MoEF&CC (FC div.) against the proposed forest diversion proposals.

1.4. Source of Data:

Apart from our primary source of data like GPS coordinates, Key Map, Geological Map etc., we followed Assam Minor Minerals Concession Rules,2013 for authenticity of guidelines pertaining to Mining operation and several Environment Impact Assessment Reports related to mining activities.

Chapter 2 : Details of the Flora and Fauna in Kamrup district

List of diverse flora found in North Kamrup forest Division, Assam.

S. No.	Local name	Botanical Name	Status
(A) Trees			
1	Khoir	*Acacia catechu*	Common
2	Haidisopa,Haldu,Taraksopa	*Adina cordifoiia*	Common
3	Bel	*Aegle marmelos*	Common
4	Ramanbih	*Aesculus panduana*	Common
5	Borpat	*Aiianthus grandis*	Common
6	Chika-maruli	*Alangium chinense (syn. A. begoniaefolium)*	Common
7	Sau	*Albizzia chinensis (Syn. A. stipulate)*	Common
8	Siris	*Albizzia lebbek*	Common
9	Moj	*Albizzia lucida*	Common
10	Koroi	*Albizzia procera*	Common
11	Nogakola	*Alphonsea ventricosa*	Common
12	Satiana	*Alstonia scholaris*	Common
13	Jutuli	*Altingia excelsa*	Common
14	Amari lali	*Amoora wallichii*	Common
15	Kadam	*Anthocephalus cadamba*	Common
16	Garokhuta,	*Aporosa aurea*	Common
17	Garogine	*Aporosa roxburghii*	Common
18	Cham, Dewa	*Artocarpus chaplasa*	Common
19	Kathal	*Artocarpus heterophylk(Syn, A. interifolia)*	Common
20	Bohet, Dewa	*Artocarpus lakcoocha*	Common
21	Leleku	*Baccaurca sapida*	Common
22	Hidal, Hikai	*Barringtonia acutangula*	Common
23	Kurial, Keral	*Bauhinia purpurea*	Common
24	Kanchan	*Bauhinia spp.*	Common
25	Bogra-kotro, Kurol	*Bauhinia variegata*	Common
26	Kathalpatia , Amchoi	*Beiischmicdie assamica*	Few
27	Uriam	*Bischofia javanica*	Common
28	Kuhir, Kata-kuhir	*Bridelea retusa*	Common
29	Palas	*Butea monosperma*	Common
30	Banmala	*Calicarpa macrophyila*	Common
31	Maksi, Maskotia	*Callicarpa macrophylla*	Common
32	Khuksi	*Callicarpa spp.*	Common
33	Dhuna	*Canararium bengalense*	Few
34	Boga-kaiti,Bhela	*Canthium glabrum*	Common
35	Dalni-jam	*Carallia brachiata (syn. C. integerrima)*	Common
36	Kum	*Careya arborea*	Common

S. No.	Local name	Botanical Name	Status
42	Tezpat	*Cinnamomum tamala*	Common
43	Kotra	*Cordia grandis*	Common
44	Boal,Goborhuta Dobakari	*Cordia dichotma*	Common
45	Barun	*Cratasva nurvala*	Common
46	Garumara	*Crypteronia paniculata*	Common
47	Sissoo	*Dalbergia sissoo*	Common
48	Dal-bijili	*Dalbergia stipulacea*	Common
49	Kathiakoroi	*Derris rabusta*	Common
50	Owtenga	*Dillenia indica*	Common
51	Okshi, Oxi, Baji-ow	*Dillenia pentagyana*	Common
52	Kolonthi,Salkai	*Diospyros variegata*	Common
53	Banpitha	*Doncllo roxburghii (syn chrysocnyucw roxburghii)*	Common
54	Dukoha	*Dryptes assamica*	Few
55	Khokan	*Duabanga gradifiora (Syn, D. sonnaratioides)*	Common
56	Banardima	*Dysoxylum binectariferum*	Common
57	Gandheiipoma	*Dysoxylum hamiltonii*	Common
58	Lali	*Dysoxylum poocerum.*	Common
59	Pajar,Jarigoch,Guai	*Ehretia acuminata*	Common
60	Nagini, Garelasopa	*Elaeocarpus aristatus*	Common
61	Rudrakhya	*Elaeocarpus ganitrus.*	Common
62	Amlakhi	*Embilca officinalis (Syn. Phyllanthus emblica)*	Common
63	Phulgamari	*Endospermum chinense*	Common
64	Jodha,Lowa	*Engelhardtia spicata*	Common
65	Modar	*Erithrina variegata (Syn. E. indica)*	Common
66	Lehajam	*Euginea Formosa*	Common
67	Brajnali	*Fagara budrunga (syn. Zanthoxylum budrunga)*	Scattered
68	Bar	*Ficus bengalensis*	Common
69	Jari	*Ficus benjamina*	Common
70	Dhopabar	*Ficus drunacea (syn.Ficus myserensia)*	Common
71	Atha-bor	*Ficus elastica*	Common
72	Jaribar	*Ficus globosa*	Common
73	Dimaru	*Ficus hispida*	Common
74	Tengabor	*Ficus infectoria (Syn. F.lucescens).*	Common
75	Godgubar	*Ficus microcarpa L.f Var. latifolia (Miq) corner*	Common
76	Ahot	*Ficus religiosa*	Common
77	Autha-dimaru	*Ficus roxburgii*	Common
78	Pakri	*Ficus rumphii*	Common
79	Panial	*Flacourtia cataphracta (Syn. F. jangomas)*	Few
80	Kuji-thekera	*Garcinia kydia*	Common
81	Bar- thekera	*Garcinia pedunculata*	Few
82	Tepor	*Garcinia zanthochymus*	Few
83	Kau-thekera	*Garsinia cowa*	Common
84	Thutmola	*Garuga pinnata*	Common
85	Gamari	*Gmelina arborea*	Common
86	Bijol-gaoh, , Ban-bagari	*Grewia elastic*	Common

S. No.	Local name	Botanical Name	Status
87	Pisoii	*Grewia microcos (Syn.Microcos panicuiata)*	Common
88	Dalmugra	*Gynocardia odorata*	Common
89	Dhop-parali	*Haplophregma adenophyllum*	Common
90	Karonda/ Keseru/Karangiya	*Hateropanax fragrans*	Common
91	Komal-siuld	*Heynea trijunga*	Common
92	Dudhi	*Holarrhena antidysenterica*	Common
93	Panikadam Bhurkhundi	*Hymenodictyon excelsum*	Common
94	Pisela	*Kydia calycina*	Common
95	Sida	*Lagerstroemia parviflora*	Common
96	Ajharvl	*Lagerstroemia speciosa (Syn.l llosioginao)*	Common
97	Ruhimala	*Lannea coromandelica*	Common
98	Pareng	*Linoceria macrophylla (Syn. L remiflora)*	Common
99	Honlu, Muga	*Litsaea monopetala (Syn. L. polyantha)*	Few
100	Baghnal	*Litsea glutinosa(Syn, L, sebifera)*	Rare
101	Morelia	*Macaranga denticulata*	Common
102	Janlo/ Juglo	*Macaranga indica*	Common
103	Kalasom/ Kaunla	*Machilus globosa*	Common
104	Garorisopa	*Magnolia griffithii (Magnolia pterocarpa)*	Common
105	Larubandha	*Mailohes albus.*	Common
106	Jarath, Rohini.Faku	*Mallotus phillipensis*	Common
107	Buritokan	*Mallotus rexburghianus*	Common
108	Am	*Mangifera indica*	Common
109	Bon-Aam	*Mangifera sylvatica*	Common
110	Phulsopa	*Manglietia insignis*	Common
111	Badam	*Mansonia dipikal*	Common
112	Bon- Pasala, Monoi	*Meliosma pinnata*	Common
113	Thowthowa,phoko	*Meliosrna simplscifolia*	Common
114	Nahor	*Mesua ferrea*	Common
115	Sopa	*Michelia spp.*	Common
116	Kaliori, Kolti	*Mitrephora tomentosa*	Common
117	Nuni	*Morus acidosa*	Common
118	Bola	*Morus lavigata*	Scattered
119	Gorobhala	*Myristica linifolia (syn. M. longifolia)*	Common
120	Choi-parali	*Oreenida integrifolia*	Common
121	Bhatgilla	*Oroxylum indicum*	Common
122	Som	*Persea bombycina (Syn. Machilusbombycina)*	Common
123	Bonsum	*Pheebe goalparensis*	Common
124	Makahi	*Phoebe cooperiana*	Common
125	Karas	*Pongamia glabra*	Common
126	Chika-gamari	*Prema barbata*	Common
127	Ghora	*Premna bengalensis*	Common
128	Gainali, Gundari,Gunderi	*Premna latifoiia*	Common
129	Mirtenga, Newri	*Protium serratum (Syn. Bursera serrata)*	Common
130	Hatipolia	*Pterospermum acerifolium*	Common
131	Ban~tetali	*Pterospermum lanceofolium*	Common

S. No.	Local name	Botanical Name	Status
132	Harumoin	*Randia fasciculata*	Common
133	Bhe	*Salix tetrasporma*	Common
134	Simul, Simalu	*Salmalia malabarica (Syn. Bombax malabaricum,) Bombax ceiba*	Common
135	ManiSal	*Sapindus mukorissii*	Common
136	korha	*Sapium euginaefolium.*	Common
137	Mahkoia	*Sapium insigne*	Common
138	Seleng	*Sapiurn baccatum*	Common
139	Ghogra,Makri sal	*Schima wallichii*	Common
140	Bhela,Dhubinat	*Semecarpus anacardium*	Common
141	Sal	*Shorea robusta*	Common
142	Joba,Hingori	*Sloanea assamica (Syn. Echinocarpus assamica)*	Few
143	Pahari	*Sterculia alata*	Common
144	Udal	*Sterculia villosa*	Common
145	Parali	*Stereospermum personatum (Syn. S. chelonoides)*	Common
146	Hewra	*Streblus asper*	Common
147	Gorobhangra	*Symploces javanica (syn. S. ferruginea)*	Common
148	Bharatmuri,Bhoira & Rotha	*Symplocos launna (Syn.S. spicate)*	Common
149	Bhomrati	*Symplocos oxyphylla*	Common
150	Godhajam	*Syzigium cerasoideum (Syn. Eugenia operculata)*	Common
151	Jam	*Syzigium cumini (Syn. Eugenia jumbolana)*	Common
152	Bogi-Jam	*Syzygium cumini (Syn. Euginea jumbolana)*	Common
153	Titasopa	*Talauma phellocarpa (Sync. Paramichelia baillionii*	Common
154	Bohramthuri	*Talaurna hodgsonii*	Scattered
155	Tetali	*Tamarindus indica*	Common
156	Segun, Teak	*Tectona grandis*	Common
157	Bhomra,Bahera	*Terminalia belerica*	Common
158	Hollock	*Terminalia myriocarpa*	Common
159	Hilikha	*Terminelia chebula (Syn. T.citrine)*	Scattered
160	Jatipoma, Poma	*Toona ciliate (Syn.Cedrela toona)*	Common
161	Phakdima	*Trea orientails &T. cannabina (Syn. T. ambronensis)*	Common
162	Bhotola	*Trevesia palmata*	Common
163	Bhelkar	*Trewia nudiflora (syn T. polycarpa)*	Common
164	Khukru	*Tricalysia singularis*	Common
165	Mota-Amari,Gobar-Kutla	*Turpinia pomifera*	Common
166	Ketkora, Moin	*Vanguira spinosa*	Common
167	Teta	*Vitex canescens*	Common
168	Ahoi	*Vitex peduncularis*	Common
169	Bhadia, Gohora	*Vitex pinnata (Syn. V. pubescens and glabrata and)*	Common
170	Moin, Hihmoin	*Xeromphis spinosa (Syn. Randia dumetorum)*	Common
171	Bagari	*Zizyphus mauritiana(Z. Jujuba)*	Common
172	Benbagri	*Zizyphus rugosus*	Common
(B) Climbers			
1	Baghalchora	*Mezoneurum cucullatum / Naravelia zeylanica*	Few
2	Bakalbih	*Dorris elliptica*	Common
3	Barkhi- lota	*Embelia ribes*	Common

S. No.	Local name	Botanical Name	Status
4	Bheda lata	*Paederia scandens {Syn.P. tomentosa)*	Common
5	Bon~marich	*Clematis cadmia*	Common
6	Chagallata	*Emblica nagushia*	Common
7	Chapetilata	*Vitis latifolia*	Common
8	Dat-bijali	*Dalbergia tamarindifolia, D. stipuiaces.*	Common
9	Dtgilewa	*Merremia vitifolia*	Common
10	Ghahelewa	*Croton caudatus*	Common
11	Ghiialata	*Entada phascoloides*	Common
12	Gobanglata, Latadimaru	*Conocephalus suaveolens*	Common
13	Hatibandholata	*Butea parviflora*	Common
14	Helolakha	*Milletia auriculata*	Common
15	Kari-lewa	*Vallaris heynei*	Common
16	Kharika-lata	*Jasminum coarctatum*	Common
17	Kirkiri-lata	*Jasminum scandens*	Common
18	Kuchai, Kuchia-lata	*Acacia pinnata*	Common
19	Kukual-lata	*Thumbergia grandifolia*	Common
20	Lata-dimaru	*Ficus scandens*	Common
21	Lata-guti	*Caesalpinia crista*	Common
22	Nakhati-lewa	*Bauhinllia vahlii*	Common
23	Padri-lewa	*Paederia scandens (Syn. Vitis rependa)*	Common
24	Pahari-lata	*Dalhonsic bracteata*	Common
25	Pani-lata	*Cissus repanda(Syn. Vitis repanda)*	Common
26	Pichala-lata	*Hibiscus fragrans*	Common
27	Sonarupa	*Mussanda glabra*	Common
28	Thebowlata	*Hodgsonia hiteroclita*	Common
29	-----	*Michelia macarantha*	Common
30	-----	*Smilax pacis*	Common
31	-----	*Dioscorea species*	Common
32	-----	*Atylosia barbata*	Common
(C) Canes and Palms			
1	Bontal	*Licuala peltata*	Few
2	Guruga tamul	*Pinanga gracilis*	Scattered
3	Hakua – bet	*Calamus latifolia*	Few
4	Jati-bet	*Calamus tenuis*	Uncommon
5	Raidanga – bet	*Calamus Flagellum*	Uncommon
6	Rankoli- bet	*Calamus loptospadix*	Uncommon
7	Tita-bet	*Calamus tenuis*	Few
8	Toko-pak	*Livistona jenkinsiana*	Uncommon
9	Tamul	*Areca catechu*	Common
(D) Grasses and Bamboo			
1	Ekra	*Erianthus ravennae*	Common
2	Kush	*Saccharum spontaneum*	Common
3	Meghela	*Saccharum spodaeneum*	Common
4	Nal	*Phragmitis karka*	Common
5	Sau	*Pollinia ciiliata*	Common

S. No.	Local name	Botanical Name	Status
6	Sun-grass	*Imperata arundinacea*	Common
7	Bati bah	*Dinochola madellandii*	Common
8	Bojai bah	*Pseudostachympolymorphum*	Common
9	Dolu bah	*Teinostachyum dulloca*	Common
10	Jati bah	*Bamboosa tulda*	Common
11	Kako bah	*Dendrolcalamus hamiltoni*	Common
12	Lakhooti bah	*Bamboosa pallida*	Common
13	-----	*Bambossa balcooa*	Common
14	-----	*Neohougeaua spp.*	Common

iii. **List of fauna in North Kamrup Division, Assam:** The North Kamrup forest Division provides suitable habitat for a diverse fauna. The detail list of different fauna found in this Division is shown in table

4.

Table 4: List of diverse fauna found in North Kamrup forest Division, Assam.

S. No.	Local name	English name	Scientific name	Status
(A) Mammals				
1	Garh	One horned Rhinoceros	*Rhinoceros unicornis*	Rare
2	Bonoria gahari	Indian wild Boar	*Sus cristatus*	Least concern
3	Dhekiapatia bagh	Royal Bengal Tiger	*Panthera tigris*	Rare
4	Naharphutuki bagh	Panther or Leopard	*Panthera pardus*	Endangered
5	Joha mala	Indian Civet	*Viorra zibotha*	Least concern
6	Horu jahamala	Small Indian Civet	*Volvariella indica*	Least concern
7	Sugari pahu	Barking Dear	*Muntiacus muntjak*	Least concern
8	Siyal	Fox	*Canis aureus*	Least concern
9	Bandar	Monkey	*Macaca mulata*	Least concern
10	Honumanbandar	Common Langur	*Semnopithecus antellus*	Least concern
11	Hollo bandar	White browed Gibbon	*Hylobates hoolocks*	Endangered
12	Laguki bandar	Slow loris	*Nyctiebus coucang*	Least concern
13	Bonoria Mah	Wild Buffalo	*Bubalus bubalis*	Least concern
14	Neul	Mongoose	*Herpestes species*	Least concern
15	Udd	Common Otter	*Lutra lutra*	Least concern
16	Sohapahu	Hare	*Lepus ruficaudatus*	Least concern
17	Ketela pahu	Indian porcupine	*Hystrix indica*	Endangered
18	Kerketua	Squirrels	*Dremomys lokriah*	Least concern
19	Kemtapahu	Pangolin	*Manis crassicaudata*	Endangered
(B) Birds				
1	Kaori	House Crow	*Corvus splendens*	Least concern
2	Dhora kauri	Jungle Crow	*Corvus macrohynchos*	Least concern
3	Chekcheki	Tree pie	*Dandrocitta vagabunda*	Least concern
4	Bulbuli	Bulbul	*Molpastes cafer*	Least concern
5	Dohikotara	Magpie Robin	*Copsychus caulans*	Least concern
6	Phesu	Black Drongo or King Crow	*Dicrurus macrooerus*	Least concern

S. No.	Local name	English name	Scientific name	Status
7	Patmadoi	Golden Orole	*Orolus orolus*	Least concern
8	Moina	Grackle Himalaya	*Gracula religiosa*	Least concern
9	Kath salika	Grey Headed Maina	*Sturnia malabarica*	Least concern
10	Chutia salika	Bank Maina	*Acridotheres ginginlanus*	Least concern
11	Kankunka	Pied Maina	*Sturnopaster contra*	Least concern
12	Tokora charai	Weaver Bird	*Ploceus philippinus*	Endangered
13	Bota charai	Munia	*Uroloncha striata*	Least concern
14	Ghan chirika	House sparrow	*Passer domesticus*	Least concern
15	Bali mahi	Wagtail	*Motacilla alba*	Least concern
16	Kathkhola	Wood pecker	*Dryobates mahrattensis*	Least concern
17	Ranga barhoitoka	Golden backed wood pecker	*Brachypternusbenghalensis*	Least concern
18	Hetaluka	Barbet	*Xantholoema haemacophal*	Least concern
19	Keteki	Cuckoo	*Hierococcyx vairous*	Least concern
20	Kuli	Koel	*Eudynamis scolopaccus*	Least concern
21	Kukuha	Crow pheasant	*Centropus sinensis*	Least concern
22	Kaocharai	Roller	*Coracies bengaiensis*	Least concern
23	Bhatow	Indian parakeet	*Psittacula cuptria*	Least concern
24	Machruka	Pied king fisher	*Caryle rudis*	Least concern
25	Dhanesh	Hornbill	*Dickoceros bicornis*	Least concern
26	Guburkhosara	Hoopie	*Upupa epops*	Least concern
27	Dinkona	Night jar	*Caprimulgus asiaticus*	Least concern
28	Hudu	Great horned owl	*Bubo bubo*	Least concern
29	Phesa	Spotted owlet	*Athene brama*	Least concern
30	Rogasagun	King vulture	*Sarcogyps calvus*	Rare
31	Sagun	Bengal vulture	*Pseudogyps bengalensis*	Rare
32	Chilani	Brahminy kite	*Haliastur indus*	Rare
33	Hen	Tawny eagle	*Aquila rapox*	Least concern
34	Moukhap	Serpent eagle	*Haemanternus cheela*	Endangered
35	Haitha	Green pigeon	*Crocopus phoenicopterus*	Endangered
36	Kopow	Ring dove	*Streptopelia dacapcto*	Least concern
37	Bonkukura	Red jungle fowl	*Gallus gallus*	Least concern
38	Donk	Partridge	*Francolinus francolinus*	Least concern
39	Dauk	White breasted water hen	*Amauvornis phoonicurus*	Least concern
40	Kam charai	Purple moorhen	*Prophvno pohocephalus*	Least concern
41	Jaymala	Jacana	*Motopibius indicus*	Least concern
42	Ganga chiloni	River tern Pelican	*Sterna aurantia*	Least concern
43	Dohikola	Large cormorant	*Phalacrocorax carbo*	Least concern
44	Pani kaori	Little cormorant	*Phalacrocorax niger*	Least concern
45	Monihori	Snake bird	*Anhinga melanogaster*	Least concern
46	Hargilla	Greater adjuntant stork	*Leptoptilos dubius*	Rare
47	Saru Bortokola	Lesser adjunt	*Leptoptilos javanicus*	Least concern
48	Samukbhanga	Open billed stork	*Anastomas oscitans*	Least concern
49	Bagoli	Cattle egret	*Bubulcus ibis*	Least concern
50	Konamusuri	Paddy bird	*Ardeola grayii*	Least concern
51	Ghilahanh	Cotton teal	*Nettapus coromandelianus*	Least concern

S. No.	Local name	English name	Scientific name	Status
52	Soralihanh	Whistling teal	*Dendrocygna javancia*	Least concern
53	Chakoichokowa	Brahmmy duck	*Casarca ferruqinea*	Least concern
54	Digholihagh	Pintail duck	*Amauvor*	Least concern
55	Mugihagh	Common teal	*Anas cracca*	Least concern
(C) Reptiles				
1.	Ajoghar	Indian Rock Phython	*Phython molurus*	Least concern
2.	Lota-Xap	Vine Snake	*Ahaetulla nasutus*	Least concern
3.	Dhora Xap	Chequered Keelback	*Zenochrophis piscatir*	Least concern
4.	Bamuni Xap	Striped Keelback	*Xenochrophis vittatus*	Endangared
5.	Batchupa	Red necked Keelback	*Rhabdophis subminiatus*	Endangared
6.	Nilaji gum	Copperhead Trinket	*Elaphe radiata*	Least concern
7.	Asari	Bronzeback Tree snake	*Tendrelaphis pristis*	Least concern
8.	Guwala	Wolf Snake	*Mabuya carinata*	Least concern
9.	Sika Maroli	Rat Snake	*Ptyas mucosus*	Least concern
10.	Sankha Sur	Banded Krait	*Bungarus fasciatus*	Endangared
11.	Chokori	Monocled Cobra	*Naja kaouthia*	Endangared
12.	Khantia Xap Feti	Blind Snake	*Thphlina bramind*	Endangared
13.	Nag Feti	Spectacled Cobra	*Naja naja*	Endangared
14.	Tejpia	Common Indian Monitor	*Varanus bebgalensis*	Endangared
15.	Gui	Water Monitor	*Varanus salvator*	Least concern
16.	Keko	Geckos	*Lepidodactylus spp*	Least concern

Chapter 3 : Mining Operation and Production Activities :

In order to ensure mineral conservation, systematic mining and protection of environment, the Assam Minor Mineral Concession Rues,2013 has been made mandatory in regard to systematic and scientific development of all mines and quarries.

The mining permit area is covered with little amount of vegetation and soil without any tree of significant importance. For facilitating mining in this area and transportation of the quarry products, an unmetalled approach road already exists up to the quarry site which may be easily connecting the main road.

There is a topsoil cover (including overburden) with thickness varying from 1m to 1.5 m over the whole area except in some places where there are exposed rock boulders. Such exposed rocks are weathered rocks and may be used only for the construction of the approach road and backfilling of the mined out area for reclamation purposes.

The quarry has been designed to work for 250 days on single shift basis. The mining permit is for five years and as per calculation of reserves, it is found that year-wise production of granite rock boulders for the 1st year will be 50200 cu.m., for 2nd year it will be 52650 cu. m, for 3rd year... 61950 cu. m., for 4th year ....49950 cu. m. and for 5th year ... 35250 cu. m. respectively.

Since the deposit is very hard and compact, use of explosives with controlled blasting is suggested from economic point of view and to achieve the target production..

The applicant is suggested to approach the competent authority, Office of the Deputy Commissioner to take proper permission against use of explosives in proper way and also clearance from Pollution Control Board.
Provision was made for a stockyard to store the stone boulders outside the quarry site. The large rock boulders produced while quarrying, will be broken manually to a suitable size in the quarry itself and will be loaded manually to the Trucks/ Dumpers for dispatch to the desired locations.

3.1. Probable hazards and pollution associated with mining operation :

While it is acknowledged that mining activities in Gopeswar Stone Quarry and Mining Zone have been carried out quite responsibly, it is essential to mention about the potential hazards associated with such activities especially about controlled blasting operations.
Moreover, noise generated during blasting, drilling operations, generation of dust, accumulation of overburden, movement of transport vehicles etc. will negatively impact the environment, including flora and fauna.

3.2. Measures to mitigate pollution and prevent any potential hazards :

1) Although blasting operation was carried out in a controlled manner, it is advisable to fix a thick cover of a safety net over the blasting site in order to prevent the splitting out of rock fragments during blasting operations.
2) Blasting operations should be carried out in a phase manner in order to minimize the noise hazard. Better to provide an acoustic shield.
3) It is advisable to use ear-plug during blasting operations.
4) The worker carrying out drilling operation must wear eye-protector, proper hand-gloves to withstand vibratory effects and protective clothing
5) Dust suppression system to be provided during loading and transport operations.
6) Adequate measure should be taken during transportation and storage of explosives.

Chapter 4. : Impact on the Flora and Fauna

As per Environment Impact Assessment (EIA) studies carried out to assess the impact of stone mining activities on the local ecosystem in Kamrup district i.e. air quality, water quality, biodiversity assessment, socio-economic evaluations etc., it is now confirmed that there is no evidence of any adverse impact on flora and fauna due to the mining activities at Gopeswar Stone Quary and Mining Zone.
Our findings emphasize that previous similar mining activities in this region has not resulted in any damage to the biodiversity in the same region.
Moreover, the mining activity have been carried out with complete adherence to

the necessary environment regulations and adequate mitigation measures. This has guaranteed nominal disruption to the natural habitat of the flora and fauna.

Chapter 4.1 : Possible impact on Flora and Fauna :

For the sake of interest and discussion about certain probable impacts on flora and fauna, which can occur owing to unregulated and unethical mining activities are highlighted as under :

a) Destruction of habitats : The major impact of mining activities is destruction of habitats. The clearing of land, creation of infrastructure, maximum felling of trees etc. can disrupt the natural habitat of several plant species which, in turn, lead to soil erosion and loss of biodiversity.
b) Contamination of soil and water : Accumulation of overburden can contaminate the soil and water bodies, affecting health and growth of vegetation in that area.
c) Air pollution : Emissions from drilling machineries, blasting operations, movement of vehicles etc. pollute the air and proper mitigation measures must be adapted to minimize the adverse effect on plant life in nearby areas.
d) Noise and disturbance : Noise generated during blasting, drilling operations, movement of vehicles etc. can disrupt natural behavior and breeding patterns of many wildlife species.
e) Road mortality : Construction of roads for movement of heavy vehicles can result in road mortality among wildlife. Amphibians, reptiles and smaller mammals are at much higher risk in the event of reckless driving.

4.1.1. Mitigation measures to nullify the impact on the Flora and Fauna :

a) Protected area : To establish and maintain protected area within the reserve forests may serve as a haven for wildlife. It is essential to have proper enforcement of no-entry zones during critical breeding seasons.
b) Wildlife corridor : In order to facilitate the movement of animals between fragmented habitats, it is necessary to design and protect wildlife corridors. Such corridors will reduce isolation effects and enhance genetic diversity.
c) Research and education : It is very important to have continuous research on environmental impacts and biodiversity in the Goalpara district. It will be of huge benefits if the local population, workers at site and policymakers are educated about the importance of conservation.
d) Monitoring and Regulation : Continuous monitoring of mining activities is mandatory to ensure complete adherence to prescribed regulations. Violators must be penalized and corrective action should be enforced immediately.

e) Plantation activities : Major plantation activities should be carried out in and around the project site, preferably with plant species which are amicable to local habitat.

4.2.1 No adverse impact on Flora and Fauna :

The cumulative findings indicate that there is no substantial impact on the flora and fauna of the reserve forest in Kamrup district as a result of mining activities at stone quarry at Gopeswar

Our key observations are :

a) Minimai habitat disruption : The clearing of site and building up of infrastructure has been carried out with minimal disturbance to the natural habitat and animal species.
b) Protected habitats : The existing mining site is located far away from the wildlife habitats and this has reduced the likelihood of direct face-off or disruption to the local fauna.
c) Limited air pollution : Emissions from machineries and vehicles used during activities have been well within the permissible limits, without any significant effects on local plant life.
d) Minimal spills and incidents due to the environmental regulations : Stringent environmental regulations and guidelines enforced by the MoEF&CC, State Forest Department, Pollution Control Board etc. have contributed in minimizing any damage to flora. The regulations include strict measures for waste disposal and land reclamation.
e) Reforestation initiatives : Mining Permit Holder has undertaken reforestation initiatives in the area as part of Compensatory Afforestation Programme of MoEF&CC, which in turn will contribute positively to the overall forest cover in the district.

Chapter 4.3 : Positive coexistence of Faunal Population and Mining activities

Despite the potential hazard associated with mining activities, it is already established that flora and faunal population in the Kamrup district has managed to coexist with such activities.

This study identifies different species of mammals and avifauna present in this region. There is not any adverse impact on the population of these species or their habitats. This suggests that proper environmental management practices including the implementation of environment monitoring plan, environmental impact assessment and mitigation measures, have been adapted to protect the sensitive ecosystem and ensure the conservation of biodiversity in the North Kamrup Division.

Chapter 5 : Conclusion :

Once the mining operation is over, the landscape of the quarrying area will get completely changed and there will be no grass, shrubs and other trees. At this stage, it is desired to restore the physical, chemical and biological qualities of the environment without any possible agricultural activities.

However, reclamation of this area with plantation of trees must be undertaken by the Mining Permit Holder.

Although such activities are essential for economic growth, they need to be managed to safeguard the biodiversity of the region. A well balanced approach is essential in order to integrate conservation and sustainable development, which is crucial for ensuring long-term survival of Flora and Fauna in this district.

Continuous monitoring and implementation of best practices as per Environment Monitoring Plan should be carried out for protection of biodiversity of the region.

There must be a balanced approach between environmental and economic development.

As understood from conservations with local inhabitants, there will be no significant impact on Flora and Fauna of this region due to such mining activity and a successful coexistence will prevail between such activities and biodiversity of the region.

Annexure – III

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Estimate for 0.91 Ha. Plantation for Creation of Safety Zone along Mining Boundary of Gopeswar Stone Quarry and Mining Zone area

Area (ha.)	0.91
Spacing (m x m)	2 X 2
Number of Saplings/ ha	2500
Length of Fence (RM)	1200 *
Wage rate (Rs.)	344
Increase in wage rate for subsequent years by a factor	1.1 **

Sl. No.	Particulars of works	Units	Qty./ Ha.	Total Qty.	Rate/ Unit	Amount (Rs.)	Applicable rate of GST/ Cess etc.	
							GST	Labour Cess
A	**ERECTION OF FENCING**							
	(a) Cost of full chain link fencing (4′ ht with 10 guage 3″ dia link) with 2 strand barbed wire, to be filled on pre-cast RCC pillars of specific specification and size (2.1m x 0.125m x 0.125m) as per detail specification attached at 2.5 m apart, including transportation, fitting and fixing for 1500 RM @ Rs. 1706/RM as per estimate (Inclusive of 14.05% GST and 1% Labour Cess)	RMs		1200	1706	2047200		
	Sub Total					**2047200**		
B	**INFRASTRUCTURE IN PLANTATION AREA**							
	Cost of tools & implements	Set		1	10000	10000		
	Sub Total					**10000**		
	GST					**1200**	**12%**	
	Labour Cess					**100**		**1%**
	Total					**11300**		
C	**ADVANCE WORK**							
	Raising of Nursery for creation including vacancy filling for 3 (three) years (25% + 15% + 10%) and site nursery mortality 15% by using polypots	Nos.	4125	3753.8	10	37538		
	Site selection, surveying, demarcation, jungle cutting, slash disposal etc. 40DLs/ha.	DLs	40	36.4	344	12522		
	Sub Total					**50059**		
D	**CREATION**							
	Soil working, carriage of stumps, polypot seedling and planting at the plantation site including, dibbling of seeds wherever necessary to complete raising of plantation with all necessary operation @ 50 DLs/ ha	DLs	50	45.5	344	15652		
	Sub Total					**15652**		
E	**1ST YEAR MAINTENANCE**							
	4 weeding, mulching and fire protection works @ 25 DLs/ ha/ weeding	DLs	25	22.75	344	7826		
	Contingency	LS				5000		
	Sub total					**12826**		

	2ND YEAR MAINTENANCE							
	4 weedings, mulching & fire protection works @ 25 DLs/ha/weeding	DLs	40	36.4	378.4	13773.76		
	25% vacancy filling by 1 year old seedlings from nursery @ 28 DLs/ha	DLs	28	25.48	378.4	9641.632		
	Contingency	LS				5000		
F	***Sub Total***					**28415.392**		
	3RD YEAR MAINTENANCE							
	4 weedings, mulching & fire protection works @ 20 DLs/ ha/ weeding	DLs	20	18.2	416.24	7575.568		
	15% Vacancy filling by 2 year old seedlings from nursery @ 23 DLs/ ha	DLs	23	20.93	416.24	8711.9032		
	Maintenance of fencing	LS				5000		
	Contingency	LS				5000		
G	***Sub Total***					**26287**		
	4TH YEAR MAINTENANCE							
	3 weedings, fire protection works @ 15DLs/ ha/ weeding	DLs	15	13.65	457.864	6249.8436		
	Maintenance of fencing	LS				5000		
	Contingency	LS				5000		
H	***Sub Total***					**16249.84**		
	5TH YEAR MAINTENANCE							
	Climber cutting, 3 weedings & other silvicultural works and fire protection works @ 15 DLs/ ha	DLs	15	13.65	503.65	6874.82796		
	Maintenance of fencing	LS				5000		
	Contingency	LS				5000		
I	***Sub Total***					**16874.83**		
	Grand Total					**2224865**		
	Rupees Twenty Two Lakh Twenty Four Thousand Eight Hundred Sixty Five only							

Divisional Forest Officer
North Kamrup Division, Rangia

GOVT. OF ASSAM

OFFICE OF THE DIVISIONAL FOREST::OFFICER :: NORTH KAMRUP DIVISION, RANGIA

Letter No. A/MHL/NKD/ 1149-50 Date: 05/1/2024

To,

The Chief Conservator of Forests &
Nodal Officer, (FC Act), Assam
O/o the Principal Chief Conservator of Forests &
Head of Forest Force, Assam
Panjabari, Aranya Bhawan, Guwahati- 37

06/01/2024

Sub: Proposal for diversion of 5.40 Ha. of forest land for operation of Gopeswar Stone Quarry & Mining Zone area under North Kamrup Division in favour of Sri Fatuk Das, Guwahati.

Ref: Your office letter no. FG.27/Nodal/Proposal/Gopeswar MCA/N.K. Divn, dtd. 26.09.2023. — 173

Sir,

With reference to the subject cited above, I have the honour to furnish herewith the required information point wise as sought for.

1. It is a part of the Mining Zone, a map of which is attached for reference as Annexure-I.
2. The cumulative impact has been attached as Annexure-II.
3. The proposed area doesn't fall under any no-development Zone.
4. The proposed area does not fall under any Eco-Sensitive Zone or nearby protected area. The aerial distance of the proposed area from the nearest Wildlife Sanctuary was also furnished in Form-A Part-I by the user agency.
5. The proposed area doesn't fall under any elephant corridor. Also this Division doesn't have any record of human elephant conflict in the said area.
6. The CA land has been allotted to the forest department. The proposal to constitute the area into Reserved Forest will be sent soon to the Govt.
7. The copy of estimate for plantation in the safety zone area is enclosed as Annexure-III.

Enclo:- As stated above.

Yours faithfully

(Sunnydeo I. Choudhary, IFS)
Divisional Forest Officer
North Kamrup Division, Rangia

Copy to the Chief Conservator of Forests(T), Central Assam Circle, Guwahati-29 for favour of his kind information.

Divisional Forest Officer
North Kamrup Division, Rangia

Memo No. B/MHL/NKD/ 5195 Date: 05/1/2024

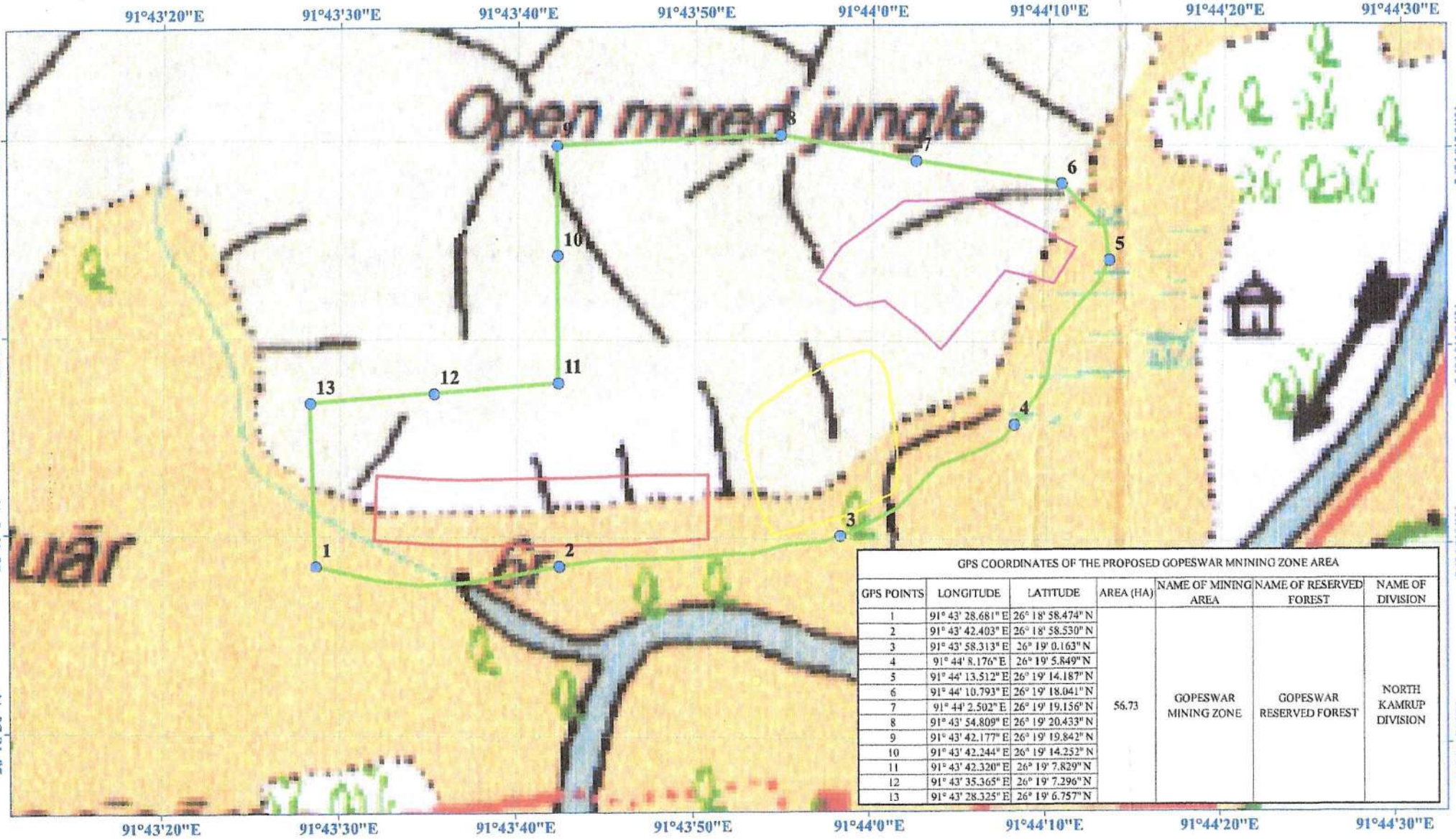
Copy to Sri Fatik Das, LOI holder for information.

Divisional Forest Officer
North Kamrup Division, Rangia

Annexure – I

GEOREFERENCED MAP SHOWING THE 56.73 HECTARE GOPESWAR MINING ZONE AREA AT GOPESWAR RF UNDER NORTH KAMRUP FOREST DIVISION,RANGIA

SCALE: 1:4,000



GPS COORDINATES OF THE PROPOSED GOPESWAR MNINING ZONE AREA						
GPS POINTS	LONGITUDE	LATITUDE	AREA (HA)	NAME OF MINING AREA	NAME OF RESERVED FOREST	NAME OF DIVISION
1	91° 43' 28.681" E	26° 18' 58.474" N	56.73	GOPESWAR MINING ZONE	GOPESWAR RESERVED FOREST	NORTH KAMRUP DIVISION
2	91° 43' 42.403" E	26° 18' 58.530" N				
3	91° 43' 58.313" E	26° 19' 0.163" N				
4	91° 44' 8.176" E	26° 19' 5.849" N				
5	91° 44' 13.512" E	26° 19' 14.187" N				
6	91° 44' 10.793" E	26° 19' 18.041" N				
7	91° 44' 2.502" E	26° 19' 19.156" N				
8	91° 43' 54.809" E	26° 19' 20.433" N				
9	91° 43' 42.177" E	26° 19' 19.842" N				
10	91° 43' 42.244" E	26° 19' 14.252" N				
11	91° 43' 42.320" E	26° 19' 7.829" N				
12	91° 43' 35.365" E	26° 19' 7.296" N				
13	91° 43' 28.325" E	26° 19' 6.757" N				

Legend

G.P.S. POINTS OF THE GOPESWAR MINING ZONE AREA

PROPOSED GOPESWAR MINING ZONE AREA

PROPOSED 5.4 HA GOPESWAR STONE QUARRY & MINING ZONE AREA

PROPOSED 5.47 HA GOPESWAR EAST STONE QUARRY NO.1 AREA

PROPOSED 5.73 HA GOPESWAR STONE QUARRY NO.4 AREA

Annexure – II

193

Cumulative Impact Study on Flora and Fauna due to Mining of Stone from 5.38 Hectares Gopeswar Stone Query and Mining Zone under Kamrup District, Assam

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CONTENTS

Chapter 1 : Introduction

Kamrup is a hilly district in the state of Assam. It is located between 25°43' and 26°51'N latitude and 90°36' to 92°12 E longitude. The district is bounded by Darrang district to the

east, State of Meghalaya to the south, Udalgiri and Baska districts in the north, Goalpara and Nalbari districts in the west.
Kamrup district occupies an area of 4,345 square kilometers.

Kamrup is an administrative district in the State of Assam with its head quarter at Amingaon. It came into being on 31st day of March 2003 and has proved to be an exemplary and model civil district.

Kamrup district is famous for many historic places like Hajo, Sualkuchi, Chhayagaon, Chamaria, Rangia, Palashbari, Boko and north Guwahati. Hajo is famous for many religious shrineslike Ganesh temple, Kedar temple, Hayagriba Madhava temple etc.

The Mining Plan related to this stone mining project was prepared by Dr. Abhijit Bora, RQP and Director of EcoRescue Enviro Consulting Services Private Limited and was duly approved by Directorate of Geology and Mining, Guwahati.

1.1 Objective :

According to the ICSSR (Institute of Social Sciences and Research), the total forest area in the Kamrup district is 1,22905.105 hactares, excluding the unclassed state forest. The forest resource of the district comprises of 23 reserve forests under three forest divisions of Kamrup East, Kamrup West and North Kamrup.
Although the total under reserve forest in the district is 151446.375 hectares, the rate of deforestation in the district is 2.5% per annum and rate of urbanization is about 7% per annum.
The district has also several stone quarries available for mining purpose
Section 2 of the Forest Conservation Act is about the restriction on the State Government for dereservation of forests or use of forest for non-forest purpose. Non-forest purpose means the breaking up or cleaning up of any forest land or portion thereof for (a) for cultivation of crops (b) any purpose other than reafforestation. Due to above, special provisional permission has been obtained from the Principal Chief Conservator of Forest and Head of Forest Force, Assam towards operation at Gopeswar Stone Quarry and Mining Zone Area covering 5.38 hactares near Deuduar Gaon.
Kamrup district is also rich in flora and fauna. This report assesses the impact of such mining activity on the flora and fauna at the quarry site, being near to Deuduar Gaon, under North Kamrup Division.

This report also focusses on environmental consequences and mitigation measures. Moreover, our study penetrates into the intricate ecological dynamism of this region and evaluates the consequences of human intervention during the mining activities. We have thoroughly studied and analyzed the probable environmental changes which may affect the habitat and also identified strategies for sustainable coexistence between rich biodiversity and mining activities
We have also identified possible hazards which may arise during mining

activities and planned adequate mitigation measures.
Mined out stone boulders will be used mainly for construction of roads and buildings while rock boulders will be processed in Stone Crusher unit to manufacture road metals and stone chips of different sizes to make it suitable for various road construction and other construction purposes.

1.2 Study Area :

The proposed quarry site falls under Gopeswar Reserve Forest under Sila Range of North Kamrup Divisiont and about 2 km away from National Highway 31, connected by a motorable road. Nearest railway station is Changsari. The proposed quarry side is free from human habitat within a radius of 400 meters.

The Latitudes and Longitudes of the mining permit area is given below :

GPS Points	Longitude	Latitude
M 1	90° 43' 32.000" E	26° 18' 59.800" N
M 2	90° 43' 35.500" E	26° 18' 59.600" N
M 3	90° 43' 40.825" E	26° 18' 59.583" N
M 4	90° 43' 46.601" E	26° 18' 59.651" N
M 5	90° 43' 50.810" E	26° 18' 59.940" N
M 6	90° 43' 50.770" E	26° 19' 03.180" N
M 7	90° 43' 45.968" E	26° 19' 03.108" N
M 8	90° 43' 41.025" E	26° 19' 02.983" N
M 9	90° 43' 35.700" E	26° 19' 02.900" N
M 10	90° 43' 32.100" E	26° 19' 03.100" N

The mining area falls under Survey Toposheet no. 78 N / 11.
The area is about 5.38 hectares and is a degraded forest area. The area is covered by small vegetation like grasses and shrubs. There is no growth of valuable big trees. The proposed site is not within any protected area under Archeological, Religious, Cultural heritage or Defense establishments.
The geology of the Mining Permit area is a massive granitic body comprising of Grey coloured hard medium to coarse grained granite with high quantity of quartz, plagioclase, microcline, biotite etc. Joints are present in the depositwhich will be very helpful during mining operation.

1.3. Background :

The detailed exploration of the mineral in this area has not been carried out. Therefore, the estimation of the Mineral Reserve has been made considering the deposit to be massive and continuous and taking into account DFO letter no. B/MHL/Gopeswar SQ/7897 dated 01.10.2018.
The Mineable reserve calculated roughly up to the lowest level is approximately 2,50,000 cu. m. within a period of five (5) years with considerable amount of overburden.

This report is prepared in context of the essential details sought by MoEF&CC (FC div.) against the proposed forest diversion proposals.

1.4. Source of Data:

Apart from our primary source of data like GPS coordinates, Key Map, Geological Map etc., we followed Assam Minor Minerals Concession Rules,2013 for authenticity of guidelines pertaining to Mining operation and several Environment Impact Assessment Reports related to mining activities.

Chapter 2 : Details of the Flora and Fauna in Kamrup district

List of diverse flora found in North Kamrup forest Division, Assam.

S. No.	Local name	Botanical Name	Status
(A) Trees			
1	Khoir	*Acacia catechu*	Common
2	Haidisopa,Haldu,Taraksopa	*Adina cordifoiia*	Common
3	Bel	*Aegle marmelos*	Common
4	Ramanbih	*Aesculus panduana*	Common
5	Borpat	*Aiianthus grandis*	Common
6	Chika-maruli	*Alangium chinense (syn. A. begoniaefolium)*	Common
7	Sau	*Albizzia chinensis (Syn. A. stipulate)*	Common
8	Siris	*Albizzia lebbek*	Common
9	Moj	*Albizzia lucida*	Common
10	Koroi	*Albizzia procera*	Common
11	Nogakola	*Alphonsea ventricosa*	Common
12	Satiana	*Alstonia scholaris*	Common
13	Jutuli	*Altingia excelsa*	Common
14	Amari lali	*Amoora wallichii*	Common
15	Kadam	*Anthocephalus cadamba*	Common
16	Garokhuta,	*Aporosa aurea*	Common
17	Garogine	*Aporosa roxburghii*	Common
18	Cham, Dewa	*Artocarpus chaplasa*	Common
19	Kathal	*Artocarpus heterophylk(Syn, A. interifolia)*	Common
20	Bohet, Dewa	*Artocarpus lakcoocha*	Common
21	Leleku	*Baccaurca sapida*	Common
22	Hidal, Hikai	*Barringtonia acutangula*	Common
23	Kurial, Keral	*Bauhinia purpurea*	Common
24	Kanchan	*Bauhinia spp.*	Common
25	Bogra-kotro, Kurol	*Bauhinia variegata*	Common
26	Kathalpatia , Amchoi	*Beiischmicdie assamica*	Few
27	Uriam	*Bischofia javanica*	Common
28	Kuhir, Kata-kuhir	*Bridelea retusa*	Common
29	Palas	*Butea monosperma*	Common
30	Banmala	*Calicarpa macrophyila*	Common
31	Maksi, Maskotia	*Callicarpa macrophylla*	Common
32	Khuksi	*Callicarpa spp.*	Common
33	Dhuna	*Canararium bengalense*	Few
34	Boga-kaiti,Bhela	*Canthium glabrum*	Common
35	Dainl-jam	*Carallia brachiata (syn. C. integerrima)*	Common
36	Kum	*Careya arborea*	Common

S. No.	Local name	Botanical Name	Status
42	Tezpat	*Cinnamomum tamala*	Common
43	Kotra	*Cordia grandis*	Common
44	Boal,Goborhuta Dobakari	*Cordia dichotma*	Common
45	Barun	*Cratasva nurvala*	Common
46	Garumara	*Crypteronia paniculata*	Common
47	Sissoo	*Dalbergia sissoo*	Common
48	Dal-bijili	*Dalbergia stipulacea*	Common
49	Kathiakoroi	*Derris rabusta*	Common
50	Owtenga	*Dillenia indica*	Common
51	Okshi, Oxi, Baji-ow	*Dillenia pentagyana*	Common
52	Kolonthi,Salkai	*Diospyros variegata*	Common
53	Banpitha	*Doncllo roxburghii (syn chrysocnyucw roxburghii)*	Common
54	Dukoha	*Dryptes assamica*	Few
55	Khokan	*Duabanga gradifiora (Syn, D. sonnaratioides)*	Common
56	Banardima	*Dysoxylum binectariferum*	Common
57	Gandheiipoma	*Dysoxylum hamiltonii*	Common
58	Lali	*Dysoxylum poocerum.*	Common
59	Pajar,Jarigoch,Guai	*Ehretia acuminata*	Common
60	Nagini, Garelasopa	*Elaeocarpus aristatus*	Common
61	Rudrakhya	*Elaeocarpus ganitrus.*	Common
62	Amlakhi	*Emblica officinalis (Syn. Phyllanthus emblica)*	Common
63	Phulgamari	*Endospermum chinense*	Common
64	Jodha,Lowa	*Engelhardtia spicata*	Common
65	Modar	*Erithrina variegata (Syn. E. indica)*	Common
66	Lehajam	*Euginea Formosa*	Common
67	Brajnali	*Fagara budrunga (syn. Zanthoxylum budrunga)*	Scattered
68	Bar	*Ficus bengalensis*	Common
69	Jari	*Ficus benjamina*	Common
70	Dhopabar	*Ficus drunacea (syn.Ficus myserensia)*	Common
71	Atha-bor	*Ficus elastica*	Common
72	Jaribar	*Ficus globosa*	Common
73	Dimaru	*Ficus hispida*	Common
74	Tengabor	*Ficus infectoria (Syn. F.lucescens).*	Common
75	Godgubar	*Ficus microcarpa L.f Var. latifolia (Miq) corner*	Common
76	Ahot	*Ficus religiosa*	Common
77	Autha-dimaru	*Ficus roxburgii*	Common
78	Pakri	*Ficus rumphii*	Common
79	Panial	*Flacourtia cataphracta (Syn. F. jangomas)*	Few
80	Kuji-thekera	*Garcinia kydia*	Common
81	Bar- thekera	*Garcinia pedunculata*	Few
82	Tepor	*Garcinia zanthochymus*	Few
83	Kau-thekera	*Garsinia cowa*	Common
84	Thutmola	*Garuga pinnata*	Common
85	Gamari	*Gmelina arborea*	Common
86	Bijol-gaoh, , Ban-bagari	*Grewia elastic*	Common

S. No.	Local name	Botanical Name	Status
87	Pisoii	*Grewia microcos (Syn.Microcos panicuiata)*	Common
88	Dalmugra	*Gynocardia odorata*	Common
89	Dhop-parali	*Haplophregma adenophyllum*	Common
90	Karonda/ Keseru/Karangiya	*Hateropanax fragrans*	Common
91	Komal-siuld	*Heynea trijunga*	Common
92	Dudhi	*Holarrhena antidysenterica*	Common
93	Panikadam Bhurkhundi	*Hymenodictyon excelsum*	Common
94	Pisela	*Kydia calycina*	Common
95	Sida	*Lagerstroemia parviflora*	Common
96	Ajharvl	*Lagerstroemia speciosa (Syn.l llosioginao)*	Common
97	Ruhimala	*Lannea coromandelica*	Common
98	Pareng	*Linoceria macrophylla (Syn. L remiflora)*	Common
99	Honlu, Muga	*Litsaea monopetala (Syn. L. polyantha)*	Few
100	Baghnal	*Litsea glutinosa(Syn, L, sebifera)*	Rare
101	Morelia	*Macaranga denticulata*	Common
102	Janlo/ Juglo	*Macaranga indica*	Common
103	Kalasom/ Kaunla	*Machilus globosa*	Common
104	Garorisopa	*Magnolia griffithii (Magnolia pterocarpa)*	Common
105	Larubandha	*Mailohes albus.*	Common
106	Jarath, Rohini.Faku	*Mallotus phillipensis*	Common
107	Buritokan	*Mallotus rexburghianus*	Common
108	Am	*Mangifera indica*	Common
109	Bon-Aam	*Mangifera sylvatica*	Common
110	Phulsopa	*Manglietia insignis*	Common
111	Badam	*Mansonia dipikal*	Common
112	Bon- Pasala, Monoi	*Meliosma pinnata*	Common
113	Thowthowa,phoko	*Meliosrna simplscifolia*	Common
114	Nahor	*Mesua ferrea*	Common
115	Sopa	*Michelia spp.*	Common
116	Kaliori, Kolti	*Mitrephora tomentosa*	Common
117	Nuni	*Morus acidosa*	Common
118	Bola	*Morus lavigata*	Scattered
119	Gorobhala	*Myristica linifolia (syn. M. longifolia)*	Common
120	Choi-parali	*Oreenida integrifolia*	Common
121	Bhatgilla	*Oroxylum indicum*	Common
122	Som	*Persea bombycina (Syn. Machilusbombycina)*	Common
123	Bonsum	*Pheebe goalparensis*	Common
124	Makahi	*Phoebe cooperiana*	Common
125	Karas	*Pongamia glabra*	Common
126	Chika-gamari	*Prema barbata*	Common
127	Ghora	*Premna bengalensis*	Common
128	Gainali, Gundari,Gunderi	*Premna latifolia*	Common
129	Mirtenga, Newri	*Protium serratum (Syn. Bursera serrata)*	Common
130	Hatipolia	*Pterospermum acerifolium*	Common
131	Ban~tetali	*Pterospermum lanceofolium*	Common

S. No.	Local name	Botanical Name	Status
132	Harumoin	*Randia fasciculata*	Common
133	Bhe	*Salix tetrasporma*	Common
134	Simul, Simalu	*Salmalia malabarica (Syn. Bombax malabaricum,) Bombax ceiba*	Common
135	ManiSal	*Sapindus mukorissii*	Common
136	korha	*Sapium euginaefolium.*	Common
137	Mahkoia	*Sapium insigne*	Common
138	Seleng	*Sapium baccatum*	Common
139	Ghogra,Makri sal	*Schima wallichii*	Common
140	Bhela.Dhubinat	*Semecarpus anacardium*	Common
141	Sal	*Shorea robusta*	Common
142	Joba,Hingori	*Sloanea assamica (Syn. Echinocarpus assamica)*	Few
143	Pahari	*Sterculla alata*	Common
144	Udal	*Sterculia villosa*	Common
145	Parali	*Stereospermum personatum.(Syn. S. chelonoides)*	Common
146	Hewra	*Streblus asper*	Common
147	Gorobhangra	*Symploces javanica (syn. S. ferruginea)*	Common
148	Bharatmuri,Bhoira & Rotha	*Symplocos launna (Syn.S. spicate)*	Common
149	Bhomrati	*Symplocos oxyphylla*	Common
150	Godhajam	*Syzigium cerasoideum (Syn. Eugenia operculata)*	Common
151	Jam	*Syzigium cumini (Syn. Eugenia jumbolana)*	Common
152	Bogi-Jam	*Syzygium cumini (Syn. Euginea jumbolana)*	Common
153	Titasopa	*Talauma phellocarpa (Sync. Paramichelia baillionii*	Common
154	Bohramthuri	*Talaurna hodgsonii*	Scattered
155	Tetali	*Tamarindus indica*	Common
156	Segun, Teak	*Tectona grandis*	Common
157	Bhomra,Bahera	*Terminalia belerica*	Common
158	Hollock	*Terminalia myriocarpa*	Common
159	Hilikha	*Terminelia chebula (Syn. T.citrine)*	Scattered
160	Jatipoma, Poma	*Toona ciliate (Syn.Cedrela toona)*	Common
161	Phakdima	*Trea orientails &T. cannabina (Syn. T. ambronensis)*	Common
162	Bhotola	*Trevesia palmata*	Common
163	Bhelkar	*Trewia nudiflora (syn T. polycarpa)*	Common
164	Khukru	*Tricalysia singularis*	Common
165	Mota-Amari,Gobar -Kutla	*Turpinia pomifera*	Common
166	Ketkora, Moin	*Vanguira spinosa*	Common
167	Teta	*Vitex canescens*	Common
168	Ahoi	*Vitex peduncularis*	Common
169	Bhadia, Gohora	*Vitex pinnata (Syn. V. pubescens and glabrata and)*	Common
170	Moin, Hihmoin	*Xeromphis spinosa (Syn. Randia dumetorum)*	Common
171	Bagari	*Zizyphus mauritiana(Z. Jujuba)*	Common
172	Benbagri	*Zizyphus rugosus*	Common
(B) Climbers			
1	Baghalchora	*Mezoneurum cucullatum / Naravelia zeylanica*	Few
2	Bakalbih	*Dorris elliptica*	Common
3	Barkhi- lota	*Embelia ribes*	Common

S. No.	Local name	Botanical Name	Status
4	Bheda lata	*Paederia scandens {Syn.P. tomentosa)*	Common
5	Bon~marich	*Clematis cadmia*	Common
6	Chagallata	*Emblica nagushia*	Common
7	Chapetilata	*Vitis latifolia*	Common
8	Dat-bijali	*Dalbergia tamarindifolia, D. stipuiaces.*	Common
9	Dtgilewa	*Merremia vitifolia*	Common
10	Ghahelewa	*Croton caudatus*	Common
11	Ghiialata	*Entada phascoloides*	Common
12	Gobanglata, Latadimaru	*Conocephalus suaveolens*	Common
13	Hatibandholata	*Butea parviflora*	Common
14	Helolakha	*Milletia auriculata*	Common
15	Kari-lewa	*Vallaris heynei*	Common
16	Kharika-lata	*Jasminum coarctatum*	Common
17	Kirkiri-lata	*Jasminum scandens*	Common
18	Kuchai, Kuchia-lata	*Acacia pinnata*	Common
19	Kukual-lata	*Thumbergia grandifolia*	Common
20	Lata-dimaru	*Ficus scandens*	Common
21	Lata-guti	*Caesalpinia crista*	Common
22	Nakhati-lewa	*Bauhinllia vahlii*	Common
23	Padri-lewa	*Paederia scandens (Syn. Vitis rependa)*	Common
24	Pahari-lata	*Dalhonsic bracteata*	Common
25	Pani-lata	*Cissus repanda(Syn. Vitis repanda)*	Common
26	Pichala-lata	*Hibiscus fragrans*	Common
27	Sonarupa	*Mussanda glabra*	Common
28	Thebowlata	*Hodgsonia hiteroclita*	Common
29	-----	*Michelia macarantha*	Common
30	-----	*Smilax pacis*	Common
31	-----	*Dioscorea species*	Common
32	-----	*Atylosia barbata*	Common
(C) Canes and Palms			
1	Bontal	*Licuala peltata*	Few
2	Guruga tamul	*Pinanga gracilis*	Scattered
3	Hakua – bet	*Calamus latifolia*	Few
4	Jati-bet	*Calamus tenuis*	Uncommon
5	Raidanga – bet	*Calamus Flagellum*	Uncommon
6	Rankoli- bet	*Calamus loptospadix*	Uncommon
7	Tita-bet	*Calamus tenuis*	Few
8	Toko-pak	*Livistona jenkinsiana*	Uncommon
9	Tamul	*Areca catechu*	Common
(D) Grasses and Bamboo			
1	Ekra	*Erianthus ravennae*	Common
2	Kush	*Saccharum spontaneum*	Common
3	Meghela	*Saccharum spodaeneum*	Common
4	Nal	*Phragmitis karka*	Common
5	Sau	*Pollinia ciiliata*	Common

S. No.	Local name	Botanical Name	Status
6	Sun-grass	*Imperata arundinacea*	Common
7	Bati bah	*Dinochola madellandii*	Common
8	Bojai bah	*Pseudostachympolymorphum*	Common
9	Dolu bah	*Teinostachyum dulloca*	Common
10	Jati bah	*Bamboosa tulda*	Common
11	Kako bah	*Dendrolcalamus hamiltoni*	Common
12	Lakhooti bah	*Bamboosa pallida*	Common
13	-----	*Bambossa balcooa*	Common
14	-----	*Neohougeaua spp.*	Common

iii. **List of fauna in North Kamrup Division, Assam:** The North Kamrup forest Division provides suitable habitat for a diverse fauna. The detail list of different fauna found in this Division is shown in table

4.

Table 4: List of diverse fauna found in North Kamrup forest Division, Assam.

S. No.	Local name	English name	Scientific name	Status
(A) Mammals				
1	Garh	One horned Rhinoceros	*Rhinoceros unicornis*	Rare
2	Bonoria gahari	Indian wild Boar	*Sus cristatus*	Least concern
3	Dhekiapatia bagh	Royal Bengal Tiger	*Panthera tigris*	Rare
4	Naharphutuki bagh	Panther or Leopard	*Panthera pardus*	Endangered
5	Joha mala	Indian Civet	*Viorra zibotha*	Least concern
6	Horu jahamala	Small Indian Civet	*Volvariella indica*	Least concern
7	Sugari pahu	Barking Dear	*Muntiacus muntjak*	Least concern
8	Siyal	Fox	*Canis aureus*	Least concern
9	Bandar	Monkey	*Macaca mulata*	Least concern
10	Honumanbandar	Common Langur	*Semnopithecus antellus*	Least concern
11	Hollo bandar	White browed Gibbon	*Hylobates hoolocks*	Endangered
12	Laguki bandar	Slow loris	*Nyctiebus coucang*	Least concern
13	Bonoria Mah	Wild Buffalo	*Bubalus bubalis*	Least concern
14	Neul	Mongoose	*Herpestes species*	Least concern
15	Udd	Common Otter	*Lutra lutra*	Least concern
16	Sohapahu	Hare	*Lepus ruficaudatus*	Least concern
17	Ketela pahu	Indian porcupine	*Hystrix indica*	Endangered
18	Kerketua	Squirrels	*Dremomys lokriah*	Least concern
19	Kemtapahu	Pangolin	*Manis crassicaudata*	Endangered
(B) Birds				
1	Kaori	House Crow	*Corvus splendens*	Least concern
2	Dhora kauri	Jungle Crow	*Corvus macrohynchos*	Least concern
3	Chekcheki	Tree pie	*Dandrocitta vagabunda*	Least concern
4	Bulbuli	Bulbul	*Molpastes cafer*	Least concern
5	Dohikotara	Magpie Robin	*Copsychus caulans*	Least concern
6	Phesu	Black Drongo or King Crow	*Dicrurus macrooerus*	Least concern

S. No.	Local name	English name	Scientific name	Status
7	Patmadoi	Golden Orole	*Orolus orolus*	Least concern
8	Moina	Grackle Himalaya	*Gracula religiosa*	Least concern
9	Kath salika	Grey Headed Maina	*Sturnia malabarica*	Least concern
10	Chutia salika	Bank Maina	*Acridotheres ginginlanus*	Least concern
11	Kankunka	Pied Maina	*Sturnopaster contra*	Least concern
12	Tokora charai	Weaver Bird	*Ploceus philippinus*	Endangered
13	Bota charai	Munia	*Uroloncha striata*	Least concern
14	Ghan chirika	House sparrow	*Passer domesticus*	Least concern
15	Bali mahi	Wagtail	*Motacilla alba*	Least concern
16	Kathkhola	Wood pecker	*Dryobates mahrattensis*	Least concern
17	Ranga barhoitoka	Golden backed wood pecker	*Brachypternusbenghalensis*	Least concern
18	Hetaluka	Barbet	*Xantholoema haemacophal*	Least concern
19	Keteki	Cuckoo	*Hierococcyx vairous*	Least concern
20	Kuli	Koel	*Eudynamis scolopaccus*	Least concern
21	Kukuha	Crow pheasant	*Centropus sinensis*	Least concern
22	Kaocharai	Roller	*Coracies bengaiensis*	Least concern
23	Bhatow	Indian parakeet	*Psittacula cuptria*	Least concern
24	Machruka	Pied king fisher	*Caryle rudis*	Least concern
25	Dhanesh	Hornbill	*Dickoceros bicornis*	Least concern
26	Guburkhosara	Hoopie	*Upupa epops*	Least concern
27	Dinkona	Night jar	*Caprimulgus asiaticus*	Least concern
28	Hudu	Great horned owl	*Bubo bubo*	Least concern
29	Phesa	Spotted owlet	*Athene brama*	Least concern
30	Rogasagun	King vulture	*Sarcogyps calvus*	Rare
31	Sagun	Bengal vulture	*Pseudogyps bengalensis*	Rare
32	Chilani	Brahminy kite	*Haliastur indus*	Rare
33	Hen	Tawny eagle	*Aquila rapox*	Least concern
34	Moukhap	Serpent eagle	*Haemanternus cheela*	Endangered
35	Haitha	Green pigeon	*Crocopus phoenicopterus*	Endangered
36	Kopow	Ring dove	*Streptopelia dacapcto*	Least concern
37	Bonkukura	Red jungle fowl	*Gallus gallus*	Least concern
38	Donk	Partridge	*Francolinus francolinus*	Least concern
39	Dauk	White breasted water hen	*Amauvornis phoonicurus*	Least concern
40	Kam charai	Purple moorhen	*Prophvno pohocephalus*	Least concern
41	Jaymala	Jacana	*Motopibius indicus*	Least concern
42	Ganga chiloni	River tern Pelican	*Sterna aurantia*	Least concern
43	Dohikola	Large cormorant	*Phalacrocorax carbo*	Least concern
44	Pani kaori	Little cormorant	*Phalacrocorax niger*	Least concern
45	Monihori	Snake bird	*Anhinga melanogaster*	Least concern
46	Hargilla	Greater adjuntant stork	*Leptoptilos dubius*	Rare
47	Saru Bortokola	Lesser adjunt	*Leptoptilos javanicus*	Least concern
48	Samukbhanga	Open billed stork	*Anastomas oscitans*	Least concern
49	Bagoli	Cattle egret	*Bubulcus ibis*	Least concern
50	Konamusuri	Paddy bird	*Ardeola grayii*	Least concern
51	Ghilahanh	Cotton teal	*Nettapus coromandelianus*	Least concern

S. No.	Local name	English name	Scientific name	Status
52	Soralihanh	Whistling teal	*Dendrocygna javancia*	Least concern
53	Chakoichokowa	Brahmmy duck	*Casarca ferruqinea*	Least concern
54	Digholihagh	Pintail duck	*Amauvor*	Least concern
55	Mugihagh	Common teal	*Anas cracca*	Least concern
(C) Reptiles				
1.	Ajoghar	Indian Rock Phython	*Phython molurus*	Least concern
2.	Lota-Xap	Vine Snake	*Ahaetulla nasutus*	Least concern
3.	Dhora Xap	Chequered Keelback	*Zenochrophis piscatir*	Least concern
4.	Bamuni Xap	Striped Keelback	*Xenochrophis vittatus*	Endangared
5.	Batchupa	Red necked Keelback	*Rhabdophis subminiatus*	Endangared
6.	Nilaji gum	Copperhead Trinket	*Elaphe radiata*	Least concern
7.	Asari	Bronzeback Tree snake	*Tendrelaphis pristis*	Least concern
8.	Guwala	Wolf Snake	*Mabuya carinata*	Least concern
9.	Sika Maroli	Rat Snake	*Ptyas mucosus*	Least concern
10.	Sankha Sur	Banded Krait	*Bungarus fasciatus*	Endangared
11.	Chokori	Monocled Cobra	*Naja kaouthia*	Endangared
12.	Khantia Xap Feti	Blind Snake	*Thphlina bramind*	Endangared
13.	Nag Feti	Spectacled Cobra	*Naja naja*	Endangared
14.	Tejpia	Common Indian Monitor	*Varanus bebgalensis*	Endangared
15.	Gui	Water Monitor	*Varanus salvator*	Least concern
16.	Keko	Geckos	*Lepidodactylus spp*	Least concern

Chapter 3 : Mining Operation and Production Activities :

In order to ensure mineral conservation, systematic mining and protection of environment, the Assam Minor Mineral Concession Rues,2013 has been made mandatory in regard to systematic and scientific development of all mines and quarries.

The mining permit area is covered with little amount of vegetation and soil without any tree of significant importance. For facilitating mining in this area and transportation of the quarry products, an unmetalled approach road already exists up to the quarry site which may be easily connecting the main road.

There is a topsoil cover (including overburden) with thickness varying from 1m to 1.5 m over the whole area except in some places where there are exposed rock boulders. Such exposed rocks are weathered rocks and may be used only for the construction of the approach road and backfilling of the mined out area for reclamation purposes.

The quarry has been designed to work for 250 days on single shift basis. The mining permit is for five years and as per calculation of reserves, it is found that year-wise production of granite rock boulders for the 1st year will be 50200 cu.m., for 2nd year it will be 52650 cu. m, for 3rd year... 61950 cu. m., for 4th year ....49950 cu. m. and for 5th year ... 35250 cu. m. respectively.

Since the deposit is very hard and compact, use of explosives with controlled blasting is suggested from economic point of view and to achieve the target production..

The applicant is suggested to approach the competent authority, Office of the Deputy Commissioner to take proper permission against use of explosives in proper way and also clearance from Pollution Control Board.
Provision was made for a stockyard to store the stone boulders outside the quarry site. The large rock boulders produced while quarrying, will be broken manually to a suitable size in the quarry itself and will be loaded manually to the Trucks/ Dumpers for dispatch to the desired locations.

3.1. Probable hazards and pollution associated with mining operation :

While it is acknowledged that mining activities in Gopeswar Stone Quarry and Mining Zone have been carried out quite responsibly, it is essential to mention about the potential hazards associated with such activities especially about controlled blasting operations.
Moreover, noise generated during blasting, drilling operations, generation of dust, accumulation of overburden, movement of transport vehicles etc. will negatively impact the environment, including flora and fauna.

3.2. Measures to mitigate pollution and prevent any potential hazards :

1) Although blasting operation was carried out in a controlled manner, it is advisable to fix a thick cover of a safety net over the blasting site in order to prevent the splitting out of rock fragments during blasting operations.
2) Blasting operations should be carried out in a phase manner in order to minimize the noise hazard. Better to provide an acoustic shield.
3) It is advisable to use ear-plug during blasting operations.
4) The worker carrying out drilling operation must wear eye-protector, proper hand-gloves to withstand vibratory effects and protective clothing
5) Dust suppression system to be provided during loading and transport operations.
6) Adequate measure should be taken during transportation and storage of explosives.

Chapter 4. : Impact on the Flora and Fauna

As per Environment Impact Assessment (EIA) studies carried out to assess the impact of stone mining activities on the local ecosystem in Kamrup district i.e. air quality, water quality, biodiversity assessment, socio-economic evaluations etc., it is now confirmed that there is no evidence of any adverse impact on flora and fauna due to the mining activities at Gopeswar Stone Quary and Mining Zone.
Our findings emphasize that previous similar mining activities in this region has not resulted in any damage to the biodiversity in the same region.
Moreover, the mining activity have been carried out with complete adherence to

the necessary environment regulations and adequate mitigation measures. This has guaranteed nominal disruption to the natural habitat of the flora and fauna.

Chapter 4.1 : Possible impact on Flora and Fauna :

For the sake of interest and discussion about certain probable impacts on flora and fauna, which can occur owing to unregulated and unethical mining activities are highlighted as under :

a) Destruction of habitats : The major impact of mining activities is destruction of habitats. The clearing of land, creation of infrastructure, maximum felling of trees etc. can disrupt the natural habitat of several plant species which, in turn, lead to soil erosion and loss of biodiversity.
b) Contamination of soil and water : Accumulation of overburden can contaminate the soil and water bodies, affecting health and growth of vegetation in that area.
c) Air pollution : Emissions from drilling machineries, blasting operations, movement of vehicles etc. pollute the air and proper mitigation measures must be adapted to minimize the adverse effect on plant life in nearby areas.
d) Noise and disturbance : Noise generated during blasting, drilling operations, movement of vehicles etc. can disrupt natural behavior and breeding patterns of many wildlife species.
e) Road mortality : Construction of roads for movement of heavy vehicles can result in road mortality among wildlife. Amphibians, reptiles and smaller mammals are at much higher risk in the event of reckless driving.

4.1.1. Mitigation measures to nullify the impact on the Flora and Fauna :

a) Protected area : To establish and maintain protected area within the reserve forests may serve as a haven for wildlife. It is essential to have proper enforcement of no-entry zones during critical breeding seasons.
b) Wildlife corridor : In order to facilitate the movement of animals between fragmented habitats, it is necessary to design and protect wildlife corridors. Such corridors will reduce isolation effects and enhance genetic diversity.
c) Research and education : It is very important to have continuous research on environmental impacts and biodiversity in the Goalpara district. It will be of huge benefits if the local population, workers at site and policymakers are educated about the importance of conservation.
d) Monitoring and Regulation : Continuous monitoring of mining activities is mandatory to ensure complete adherence to prescribed regulations. Violators must be penalized and corrective action should be enforced immediately.

e) Plantation activities : Major plantation activities should be carried out in and around the project site, preferably with plant species which are amicable to local habitat.

4.2.1 No adverse impact on Flora and Fauna :

The cumulative findings indicate that there is no substantial impact on the flora and fauna of the reserve forest in Kamrup district as a result of mining activities at stone quarry at Gopeswar

Our key observations are :

a) Minimai habitat disruption : The clearing of site and building up of infrastructure has been carried out with minimal disturbance to the natural habitat and animal species.
b) Protected habitats : The existing mining site is located far away from the wildlife habitats and this has reduced the likelihood of direct face-off or disruption to the local fauna.
c) Limited air pollution : Emissions from machineries and vehicles used during activities have been well within the permissible limits, without any significant effects on local plant life.
d) Minimal spills and incidents due to the environmental regulations : Stringent environmental regulations and guidelines enforced by the MoEF&CC, State Forest Department, Pollution Control Board etc. have contributed in minimizing any damage to flora. The regulations include strict measures for waste disposal and land reclamation.
e) Reforestation initiatives : Mining Permit Holder has undertaken reforestation initiatives in the area as part of Compensatory Afforestation Programme of MoEF&CC, which in turn will contribute positively to the overall forest cover in the district.

Chapter 4.3 : Positive coexistence of Faunal Population and Mining activities

Despite the potential hazard associated with mining activities, it is already established that flora and faunal population in the Kamrup district has managed to coexist with such activities.

This study identifies different species of mammals and avifauna present in this region. There is not any adverse impact on the population of these species or their habitats. This suggests that proper environmental management practices including the implementation of environment monitoring plan, environmental impact assessment and mitigation measures, have been adapted to protect the sensitive ecosystem and ensure the conservation of biodiversity in the North Kamrup Division.

Chapter 5 : Conclusion :

Once the mining operation is over, the landscape of the quarrying area will get completely changed and there will be no grass, shrubs and other trees. At this stage, it is desired to restore the physical, chemical and biological qualities of the environment without any possible agricultural activities.

However, reclamation of this area with plantation of trees must be undertaken by the Mining Permit Holder.

Although such activities are essential for economic growth, they need to be managed to safeguard the biodiversity of the region. A well balanced approach is essential in order to integrate conservation and sustainable development, which is crucial for ensuring long-term survival of Flora and Fauna in this district.

Continuous monitoring and implementation of best practices as per Environment Monitoring Plan should be carried out for protection of biodiversity of the region.

There must be a balanced approach between environmental and economic development.

As understood from conservations with local inhabitants, there will be no significant impact on Flora and Fauna of this region due to such mining activity and a successful coexistence will prevail between such activities and biodiversity of the region.

Annexure – III

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Estimate for 0.91 Ha. Plantation for Creation of Safety Zone along Mining Boundary of Gopeswar Stone Quarry and Mining Zone area

Area (ha.)	0.91
Spacing (m x m)	2 X 2
Number of Saplings/ ha	2500
Length of Fence (RM)	1200 *
Wage rate (Rs.)	344
Increase in wage rate for subsequent years by a factor	1.1 **

Sl. No.	Particulars of works	Units	Qty./ Ha.	Total Qty.	Rate/ Unit	Amount (Rs.)	Applicable rate of GST/ Cess etc.	
							GST	Labour Cess
A	**ERECTION OF FENCING**							
	(a) Cost of full chain link fencing (4′ ht with 10 guage 3″ dia link) with 2 strand barbed wire, to be filled on pre-cast RCC pillars of specific specification and size (2.1m x 0.125m x 0.125m) as per detail specification attached at 2.5 m apart, including transportation, fitting and fixing for 1500 RM @ Rs. 1706/RM as per estimate (Inclusive of 14.05% GST and 1% Labour Cess)	RMs		1200	1706	2047200		
	Sub Total					**2047200**		
B	**INFRASTRUCTURE IN PLANTATION AREA**							
	Cost of tools & implements	Set		1	10000	10000		
	Sub Total					**10000**		
	GST					**1200**	**12%**	
	Labour Cess					**100**		**1%**
	Total					**11300**		
C	**ADVANCE WORK**							
	Raising of Nursery for creation including vacancy filling for 3 (three) years (25% + 15% + 10%) and site nursery mortality 15% by using polypots	Nos.	4125	3753.8	10	37538		
	Site selection, surveying, demarcation, jungle cutting, slash disposal etc. 40DLs/ha.	DLs	40	36.4	344	12522		
	Sub Total					**50059**		
D	**CREATION**							
	Soil working, carriage of stumps, polypot seedling and planting at the plantation site including, dibbling of seeds wherever necessary to complete raising of plantation with all necessary operation @ 50 DLs/ ha	DLs	50	45.5	344	15652		
	Sub Total					**15652**		
E	**1ST YEAR MAINTENANCE**							
	4 weeding, mulching and fire protection works @ 25 DLs/ ha/ weeding	DLs	25	22.75	344	7826		
	Contingency	LS				5000		
	Sub total					**12826**		

	2ND YEAR MAINTENANCE							
	4 weedings, mulching & fire protection works @ 25 DLs/ha/weeding	DLs	40	36.4	378.4	13773.76		
	25% vacancy filling by 1 year old seedlings from nursery @ 28 DLs/ha	DLs	28	25.48	378.4	9641.632		
	Contingency	LS				5000		
F	***Sub Total***					**28415.392**		
	3RD YEAR MAINTENANCE							
	4 weedings, mulching & fire protection works @ 20 DLs/ ha/ weeding	DLs	20	18.2	416.24	7575.568		
	15% Vacancy filling by 2 year old seedlings from nursery @ 23 DLs/ ha	DLs	23	20.93	416.24	8711.9032		
	Maintenance of fencing	LS				5000		
	Contingency	LS				5000		
G	***Sub Total***					**26287**		
	4TH YEAR MAINTENANCE							
	3 weedings, fire protection works @ 15DLs/ ha/ weeding	DLs	15	13.65	457.864	6249.8436		
	Maintenance of fencing	LS				5000		
	Contingency	LS				5000		
H	***Sub Total***					**16249.84**		
	5TH YEAR MAINTENANCE							
	Climber cutting, 3 weedings & other silvicultural works and fire protection works @ 15 DLs/ ha	DLs	15	13.65	503.65	6874.82796		
	Maintenance of fencing	LS				5000		
	Contingency	LS				5000		
I	***Sub Total***					**16874.83**		
	Grand Total					**2224865**		
	Rupees Twenty Two Lakh Twenty Four Thousand Eight Hundred Sixty Five only							

Divisional Forest Officer
North Kamrup Division, Rangia