K R ASSOCIATES

Date: 24/08/2016

To,
The Director
Ministry of Environment, Forest & Climate Change
(IA Division)
Government of India
Indira Paryavaran Bhavan,
Jor Bagh Road,
New Delhi - 110 003

Sub.: Submission of addition information sought by the Hon. Expert Appraisal Committee for environmental clearance for Proposed 500 TPD clinker (Rotary kiln) Unit and 500 TPD Cement Grinding Unit (Closed Circuit) at Village Ambher, 12th Mile, Jorabat, Mouza Sonapur, District Kamrup, Assam.

Ref.: Minutes of ninth (9TH) Meeting of Expert Appraisal Committee held on 27th July to 29th July, 2016 for Environmental Appraisal of Industry-I

Dear Sir,

With reference to above subject matter and Minutes of Ninth (9th) Meeting of Expert Appraisal Committee held on 27th July to 29th July, 2016 (Agenda No. 9.7.1), for Environmental Appraisal of Industry-I, accordingly we are hereby submitting additional information alongwith other documents, in accordance with the procedure prescribed in EIA notification dated 14th September, 2006 for Environmental Clearance.

We request your kind self to do the needful in the matter and grant us Environmental Clearance under EIA Notification dated 14th September, 2006 at the earliest.

Thanking you.

Yours Faithfully,

For, **M/s K R Associates**
For K R ASSOCIATES
Kiran Kayal
PARTNER
Kiran Kayal

(PARTNER)

HOUSE NO.62 , BYE LANE 2ND , ABC TARUN NAGAR , BHANGAGHAR , GUWAHATI – 781005 (ASSAM)
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Additional details sought by
EAC (Industry-1), MoEF&CC, New Delhi
for
Environmental clearance
for
Proposed Cement Plant
(500 TPD Clinker & 500 TPD Cement)
at
Dag No.: 141 to 146 & 151 of K. P. Patta No.: 3, 19, 21, & 9, Village Ambher, 12th Mile, Jorabat, Mouza Sonapur, District Kamrup, Assam.

-: Project Proponent:-

K R ASSOCIATES

-: Environmental consultant: -

en-VISION ENVIRO TECHNOLOGIES PVT. LTD.

2nd Floor, Shri Ram Complex, Above Bank of India,
Near Kargil Chowk, Surat-Dumas Road,
Piplod, Surat-395007
Gujarat.

(QCI/NABET Accredited EIA Consultancy Organization
Certificated No: NABET/EIA/1417/ IA 003 valid up to: December 03, 2017)

The proposed project proposal was considered by the reconstituted Expert Appraisal Committee (Industry-1) for the environmental clearance in its 9th meeting held during 27th July to 29th July 2016.

After detailed deliberations, the committee sought the following additional information.

Reply of additional details sought

NO.	ADDITIONAL DETAILS SOUGHT`	PAGE NO.
1.	Agreement/NOC with the State Electricity Department/Electricity Board for the required load has to be obtained and submitted.	AI-1
2.	Permission from the Ground Water Department for drawl of ground water for the required volume should be obtained and submitted.	AI-2
3.	A letter from the revenue department for conversion of land should be submitted. A note on, whether the new legislation has any conflict with the conversion of land based on the old legislation has to be submitted.	AI-2
4.	Monitoring to be done in NW direction near the city for a period of 1 month (nonmonsoon) and data from the pollution control board for that area.	AI-2
5.	Detailed EMP and pollution control system proposed for the plant should be revised and submitted.	AI-3
6.	Authenticate the data submitted in the EIA report regarding the list of flora and fauna from the local forest department and submitted.	AI-3
7.	The air pollution data analysis has to be revisited and submitted.	AI-7
8.	The green belt plan has to be revised and superimposed on the layout plan including parking plan should be submitted.	AI-13
9.	Domestic waste water treatment and disposal plan has to be submitted.	AI-14
10.	A detailed green belt development plan along with the list of plant species to be planted should be submitted. More green belt should be developed towards north east direction where the city is located as also near the sanctuary.	AI-15
11.	Commitment by the PP for the point raised by the local public during the PH should be inserted in the presentation.	AI-16

NO.	ANNEXURE	PAGE NO.
1.	Copy of Application to CGWA, Northeast Region, Assam for withdrawal of ground water.	AI-19
2.	Copy of letter from the revenue department for conversion of land	AI-25
3.	Revised Detailed Environmental Management Plan	AI-29
4.	Flora and Fauna data from the forest department	AI-38

Reply of Additional details sought by committee members during EC meeting held on 28th July 2016

1) Agreement/NOC with the State Electricity Department/Electricity Board for the required load has to be obtained and submitted.

Reply: Copy of Agreement/NOC with the State Electricity Department/Electricity Board for the required load is enclosed below.

COPY OF AGREEMENT/NOC WITH THE STATE ELECTRICITY DEPARTMENT /ELECTRICITY BOARD

ASSAM POWER DISTRIBUTION COMPANY LIMITED
(Lower Assam Region)
OFFICE OF THE GENERAL MANAGER, GUWAHATI ZONE,
SIXMILE, GUWAHATI-22
Phone & FAX NO: 0361-2335268. E-Mail: [illegible] website www.apdcl.gov.on

NO.GM/DZ/APDCL/T-1/2016/ 3082 Dated Guwahati, the 20th August 2017

TO WHOM IT MAY CONCERNED

This is to certify that, after going through the application of **M/S. K. R. Associates, House NO. 62, 2nd By Lane, Tarun Nagar, Bhangagarh, Guwahati-05** power to the tune of 3600 KW would be provided to the prospective consumer through 33 KV system at their Cement Manufacturing factory premises, if the party concerned follows all formalities of APDCL. Terms & Conditions and AERC regulations.

Name of Industry:	M/S. K. R. Associates.
Power demand:	3600 KW in 33 KV system.
Name of location:	**Ambher Village, 12th Mile, Jorabat, Assam.**

General Manager,
Guwahati Zone, LAR, APDCL
Six Mile, Guwahati-22

2) Permission from the Ground Water Department for drawl of ground water for the required volume should be obtained and submitted.

Reply: Total water requirement of the proposed project is 17.6 KL/day which shall be met through ground water using bore well. We have applied to CGWA, North Eastern Region, Assam for permission of ground withdrawal which is enclosed as Annexure-I

3) A letter from the revenue department for conversion of land should be submitted. A note on, whether the new legislation has any conflict with the conversion of land based on the old legislation has to be submitted.

Reply: Copy of letter from the revenue department for conversion of land is enclosed as Annexure-II

4) Monitoring to be done in NW direction near the city for a period of 1 month (nonmonsoon) and data from the pollution control board for that area.

Reply: As per the EAC committee suggested and asked for AAQ data of last five year of pollution control board Assam. Data of last five year of pollution control board Assam is given below.

Ambient Air Quality at Khanapara

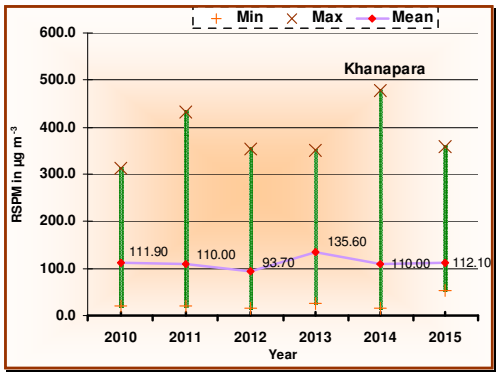
It is observed from the air quality data that SO_2 and NO_2 values were well within the prescribed limit during the period from 2010 to 2015. The maximum SO_2 and NO_2 values observed during the said period were 21.00µgm^{-3} and 34.80µgm^{-3} respectively. The SO_2 and NO_2 values show a slight decreasing trend over the given period. But the mean value of SPM and RSPM were well above the prescribed limit and were varies between 190.20µgm^{-3} to 251.40µgm^{-3} and 93.70µgm^{-3} to 135.60µgm^{-3} respectively. Trends in annual average concentration of RSPM and SPM in Khanapara were depicted in *Figure.*

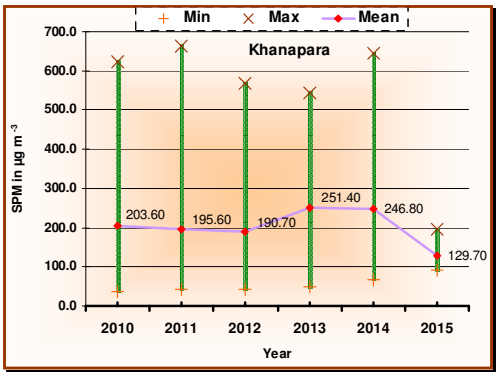
AMBIENT AIR QUALITY AT KHANAPARA (CENTRAL DAIRY, GUWAHATI)

(2010 - 2015) BASED ON ANNUAL AVERAGE DATA

Years	No. of obs.(n)	Parameters							
		SO_2		NO_2		RSPM		SPM	
		µg m^{-3}							
		Range (Min-Max)	Mean	Range (Min-Max)	Mean	Range (Min-Max)	Mean	Range (Min-Max)	Mean
2010	246	3.00-21.00	7.30	7.50-34.80	14.70	21.50-313.50	111.90	38.00-622.50	203.60
2011	250	2.50-9.80	5.80	5.90-18.50	13.10	21.00-433.00	110.00	42.50-663.50	195.60
2012	246	3.00-13.50	6.10	7.00-20.00	13.40	16.00-353.50	93.70	44.00-568.00	190.70
2013	247	3.30-11.00	7.20	9.60-19.50	15.30	25.50-349.70	135.60	49.00-545.00	251.40
2014	241	3.00-13.00	7.30	6.80-28.30	14.80	15.50-478.00	110.00	67.50-645.50	246.80
2015	220	3.00-13.30	7.30	9.10-26.80	15.00	54.00-358.00	112.10	92.00-196.00	129.70

TREND OF PARTICULATE MATTER CONCENTRATION FROM 2010-2015 AT KHANAPARA (CENTRAL DAIRY, GUWAHATI)





5) Detailed EMP and pollution control system proposed for the plant should be revised and submitted.

Reply: Detailed EMP and pollution control system proposed for the plant is enclosed as Annexure-III

6) Authenticate the data submitted in the EIA report regarding the list of flora and fauna from the local forest department and submitted.

Reply: List of flora and fauna is given below

LIST OF FLORA SPECIES PRESENT IN THE STUDY AREA

S.NO.	BOTANICAL NAME	COMMON NAME	FAMILY
Trees			
1.	*Adina cardifolia*	Hed	Rubiaceae
2.	*Aegle marmelos*	Bel	Rutaceae
3.	*Ailanthus excelsa*	Mahanim	Simaroubaceae
4.	*Albizia lebbeck*	Shiras	Mimosaceae
5.	*Albizia odoratissima*	Kala Shiras	Mimosaceae
6.	*Albizia procera*	Koroi	Mimosaceae
7.	*Alstonia scholaris*	Sotiana	Apocynaceae
8.	*Annona reticulata*	Aata/ Sitaphal	Annonaceae
9.	*Annona squamosa*	Aata/ Ramfal	Mimosaceae
10.	*Anthocephalus chinense*	Kadam	Rubiaceae
11.	*Areca catechu*	Tamol	Palmae
12.	*Artocarpus heterophyllus*	Katol	Moraceae
13.	*Artocarpus integrifolia*	Phanas	Moraceae
14.	*Bauhinia purpuria*	Apta	Caesalpiniaceae
15.	*Bauhinia variegata*	Kachnar	Caesalpiniaceae
16.	*Bombax ceiba*	Semal	Bombacaceae
17.	*Borassus flabellifer*	Tal	Palmae
18.	*Bridelia retusa*	Kasai	Euphorbiaceae
19.	*Callicarpa arborea*	Dieng-lakhoit	Verbanaceae
20.	*Careya arborea*	Kumbhi	Myrtaceae
21.	*Caryota urens*	Bherlimad	Palmae
22.	*Cassia fistula*	Kassod	Caesalpiniaceae
23.	*Castonopsis tribuloides*	chinkapin	Fagaceae
24.	*Cinnamomum zeylannicum*	Tamal patra	Lauraceae
25.	*Citrus maxima*	Bada nimbu	Rutaceae
26.	*Cleistanthus collinus*	Karra	Euphorbiaceae
27.	*Cocos nucifera*	Narikal	Palmae
28.	*Delonix regia*	Gulmohar	Caesalpiniaceae
29.	*Derris robusta*	Diengthing	Papilionaceae
30.	*Dillenia indica*	Kargela	Dilleniaceae
31.	*Erythrina indica*	Madar	Fabaceae
32.	*Erythrina suberosa*	Pattemadar	Papilionaceae
33.	*Ficus benghalensis*	Bargad	Moraceae
34.	*Ficus elastica*	Athabor	Moraceae
35.	*Ficus hirta*	Dimoru	Moraceae
36.	*Ficus infectoria*	Parak	Moraceae
37.	*Ficus religiosa*	Peepal	Moraceae
38.	*Garuga pinnata*	Kakad	Burseraceae
39.	*Gmelina arborea*	Shivam	Verbinaceae
40.	*Grevillea robusta*	Silver oak	Proteaceae
41.	*Lagerstroemia indica*	Sida	Lythraceae
42.	*Lagerstroemia speciosa*	Sida	Lythraceae

S.NO.	BOTANICAL NAME	COMMON NAME	FAMILY
43.	*Lannea grandis*	Jiya	Anacardiaceae
44.	*Macaranga denticulata*	Mildew mahang	Euphorbiaceae
45.	*Macropanax dispermus*	Dieng la-rasi	Analiaceae
46.	*Mallotus philippensis*	Red Kamala	Euphorbiaceae
47.	*Mangifera indica*	Aam	Anacardiaceae
48.	*Melia azedarach*	Bakain	Melastomataceae
49.	*Memecylon edule*	Anjani	Melastomataceae
50.	*Messua ferrea*	Nahar	Clusiaceae
51.	*Michelia champaca*	Tita sopa	Magnoliaceae
52.	*Moringa oleifera*	Sahjan	Moringaceae
53.	*Morus australis*	Shahtoot	Moraceae
54.	*Protium serratum*	Mirtenga	Burseraceae
55.	*Psidium guajava*	Pyara	Myrtaceae
56.	*Putranjiva roxburgii*	Jaiputa	Euphorbiaceae
57.	*Pterospermum acerifolium*	Dieng tharo-masi	Sterculiaceae
58.	*Saraca indica*	Ashoka tree	Papilionaceae
59.	*Schima wallichii*	Makrisal	Theaceae
60.	*Spondias pinnata*	Amera	Anacardiaceae
61.	*Sterculia villosa*	Kandol	Sterculiaceae
62.	*Syzygium cumini*	Jambhul	Myrtaceae
63.	*Tectona grandis*	Moi, sag	Verbenaceae
64.	*Terminalia chebula*	Hirda	Combretaceae
65.	*Terminalia paniculata*	Saja	Combretaceae
66.	*Terminalia tomentosa*	Saja	Combretaceae
67.	*Trema orientalis*	Khargol	Cannabaceae
68.	*Vitex peduncularis*	Nirgudi	Verbenaceae
69.	*Wrightia tomentosa*	Kuda	Apocynaceae
70.	*Zizyphus jujube*	Bor	Rhamnaceae
71.	*Zizyphus xylopyra*	Ghont	Rhamnaceae
Shrubs			
1.	*Ageratum conyzoides*	Jangli pudina	Asteraceae
2.	*Calotropis gigantia*	Rui	Asclepiadaceae
3.	*Cassia tora*	Chakunda	Caesalpiniaceae
4.	*Clerodendron infortunatum*	Syntiew-dohmahi	Verbenaceae
5.	*Gardenia lucida*	Dikamali	Rubiaceae
6.	*Holarrhena antidysenterica*	Kuda	Apocynaceae
7.	*Ixora parviflora*	Kurat	Rubiaceae
8.	*Lantana camara*	Rajmunia	Verbenaceae
9.	*Nyctanthus arbortristis*	Harsingar	Oleaceae
10.	*Ricinus communis*	Arand	Euphorbiaceae
Herbs			
1.	*Achyranthus aspera*	Chirchira	Amaranthaceae
2.	*Amaranthus spinosus*	Chaulii	Amaranthaceae
3.	*Amaranthus viridis*	Slender Amaranth	Amaranthaceae
4.	*Amischophacelus axillaris*	Kana	Commelinaceae
5.	*Ammania baccifera*	Aginbuti	Lythraceae
6.	*Bidens biternata*	Yellow-flowered blackjack	Asteraceae
7.	*Blainvillia acmella*	Kanghi	Asteraceae
8.	*Blumea paniculata*	Mharbir	Asteraceae
9.	*Commelina benghalensis*	Kankawa	Commelinaceae
10.	*Eclipta alba*	Bhringraj	Asteraceae

S.NO.	BOTANICAL NAME	COMMON NAME	FAMILY
11.	*Euphorbia hirta*	Dudhi bel	Euphorbiaceae
12.	*Jasminum sambac*	Mei-lar-um	Oleaceae
13.	*Laportea cuneata*	Dieng synrem	Urticaceae
14.	*Lycopodium casuarinoides*	Tmain-khla	Lycopodiaceae
15.	*Maesa indica*	Diengsoh-jala-tyrkai	Myrsinaceae
16.	*Melastoma malabathricum*	Soh-khing	Melastomaceae
17.	*Musa nagensium*	Lakait	Musaceae
18.	*Osbeckia crinite*	Jalng-kthem	Melastomaceae
19.	*Osbeckia octandra*	Soh-kthem	Melastomaceae
20.	*Oscimum sanctum*	Tulsi	Labiatae
21.	*Oxalis corniculata*	Jajew	Oxalidaceae
22.	*Pteris arborea*	Tyrkhang	Pteridaceae
23.	*Randia spinosa*	Sohladung	Rubiaceae
24.	*Sida cordata*	Bhuinii	Malvaceae
25.	*Solanum nigrum*	Bhatkadrana	Solanaceae
26.	*Triamfetta pilosa*	Soh-byrthid	Araliaceae
27.	*Tridax procumbens*	Khal-muriya	Asteraceae
28.	*Urena lobata*	Soh-byrthit	Malvaceae
29.	*Vicia sativa*	Common vetch	Papilionaceae
Climbers			
1.	*Acacia pinnata*	Jermai-sheih-lyngsiah	Mimosaceae
2.	*Asparagus racemosus*	Shatavari	Liliaceae
3.	*Bougainvillea buttiana*	Baganvilas	Nyctaginaceae
4.	*Ipomoea vitifolia*	Navalicha wel	Convolvulaceae
5.	*Mucuna bractiata*	Kiwach	Papilionaceae
6.	*Piper nigrum*	Kali Mirch	Piperaceae
7.	*Smilex macrophylla*	Mutri	Smilacaceae
8.	*Zizyphus oenoplia*	Kunheri	Rhamnaceae
Grasses			
1.	*Bambusa bambos*	Kalak	Poaceae
2.	*Bambusa palida*	Seij	Poaceae
3.	*Bambusa tulda*	Shken	Poaceae
4.	*Cymbopogon martini*	Rusa ghans	Poaceae
5.	*Cynodon dactylon*	Doob	Poaceae
6.	*Cyperus rotundus*	Motha	Cyperaceae
7.	*Dendrocalamus hamiltoni*	Seij	Poaceae
8.	*Thysanolaena maxima*	Synsar	Poaceae
9.	*Travesia palmata*	Soh-kynthur	Araliaceae

LIST OF FAUNA SPECIES PRESENT IN THE STUDY AREA

SR. NO.	SCIENTIFIC NAME	COMMON NAME	FAMILY	Reference to schedule as per wild life protection act 1972, as amended upto 2006		
				Schedule	Part	Serial
Mammals						
1.	*Funambulus pennanti*	Five striped palm squirrel	Sciuridae	IV	-	3-A
2.	*Bubalus bubalis*	Buffalo	Bovidae	I	I	41
3.	*Ovis aries*	Sheep	Bovidae	I	I	26
4.	*Capra aegagrus hircus*	Goat	Bovidae	-	-	-
5.	*Equus ferus*	Horse	Equidae			18-A
6.	*Sus bucculentus*	Pig	Suidae	III	-	19

SR. NO.	SCIENTIFIC NAME	COMMON NAME	FAMILY	Reference to schedule as per wild life protection act 1972, as amended upto 2006		
				Schedule	Part	Serial
7.	*Lepus nigricollis*	Indian hare	Leporidae	IV	-	4
8.	*Presbytis entellus*	Languor	Cercopithecidae	II	I	4-A
9.	*Rattus rattus*	Common house rat	Muridae	V	-	6
Aves						
1.	*Acridotheres tristis*	Myna	Sturnidae	IV	-	11(45)
2.	*Aredea ceineria*	Grey heron	Ardeidae	IV	-	11(22)
3.	*Bubo bubo*	Owl	Strigidae	IV	-	11(48)
4.	*Gallus gallus domesticus*	Fowl	Phasianidae	-	-	18-A
5.	*Mergus serrator*	Duck	Anatidae	IV	-	21
6.	*Columba livia*	Blue rock pigeon	Columbidae	-	-	-
7.	*Corvus splendens*	House crow	Corvidae	V	-	1
8.	*Coturnix coturnix*	Common quail	Phasianidae	IV	-	11(57)
9.	*Francolinus pondicerianus*	Grey patridge	Phasianidae	IV	-	11(51)
10.	*Passer domesticus*	House sparrow	Passerinae	-	-	-
11.	*Perdicula asiatica*	Grey quail	Phasianidae	IV	-	11(57)
12.	*Psittacula krameri*	Roseringed parakeet	Psittacidae	IV	-	11(50)
Reptiles & Amphibians						
1.	*Bufo Parietalis*	Indian toad	Bufonidae	IV	-	13
2.	*Bungarus caeruleus*	Common Indian krait	Elapidae	IV	-	12(vi)
3.	*Calotes versicolor*	Lizard	Agamidae	-	-	-
4.	*Mobuya carinata*	Common keeled grass skink	Scincidae	-	-	-
5.	*Ophiophagus hannah*	King cobra	Elapidae	II	II	12
6.	*Ptyas mucosus*	Dhaman	Colubridae	II	II	9
Fish						
1.	*Catla catla*	Catla	Cyprinidae	-	-	-
2.	*Labeo fimbriatus*	Mongri rou	Cyprinidae	-	-	-
3.	*Labeo rohita*	Rohu	Cyprinidae	-	-	-
Insecta						
1.	*Acontia marmoralis*	Emmelia (Grasshooper)	Noctuidae	-	-	-
2.	*Acrida turrita*	Acrida (Grasshooper)	Acridodea	-	-	-
3.	*Agriocnemis pygmaea*	Midget Whisp	Coenagrionidae	-	-	-
4.	*Anax guttatus*	Pale-spotted Emperer	Aeshnidae	-	-	-
5.	*Ceriagrion coromandelianum*	Damselfly	Coenagrionidae	-	-	-
6.	*Heterojinus semilaetaneus*	Heterorrhina	Cucujidae	II	II	1
7.	*Holochlora indica*	Green grasshooper	Tettigonjoidea	-	-	-
8.	*Ischnura aurora*	Golden Dartlet	Coenagrionidae	-	-	-
9.	*Periplaneta americana*	American cockroach	Blattidae	-	-	-
10.	*Pseudagrion rubriceps*	Damselfly	Coenagrionidae	-	-	-
Mollusca						
1.	*Cypraea limacina*	Slug-Like Cowrie	Cypraeidae	IV	-	19
2.	*Turbo marmoratus*	Marbled turban		IV	-	19

7) The air pollution data analysis has to be revisited and submitted.
Reply: Revised air pollution data analysis

REVISED AIR POLLUTION DATA ANALYSIS

The proposed plant will handle large quantities of solids viz., Limestone, Clay, Iron Dust, Coal, Fly ash/Slag, Gypsum and Cement, which are subjected to various dust generating operations like crushing, grinding, transfer, packing, etc. These operations generate large quantities of fugitive dust, which would otherwise disperse into the work zone atmosphere and plant surroundings. To control the dispersion of fugitive dust, crushers and transfer points will be provided with dust extraction system consist of hoods, ducting, bag house ID fans and exhaust ducts.

The dispersion of pollutants in the atmosphere is a function of several meteorological parameters viz. temperature, wind speed and direction, mixing depths, inversion level, etc. A number of models have been developed for the prediction of pollutant concentration at any point from an emitting source. The Industrial Source Complex – Short Term (ISCST3) dispersion model is a steady-state Gaussian plume model. It is most widely accepted for its interpretability. It gives reasonably correct values because this obeys the equation of continuity and it also takes care of diffusion, which is a random process. For the present study, this model is used for the prediction of maximum ground level concentration (GLC).

With respect to operation phase impact, Proposed Air emission from M/s. K R Associates includes Particulates Matter, SO_2, NOx and CO. Adequate measures will be taken to minimize air pollution from process by providing air pollution control equipment. D. G. set will be installed as standby to be used during emergency only. Flue gases are discharged from stacks at adequate height (as per SPCB norms). The site specific and monitored details considered for input data for the software "ISC-AERMOD View" by Lakes Environmental, Canada for prediction of impact on air environment.

The air pollution caused by the gaseous emissions from a single or small group of stacks is a local phenomenon. Its impact will occur at a distance ranging from within the immediate vicinity of the stack to several kilometers away from the stack. Maximum ground level concentration will occur within this range. All plumes at more downwind distances from the source by stack emission become diluted by diffusion in the ambient atmosphere, that concentrations of pollutants become negligible.

METEOROLOGICAL INPUTS

The site specific and monitored details considered for input data for the software "ISC-AERMOD View" by Lakes Environmental, Canada for prediction of impact on air environment.

The site-specific hourly meteorological data measured in order to conduct a refined air dispersion modeling using ISCST3 air quality dispersion models. The site specific hourly meteorological data measured at site is pre-processed using the U.S. EPA PCRAMMET and U.S. EPA AERMET programs.

MIXING HEIGHT

As site specific mixing heights were not available, mixing heights based Atlas of Hourly Mixing Height and Assimilative Capacity of Atmosphere in India published by Environment Monitoring & Research Centre, India Meteorological Department, Ministry of Earth Science, New Delhi. Based on Diurnal Variation of Mixing Height in winter Season the maximum mixing height of Guwahati region is 1,200 meter, which is considered for air dispersion modeling.

MODEL INPUT EMISSION DATA

For the modeling purpose air emission can be considered for particulate matter, sulphur dioxide and oxide of nitrogen. Stack emission details are given in following table.

DETAILS OF EMISSION FROM STACKS CONSIDORING APCE

STACK NO.	ATTACHED TO	POLLUTANTS	CONCENTRATION OF POLLUTANTS	STACK HEIGHT	STACK DIAMETER	FLUE/AIR EXIST VELOCITY	AIR/GAS EXIST TEMP.	AMBIENT TEMP.	EMISSION RATE
		UNIT	mg/m3	m	m	m/s	K	K	g/s
1	L/S Crusher	PM	6	30	0.75	11	298	298	0.030
2	Hopper	PM	6	30	0.6	11	298	299	0.019
3	Raw Mill & Kiln	PM	6	78	2.1	12	398	300	0.192
		SO_2	20						0.626
		NOx	18.8						0.602
4	Blending Silo	PM	6	30	0.5	11	298	301	0.013
5	Cooler Exhaust Stack	PM	6	30	1.5	12	523	302	0.074
		SO_2	20						0.210
		NOx	18.8						0.233
6	Clinker Stockpile	PM	6	30	0.8	12	298	303	0.037
7	Hopper	PM	6	30	0.6	12	298	304	0.021
8	Cement Mill	PM	6	30	0.8	12	353	305	0.031
9	Packing House	PM	6	30	0.9	12	298	306	0.047
10	Coal Mill	PM	6	30	0.8	12	353	307	0.031

MODEL OPTIONS USED FOR COMPUTATIONS

- The plume rise is estimated by Briggs formulae, but the final rise is always limited to that of the mixing layer;
- The is done considering pollution control equipment with the stacck
- Complex terrain
- Stack tip down-wash is not considered;
- Buoyancy Induced Dispersion is used to describe the increase in plume dispersion during the ascension phase;
- Calms processing routine is used by default;
- It is assumed that the pollutants do not undergo any physico-chemical transformation and that there is no pollutant removal by dry deposition;
- Washout by rain is not considered;
- Cartesian co-ordinate system has been used for computations

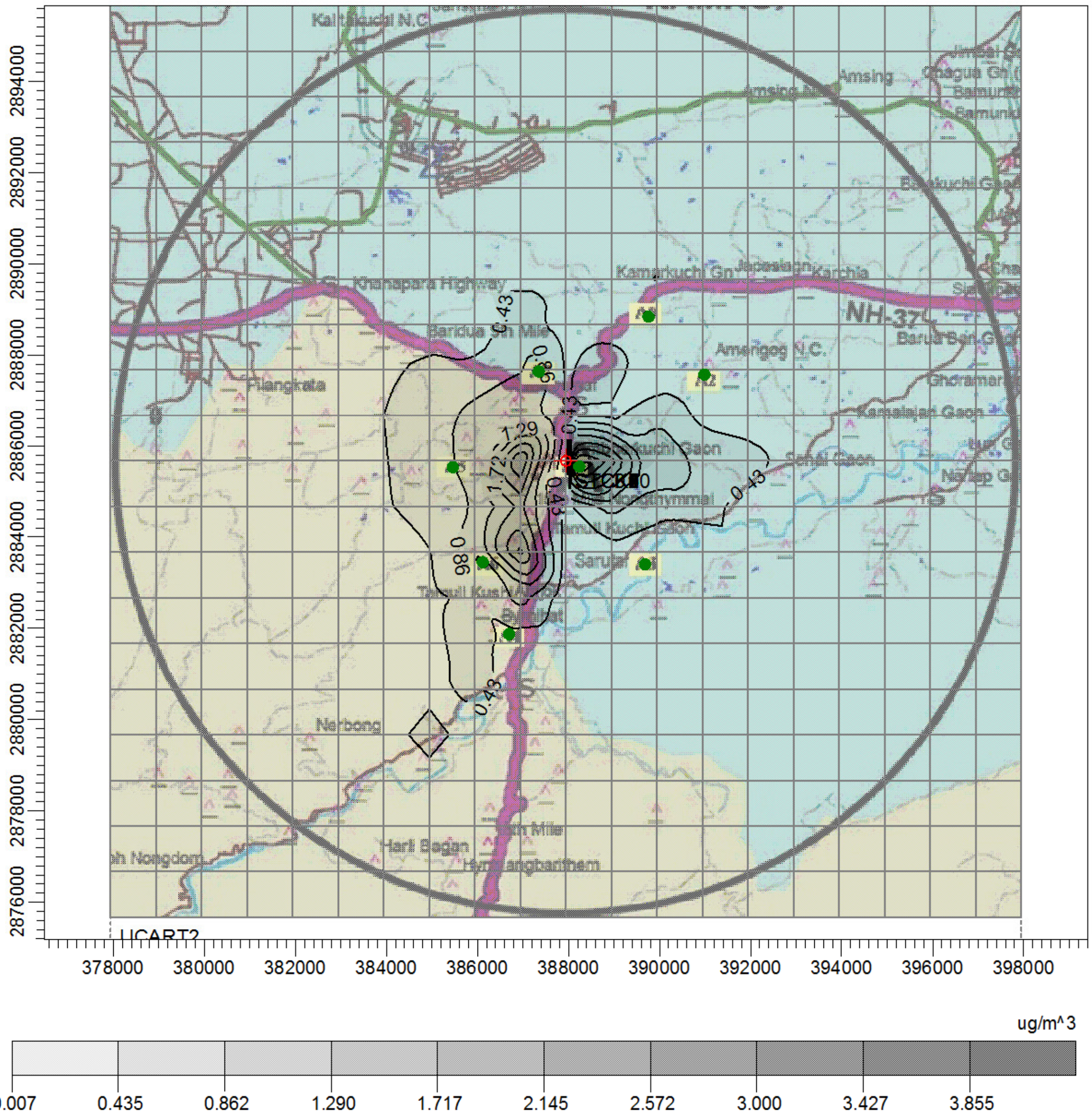
MODEL OUTPUT AND MAXIMUM GROUND LEVEL CONCENTRATION

The maximum ground level concentration for PM, SO_2 and NOx due to the proposed project is given in following table. Equal concentration contour plot for above parameters due to proposed project are given in following figure-A, B and C. Summary of ISCST3 Model output for PM is given as table

A EQUAL CONCENTRATION CONTOUR PLOT FOR PM

PROJECT TITLE:

M/S. K R ASSOCIATES, KAMRUP, ASSAM.

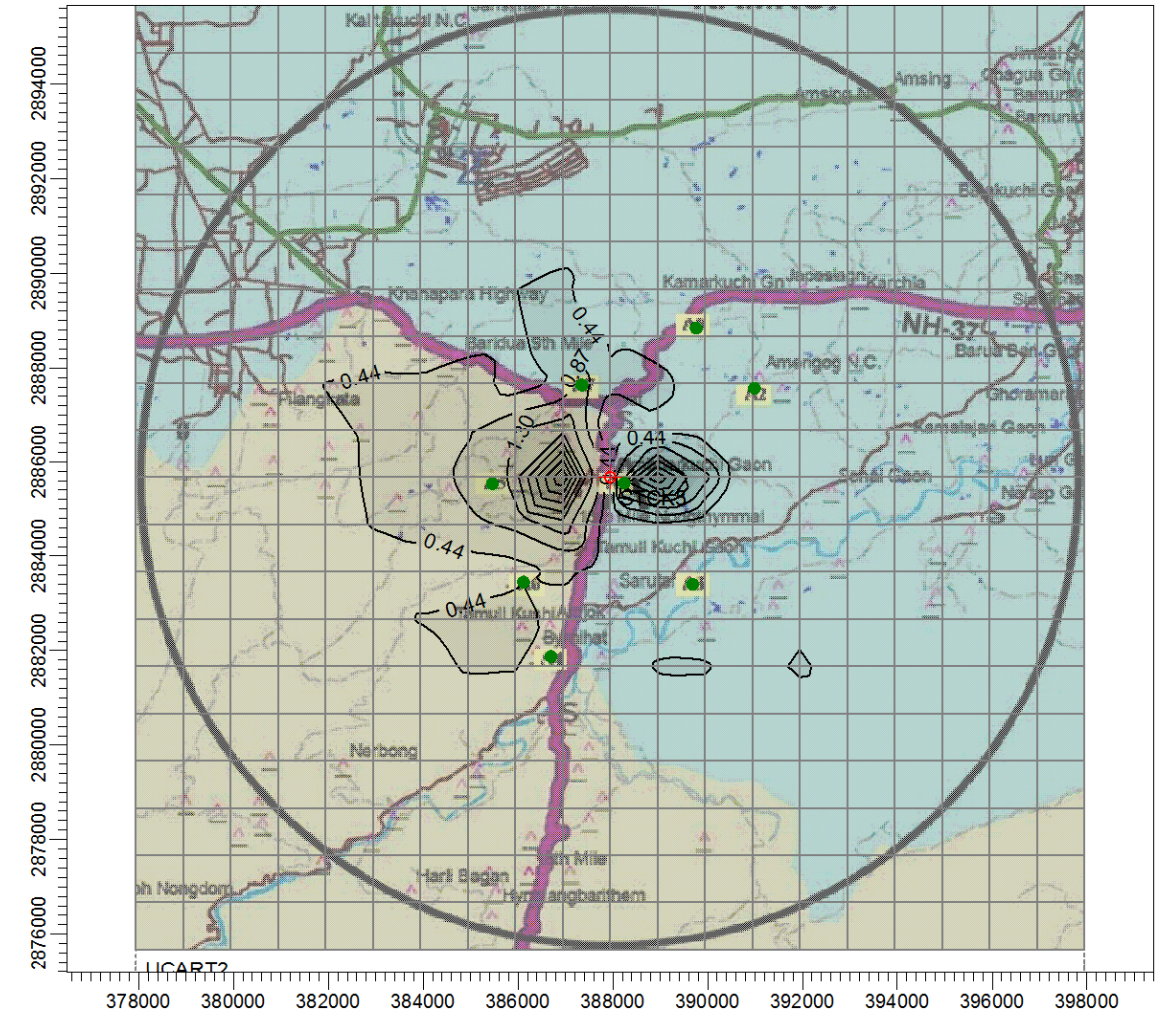


COMMENTS: Equal Concentration Contour Plot for PM	SOURCES: **10**	COMPANY NAME: **M/s. K R Associates, Kamrup, Assam.**	
	RECEPTORS: **449**	MODELER: **M/s. En-vision Enviro Technologies Pvt. Ltd., Surat.**	
	OUTPUT TYPE: **Concentration**	SCALE: 1:139,823 0 — 5 km	
	MAX: **3.85492 ug/m^3**		PROJECT NO.: **-**

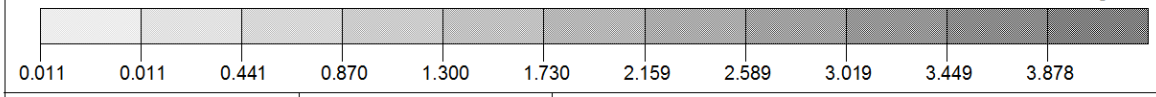
FIGURE-4.7(B) EQUAL CONCENTRATION CONTOUR PLOT FOR SO_2

PROJECT TITLE:

M/S. K R ASSOCIATES, KAMRUP, ASSAM.



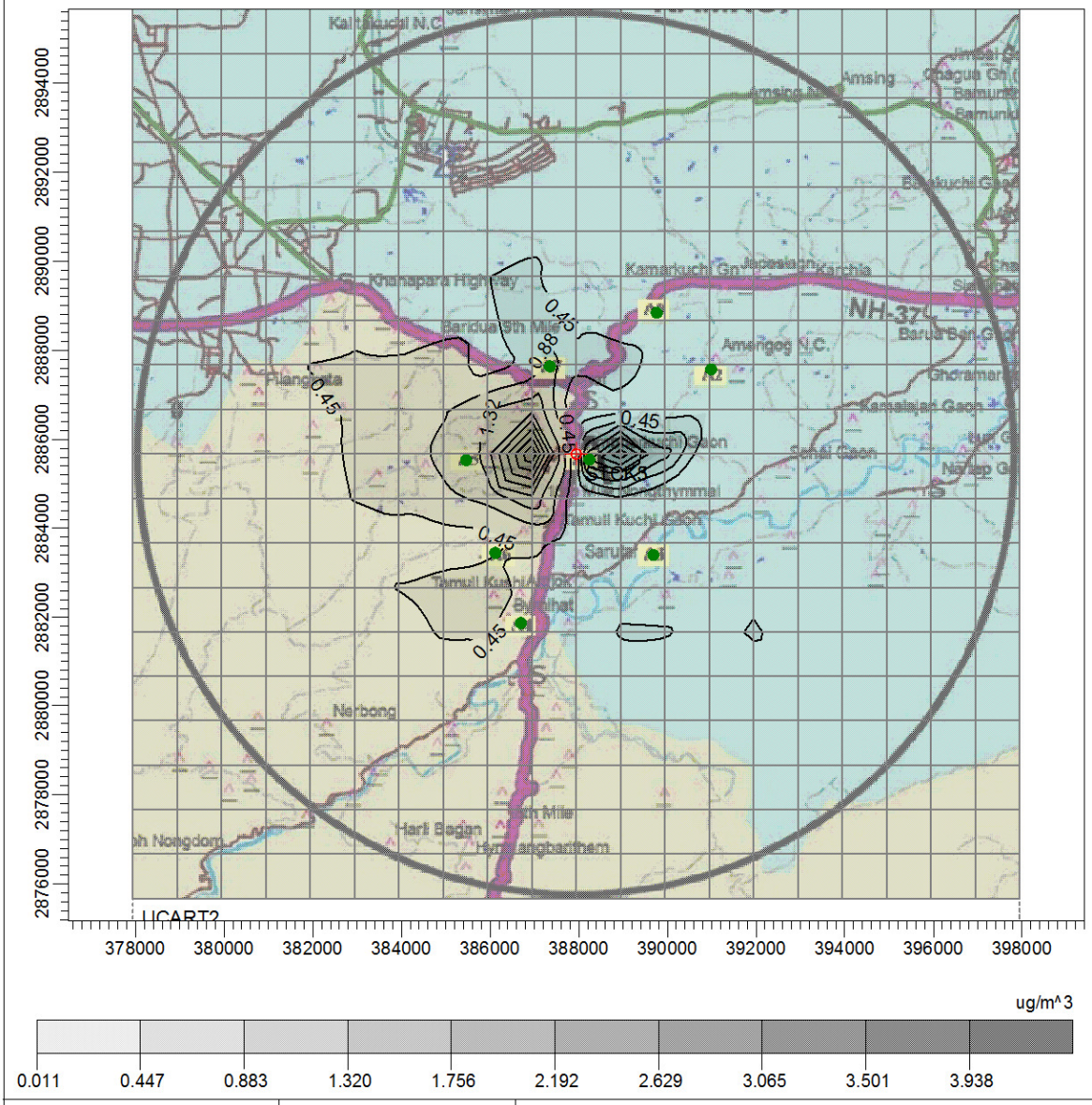
ug/m^3



COMMENTS: Equal Concentration Contour Plot for SO2	SOURCES: 2	COMPANY NAME: M/s. K R Associates, Kamrup, Assam.	
	RECEPTORS: 449	MODELER: M/s. En-vision Enviro Technologies Pvt. Ltd., Surat.	
	OUTPUT TYPE: Concentration	SCALE: 1:139,823 0 5 km	
	MAX: 3.87838 ug/m^3		PROJECT NO.: -

FIGURE-4.7(C) EQUAL CONCENTRATION CONTOUR PLOT FOR NO_x

PROJECT TITLE:
M/S. K R ASSOCIATES, KAMRUP, ASSAM.



ug/m^3

COMMENTS: Equal Concentration Contour Plot for NOx	SOURCES: 2	COMPANY NAME: M/s. K R Associates, Kamrup, Assam.	
	RECEPTORS: 449	MODELER: M/s. En-vision Enviro Technologies Pvt. Ltd., Surat.	
	OUTPUT TYPE: Concentration	SCALE: 1:139,823 (0 — 5 km)	
	MAX: 3.93779 ug/m^3		PROJECT NO.: -

Maximum Ground level concentration

NO.	PARAMETERS	MAXIMUM GROUND LEVEL CONCENTRATION (µg/m^3)	LOCATION
1.	PM	3.85	At one km in west detection
2.	SO_2	3.88	
3.	NOx	3.94	

SUMMARY OF ISCST3 MODEL OUTPUT FOR PM

SR. NO.	LOCATIONS	BEARING W.R.T.	APPROXIMATE RADIAL DISTANCE(KM)	MAXIMUM GROUND LEVEL CONCENTRATION (µg/m^3)		
				PM	SO_2	NOx
1.	Project Site (A1)	-	0	3.85	1.96	2.18
2.	Gojigaon (A2)	NE	3.7	0.04	0.04	0.04
3.	Sarutari (A3)	S	2.3	0.09	0.11	0.11
4.	Byrnihat (A4)	*SSW*	4.3	0.35	0.21	0.22
5.	Chhatakling (A5)	W	1.9	0.84	1.08	1.11
6.	Amjok (A6)	SSW	4.5	0.60	0.42	0.45
7.	Jorabat (A7)	N	1.4	1.09	1.04	1.07
8.	Patarkuchi (A8)	NNE	2.5	0.20	0.07	0.07

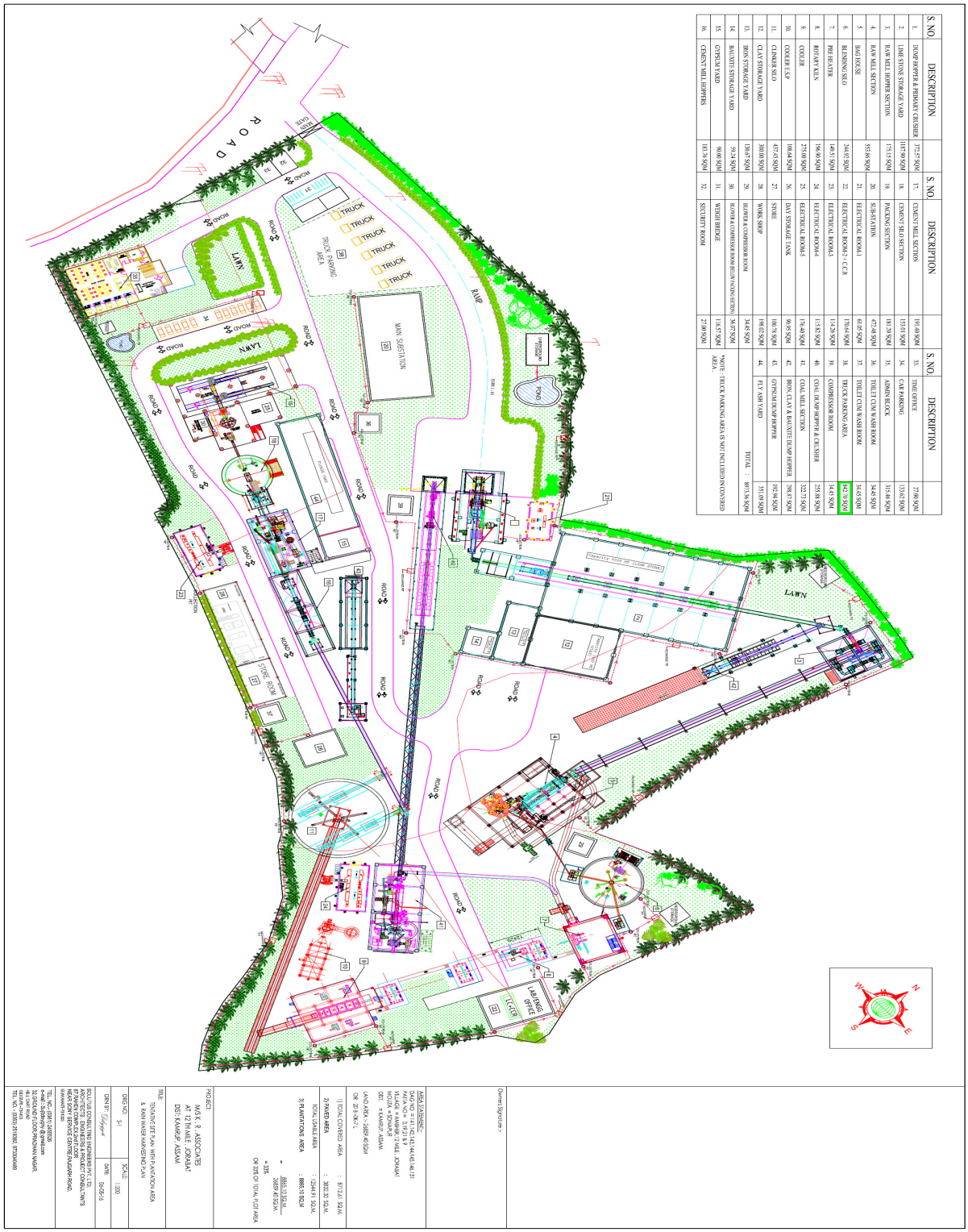
Mitigation measures

Following mitigation measures will be adopted to control air pollution.

- Effective stack height with proper air pollution control equipment shall be provided to all stacks.
- Regular maintenance of APCE (Air Pollution Control Equipments) shall be done and recorded.
- Green belt shall be developed on 33% are of the total plant area.

8) The green belt plan has to be revised and superimposed on the layout plan including parking plan should be submitted.

Reply: Revised layout plan is given below



S.NO.	DESCRIPTION		S.NO.	DESCRIPTION		S.NO.	DESCRIPTION	
1.	LIMESTONE CRUSHER	1725.57 SQM.	17.	CEMENT MILL SECTION	191.68 SQM.	31.	TIME OFFICE	27.99 SQM.
2.	LIME STONE STORAGE YARD	1187.98 SQM.	18.	CEMENT SILO SECTION	153.01 SQM.	34.	CAR PARKING	1333.82 SQM.
3.	RAW MILL HOPPER SECTION	175.11 SQM.	19.	PACKING SECTION	181.26 SQM.	35.	ADMIN BLOCK	315.46 SQM.
4.	RAW MILL SECTION	353.00 SQM.	20.	SUBSTATION	472.46 SQM.	36.	TOILET COM WASH ROOM	344.45 SQM.
5.	BAGHOUSE	353.00 SQM.	21.	ELECTRICAL ROOM-1	61.95 SQM.	37.	TOILET COM WASH ROOM	344.45 SQM.
6.	BLENDING SILO	344.45 SQM.	22.	ELECTRICAL ROOM-2 + C.C.R.	150.64 SQM.	38.	TRUCK PARKING AREA	4228.0 SQM.
7.	PRE HEATER	1145.1 SQM.	23.	ELECTRICAL ROOM-3	114.26 SQM.	39.	COMPRESSOR ROOM	344.45 SQM.
8.	ROTARY KILN	196.96 SQM.	24.	ELECTRICAL ROOM-4	115.82 SQM.	40.	COAL DUMP HOPPER & CRUSHER	255.58 SQM.
9.	COOLER	215.00 SQM.	25.	ELECTRICAL ROOM-5	154.40 SQM.	41.	COAL MILL SECTION	322.73 SQM.
10.	COOLER E.S.P	196.64 SQM.	26.	DAS STORAGE TANK	90.95 SQM.	42.	IRON, CLAY & BAUXITE DUMP HOPPER	280.5 SQM.
11.	CLINKER SILO	427.42 SQM.	27.	STORE	186.76 SQM.	43.	GYPSUM DUMP HOPPER	192.94 SQM.
12.	CLAY STORAGE YARD	300.00 SQM.	28.	WORK SHOP	198.02 SQM.	44.	FLY ASH YARD	351.09 SQM.
13.	IRON STORAGE YARD	126.65 SQM.	29.	BOOSTER & COMPRESSOR ROOM	344.45 SQM.		TOTAL :	8913.56 SQM.
14.	BAUXITE STORAGE YARD	913.24 SQM.	30.	BOOSTER & COMPRESSOR ROOM (RECIRCULATION SYSTEM)	36.07 SQM.	*NOTE : TRUCK PARKING AREA IS NOT INCLUDED IN COVERED AREA.		
15.	GYPSUM YARD	90.00 SQM.	31.	WEIGH BRIDGE	116.57 SQM.			
16.	CEMENT MILL HOPPERS	183.76 SQM.	32.	SECURITY ROOM	27.99 SQM.			

AREA STATEMENT:-
DAG NO. = 141/142/143/144/145/151
PATTA NO. = 1/1/1/1/1/1
VILLAGE = AMINGAON, DIST. = KAMRUP, ASSAM
LAND AREA = 2.68859 HECTARE OR 26.8 BIGHA

1) TOTAL COVERED AREA = 87134.00 SQ.M.
2) PAVED AREA = 38232.00 SQ.M.
TOTAL GREEN AREA = 22441.91 SQ.M.
3) PLANTATIONS AREA = 8866.10 SQ.M.
8866.10 SQ.M.
26859.40 SQ.M.
= 33%
OR 33% OF TOTAL PLOT AREA

Owners Signature :-

PROJECT:
M/S. K. R. ASSOCIATES
AT 12TH MILE, JORABAT
DIST. KAMRUP, ASSAM

TITLE:
TENTATIVE SITE PLAN WITH PLANTATION AREA & RAIN WATER HARVESTING PLAN

DRG NO. :- S-1
SCALE :- 1200
DRN BY :- Sangeeta
DATE :- 30/09/14

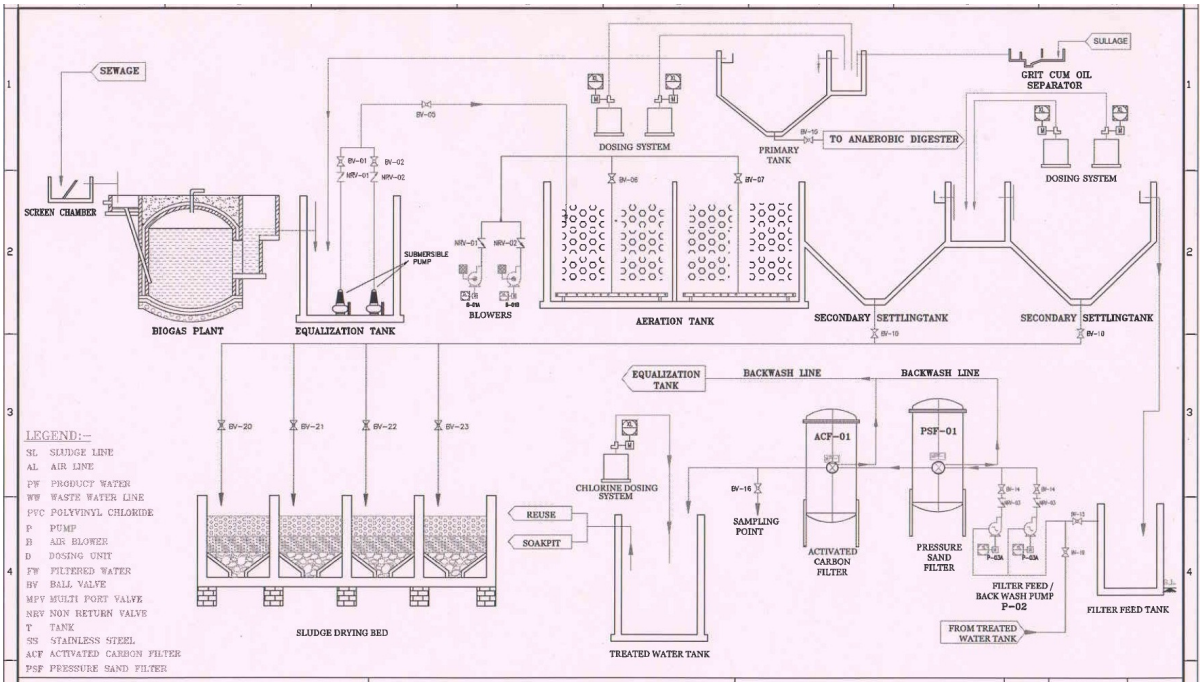
SOLUTION ORIENTED ENVIRONMENTAL CONSULTANTS
ARCHITECTS, ENGINEERS & PROJECT CONSULTANTS
REAR SIDE, SERVICE CENTRE, RAJGARH ROAD,
GUWAHATI-781005

TEL. NO.:- (0361) 2340028
e-mail:- sales@envision.in
Website:- www.envision.in
NEAR CENTRE POINT SCHOOL, PANJABARI
GUWAHATI-781037
TEL NO.:- (0361) 2510082, 07002406660

9) Domestic waste water treatment and disposal plan has to be submitted.

Reply: For the proposed project water requirement for domestic purpose will be 8.0 KLD. Total domestic waste water approx 6.4 KLD will be generated which will be treated through proposed STP and STP treated waste water will be used or the gardening or dust suppression purpose.

DETAILS OF STP



TREATMENT METHODOLOGY

- Treatment by Moving Bed Bio Reactor Technology- using diffused aeration system.
- Domestic Sewage will pass through bar screens to remove floating objects and biogas plant before it is collecting to the equalization tank.
- Sullage will be passed through coarse screen, oil and grease trap, flocculation tank, primary settling before it collecting in the same equalization tank where sewage has been collection
- Wastewater from under ground equalization tank shall be pumped to the Sewage Treatment Plant located at the elevated land.
- Sewage will be pumped to the aeration tank which is already added with MBBR Media for the support for the attached growth of Micro Organism.
- In the aeration tank modified fluidized process shall be carried out. The MBBR media.
- Air requirement for the aeration tank shall be provided from the centralized blower. Diffusers at the bottom of tank shall be provided for the transfer of air.
- Overflow of the aeration tank shall be taken to the secondary settling tank.
- In the secondary settling tank, sludge shall be settled due to gravity. One part of settled sludge at the bottom of secondary settling tank shall be recycled back to the system and the excess sludge will be drained to sludge drying bed
- Water flows out from the secondary settling tank shall be collected in Filter Feed Tank, where sodium hypochlorite solution will be added as disinfectant.
- From the filter feed tank, effluent shall be pumped thro Dual Media Filter, i.e. the Pressure Sand Filter (PSF) followed by Activated Carbon Filter (ACF).
- Outlet of the ACF shall be collected in the treated effluent storage tank
- Treated water shall be used for flushing and gardening
- Surplus water shall be percolated to the soil using soak pits located at different locations

10) A detailed green belt development plan along with the list of plant species to be planted should be submitted. More green belt should be developed towards north east direction where the city is located as also near the sanctuary.

Reply: Green Belt Development Plan

The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. The green belt helps to capture the fugitive emission and to attenuate the noise generated apart from improving the aesthetics. Development of green belt and other forms of greenery shall also prevent soil erosion and washing away of topsoil besides helping in stabilizing the functional ecosystem and further to make the climate more conducive and to restore water balance.

About 8,832.71 m^2 area i.e. 33 % of total plant area shall be developed as green belt at plant boundary, road side, around offices & buildings and Stretch of open land. In Green belt area about 1000 tree per acre of land shall be planted. The selection of tree species suitable for plantation at the industry shall be governed by guiding factors as stated below:

- The trees should be tolerant to air pollutants present in the area
- The trees should be able to grow and thrive on soil of the area, be evergreen, inhabitant, having minimum of leaf fall.
- The trees should be tall in peripheral curtain plantation and with large and spreading canopy in primary and secondary attenuation zone.
- The trees should posses' extensive foliar area to provide maximum impinging surface for continued efficient adsorption and absorption of pollutants.
- The trees should be fast growing and indigenous and should maintain ecological, land and hydrological balance of the region.
- It is also recommended to plant few trees, which are sensitive to air pollution, as air pollution indicator.
- It is also recommended to carry out extensive plantation within premises.
- Keeping in view the climatic conditions, status of soils and vegetation types in and around the project area the species shall be selected for proposed green belt development.

RECOMMENDED PLANT SPECIES FOR GREEN BELT DEVELOPMENT

Plant Species	Local Name
Azadirachta indica	Neem
Terminalia arjuna	Arjun tree
Polyalthia longifolia	Ashok
Cassia fistula	Amaltas
Thespesia populnea	Plaksa
Ficus benghalensis	Banyan
Mangifera indica	Mango
Dalbergia sissoo	Sisam
Syzygium cuminii	Jamun
Gmelina arborea	gamhar
Tabebuia rosea	Pink Poui,
Aegle marmelos	Bel
Anthocephalus chinense	Kadam
Delonix regia	Gulmohar
Ficus religiosa	Peepal

T: Tolerant, NA =Not available

Sources: CPCB (March, 2000) Guidelines for developing green belts PROBES/75/1999-2000

FOUR YEAR BUDGETARY PROVISIONS FOR GREENBELT DEVELOPMENT

SR. NO.	YEAR	NO. OF PLANTS	BUDGET (RS. IN LAKHS)
1.	1st Year	800	4,80,000
2.	2nd Year	600	3,60,000
3.	3rd Year	400	2,40,000
4.	4th Year	200	1,20,000
TOTAL		**2000**	**12,00,000**

11) Commitment by the PP for the point raised by the local public during the PH should be inserted in the presentation.

Reply: Public Hearing was conducted on 20th April, 2016 at 11:00 hours at "Ambher LP School, Vill. Ambher, PO. Tamulikuchi, Byrnihat, Mouza-Sonapur, Dist.- Kamrup (M), Assam. Around 55 people were present during public hearing. Out of which 20 persons have presented their issues/suggestions/objection/opinion about the project. Issued raised along and its reply given by project the authority in tabulated form is presented in following table.

NO.	NAME OF THE PERSON	ISSUE RAISED	Commitments
1.	Sri Redminton Sangma, Ambher Village	Told that he has to discuss among the villagers and he has not yet done. So today he will not be able to say anything.	In the later part of the meeting, since most of the villagers have put down their view point so even they decided for the unit
2.	Sri Lathyson Momin, Village Ambher.	He said that he is about 68 yrs. Due to coke industry, agriculture has not been much but due to the establishment of the industry. They will be able to lead their livelihood or earning by working in the factory and has welcomed the setting up of the proposed industry. As it will improve their socio-economic condition.	The management has assured them of maximum local employment
3.	Sri Gideon Sangma, Village Ambher	Said that due to factories, they have been able to work in the factory and has asked the industry people to give employment to the local people.	The management has assured them of maximum local employment
4.	Sri Gritison Sangma, Village Ambher	Said that due to Amchang Wildlife Sanctuary proposed cement factory cannot be set up. But with strict adherence to pollution measures it can be set up as it will help people.	The management has assured that the industry would be set up by following all the norms of CPCB and by getting all the approvals from necessary authorities. It has also been assured to take adequate measures to control the pollution
5.	Sri Ashraf Ansari, Village Jorabat	Said that the public hearing was held in not much publicly. He said that cancer patients are rising as the industry does not much follow the pollution control measures. He also requested for employment and development and improve the road condition.	The management has already replied to the said question
6.	Sri Bismil Ranghang	Said that it was not held secretly. If it held secretly than such a large gathering will not possible. He said the pollution should be controlled by following the measures of expected employment in the industry and thus welcome the setting up of industry.	The management has already replied to the said question
7.	Sri Topeswar Rabha, Village Ambher	Said that the cement industry should be held and welcomed it. As it will create employment. He also asked to improve road	The management has already replied to the said question

NO.	NAME OF THE PERSON	ISSUE RAISED	Commitments
		conditions.	
8.	Smt. Nanda Rabha, Village - Ambher	Said that setting up of industry is good and welcomed it. She said that the poor people like her will get employment and improved road condition.	The management has assured for improving road condition as a part of CSR activity
9.	Sri Norgini Momin, Village : Ambher	Said that industry should be set up. She said that young boys will get employment and requested to recruit employment of the local boys of Ambher village and then she supported it.	The management has assured them of maximum local employment.
10.	Sri Salam Momin, Village : Ambher	Said that local people should get the opportunity to work in the industry as it will help them to earn the livelihood.	The management has assured them of maximum local employment.
11.	Sri Bisnu Chetry, Village : Ambher	Welcomed the setting up of the cement industry as it is a hilly area, no agriculture. So he said that if a industry is set up, it will help the people at large as it will help to earn them livelihood.	The management has assured them of maximum local employment.
12.	Sri Ratneswar Ranghong Village Ambher	Said that as it is nearby Amchang it should not be effect. He said that the social welfare fund should be properly utilized and should be told to the public at large. If the industry is setup, employment should be given to the local people.	The management has already assured for a fund of CSR
13.	Sri Jayanta Kr. Das, AEE, RO Ghy PCBA	Said that before one month i.e. 20th March 2016 it was given in the Assam Tribunal and Jana Sadhana newspaper about the public hearing.	
14.	Sri Bisne Rong Hang, Village : Ambher	Said that the PCBA people / authorities know whether cement industry can be set up or not. He said many industries are there, where local people were employed and now the industries are closed/not operational, so he requested PCBA authorities to look into it and also requested to control and look after the pollution and whether it is following the norms which are applicable. He also said the social welfare fund is not well utilized and should take the steps to utilized it properly and explain it to the public and said that if it follows. He welcomed the setting up of the industry.	The management assured them for maximum local employment and development and proper utilization of CSR funds.
15.	Sri Ajit Khaklaci, Village Dimoria	Said that earlier also local people do not get any scope for employment as they promise. He said that if the local area, school and employment is given then he welcomed and supported the setting up of the proposed cement industry.	The management has assured for it would take care of health and education of the local area
16.	Sri J. K. Das, AEE, RO, PCBA, Guwahati	Said that the local people should be benefitted and employed. Further he told the public that the health of the local people will be taken care of. The permission from Amchang Wildlife Sanctuary will be taken. The mid-meal from Akshay Patra will be given to the children of the school. He also promised for giving employment to the local people and develop the local roads at large	The management has assured for it would take care of health and education of the local area.

NO.	NAME OF THE PERSON	ISSUE RAISED	Commitments
		and take care of the people.	
17.	Sri Bijoy Teron	Said that he has worked with Deepak Kayal and is satisfied with the working condition and he has given employment to local people and he welcomed the setting up of the proposed cement industry as it will benefit and help the people at large.	The management has assured for it would take care of health and education of the local area and industry would be set up by following all the norms of CPCB and by getting all the approvals from necessary authorities.
18.	Sri Redmington Sangma	He said that after listening to the news he said the pollution control measures should be adopted and followed and requested the payment to the local youth and due salary should be given to the youth.	The management has already assured that the industry would be set up by following all the norms of CPCB and by getting all the approvals from necessary authorities. It has also been assured to take adequate measures to control the pollution
19.	Sri Kamal Hajong, Village Dimmoria	Said that development should be done and welcomed the setting up of the industry if it follows all the pollution norms applicable and help the people at large and the locality like school, roads than he has no objection for setting up of the proposed industry.	The management has already assured that the industry would be set up by following all the norms of CPCB and by getting all the approvals from necessary authorities. It has also been assured to take adequate measures to control the pollution
20.	Sri M. Nath Nagatey, ACS, Addl. Magistrate	Requested the PCBA authorities to follow all the norms applicable for the cement industry. He said that if any anomalies are present then they will act accordingly and the meeting ended.	

Annexure-I

Copy of Application to CGWA, Northeast Region, Assam for withdrawal of ground water.

K R ASSOCIATES

Date : 17-08-2016

To,
The Regional Director,
Central Ground Water Board North Eastern Region,
Betkuchi, Opp ISBT,
NH 37, Guwahati,
Assam

Ref : Our Online Application for Permission to Abstract Ground Water for Industrial Use (Application No. 21-4/159/AS/IND/2016 dtd. 16-08-2016)

Sub: Submission of Application

Dear Sir,

In reference to our online application mentioned above, we request you to please find enclosed the application copy along with other documents and Demand Draft of Rs. 1000/- in favour of PAO, CGWB.

We request you to kindly acknowledge the receipt of the same and let us know for any further information or details required.

Thanking you,
Yours faithfully,
For K R Associates

For K R ASSOCIATES
Kiran Kayal
(Partner) PARTNER

Enclosed: As stated

17/8/16
Despatcher
Government of India
Central Ground Water Board
North Eastern Region
NH-37, Betkuchi (Opp-ISBT)
Guwahati-781 035

HOUSE NO.62 , BYE LANE 2ND, ABC TARUN NAGAR , BHANGAGHAR , GUWAHATI – 781005 (ASSAM)
PH :- +91 361 2524073 / 2460020 / 21 FAX :- +91 361 2451757 E-MAIL :- kayal_manoj@yahoo.co.in

Government of India
Central Ground Water Authority (CGWA)
Ministry of Water Resources, River Development and Ganga Rejuvenation
Applications for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Permission to Abstract Ground Water for Industrial Use (Application For New NOC)

Application Number : 21-4/159/AS/IND/2016

1. **General Information:**

Water Quality:	Fresh Water
Application Type Category/ Type of Application:	Cement Industry
(i) Name of Industry:	K R ASSOCIATES
(ii) Location Details of the Industrial Unit- (Attach Site Plan and Certified Revenue Sketch) ($)	
Address Line 1 :	VILL- AMBHER
Address Line 2 :	12 MILE JORABAT
Address Line 3 :	
State:	ASSAM
District:	KAMRUP METRO
Sub-District:	DIMORIA
Village/Town:	Ambher Gaon
Area Type :	Non-Notified
Area Type Category :	Safe
(iii) Communication Address	
Address Line 1:	HOUSE NO. 62
Address Line 2:	BY LANE 2 TARUN NAGAR
Address Line 3:	G S ROAD
State:	ASSAM
District:	KAMRUP METRO
Sub-District:	Guwahati
Pincode:	781005
Phone Number with Area Code:	
Mobile Number:	91 9954008252
Fax Number:	
E-Mail:	ishaanmodi16@gmail.com

(iv) Salient Features of the Industrial Activity:

Manufacturing of Cement

(v) Land Use Details of the Existing / Proposed Industrial Unit Premises Ownership of the Land : Enclose Documents of Ownership / Lease: ($)

Land Use Details	Existing (sq meter)	Proposed (sq meter)	Grand Total (sq meter)
Green Belt Area	0.00	8832.71	8832.71
Open Land	0.00	7033.96	7033.96
Road/ Paved Area	0.00	3774.53	3774.53

Government of India
Central Ground Water Authority (CGWA)
Ministry of Water Resources, River Development and Ganga Rejuvenation
Applications for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Permission to Abstract Ground Water for Industrial Use (Application For New NOC)

Application Number : 21-4/159/AS/IND/2016

Rooftop area of building/ sheds	0.00	7218.20	7218.20
Total	0.00	26859.40	26859.40

(vi) Drainage in the Area (River/ Nala etc) : Nil

(vii) Source of Availability of Surface Water for Industrial Use (if any – Furnish Details): Nil

(viii) Average Annual Rainfall in the Area (in mm): 1750.00

(ix) Townships / Villages (Within 2km Radius of the Industrial Unit): Ambher

(x) Whether Ground Water Utilization for: New Industry

Date of Commencement Industry:

Date of Expansion :

2. Details of Water Requirement (Fresh and Recycled Water Usage):
(Please Enclose Water Flow Chart of Activities and Requirement of Water at each Stage) ($)

(i) Total Water Requirement (a+b+c+d) (m3/day)

	Existing	Proposed	Total
Water Requirement Details (Fresh Water) (m3/day)			
(a) Ground Water Requirement (m3/day):	0.00	17.60	17.60
(b) Surface Water Available (Canal, River, Ponds etc.) (m3/day):	0.00	0.00	0.00
(c) Water Supply from Any Agency (m3/day):	0.00	0.00	0.00
Total Fresh Water Requirement (a+b+c)(m3/day):	**0.00**	**17.60**	**17.60**
(d) Recycled Water Usage (m3/day):	0.00	0.00	0.00
Total Water Requirement : (a+b+c+d)(m3/day)	**0.00**	**17.60**	**17.60**

(ii) Breakup of Water Requirement and Usage:

Activity	Existing Requirement (m3/day)	Proposed Requirement (m3/day)	Total Requirement (m3/day)	No. of Operational Days in a Year	Annual Requirement (m3/year)
Industrial Activity	0.00	3.60	3.60	300	1080.00
Residential / Domestic	0.00	8.00	8.00	365	2920.00
Greenbelt Development /Environment Maintenance	0.00	1.00	1.00	300	300.00
Other Use	0.00	5.00	5.00	300	1500.00
Grand Total	0.00	17.60	17.60		5800.00

Government of India
Central Ground Water Authority (CGWA)
Ministry of Water Resources, River Development and Ganga Rejuvenation
Applications for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Permission to Abstract Ground Water for Industrial Use (Application For New NOC)

Application Number : 21-4/159/AS/IND/2016

(iii) Breakup of Recycled Water Usage:

	(m3/day)		(Days)	(m3/year)
(a) Total Waste Water Generated :		6.40	365	2336.00
(b) Quantity of Treated Water Available	0.00			
i). Reuse in Industrial Activity:		0.00	300	0.00
ii). Reuse in Green Belt Development:		0.00	300	0.00
iii). Other Uses:		0.00	300	0.00
(c) Total Treated Water Utilized:		0.00		0.00

Net Ground Water Requirement: 17.60 (m3/day)

3. (a). Groundwater Abstraction Structure- Existing:

Number of Existing Structures: 0

SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours (Day) / Days (Year)	Mode of Lift Name	Horse Power of Pump	Whether Fitted with Water Meter	Whether Permission Registered with CGWA / If so Details Thereof

(b). Groundwater Abstraction Structure- Proposed:

Number of Proposed Structures: 1

SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours (Day) / Days (Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA / If so Details Thereof
1	Borewell / -	- / -			- / -	Submersible Pump		Yes	No / -

4. Groundwater Availability (Please Enclose a Comprehensive Report / Note on Groundwater Condition / Groundwater Quality in and Around the Area) Applicable to Industries Consuming Greater Than 500 m3/day and / or having a Land Area of Greater Than 2 Ha.- ($)

Attached

5. Details of Rainwater Harvesting and Artificial Recharge Measures for Groundwater Recharge in the Area. If the Firm has Proposed to take up Rainwater Harvesting and Recharge outside the Industrial Unit Premises, then provide NOC from the Concern Authority / Agency where the Harvesting Measures are Proposed, if Already implemented, details may be furnished. (Attach Report on Comprehensive & Feasible Rainwater Harvesting / Recharge Proposal).- ($)

Attached

Government of India
Central Ground Water Authority (CGWA)
Ministry of Water Resources, River Development and Ganga Rejuvenation
Applications for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Permission to Abstract Ground Water for Industrial Use (Application For New NOC)

Application Number : 21-4/159/AS/IND/2016

6. **Copy of Referral Letter seeking NOC from CGWA from Central Pollution Control Board / State Pollution Control Board / Bureau of Indian Standards / Ministry of Environment and Forests / Other Central / State Agencies shall be Annexed.- ($)**

Attached Referral Letter

S.No	Attached Referral Letter	Attachment Name	File Name
1	Central Pollution Control Board	TOR	TOR.pdf

7. **Have You Applied Earlier for Groundwater Clearance from CGWA / State Government Agency:**

If Yes, so Details thereof with Status:

INDUSTRIAL USE- Self Declaration

☑ It is to Certify that the Data and Information Furnished Above are True to the Best of My Knowledge and Belief and I am Aware that if Any Part of the Data / Information Submitted is Found to be False or Misleading at Any Stage the Application will be Rejected Out Rightly.

1. Application Proforma is Subject to Modification from Time to Time.

2. Application should be submitted to Regional Office.

Regional Director,Central Ground Water Board North Eastern Region, Betkuchi, Opposite ISBT,, NH-37, Guwahati,, KAMRUP METRO, ASSAM, 781005

3. Incomplete Application will be Summarily Rejected.

Submitted Application will not be Processed till the Print Out of the Signed Complete Application is Submitted to Regional Office.

4. Applicant has to Submit Processing Fee of Rs. 1000.00/- (Rupees One Thousand Only) in the form of Demand Draft drawn in Favour of PAO, CGWB and Payable at Faridabad, Haryana.

Demand Draft Details:-

D.D. No. Dated :

Bank Name: Amount:

Note:- The Processing Fee is Non-Refundable. Applicant should ensure and Check Eligibility of Submission of Application and Required Documents before Submitting Online Application.

Attached Files:

1). Site Plan : (Refer: 1 (ii))

S.No	Attachment Name	File Name
1	SITE PLAN	PROPOSED MASTER PLAN.pdf

2). Certified Revenue Sketch : (Refer: 1 (ii))

S.No	Attachment Name	File Name
1	REVENUEMAP	REVENUEMAP.pdf

3). Documents of Ownership / Lease : (Refer: 1 (v))

No Attachment Found!

4). Source of Availability of Surface Water : (Refer: 1 (vii))

No Attachment Found!

Copy of Application to CGWA, Northeast Region, Assam for withdrawal of ground water.

Government of India
Central Ground Water Authority (CGWA)
Ministry of Water Resources, River Development and Ganga Rejuvenation
Applications for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Permission to Abstract Ground Water for Industrial Use (Application For New NOC)

Application Number : 21-4/159/AS/IND/2016

5). Enclose Flow Chart of Activity and Requirement of Water: (Refer: 2)

No Attachment Found!

6). Groundwater Availability Report : (Refer: 4)

No Attachment Found!

7). Details of Rainwater Harvesting / Artificial Recharge Measures : (Refer: 5)

S.No	Attachment Name	File Name
1	RAINWATERHARVESTING	RAINWATERHARVESTING.pdf

8). Authorization :

No Attachment Found!

10). Non-Polluting Effluent :

S.No	Attachment Name	File Name
1	PROCESS	PROCESS.pdf

11). Extra Attachment :

No Attachment Found!

12). Scanned Industrial Application :

No Attachment Found!

Date :

Place :

Name & Signature of the applicant

(With official seal)

Associated User : krassociates

Submitted By User : krassociates

Submission Date : 16/08/2016

* In case signed by any authorized signatory, the details of the signatory with the authorization shall be enclosed.

16/08/2016 02:08 PM

Page 5 of 5

Copy of letter from the revenue department for conversion of land

Serial No. 74
Date 8/8/16

Jamabandi For Surveyed Village

Kamarup (M)/ Guwahati/ Sonapur/ Sonapur/ Lat No. 1/ Ambher Village

Patta No.		Pattadar/	Land of each Dag				Revenue (Rupees)	Local Tax	Remarks
Old	New		No.	Area	Class	Area			
1	2	3	4	5	6	7	8	9	10
	9	1) Sri Dataram Sangma (S/o- Changram) 2) Smt. Khristina Mamin (D/o- Dataram) 3) M/S Pride Cook Pvt. Ltd. 4) Jumbo Packaging (Meghalaya) Pvt. Ltd.	123 151	6-2-02 9-1-05	Industrial	0-85-94.38 1-23-82.86	3,210.00 46.25	0.00 0.00	(a) By order dated 31-05-1972 passed by Addl. Deputy Commissioner against the petition filed during the year 1971-72 on payment of premium of Rs. 58.50 vide challan No. 75 dated 15-05-72, the land against Dag No. 123. (b) Covering area of 6 Bighas, 2 Kathas and 2 Lechas and against Dag No. 151 land measuring 9 Bighas 1 Katha 5 Lechas, total land measuring 15 Bighas 3 Kathas 7 Lechas has been included in the new Myadi during Settlement operation in 1379 Signature ..... Bhaben Doloi..... 25-8-72 (c) As per record of the Citha, by order dated 13-6-92, passed by Circle Officer, by law of inheritance, The name of Smt. Khristilla Mamin, Father- Dararam has been mutated in place of pattadar. Signature ..... Illegible ..... date ..... (d) As per record of Chitha vide order dated 18-10-04 passed Circle Officer the name of M/S Pride Cook Pvt. Ltd. has been mutated by virtue of transfer of ownership (sale) in land measuring 5 Bighas 4 Kathas 7 Lechas of Dag No. 123 along with Pattadar Smt. Khrsilla Mamin. Signature ..... illegible ....dated 18-10-04.

NOTARY
Banti Baishya
Kamrup (M) Ghy
Regd. No.-KAM.22
Expiry Date
22/05/2018
GOVT. OF ASSAM

8/8/16
Banti Baishya
NOTARY, GOVT. OF ASSAM
Kamrup (Metro), Guwahati
Regd. No.: KAM-22

Serial No. 75
Date 8/8/16

JAMABANDI FOR SURVEYED VILLAGES

Kamrup (Metro)/ Guwahati/Sonapur/Sonapur/Lot No.1/Ambher gaon

Kheraj Myadi Jamabandi

Patta No.		Name & Father's name of Pattadar	Land of each Dag				Reve -nue in Rs.	Local Tax in Rs.	Remarks
Old	New		No	Area B-K-L	Class	Area B-K-L			
1	2	3	4	5	6	7	8	9	10
	3	~~1) Sri Dataram Sangma S/O- Sri Sangma~~ ~~2) Sri Pharstan Marak S/O- Late Kanshing~~ 3)Smt Khritilla Momin D/O- Dataram 4) M/S- Pride Cook Ltd. 5) Smt Nurmila Momin W/O- Phrenton 6) Smt Silme G Momin D/O- Phrenton 7) Jumbo Packaging (Meghalaya) Pvt. Ltd.	122 139 141	1-0-10 2-4-10 1-3-12	Industrial Naba Industrial	0-14-72.56 0-38-82.20 0-23-02.54	550.00 14.50 860.00	00.00 00.00 00.00	**(Ka)** In compliance with the order dated 24/6/66 passed by ASO on basis of petition being No. CR 227 of 1966 the land measuring 1 Bigha 10 Lessa covered by Dag No. 122, the land measuring 1 Bigha 3 Katha 12 Lessa covered by Dag No. 141 and the land measuring 2 Bigha 4 Katha 10 Lessa covered by Dag No. 139 are made myadi on receipt of premium of Rs.29/ vide Challan No.112 in the year 1373 (Bangla). Sd/ Bhaben Doloi Date- 26/8/66 **(Kha)** In compliance with the order dated 24/7/74 passed by SDC in the Chitha, mutation is allowed in respect of the land measuring 1 Bigha 3 Katha 12 Lessa, in favour of Pharstan Marak in place of the Pattader on basis of gift. **(Ga)** In compliance with the order dated 10/6/92 passed by Circle Officer in the Chitha, mutation is allowed in favour of Smt Khritilla Momin in place of the Pattader on basis of inheritance. Sd/ Prabhat Deka Date- 10/6/92 **(Gha)** In compliance with the order dated 18/10/04 passed by Circle Officer in the Chitha, mutation is allowed in respect of land measuring 1 Bigha 10 Lessa covered by Dag No.122 in favour of Pride Cook Pvt. Ltd. in place of the Pattader Smt Khritilla Momin on basis of purchase. Sd/ Prabhat Deka Date- 18/11/04 **(Unga)** In compliance with the order dated 15/6/05 passed by Circle Officer

NOTARY
Banti Baishya
Kamrup (M), Ghy
Regd. No.- KAM.22
Expiry Date
22/05/2018
GOVT. OF ASSAM

8/8/16
Banti Baishya
NOTARY, GOVT. OF ASSAM
Kamrup (Metro), Guwahati
Regd. No.: KAM-22

Serial No. 76
Date 8/8/16

JAMABANDI FOR SURVEYED VILLAGES

Kamrup (Metro)/ Guwahati/Sonapur/Sonapur/Lot No.1/Ambher gaon

Kheraj Myadi Jamabandi

Patta No.		Name & Father's name of Pattadar	Land of each Dag				Revenue in Rs.	Local Tax in Rs.	Remarks
Old	New		No	Area B-K-L	Class	Area B-K-L			
1	2	3	4	5	6	7	8	9	10
	21	1) Sri Dibis N Areng S/O- Late Duwaram 2) M/S- S/M Cooks Ltd. ~~3) M/S- S/M Cooks Ltd~~. 4) Sri Barna Dish Momin D/O- Abison 5) Smt Jom Binish Momin W/O- Sri Khenkam Momin ~~6) Sri Jayanta Bodo S/O- Late Saya Bodo~~ ~~7)Sri Amiya~~ Islari, ~~Director, M/S- Cook~~ 8) Sri Amiya Islari, Director, J S B Properties Pvt. Ltd 9) Sri Amiya Islari, Director, J S B Cement L L P 10) Jumbo Packaging (Meghalaya) Pvt. Ltd.	109 112 113 145 146	3-2-00 5-2-00 2-0-06 4-1-13 4-1-00	Industrial Abdong Akhdong Industrial Industrial	0-45-51.54 0-72-28.92 0-27-57.70 0-57-96.52 0-56-22.49	1700.00 28.95 10.30 0.00 2100.00	00.00 00.00 00.00 00.00 00.00	In compliance with the order dated 2/4/97 passed by Circle Officer on basis of petition being no. Myadi 497/2/4/97, total land measuring 19 Bigha 1 Katha 19 Lessa covered by Dag No. 109, 112, 113, 146 and 145 under Eksona (Annual) Patta No.14, are made myadi under the Patta No. 21 as per settlement of the year 1404, in favour Sri Dibis N Areng, S/O- Late Duwaram upon receipt of premium of Rs.160.00 vide Sl No. 58 of CRF Book No. 5252. Sd/Illegible Date: 1/8/97 **(Ka)** In compliance with the order dated 6/8/99 passed by Circle Officer in the Chitha, mutation is allowed in respect of land measuring 5 Bigha 2 Katha covered by Dag No. 112 and land measuring 2 Bigha 6 Lessa covered by Dag No. 113, total land measuring 7 Bigha 2 Katha 6 Lessa in favour M/S- S/M Cooks Ltd. on basis of purchase of possessory right. Sd/ Illegible Date- 1/8/97 **(Kha)** In compliance with the order dated 14/2/2000 passed by Circle Officer on basis of petition being No. 507/10/8/99, the mutation order dated 6/8/99 allowed in respect of the land measuring 5 Bigha 2 Katha covered by Dag No. 112, the land measuring 2 Bigha 6 Lessa covered by Dag No. 113 and the land measuring 7 Bigha 2 Katha 6 Lessa covered by Dag No. ..... is cancelled, and the name of original Pattader is restored. Sd/Illegible Date- 14/2/2000

NOTARY
Banti Baishya
Kamrup (M), Ghy
Regd. No.- KAM.22
Expiry Date
22/05/2018
GOVT. OF ASSAM

8/8/16
Banti Baishya
NOTARY, GOVT. OF ASSAM
Kamrup (Metro), Guwahati
Regd. No.: KAM-22

Serial No. 77
Date 8/8/16

JAMABANDI FOR SURVEYED VILLAGES

Kamrup (Metro)/ Guwahati/Sonapur/Sonapur/Lot No.1/Ambher gaon

Kheraj Myadi Jamabandi

Patta No.		Name & Father's name of Pattadar	Land of each Dag				Revenue in Rs.	Local Tax in Rs.	Remarks
Old	New		No	Area B-K-L	Class	Area B-K-L			
1	2	3	4	5	6	7	8	9	10
	19	1) ~~Smt Mamlion Marak W/O Anderson~~	142	0-3-00	Industrial	0-08-03.21	0.28	0.07	In compliance with the order dated 30/9/96 passed by Circle Officer on basis of petition being no. 275/95-96 of 1995/96, the land measuring 5 Bigha 1 Katha 10 Lessa covered by Dag No. 76, the land measuring 1 Bigha 3 Katha 11 Lessa covered by Dag No. 83, the land measuring 3 Katha 10 Lessa covered by Dag No. 96, the land measuring 3 Katha covered by Dag No. 142, the land measuring 1 Bigha 9 Lessa covered by Dag No. 143 and the land measuring 6 Bigha 2 Katha covered by Dag No. 144, total land measuring 15 Bigha 4 Katha 10 lessa are made myadi under the Patta No. 19 as per settlement of the year 1404 in favour of 1) Smt Mamlion Marak W/O-Anderson and 2) Smt Phinowace R Marak D/O- Anderson upon receipt of premium of Rs.160.00 on 1/10/96 vide Sl No. 83 of CRF Book No. 3462. Sd/Rupam Bhuyan Date: 27/2/96 **(Ka)** In compliance with the order dated 3/4/04 passed by SDC in the Chitha, mutation is allowed in favour Smt Phinowace R Marak D/O- Anderson in place of the Pattader No.1 on basis of inheritance. Sd/ Illegible Date- 3/4/04 **(Kha)** In compliance with the order dated 26/2/07 passed by Circle Officer in the Chitha, mutation is allowed in respect of land measuring 3 Katha 10 Lessa covered by Dag no. 93 in favour of Smt Ai Rolina Marak D/O-Late Gonison
		2) Sri Phinowace R Marak D/O- Anderson	144	6-2-10	Industrial	0-87-01.47	3.06	0.76	
			76	5-1-10	Abdong	0-70-95.05	5.24	1.31	
		3)Sri Ai Rolina Marak W/O-Alom Dakhang	83	1-3-11	Naba	0-22-89.16	0.80	0.20	
			93	0-3-10	Industrial	0-09-37.08	350.00	0.14	
		4) Sri Amiya Islari, Director, J S B Cement L LP							
		5) Sri Sanjib Deka S/O- Late Kabiram Deka							
		6) Jumbo Packaging (Meghalaya) Pvt. Ltd.							
		7) Sri Subha R Marak D/O- Debis N Areng							

NOTARY
Banti Baishya
Kamrup (M), Ghy
Regd. No.- KAM.22
Expiry Date
22/05/2018
GOVT. OF ASSAM

8/8/16 Banti Baishya
NOTARY, GOVT. OF ASSAM
Kamrup (Metro), Guwahati
Regd. No.: KAM-22

REVISED DETAILED ENVIRONMENTAL MANAGEMENT PLAN.

DETAILS OF ENVIRONMENTAL MANAGEMENT PLAN
1. DURING CONSTRUCTION PHASE

1.1 AIR ENVIRONMENT

Construction phase will be for a short period and hence the impacts will also be for a short and temporary period. During construction activities, mainly emission of dust and gases from movement of vehicles and construction activity is expected. However, following measures will be taken to reduce/contain such emissions:

- Preparation of paved internal movement roads will be taken up at the initial stage of civil construction work.
- Water will be sprinkled on loose top soil to prevent re-suspension of dust into ambient air due to movement of vehicles etc.
- Separate civil construction material storage yard will be created within the site and it will be enclosed.
- Possibility of raising green belt along with construction activity will also be explored.
- Transport vehicles and construction equipments / machineries will be properly maintained to reduce air emissions.
- Vehicles and equipments will be periodically checked for pollutant emissions against stipulated norms.
- Idle running of vehicles will be minimized during material loading / unloading operations.
- Exhaust vent of D.G. set will be kept at proper height to ensure quick dispersal of gaseous emissions.
- All construction workers will be provided appropriate PPEs like dust mask, ear plug, helmet, safety belt etc. and made to wear them during working hours.

1.2 WATER ENVIRONMENT

Water required for construction of proposed project will be met from ground water using bore well. As, location of the project site falls in safe category based on Ground Water Resource Estimation (GWRE) 2009, Permission to draw ground water is not required as per the Guidelines/Criteria for evaluation of proposals/ requests for ground water abstraction (with effect from 15/11/2012) of Central Ground Water Authority (CGWA). The quantity of water will be small. Hence, no major impact on existing water resources of the study area is envisaged. Further, there will be no housing facilities at site for construction workers and hence a major source of impact on water environment will be avoided. Proper and sufficient sanitary facilities will be provided to construction workers to maintain all hygienic conditions at site. Storm water drain compatible with the local hydrological pattern of the area, will be provided to carry-off, any run-off or storm water from the premises. Care should be taken during construction work & will nor create any obstruction/dips in the topography which can lead to accumulation of water within premises leading to undesirable consequences like health and hygiene problems etc.

1.3 NOISE ENVIRONMENT

Following measures are proposed during construction period to mitigate adverse impacts:

- Construction machinery and vehicles will undergo periodic maintenance to keep them in good working condition.
- All machineries to be used for construction purpose will be of highest standard of reputed make and compliance of noise pollution control norms by these equipments will be emphasized by company.
- Acoustic laggings and silencers will be used in equipments wherever possible.
- Feasibility of putting up acoustic enclosure / temporary barrier around areas with high noise levels will also be explored.
- All construction workers working in high noise areas will be provided appropriate PPEs like ear muffs and made to wear them during working hours.
- Possibility of raising green belt along with construction activity will also be explored so as to serve as a noise barrier.

1.4 LAND ENVIRONMENT

Following steps are proposed to take care of impact of construction activity on project land area:

- On completion of civil works, all debris etc. will be completely removed from site to avoid any incompatibility with future use.
- Other materials like paints; diesel etc. will be properly stored and handled to prevent any spillage on land.
- All the wastes will be stored at a designated site within the premises to prevent scattered discharge on land.

1.5 SOLID WASTE

Main solid waste generation during construction phase will be construction debris like rubble, brick bats, debris, steel scrap, wooden scrap, sand, gravel etc. However, these materials are inert in nature and will not result into leaching of any substance or constituent.

These materials will be properly sorted and will be used within premises for filling of low lying areas. Wooden scrap, steel scrap will be given to scrap dealers.
On completion of civil work, all debris etc. will be completely removed from site to avoid any incompatibility with future use.

1.6 ECOLOGY

Project site is almost on flat land with few shrubs and herbs. Thus, no major tree cutting exercise will be there and no major impact on ecology is anticipated.

However, possibility of rising of greenbelt along with construction activity will be explored so that greening of area can be started at the beginning of project.

1.7 SOCIO-ECONOMIC

During construction work necessary facilities like sanitation through mobile toilets, fuel for cooking, restroom, etc. will be provided.

Overall socio-economic effect of construction phase will have positive impact due to direct and indirect employment opportunity for the local livings.

2 DURING OPERATION PHASE

Operation phase of any industry is being longer in duration and because of its potential to create continuous impacts. It is quite important from the impact point of view, comprehensive and effective EMP has to be prepared and implemented to safe-guard environmental concerns during operation phase of any unit.

2.1 AIR ENVIRONMENT

The air pollutants in the plant may be classified broadly into particulate matter like dust, fumes etc. and gases like sulphur dioxide, carbon mono oxide, nitrogen oxide etc. The measure to control the air pollution will ensure the ambient air quality standards as laid down by Central Pollution Control Board (CPCB) for industrial areas.

The system proposed for air pollution control will provide acceptable environment condition in the working areas and abate air pollution in the surrounding area of the plant. The technological equipment and processes have been selected with the above objectives. Depending on quality of emission from different sources, suitable air pollution control system will be provided. The Stack height will be as per CPCB norms to ensure ground level concentration of different pollutants within permissible limit.
Dust collection equipments will be adopted to remove particulate matter from gas streams. The pollutant itself will be collected through suction hoods, ducts etc.
Following measures are proposed to mitigate negative impact of operation phase of the project on the surrounding air environment:

- All transfer points will have bag filter attached to them to control and capture dust emission.
- Height of all the stacks will be as per statutory requirement.
- All the stacks will have Stack Monitoring Facility (SMF) consisting of sampling port-hole, platform

and access ladder.

- Adequate spares of critical components of dust collection systems will be kept to ensure trouble-free operations and continuous compliance to emission norms.
- A comprehensive plan for fugitive emission control based on CPCB guidelines will be prepared and followed.
- Transport vehicles will be properly maintained to reduce air emissions.
- Vehicles will be periodically checked for pollutant emissions against stipulated norms.
- Idle running of vehicles will be minimized during material loading / unloading operations.

2.1.1 ACTION PLAN TO CONTROL FUGITIVE EMISSIONS AS PER CPCB GUIDELINES

(A) Unloading section:

- Enclosure (of flexible material) will be provided towards unloading side up to suitable height.
- Bag filter will be provided to effectively capture dust emission.

(B) Material Handling Section And Transfer Points

- All transfer point locations will be fully enclosed but will have access doors. Doors will be kept closed during operation.
- All transfer points will have bag filters.

(C) Storage of Clinker, Cement, Gypsum and Fly ash

- Coal will be stored in open area.
- Clinker will be stored in covered clinker storage yard having green belt.
- Storage area shall be clearly earmarked.
- Coal, clay, Gypsum, fly ash, etc. storage will be done under covered shed and side walls will be provided on minimum two sides up to roof level.
- Cement will be stored in silo equipped with bag filters.

(D) Cement Packing Section

- Packing machines will be provided dust extraction system in the form of bag filters.
- Adequate ventilation will be provided in packing hall to provide dust free work environment.
- Spilled cement from the packing machine will be collected properly and sent for recycling. Arrangement for vacuum sweeping will also be provided.

(E) Roads

- All internal roads will be of concrete and will be well maintained. Repairing work required, if any, will be carried out immediately.
- Water sprinkling will be done regularly along the road to control fugitive emission.
- Speed limit inside the plant premises will be fixed to prevent dust emissions.

Other Measures:

- Company will also designate Environment Manager, who will look after fugitive dust emission control including emergency situations. He will be adequately trained to handle the responsibility of control of fugitive emissions.
- All personnel working on fugitive emission control systems will be given regular training on operation and maintenance of the system.
- A proper record and documentation of fugitive dust control system will be kept.
- All other guidelines of Central Pollution Control Board (CPCB) too will be complied.

Moreover, the fugitive emission will be monitored regularly as per environment monitoring program.

2.2 WATER ENVIRONMENT

Total water requirement during operation phase is estimated at 17.6 KL per day, which will be met from ground water using bore well. Water drawl permission from CGWA (Central Ground Water Authority) will be obtained. No industrial waste water will be generated; only domestic waste water i.e. 6.4 KL per day will be generated and treated through septic tank/soak pit/well. So, there will not be any impact on water environment due to the proposed project.

To compensate and mitigate impact on ground water availability in the area due to continuous withdrawal of ground water by the project to the tune, a comprehensive rain water recharge scheme has been developed and its details are given in following section.

2.2.1 ACTION PLAN FOR RAIN WATER HARVESTING

Rain Water Harvesting is a way to capture the rain water when it rains, store that water above ground or charge the underground and use it later.

Rainwater Harvesting System:

Rain Water Harvesting is a way to capture the rain water when it rains, store that water above ground or charge the underground and use it later.

There are a number of types of systems to harvest rainwater ranging from very simple to the complex industrial systems. Generally, rainwater is either harvested from the ground or from a roof. The rate at which water can be collected from either system is dependent on the plan area of the system, its efficiency, and the intensity of rainfall.

As the company will require continuous water, it would be met from ground water. To compensate the ground water loss, it is proposed to recharge the water through rain water harvesting system.

Storm Water Drainage Line: Channels will be installed wherever required to collect and transport rain water to the storage tank. Drainage will be semi-circular and will be made using Galvanized Iron sheet folded to required shapes. Drainages will be fixed using Iron Brackets.

Conduits: Pipes will be used to carry rain water from catchment to the recharge pit, passing through filter. A valve will be put at the end of wall for first flushing.

Filter: Sand Filter will be used to remove suspended pollutants from the rainwater.

Recharge: After filtration, water will be recharged using percolation pit, filled with pebbles or brick and river sand and covered with perforated concrete slabs. Depth of recharge pit will be designed according to Water table of the area.

2.3 NOISE ENVIRONMENT

Following precautionary measures will be adopted to control the noise level:

- Roof of buildings will be constructed of reinforced concrete or of lightweight concrete
- Walls and ceilings of building will be lined with sound absorbing materials, wherever required
- Sheet metal casting and housing will be insulated with sound absorbing materials
- Noise generating sources and their platforms will be maintained properly to minimize noise vibrations generated by them.
- Personnel working near the noisy machines in different plant locations, will be provided with well designed ear muffs/plugs (effective noise reduction upto10-15 dBA)
- Cement mill premises will have proper ventilation.
- Green belt will be developed to act as a noise barrier.
- Noise barriers in the form of walls, beams will be provided around the units wherever found feasible.
- Training to personnel will be imparted to generate awareness about effects of noise and importance of using PPEs (Personal Protective Equipment).

2.4 LAND ENVIRONMENT

All the solid wastes will be stored separately in a “Solid Waste Storage Area” within the factory premises. It will have non-percolating Reinforced Cement Concrete (RCC) floor and covered roof. The storage area will have proper illumination and ventilation and equipped with fire extinguisher device wherever required. A sign-board will be put out-side the storage area marked “Solid Waste Storage Area” and “Danger”.

Non-hazardous dried bio-sludge from septic tank will be rich in nutrients and hence will be used as fertilizer and nutrient within premises for gardening.

Hazardous waste i.e. used lubricating oil will be given to Central Pollution Control Board (CPCB)

registered recycler/re-processor of oil.

2.5 BIOLOGICAL ENVIRONMENT

2.5.1 GREEN BELT DEVELOPMENT

The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. The green belt helps to capture the fugitive emission and to attenuate the noise generated apart from improving the aesthetics. Development of green belt and other forms of greenery shall also prevent soil erosion and washing away of topsoil besides helping in stabilizing the functional ecosystem and further to make the climate more conducive and to restore water balance.

About 8,832.71 m^2 area i.e. 33 % of total plant area shall be developed as green belt at plant boundary, road side, around offices & buildings and Stretch of open land. In Green belt area about 1000 tree per acre of land shall be planted. The selection of tree species suitable for plantation at the industry shall be governed by guiding factors as stated below:

- The trees should be tolerant to air pollutants present in the area
- The trees should be able to grow and thrive on soil of the area, be evergreen, inhabitant, having minimum of leaf fall.
- The trees should be tall in peripheral curtain plantation and with large and spreading canopy in primary and secondary attenuation zone.
- The trees should posses' extensive foliar area to provide maximum impinging surface for continued efficient adsorption and absorption of pollutants.
- The trees should be fast growing and indigenous and should maintain ecological, land and hydrological balance of the region.
- It is also recommended to plant few trees, which are sensitive to air pollution, as air pollution indicator.
- It is also recommended to carry out extensive plantation within premises.
- Keeping in view the climatic conditions, status of soils and vegetation types in and around the project area the species shall be selected for proposed green belt development.

FOUR YEAR BUDGETARY PROVISIONS FOR GREENBELT DEVELOPMENT

SR. NO.	YEAR	NO. OF PLANTS	BUDGET (RS. IN LAKHS)
1.	1st Year	800	4,80,000
2.	2nd Year	600	3,60,000
3.	3rd Year	400	2,40,000
4.	4th Year	200	1,20,000
TOTAL		**2000**	**12,00,000**

2.6 OCCUPATIONAL HEALTH AND SAFETY PROGRAM

All precautions would be taken to avoid foreseeable accident like spillage, fire hazards and to minimize the effect of any such accident and to combat the emergency at site level in case of emergency. Some of the preventive safety measures to minimize the risk of accident with respect to Technical Safety, Organizational Safety and Personal Safety are listed below:

- Regular inspection and maintenance of pollution control systems.
- All measures related to safety such as safety appliances, training, safety awards, posters, slogans will be undertaken.
- Adequate facilities for drinking water and toilets will be provided to the employees.
- The fire and safety equipment will be properly utilized and maintained regularly.
- The health of the workers will be regularly checked by a well qualified doctor and proper records will be kept for each worker.
- The factory will take all reasonably practicable measures to minimize the risk of such accident in compliance with the legal obligation under the relevant safety.
- All building plans and installations are as per relevant acts and duly approved by competent government authorities.

- Safety features such as fire extinguisher and suitable Personal Protective Equipments (PPEs) shall be provided. Regular operations and testing of fire extinguishers shall be carried out.
- Periodic inspection and testing of pressure vessels, equipment, machineries and equipment handling hazardous substances.
- Training of workers and Staff for fire fighting, work permit system, first aid, safe handling of hazardous chemicals and integrating safety, in all activities.
- Accident/Incident reporting system and information of employees about the same for better awareness.
- Suitable notices/boards displayed at several locations indicating appropriate hazards warning as well as DO's and DON'T for ensuring operational and personal Safety for information of workers/staff and visitors.
- For the safety of the workers, personal protective equipments like hand gloves, helmets, safety shoes, goggles, aprons etc. & Ear protecting devices like earplugs/earmuffs will be provided. Nose mask will be provided at places, where there is possibility of dust generation.

2.6.1 OCCUPATIONAL HEALTH SURVEILLANCE OF THE WORKER

Company shall carry out the following Health surveillance;

i) Pre - employment medical check up at the time of employment.

ii) Periodical medical check up shall be done for all employees as:

1. <30 Once in five years
2. 31-40 Once in four years
3. 41-50 Once in two years
4. Above >50 years once every year

iii) First aid training shall be given to the employees.

iv) Monitoring of occupational hazards like noise, heat, raw materials and product exposure shall be carried out at frequent intervals, the records of which shall be documented.

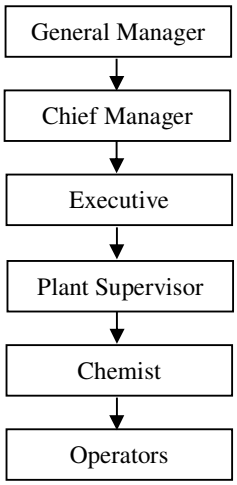
v) Evaluation of health of workers viz. chest X-Ray, Audiometry, Spirometry Vision testing (Far & Near vision, colour vision and any other ocular defect) ECG (Eco-Cardiogram), during pre-employment and periodical examinations shall be carried out.

2.7 ENVIRONMENTAL MANAGEMENT CELL

In addition to preparing an Environmental Management Plan (EMP), it is also necessary to have a permanent organizational set up to ensure its effective implementation. Hence, proposed plant will create a team consisting of officers from various departments to co-ordinate the activities concerned with management and implementation of the environmental control measures. This team will undertake the activity of monitoring the stack emissions, ambient air quality, noise level etc. either departmentally or by appointing external agencies wherever necessary. Regular monitoring of environmental parameters will be carried out to find any deterioration in environmental quality and also to take corrective steps, if required, through respective internal departments.

The Environmental Management Cell will also collect data about health of workers, green belt development etc. An Organogram of the Environmental Management Cell is presented in figure-8.1.

AN ORGANOGRAM OF ENVIRONMENT MANAGEMENT CELL



The cell will also be responsible for monitoring of the plant safety and safety related systems which include:

- Checking of safety related operating conditions.
- Visual inspection of safety equipments.
- Preparation of a maintenance plan and documentation of maintenance work specifying different maintenance intervals and the type of work to be performed.

The other responsibilities of the cell will include:

- Conduct and submit annual Environmental Audit. State Pollution Control Board (SPCB) registered agency will be retained to generate the data in respect of air, water, noise, soil and meteorological data and prepare the Environmental Audit report. This report will be submitted to the SPCB every year. Timely renewal of Consolidated Consents & Authorization (CC&A) will also be taken care.
- Submitting environmental monitoring report to State Pollution Control Board (SPCB). Data monitored by the cell will be submitted to the Board regularly and as per the requirement of SPCB. The cell will also take corrective measures as required or suggested by the Board.
- Keeping the management updated on regular basis about the conclusions/results of monitoring activities and proposes measures to improve environment preservation and protection.
- Conducting regular safety drills and training programs to educate employees on safety practices. A qualified and experienced safety officer will be responsible for the identification of the hazardous conditions and unsafe acts of workers and advise on corrective actions, organize training programs and provide professional expert advice on various issues related to occupational safety and health.
- Conducting safety and health audits to ensure that recommended safety and health measures are followed.

2.8 ENVIRONMENTAL POLICY

The Standard Operating Procedure (SOPs) shall be developed and followed for the smooth operation of the unit. The company also shall obtain International Organization for Standardization (ISO) certificate and plan for Integrated Management System (IMS) to meets the standards of certification and improve business processes. Once such certification obtained, M/s. K R Associates will develop health, Safety, environment policy which will be approved by the Board of Directors.

2.9 REPORTING SYSTEM TO THE DIRECTORS

At M/s. K R Associates, all the safety officers and HSE officers collect the Environment and safety compliance data and submit it to their respective Heads and then safety & HSE Heads submit a signed Environment and safety compliance report to the unit manager and unit manager gives the compliance report to Managing Director who submit it with his sign to the Board of Directors, every month. Any Environment related non compliances / violations / notices are immediately brought to the notice of the Board of directors and discussed in board meeting

2.10 CONCEPT OF WASTE-MINIMISATION, RECYCLE/REUSE/RECOVER TECHNIQUES, ENERGY CONSERVATION, AND NATURAL RESOURCE CONSERVATION

Waste-minimisation: Process optimization by using latest technology equipment.
Recycle/reuse/recover: Dust generated from the pollution control equipment will be completely recycle within process.

Energy Conservation Measures:

- Energy efficient machinery will be installed
- Solar lamp will be used for lighting purpose.
- Regular Energy audit will be conducted

Natural Resource Conservation: To conserve ground water rain water harvesting will be carried out to store rain for future use and also to recharge ground water. Recycling of process water shall be done up to the extent possible to reduce the fresh water demand.

2.11 BUDGETORY PROVISIONS FOR EMP

Adequate budgetary provisions have been made by the management for execution of environmental management plans. Total capital and recurring cost (per annum) earmarked 5.02 crore and 0.74 crore respectively for pollution control/monitoring equipment. Budgetary provisions for the development and maintenance of greenbelt are given in table-8.1 and detailed breakup of cost for operation and maintenance of pollution control measures are given following table.

COST OF ENVIRONMENTAL PROTECTION MEASURES (RS. IN CRORE)

S.No.	Particulars	Capital Cost (RS. IN Crore)	Recurring Cost Per Annum (Rs. In Crore)
1	Air Pollution Control	3.5	0.5
2	Water Pollution Control (STP)	0.8	0.08
3	Noise Pollution Control (Acoustic enclosures)	0.3	0.05
4	Environment Monitoring and Management	0.1	0.01
5	Occupational Health	0.2	0.08
6	Green Belt	0.12	0.02
Total		**5.02**	**0.74**

DETAILS OF AIR POLLUTION CONTROL EQUIPMENT

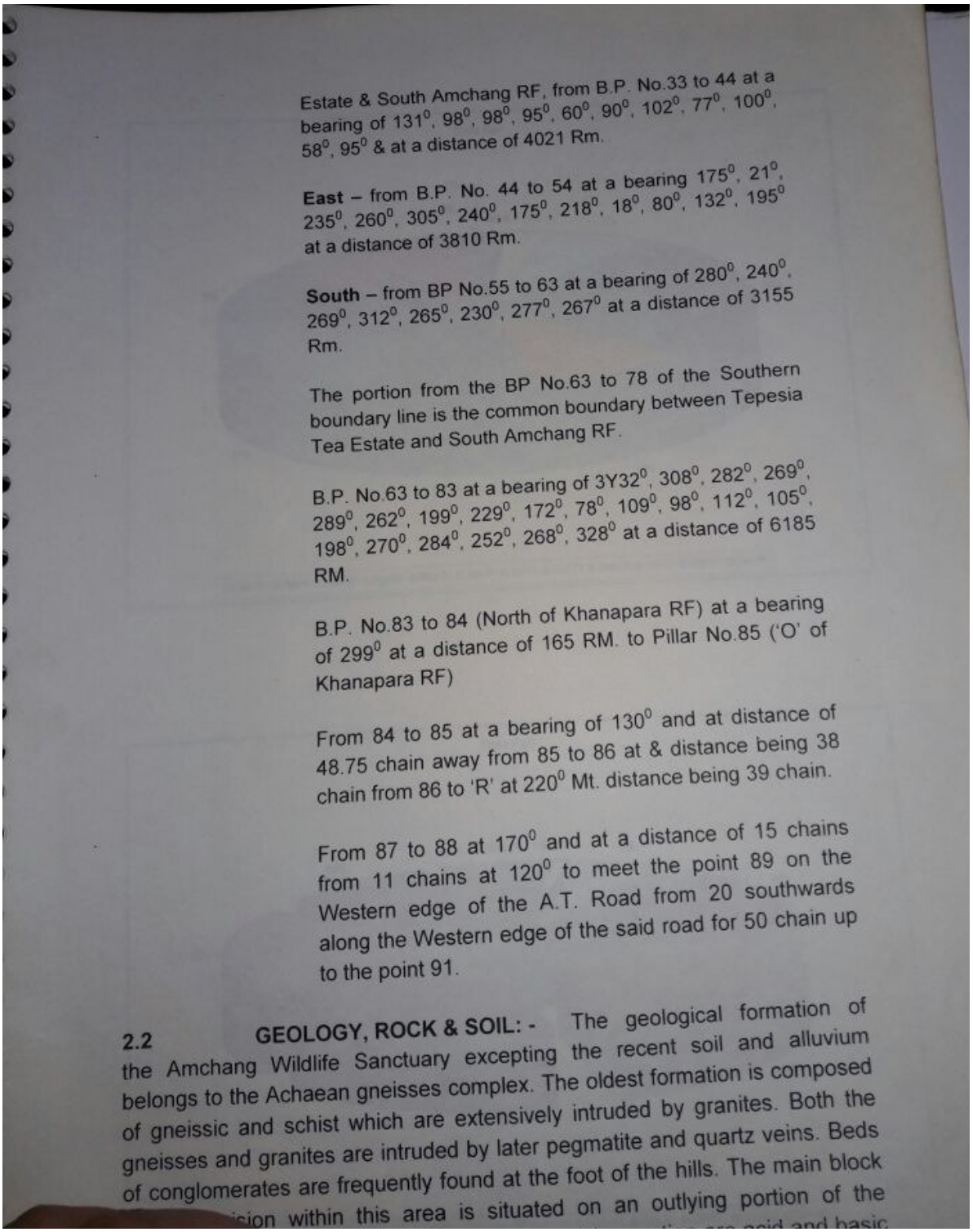
S. No.	Name of machine (stack attached to)	Pollution control equipment	Capacity	Air to Cloth Ratio	Type of cloth
1	Lime stone crusher	Reverse pulse jet type bag filter	250 m3/min	1.40	550 gm / m^2, polyster, Indigenous
2	Hopper	Reverse pulse jet type bag filter	167 m3/min	1.40	550 gm / m^2, polyster, Indigenous
3	Raw mill & kiln	Twin cyclone separator followed by Reverse pulse jet type bag filter	1525 m3/min	1.00	Fibre glass with Ptfe membrane
4	Silo	Reverse pulse jet type bag filter	120 m3/min	1.40	550 gm / m^2, polyster, Indigenous
5	Cooler exhaust stack	Electrostatics precipitator	1560 m3/min		N.A
6	Clinker stockpile	Reverse pulse jet type bag filter	120 m3/min	1.40	550 gm / m^2, polyster, Indigenous
7	Hopper	Reverse pulse jet type bag filter	167 m3/min	1.20	550 gm / m^2, polyster, Indigenous
8	Cement mill	Twin cyclone separator	250 m3/min	1.00	550 gm / m^2, polyster,

S. No.	Name of machine (stack attached to)	Pollution control equipment	Capacity	Air to Cloth Ratio	Type of cloth
		followed by Reverse pulse jet type bag filter			Indigenous
9	Packing house	Twin cyclone separator followed by Reverse pulse jet type bag filter	350 m3/min	1.20	550 gm / m^2, polyster, Indigenous
10	Coal mill	Reverse pulse jet type bag filter	283 m3/min	1.00	550 gm / m^2, acrylic Homopolymer, with 5% SS wire, indigenous

PROPOSED SCHEDULE OF ENVIRONMENTAL MONITORING

NO.	PARTICULARS	MONITORING FREQUENCY	IMPORTANT PARAMETERS
1.	Stack emission Monitoring	Online continuous for major stacks and for other once in a month	PM, SO_2 & NOx
2.	Ambient Air Quality monitoring	Twice in a Year	PM_{10}, $PM_{2.5}$, SO_2,1 NOx & CO
3.	Fugitive Emission monitoring	Twice in a Year	Particulate Matter
4.	Ground water monitoring	Once in a Year	the parameters specified in IS for drinking water
5.	Sewage waste water monitoring	Twice in a Year	pH, BOD, COD, DO, TDS, TSS, etc.
6.	Noise Monitoring	Once in a month	Noise Levels in dB(A)
7.	Ecological environment monitoring	Once in a Year	Flora & Fauna
8.	Occupational health monitoring	Pre-employment	Vision, Audiometry, Spirometry, chest Skiagram, Unrin, RBS, etc.
		During employment	
		Post-employment	

Flora and Fauna data from the forest department.



Estate & South Amchang RF, from B.P. No.33 to 44 at a bearing of 131^0, 98^0, 98^0, 95^0, 60^0, 90^0, 102^0, 77^0, 100^0, 58^0, 95^0 & at a distance of 4021 Rm.

East – from B.P. No. 44 to 54 at a bearing 175^0, 21^0, 235^0, 260^0, 305^0, 240^0, 175^0, 218^0, 18^0, 80^0, 132^0, 195^0 at a distance of 3810 Rm.

South – from BP No.55 to 63 at a bearing of 280^0, 240^0, 269^0, 312^0, 265^0, 230^0, 277^0, 267^0 at a distance of 3155 Rm.

The portion from the BP No.63 to 78 of the Southern boundary line is the common boundary between Tepesia Tea Estate and South Amchang RF.

B.P. No.63 to 83 at a bearing of 3Y32^0, 308^0, 282^0, 269^0, 289^0, 262^0, 199^0, 229^0, 172^0, 78^0, 109^0, 98^0, 112^0, 105^0, 198^0, 270^0, 284^0, 252^0, 268^0, 328^0 at a distance of 6185 RM.

B.P. No.83 to 84 (North of Khanapara RF) at a bearing of 299^0 at a distance of 165 RM. to Pillar No.85 ('O' of Khanapara RF)

From 84 to 85 at a bearing of 130^0 and at distance of 48.75 chain away from 85 to 86 at & distance being 38 chain from 86 to 'R' at 220^0 Mt. distance being 39 chain.

From 87 to 88 at 170^0 and at a distance of 15 chains from 11 chains at 120^0 to meet the point 89 on the Western edge of the A.T. Road from 20 southwards along the Western edge of the said road for 50 chain up to the point 91.

2.2 GEOLOGY, ROCK & SOIL: - The geological formation of the Amchang Wildlife Sanctuary excepting the recent soil and alluvium belongs to the Achaean gneisses complex. The oldest formation is composed of gneissic and schist which are extensively intruded by granites. Both the gneisses and granites are intruded by later pegmatite and quartz veins. Beds of conglomerates are frequently found at the foot of the hills. The main block ...ion within this area is situated on an outlying portion of the ... acid and basic

b) Aves :- the Sanctuary is the important habitat for variety of birds- viz. *Hornbill, Stork, Pegion, Coco, Hill maina, Parrot.* A check list of bird is appended herewith as annexure – I.

c) Reptiles: - Main species of reptiles are – *Python, Monitor lizard, king cobra* etc.

d) Amphibians: - No census has been carried out and hence list could not be furnished. But several common amphibian species are found available.

e) Fishes: - Fishes are commonly found in the area though systematic survey of the Fishes has not been carried out. The common fishes are *Rou, Bahu, Sole, Magur, Goroi, Kawoi, Borali, Puthi, Mirika, Kurhi, Bhokuwa, Singi, Kusia, Bami, Tora,* etc.

Population for census of wild animal is yet to be carried out. Hence population data for different species could not be furnished.

2.6.2.2 The Limiting factors:-

a) The Wildlife Sanctuary (PA) is surrounded by human habitation in influencing adverse factors in the P.A. is though not very acute, but cannot be ignored.

b) The limiting factors in the Sanctuary are –

i) Poaching of elephant

ii) Encroachment

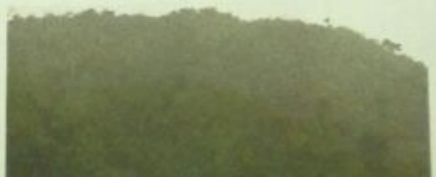
iii) Illegal felling of timber

iv) Erosion present in the form of grazing and illegal collection of MFP

v) Insularity of the Sanctuary (Non-contiguity with any forest land)

2.6.2.3 Important Invertebrates, their status, distribution and habitat

The butterflies found in the Sanctuaries are – *Badamia, Exclamatiois, Hasora cromas, Parmara mathius, Cethosia bibles* etc.



assamcnsis), Rhesus macaque (*M. mulatta*), Capped langur *(Presbytis pileatrus)*, Hoolock gibbon (*Rylobates hillock)*,Dhole or Wild dog *(Cuon alpinus)*, Yellow throated marten *(Martes flavigula)*, Hog badger *(Arctonyx* collaris), Jungle cat (*Felis chaus)*,Leopard cat (*F. bengalensis)*, Leopard *(panthera pardus)*,Tiger *(P.* figris), Elephant *(Elephas maximus)*, Wild pig *(Sus scrofa)*, Sambar *(Cervus unicolor)*, Muntjak (*Muntiacus muntjac)*, Gaur or Indian 'bison' *(Bos gaurus)*, Malayan giant squirrel *(Ratufa bicolor)*, Irrawaddy or Himalayan hoary bellied squirrel *(Callosciurus pygerythrus)*, Hoary bamboo rat *(Rhizomys pruinosus)*, Chinese or crestless Himalayan porcupine (*Hystrix brachyura)*,and Rufous tailed hare *(Lepus nigricollis ruficaudarus)*

BIRDS - Lesser Adjutant *(Leptoptilos javanicus)*, Greater Adjtuant *(Leptoptilos dubius) White* backed Vulture *(Gyps bcngalcnsis)*, Slender billed Vulture (G. *tenuirostris)*, Kaleej Pheasant *(Lophura* leucomelanos), Green Imperial Pigeon *(Ducula aenea)*, Wreathed Hornbill *(Accros undulatus)*, Great Pied Hornbill *(Buceros bicornis)*.

The landscape of the Protected Area is worth mentioning, the composition of forest of the P.A. form a part of the lower catchments area. The catchments of the P.A. including Amchang Nala, Bonda Nala & Bahini Nala flows to the Bharalu & Brahmaputra river which also serve as outlet of drained water of the Guwahati city. The composition of forest in present scenario is a unique subject of management interest. It has a great value of green cover in controlling and minimizing flood and soil erosion of the area.

deer, elephants, varieties of birds are often sighted in this area. Leopards are also often sighted in the area. Therefore, the devolvement of the area from the tourism an aesthetic point of view is very important.

III. Chandrapur area – the area is situated on the Northern bank of the Sanctuary and on Southern bank of the mighty river Brahmaputra. This area is experience with evergreen patch of natural forests. Being situated on the Bank of the Brahmaputra the area is also important from the tourism point of view. Natural evergreen high forest area gives shelter to many endangered species such as Leopard, Bison, Wild bore, barking deer and many other varieties of birds including breeding grounds for migratory birds. This area required some developmental activities like Watch Tower, Roads, Anti poaching Camp etc.

IV. Satgaon Area – The area is situated just on the border Army cantonment and therefore this area considered to be well protected area of the Sanctuary. The area is fuelled bamboo patches one movement of elephant in herds is a common feature of the area. Depredation of wild elephant in the Army cantonment area and nearby villages one regular feature and therefore Anti depredation camp, watch tower and development and roads for communication are highly required.

V. Ghogua Area – The area is situated on the Eastern boundary of Sanctuary and equal distance from both the entry point i.e. Patarkuchi, Bonda. The area is very important from the protection of flora & fauna.

Animals (The key Wildlife species of conservation importance are)

i) Elephant (*Elephas maximus*)

ii) Leopard (*Panthera pardus*)

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i) Elephant (*Elephas maximus*)
ii) Leopard (*Panthera pardus*)
iii) Barking deer (*Muntiacus muntiak*)
iv) Gaur or Indian Bison (*Bos gaurus*)
v) Wreathed Horn bill (*Aceros undulates*)
vi) Wild pig (*Sus scrofa*)

2.6.2.1 **Wildlife species**

a) Mamals – *Asiatic Elephant (Elephas maximus)* is the main species of the Wildlife Sanctuary. The other important species sharing the habitat are Leopard, Wild pig, Barking deer, Indian Bison Leopard cat, Civet cat, Porcupine, Pangolin etc.

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The P.A. falls under the Brahmaputra valley Biogeographic province (9 B) of North East Biogeographic Zone (9) as per Biogeographic classification of India (2000).

2.6.1.2 – The Biographical Zone (Forest Type)

i) Mixed deciduous forest – Approx. type 3c/C3 (b) and according champion and Seth 1968 classification, the habitat of the sanctuary is composed of following forest type.

ii) Moist Mixed Deciduous forests. Approximates type 3C/C3 (B) and type 3C/C3 (2S1)

iii) Evergreen patches : Approximates to type 2 B/C/1

This type of forest occurs in –patches, mainly in hill slopes along bench of perennial streams & Shady moist pockets along nallahs, fur away from habitation and not subjected to any kind of biotic interference like jhuming, grazing, fire etc. species found are. Garcinia spp, Dysoxylem spp. Castonopsis spp, Talauma spp, Artocarpus spp, Diospyros spp, Amora spp, Michelia spp., Ficus spp. etc. The middle storey is occupied by bamboo D. Hamiltonii. The commonest ground cover is Apinia spp with occasional Canes, Phalogacamthes, Saugrass, Ferns. Pollinia ciliate which are found sporadically besides the species mentioned above.

iv) Secondary Moist Bamboo brakes Type 2/2 Sl.

Large tract of bamboo brakes occur along the moist mixed deciduous forest in the hilly areas. They occur mostly in damp location especially along the perennial streams and nallas and have been found extent to the evergreen patches of the hill. The principal bamboo species is Kako (D. Hamillonii). Dolo bamboo (Dullooa), Muli, Bajal, are found sporadically though not found abundantly. Clames of stunded and queachy bamboo occur mostly in open areas where soil is shallow and poor.

2.6.1.2 A Forest Type Cover and Food for Wild Animals.

The type of forest is the characteristic of the diver stops and ridges of the hill with conspicuous absence of Sal in patches and gapes. This type is almost of devoid of Sal. The principal species occupying the top canopy are Makari Sal, Ahoi, Paroli, Bhelu, Sida, Odal , Jamu, Gamari, Amari, Kuhir, Sam, Sopa, Siris, Amlakhi, Jia, Poma, Koroi, Dimaru, Selleng etc. Presence of climber such as Beutia perviflora, Millelia auriculata, Acacia piñata etc are found in this type of forest.

The area is rich in diversity of biomass and productivity. The areas support a variety of rare, threatened and endangered faunal species.

The relative humidity during Nov-March is dry and reaching about 55% and from April – Oct. is high humidity ranging from 80-90% as per record collected from Meteorology Deptt. wind speed.

2.4.4 Wind Speed Pattern and Distribution

Except in occasional cases the wind movement through out the year is moderate and not very significant. During the period from February to May wind attend a speed of 2.5 KM per hour to 5 Km per hour while the remaining period of the year atmosphere is very calm with insignificant air movement.

Drought : - Drought is generally experience during cold season i.e. Dec - Feb

2.5 WATER SOURCES:

2.51. Natural: The main sources of water in Sanctuary area are the perennial streams along-with some depressions where water is retained throughout the year.

There is no scarcity of water to the animal even during the winter season.

2.5.2 **Artificial:** Storage of water in certain suitable areas may be developed by making of artificial reservoirs.

i) Flood and its periodicity

Occurrence of flood in the sanctuary area being undulating hilly area is almost nil. But the low lying area along the Northern boundary experience with higher and regular flood from the river Brahmaputra and Digaru. There is no damage or devastation caused by flood to the sanctuary areas.

The Southern & Western boundary of the Sanctuary do not experience regular flood except the summer rain water flowing from Meghalaya submerged the surrounding of the Sanctuary areas and affect the approach road leading to the Sanctuary.

2.6 RANGE OF WILDLIFE, STATUS, DISTRIBUTION AND HABITAT:

The vegetation of the P.A. is mainly covered by high forest from sub climax to climax stage. A short list of flora is appended here to.

2.6.1 Vegetation

The vegetation of the area comprises with misc. species with evergreen patches with secondary bamboo brakes.

2.6.1.1 – Biogeographic Class –

Sl. No	BIOMRE	P.C Area
1	Wood Land (with plantation)	
2	Thatch Area	5 Ha. (Approx.)
3	Tall grass Area	10 Ha. (Approx.)
4	Water bodies/Swamps	100 Ha. (Approx.)
5	Chapori / Sandy area	-

The co-existence of the three biomar in proportionate quantities makes the area very rich in biodiversity and productivity. The area supports a very rare, threatened and endangered faunal species. The grass land may further divided into two categories depending upon the height attained as follows.

a) Tall grass – Ekora Erianthus ravance, Nal Arundo donax,, Saccharum species, Khagori, Ulukher imperata cylindrical Themeda arundinacea etc.

b) Short grass consisting of Dubori Cynodon dactylon, Locusa, Hemerthia compressa etc.

2.6.1.3 Species and communities of conservation importance ; Key areas

The woodland may be divided into two categories –

a) Natural forest consisting of Makorisal, Bogipama, Mir, Jamuk, Siharu, Siris, Jia, Sida, Castonopis, Ahoi, Amari, Samkathal, Bohot (Dewa), Am, Bhatghila, Bhelu, Dimaru, Bhelkor, Haldu, Gamari, Khakan, Koroi, Moj, Kadam, Selleng, Paroli, Owtenga, Baziow etc.

b) Plantation area consisting of primarily Tectonia grandis and other misc. species like Bogi Poma, Bhomora, Gamari, Koroi, Moj, Cham etc.

The area was planted mostly with pure teak and miscellaneous species since 1959. The misc. species raised were Teak, Azar, Poma, Gamari, Bohera etc.

The key areas of conservation are –

II. This is the main entrance to the sanctuary area by NH - 37. The area is important from the point tourism. Private resort and ecological park 'Brahmaputra Resort' by name has already been setup just outside the sanctuary area which is point of instruction for the tourist Herbivorous animals like

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b) Aves :- the Sanctuary is the important habitat for variety of birds- viz. *Hornbill, Stork, Pegion, Coco, Hill maina, Parrot*. A check list of bird is appended herewith as annexure – I.

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iii) Illegal felling of timber

iv) Erosion present in the form of grazing and illegal collection of MFP

v) Insularity of the Sanctuary (Non-contiguity with any forest land)

2.6.2.3 Important Invertebrates, their status, distribution and habitat

The butterflies found in the Sanctuaries are – *Badamia, Exclamatiois, Hasora cromas, Parmara mathius, Cethosia bibles* etc.

C. Constitution of South Amchnag RF - Notified in the Assam Gazette vide No FRS.101/90/99 dt.19/9/1990 with an area of 1550.00 Hect.

1.2 APPROACH & ACCESS:-

The Amchang Wildlife Sanctuary is well approachable on the Northern side by the Narengi - Chandrapur PWD Road. The road touches the Guwahati Range Office at Kacharighat of Kamrup East Division which is about 15 KM from Bonda – Birkuchi point of Amchang Wildlife Sanctuary. The road also touches Narengi and Chandrapur Beat being a distance of about 5 KM and 20 KM from the same point. One can go up to Digaru and meet NH-37 at Sonapur. The road passes through villages, tea garden and forest area.

The NH-37 (East West Corridor) at Khanapara and Jorabat can approach the Southern side of the Protected Area. This road touches the Sonapur Range, Kamrup East Division. During the whole year the Protected Area is approachable by road.

The nearest Airport from the Protected Area is located at Borjhar is LGBI Airport at a distance of 40 KM.

The nearest Railway station is Guwahati at a distance of 15 KM from the Protected Area

The Protected Area is also connected with following road viz.

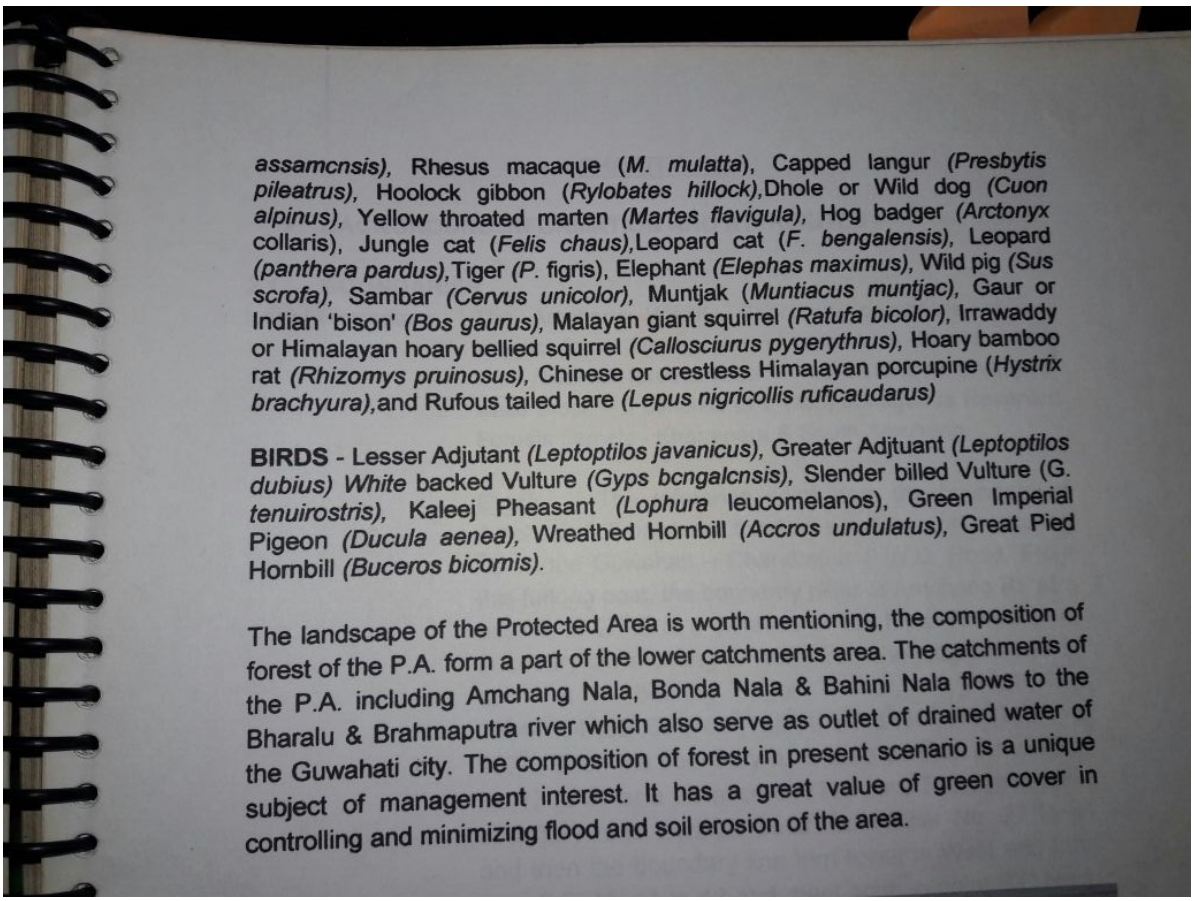
1. Guwahati – Nagaon – Jorhat - Dibrugrah - NH-37
2. Guwahati - Nagaon – Dabaka – Dimapur – NH- 36
3. Guwahati - Numaligarh – Barpathar – Dimapur – NH - 39
4. Guwahati - Baihata – Mongaldoi – Sonitpur – Lakhimpur – NH-52
5. Guwahati – Shillong – NH-40
6. Guwahati – Narengi - Chandrapur – PWD Road
7. Khanapara – Satgaon - MES Road.

By Train -
Guwahati - Tinsukia - Dibrughar B. G Line

1.3 STATEMENT OF SIGNIFICANCE

Amchang Wildlife Sanctuary is one of the ideal habitat for Wild Animals, Birds, Reptiles etc.

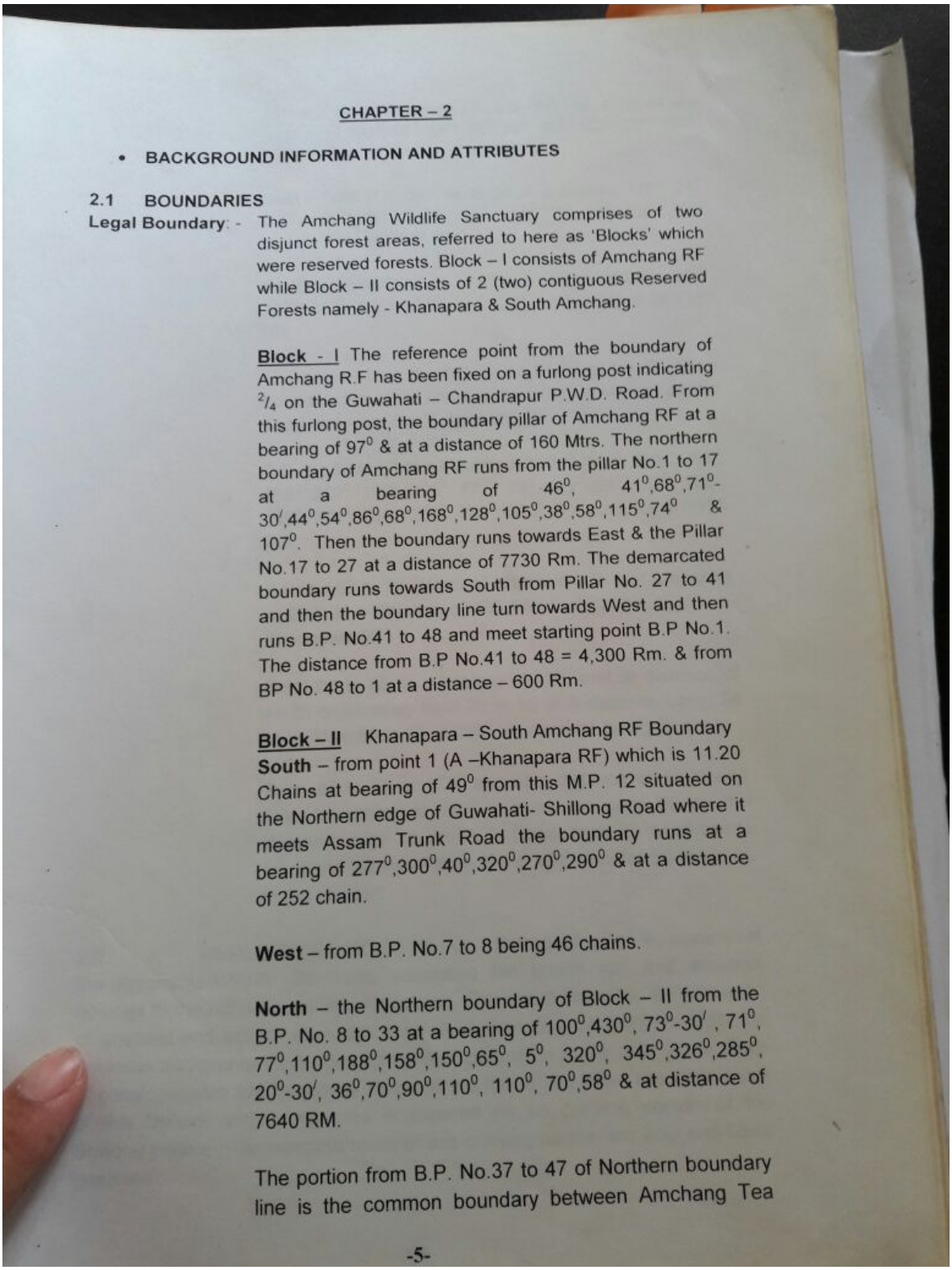
MAMMALS - Chinese pangolin *(Manis pentadactyla)*, Flying fox (*Pteropus gigantcus)*, Slow loris *(Nycticebus coucang)*, Assamese macaque *(Macaca*



assamcnsis), Rhesus macaque (*M. mulatta*), Capped langur *(Presbytis pileatrus),* Hoolock gibbon (*Rylobates hillock),*Dhole or Wild dog *(Cuon alpinus),* Yellow throated marten *(Martes flavigula),* Hog badger *(Arctonyx* collaris), Jungle cat (*Felis chaus),*Leopard cat (*F. bengalensis*), Leopard *(panthera pardus),*Tiger *(P.* figris), Elephant *(Elephas maximus),* Wild pig *(Sus scrofa),* Sambar *(Cervus unicolor),* Muntjak (*Muntiacus muntjac),* Gaur or Indian 'bison' *(Bos gaurus),* Malayan giant squirrel *(Ratufa bicolor),* Irrawaddy or Himalayan hoary bellied squirrel *(Callosciurus pygerythrus),* Hoary bamboo rat *(Rhizomys pruinosus),* Chinese or crestless Himalayan porcupine (*Hystrix brachyura),*and Rufous tailed hare *(Lepus nigricollis ruficaudarus)*

BIRDS - Lesser Adjutant *(Leptoptilos javanicus),* Greater Adjtuant *(Leptoptilos dubius) White* backed Vulture *(Gyps bcngalcnsis),* Slender billed Vulture (G. *tenuirostris),* Kaleej Pheasant *(Lophura* leucomelanos), Green Imperial Pigeon *(Ducula aenea),* Wreathed Hornbill *(Accros undulatus),* Great Pied Hornbill *(Buceros bicornis).*

The landscape of the Protected Area is worth mentioning, the composition of forest of the P.A. form a part of the lower catchments area. The catchments of the P.A. including Amchang Nala, Bonda Nala & Bahini Nala flows to the Bharalu & Brahmaputra river which also serve as outlet of drained water of the Guwahati city. The composition of forest in present scenario is a unique subject of management interest. It has a great value of green cover in controlling and minimizing flood and soil erosion of the area.



CHAPTER – 2

- **BACKGROUND INFORMATION AND ATTRIBUTES**

2.1 BOUNDARIES

Legal Boundary: - The Amchang Wildlife Sanctuary comprises of two disjunct forest areas, referred to here as 'Blocks' which were reserved forests. Block – I consists of Amchang RF while Block – II consists of 2 (two) contiguous Reserved Forests namely - Khanapara & South Amchang.

Block - I The reference point from the boundary of Amchang R.F has been fixed on a furlong post indicating $^{2}/_{4}$ on the Guwahati – Chandrapur P.W.D. Road. From this furlong post, the boundary pillar of Amchang RF at a bearing of 97^{0} & at a distance of 160 Mtrs. The northern boundary of Amchang RF runs from the pillar No.1 to 17 at a bearing of 46^{0}, 41^{0},68^{0},71^{0}-$30^{/}$,44^{0},54^{0},86^{0},68^{0},168^{0},128^{0},105^{0},38^{0},58^{0},115^{0},74^{0} & 107^{0}. Then the boundary runs towards East & the Pillar No.17 to 27 at a distance of 7730 Rm. The demarcated boundary runs towards South from Pillar No. 27 to 41 and then the boundary line turn towards West and then runs B.P. No.41 to 48 and meet starting point B.P No.1. The distance from B.P No.41 to 48 = 4,300 Rm. & from BP No. 48 to 1 at a distance – 600 Rm.

Block – II Khanapara – South Amchang RF Boundary

South – from point 1 (A –Khanapara RF) which is 11.20 Chains at bearing of 49^{0} from this M.P. 12 situated on the Northern edge of Guwahati- Shillong Road where it meets Assam Trunk Road the boundary runs at a bearing of 277^{0},300^{0},40^{0},320^{0},270^{0},290^{0} & at a distance of 252 chain.

West – from B.P. No.7 to 8 being 46 chains.

North – the Northern boundary of Block – II from the B.P. No. 8 to 33 at a bearing of 100^{0},430^{0}, 73^{0}-$30^{/}$, 71^{0}, 77^{0},110^{0},188^{0},158^{0},150^{0},65^{0}, 5^{0}, 320^{0}, 345^{0},326^{0},285^{0}, 20^{0}-$30^{/}$, 36^{0},70^{0},90^{0},110^{0}, 110^{0}, 70^{0},58^{0} & at distance of 7640 RM.

The portion from B.P. No.37 to 47 of Northern boundary line is the common boundary between Amchang Tea

deer, elephants, varieties of birds are often sighted in this area. Leopards are also often sighted in the area. Therefore, the devolvement of the area from the tourism an aesthetic point of view is very important.

III. Chandrapur area – the area is situated on the Northern bank of the Sanctuary and on Southern bank of the mighty river Brahmaputra. This area is experience with evergreen patch of natural forests. Being situated on the Bank of the Brahmaputra the area is also important from the tourism point of view. Natural evergreen high forest area gives shelter to many endangered species such as Leopard, Bison, Wild bore, barking deer and many other varieties of birds including breeding grounds for migratory birds. This area required some developmental activities like Watch Tower, Roads, Anti poaching Camp etc.

IV. Satgaon Area – The area is situated just on the border Army cantonment and therefore this area considered to be well protected area of the Sanctuary. The area is fuelled bamboo patches one movement of elephant in herds is a common feature of the area. Depredation of wild elephant in the Army cantonment area and nearby villages one regular feature and therefore Anti depredation camp, watch tower and development and roads for communication are highly required.

V. Ghogua Area – The area is situated on the Eastern boundary of Sanctuary and equal distance from both the entry point i.e. Patarkuchi, Bonda. The area is very important from the protection of flora & fauna.

2.6.2 Animals (The key Wildlife species of conservation importance are)

i) Elephant (*Elephas maximus*)
ii) Leopard (*Panthera pardus*)
iii) Barking deer (*Muntiacus muntiak*)
iv) Gaur or Indian Bison (*Bos gaurus*)
v) Wreathed Horn bill (*Aceros undulates*)
vi) Wild pig (*Sus scrofa*)

2.6.2.1 **Wildlife species**

a) Mamals – *Asiatic Elephant (Elephas maximus)* is the main species of the Wildlife Sanctuary. The other important species sharing the habitat are Leopard, Wild pig, Barking deer, Indian Bison Leopard cat, Civet cat, Porcupine, Pangolin etc.

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