DOCUMENT

FOR

PUBLIC HEARING

OF
WADEGAON O.C. MANGANESE ORE MINE
(2.49 ha)
AT
VILLAGE : WADEGAON, TEHSIL : RAMTEK, DIST. NAGPUR

PROPONENT

Mr. Shakeel Ahmed Aqueel Husain
Aqueel Mansion, Teen Nal Chowk,
Old Bhandara Road, Itwari, Nagpur

Consultant

Enviro Techno Consult Private Limited
68, Mahakali Nagar 2, Near Manewada Square
Nagpur 440 024

Accredited By QCI/ NABET for EIA
Listed at Sl. No. 73, dated May 09, 2016

May 2016

Executive summary

Proponent Mr. Shakeel Ahmed Aqueel Husain of Nagpur has been granted a 2.49 ha lease area near village Wadegaon in Ramtek Tehsil of Nagpur district by State Government for manganese ore mining.

Ministry of Mines G.O.I. vide their letter no. 5/17/2003-M.IV dated 21-03- 2006 had conveyed approval of mining lease (ML) of 2.49 ha for 20 years.

I.B.M. had granted approvals for mining plan and scheme for the period 2015-2017.

Mr. Shakeel Ahmed Aqueel Husain has been granted another lease (3.97 ha) near Wadegaon itself. These leases are contiguous.

Manganese is an essential input to steel. There are many ferro alloy, & steel plants around Nagpur. Mining at Wadegaon will ensure cost effective supply of manganese to these industries.

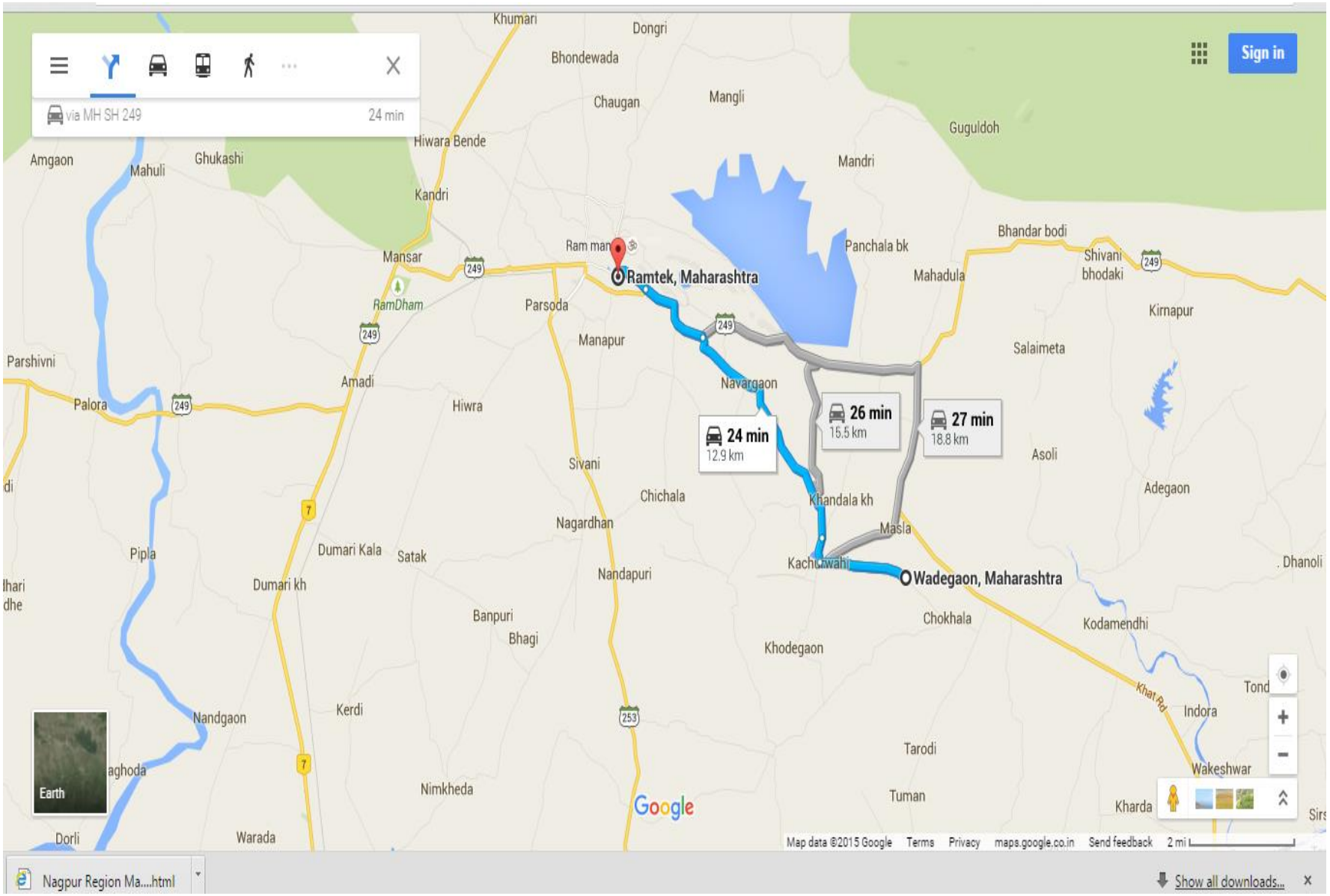
Lease is not a forest area and Maharashtra Government vide their letter MMN-1001/C.R.91/IND-9 dated 05-08-2006 had asked for approved mining plan.

Geographical location of this lease is shown in **Figure 1**. Khasra number & coordinates of this lease is given below.

Khasra no	Latitude	Longitude
44(part),45,46	21°19’41.250 ”:21°19’48.436” N	79° 24’ 15.242”: 79°24’ 24.604” E

Lease is included in S.O.I. Topo sheet No. 55 O/7 and is shown in **Figure 2**. Elevation is 302 m MSL and is a relatively flat terrain. This is a private revenue land. A part of NE corner of lease is a part of an existing pit.

FIGURE 1



GEOGRAPHICAL LOCATION OF LEASE

FIGURE 2

WADEGAON SITE ON SURVEY OF INDIA TOPO SHEET No. 55 O/7

Project brief :

This proposal is for O.C. mechanized mining of manganese @ 6,000 TPY. Presentation to SEAC (117th meeting) for TOR was made on 29th December 2015 for TOR. SEAC members have inspected the site on 6th January 2016.

Baseline environmental study was conducted during winter season (January 11 – April 10, 2016) as per relevant items of standard TOR prescribed by MOEF & CC for mining projects & those implied in the minutes of SEAC meeting mentioned above.

Field data within core zone and buffer zone was collected /generated for AAQ, water quality, hydrogeology, flora &fauna and socio economic status.

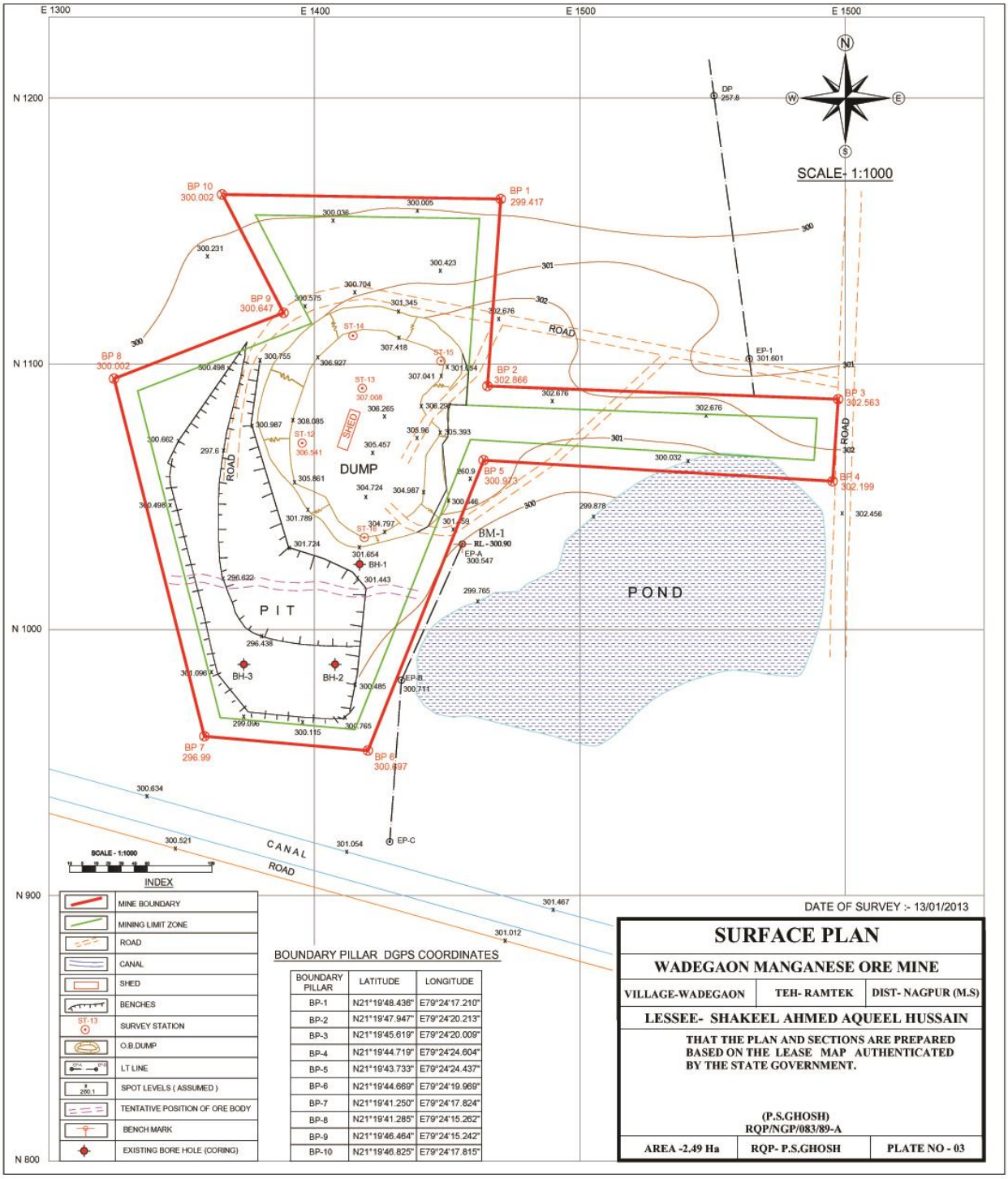
Quality of ore at Wadegaon deposits is acceptable to domestic markets e.g. Bhilai Steel Plant, ferro alloys units in Kanhan & Chandrapur area. Available ore with manganese contents between 25 to 40 per cent with iron (6-9%) and silica (8-11 per cent) is acceptable to these industries. Deposits from surrounding area have been worked since the 19th century. There are four old dumps and water-logged pit in the lease area.

Reserves calculated by the RQP are

Deposits, T	20,730
Probable, T	19,312
Proposed mining @ T/y	6,000
Recovery, %	90
Mine life, years	4
Ore quality,% Manganese Iron Silica	 25-40 6 8-11

IBM has been informed that there has been no mining till Dec. 2012 over the lease for want of permission. There are four dumps within the lease area. Also there is a pit within this lease as shown in **Figure 3**.

FIGURE 3



SURFACE PLAN OF LEASE SHOWING EXISTING PIT

During execution of the project, existing pit in the lease will be deepened. There will not be any bench in the over burden.

Proposed production will be :

Year	Excavation, m^3	Soil	IB /SB/ OB	ROM,m^3	Material rejects, m^3
2015-2016	2880	Nil	1440	Ore = 1440 Rejects = 72	252
2016-2017	2880	Nil	1440	Ore = 1440 Rejects = 72	252

Mining operations will include i) sorting of material from existing dump, ii) deepening the pit for ore extraction, iii) development of benches in the existing pit.

Lease is a part of waste land. Babool and some thorny bushes are seen. River Sur flows from NW of lease to E-SE at about 0.5 km. There are no water bodies in the lease. There is no forest. There is one old abandoned magazine in the area and will not be used.

There is no soil cover over the proposed work area.

Lithological sequence in the lease is soil is followed by micaceous schist with Pegmatite, manganese ore with Gondite and calcarious schist with quartzite.

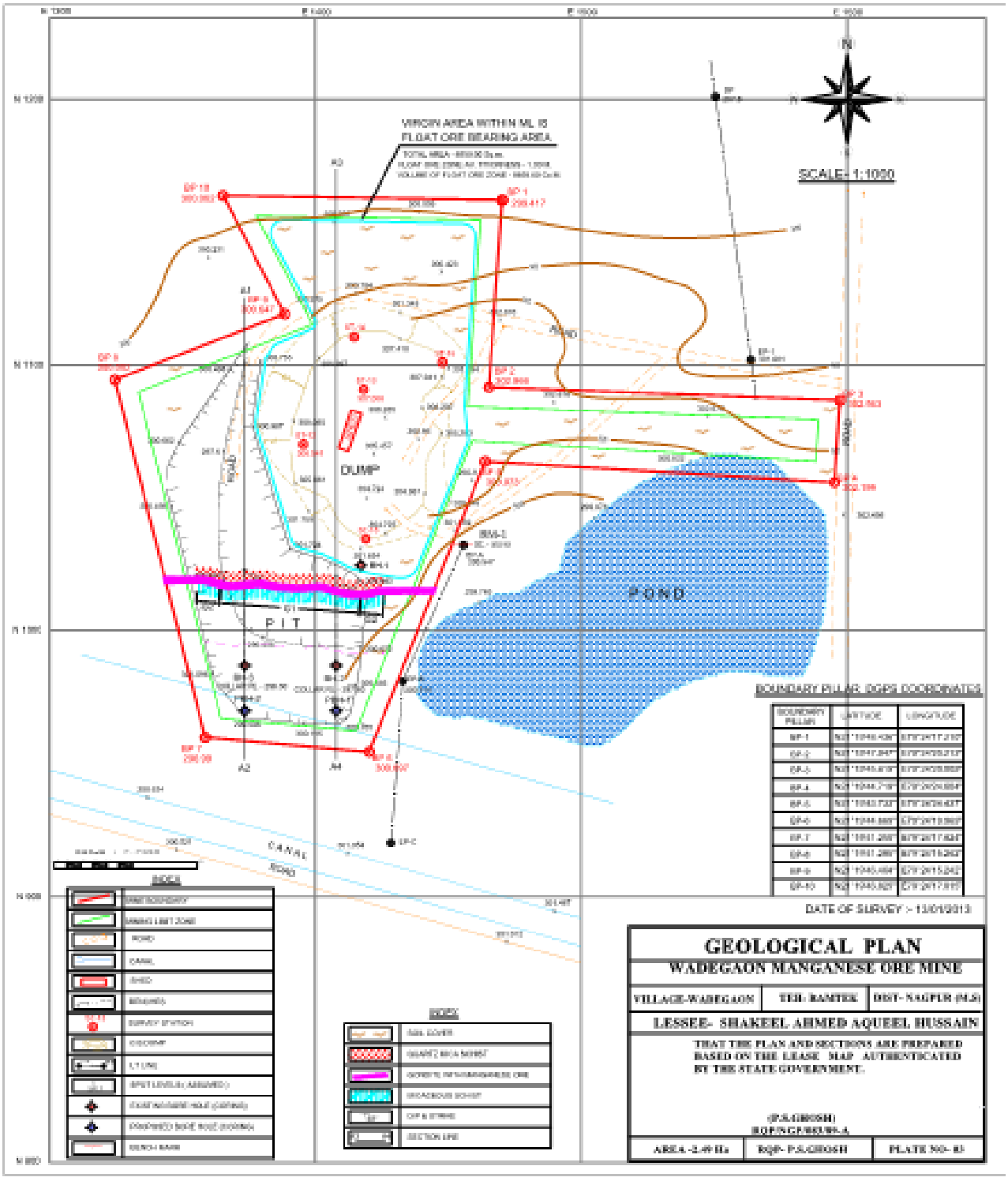
Regional geology sequence :

Recent --	Brown soil & loamy
Tertiary--	Ferruginous laterite
Cretaceous--	Deccan trap
Post Sausar intrusives--	Pegmatite, quartz veins, granite etc.

Thickness of Manganese deposits in the pit is 20m, strike is to E-W, dip is 40-45^o

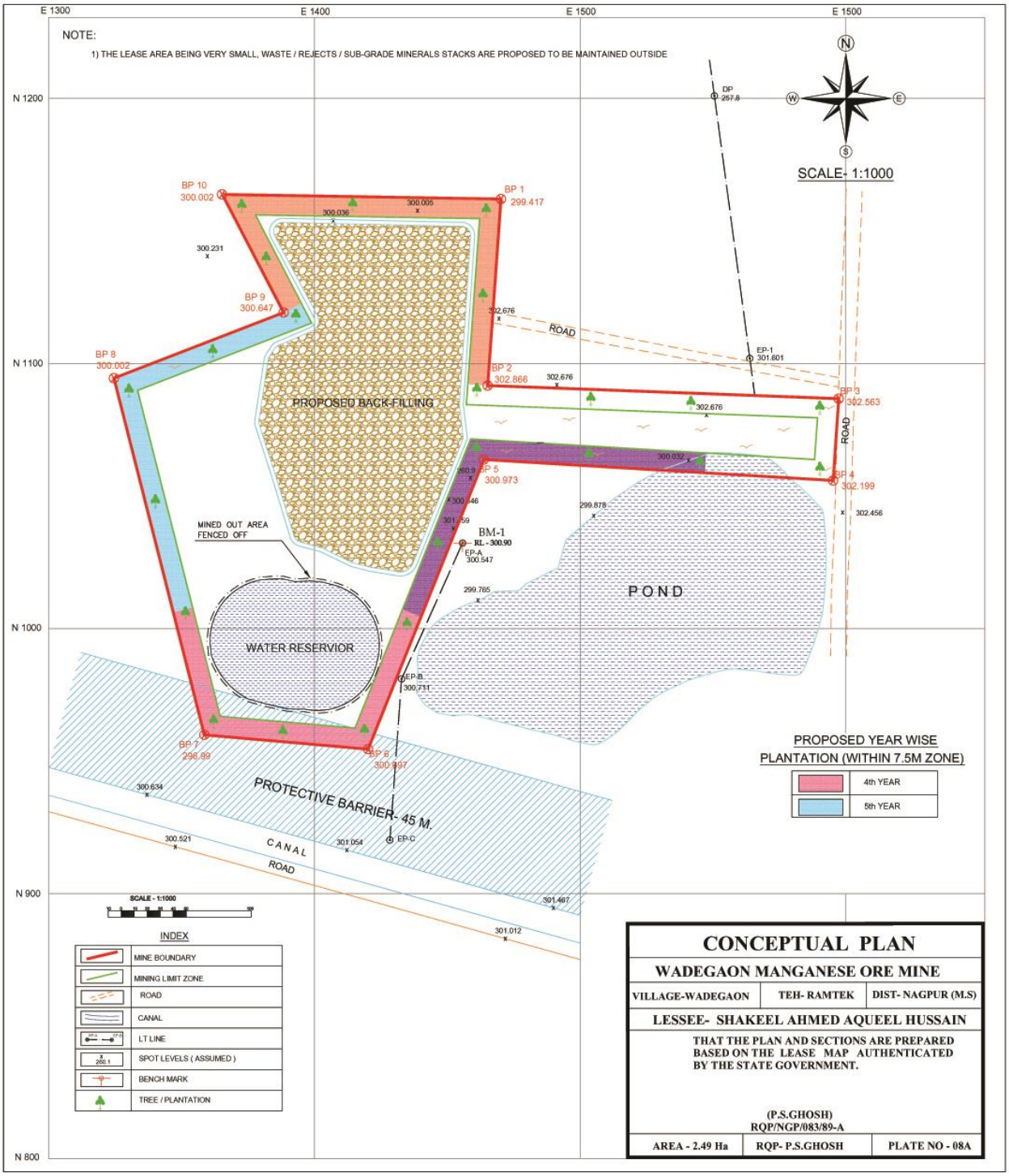
Geological plan & Conceptual plan of the lease is given in **Figures 4-5.**

FIGURE 4



GEOLOGICAL PLAN

FIGURE 5



CONCEPTUAL PLAN

Mining method:

Open cast mechanized mining will be carried out. There will not be soil generation since existing pit will be deepened. Drilling and blasting as per DGMS norms is proposed. Facility for crushing ore to buyer's specification is proposed.

Water accumulated during rains will be pumped out. Compressed air wagon/DTH drills (65/83mm diameter).Hole depth will be 6 m. Ore will be loaded mechanically. Ultimate depth of pit will be 30 m below ground level. Pit slope will be 60 degrees.

Water requirement will be about 10 m^3 for drinking and dust control. Existing well will be adequate for drinking water and mine pit water will be used for dust control.

About 45 persons will be required. Unskilled workers will be 25-30 and will be drawn from nearby villages.

It is proposed to start mining after EC is granted. Mining will be carried out as per the approved mining scheme during the years 2015-2017.
Cost estimates are likely to vary with market conditions. Present status is given below :

Item	Rs. In lakhs
Asset (Office, rest shelter, store guard room, plant & machinery etc.)	170.00
Working capital margin	30.00
Preoperative	2.50
MSEDCL charges	2.50
Fixtures	1.00

Base line environment :

Base line environmental quality was studied in the area within 10 km radius in order to predict impacts, if any on air quality, on water quality & hydrology, land use and the socio-economic status due to proposed mining. Findings are presented in the order air including noise, aquatic, terrestrial and socio-economic environment.

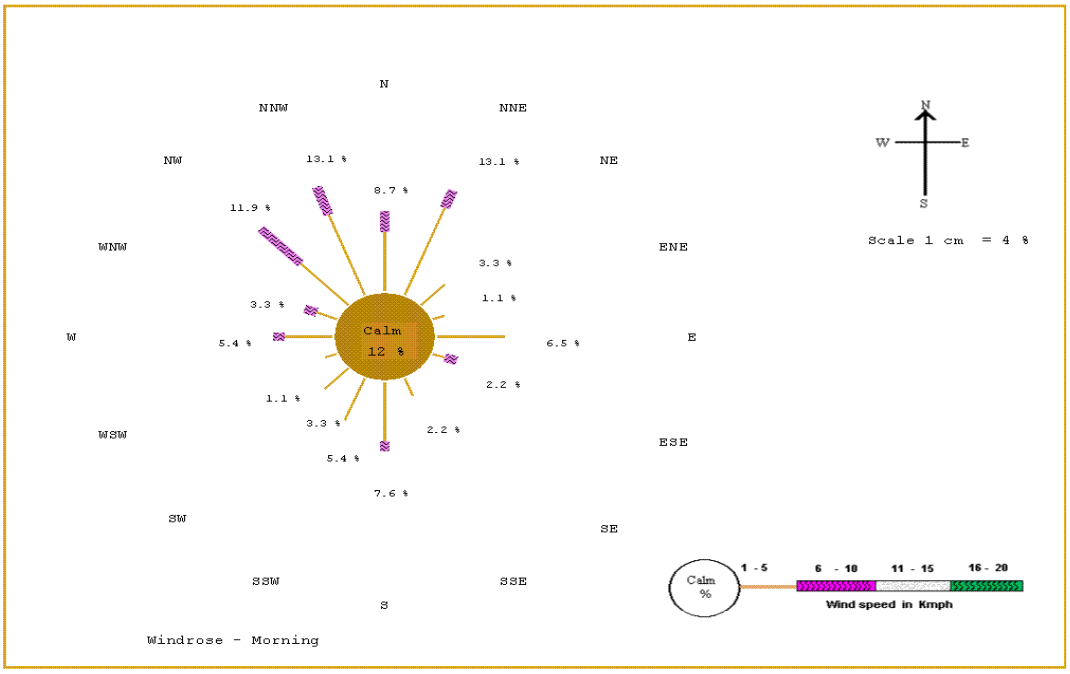
Base line air quality :

Micrometeorology :

Annual average of wind speed	= 5-6 Km / hour (1.39-1.67 m/sec).
Average annual relative humidity	= 60 per cent.
Average annual rainfall (past 20 years)	=1083.9 mm /year.

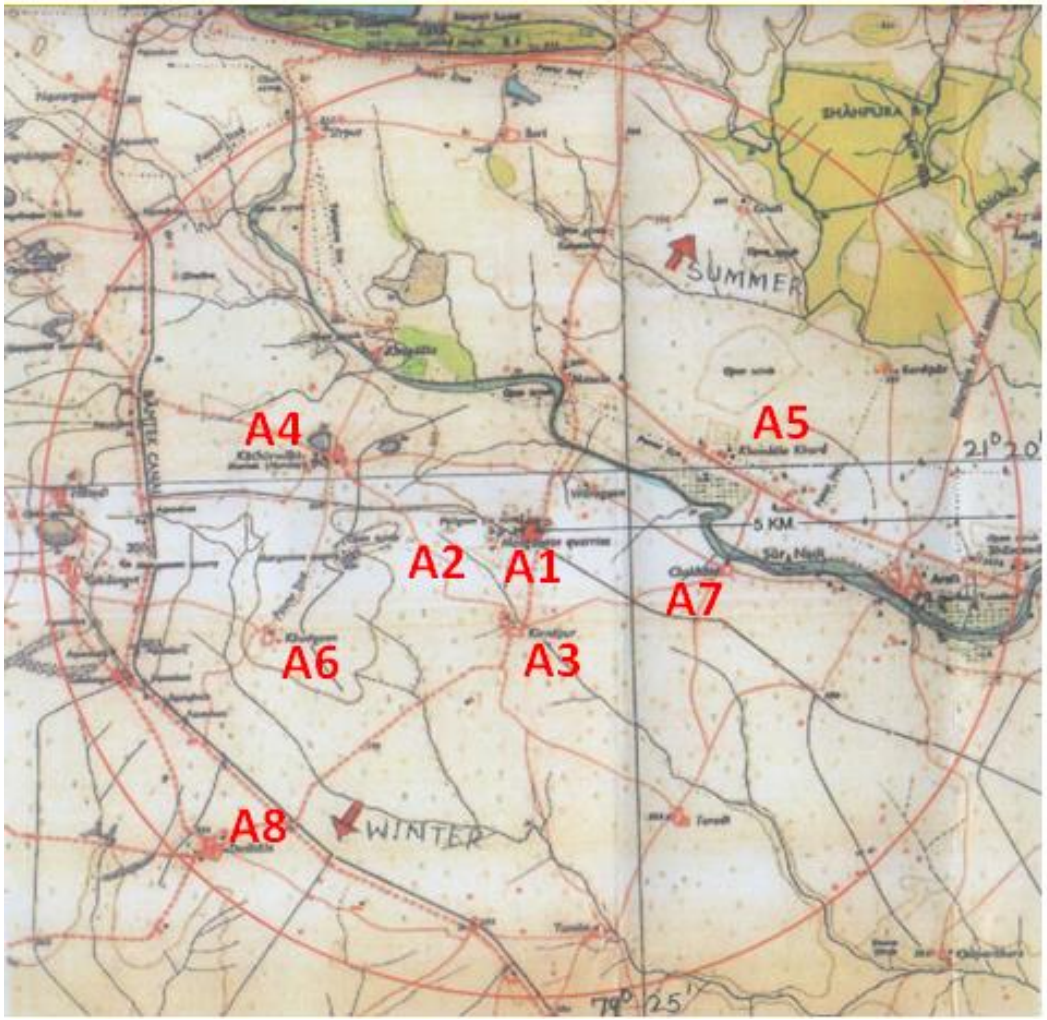
Wind velocities & directions during monitoring period enabled the following wind rose is given in **Figure 6**.

FIGURE 6



Monitoring period- wind rose

Air quality sampling stations as per wind rose are shown in following **Figure 7**.



AIR QUALITY MONITORING STATIONS

Sample code	Sampling station
A1	Lease area-2.49 ha
A2	Lease area-3.97 ha
A3	Kirnapur
A4	Kachurwahi
A5	Khandalakhurd
A6	Khodgaon
A7	Chichala
A8	Dudhhala

- Predominant pollutant during mining operations- particulates matter.
- There are no industries/ vehicular emissions in the buffer zone.
- Particulate matter concentrations at these stations are given below.

Particulate matter concentrations

A1 – Mine lease area -2.49 ha	PM_{10} (µg/m^3)	$PM_{2.5}$(µg/m^3)
Minimum	33.6	7.0
Maximum	52.3	11.2
Average	44.0	9.0
98 percentile	52.1	11.0
A2 –Wadegaon lease area -3.97 ha		
Minimum	43.7	7.3
Maximum	58.3	12.7
Average	51.8	9.4
98 percentile	58.3	12.2
A3 –Kirnapur		
Minimum	34.2	6.2
Maximum	56.4	11.2
Average	42.8	8.0
98 percentile	56.4	10.8
A4 –Kachurwahi		
Minimum	46.5	8.2
Maximum	63.6	12.2
Average	55.3	10.0
98 percentile	63.5	11.9
A5 –Khandalakhurd		
Minimum	40.8	6.6
Maximum	67.2	14.1
Average	51.5	10.2
98 percentile	66.0	13.9
A6 –Khodgaon		
Minimum	50.2	8.9
Maximum	55.6	13.2
Average	52.6	10.9
98 percentile	55.2	13.0
A7 –Chichala		
Minimum	31.2	9.8
Maximum	48.6	15.8
Average	38.8	12.6
98 percentile	47.8	15.6
A8 –Dudhhala		
Minimum	34.3	6.8
Maximum	57.2	11.3
Average	44.3	8.6
98 percentile	56.6	11.0

Observations-

There are no industrial sources within 10 km radius of the site. Emissions are only due to domestic and agriculture activities. Average PM_{10}, $PM_{2.5}$, SO_2 and NOx values were respectively 31.2-67.2, 6.2-15.8, 5.1-8.4 and 6.1-11.7 μg/m^3. There are no sensitive receptors like hospitals, schools or any ecosystems. Ambient air quality is typical of rural setting.

Ambient noise:

Four stations from AAQ monitoring stations were selected for monitoring noise levels. Recorded values are given below :

	N1 Mine lease area	N2 Kirnapur	N3 Kachurwahi	N4 Khandala khurd
Range	36.2-46.9	40.0-59.5	39.9-63.8	34.4-55.4
Ld	43.3	54.4	56.4	49.6
Ln	39.1	50.2	40.8	39.5
Ldn	46.4	57.5	55.0	49.6

Aquatic environment:

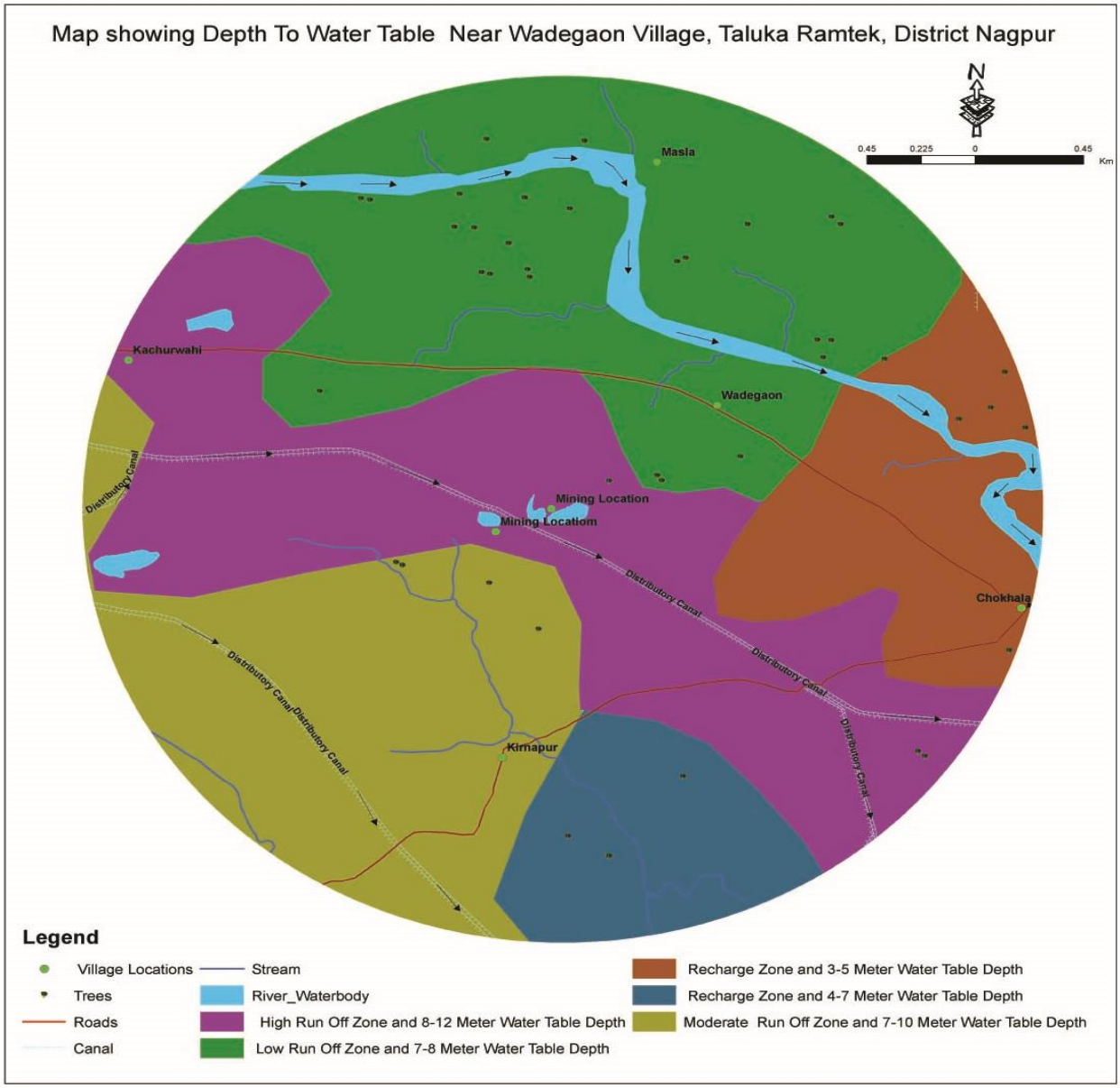
-Following satellite imagery shown in **Figure 8** below shows depth to water table in the buffer zone. Lease lies in high run off zone. Ground water table is 8-10 m bgl.

-Estimated run off from lease by rational method = 0.03 m^3/sec during rainfall

-Surface sources are Khindsi lake at 9 km, river Sur 1.5 km& canal.

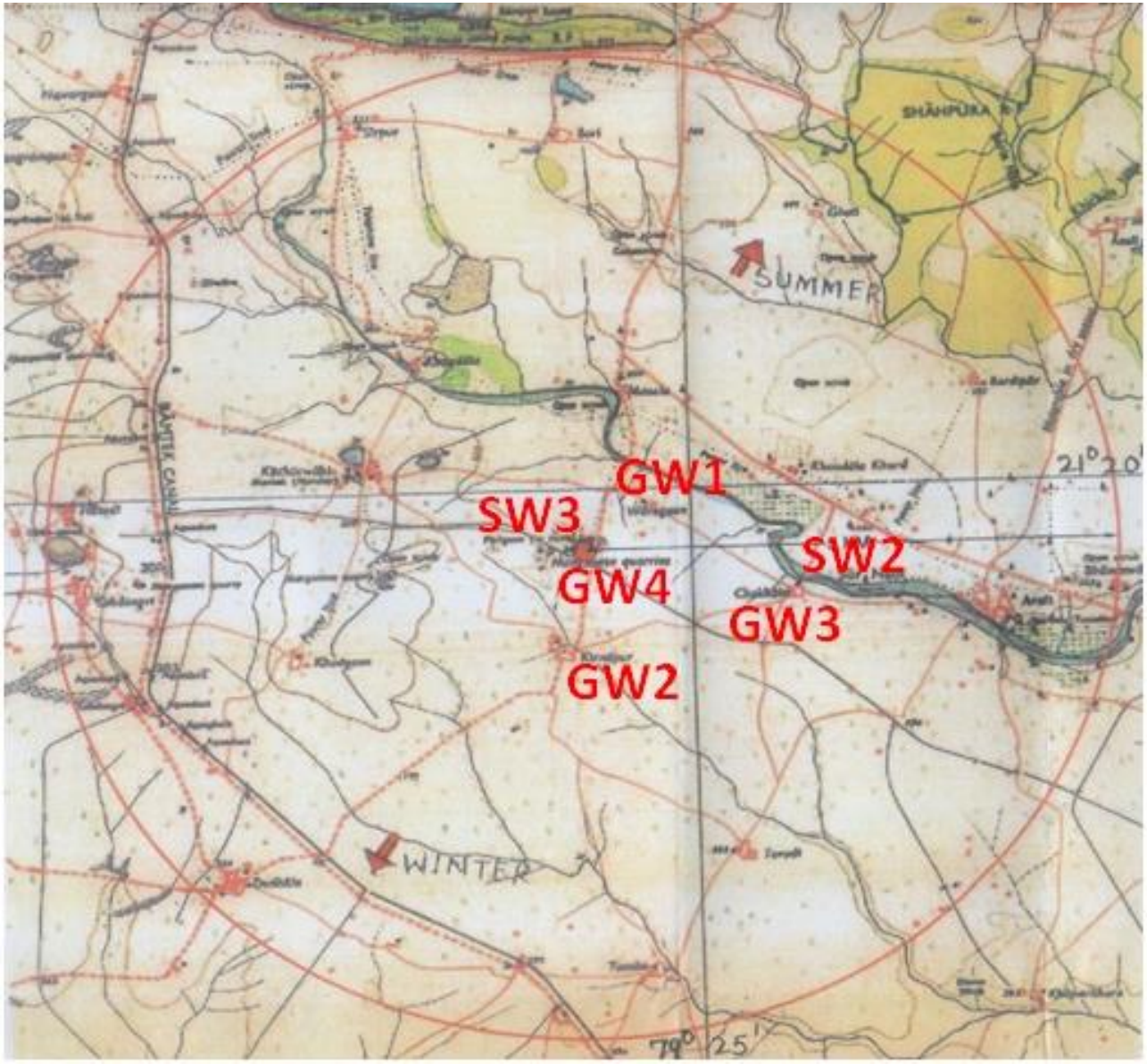
-Flows in the river and canal was negligible to nil.

FIGURE 8



Seven samples of surface & ground water were collected and analysed and the result is given below and the sampling stations are depicted in **Figure 9.**

FIGURE 9



Sample code	Sampling station
SW1	Khindsi lake
SW2	Sur river
SW3	Canal water
GW1	Village Wadegaon
GW2	Village Kirnapur
GW3	Village Chichala
GW4	Pit water

SW : Surface water
GW : Ground water

WATER QUALITY SAMPLING STATIONS

Surface water quality

Sr. No	Parameters	Unit	IS-10500-1991		Sampling stations		
			Desir-able	Permissible	SW 1 Khindsi lake	SW2 Sur river	SW 3 Canal water
	Items relating to preservation of living environment						
1.	Ambient Temperature	°C			27.0	27.0	28.0
2.	Colour	Hazen	05	25	SM	SM	SM
3.	Odour		UO	UO	UO	UO	UO
4.	Taste		AG	AG	AG	AG	AG
5.	Turbidity	NTU	05	10	25.0	30.0	8.0
6.	pH		6.5-8.5	NR	7.9	8.0	7.9
7.	Dissolved oxygen	mg/L	*	*	5.8	6.1	5.6
8.	BOD	mg/L	*	*	4.8	5.2	5.8
9.	COD	mg/L	*	*	12.8	15.4	14.8
10.	Electrical conductance	µS	*	*	135.0	132.0	260.0
11	T. Dissolved Solids	mg/L	500	2000	95.0	97.0	120.0
12.	T. Suspended Solids	mg/L	*	*	15.0	14.0	12.0
13.	Alkalinity as $CaCO_3$	mg/L	200	600	24.0	28.0	38.0
14.	Hardness as $CaCO_3$	mg/L	300	600	108.0	104.0	128.0
15.	Calcium as Ca	mg/L	75	200	34.0	32.0	70.0
16.	Magnesium as Mg	mg/L	30	100	9.0	8.0	7.0
17.	Chlorides as Cl	mg/L	250	1000	70.0	18.0	25.0
18.	Sulphate as SO_4	mg/L	200	400	7.0	7.5	8.0
19.	Nitrate as NO_3	mg/L	45	100	0.8	0.6	1.2
20.	Fluoride as F	mg/L	1.0	1.5	0.2	0.15	0.2
21.	Iron as Fe	mg/L	0.3	1.0	0.1	0.1	BDL
22.	Copper as Cu	mg/L	0.05	1.5	BDL	BDL	BDL
23.	Zinc as Zn	mg/L	5.0	15	0.02	0.02	BDL
24.	Manganese as Mn	mg/L	0.1	0.3	0.1	BDL	BDL
25	Boron	mg/L	1.0	5.0	BDL	BDL	BDL
26.	Oil & Grease	mg/L	0.01	0.05	NIL	NIL	NIL
27.	Coliforms	MPN/ 100ml	--	--	460	150	460
28.	Cadmium	mg/L	0.01	NR	BDL	BDL	BDL
29.	Lead	mg/L	0.05	NR	BDL	BDL	BDL
30.	Chromium	mg/L	0.05	NR	BDL	BDL	BDL
31.	Arsenic	mg/L	0.05	NR	BDL	BDL	BDL
32.	Pesticides	mg/L	ABSENT	0.001	ABSENT	ABSENT	ABSENT

NR : No Relaxation * : No specific limit prescribed CL : Colourless
UO : Unobjectionable AG : Agreeable BDL : Below detectable level

Ground water quality

Sr. No.	Parameters	Unit	IS-10500-1991		Sampling stations			
			Desirable Limits	Permissible Limits	GW1 Village Wadegaon open dug well	GW2 Village Kirnapur Hand pump	GW3 Village Chichala Bore well water	GW4 Pit water
	Items relating to preservation of living environment							
1.	Ambient Temperature	°C			28.5	27.0	28.0	27.5
2.	Colour	Hazen	05	25	CL	CL	CL	CL
3.	Odour		UO	UO	UO	UO	UO	UO
4.	Taste		AG	AG	AG	AG	AG	AG
5.	Turbidity	NTU	05	10	<1	<1	<1	<1
6.	pH		6.5-8.5	NR	7.7	7.2	8.2	7.5
7.	Dissolved oxygen	mg/L	*	*	**3.5**	1.5	1.8	0.8
8.	BOD	mg/L	*	*	<2	<2	<2	<2
9.	COD	mg/L	*	*	<5	<5	<5	<5
10.	Electrical conductance	µS	*	*	910.0	730.0	570.0	810.0
11	T. Dissolved Solids	mg/L	500	2000	624.0	550.0	395.0	575.0
12.	T. Suspended Solids	mg/L	*	*	3.0	8.0	<1	<1
13.	Alkalinity as $CaCO_3$	mg/L	200	600	60.0	346.0	260.0	504.0
14.	Hardness as $CaCO_3$	mg/L	300	600	384.0	340.0	204.0	536.0
15.	Calcium as Ca	mg/L	75	200	98.0	75.0	43.0	119.0
16.	Magnesium as Mg	mg/L	30	100	25.0	37.0	23.0	57.0
17.	Chlorides as Cl	mg/L	250	1000	80.0	40.0	31.0	113.0
18.	Sulphate as SO_4	mg/L	200	400	15.0	10.0	15.0	15.0
19.	Nitrate as NO_3	mg/L	45	100	3.5	1.7	2.5	3.2
20.	Fluoride as F	mg/L	1.0	1.5	0.2	0.2	0.2	0.2
21.	Iron as Fe	mg/L	0.3	1.0	0.2	0.2	0.15	0.12
22.	Copper as Cu	mg/L	0.05	1.5	BDL	BDL	BDL	BDL
23.	Zinc as Zn	mg/L	5.0	15	0.05	0.02	0.05	0.05
24.	Manganese as Mn	mg/L	0.1	0.3	< 0.1	0.2	0.1	0.1
25	Boron	mg/L	1.0	5.0	BDL	BDL	BDL	BDL
26.	Oil & Grease	mg/L	0.01	0.05	NIL	NIL	NIL	NIL
27.	Coliforms	MPN/ 100ml	--	--	1500	0	0	0
28.	Cadmium	mg/L	0.01	NR	BDL	BDL	BDL	BDL
29.	Lead	mg/L	0.05	NR	BDL	BDL	BDL	BDL
30.	Chromium	mg/L	0.05	NR	BDL	BDL	BDL	BDL
31.	Arsenic	mg/L	0.05	NR	BDL	BDL	BDL	BDL
32.	Pesticides	mg/L	ABSENT	0.001	ABSENT	ABSENT	ABSENT	ABSENT

NR : No Relaxation * : No specific limit prescribed CL : Colourless
UO : Unobjectionable AG : Agreeable BDL : Below detectable level

Observations on water quality :

- Transmission of Pench irrigation project water this water through canal is not expected to alter water quality. Canal is lined and there is no probability of loss of water by seepage or the vice versa, unless it is damaged.
- There is no perpetual release of water .Normally it is released during rabi and kharif seasons.
- River Sur is a typical seasonal river in a semi-arid zone. There is no fishing.
- Chemical quality water in Khindsi, Sur-river and canal is identical.
- Presence of coliforms is normal because these are natural sources
- All these sources can be used for drinking water supply after disinfection.
- Conductivity and thus dissolved solids in ground water & in mine pit sample were higher because ground water remains in contact with soil/ores/minerals etc. for longer periods.
- Lower D.O. in hand pump and bore well samples was less because ground water is cut off from air. Dug well is probably contaminated because D.O. was lower.
- Manganese in water is within permissible limits probably because ore at Wadegaon is present as oxides/carbonate which are only sparingly soluble.

Hydrogeology:

-Ground water exploration in Ramtek Tehsil carried by CGWB report shows

Depth, m bgl	SWL, m bgl	Discharge, litres/sec	Draw-down, meter
68.75-214.75	4.69-5.05	0.14-4.43	3.42-18.44

-Average annual rainfall since 2002 till 2011 is 1017.3mm.

-Area beyond lease is characterized by hilly area and hard rock (basalt, granite, gneisses, schists, quartz).

-Fluctuation in post and pre monsoon period is 1.99 m.

-Ramtek tehsil , as per CGWB is categorized as " safe" .

Terrestrial environment:

-Distribution of land use within 10 km

Description	Area, ha
Agricultural Land-Kharif Crop	19221.47
Agricultural Land-More than two crop	53.71
Agricultural Land-Rabi Crop	1721.82
Agricultural Land-Two crop area	1323.91
Agricultural Land-Zaid Crop	2159.27
Agricultural Land-Current Fallow	38.94
Built Up-(Rural)	161.70
Forest-Deciduous -Dense	18.87
Forest-Deciduous -Open	69.02
Forest-Scrub Forest	2.85
Forest-Tree Clad Area- Dense	1705.51
Wastelands-Dense scrub	574.22
Wastelands-Open scrub	688.04
Water bodies-Canal	2893.60
Water bodies-Reservoir/Tanks	549.09
Water bodies-River/Stream	218.00
Total	31400.00

Soil samples were collected from mining lease and an adjoining field. Samples from three depths (0-30; 30-60;60-90 cm) were collected. Their physical and chemical characteristics are given in following tables.

Physical characteristics of soil

Parameters	Lease			Agriculture land		
	0-30	30 -60	60-90	0-30	30 -60	60-90
Gravel, %	6.2	6.7	6.1	4.5	4.8	4.1
Sand,%	58.4	56.2	51.0	31.7	30.0	30.2
Silt,%	14.2	14.6	13.4	26.7	28.2	23.4
Clay,%	27.4	29.2	35.6	41.6	41.8	46.4
Texture,	Sandy clay	Sandy clay loam	Sandy clay loam	Clayey	Clayey	Clayey
B.D., g/m^3	1.62	1.71	1.55	1.67	1.64	1.64
Permeability, mm/sec.	16.7	16.5	14.4	9.2	8.7	8.1
Water retention capacity,						
1/3 bar	34.6	38.3	39.4	42.3	42.6	42.8
15 bar	26.2	27.4	28.6	30.7	31.4	31.2

Chemical properties of soil

Parameters	Lease			Agriculture land		
	0-30	30 -60	60-90	0-30	30 -60	60-90
pH	7.5	6.9	6.7	7.9	7.8	7.8
Conductivity, mS	0.06	0.04	0.04	0.28	0.32	0.36
CEC, m eq./ 100g	9.16	6.78	11.34	28.72	29.40	32.60
Exchangeable Ca^{++}& Mg^{++}, m eq./ 100g	5.54	5.00	10.56	12.84	13.74	15.68
Exchangeable K, m eq./ 100g	0.10	0.05	0.05	0.42	0.47	0.42
Organic carbon,%	0.54	0.32	0.28	0.78	0.56	0.43
Available N, kg/ha	362.4	220.4	132.6	324.6	270.8	200.6
Available P kg/ha	16.5	14.2	12.8	21.8	18.3	17.5

Socio economic status:

There are 14 villages in the buffer zone. Details of population, number of households, distribution of main workers, workers in agriculture and in other miscellaneous activities were collected. These villages are electrified and

communication facilities are satisfactory. Health services and other medical facilities are satisfactory. Education and communication facilities are good. There is an engineering college at Ramtek.

Environmental impacts:

Probable impacts of proposed mining have been predicted based on intensity of activity summarized below.

- Mining rate @ 20 tonnes per day
- Soil generation will be negligible since existing pit would be deepened.
- In situ excavation would be 5760 m^3 in 2 years
- OB/SB/IB would be 2880 m^3 in 2 years.
- Ore volume = 4.8 m^3/d ; Reject volume = 0.24 m^3/d
- Ultimate depth of pit would be 30m b.g.l.
- Mine road dimensions will be 100 m length & width 10 m.
- R & R is not involved
- Employment to about45 persons

Impact of mining on canal

Probable impacts of mining operations on canal can be a) physical damage, b) changes in flow pattern of water and c) changes in water quality.

a) Physical damage:

Mining will be carried out by deepening the existing pit. Distance of the pit from canal was measured again during the survey and is 20 m from core mining activity. Blasting at the bottom of pit at 15 m will not affect the canal structure which is 12 m vertically above the pit. Vibration waves normally travel horizontally and PPV at the canal bottom will not cause any damage. Moreover mining will proceed from south of the pit.

Rule No 127 of metallic ferrous mine rules states that working shall not be vertically below any water body or at any spot within 15 m horizontal distance from the water body.

In the present case active mine working will be beyond 50 m.

b) Canal flow

There is hard rock between the bottom of pit and the canal. Visual survey of the canal within and beyond leases showed that it is a lined structure. Enquiry with irrigation department also confirmed this. A few farmers seem to have attempted to avail of the flowing canal water for irrigation. In other words pilferage of water is common. Percolation from canal is not possible.

c) Water quality:

Addition of mine pit water to canal is not proposed. Hence water quality will remain unaltered. Project proponent will ensure proper lining to the stretch of canal along the leases.

Mine –pit water

Pit would occupy about 2.6 ha area. Rainfall in the area is about 1000 mm/year. Therefore there is a probability that about 26 m^3 water is collected during rainy season.

Water requirement during operational phase would be 3 m^3 per day for drinking and about 2 m^3 per day for dust control. The existing well near the site will be used for domestic water requirement and the stored pit water for dust control.

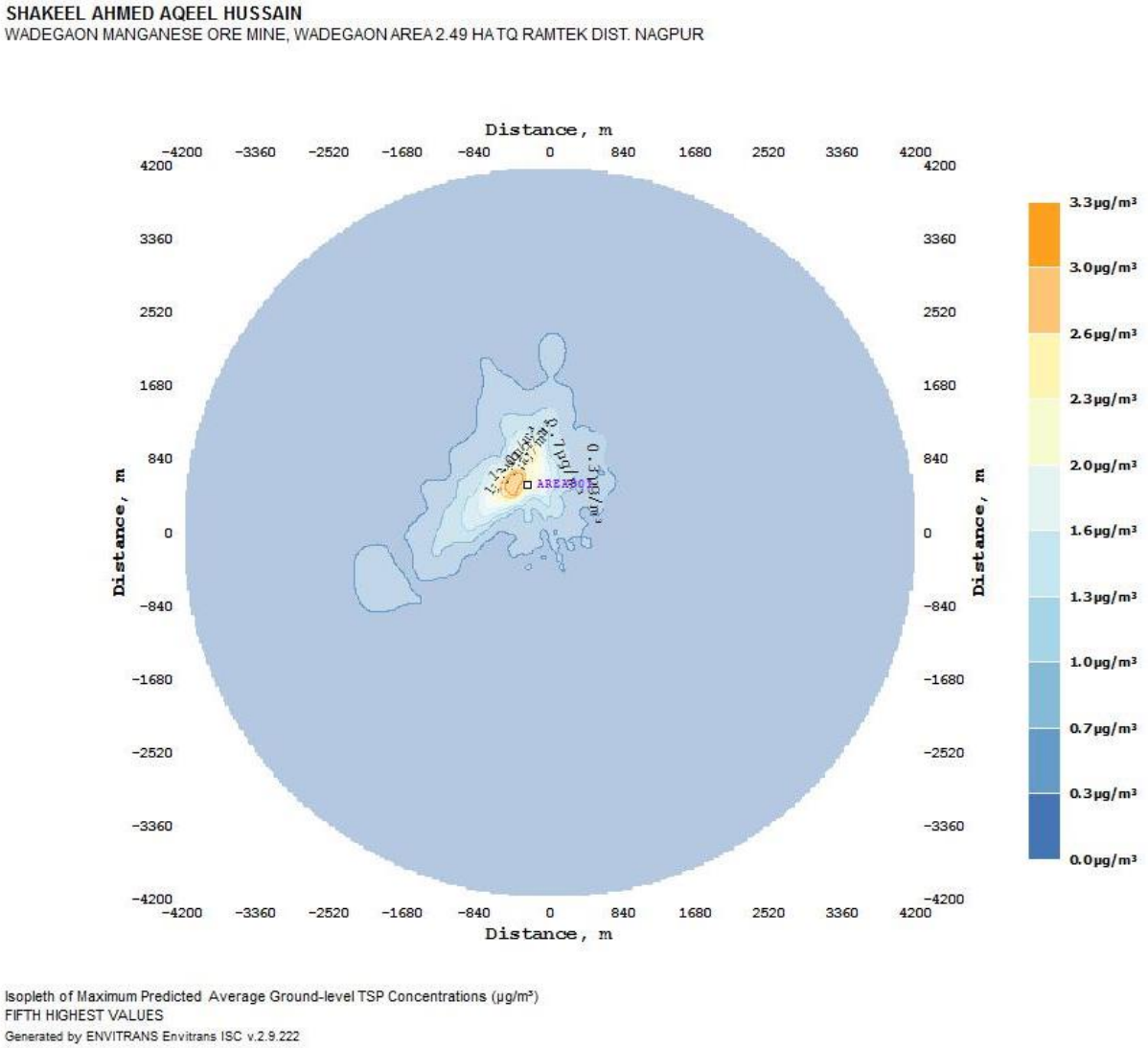
This existing well will be the observation well and a record of water level in the well during pre & post monsoon season will be maintained.

Terrestrial Environment :

There is no residential colony or structure over the lease. Site preparation is not necessary. Tree felling will not be required. Therefore there will not be any adverse impact on land.

Ambient air quality :

Impact of mining on ambient air quality has been predicted and the ground level concentration have been plotted in **Figure 10**. There would not be any adverse impact on AAQ.



ISOPLETH - GLCs CONCENTRATIONS

Mitigation methods :

A} Control spread of dust.

- It is proposed to use jack hammer drills with PPE to the driller. Environment friendly drills available in market will be preferred.
- Haul road will be macadamized with regular water sprinkling during vehicle movement.
- Blasting will be as per DGMS norms and at fixed timings and with warning siren. There will not be stemming.

B} Control of noise levels & protection:

- Blasting will be carried at the bottom of existing pit as per the DGMS norms.
- Over charge during blasting will be avoided. Blasting will be during day time. Mesh ratio E/V i.e. space between holes / space between rows will be more than 1.
- Pre splitting, smooth wall blasting and inline drilling will be practiced after DGMS approval.
- Explosives will not be stored within mining lease.
- Proponent will keep a close watch on canal structure. He will ensure sustenance of lining of canal -stretch along the lease which even otherwise is likely to get deteriorated with passage of time.

C} Water

- Quality and quantity of water collected in the mine pit and canal will be monitored.
- Co-relation between canal water and the pit water will be established
- Pit water will be used for plantation and dust control

- Project proponent will ensure that stretch of canal along its lease will be concreted and its condition will be recorded.

D} Plantation along the boundary lease is proposed. Locally grown variety will be planted. Infrastructure will include one office shed, rest room and roads within lease. Drinking kiosk will be provided.

E} Proponent has decided to engage a consultant for monitoring environmental quality during the operational phase. Impacted segments have been identified as i) air quality, ii) the water regime within core zone including the irrigation canal, iii) land use, iv) health status of miners , v) risk factors etc.

आम जनतेच्या सुनवाईसाठी

पर्यावरण विषयक निवेदन

प्रोजेक्ट : **वडेगाव मंगनीज अयस्कखाण (२.४९ हे)**

प्रस्तावित क्षेत्र : **गाव - वडेगाव, तहसील- रामटेक, जिल्हा–नागपूर**

प्रस्तावक

श्री शकील अहमद अकिल हुसैन
अकिल मेन्शन,तीननलचोक,
ओल्डभंडारारोड,इतवारी,
नागपूर

एन्विरो टेक्नो कन्सल्ट प्रायव्हेट लिमिटेड
६८, महाकाली नगर-२,
मानेवाडा चौक,
नागपूर ४४००२४

मे २०१६

वडेगाव मंगनीज उत्खनन प्रकल्प
पर्यावरणीय अहवाल

उपोद्घात:

या प्रकल्पाचे प्रायोजक श्री शकील अहमद अकिल हुसैन, हे नागपूरात राहणारे आहेत. श्री शकील अहमद गनीज अयस्काच्या खाणीच्या उद्योगात अंदाजे तीस वर्षे पासून काम करत आहेत .त्यांना २.४९ हे. ची एक लीज २० वर्षा साठी मंगेनीज अयस्क काढण्या करीता पत्र क्रमांक MMN/१००१/छृ२३२७/इंद-९ दि.५-८.२००६ प्रमाणे मंजूर झाली आहे.

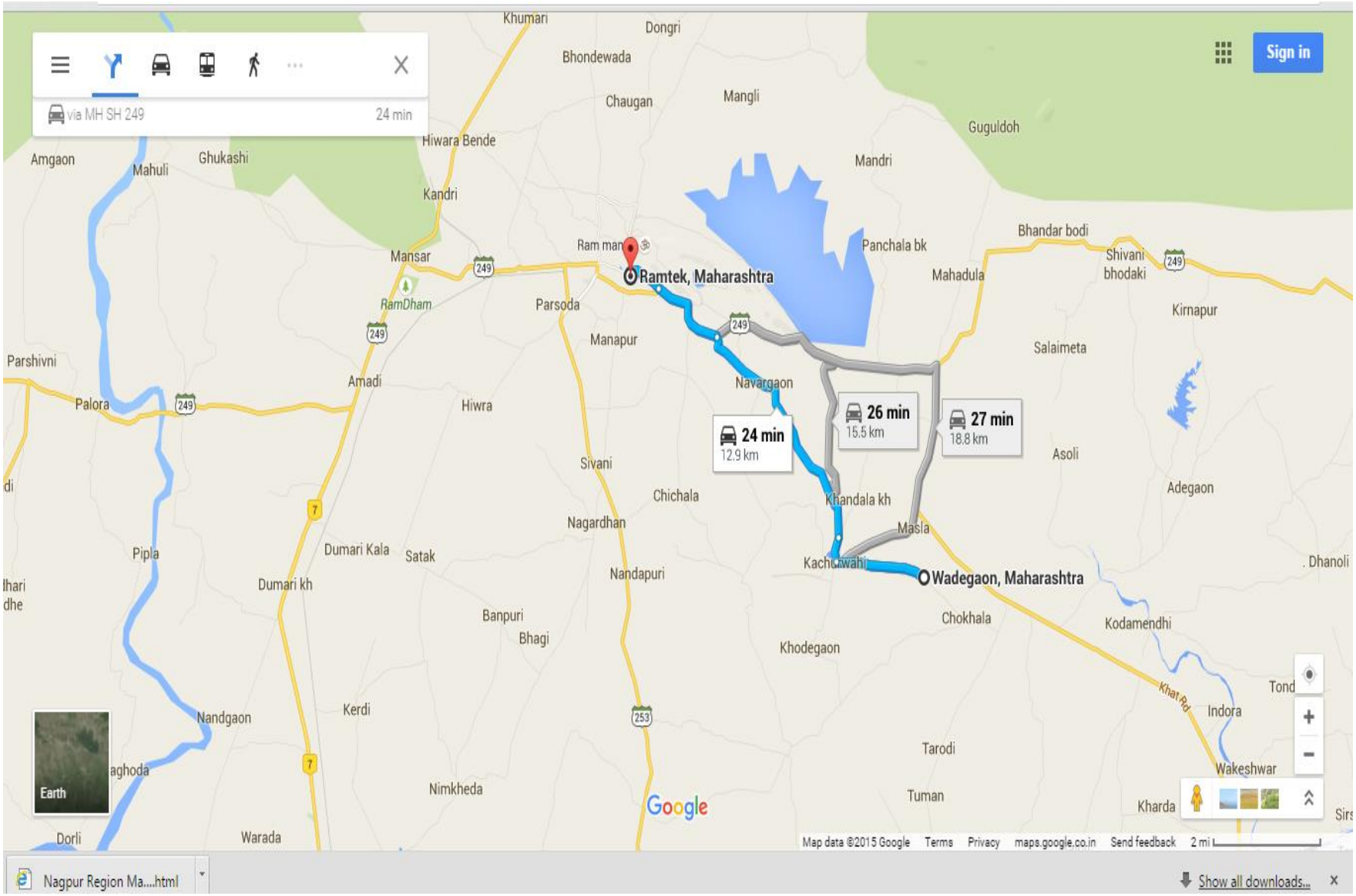
ही लीज वडेगावाजवल रामटेक तहसीली मध्ये आहे. येथील अयस्क भूगर्भ शास्त्रानुसार सौसर सिरीज चे आहेत. काही वर्षा पूर्वी इंग्रजांनी येथे खाणी उघडल्या होत्या. लीजचे अक्षांश आणि रेखांश अनुक्रमे २११९४१.२५ :२११९४८.४३६ उ आणि ७९२४१५.२४२ : ७९२४६०४ पू आहेत.

लीज खाजगी जमीन प्रस्तावकाच्या मालकीची आहे. लीज वर रस्ता, नदी, तलाव,वस्ती, जंगल इत्यादी काही नाहीत. भारतीय खाण ब्युरोने (IBM) या प्रकल्पासाठी आवश्यक असलेला मायनिंग प्लानव स्कीम २०१७ पर्यंत मंजूर केली आहे. २०१२ पासून कुठले ही कामझालेनाही.

दर वर्षी ६,००० टन ऑपनकास्ट पद्धतीने अयस्क काढण्याचे प्रस्तावित आहे. या मध्ये पोर्टेबल कोम्प्रेसर, व्यागनड्रिल आणि एक एस्कवेटर/लोडर वापरण्यात येईल. भूगर्भ शास्त्रानुसार अयस्काचे साठे २०,७३० ट. आहेत; १९,३१२ ट. अयस्क उपलब्ध होऊ शकतील. चार वर्ष खाण चालेल .या खाणीतील काढलेला अयस्क नागपूरच्या जवळील उद्योगा मध्ये पुरवला जाइल.

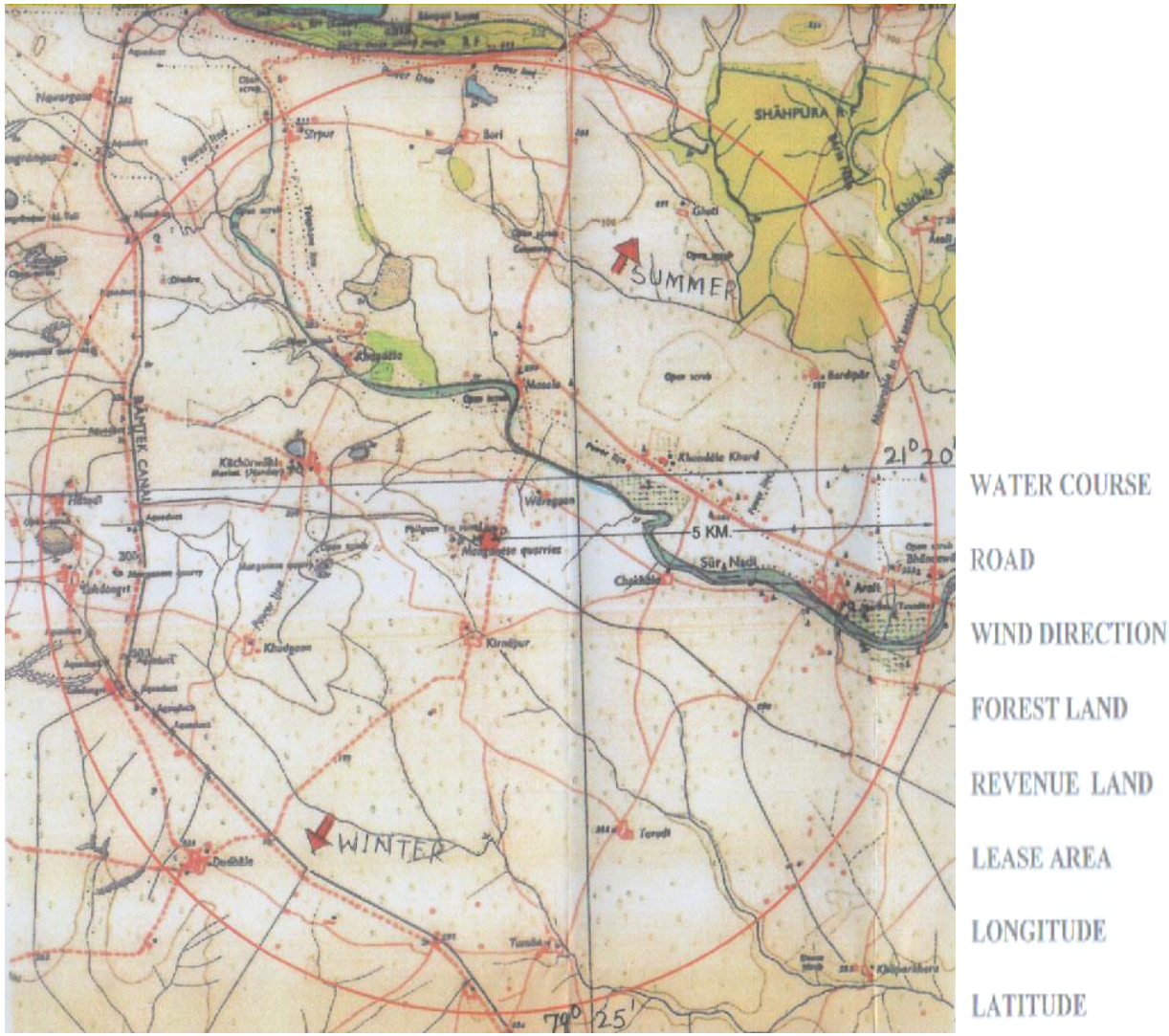
वडेगावचे मानचित्र **आकृती १** मध्ये दिले आहे. **आकृती २** मध्ये वडेगाव पासून १० कि.मी. त्रिज्येच्या आतील परिसर दाखविला आहे. ह्या मध्ये सूरनदी, पेंचकालवा, खिंडसी तलाव इत्यादी दिसतात.

आकृती १



GEOGRAPHICAL LOCATION OF LEASE

आकृती २



WADEGAON LEASE (2.49 ha) ON SURVEY OF INDIA TOPO SHEET No. 55 O/7

प्रकल्पाची संक्षिप्त माहिती

हा प्रस्ताव दर वर्षी ६,००० टन ओपन कास्ट पद्धतीने यांत्रिक रीती ने मंगनीज उत्खनना साठी आहे.

एकंदर अयस्क साठे	२०,७३० ट
संभाव्य साठे	१९,३१२ ट
दरवर्षी	६,००० ट
प्राप्ती %	९०

ही खाण ४ वर्ष चालेल.हया अयस्का मध्ये मंगनिज, लोह, सिलिका अनुक्रमे २५-४०, ६, आणि ८-११ असते

भारतीय खाण ब्युरोला २०१२ पासून काम केले नाही असे कळविण्यात आले आहे. कारण परवानगी नव्हती. नियमा प्रमाणे हा प्रस्ताव महाराष्ट्राच्या पर्यावरण कमिटी कडे पाठविण्यात आला. कमिटी समोर सादरी करण झाल्यावर त्यांनी एक संदर्भ सूची पाठीवली आणि कमिटीने वडेगावला भेट दिली.

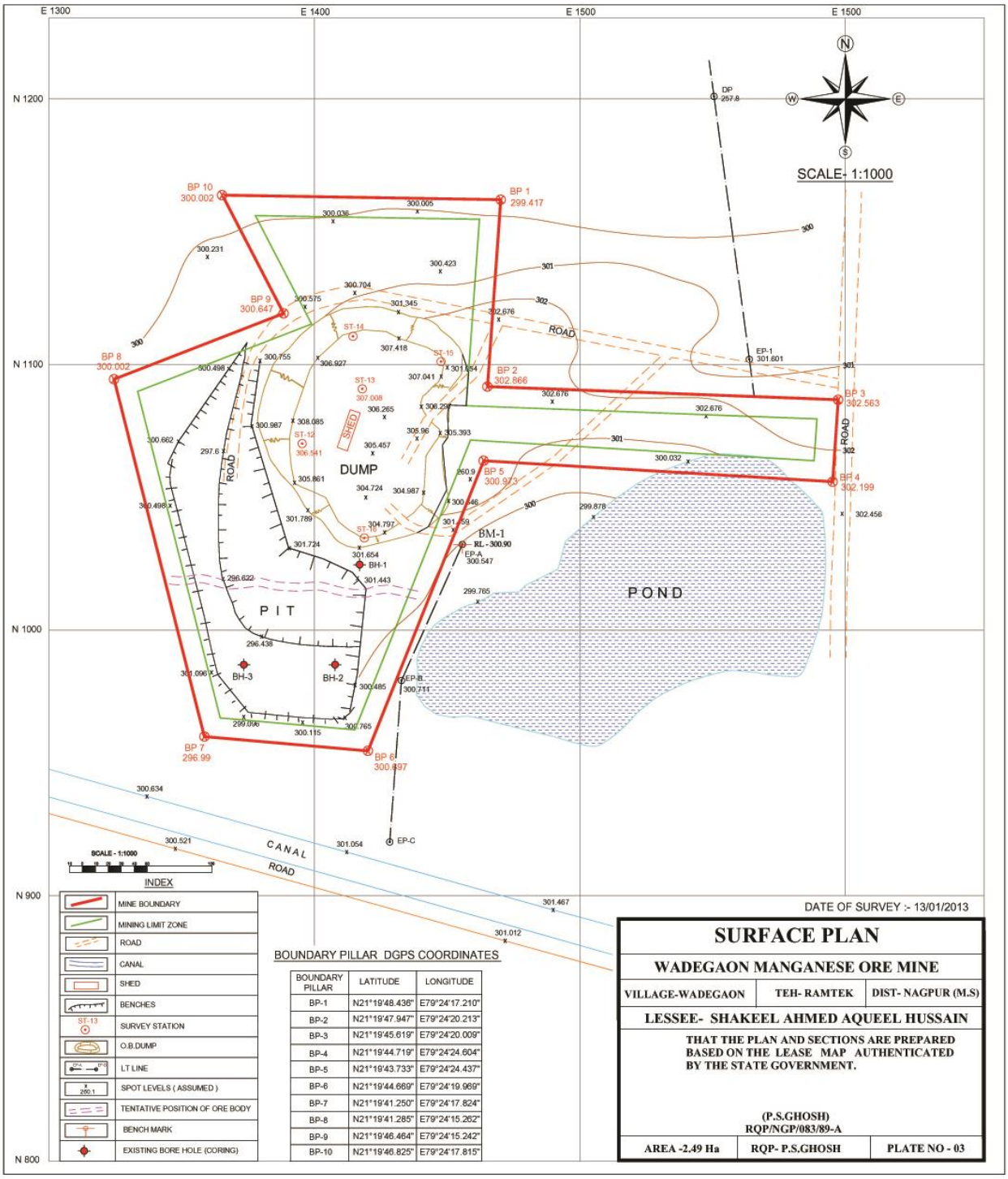
कमिटीच्या निर्देशा प्रमाणे पर्यावरणाचे (१०कि. मी. परिसरात) परीक्षण शास्त्रीय पद्धतीने केले. परीक्षण काळ जानेवारी ११ ते एप्रिल १० ,२०१६ होता

खाणीचे सध्याचे दिसणारे चित्र आकृती क्रमांक २ मध्ये आहे. लीज मध्ये झाडं, वस्ती, विजेचेखांब/ तारा इत्यादी नाहीत. हया लीज मध्येतिच्या आग्नेयेला पूर्वी पासून असलेल्या एका खड्ड्याचा एक भाग आहे. पहा आकृती क्रमांक ३.

हयाच खड्ड्या मध्ये बेंचेस करून अयस्क काढण्याचे प्रस्तावित आहे. अयस्क खड्ड्याच्या तळाशी असून त्याचा उतार पू.-प .आहे. त्याची जाडी २० मी आहे.

२०१५-२०१७ मध्ये खोद काम मध्ये ५७६० घनमी. असेल. अयस्क ३०२४ घन मी. आणि ओ.बी २८८० घन मी. असेल

आकृती ३



BOUNDARY PILLAR	LATITUDE	LONGITUDE
BP-1	N21°19'48.436"	E79°24'17.210"
BP-2	N21°19'47.947"	E79°24'20.213"
BP-3	N21°19'45.619"	E79°24'20.009"
BP-4	N21°19'44.719"	E79°24'24.604"
BP-5	N21°19'43.733"	E79°24'24.437"
BP-6	N21°19'44.669"	E79°24'19.969"
BP-7	N21°19'41.250"	E79°24'17.824"
BP-8	N21°19'41.285"	E79°24'15.262"
BP-9	N21°19'46.464"	E79°24'15.242"
BP-10	N21°19'46.825"	E79°24'17.815"

उत्खननाचीपद्धत

खड्या मध्ये उत्खानाची सुरवात दक्षिणे कडून होईल आणि उत्तरे कडे चालेल. माती इत्यादी निघणार नाही. ड्रिलिंग, ब्लास्टिंग शास्त्रीय पद्धतीने, महानिदेशक, खाण सुरक्षा विभाग ह्यांच्या निर्देशा प्रमाणेच होईल.

कॉम्प्रेस्सेड एअर ड्रिलचा वापर ६५ ते ८३ मी.मी. चे आणि ६ मी खोल असे होल्स करण्यात येईल अंततः खड्याची खोली जमिनी खाली ३० मी. असेल. खड्ड्याचा उतार ६० डिग्री असेल. कमीप्रतीचा माल ५०४ घ.मी. असेल. उतखाननाच्या वेळी अंदाजे १० घ.मी. पाणी पिण्यासाठी आणि धुळीच्या नियंत्रणासाठी लागेल .४५ लोकांना काम मिळेल. त्यापैकी २५-३० लोक अकुशल चालतील आणि ते जवळपासच्या खेड्यातील असतील.

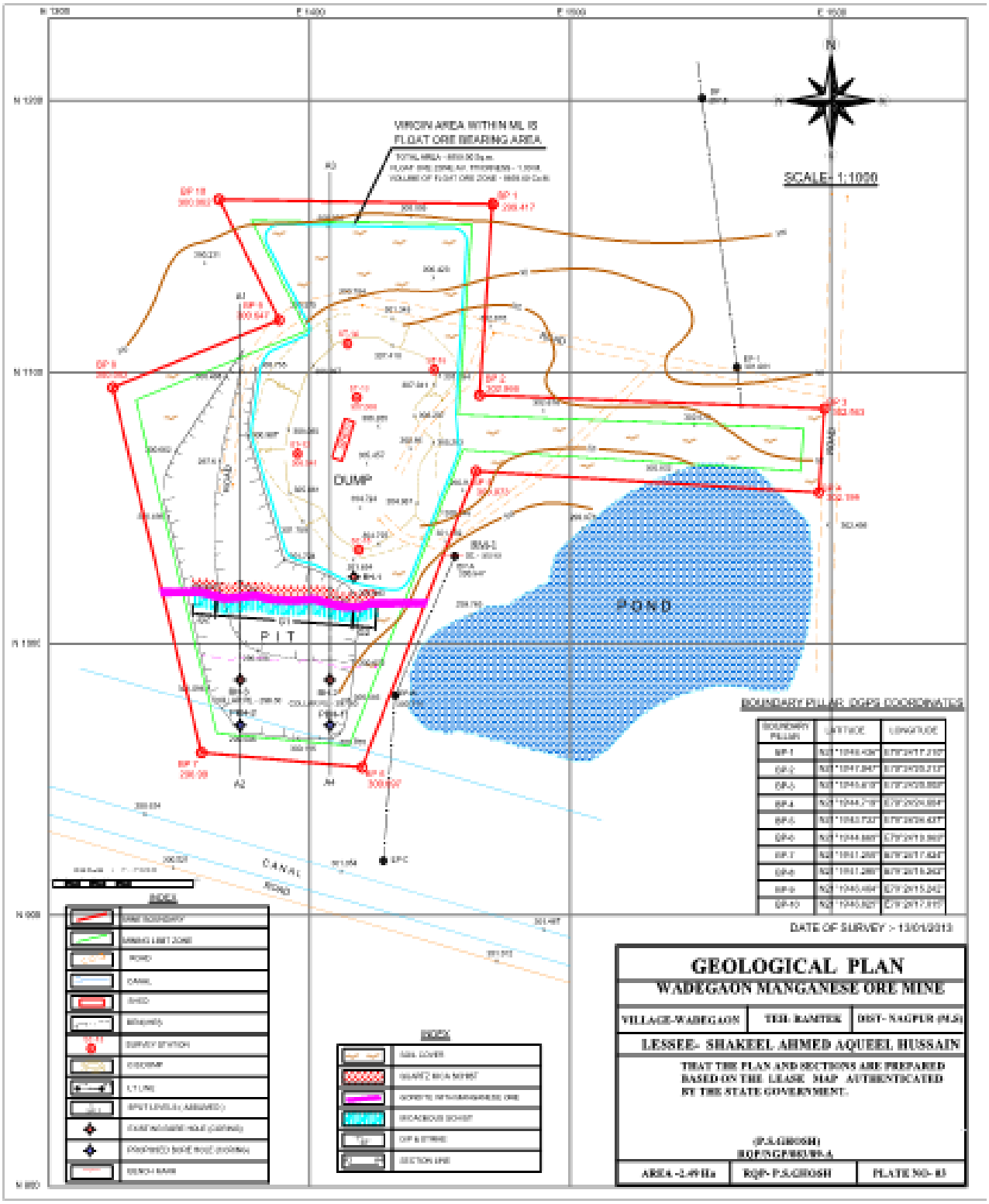
उत्खननाचे सुरुवात पर्यावरण खात्याकडून परवानगी मिळाल्यावर होईल.

प्रकल्पा मध्ये लागणारा खर्च

ऑफिस, मशिनरी, लीज वरचे बांध काम	रु.१,७० लाख
वर्किंग क्यापिटल	रु. ३० लाख
सुरुहोण्या आधी	रु.२,५० लाख
वीज पुरवठा	रु.२.५ लाख
इतर	रु.१ लाख

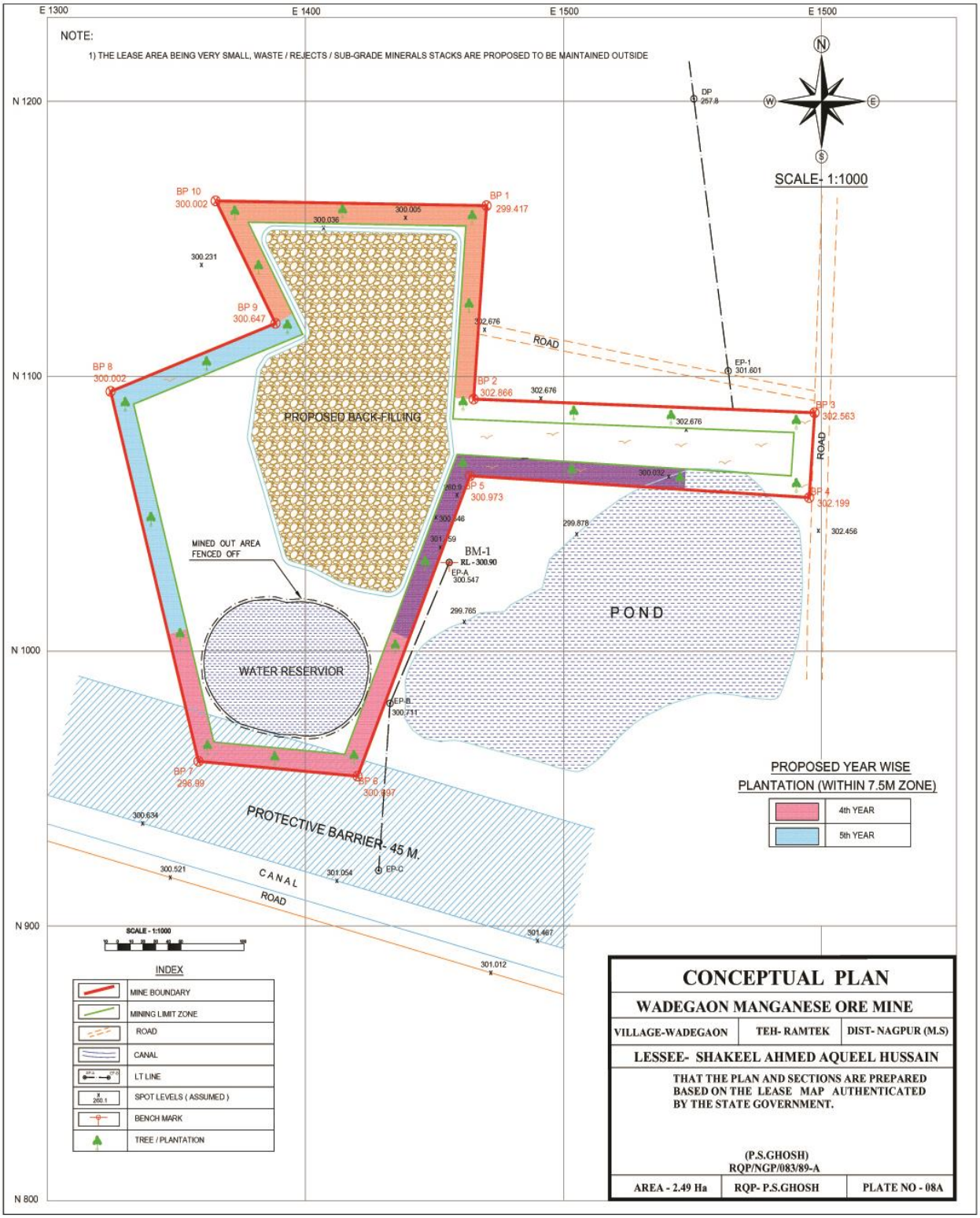
भूगार्भा शास्त्रानुसार काढलेला लिझचा नकाशा आणि प्रोजेक्टच्या अंतिम टप्प्यातातील लीज चे दिसणारे चित्र अनुक्रमे **आकृती ४** आणि **५** मध्ये दाखविलेली आहे.

आकृती ४



GEOLOGICAL PLAN

आकृती ५



CONCEPTUAL PLAN

पर्यावरणाची सद्यस्थिती :

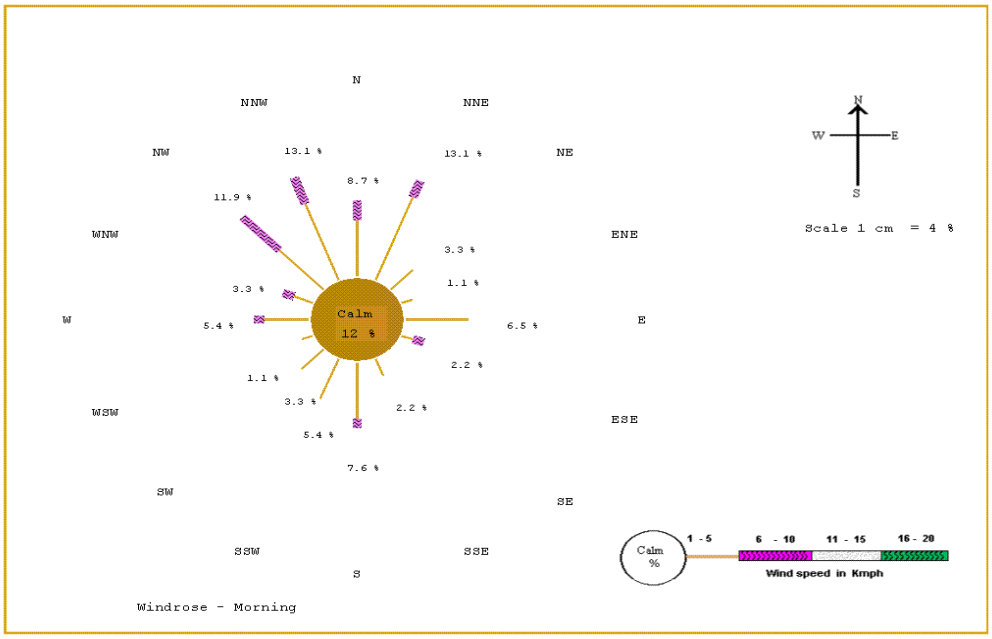
प्रस्तावित प्रकल्पाच्या पर्यावरणावर होणारा संभावित परिणामाचे मुल्यांकन करण्यासाठी सद्ध्याचे पर्यावरण कसे आहे याचे सर्वेक्षण १० कि मी च्या आतील क्षेत्राचे केले. हया मध्ये सध्याच्या हवेची गुणवत्ता , पाण्याचे स्त्रोत आणि त्याचे विश्लेषण, जमिनीचा वापर आणि सामाजिक स्थिती इत्यादींचा समावेश होता.

हवेची गुणवत्ता

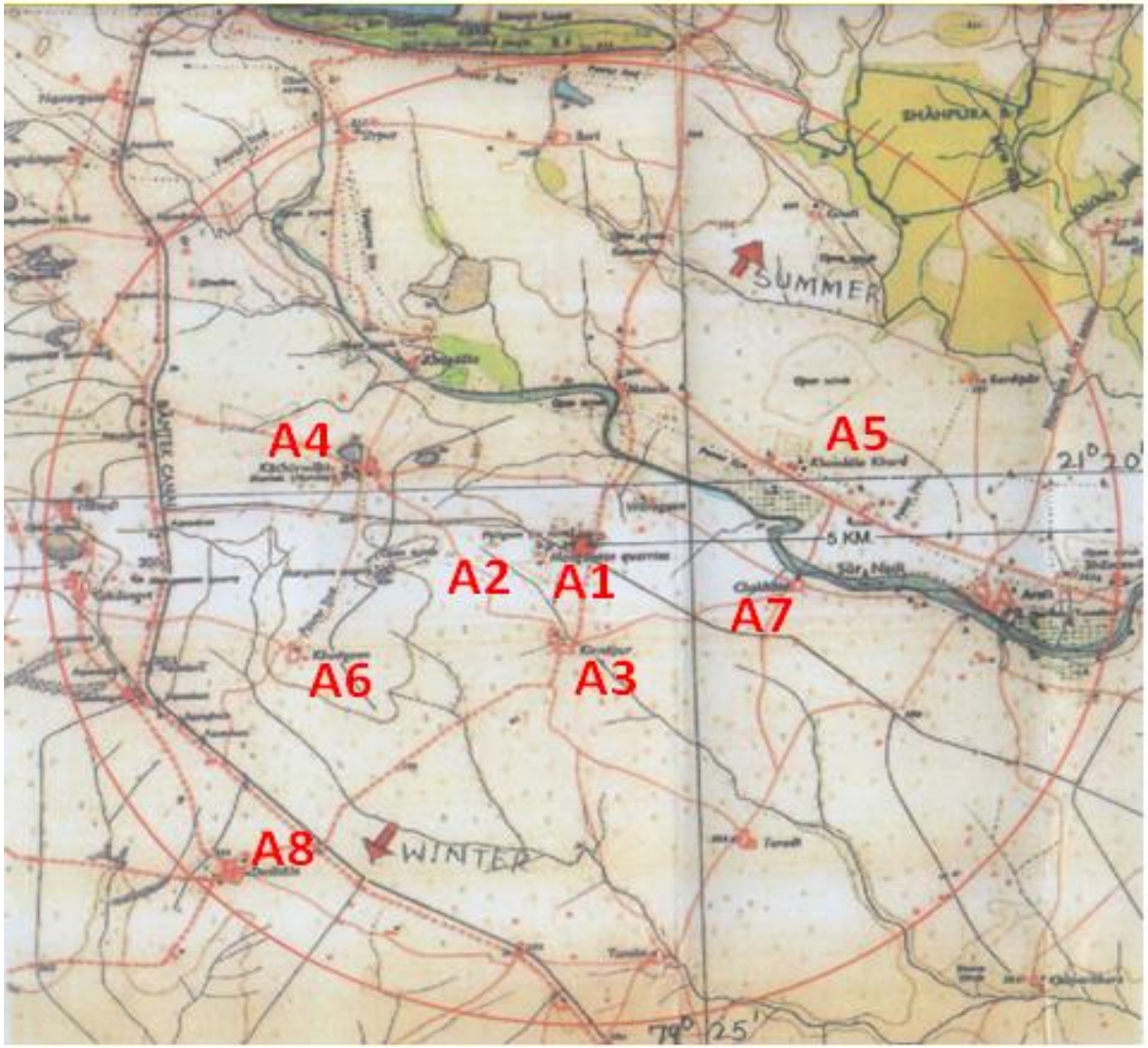
गती- ५-६ कि.मी./तास;आर्द्रता-६०%; पर्जन्यमान-१०८३.९मि.मी./वर्ष. हवेचे प्रचलन या क्षेत्रात खालील आकृती प्रमाणे असते.

हवेतील प्रदूषण करणाऱ्या घटकांचे मोज मापन दिशे प्रमाणे आठ ठिकाणी केले. हया जागा **आकृती क्रमांक. ६** मध्ये दाखविल्या आहेत. या परिसरात कुठलाही इतर उद्योग नाही. म्हणून SO_2 आणि NOx चे प्रमाण १५ माय्क्रो ग्राम प्रती घन मी. पेक्षा कमी होते. धुळी कण खाली दिलेल्या तक्त्यात दिले आहेत.

या तक्त्यावरून असा निष्कर्ष काढता येईल क़ी हवा प्रदूषित नाही.



आकृती ६



Sample code	Sampling station
A1	Lease area-2.49 ha
A2	Lease area-3.97 ha
A3	Kirnapur
A4	Kachurwahi
A5	Khandalakhurd
A6	Khodgaon
A7	Chichala
A8	Dudhhala

हवेचे मोजमापनकेलेल्या जागा

Particulate matter concentrations

A1 – Mine lease area -2.49 ha	PM_{10} (µg/m^3)	$PM_{2.5}$ (µg/m^3)
Minimum	33.6	7.0
Maximum	52.3	11.2
Average	44.0	9.0
98 percentile	52.1	11.0
A2 –Wadegaon lease area -3.97 ha		
Minimum	43.7	7.3
Maximum	58.3	12.7
Average	51.8	9.4
98 percentile	58.3	12.2
A3 –Kirnapur		
Minimum	34.2	6.2
Maximum	56.4	11.2
Average	42.8	8.0
98 percentile	56.4	10.8
A4 –Kachurwahi		
Minimum	46.5	8.2
Maximum	63.6	12.2
Average	55.3	10.0
98 percentile	63.5	11.9
A5 –Khandalakhurd		
Minimum	40.8	6.6
Maximum	67.2	14.1
Average	51.5	10.2
98 percentile	66.0	13.9
A6 –Khodgaon		
Minimum	50.2	8.9
Maximum	55.6	13.2
Average	52.6	10.9
98 percentile	55.2	13.0
A7 –Chichala		
Minimum	31.2	9.8
Maximum	48.6	15.8
Average	38.8	12.6
98 percentile	47.8	15.6
A8 –Dudhhala		
Minimum	34.3	6.8
Maximum	57.2	11.3
Average	44.3	8.6
98 percentile	56.6	11.0

ध्वनि

लीज मधील आणि किरणापूर, काचुरवाही आणि खंडाला खुर्द या गावां मधील ध्वनीची मात्रा खालील तक्त्यात दिली आहे.

ध्वनी स्त्रोत उदा. कारखाने, वाहने, इत्यादी या क्षेत्रात नाहीत.

ध्वनी मुळे प्रभावित होणारे कुठलेही क्षेत्र जसे दवाखाने, शाळा, वृद्धाश्रम इत्यादी लीझ पासून १० कि.मी. पर्यंत नाहीत.

	N1 Mine lease area	N2 Kirnapur	N3 Kachurwahi	N4 Khandala khurd
Range	36.2-46.9	40.0-59.5	39.9-63.8	34.4-55.4
Ld	43.3	54.4	56.4	49.6
Ln	39.1	50.2	40.8	39.5
Ldn	46.4	57.5	55.0	49.6

पाणी/जलस्त्रोत

आकाश उपग्रहातून घेतलेले वडेगाव येथील लीज चेचित्र **आकृती ७** मध्ये दिले आहेत. या वरून असे दिसते कि लीज जवळ भूजलाची पातळी जमिनी खाली ८-१० मी.आहे.

ती जमिनीवर चेस्त्रोत खिंडसी तलाव, सूर नदी आणि कालवा आहेत. त्यातील पाण्याचे आणि चार विहिरींचे नमुने घेऊन त्यांचे विश्लेषण केले. ते खालील तक्त्यात दिले आहेत आणि **आकृती ८** मध्ये दाखविले आहेत

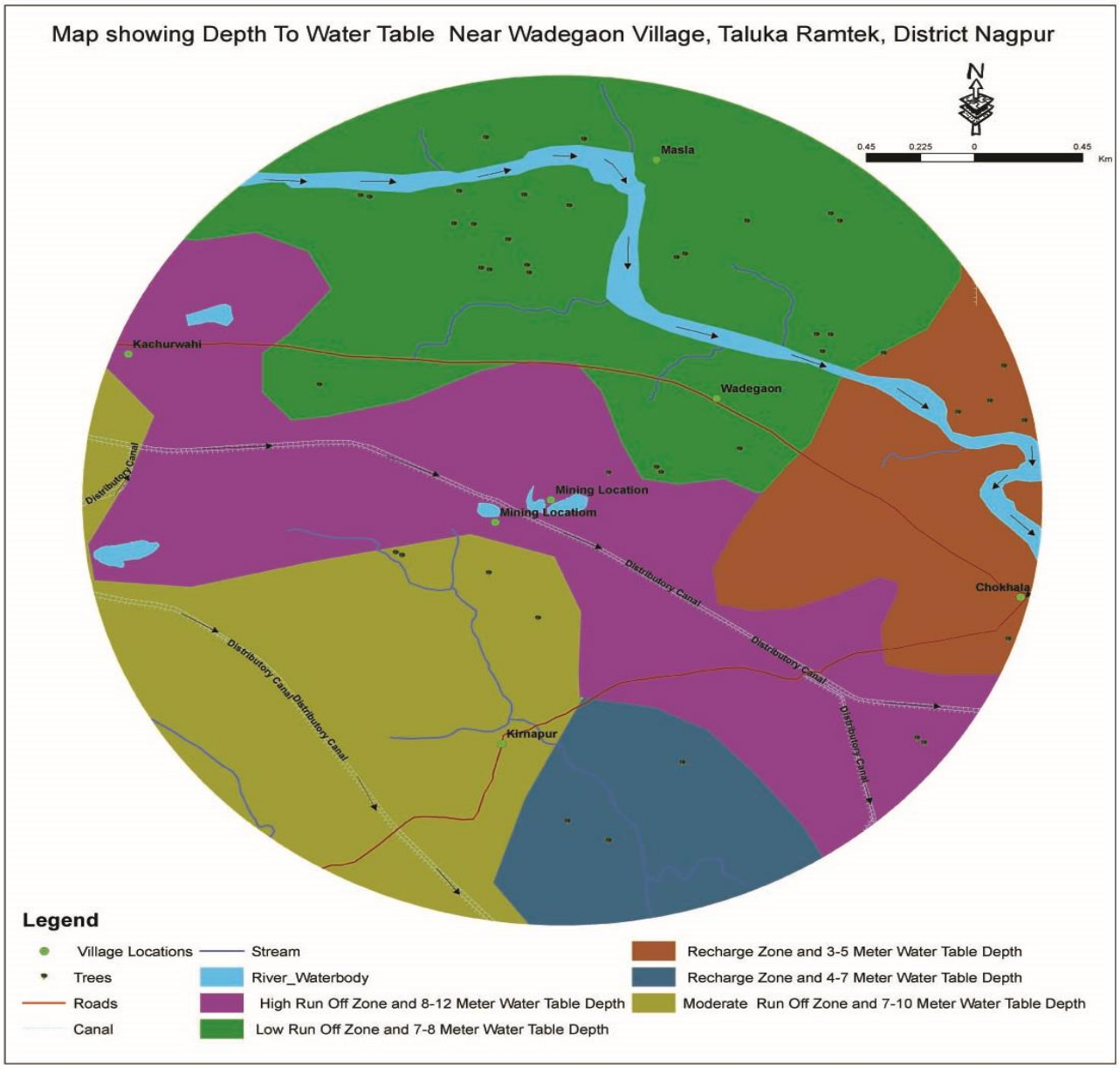
*सर्व स्त्रोतातील पाणी प्रदूषित नव्हते. पिण्यासाठी वापर करण्या पूर्वी निर्जंतु करण आवश्यक आहे.

*कालवा पक्का असल्यामुळे त्याचे पाणी बाहेर किंवा बाहेर चे पाणी कालव्यात जाणे संभवत नाही.

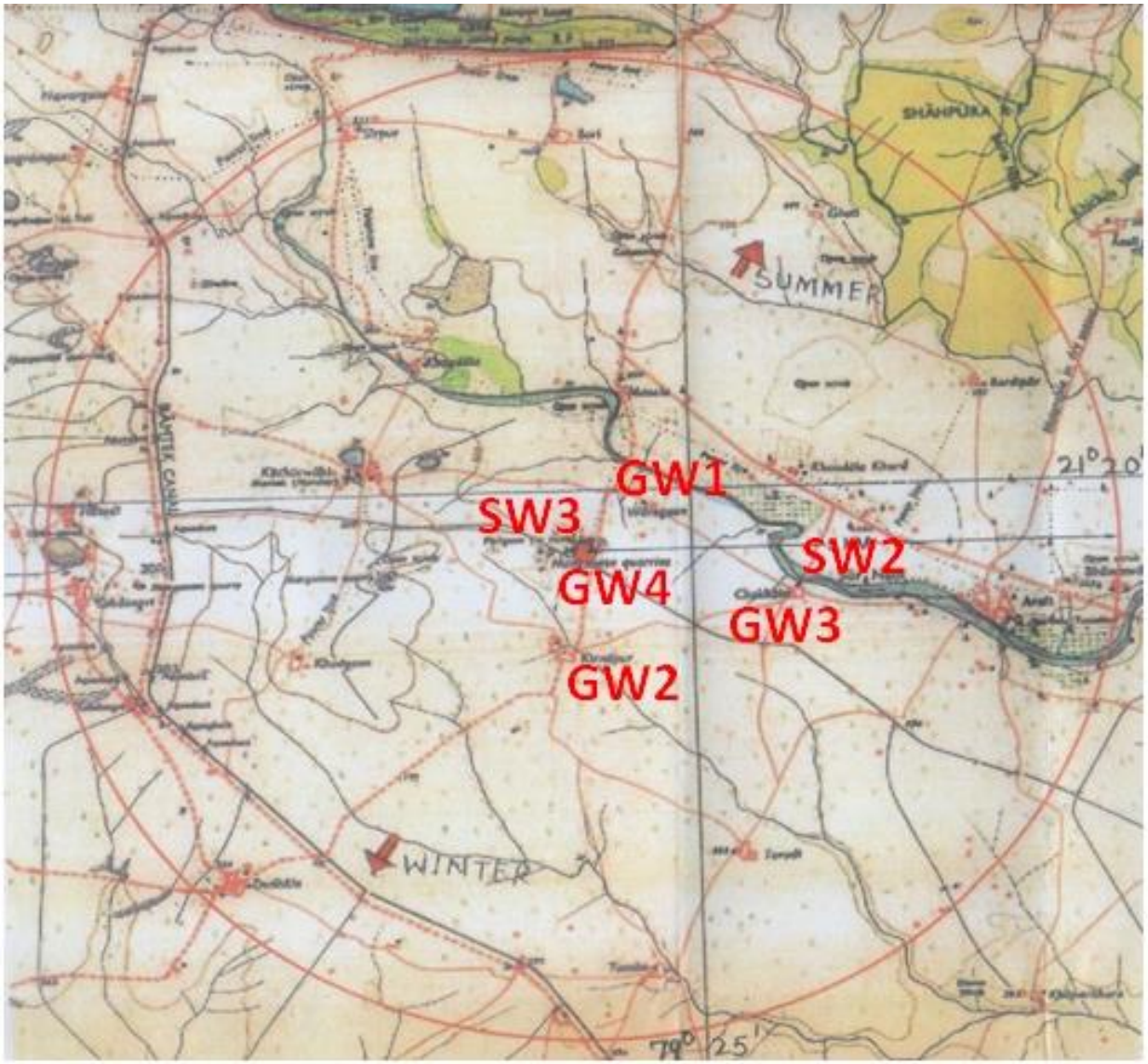
*कालव्या मध्ये पाण्या चे वहन शेती कामाच्या आवश्यकते प्रमाणेच असते.

*भूजलाची पातळी मध्ये १.९९ मीटर फरक पावसाच्या आधी आणि नंतरच्या काळात पडतो.

आकृती ७



आकृती ८



पाण्याचे नमुने घेतलेल्या जागा

Sample code	Sampling station
SW1	Khindsi lake
SW2	Sur river
SW3	Canal water
GW1	Village Wadegaon
GW2	Village Kirnapur
GW3	Village Chichala
GW4	Pit water

SW : Surface water
GW : Ground water

SURFACE WATER QUALITY

Sr. No	Parameters	Unit	IS-10500-1991		Sampling stations		
			Desir-able	Permissible	SW 1 Khindsi lake	SW2 Sur river	SW 3 Canal water
	Items relating to preservation of living environment						
1.	Ambient Temperature	°C			27.0	27.0	28.0
2.	Colour	Hazen	05	25	SM	SM	SM
3.	Odour		UO	UO	UO	UO	UO
4.	Taste		AG	AG	AG	AG	AG
5.	Turbidity	NTU	05	10	25.0	30.0	8.0
6.	pH		6.5-8.5	NR	7.9	8.0	7.9
7.	Dissolved oxygen	mg/L	*	*	5.8	6.1	5.6
8.	BOD	mg/L	*	*	4.8	5.2	5.8
9.	COD	mg/L	*	*	12.8	15.4	14.8
10.	Electrical conductance	µS	*	*	135.0	132.0	260.0
11	T. Dissolved Solids	mg/L	500	2000	95.0	97.0	120.0
12.	T. Suspended Solids	mg/L	*	*	15.0	14.0	12.0
13.	Alkalinity as $CaCO_3$	mg/L	200	600	24.0	28.0	38.0
14.	Hardness as $CaCO_3$	mg/L	300	600	108.0	104.0	128.0
15.	Calcium as Ca	mg/L	75	200	34.0	32.0	70.0
16.	Magnesium as Mg	mg/L	30	100	9.0	8.0	7.0
17.	Chlorides as Cl	mg/L	250	1000	70.0	18.0	25.0
18.	Sulphate as SO_4	mg/L	200	400	7.0	7.5	8.0
19.	Nitrate as NO_3	mg/L	45	100	0.8	0.6	1.2
20.	Fluoride as F	mg/L	1.0	1.5	0.2	0.15	0.2
21.	Iron as Fe	mg/L	0.3	1.0	0.1	0.1	BDL
22.	Copper as Cu	mg/L	0.05	1.5	BDL	BDL	BDL
23.	Zinc as Zn	mg/L	5.0	15	0.02	0.02	BDL
24.	Manganese as Mn	mg/L	0.1	0.3	0.1	BDL	BDL
25	Boron	mg/L	1.0	5.0	BDL	BDL	BDL
26.	Oil & Grease	mg/L	0.01	0.05	NIL	NIL	NIL
27.	Coliforms	MPN/ 100ml	--	--	460	150	460
28.	Cadmium	mg/L	0.01	NR	BDL	BDL	BDL
29.	Lead	mg/L	0.05	NR	BDL	BDL	BDL
30.	Chromium	mg/L	0.05	NR	BDL	BDL	BDL
31.	Arsenic	mg/L	0.05	NR	BDL	BDL	BDL
32.	Pesticides	mg/L	ABSENT	0.001	ABSENT	ABSENT	ABSENT

NR : No Relaxation * : No specific limit prescribed CL : Colourless

UO : Unobjectionable AG : Agreeable BDL : Below detectable level

GROUND WATER QUALITY

Sr. No.	Parameters	Unit	IS-10500-1991		Sampling stations			
			Desirable Limits	Permissible Limits	GW1 Village Wadegaon open dug well	GW2 Village Kirnapur Hand pump	GW3 Village Chichala Bore well water	GW4 Pit water
	Items relating to preservation of living environment							
1.	Ambient Temperature	°C			28.5	27.0	28.0	27.5
2.	Colour	Hazen	05	25	CL	CL	CL	CL
3.	Odour		UO	UO	UO	UO	UO	UO
4.	Taste		AG	AG	AG	AG	AG	AG
5.	Turbidity	NTU	05	10	<1	<1	<1	<1
6.	pH		6.5-8.5	NR	7.7	7.2	8.2	7.5
7.	Dissolved oxygen	mg/L	*	*	**3.5**	1.5	1.8	0.8
8.	BOD	mg/L	*	*	<2	<2	<2	<2
9.	COD	mg/L	*	*	<5	<5	<5	<5
10.	Electrical conductance	µS	*	*	910.0	730.0	570.0	810.0
11	T. Dissolved Solids	mg/L	500	2000	624.0	550.0	395.0	575.0
12.	T. Suspended Solids	mg/L	*	*	3.0	8.0	<1	<1
13.	Alkalinity as $CaCO_3$	mg/L	200	600	60.0	346.0	260.0	504.0
14.	Hardness as $CaCO_3$	mg/L	300	600	384.0	340.0	204.0	536.0
15.	Calcium as Ca	mg/L	75	200	98.0	75.0	43.0	119.0
16.	Magnesium as Mg	mg/L	30	100	25.0	37.0	23.0	57.0
17.	Chlorides as Cl	mg/L	250	1000	80.0	40.0	31.0	113.0
18.	Sulphate as SO_4	mg/L	200	400	15.0	10.0	15.0	15.0
19.	Nitrate as NO_3	mg/L	45	100	3.5	1.7	2.5	3.2
20.	Fluoride as F	mg/L	1.0	1.5	0.2	0.2	0.2	0.2
21.	Iron as Fe	mg/L	0.3	1.0	0.2	0.2	0.15	0.12
22.	Copper as Cu	mg/L	0.05	1.5	BDL	BDL	BDL	BDL
23.	Zinc as Zn	mg/L	5.0	15	0.05	0.02	0.05	0.05
24.	Manganese as Mn	mg/L	0.1	0.3	< 0.1	0.2	0.1	0.1
25	Boron	mg/L	1.0	5.0	BDL	BDL	BDL	BDL
26.	Oil & Grease	mg/L	0.01	0.05	NIL	NIL	NIL	NIL
27.	Coliforms	MPN/ 100ml	--	--	1500	0	0	0
28.	Cadmium	mg/L	0.01	NR	BDL	BDL	BDL	BDL
29.	Lead	mg/L	0.05	NR	BDL	BDL	BDL	BDL
30.	Chromium	mg/L	0.05	NR	BDL	BDL	BDL	BDL
31.	Arsenic	mg/L	0.05	NR	BDL	BDL	BDL	BDL
32.	Pesticides	mg/L	ABSENT	0.001	ABSENT	ABSENT	ABSENT	ABSENT

NR : No Relaxation * : No specific limit prescribed CL : Colourless
UO : Unobjectionable AG : Agreeable BDL : Below detectable level

माती

सर्वेक्षणा मध्ये मातीचेही परीक्षण केले त्याचे विश्लेषण खालील तक्त्यात आहे.

Physical characteristics of soil

Parameters	Lease			Agriculture land		
	0-30	30 -60	60-90	0-30	30 -60	60-90
Gravel, %	6.2	6.7	6.1	4.5	4.8	4.1
Sand,%	58.4	56.2	51.0	31.7	30.0	30.2
Silt,%	14.2	14.6	13.4	26.7	28.2	23.4
Clay,%	27.4	29.2	35.6	41.6	41.8	46.4
Texture,	Sandy clay	Sandy clay loam	Sandy clay loam	Clayey	Clayey	Clayey
B.D., g/m^3	1.62	1.71	1.55	1.67	1.64	1.64
Permeability, mm/sec.	16.7	16.5	14.4	9.2	8.7	8.1
Water retention capacity,						
1/3 bar	34.6	38.3	39.4	42.3	42.6	42.8
15 bar	26.2	27.4	28.6	30.7	31.4	31.2

Chemical properties of soil

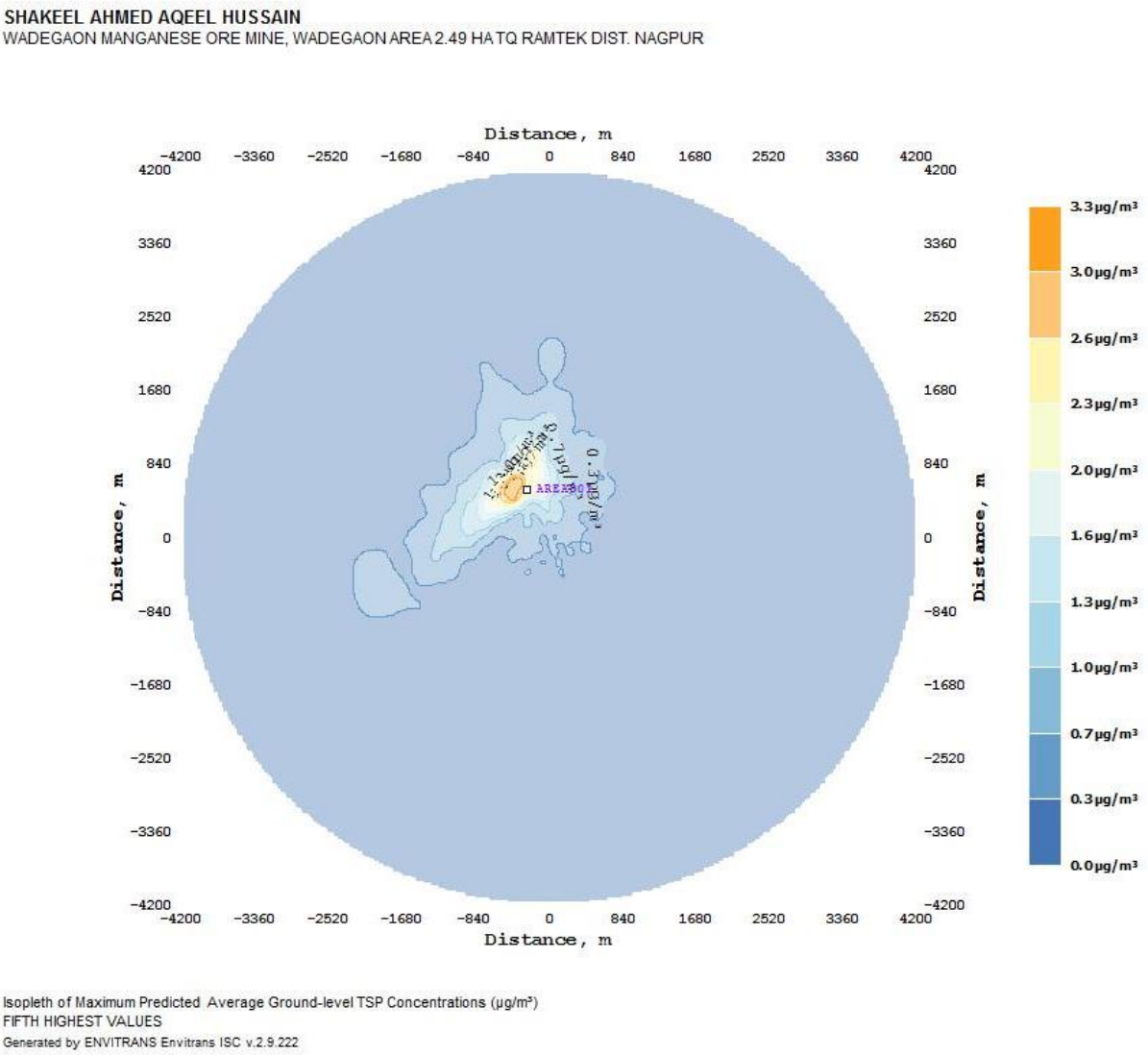
Parameters	Lease			Agriculture land		
	0-30	30 -60	60-90	0-30	30 -60	60-90
pH	7.5	6.9	6.7	7.9	7.8	7.8
Conductivity, mS	0.06	0.04	0.04	0.28	0.32	0.36
CEC, m eq./ 100g	9.16	6.78	11.34	28.72	29.40	32.60
Exchangeable Ca^{++}& Mg^{++}, m eq./ 100g	5.54	5.00	10.56	12.84	13.74	15.68
Exchangeable K, m eq./ 100g	0.10	0.05	0.05	0.42	0.47	0.42
Organic carbon,%	0.54	0.32	0.28	0.78	0.56	0.43
Available N, kg/ha	362.4	220.4	132.6	324.6	270.8	200.6
Available P kg/ha	16.5	14.2	12.8	21.8	18.3	17.5

प्रस्तावित प्रकल्पाचे पर्यावरणावर होणारे संभाव्य परिणाम

ओपनकास्ट उत्खनना चे परिणाम मुख्यतः वायू, ध्वनी आणि जल स्त्रोतावर संभवतात. त्याचा उहापोह खाली केला आहे.

वायू

ब्लास्टिंग, ड्रीलिंग आणि अयस्काचे वहन इत्यादी मुळे होणारे धुळीचे प्रसरण आणि धुळीकणांचे प्रमाण खालील **आकृती ९** मध्ये दाखविले आहे.



या आकृती वरून असे दिसून येते की उत्खनन केवळ २० टन प्रती दिन जमिनी खाली असल्यामुळे, ते ही मायनिंग प्लान प्रमाणे असल्या मुळे हवेचे प्रदूषण संभवत नाही. मायनिंग प्लान मध्ये प्रदूषण कमीत कमी व्हावे म्हणून उपाय योजना असतात.

हवेचे प्रदूषण कमी करण्यासाठी प्रस्तावित उपाय योजना.

१. धुळी चे उत्सर्जन कमी करण्यासाठी पाण्याचा शिडकाव करणारच आहेत.

२. अयस्काचे वहन खाणी पासून झाकलेल्या वाहनातूनच होईल.

ध्वनी:

ब्लास्टिंग जमिनी खाली १५ मी. वर होइल. ते करताना "ओवरचार्ज" करण्यात येणार नाही. ते फक्त दिवसाच होईल. ब्लास्टिंगची पद्धत महानिदेशक ,खान सुरक्षा यांच्या निर्देशा प्रमाणे असेल. कुठलेही स्फोटक लीज मध्ये साठवून ठेवण्याचा प्रस्ताव नाही कारण ब्लास्टिंगहे मान्याता प्राप्त ठेकेदारा कडूनच करणार आहेत.

शेजारी असलेल्या कालव्याची सुरक्षितता अबाधित राहील.

पाणी/जल:

कालव्यातील तसेच खाणी तील पाण्याची तपासणी करून त्याचा योग्य उपयोग करण्यात येईल.

खाणीच्या खड्ड्यातील आणि कालव्याच्या पाण्याची तुलना करून ते एकमेकात मिसळते आहे किंवा नाही ह्याची खात्री करणार आहे.

खड्ड्यातील पाणी धुळीच्या नियन्त्रणासाठी आणि झाडे लावण्यासाठीवा परणार आहेत.

खड्ड्यातील पाणी नहरात जाणार नाही याची खबरदारी घेण्यात येईल

कालव्याची सुरक्षितता :

ब्लास्टिंग जमिनी खाली असेल, कालवा जमिनी वर आहे. ब्लास्ट ने होणारे स्पंदन आडवे जाते. कालवा आणि लीज मध्ये टणक/हार्डदगड आहे. त्यामुळे बांध काम सुरक्षित राहील. कालव्याचे बांधकाम आहे तसेच राहील .प्रोजेक्ट प्रस्तावकाने कालव्याचे बांधकाम अबाधित राहीलयाची हमी घेतली आहे.

लीजच्या सभोवताल झाडे लावण्यात येणार आहेत. लीज मध्ये एक शेड, कामगारांसाठी रेस्टरूम , पक्के रस्ते इत्यादीं ची सोय करण्यात येणार आहे.

प्रोजेक्ट सुरूझाल्यावर एक सल्लागार नेमण्यात येणार आहे. तो पर्यावरणाची देख भाल करेल, सल्ला देईल आणि उपाययोजना करेल.

उपसंहार

प्रस्तावित उत्खनन प्रोजेक्ट राबवत असतांना पर्यावरणाची कोणतीही हानी न होता अयस्क काढणे शक्य आहे. लोकाना रोजगार मिळेल आणि प्रदूषण संभवत नाही.

हा प्रोजेक्ट वडेगावसाठी फायद्याचे राहील.