

EXECUTIVE SUMMARY

FOR

PUBLIC HEARING

OF

JUNAD EXPN. OC
(WANI NORTH AREA, WCL)

JANUARY - 2008

**CENTRAL MINING PLANNING & DESIGN ENGINEERING
INSTITUTE LTD.**

REGIONAL INSTITUTE – IV
KASTURBA NAGAR, JARIPATKA,
NAGPUR- 440014

INTRODUCTION

1 TYPE OF PROJECT

This is expansion of existing Junad Opencast with mine able reserve of 6.13 Mt and with maximum coal production target of 1.50 MTPA. The life of the mine is about 8 years.

2 NEED OF THE PROJECT

There is a substantial gap between demand and availability of coal for the mines of WCL as a whole. It is in national interest to open new mines/projects & to go for expansion of existing projects urgently so as to meet the requirement of coal for power and various other sectors.

The justification of this mine has been studied in the light of estimated demand for non-coking coal from power sector in Maharashtra and production forecast from existing, completed and ongoing projects of WCL.

3 LOCATION & COMMUNICATION

Junad OC Expn. mine is located in the Yavatmal district of Maharashtra state. It is bounded by Latitudes 20° 01' 05" to 20° 04' 10" N & Longitudes 79° 03' 09" to 79° 05' 00" E and falling in Survey of India Topo Sheet No. 55 P/4.

The existing mine is at a distance of about 140 km from Nagpur . However, the block is presently connected by a 3 km fair weather road with Aheri village which, in turn, is connected with Wani town towards North-West by a 19 km metalled road. The block may also be approached by a 3 km road from Ukni / Pimpalgaon project which is also being connected with Wani town via Bhalar village.

4 TOPOGRAPHY & DRAINAGE :-

The area of Junad Extension OC mine exhibits gently undulating topography. The general slope of the ground is from west to east. The elevation varies from 180 m to 195 m. The Wardha River flowing from north to south is the main drainage channel of the area.

5 CLIMATE :-

Junad block has extreme climate with temp. of 48° C during summer months and about 10° C during winter months . The average annual rainfall is about 1250 mm.

6 PRESENT LAND USE PATTERN :-

The entire land to be acquired for extension of the Junad OC project is covered by black cotton soil and is very fertile and is generally used for growing mainly the cash crops like cotton, sugarcane, chillies etc apart from standard agricultural products like rice , wheat & jawar. No village is falling in the proposed leasehold boundary of the project. All the land losers will be given compensation as per Company's norms.

7 SITE DESCRIPTION: -

The study area has been divided into two heads

- Core Zone
- Buffer Zone

a) Core zone:

The core zone consists of the mining leasehold area where mining and allied activities take place. The core zone comprises of 449.63 ha of land. The land usage is given below.

Sl. No	Land Particulars	Total Land
1.	Agricultural land	443.53 ha
2.	Waste Land (Govt. Land)	6.10 ha
3.	Forest Land	-
Total		449.63 ha

b) FEATURES IN BUFFER ZONE

Sl. No.	FEATURES	DETAILS	DISTANCE FROM MINE
1	Industries	Nil	Nil
2	Railway Lines	Wani Railway Siding	About 9.0 km
3	State Highway	State Highway No.- 84	About 5.0 km
4	Other Coal Mines	Ukni OC, Pimpalgaon OC, Kolar Pimpri OC	3.0 – 5.0 km
5	Water Bodies	Wardha River	125 m from mine boundary
6	Human Settlement	40 villages & WCL township within buffer zone	

8 JUSTIFICATION: -

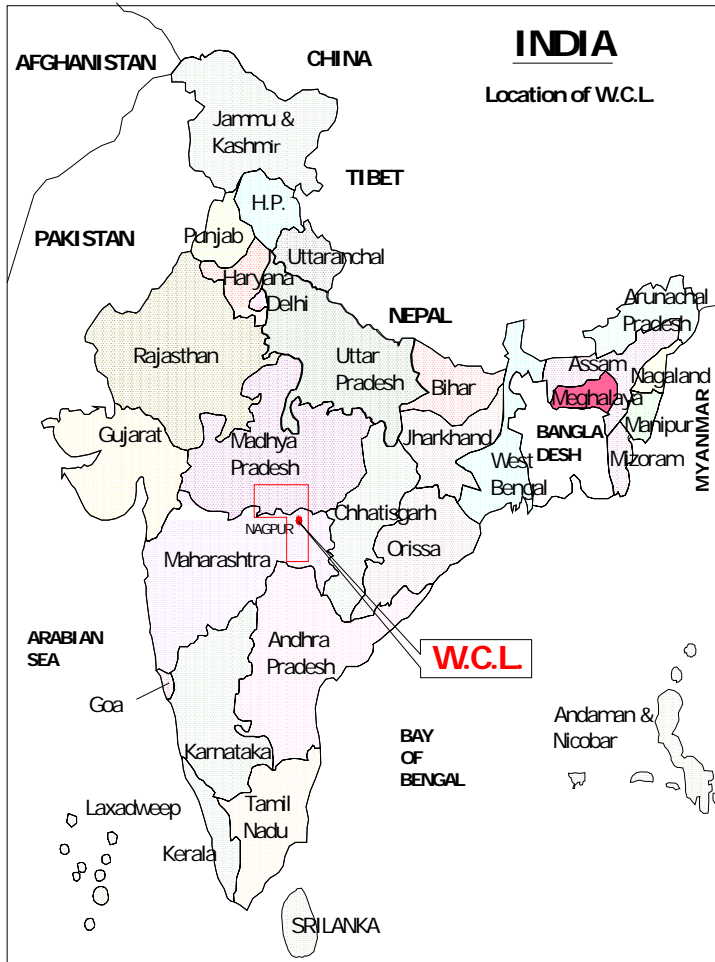
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9 SOURCES OF DATA

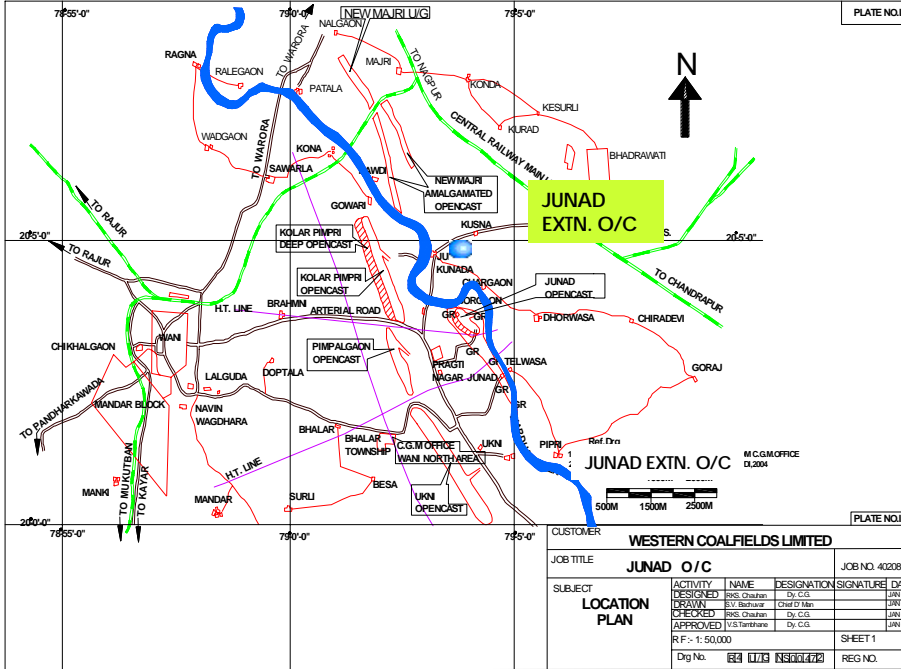
This report has been formulated using various data from the following sources:

Sl. No.	Type of Data	Sources
1	Mining and economic parameters and other miscellaneous data	CMPDIL and Wani North Area, WCL.
2	Environmental data including meteorological data, air quality, dust fall rate, water quality and noise level data.	Environmental-data generation for proposed Junad Extn. (Deep) OC of Wani North Area of WCL, Maharashtra carried out by CMPDI.
3	Socio-economic study & Land use/cover mapping buffer zone.	Census data 2001 & base line Socio - Economic survey.
4	Flora and fauna	Survey Report prepared by the competent authority in this field.
5	Surface hydrology and hydrogeology	CMPDIL, RI- IV, Nagpur.
6	Meteorological data	Environmental-data generation for Junad. Extn (Deep) OC of Wani North Area Maharashtra carried out by CMPDI.
7	Land use/cover mapping core zone.	As per State Govt. Record, data supplied by the concerned WCL area office.



LOCATION MAP OF WCL

LOCATION PLAN



10 GEOLOGY OF THE MINING BLOCK

The geological formation encountered in the present quarriable area are as follows :-

Formation	Thickness (m)		Lithology
	Minimum	Maximum	
Soil	3.00 (MWJ-24)	24.00 (MWJ-27)	Black clayey soil and sandy soil
Kamthis	6.00 (MWJ-37)	101.00 (MWJ-12)	Yellow, brown, red, yellowish white ferruginous sandstone, occasionally grey sandy shale/shale.
Barakar	12.78 (MWJ-20)	133.55 (MWJ-27)	Grey white medium to grey sandstone

11 GEOLOGICAL STRUCTURE

Only 3 faults viz. Fault F3-F3, F4-F4 and F5-F5 are intersected in quarry. The fault F3-F3 is minor in nature and throw is 5 m. The throw of F4-F4 & F5-F5 is 20 m towards NE and 40 m SW respectively.

GEO - MINING PARAMETERS

Sl. No.	Particulars	EXTENSION QUARRY
1.	FACE LENGTH (km)	
a)	On the floor of composite seam	1.15 – 1.28
b)	On surface	1.50 – 1.70
2.	DEPTH UPTO FLOOR OF COMPOSITE SEAM(m)	
a)	Initial	30 - 88
b)	Final	170
3.	WIDTH BELOW THE DECOALED VOID OF EXISTING OC (m)	
a)	On the floor of composite seam	250 - 325
b)	On surface	400 – 525
4.	AREA OF THE QUARRY (ha)	
a)	On the floor	35.20
b)	On surface	70.50
5.	GRADIENT OF SEAM	1 in 3
6.	GRADE OF SEAM (WITH 5 CM CONTAMINATION)	E
7.	U.H.V. (WITH 5 CM CONTAMINATION)	3822
8.	AVG. SEAM THICKNESS(m)	17
9.	NET MINEABLE RESERVES (Mt)	6.13
10.	Average stripping ratio (t:m ³)	1:8.26

The shovel dumper system of mining with horizontal slicing method is recommended for the proposed extension project with sump at the bottom-most horizon bench in the coal seam.

12 WASTE DISPOSAL & REHANDLING OF EXISTING OB DUMP

Two external OB dumps are proposed in dip side of the extended quarry beyond the major boundary Fault F1-F1 at a depth ranging from 350-400 m at the floor of coal seam. The main external OB dump No.1 lies exactly in the dip side of extended quarry from Aheri village in north to approach road for the project in south. The dump No.1 is proposed keeping safe distance from Pragati Nagar township, existing water pipeline, Wardha river and approach road to the project. External OB dump No.2 is located on other side of approach road.

In addition, about 10.33 Mm³ of OB already dumped by existing Junad OC in dip side of the quarry over coal bearing area where Junad Extension OCP is proposed also requires to be rehandled. The capacity of external OB dumps proposed is about 60.20 Mm³. Remaining 0.75 Mm³ of OB will be used is construction of safety embankment. The break up of OB quantities in external OB dumps is given in following table.

No.	Dump	Capacity in Mm ³		
		0-30m	30 -60m	Total
i)	Dump - 1	25.70	16.92	42.65
ii)	Dump - 2	5.80	2.17	17.55
Total				60.20

The entire extension quarry which is 50.62 M.Cu.m. of existing Junad OC mine is dumped in dump no. 1 and 2 . About 10.33 M.Cu.m. of OB to be rehandled will also be dumped in dump no.2 (9.58 M.Cu.m.) and also used for construction of embankment(0.75 M.Cu.m.).

The external dumps have two benches each of 30m height and final angle of slope is proposed to be kept at maximum 28°.

A small coal handling plant is already in operation, installed at Pimpalgaon project (about 5 km away) for Junad OCP. The same CHP will cater to the needs of Junad Extension OC.

The CHP has facilities For crushing of coal to (-)200 mm size .The crushed coal is being loaded in trucks by pay loader and transported to Wani Siding for rail despatch.

Break up is given below .

Sl. No.	Particulars	Land already acquired in existing Junad OC Mine	Land to be acquired under proposed Junad Extn. OC Mine	Total
1.	Agricultural Land		269.25 ha*	
2.	Waste Land (Govt. Land)	174.28 ha	6.10ha	449.63 ha
3.	Forest Land	NIL	NIL	NIL
	TOTAL	174.28 ha	275.35 ha	449.63 ha

* This 269.25ha of land to be acquired includes 5.20 ha of land of Kolar pimpri extn oc and 13.85 ha of acquired land by existing pimpalgaon oc project. Both the projects are adjacent to Junad extension oc mine.

{Source of Data: - Sanctioned Project Report}

Changes of Land Use during Mining:

Sl. No.	Particulars	Area (ha)
1	Quarry Area	101.70
2	External OB Dump	175.00
3	Infrastructure including approach road etc.	15.00
4	Diversion of Nala	00.00
5	Embankment	20.00
6	Area needed for rationalization & safe blasting zone	137.93
	TOTAL	449.63

**The Plantation programme will be as follows
(considering 2500 Plants/ha) :**

(Area figures are in ha)

Sl. No.	Particulars	Ext.OB Dump	Backfilled Area	Vacant Land	Total
		Area Nos. (Ha)	Area Nos. (Ha)	Area Nos. (Ha)	Area Nos. (Ha)
1.	At the end of 5 th Yr.	140.00 350000	- -	-	140.00 350000
2.	At the end of 10 th Yr & end of mine life	175.00 437500	- -	20 50000	195 487500

The post-mining scenario can be summarized as below :

Sl. No	Particulars	Plantation	Void	Public Use	Undisturbed	Total
1.	External OB Dump	175.00	-	-	-	175.00
2.	Excavation		101.70	-	-	101.70
3.	Infrastructure	3.00	-	7.00-	-	10.00
4.	Diversion of/ Roads/ nalla/ Embankment	17.00	-	8.00	-	25.00
5.	Rationalisation of Mine boundary & Blasting zone	-	-	-	137.93	137.93
	Total		195.00	101.70	15.00	137.93 449.63

13 ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

AIR POLLUTION IMPACT ASSESSMENT

The impact assessment has been carried out dealing with the following points:

- (a) Phase-wise inventory of air pollution emission sources
- (b) Impact assessment

a. **Phase-wise inventory of air pollution emission sources**

The pollution sources are obvious and to assess the impact, the project life is divided into following time frames:

- Operation phase
- Post-operational stage

The activities associated with these time frames and having impact on the ambient air quality along with the pollutants are enumerated in the following sections:

✿ **Operational phase**

During this phase, activities necessary for mining of coal, its handling and transport are taken up. Such activities having impact on ambient air quality are detailed below:

- (i) Drilling : Dust
- (ii) Blasting of coal and overburden : Dust and noxious gases
- (iii) Handling of coal : Dust and noxious gases
- (iv) Overburden handling : Dust and noxious gases
- (v) Dump formation (internal) : Dust and exhaust fumes from dumpers and dust till the development of green cover
- (vi) Movement of vehicles : Dust and noxious fumes

✿ **Post-operational stage**

During this stage of the project, the activities related to the closure of mine are to be carried out. Preparation of mine closure plan shall be carried out during the period four to five years before the closure of the mine. Some of the activities for the closure are:

Modifications in physical and biological reclamation of backfilled area

- Salvaging and shifting operation of HEMMs and other equipment
- Clearing of coal and other materials, restoration of infrastructure area & colony area to the extent possible and necessary if not useful for other projects
- Management of hydrology and hydrogeology.
- Redeployment of workforce, etc.
- Arrangement & implementation of post-operation monitoring mainly keeping watch, vigil, etc.

The activities having impact on the ambient air quality are enumerated below:

- (i) Movement of HEMMs for physical : Dust and obnoxious
reclamation of backfilled area fumes
- (ii) Movement of vehicles for shifting and : Dust and obnoxious
salvaging operation of HEMMs and other fumes
equipment
- (iii) Movement of vehicles for clearing of coal : Dust and obnoxious
and other materials gases

b. Impact assessment

The mining and its related activities create ambient air pollution. The impact of mining on ambient air quality are highlighted in the following paragraphs:

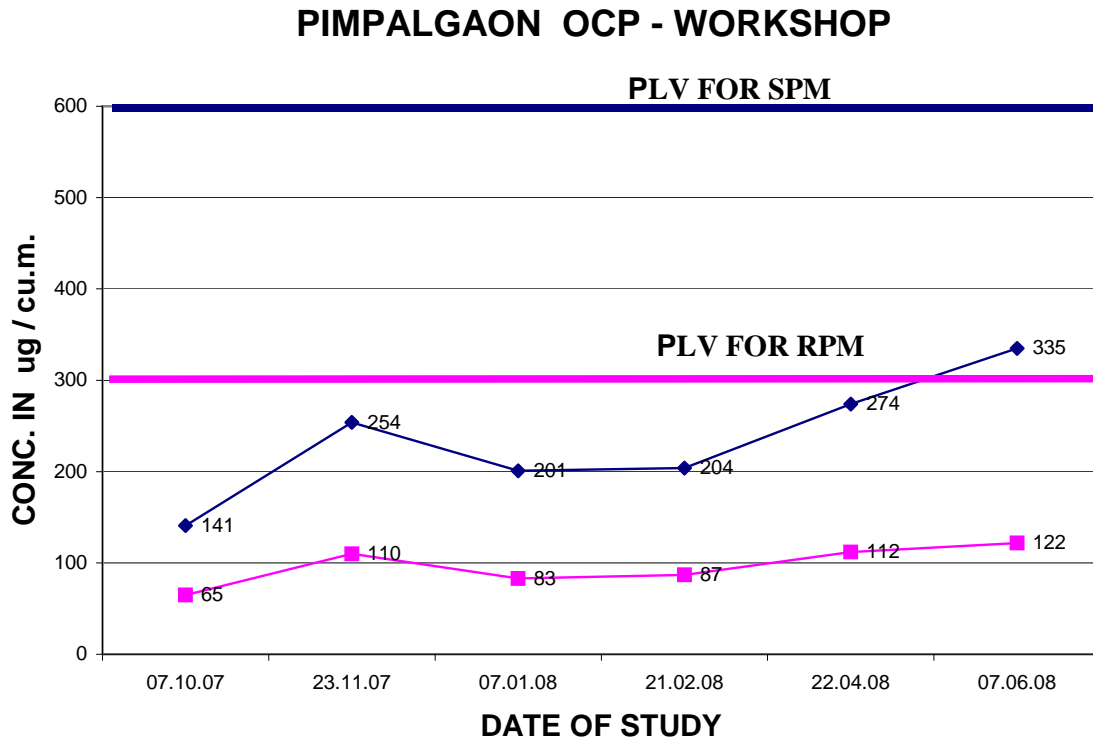
(a) The ambient air quality is influenced due to the presence of RPM, SPM, SO₂, NO_x, etc., which are generated due to various activities like drilling, blasting and handling related to the project. Further, the ambient air quality is affected marginally to a varying degree due to the mining activities of other nearby opencast and underground coal mines of the same coalfield. The concentration of pollutants may vary depending upon the various micro-meteorological parameters and the seasons of a year.

(b) The baseline ambient air quality has been generated at five locations surrounding the proposed site of Junad OC to assess the present ambient air quality scenario corresponding to the pre-mining status of the proposed project. The details of baseline data have been given in previous chapter. All the monitored parameters are well below the permissible limit. Thus it can be concluded that although the mine under consideration is operating since long but ambient air quality in the surrounding area has not been affected adversely.

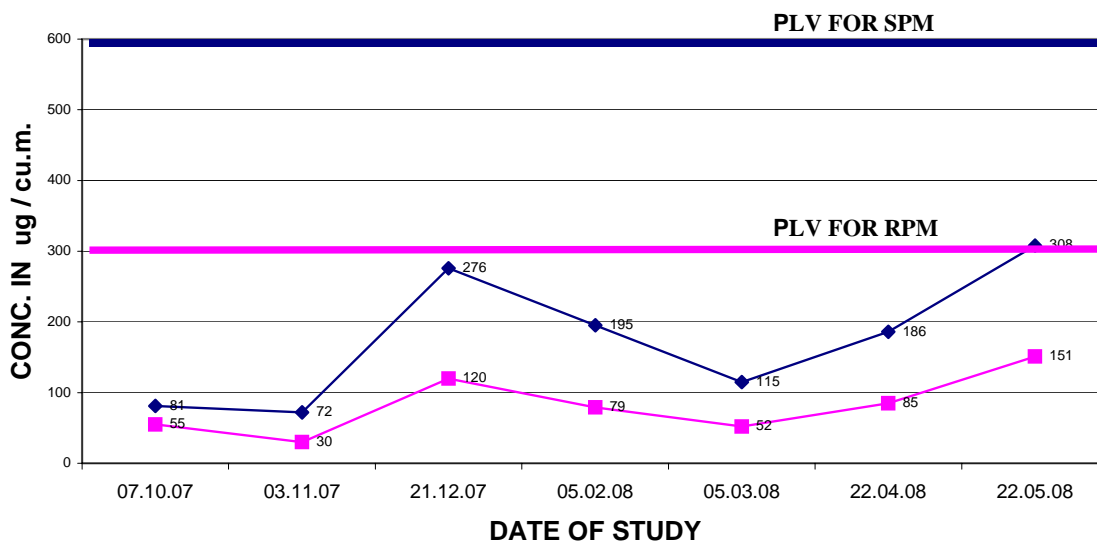
Now, with the start of the proposed expansion project, there is likelihood of addition of pollution to the existing concentration level of different attributes of ambient air. Efforts will be made by implementation of proper abatement measures so as to maintain the sinking capacity of ambient air to absorb the additional load, if any, thereby maintaining the quality of ambient air to the pre-mining level to the extent possible.

(c) Now in order to assess the likely contribution of pollution due to proposed expansion mining activities, air quality data of mine activity area of Pimpalgaon OCP have been considered to prove the fact that an operating mine with same production capacity of proposed expansion project, generates pollution load, even in dry season, well below the limit values, so the pollution load from proposed project will be much much less.

(d) Further, as per TOR received from MOEF, AAQ Prediction modeling has been done with ISCT – 3 and it has been found that there will be insignificant increase in the level of pollutants as such there will be negligible impact on the Ambient air quality due to proposed expansion of the mine.



PIMPALGAON OCP - SAM OFFICE



Hence, it is expected that pollution load to be generated due to increase production at Junad OC will be well within the permissible limit as the existing air pollution control measures will be further strengthened with close monitoring for efficient & effective implementation of the pollution control measures to make the operation eco-friendly and it is expected that ambient air quality will have no harmful effect on human being, flora and fauna, soil quality, surface structures and aesthetic value of the surrounding environment.

14 AIR POLLUTION CONTROL MEASURES

Since Junad OC is an operating mine, the environmental monitoring data generation is being done at four locations on regular basis as per the Env (Protection) Amendment Rule published Vide Gazette of dated 25.9.2000. In addition to data generation, following abatement measures have also been taken in order to suppress the dust and noxious gases generation to the maximum possible extent.

14-1 Drilling Operations

In order to reduce dust generated by drilling operation wet drilling is done.

14.2 Blasting Operation

In order to minimize the generation of dust during blasting, the following measures are adopted:

- (a) Blast holes are properly placed/spaced/positioned.
- (b) Blast is properly designed in respect of hole-spacing. Hole placing and blast design are looked into as a fresh case every time, by a competent Blasting Officer who takes into consideration the actual geo-mining conditions of the site.
- (c) Blasting is being done between shifts or during the rest interval when the minimum number of persons is present around the blast area. In order to quickly disperse the dust generated in blasting operations, blasting is avoided when there is wind. Blasting is avoided in the mornings and during cloudy situations.
- (d) Adaptation of Controlled Blasting Technique as permitted by DGMS.

14.3 Loading & Transport

Movement of vehicles and HEMM on haul roads, particularly when they are unmetalled, is another major source of dust generation. To minimize dust generation due to this operation, the following abatement measures will be taken.

- (a) All long-life haul roads and service roads are properly constructed and metalled. Unmetalled roads are being kept free of ruts, potholes etc.
- (b) All haul-roads are regularly sprayed with water. Water sprinklers are regularly used in the project.
- (c) Overloading of vehicles are avoided.
- (d) Covering of loaded trucks by tarpauline.
- (e) Regular cleaning of transportation roads.
- (f) Adequate green belt have been developed all along the coal transportation road on both sides.

All the above-mentioned control measures will be continued during the balance life of the project.

14.4 OB Dumps

On the dump slopes and top surface, plantation of grass and trees will be done in phases and the details are as follows :-

The Plantation programme will be as follows
(considering 2500 Plants/ha) :

(Area figures are in ha)

Sl. No.	Particulars	Ext.OB Dump	Backfilled Area	Vacant Land	Total
		Area Nos. (Ha)	Area Nos. (Ha)	Area Nos. (Ha)	Area Nos. (Ha)
1.	At the end of 5 th Yr.	140.00	350000	-	140.00 350000
2.	At the end of 10 th Yr & end of mine life	175.00	437500	20 50000	195 487500

15 Coal Handling Plant

Lot of dust is generated in coal handling plant during operations like coal crushing, transfer and conveying. Following abatement measures are adopted for Coal Handling Plant.

- i) Enclosure of the crusher house where maximum dust is generated. Also installation of dust suppression system in the crusher house (specially above the hopper in such a way that air borne dust is suppressed without adding much water to the coal).
- ii) Minimising the height of coal-fall at transfer points (to reduce dust formation) and, if necessary, installing dust suppression measures.
- iii) Enclosure of the belt conveyor to reduce the generation of dust due to blowing wind.
- iv) Creation of a green belt on both sides of belt conveyors and around coal stocks and the CHP building.

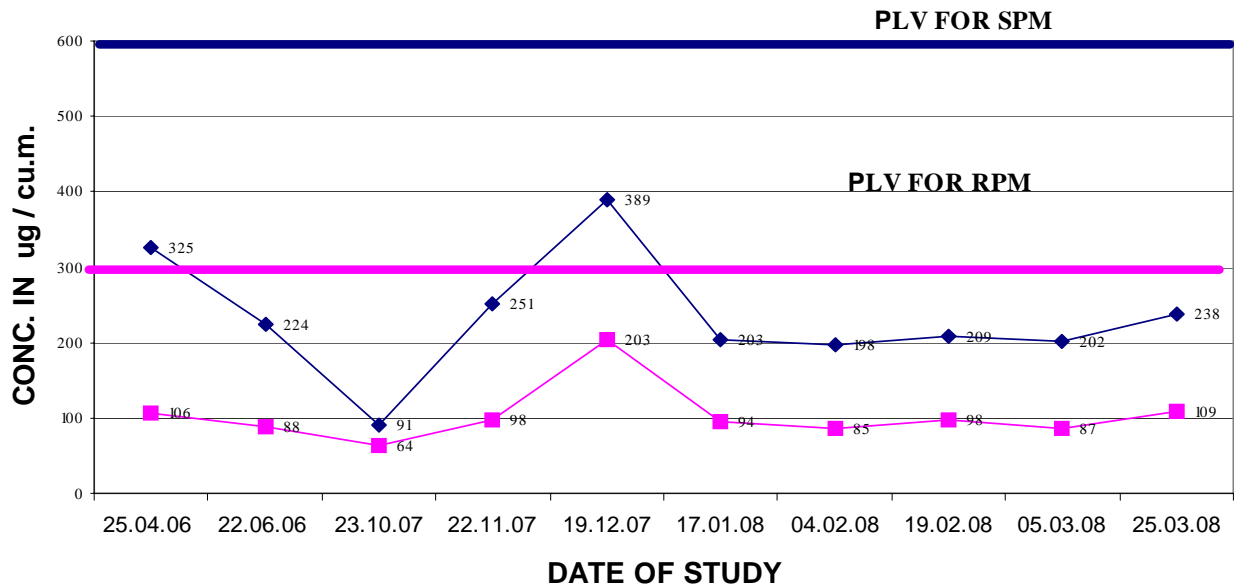
Noxious gasses are emitted through exhaust fumes during the operation of diesel / petrol operated equipment. In order to reduce such emission, regular maintenance of the diesel / petrol operated vehicles will also be carried out so that the emissions from these vehicles are under control. However, wherever, the condition will permit, petrol / diesel operated HEMM will be replaced by electrically operated ones.

Water sprinkling on coal stock/face, blanketing of exposed surface will be carried out to avoid spontaneous heating and minimize air pollution.

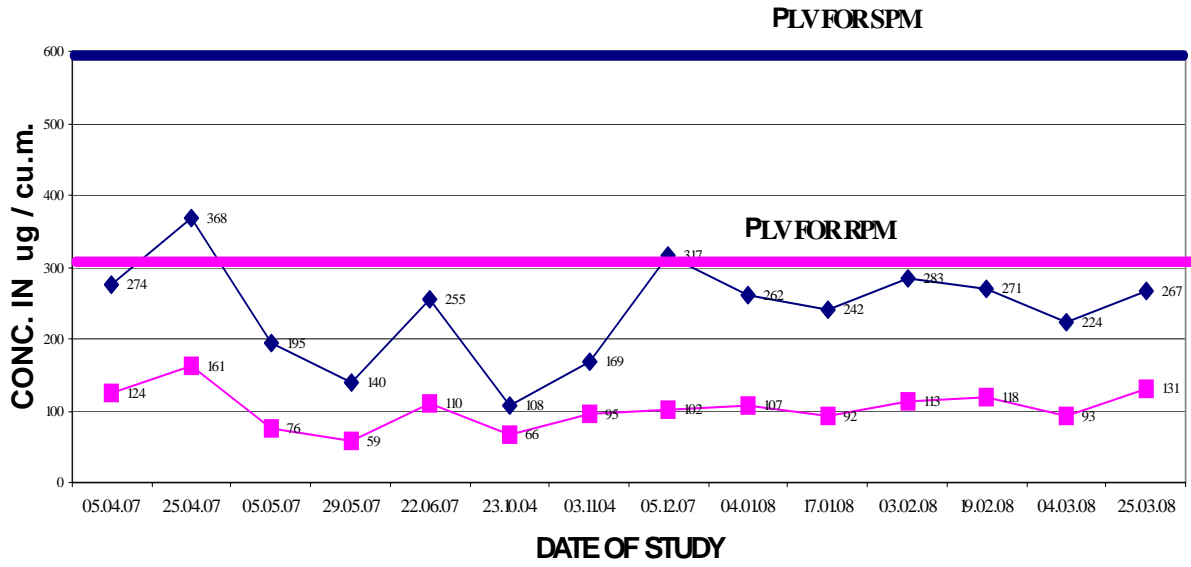
16 Ambient Air Quality Monitoring

The ambient air quality monitoring is being carried out on regular basis as per the Env (Protection) Amendment Rule, 2000 so as to ascertain the likely load of various air pollutants and thereby suitably modifying the various control measures.

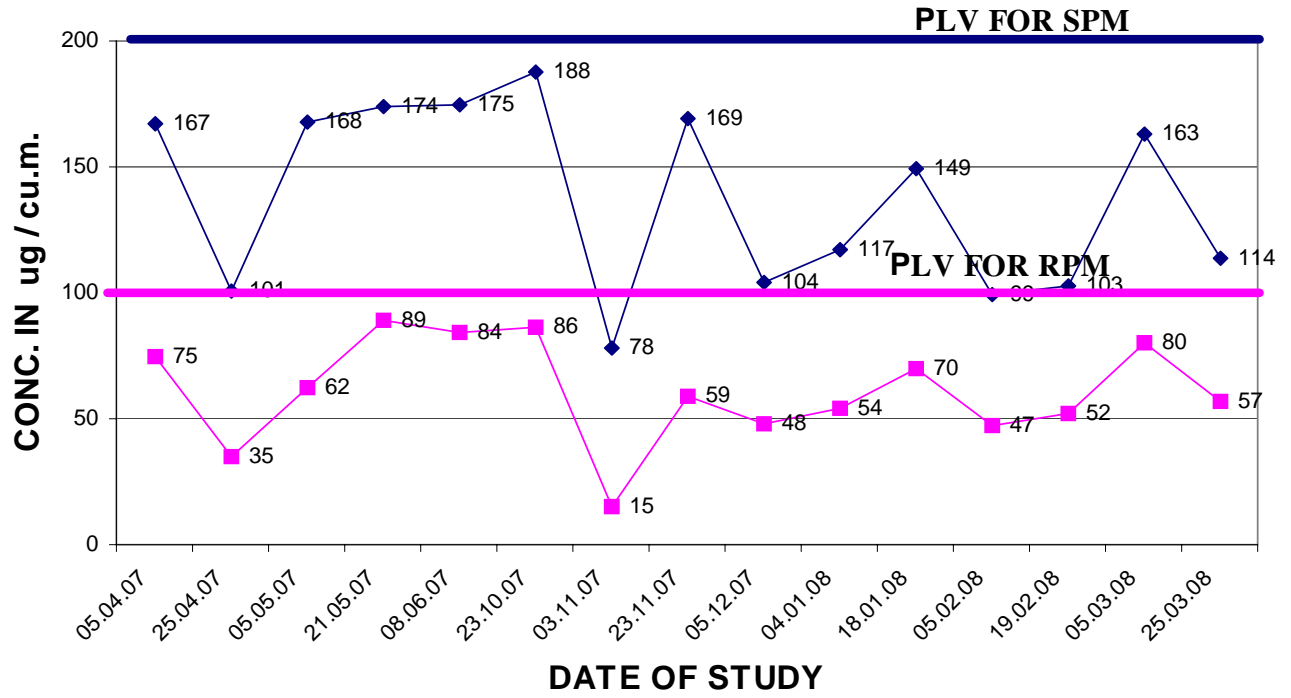
JUNAD OC - SAM OFFICE



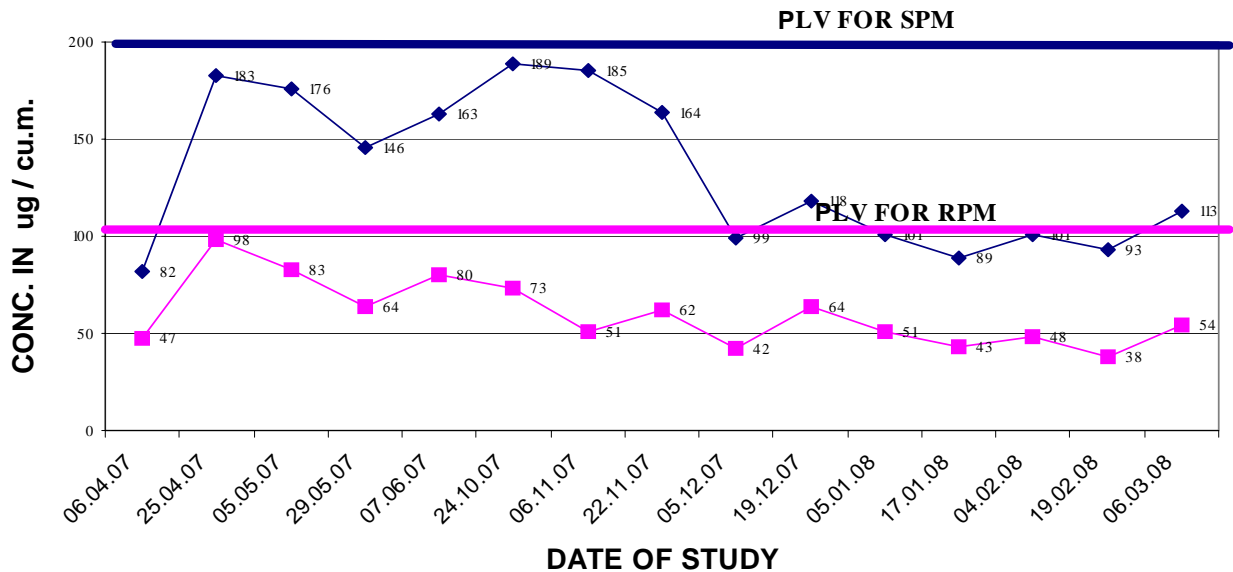
JUNAD OC - NEAR SUBSTATION



JUNAD OC - BHALAR TOWNSHIP



JUNAD OCP - BORGAON VILLAGE



It may be seen from the above results that all parameters are within the permissible limits.

17 Plantation to Check Air Pollution

Plantation has been under taken in the mine area as mitigatives measure against air pollution, noise pollution and to increase the aesthetic value. The plantation will be developed at suitable places like overburden dump, along the road sides, unused land etc to arrest as well as reduce the rate of dispersion of dust generated due to various mining operations viz. quarrying, coal and OB transportation, OB dumping, CHP operation. Species to be planted (recommended by Forest Department) in the area are as follow.

a) Ornamental trees viz Gulmohar, Eucalyptus and fruit trees like Mango, Guava, Jamun and medicinal plant like Neem etc. will be planted in colony area, schools, dispensary, community buildings, play ground etc.

b) Ornamental shady trees will be planted e.g. around colony along roads, haul roads, and around industrial buildings etc.

c) The fast growing varieties of trees like Eucalyptus act as sound barriers where as ornamental shady trees e.g. Subabul, Kikar and karanj will add to the aesthetic look of the area.

d) The Species to be planted on OB dumps etc are: Gravalia, Robusia, Punis, Vanetis, Semal, Karanj, Babul, etc

59,325 nos. of plants on embankment, vacant land & along coal transportation road.

a. WATER QUALITY

Impact Assessment on Water

Identification of the sources of water pollution

Likely sources of water pollution from this project along with the type of pollutants are as follows:

- (i) Sanitary (domestic) wastewater : Suspended solids and BOD.
- (ii) Industrial wastewater from workshop : Suspended solids, oil & grease;
- (iii) Wastewater from mine : Suspended solids of coal, clay and oil;
- (iv) Surface run-off passing through coal stockpiles : Suspended solids;
- (v) Storm water from leasehold area and built-up area : Suspended solids.

✿ **Impact assessment**

Mining and its related activities may create water quality problems. The impact of mining at the project on both surface and ground water sources has been assessed and given below:

(a) Surface water sources

- Deterioration of water quality and pollution of water bodies due to discharge of mine effluent, if not treated. Change in relief pattern due to mining may cause flooding, siltation, choking and pollution. Mitigatory measures would involve provision of (i) garland drains on periphery to prevent surface run-off from entering into the quarry , (ii) catch drain around the dumps for avoiding siltation and (iii) sedimentation ponds for reducing the pollution of surface water bodies.
- Possible overflow of water from nearby rivers/nallahs must be safeguarded by stone pitching and strengthening the embankment along the side of the water course

- In order to assess the existing quality of surface as well as ground water quality surrounding the project site, water samples from five locations have been collected & analysed. The details are incorporated in the previous chapter. All the parameters are well within the permissible limit.
- The mine water discharge quality of existing opencast project is being monitored regularly as per Env. (Protection) Amendment Rule, 2000. The result indicates that even in untreated condition mine pumped out water does not contain any pollution load.
- However, due care will be taken to treat the mine water discharge by sedimentation for the proposed project. Effluents from workshop is continue to be treated in ETP and moreover water will be mostly recycled in Workshop & CHP. As such, possibility of adverse impact on natural watercourses after mixing is very remote.
Garland drain around the OB dump & coal dump will be made to avoid siltation of natural water course.

Based on the data collected at similar coal mine, it can be concluded that the impact due to proposed mining operation, the adverse impacts on water both surface as well as ground water will be insignificant.

18 WATER POLLUTION CONTROL MEASURES

Salient controls measures have been taken are as follows:

i) Industrial Effluent

The wastewater from workshop and CHP, which normally remain laden with oil and grease, suspended and dissolved solids etc. are treated in the Effluent Treatment Plant (ETP). Clear water coming out from the treatment plant is taken into the closed water circuit and recycled for its reuse. All parameter of ETP waste discharge are monitored regularly as per Env. (Protection) Amendment Rule, 2000 and found to be within permissible limits.

ii) Mine Water

Most of the suspended particles are settled in the mine sump as initial settlement and the supernatant water is pumped out. This water is passed through sedimentation pond on surface, before being discharged in to natural drain.

iii) Surface Run-off

Adequate numbers of vegetation will be grown on the top surface and slopes of the dumps in order to arrest the erosion of soil and it also reduces surface run-off, which helps averting siltation of natural watercourses.

Catch drains of suitable size have been provided around periphery of the OB dump as well as soil dumps to arrest site and sediment flows from the respective dump sites.

In case of OB benches in the quarry, cross drainage have been provided which carries silt and sediments into main sump made at the floor of the seam which will accumulate all the silts and act as first stage settling pond. The water is then pumped out through pumps on to the surface and discharged in to surface settling tank/sedimentation pond. The clear water from the surface sedimentation tank is used for watering the mine area, roads and green belt development. The catch drains mentioned above are regularly desilted and maintained properly. In addition, garland drains have also been provided around the periphery of the excavated area, which carries surface run off and the drains are regularly desilted before onset of monsoon. These drains allows accumulation of silt materials and sufficient retention time for settling of silt materials.

The domestic sewage disposal arrangement has been provided in the township. Regular water quality/effluent quality monitoring is also carried out so as to ascertain the likely load of pollutants and thereby suitably modifying the control measures.

The existing water pollution control measures can be summarized as below :-

EXISTING WATER POLLUTION CONTROL MEASURES

☐ MINE WATER :- TWO STAGE SEDIMENTATION

✓ **INITIAL SEDIMENTATION - AT MINE SUMP**

(SIZE- 800mX60mX4m)

✓ **FINAL SEDIMENTATION - SEDIMENTATION POND AT SURFACE (SIZE- 24mX8mX1.5m)**

☐ INDUSTRIAL / WORKSHOP EFFLUENT:

✓ **WORKSHOP EFFLUENT IS BEING TREATED IN WORKSHOP ETP .**

☐ DOMESTIC EFFLUENT:

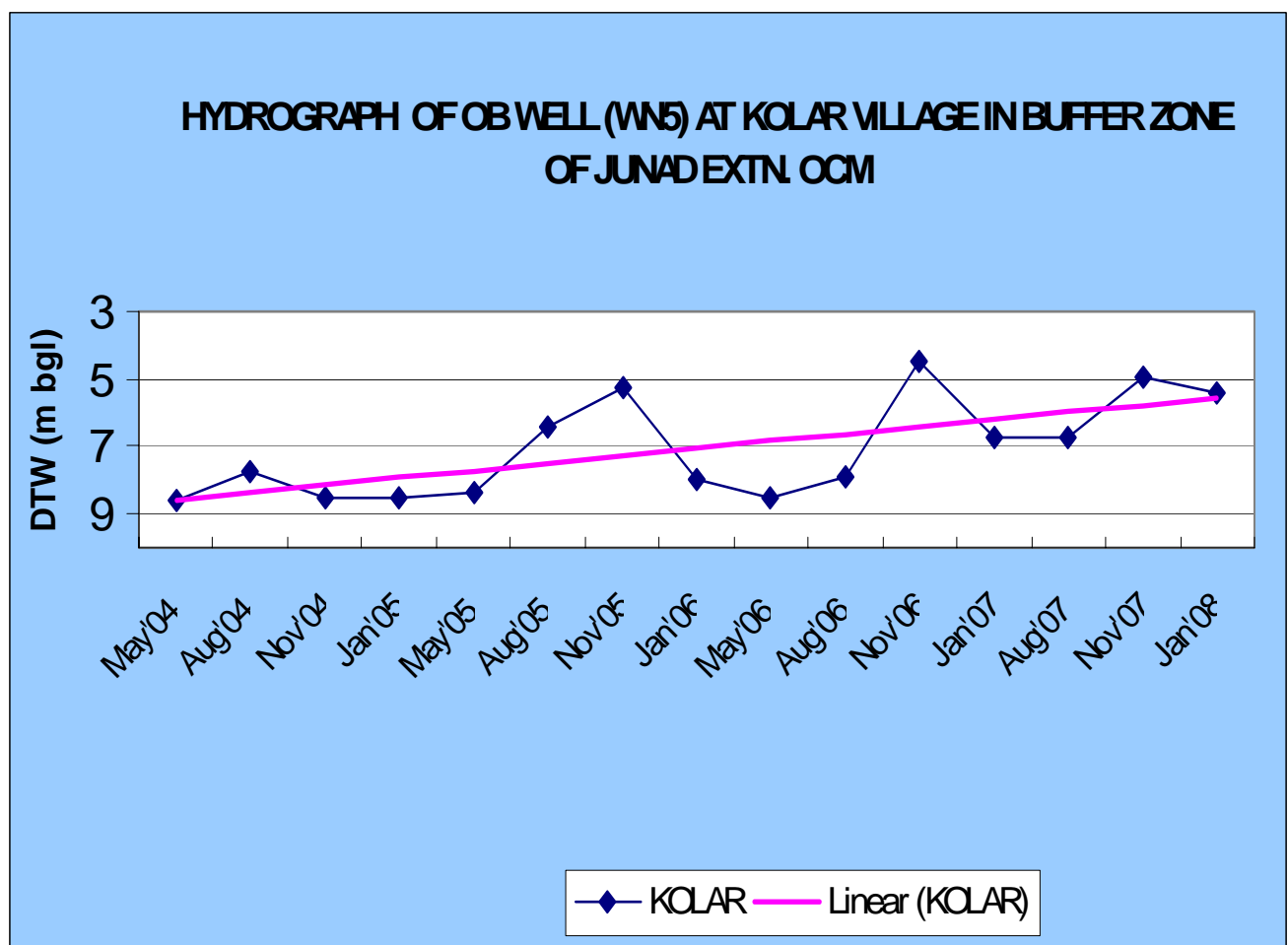
✓ **THERE IS ONE INTEGRATED DOMESTIC EFFLUENT TREATMENT PLANT AT COMBINED TOWNSHIP(0.6MLD) AT BHALAR.**

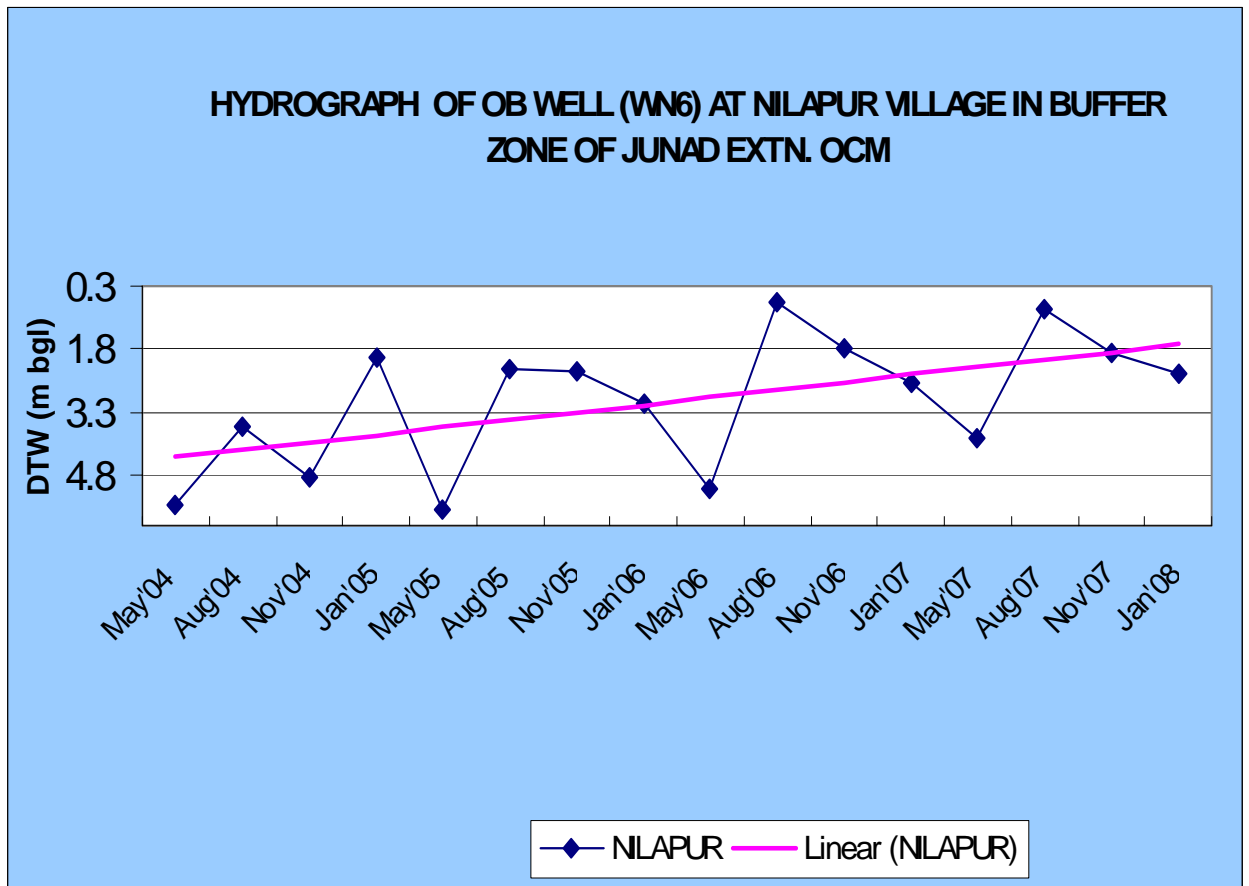
In addition to the above, provision have also been made for augmentation/ strengthening of existing sedimentation pond as well as Workshop Effluent Treatment Plant.

19 IMPACT ON HYDRO-GEOLOGICAL REGIME

The projections on ground water inflow to the mine and the mine influence on ground water table for the final stage of the quarry. Therefore, change in mine production during intermittent stage will not effect the assessment except for some local variation within the predicted influence area.

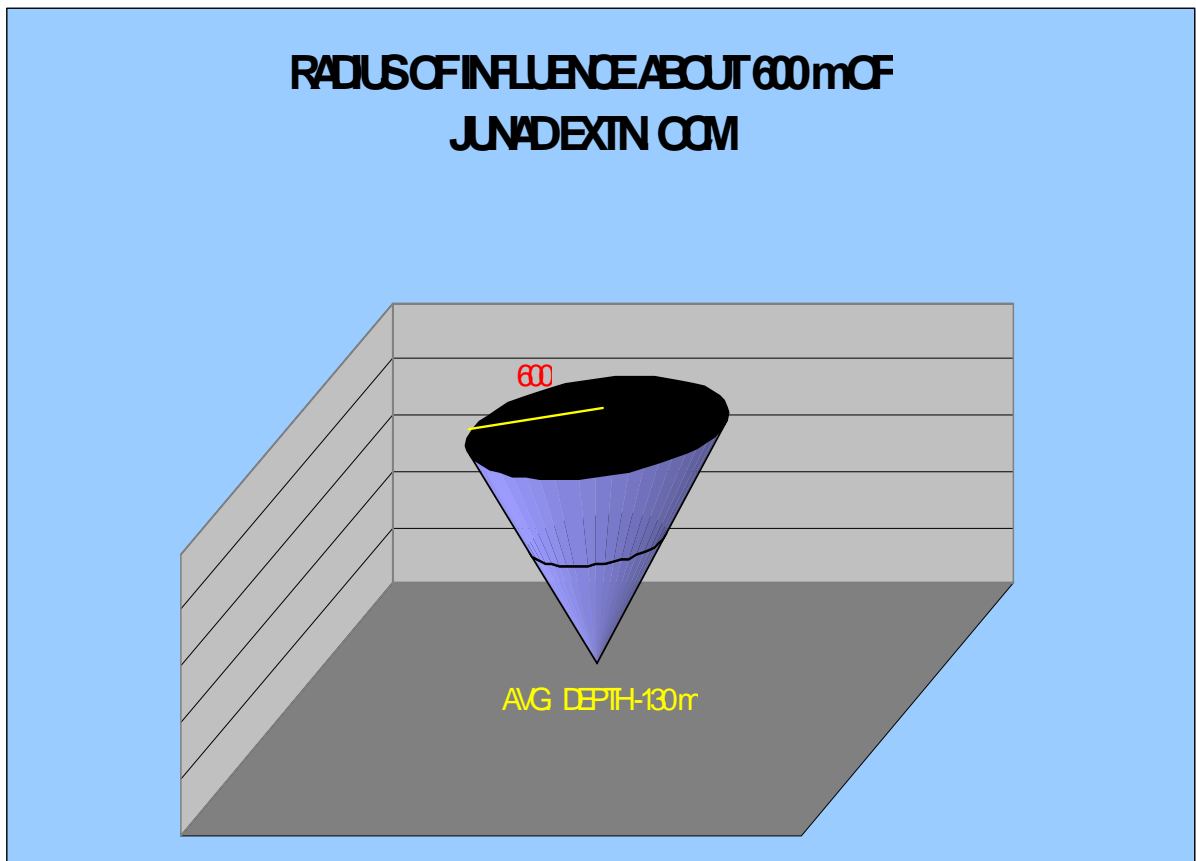
The monitoring of ground water level is being carried out regularly and results are shown below.





It can be inferred from the above graphs that the ground water level has not been affected adversely in the surrounding area due to ongoing mining activities.

The radius of influence has been calculated as below :-



20 Remedial measures to control ground water depletion

The following methodology and remedial measures will be taken to minimize the mine-induced impact on ground water levels and also adverse effects in the area.

- (i) Artificial recharge to ground water system at the periphery of the anticipated influence area by local stagnation in low lying areas/drains by providing low height dams/bunds or by injection of mine water discharge. Surface water through tubewells /percolation structures.
- (ii) The water shortage in the villages, if any, in the influence area can be supplemented by supply of water from outside source or from the mine water after treatment.
- (iii) While reclamation of the mined area, void at the deepest portion of the pit has to be left. This residual pit void would initially serve as access for future expansion and subsequently it could be backfilled.
- (iv) Regular well water monitoring in nearby villages will be carried out quarterly as per MOEF's guidelines.

21 NOISE QUALITY

In order to assess the existing ambient noise level in the surrounding of proposed project site corresponding to pre-mining scenario ,baseline noise level data has been generated & details are enclosed as Annexure – III. All the values are well within the permissible limit.

Proposed mine would be associated with following activities that may generate noise during operation :

- (a) Drilling
- (b) Blasting
- (c) Shovel operation
- (d) Dozing
- (e) Movement of dumper
- (f) Operation of CHP / Workshop

22 NOISE POLLUTION CONTROL MEASURES

Monitoring of the noise control will be carried out on regular basis as per the Env (Protection) Amendment Rule 2000. While planning for an effective noise attenuation measures, the concept of source, path and receiver has been considered.

(A) Noise Control at Source

There are two areas where the noise generation can be checked at source.

(i) Proper Design

Since the generation of noise can be reduced by reducing the vibration amplitude, the area of vibrating part and frequency of vibration will be taken care that all loose contact between metal parts avoided.

Shock absorbing pads will be fixed in the foundation of vibrating equipment / machines. In case of aerodynamic noise producing sources, mufflers will be provided with the machines.

(ii) Proper Maintenance

All machines and equipment will be properly maintained. Sound muffler system and bearing lubricating system etc. of equipment will be kept in proper condition.

(B) Noise control in Transmission Path

The measures are to be taken for control of noise along the transmission path have been put in following two categories:

- (i) Air borne path
- (ii) Ground borne path

(i) Air Borne Path

The control in air – borne path has been planned in a number of ways as:

- (a) The crusher house, screen house etc., which are source of high level noise generation are to be enclosed.
- (b) Planting of furrows of trees along the thick foliage around the compound and wall of CHP, workshop and other industrial buildings. This will reduce the spread of noise. It can be also used as an acoustic enclosure to reduce ambient noise.

(ii) Ground Borne Path

It has been proposed to provide vibration isolators in the form of vibration absorbing pads placed at the base of vibrating equipment.

(C) Noise Control at Receiver End

Even after adopting above measures, if desired noise level is not achieved at receiver end, in that case, following measures are suggested:

- (a) The workers exposed to high noise level are provided with earplugs.
- (b) Provision of enclosed booths at the worksite to protect worker from noisy environment.

LAND USE (CORE ZONE)(contd.)

SL. NO	PARTICULARS	LAND ALREADY ACQUIRED	LAND TO BE ACQUIRED	TOTAL
1.	AGRICULTURAL LAND	174.28 ha	269.25 ha	443.53 ha
2.	GOVT. LAND (WASTE LAND)	--	6.10 ha	6.10 ha
3.	FOREST LAND	NIL	NIL	NIL
TOTAL		174.28 ha	275.35 ha	449.63 ha

The during-mining land use is as follows: -

CHANGE IN LAND USE DURING MINING

SL. NO.	PARTICULARS	AREA (ha)
1	QUARRY AREA	101.70
2	EXT. OB DUMP	175.00
3	INFRASTRUCTURE INCLUDING APPROACH ROAD ETC.	15.00
4	EMBANKMENT	20.00
5	BLASTING ZONE	70.50
6	RATIONALISATION AREA	67.43
	TOTAL	449.63

24 LAND RECLAMATION / LAND MANAGEMENT

The following activities have been proposed for reclamation of land.

1. Backfilling of the excavated area to the extent possible.
2. Leveling of the backfilled area and carpeting with the topsoil.
3. Creation of garland drains in order to arrest the silt load, due to erosion, to enter into natural watercourses during surface run-off.
4. Grass, legumes and different types of plants etc. will be planted on such reclaimed land in order to make it, as far as possible, conducive to agricultural growth.
5. Technical and biological reclamation of external OB dump.

The density of trees is around 2000 – 2500 plants/Ha.

SOLID WASTE MANAGEMENT (PROPOSED)

SL. NO.	PARTICULARS	DISPOSAL OF SOLID WASTE (M.Cu.m.)		
		EXTERNAL OB DUMP	EMBANKMENT	TOTAL
1.	SOLID WASTE (OVER BURDEN)	60.20	0.75	60.95

EXISTING STATUS OF OB REMOVAL –

- i. OB REMOVED – 15.0 M.Cu.m.**
- ii. OB IN EXTERNAL DUMP – 14.50 M.Cu.m.**
- iii. OB IN EMBANKMENT - 0.50 M.Cu.m.**

Points for reclamation of void of Junad OC Extn. mine

- i. Due to steep gradient and in order to maintain proper haul road of 1 in 16 gradient it will not be possible for backfilling of the void in the present proposal.
- ii. In order to backfill the void of Junad Extn. OC to the extent of –35 m it is proposed that the OB of adjacent Pimpalgaon Extn. OC could be utilized.
- iii. The approx. quantity of OB of proposed Pimpalgaon Extn. OC is 200 M.Cu.m. and is at a distance of about 5 k.m.
- iv. This will simultaneously help in reduction of land required for external OB dump of proposed Pimpalgaon Extn. OC.

END OF MINING SCENARIO (AREA IN ha)

SL. NO.	PARTICULARS	PLANTATION	VOID	PUBLIC USE	UNDIST-URBED AREA	TOTAL
1	EXTERNAL OB DUMP	175.0	-	-	-	175.0
2	EXCAVATION	-	101.70	-	-	101.70
3	INFRASTRUCTURE	3.0	-	7.0	-	10.0
4	DIVERSION OF ROAD / EMBANKMENT	17.0	-	8.0	-	25.0
5	RATIONALISATION OF MINE BOUNDARY & BLASTING ZONE	-	-	-	137.93	137.93
	TOTAL	195.0	101.70	15.0	137.93	449.63

25 PROGRESSIVE & FINAL MINE CLOSURE PLAN

A. OBJECTIVES OF CLOSURE PLANNING

Mine closure planning has to be carried out at the starting of the mine and needs periodic reviewing and revision during its life cycle to cope with the geo-technical constraints, safety and economic risks, social and environmental challenges. Various other objectives are as follows:

- (a) To allow a productive and sustainable after-use of the site which is acceptable to the mine owner and the regulatory authority;
- (b) To protect public health and safety;
- (c) To alleviate or eliminate environmental damage and thereby encourage environmental sustainability;
- (d) To minimize adverse socio-economic impacts.

B. DIFFERENT ASPECTS OF MINE CLOSURE PLANNING

The mine closure planning broadly involves the following aspects:

- (a) Technical aspects;
- (b) Environmental aspects
- (c) Social aspects;
- (d) Financial aspects.

C. MINE CLOSURE OBLIGATIONS

There is need to define the liabilities, responsibilities and authorities of the mine management, other regulatory bodies, Central and State Governments after mine closure. Some obligations relating to the Mine Management Companies are as follows:

- (a) **Health & Safety:** Regulation Nos. 6, 61, 106, 112 of Coal Mines Regulations, 1957 and its related DGMS Circulars;
- (b) **Environment**
 - (i) Water (Prevention & Control of Pollution) Act, 1974;
 - (ii) Air (Prevention & Control of Pollution) Act, 1981;
 - (iii) Environmental (Protection) Act, 1986 and Environmental Protection (Amendment) Rule , 2000;
 - (iii) DGMS Directives on Noise & Ground Vibration;
- (c) **Forest** : Forest (Conservation) Act, 1980 – Not applicable in this case.
- (d) **Rehabilitation** : **As per Company Policy.**
- (e) Decommissioning/asset disposal, etc.

F. CLOSURE COSTS

A financial provision of Rs. 1.00 per tonne has been provided in the approved project report for the entire life of the mine to undertake mine closure activities (for plantation in slope of dumps & quarry, for protection of mine boundary and continuation of monitoring programme and control of contaminated effluents). Closure cost may be reviewed under the changing circumstances and new legislative requirements.

26 Peripheral development:

As per the present practices in WCL coal mines, adequate steps are being taken for the local villagers by providing various infrastructural and welfare facilities and

giving assistance in health care in Wani North Area of WCL, under which the mine under consideration is operating.

The various development works like construction of Primary, School, Post office, Shopping center, diversion of cart track for villagers, establishment of bank, diversion of irrigation canal etc; have been completed, mainly for catering to the needs/socio-economic upliftment of the neighbouring population.

COMMUNITY DEVELOPMENT WORKS

SOME OF THE IMPORTANT COMMUNITY DEVELOPMENT WORKS DONE BY THE AREA AMOUNTING TO Rs. 97.45 LAKHS ARE GIVEN BELOW.

SL . NO.	DESCRIPTION
1	BHALLAR VILLAGE INTERNAL ROAD REPAIRING WBM & ZP SCHOOL BUILDING REPARING
2	APPROACH ROAD TO KOLERA VILLAGE , 1.5 KM
3	WANI GHUGUS ROAD TO PIMPALGAON VILLAGE APPROACH ROAD
4	INTERNAL ROAD AT UKNI VILLAGE , 800 m
5	STRRET LIGHT FROM CGM OFFICE TO UKNI VILLAGE , 1.8 KM
6	STREET LIGHT FROM PIMPALGAON CHP TO AHERI VILLAGE – 2 KM

COMMUNITY DEVELOPMENT WORKS (contd.)

SL . NO.	DESCRIPTION
7	REPAIR OF Z. P. BUILDING AT AHERI VILLAGE
8	ONE BOREHOLE AT BHANDEWADA VILLAGE INCLUDING WATER TANK
9	REPAIRING OF Z. P. PRIMARY SCHOOL AT RAJUR
10	HAND PUMP AT NEELPUR AND PIMPALGAON VILLAGE
11	BOUNDARY WALL OF Z. P. SCHOOL RAJUR
12	REPAIRING OF PRIMARY SCHOOL RAJUR
13	SPORTS MATERIAL FOR Z. P. SCHOOL RAJUR
14	CONSTRUCTION OF A HALL AT RAMAIBAI MAHILA MANDAL AT RAJUR

27 REHABILITATION SCHEME

There is no house oustees involved in the project. Only land losers are involved who will be suitably rehabilitated as per company norms.

28 PROJECT BENEFITS

The benefits of the project can be summarized as below:-

- The physical infrastructure in the area will be improved substantially by following ways:-

- a) Development of road, thereby improving the communication.
- b) Improvement in Power, Telephone (including Mobile) facility.
- c) Improvement in Health Care facility & Educational facility.
- d) Improvement in Market / Trade & Business.

- The social infrastructure by way of cultural mixing of people of other states with local community glorifying "UNITY IN DIVERSITY".

- Substantial employment in the project & indirect employment for business & trading, contractor, transportation, vehicle contractor, nursery development.

29 ENVIRONMENTAL COST PROJECTION

The details of expenditure incurred on environmental pollution control measures are given as below :-

<u>EXPENDITURE INCURRED ON POLLUTION CONTROL MEASURES</u>		
SL. NO.	PARTICULARS	AMOUNT IN Rs. LAKH
1	AIR POLLUTION CONTROL MEASURES	24.50
2	PLANTATION	37.26
3	WATER POLLUTION CONTROL MEASURES	10.28
	TOTAL	72.04

