

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE BENCH AT CHENNAI**

ORIGINAL APPLICATION NO.39 OF 2022

IN THE MATTER OF:

Gedam Dilip Kumar

S/o. Gedam Dikaram, Aged 30 years

R/o. H.No.2-65, Vullipitta Village

Tiryani Mandal

Komurambheem Asifabad District

Telangana – 504 297

Mobile No.9908893247

Mail id: advsravan@gmail.com and other

... APPLICANTS

VERSUS

The Singareni Collieries Company Ltd.,

Rep. by its Chairman and Managing Director

Kothagudem

Bhadradi Kothagudem District

Telangana – 507 101.

Mail: dp@scclmines.com

Phone No.08744-242301 & others

... RESPONDENTS

INDEX

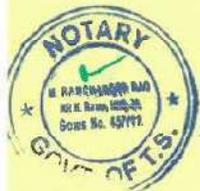
Sl. No.	Document	Date	Description	Pages
1.			Counter Affidavit	1-33
2.	Annexure-I	---	Pollution Mitigation measures by SCCL	34-35
3.	Annexure-II	Aprli-2017 to March 2022	Noise quality monitoring data by EPTRI, Hyderabad	36-40
4.	Annexure-III	Aprli-2017 to March 2022	Air quality monitoring data by EPTRI, Hyderabad	41-67
5.	Annexure-IV	Aprli-2017 to March 2022	effluents quality monitoring data by EPTRI, Hyderabad	68-97
6.	Annexure-V	Aprli-2017 to March 2022	Ground water Quality monitoring data by EPTRI, Hyderabad	98-116
7.	Annexure-VI	Aprli-2017 to March 2022	Surface water Quality monitoring data by EPTRI, Hyderabad	117-145
8.	Annexure-VII	12.05.2000, 27.08.2002	Vattivagu 1 st diversion permission copy & photos	146-150
		07.08.2020 17.04.2021	Vattivagu 2 nd diversion permission copy	151-153
9.	Annexure-VIII	March-2022	Revenue & mine working Plan with villages	154-155



10.	Annexure-IX	02.02.2006	CMRI scientific study report	156-158
11.	Annexure-X	27.07.2017	DGMS Permissions	159-175
12.	Annexure-XI	--	DGMS Circular TECH 7-1997	176
13.	Annexure-XII	January 2021 to April 2022	Minimate Records	177-220
14.	Annexure-XIII	February,2021	Socio economic study report by Centre for good governance, Hyderabad	221-307
15.	Annexure-XIV	December 2019 to March 2022	SANJEEVANI Ambulance & Medical Camps Data	308-329
16.	Annexure-XV	06.02.2015	Environment Clearance	330-339
		20.01.2016	Corrigendum to EC	340-341
17.	Annexure-XVI	29.10.2021	TSPCB samples analysis report & STANDARDS	342-350
18.	Annexure-XVII	---	Bio engineering works , Drains, Settling ponds	351-357
19.	Annexure-XVIII	2005 to 2022	Plantation details & Photos	358-362
20.	Annexure-XIX	21.05.2020	NEERI 5 Yrs expenditure	363
21.	Annexure-XX	2007-2022	Year wise production details	364
22.	Annexure-XXI	--	CSR-- civil works , Skill training & Paper coverage	365-386
23.	Annexure-XXII	2009-2031	Habitat Amelioration Scheme	387-419
		07.08.2012	HAS fee payment details	420-421
24.	Annexure-XXIII	---	R&R details	422-23
25.	Annexure-XXIV	2015-2022	Piezometric & phreatic wells monitoring data	424-427
26.	Annexure-XXV	Aprli-2017 to March 2022	Vehicular emissions quality monitoring data by EPTRI, Hyderabad	428-437
27.	Annexure-XXVI	---	SCCL Corporate Environmental responsibility	438-443
28.	Annexure-XXVII	28.09.2000	Forest clearance certificates	444-450
		10.09.2003		
		01.07.2011		
29.	Annexure-XXVIII	04.11.2015	CFE Certificate	451-456
		01.06.2017	CFO Certificate	457-462
30.	Annexure-XXIX	2006-2022	Rainfall data Since 2006	463-479

Date: 28.04.2022


Counsel for Respondents 1&9
Sri A.Sanjeev Kumar
Advocate, Hyderabad



BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE BENCH AT CHENNAI

ORIGINAL APPLICATION NO.39 OF 2022

IN THE MATTER OF:

Gedam Dilip Kumar

S/o. Gedam Dikaram, Aged 30 years
R/o. H.No.2-65, Vullipitta Village
Tiryani Mandal
Komurambheem Asifabad District
Telangana – 504 297
Mobile No.9908893247
Mail id: advsravan@gmail.com

Lekuri Nagesh

S/o. Lekuri Venkataiah, Age: 31 years
H.No.1-15, Lekureguda
Buruguda, Komurambheem Asifabad District
Telangana – 504 293
Mobile No.9848167093
Mail id: advsravan@gmail.com

...APPLICANTS

VERSUS

The Singareni Collieries Company Ltd.,
Rep. by its Chairman and Managing Director
Kothagudem
Bhadradri Kothagudem District
Telangana – 507 101.
Mail: dp@scclmines.com
Phone No.08744-242301.

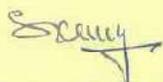
Union of India

Through its Secretary
Ministry of Environment, Forest & CC
Indira Paryavaran Bhavan
Jorbagh, New Delhi-110003
Mail: secy_moef@nic.in
Phone: 011-24695262, 24695265

Union of India

Through its Secretary
Ministry of Coal
Sastry Bhavan, New Delhi – 110003
Mail: secy.moc@nic.in
Phone: 011-23384884




General Manager
The Singareni Collieries Co Ltd
Belampalli Area
GOLETI -504 292
Dist. Komurambheem
Asifabad (T.S.)

Telangana State Pollution Control Board

Rep. by its Member Secretary
 A-3, Paryavaran Bhavan
 Sanath Nagar Industrial Estate
 Sanat Nagar, Hyderabad – 500 018
 Mail: ms-tspcb@telangana.gov.in
 Mobile: 04023887600.

District Collector and Magistrate

Komurambheem Asifabad
 Telangana – 504293
 Mail: collector_kb@ts.inc.in
 Phone: 08733279401

District Medical & Health Officer

Komurambheem Asifabad
 Telangana – 504293
 Mobile No.9848752915
 Mail: kumurambheemdmho@gmail.com

District Agriculture Officer

Kumurambheem Asifabad
 Telangana – 504 293
 Mobile No.7288894022
 Mail: daokumrambheem@gmail.com

Deputy Executive Engineer, Irrigation Department

Vattivagu project, Office: Near TS Gurukulam for Girls
 Asifabad, Kumaram Bheem Asifabad District
 Telangana – 504293
 Mobile: 9032765891
 Mail: NA

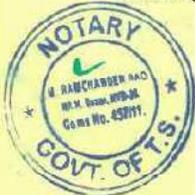
General Manager,

Singareni Collieries Company Ltd
 Bellampalli Area, Kumram Bheem Asifabad District
 Phone: 08735-231100
 Mail: po_khg@scclmines.com

... RESPONDENTS

COUNTER AFFIDAVIT ON BEHALF OF RESPONDENT NO.1 & 9
[THE SINGARENI COLLIERIES COMPANY LIMITED (SCCL)]

I, BHIMIREDDY SANJEEVA REDDY, Son of Sri BHEEMIREDDY KRISHNA REDDY , aged about 58 years, currently working as GENERAL MANAGER in the Singareni Collieries Company Limited, R/o.Goleti, KB Asifabad District Telangana State, do hereby solemnly affirm and state on oath as follows:



Sally
General Manager
 The Singareni Collieries Co.Ltd
 Bellampalli Area
 GOLETI - 504 292
 Dist. Kumrambheem
 Asifabad (T.S)

1. I am working as GENERAL MANAGER in the 1st Respondent Company and I am authorized to depose on behalf of Respondent Nos.1&9 herein to file this Counter Affidavit.
2. It is submitted that I have read and understood the contents of Application and deny all the material allegations made therein against this Respondent, except those that are specifically admitted hereunder.
3. At the outset, it is submitted that the Application is barred by law of limitation. As the Application has to be filed within a period of 30 days from the date of order or decision under Sec.14 & 16 of the NGT Act. In the instant case, Environment Clearance(EC) has been granted on 06.02.2015 and three Forest Clearances (FC) on (28.09.2000,10.9.2003 & 01.07.2011), but the applicant/petitioner for the reasons best known, has filed the Application after a lapse of about 6 years in case of Environmental Clearance and (10) years in case of FC. Therefore, the application is liable to be dismissed in limine.
4. It is submitted that the present Application is filed praying the Hon'ble Tribunal to:

A. Declare the action of Respondent No.1, 3 and 9 is illegal, arbitrary and contrary to the EP Act, 1986, Consent For Operation issued by Telangana State Pollution Control Board and Environmental Clearance dated 06.02.2015 for violating the Special Conditions No.v, vi, viii, ix, xv, xvi, xvii, xviii, xix, xxi, xxxi, xxxii, xxxiv, xxxv, xxxix, xlii, xlv, xlvi, xlvi and General Conditions No.ii, iii, iv, vi, ix, x, xi, xii, 6, 9 etc.



SECRET
General Manager
The Singareni Collieries Co.Ltd
Belampalli Area
GOLETITM 504 292
Dist: Kumrambheem
Asifabad (T.S)

- B. Appoint an independent experts Committee to verify the allegations raised by the Applicants in regard to environmental violations, damage caused to the water body, inundation, air, water pollution by Respondent No.1,3 and 9 in the execution of Kairaguda Opencast Coal Mine at Bellampalli area of Komuram Bheem Asifabad District in Telangana State.
- C. Direct the Respondent No.2 (MoEF) and 4 (TSPCB) to take stringent action according to Section 5 of Environment (Protection) Act, 1986 for violations of Environment Clearance, Consent For Operation conditions committed and loss caused to the environment, people by Respondent No.1,3 and 9.
- D. Direct the District Collector of Kumar Bheem Asifabad to enumerate and assess the loss caused due to inundation and diversion of Vatti Vagu by Respondent No.1 for providing appropriate rehabilitation and resettlement.
- E. Direct the Respondent No.2 to file an action taken report on the violation of Special Conditions No. v, vi, viii, ix, xv, xvi, xvii, xviii, xix, xxi, xxxi, xxxii, xxxiv, xxxv, xxxix, xlii, xlv, xlvi, xlvii and General Conditions No.ii, iii, iv, vi, ix, x, xi, xii, 6, 9.
- F. Direct the Respondent No.2 to initiate action against the Respondent No.1 and 9 for non-compliance and fix accountability for the damage caused to the property, loss to the villagers due to Khairagura Open cast Mine.
- G. Direct the Respondent No.1,3 to provide Rehabilitation and Resettlement to the victims according to Special Condition No.xliii, and implement CSR activities according to Condition No.v, xvii, xlvi, xlvii by taking assistance of local gram panchayaties.
- H. Direct the Respondent No.1, 3 and 9 to set up Environment Management cell, Environment Audit cell according to General Condition No.xi, 9 of Environment Clearance dated 06.02.2015 and direct the Respondent No.1 and 9 to set up separate account for funds



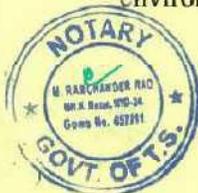
Siddhi
General Manager
 The Singareni Collieries Co.Ltd
 Bellampalli Area
 GOLETI - 504 292
 Dist: Kumrambheem
 Asifabad (T.S.)

earmarked for environmental protection measures for spending according to EMP/EIA.

- I. Direct the Telangana PCB to submit action taken report on Notice No.2087/TSPCB/RO/NZB/W&A/20121-725, dated 23.12.2021.
- J. Pass any such order, as the Hon'ble Tribunal may deem fit and proper in the facts and circumstances of the case.

5. It is submitted that the Singareni Collieries Company Limited (in short SCCL), the Respondent No.1 herein, is a Government Company within the meaning of Sec-617 of Companies Act, 1956 and Sec.2 (20) of Companies Act, 2013, jointly owned by the Government of Telangana and Government of India on 51:49 equity basis, exclusively engaged in the work of exploration, excavation, extraction and winning of coal. The Respondent No.1 is currently operating 19 opencast and 24 underground mines in six (6) Districts of Telangana State.

6. In reply to the averments made in para-1, it is submitted that Khairagura Opencast Coal Mining Project is located near Devaiguda village in Tiryani Tehsil of Kumram Bheem Asifabad District of Telangana State. Coal mining operations in this project commenced on 01.07.2005 and expansion operations started on 01.06.2015. The project is surrounded by villages like Devaiguda, ullipitta, Chandruguda, dampur, Gowriguda, Saleguda and Jendaguda villages and the people living in these villages mostly belong to Scheduled Tribe community. The Respondent Company is taking various pollution mitigation measures in the project for control of air pollution, water pollution, noise & vibration and soil erosion etc., and the environmental parameters monitored in and around the mine are within the



S. S. S. S.
S. S. S. S.
General Manager
 The Singareni Collieries Co. Ltd
 Belampalli Area
 GOLETI - 504 292
 Dist: Kumrambheem
 Asifabad (T.S.)

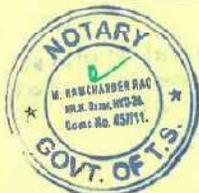
stipulated norms. The mitigative measures being implemented in the project for prevention/control of pollution are enclosed as Annexure-I. The overburden does not contain any coal dust and overburden earthen material removed during the process of the mining operations is being dumped separately at the earmarked sites within the mine lease area, coal is being extracted and brought to the surface by dumpers and crushed in the pit-head Coal Handling Plant and transported to Goleti Coal Handling Plant through trucks covered with tarpaulin sheets. Further, it is informed that the overburden is being dumped only at the designated locations as per approved mining plan and Environmental Clearance. The overburden dumps are stabilized and plantation is taken up for controlling soil erosion. At Khairagura Open Cast Project, one Continuous Ambient Air Quality Monitoring Station was established in core zone and the data is being uploading to the Telangana State Pollution Control Board (TSPCB) website on real time basis. The Continuous Ambient Air Quality Monitoring Station data indicates that the monitored parameters are well within the Standards stipulated for coal mines vide Notification No.GSR 742 (E), dated 25th September 2000. Also, ambient air, water, noise samples are being monitored in the project area falling in core zone and villages falling in buffer zone through a third party agency i.e., Environment Protection Training And Research Institute, Hyderabad, a Central Pollution Control Board recognized and National Accreditation Board for Testing and Calibration Laboratories and the data reports are periodically submitted to Telangana State Pollution Control Board. The monitored data shows that



S. S. S.
General Manager
The Singareni Collieries Co. Ltd.
Belampalli Area
GOLETI - 504 292
Dist: Kumrambheem
Asif@rediffmail.com

values are within permissible limits in the project area as well as in surrounding villages including Ullipitta Village. The environmental monitoring data is enclosed as **Annexures-II, III, IV, V, VI**. Diversion of Vattivagu was taken up as per the approval and design parameters provided by Irrigation & CAD Department of Telangana State. Approval was also accorded by Irrigation & CAD Department for the proposed Phase-II diversion of Vattivagu. Copies of Irrigation & CAD permission letters along with design parameters are enclosed as **Annexure-VII**. There is no affect on water reservoir and on nearby villages due to back waters as vatti vagu diversion was carried out in a systematic manner as per the directions of Irrigation&CAD Department. The present status of project with reference to the villages mentioned by the applicant is as follows:

Village	Ullipitta	Sale Guda	Gouru Guda	Jenda Guda
Present status	Ullipitta Village is located at a distance of 250 m. from external overburden dump (D3 External Dump) of the project. The overburden dumping in D3 external dump was completed in February 2022. The dump has been stabilized and reclaimed with plantation. Also, there is no affect of back water due to vatti vagu diversion as the village Reduced level (RL) (942.2	The village saleguda is located at about 3.8 Km in the south side of Khairagura opencast mine. Hence, there is no affect of neither overburden dumping nor Vattivagu Backwater on this village.	Village is in South-west direction of the mine, located beyond the danger zone of 500m. from the blast site. As controlled blasting is adopted in the project, there is no impact due to Blasting vibrations and noise on this village, which is about 1.20 Km. from the	Village is situated on west direction of the mine. As controlled blasting is adopted in the project, there is no impact due to Blasting vibrations and noise on this village, which is about 6.00 Km. from the project.



S. Seku
General Manager
 The Singareni Collieries Co.Ltd
 Belamkali Area
 GOLETI - 504 282
 Dist: Kumrambheem
 Asifabad (T.S)

	m RL) is above the Full Reservoir Level (FRL) of vatti vagu (939.5 m RL).		project.	
--	---	--	----------	--

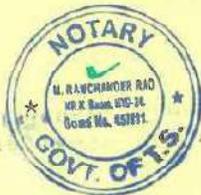
A revenue plan showing mine workings with respect to Vattivagu water reservoir and nearby villages is enclosed as **Annexure-VIII**. A scientific study was carried out through Central Mining Research Institute, Dhanbad and study recommendations are being followed in blasting operations for protection of vattivagu reservoir and surrounding villages. Also, Directorate General Of Mines Safety permission was obtained for carrying out controlling blasting operations. The ground vibrations are being regularly monitored in the project by using Minimate instrument. The details of scientific investigations, Directorate General Of Mines Safety permission, Directorate General Of Mines Safety Circular on permissible limits and blast vibrations monitoring report are enclosed as Annexures-IX, X, XI, XII respectively.

7. In reply to the averments made in para-2, it is submitted that Controlled Blasting is being carried out as per the Directorate General Of Mines Safety Permission and Central Mining Research Institute scientific study recommendations only. Blasting is done using non-electric delay detonators for controlling ground vibrations to a large extent. The blast induced vibrations are being regularly monitored in terms of peak particle velocity(ppv) and air over pressure and the values are well within the limits as stipulated by Directorate General Of Mines Safety. Coal layers are being



Sally
General Manager
 The Singareni Collieries Co. Ltd.
 Belampalli Area
 GOLETI - 504 292
 Dist. Kurnool
 Andhra Pradesh (T.S.)

extracted separately and the same is being transported to Goleti Coal Handling Plant located at 16.96 Km by tarpaulin covered trucks. No coal dust is dumped in the dump yard and only earthen overburden material is dumped at the designated locations. All the mining operations including overburden dumping are carried out as per Environmental Clearance conditions. As on date, there is no complaint on health issues of villagers and cattle. A social audit /socio-economic survey was carried out through Centre for Good Governance, Hyderabad and the study also includes health survey of surrounding villages. The social audit study report is enclosed as **Annexure-XIII**. The report reveals that there are no health impacts due to mining operations. Singareni Collieries Company Limited is conducting periodical health screening camps and awareness camps in surrounding villages and distributing free medicines based on diagnosis. Free Mobile Medical Van "SANJEEVANI" is being provided daily with qualified doctor, medical staff and testing facilities such as X-Ray, E.C.G. Spiro analyzer, blood test, urine test, etc. for medical checkups & treatment of people living in surrounding villages & Rehabilitation and Resettlement centres in Bellampalli Area. There are no occupational health issues recorded in surrounding villages except for some common ailments. The details of health checkups conducted by Singareni Collieries Company Limited in surrounding villages are enclosed as **Annexure-XIV**. Over burden dumping is being done at designated locations only as per approved Mining plan within mine lease area. Overburden dumping operations were carried out in the project as per the dumping strategy approved by Ministry of Coal and



S. Xilly
General Manager
 The Singareni Collieries Co. Ltd.
 Bellampalli Area
 GOLETI - 504 292
 Dist: Kurambheem
 Asifabad (T.S.)

Ministry of Environment, Forests & Climate Change. As per Environmental Clearance (EC) Condition, the permitted height of the No. 3 Dump is 120 m. The working of the dump was completely stopped in February 2022 as permitted height of the dump reached 120 m. It is to reiterate that there is no illegal dumping in the surrounding areas. The Environmental Clearance letter approved by Ministry of Environment, Forests & Climate Change is enclosed as **Annexure- XV**. There is no coal dumping near Ullipitta village and hence there is no possibility of coal dust flowing into the water bodies and seeping in to the ground water. The present quarry operations are around 5.5 Km away and also the coal dumping is around 3 Km away from the Ullipitta village. The quality of effluents, surface and ground water is being periodically monitored and study reports indicates that there is no contamination of these water bodies due to mine effluents.

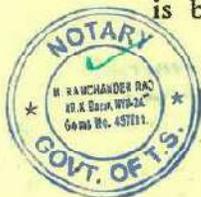
8. In reply to the averments made in para 3, it is submitted that the coal seams extracted from the quarry are being sent to Goleti Coal Handling Plant through trucks covered with tarpaulin as such there is no chance of coal dust flowing into water streams. Further effluent samples are collected and analyzed by third party i.e Environment Protection Training And Research Institute, Hyderabad and the results shows that there is no water pollution due to mine discharge. On receipt of complaint received by Sri Gedam Dileep R/o.Ullipitta village, on 29.10.2021 the Telangana State Pollution Control Board officials monitored air, noise and water quality of Vattivagu reservoir and ground water quality in Ullipitta village. The results of the monitored samples show that there is no pollution of air, water and noise.



S. Sany
General Manager
The Singareni Collieries Co.Ltd
Belampalli Area
GOLETI - 504 292
Dist: Kumrambheem
(Asifabad T.S.)

Telangana State Pollution Control Board analysis reports and coal mine standards are enclosed as **Annexure XVI**. The health survey conducted by Centre for Good Governance, Hyderabad as a part of third party social audit indicates that there is no incidence of diseases in nearby villages as a result of ongoing coal mining operations in Khairagura Open Cast Project. There is no adverse affect on aquatic life of vattivagu water. Presently, the contract is issued to ST fishermen co-operative society (vattivagu colony, Chirrakunta village) by K B Asifabad District Fisheries Department, (Telangana state) for fishing in Vattivagu reservoir.

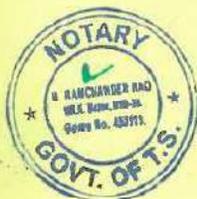
9. In reply to the averments made in para-4, it is submitted that the overburden is dumped in earmarked dump site up to a height of 120 m. as per the approved mining plan and Environmental Clearance conditions. In between village and existing overburden dump, there is a garland drain of 2.5 km length around the dump followed by an earthen bund to arrest silt from overburden dump surface run off and also the dump has been stabilized with plantation. Photographs showing soil erosion control measures adopted in the project are enclosed as **Annexure XVII**. About 14,78,294 nos. of plants were planted in an area of 393.23 Ha till 31.03.2022. (dump area- 338.95 Ha. including 20 Ha of internal dump, avenue & green belt area- 54.28 Ha.). Details of plantation are shown as **Annexure- XVIII**.
10. In reply to the averments made in para-5, it is submitted that various mitigation measures are being adopted in the project for prevention/control of air pollution, water pollution, noise & vibration and soil erosion. Blasting is being carried out as per the Directorate General Of Mines Safety



Sellu
 General Manager
 The Singareni Collieries Co. Ltd.
 Belamchi Area
 GOLETI - 504 292
 Dist: Kurnambheem,
 Asifabad (T.S.)

permission, Directorate General Of Mines Safety Circular Tech. No. 7/1997 and Central Mining Research Institute scientific study recommendations only. The monitored noise, air and water sample results are within the permissible limits. At Khairagura Open Cast Project, one Continuous Ambient Air Quality Monitoring Station is established in core zone for analyzing the air quality and data is uploading to the Telangana State Pollution Control Board website on real time basis. The Continuous Ambient Air Quality Monitoring Station data has never exceeded the standards as stipulated for coal mines. Besides this, ambient air, noise (once in fortnight), water samples (once in 3 months) are being monitored in core and buffer zone by third party i.e Environment Protection Training And Research Institute, Hyderabad and the monitored results are within permissible limits in all surrounding villages including Ullipitta Village.

11. In reply to the averments made in para-6, it is submitted that the Mining Plan and Mine Closure Plan of khairagura Open Cast Expansion Project was prepared and approved by Ministry of Coal in 2014. The mine closure involves implementation of progressive as well as final mine closure activities. Presently, the progressive mine closure plan is being implemented by Project authority as per the approved Mining Plan & Mine Closure Plan. Reclamation has been taken up concurrently with the progress of mining operations. Plantation has been taken up in an area of 393.23 Ha. with 14,78,294 nos. of native species as on 31.03.2022. Annual report on mine closure activities is being submitted to coal controllers Organization along with expenditure details. The Progressive mine closure activities were



S. Colly
General Manager
 The Singareni Collieries Co.Ltd
 Belampalli Area
 GOLETI - 504 292
 Dist: Kurnambheem
 Asifabad (T.S)

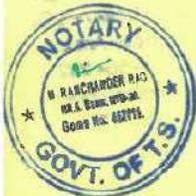
audited by Ministry of Coal approved third party agency, National Environmental Engineering Research Institute , Nagpur for the period from 2013-2014 to 2017-2018 and the expenditure of Rs 65.81 crores spent on mine closure activities was also certified by the agency. The details of third party certification of mine closure activities are enclosed as **Annexure XIX**. Final mine closure plan will be prepared and implemented five years before the closure of the mine after due approval from Ministry of Coal and details will be submitted to Ministry of Environment, Forests & Climate Change as a part of Environmental Clearance compliance.

12. In reply to the averments made in para-7, it is submitted that Controlled Blasting Technique is being adopted basing on the scientific study conducted by Central Mining Research Institute with the approval of Directorate General Of Mines Safety. Controlled blasting is being practiced with non-electric delay detonators (NONELs) for control of blast induced ground vibrations. Mitigative measures like optimum charge per hole, sequence of blasting, blasting design, blasting pattern, etc., are adopted to reduce the ground vibrations. The blasting vibrations are being measured and recorded and the results are within the limits. There is no subcontracting of blasting activity and the same is being carried out by Singareni Collieries Company Limited only under the supervision of one First Class Mine Manager certificate holder and other qualified and experienced personnel.



Sachin
General Manager
 The Singareni Collieries Co. Ltd.
 Belampalli Area
 GOLETI - 504 292
 Dist. Kurambheem
 Asifabad (T.S.)

13. In reply to the averments made in para-8, it is submitted that Vattivagu diversion was taken up as per the approval of the Telangana state Irrigation Dept (Irrigation & CAD). There is no inundation of houses and agriculture lands due to diversion of vattivagu in dampur (944 m Reduced level) and chanduguda (943 m Reduced level) villages as these villages are above the Full Reservoir Level (939.50 m Reduced level) of Vattivagu Reservoir. Due to this diversion, there has been no reduction in storage capacity of Vattivagu Reservoir. Irrigation & CAD officials have been periodically inspecting the reservoir and there are no complaints about reduction of its storage capacity due to Vattivagu diversion.
14. In reply to the averments made in para-9, it is submitted that since inception of the project, annual coal production has never exceeded the sanctioned Environmental Clearance capacity as approved by Ministry of Environment, Forests & Climate Change. The details of annual coal production achieved in Khairagura Opencast project from the beginning of the mining operations are enclosed as Annexure- XX.
15. In reply to the averments made in para-10, it is submitted that the Telangana State Pollution Control Board officials inspected the Mine and Ullipitta village and conducted analysis of Air, Water and Noise samples on 29.10.2021. They have collected air samples at substation in Core Zone and in Ullipitta Village in buffer zone of Khairagura Open Cast Project. The analysis data of samples collected in nearby village indicates that monitored parameters are within permissible limits. The Particulate Matter (PM10) value recorded at core zone location (substation of the project) is 112 µg/m³



Sally
General Manager
The Singareni Collieries Co. Ltd
Belampalli Area
GOLETI - 504 292
Dist: Kurnool
Asifabad (T.S.)

which is well within the stipulated limit of 250 $\mu\text{g}/\text{m}^3$ as per Coal Mine standards, GSR 742(E) dated 25.09.2000.

16. In reply to the averments made in para-11, it is submitted that the Respondent Company has been submitting the environmental monitoring data reports of the project to Telangana State Pollution Control Board on regular basis. The monitoring has been carried out through Environment Protection Training And Research Institute, Hyderabad, a Central Pollution Control Board recognized and National Accreditation Board for Testing and Calibration Laboratories. The monitored data shows that the parameters are within the stipulated limits. The Pollution Control Board (TSPCB) officials inspected the Mine and Ullipitta village and conducted analysis of Air, Water and Noise samples on 29.10.2021. They have collected air samples at substation in Core Zone and in Ullipitta Village in buffer zone of Khairagura Open Cast Project. The analysis data of samples collected in nearby village indicates that monitored parameters are within permissible limits .The Particulate Matter (PM10) value recorded at core zone location (substation of the project) is 112 $\mu\text{g}/\text{m}^3$, which is well within the stipulated limit of 250 $\mu\text{g}/\text{m}^3$ as per Coal Mine standards, GSR 742(E) dated 25.09.2000.

17. In reply to the averments made in para-12, it is submitted that the photos shown by the complainant are related to water logging of ullipitta village due to surface run off from nearby catchment area as a result of heavy rainfall of 185 mm recorded 22.07.2021 and some silt was carried from surrounding areas. However, deck drains, garland drains and settling ponds



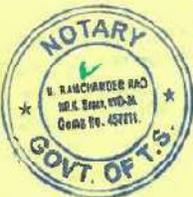
S. S. S. S.
General Manager
The Singareni Collieries Co.,
Belampalli Area
GOLETI - 504 292
Dist. Kumrambheem
Asifabad (T.S.)

were provided for arresting silt from overburden dump surface runoff.

Rainfall data since 2006 enclosed as Annexure XXIX.

18. In reply to the alleged non-compliance mentioned by the Applicant in para-13, the Respondent Company submits the compliance status as follows:

EC granted by the Ministry on 6.2.2015 and modified on 20.1.2016	Compliance status as given by Singareni Collieries Company Limited
Total project area is 1217.15 Ha out of which forest land is 296.86 ha and non-forest land is 920.64 ha	For diversion of 296.86 Ha. of forest land, Singareni Collieries Company Limited handed over equivalent extent of non-forest land and paid compensatory afforestation charges to forestry department for development of alternate forest. As per Environmental Clearance, plantation has to be done in an area of 882.29 Ha at the mine closure stage, by the end of 2027. Up to 31.03.2022, plantation was completed in 393.23 Ha as a part of progressive reclamation activities and remaining plantation work will also be completed by the end of mining operations.
x. The seasonal data for ambient air quality has been documented and all results at all stations are within prescribed limits.	Singareni Collieries Company Limited has been monitoring ambient air quality in the project area (core zone) and surrounding villages (buffer zone) through Environment Protection Training And Research Institute, Hyderabad, a Central Pollution Control Board recognized and National Accreditation Board for Testing and Calibration Laboratories and the quarterly data reports are being submitted to



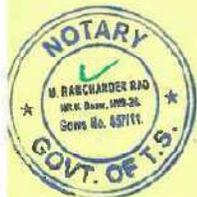
Sree
General Manager
 The Singareni Collieries Co. Ltd
 Belampalli Area
 GOLETI - 504 292
 Dist. Kumrambheem
 (Sifam/T.S.)

	<p>Telangana State Pollution Control Board. The monitored data indicates that the air quality parameters are well within the stipulated limits. One Continuous Ambient Air Quality Monitoring Station is also operating at the project site and ambient air quality data is being uploaded to Telangana State Pollution Control Board website on real time basis. The Continuous Ambient Air Quality Monitoring Station data indicates that the air quality parameters are within the limits as per coal mine standards stipulated by Ministry of Environment, Forests & Climate Change</p> <p>The Pollution Control Board (TSPCB) officials inspected the Mine and Ullipitta village and conducted analysis of Air, Water and Noise samples on 29.10.2021. They have collected air samples at substation in Core Zone and in Ullipitta Village in buffer zone of Khairagura Open Cast Project. The analysis data of samples collected in nearby village indicates that monitored parameters are within permissible limits. The Particulate Matter (PM10) value recorded at core zone location (substation of the project) is 112 $\mu\text{g}/\text{m}^3$ which is well within the stipulated limit of 250 $\mu\text{g}/\text{m}^3$ as per Coal Mine standards, GSR 742(E) dated 25.09.2000.</p>
<p>xii. Coal transportation in pit Crusher to surface CHP through belt conveyer (1.5 km length), Surface to Siding</p>	<p>Coal Transport Trucks are being covered with tarpaulin sheet and the same is regularly monitored for necessary</p>



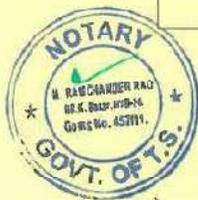
Srinivasa
General Manager
 The Singareni Collieries Co. Ltd.
 Belampalli Area
 GOLETI-504292
 Dist. Kumrambheem
 Asifabad (T.S.)

by trucks 14 Km and siding to loading by wagon.	compliance.
Xiii. There is R & R involved. There are 538 PAFs for these production.	The Full Reservoir Level of the Vattivagu is 939.50 m RL. The Ullipitta Village (942.20 m RL) is situated in up-stream on North-West side and back water never entered the village. Rehabilitation and Resettlement was already implemented for 881 Project Affected Families and 488 Project Displaced Families.
xiv. Total capital cost of the project is Rs. 50.46 Crores. CSR Cost Rs. 5.00 per tonne. R & R Cost Rs. 17.83 Crores. Environmental management cost (Additional environmental capital expenditure shall be Rs. 4.10 lakhs, Revenue expenditure shall be Rs. 18.72 per Tonne).	<p>The corporate social responsibility(CSR) plan is being implemented as per the corporate social responsibility policy approved by Singareni Collieries Company Limited's Board of Directors. Various activities are being taken up under corporate social responsibility every year, such as laying of roads, construction of drains, toilets, providing drinking water facilities, bore wells, power lines, self development trainings, mobile medical van with qualified doctors & crew, medical camps etc.,</p> <p>An amount of Rs. 22.13 Crores was spent on corporate social responsibility civil activities in the surrounding villages of the project. The corporate social responsibility expenditure is more than Rs. 5.00 per tonne of coal. The details of enclosed as Annexure-XXI.</p> <p>Further, the following works have been taken up recently in</p>



S. S. S.
General Manager
 The Singareni Collieries Co. Ltd
 Belampalli Area
 GOLETTI - 504 292
 Dist: Kumrambheem
 Asifabad (T.S)

	<p>Ullipitta Village:</p> <p>a. Construction of Bus Shelter- Rs. 2 Lakhs</p> <p>b. Construction of 2 no.s box culverts- Rs. 20 lakhs</p> <p>c. Construction of 2 houses - Rs. 12 Lakhs</p> <p>d. Laying of CC road of 1 Km - Rs. 60 Lakhs</p> <p>e. Nallah strengthening works 200 m - Rs. 20 Lakhs</p> <p>f. Hume pipe culvert no.1 - Rs. 6 Lakhs</p> <p>g. Establishment of RO plant with shed and bore well—Rs. 8 Lakhs</p> <p>h. Construction of Community hall under proposal - under corporate social responsibility - Rs. 5 Lakhs</p>
<p>xv. Water body- Vatti Vagu (Diversion of Phase-I completed and Ph-II yet to be carried out)</p>	<p>Diversion of Vattivagu was taken up as per the approval and design provided by Irrigation & CAD Department of Telangana State. Approval was also accorded by Irrigation&CAD Department for the proposed Phase-II diversion of Vattivagu.</p> <p>There is no affect on water reservoir and on nearby villages due to back waters since vatti vagu diversion was carried out in a systematic manner as per the directions of Irrigation&CAD Department.</p>
<p>xvii. Wildlife issues: There are no National Parks, wildlife sanctuary, biosphere reserves found in the 10 km buffer zone.</p>	<p>Forest clearance was obtained for 296.86 Ha for mining operations (Lr. No F.No.8-28/94-FC, dt. 28th September, 2000 for 29.85Ha. Lr. No.F.No.8-102/2000-FC, dt. 10th September, 2003 for 140.30Ha. and Lr. No. F.No.8-28/94-FC, dt. 1st July 2011 for 126.71 Ha.). Forest clearance copies enclosed as Annexure</p>



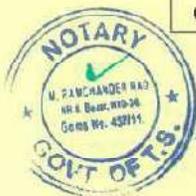
Sri
General Manager
 The Singareni Collieries Co.Lt.
 Belampati Area
 GOLETI-504292
 Dist: Kurnambheem.
 Asifabad (T.S.)

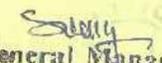
	<p>XXVII</p> <p>Also, an amount of Rs. 41.92 Lakhs was paid to Forest Department towards Habitat Amelioration Scheme and the details are enclosed as Annexure-XXII.</p>
<p>xix. Total afforestation plan shall be implemented covering an area of 882.29 ha at the end of mining. Green Belt over an area of 231.79 ha. Density of tree plantation 2500 trees/ha of plants.</p>	<p>➤ As per Environmental Clearance, plantation has to be done in an area of 882.29 Ha at the mine closure stage i.e., by the end of 2027. Up to 31.03.2022, plantation was completed in 393.23 Ha as a part of progressive reclamation activities and remaining plantation work will also be completed by the end of mining operations.</p> <p>➤ The restoration and reclamation plan envisaged in the approved Environmental Monitoring Plan is being implemented.</p> <p>➤ Plantation is also taken up by Singareni Collieries Company Limited in 57.00 Ha. of Reserve Forest land in consultation with Divisional Forest Officer (DFO), Asifabad division.</p>
<p>xxii. The proponent also mentioned that total 556 families were already displaced. 18 families were displaced as a part of Khairagura OC in of Rs. 17.83 Crs has already paid under R & R package 2005 before R & R Policy. Another 49 families who are near Vattivagu are also proposed for rehabilitation on their request. An amount of</p>	<p>Rehabilitation and Resettlement (R&R) was already implemented for 881 Project Affected Families and 488 Project Displaced Families. Rehabilitation and Resettlement details are enclosed as Annexure-XXIII.</p>



Scally
General Manager
 The Singareni Collieries Co. Ltd
 Belampalli Area
 GOLETI - 504 292
 Dist: Kumrambheem
 Asifabad (T.S)

Rs. 365.21 Lakhs provided and R&R will be carried through State Government.	
<p>3. EC Compliance Report:</p> <p>The compliance Monitoring Report of the MoEF, Regional Office, Bangalore vide letter No. EP/12.1/660 dated 06.08.2013 which was deliberated in the Committee which noted that the proponent has largely complied with the earlier EC and other conditions are in the process of compliance which include following:</p> <p>i. Crushers at the CHP be operated with system to check fugitive emissions; Drilling should be wet operated; Controlled blasting should be practiced only during day time; Afforestation shall be done in a phased manner up to total area of 819.65 Ha; Progressive mine closer plan be implemented by reclaiming quarry area; Regular monitoring of ground water and quality shall be carried out; artificial ground water recharge measures; 10 % workmen should be subjected to occupational health checkup⁵ Establishment of four ambient air quality monitoring stations; Control of fugitive dust emissions</p>	<ul style="list-style-type: none"> • Various dust suppression measures are being implemented in the project like sprinkling on haul roads, mist spray arrangement at coal handling plant. • Wet drilling is also being practiced to control dust emissions. • Fugitive dust emissions are being regularly monitored by establishing 8 air quality monitoring locations. • Regular plantation is being taken up in monsoon season every year. • Controlled blasting is being practiced using non-electric delay detonators to control blast induced vibrations. • Ground water levels are being monitored covering a network of 14 open wells and 5 piezo meters 4 times in a year and monitored data is being submitted to Ground water department and Ministry of Environment, Forests & Climate Change. Ground water level monitoring data is enclosed as Annexure-XXIV. • Air quality is being monitored once in fortnight, ground water is being monitored once in 3 months and the monitoring data reports are being periodically submitted to regulatory authorities. • The water, air, noise monitoring




General Manager
 The Singareni Collieries Co.Ltd.
 Belampalli Area
 GOLETI - 514 292
 Dist. Kurnool
 Asifabad (T.S)

<p>from all the sources; regular submission of data on ambient air quality; Adequate measures control noise levels.</p> <p>ii. Proper collection and treatment of industrial waste water;</p> <p>iii. Regular monitoring and control of vehicular emission; Provision of personal safety devices and occupational health surveillance.</p>	<p>data indicates that the pollutant concentrations are complying with stipulated norms.</p> <ul style="list-style-type: none"> • The Base Workshop vehicle wash effluent and Coal Handling Plant waste water are being treated in 2 Effluent Treatment Plants and the treated water is being utilized for internal purposes like dust suppression and plantation. • Vehicular pollution is being monitored once in six months and data is being submitted to regulatory authorities. Details enclosed as Annexure-XXV
--	--

EC conditions	Compliance status as given by Singareni Collieries Company Limited
Specific Conditions:	
iii. The Voids shall be filled up to the near ground level by the OB from the new Ullipetta Dorli mine. The coal transportation on road by mechanically covered trucks.	Coal transport trucks are being optimally loaded, completely covered with tarpaulin and ensured at Singareni Collieries Company Limited 's check posts. In addition, surprise checks are being done by security personnel at regular intervals.
v. The social audit report of the CSR to be submitted to the MoEF for record and be uploaded on to the Company's website.	corporate social responsibility works are done area-wise as per the requisition received from people's representatives and as per Singareni Collieries Company Limited corporate social responsibility Policy. A Social-audit /socio economic survey was carried out through Centre for Good Governance, Hyderabad. The social audit report of the corporate social responsibility was submitted to Ministry of Environment, Forests & Climate Change and the half yearly compliance report is displayed on company website.
vi. Instead of provision of bag filters, effective sensor operated water	<ul style="list-style-type: none"> ➤ A mist sprayer is provided at crusher of pit-head Coal Handling Plant. ➤ A sensor operated wetting point is



Sully
General Manager
 The Singareni Collieries Co.Ltd
 Belampalli Area
 GOLETI - 504 292
 Dist. Kumrambheem
 A.P. (T.S.)

sprinkling system be provided for dust suppression at crusher house and transfer points at pit head coal handling arrangement.	provided to wet coal loaded dumpers before unloading into crushers ➤ Fixed point water sprinkling arrangement is provided along the crushers, around pre weigh bin.
viii. The final mine closer plan will be submitted to MoEF 5 years in advance of final mine closure for approval.	Final mine closure plan will be prepared and implemented five years before the closure of the mine after due approval from Ministry of Coal and details will be submitted to Ministry of Environment, Forests & Climate Change as a part of Environmental Clearance compliance.
xiv. The OB shall be completely re-handled at the end of the mining and will be back filled upto the ground level and covered with about a meter thick top soil and put to use. The land after mining shall be brought back for agriculture purpose.	➤ The overburden will be back filled up to the ground level & covered with top soil for agriculture purpose as per approved mining & mine closure plan by Ministry of Coal at final stage of the project ➤ Backfilling operations were started from the month of January, 2013 and backfilling is in progress.
xvi. Appropriate embankment shall be provided along with side of the river/nallah flowing near or adjacent to the mine.	An embankment of 3.0 Km length (top width-10m, bottom width-16m, height-3m above the Highest Flood Level) was constructed along Vattivagu reservoir.
xvii. The CSR cost should be Rs. 5 per Tonnes of Coal produced which should be adjusted as per the annual inflation.	The corporate social responsibility plan is being implemented as per the corporate social responsibility policy approved by Singareni Collieries Company Limited 's Board of Directors. Various activities are being taken up under corporate social responsibility every year, such as laying of roads, construction of drains, toilets, providing drinking water facilities, bore wells, power lines, self development trainings, mobile medical van with qualified doctors & crew, medical camps etc., An amount of Rs. 22.13 Crores was spent on corporate social responsibility



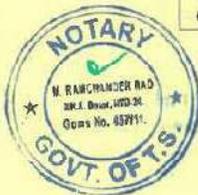
S. S. S. S.
General Manager
 The Singareni Collieries Co. Ltd.
 Belampalli Area
 GOLETI - 504 292
 Dist. Kumrambheera
 Asifabad (T.S.)

	<p>civil activities in the surrounding villages of the project. The corporate social responsibility expenditure is more than Rs. 5.00 per tonne of coal.</p> <p>Further, the following works have been taken up recently in Ullipitta Village:</p> <ol style="list-style-type: none"> Construction of Bus Shelter- Rs. 2 Lakhs Construction of 2 no.s box culverts- Rs. 20 lakhs Construction of 2 houses - Rs. 12 Lakhs Laying of CC road of 1 Km - Rs. 60 Lakhs Nallah strengthening works 200 m - Rs. 20 Lakhs Hume pipe culvert no.1 - Rs. 6 Lakhs Establishment of RO plant with shed and bore well—Rs. 8 Lakhs Construction of Community hall under proposal – under corporate social responsibility - Rs. 5 Lakhs
<p>xviii & xix. Everybody in the core area should be provided with mask for protection against fugitive dust emission. Dust mask to be provided to everyone working in mining area.</p>	<p>Protective wear like dust masks are being provided to employees working in core area for protection against fugitive dust emissions.</p>
<p>xx. The supervisory staff should held personally responsible for ensuring compulsory regarding wearing of dust mask in core area.</p>	<p>The supervisory staff is ensuring wearing of dust mask by employees working in the core area while carrying out inspection of core area. The concerned supervisors were instructed in writing to ensure that all employees working in core area must wear dust masks.</p>
<p>xxii. The mining area should be surrounded by green belt having thick closed canopy of the tree cover.</p>	<p>➤ The mining area is surrounded by green belt having closed thick canopy of the tree cover. Plantation is being taken up every year as per approved Environmental Management Plan .</p> <p>➤ About 14,78,294 nos. of plants were</p>



Sreeky
 General Manager
 The Singareni Collieries Co.Ltd
 Belampalli Area
 GOLETI - 504 292
 Dist: Kumrambheem
 Asifabad (T.S)

	planted in an area of 393.23 Ha till 31.03.2022. (dump area- 338.95 Ha. including 20 Ha internal dump, avenue & green belt area: 54.28Ha.).
xxiii. The embankment constructed along the river boundary shall be of suitable dimensions and critical patches shall be strengthened by stone pitching on the river front side and stabilized with plantation so as to withstand the peak water flow and prevent mine inundation.	<p>➤ An earthen bund of 3 Km length all along Vattivagu reservoir was provided</p> <p>embankment dimensions :</p> <ul style="list-style-type: none"> ▪ top width-10m ▪ bottom width-16m ▪ height-3m above the Highest Flood Level. <p>Embankment was strengthened by stone pitching on the reservoir front, was stabilized with plantation so as to withstand the peak water flow.</p>
xxiv. There shall be no overflow of OB into the river and into the agriculture fields and massive plantation of native species shall be taken up in the area between the river and the project.	<p>➤ All necessary measures such as preparation of drains around dumps, making of earthen bund around dumps, stabilization of final dumps with plantation, etc. are being taken up to prevent overflow of overburden into the Vattivagu reservoir and into the agricultural fields.</p> <p>➤ The garland drains, deck drains, check dams etc., are being regularly de-silted and maintained properly</p> <p>➤ An earthen bund is made 3.0Km length all along Vattivagu reservoir.</p> <ul style="list-style-type: none"> ▪ top width-10m ▪ bottom width-16m <p>➤ height-3m above the Highest Flood Level. Massive plantation is taken up in the area between the Vattivagu and the project by planting native species</p>
xxx. The project authorities shall undertake repairing and tarring of roads used for mineral transportation. A 3 tier green comprising of a mix of native species shall be developed all along the	<p>➤ Regular repairing and tarring of coal transport road is being done at regular intervals.</p> <p>➤ A 3-tier green belt comprising of a mix of native species was developed all along the major approach roads.</p>



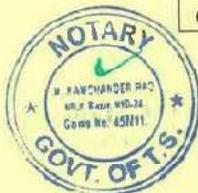
Srinivas
General Manager
 The Singareni Collieries Co. Ltd.
 Belampalli Area
 GOLETI - 504 292
 Dist: Kumrambheem
 Asifabad (T.S.)

<p>major approach roads.</p> <p>xxxi. Controlled blasting shall be practiced with use of delay detonators and only during daytime. The mitigative measures for control of ground vibrations and to arrest the rocks and boulders shall be implemented.</p>	<ul style="list-style-type: none"> ➤ Controlled blasting with NONEL (non-electric delay detonators) is being done ➤ The blasting is being carried out only in day time ➤ Mitigative measures like optimum charge per hole, sequence of blasting, blasting design, blasting pattern, etc., are adopted to reduce the ground vibrations and to arrest fly rock.
<p>xxxix. Regular monitoring of ground water level and quality shall be carried out by establishing a network of existing wells and construction of new piezometers. The monitoring for quantity shall be done four times a year in pre monsoon (May), monsoon (August), post monsoon (November) and winter (January) season and for quality in May. Data thus collected shall be submitted to the Ministry of Environment, Forest & CC and the Central Pollution Control Board quarterly within one month of monitoring.</p>	<p>The ground water levels are being monitored with a network of 5 nos. of piezometers and 14 nos. of existing open wells. The piezometric & phreatic levels monitoring data and ground water quality data is being submitted to Ministry of Environment, Forest & CC alongwith Environmental Clearance compliance reports.</p>
<p>xliii. Land oustees shall be compensated as per the norms laid out R&R Policy of CIL or the National R&R Policy or R&R Policy of the State Government whichever is higher.</p>	<p>Rehabilitation and Resettlement was already implemented before 2013 as per the State Government Rehabilitation and Resettlement policy guidelines.</p>
<p>xlvi. The project authorities shall in consultation with the</p>	<ul style="list-style-type: none"> ➤ The corporate social responsibility activities are being taken up every year in consultation with the



Sreeley
General Manager
 The Singareni Collieries Co. Ltd.
 Belampalli Area
 GOLETI - 504 292
 Dist. Kumrambheem
 Asifabad (T.S.)

<p>Panchayats of the local villages and administration identify socio-economic and welfare measures under CSR to be carried out over the balance life of the mine.</p>	<p>Panchayats of the local villages & administration. ➤ The corporate social responsibility activities are being continued in the project</p>
<p>xlvi. Corporate ironment Responsibility: a. The Company shall have well laid down Environment Policy approved by the Board of Directors. b. The Environment Policy shall prescribe for standard operating process/procedures to bring into focus any infringements/deviation /violation of the environmental or forest norms/conditions. c. The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions shall be furnished. d. To have proper checks and balances, the company shall have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or</p>	<p>a. The Singareni Collieries Company Limited has a well laid down Environment Policy approved by the Board of Directors having standard operating procedures and to bring into focus any infringements/ deviation/ violation of the environmental or forest norms/conditions. b. The status of compliance of Environmental Clearance/Forest Clearance is being appraised to Singareni Collieries Company Limited Board of Directors once in three months as per Companies Act, 2013 by the project authorities c. The Singareni Collieries Company Limited has a well defined hierarchical system to deal with environmental issues and for ensuring compliance with the environmental clearance conditions. A company level environment cell with qualified personnel headed by GM(Environment) is established to monitor and guide in implementation of the environmental safeguards. d. The company has a well laid down system of reporting non-compliances / violations of environmental norms to the Board of Directors of the company and shareholders as well as status of compliance of other laws, rules, etc. i.e. once in three months under Companies Act, 2013. The details are enclosed as Annexure-XXVI.</p>



Sully
General Manager
 The Singareni Collieries Co. Ltd.
 Belampalli Area
 GOLETI - 504 292
 Dist. Kurrambheem
 Asifabad (T.S.)

shareholders or stakeholders at large.	
<p>General Conditions:</p> <p>xi. A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company.</p>	<p>xi. The Singareni Collieries Company Limited has a well defined hierarchical system to deal with environmental issues and for ensuring compliance with the environmental clearance conditions.</p> <p>A company level environment cell with qualified personnel headed by General Manager(Environment) is established to monitor and guide in implementation of the environmental safeguards.</p>
<p>xii. The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year wise expenditure shall be reported to this Ministry and its concerned Regional Office.</p>	<p>Xii. The funds earmarked for the environmental protection are are being spent for environmental protection works only. The year wise environmental expenditure is being submitted along with half yearly reports to the ministry and its regional office of Ministry of Environment, Forests & Climate Change</p> <p>xvi. The Environmental Clearance letter was displayed on company's website i.e. www.Scclmines.com.</p> <p>The compliance status of the stipulated environmental clearance conditions is being updated once in every six months along half yearly monitoring report on company's website i.e. www.scclmines.com., so as to bring the same in public domain.</p>
<p>xvi. The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated environmental clearance conditions shall also be uploaded by the project authorities on their website and updated at least once in every six months so as to bring</p>	<p>At the entrance of the project premises and mine office, in corporate office and on company's website i.e. www.scclmines.com.</p> <p>xvii. The updated half yearly monitoring reports on status of compliance of the stipulated Environmental Clearance conditions is being submitted (both in hard copy, soft data in e-mail) once in every six months to the Regional Office, Ministry of Environment, Forests & Climate Change , Chennai, respective Zonal Officer's of Central Pollution</p>



S. S. S.
General Manager
 The Singareni Collieries Co. Ltd
 Belampalli Area
 GOLETI-504 292
 Dist. Kurnambhram
 Asifabad (T.S.)

<p>the same in public domain.</p>	<p>Control Board and the Telangana State Pollution Control Board , Hyd.</p>									
<p>xvii. The project proponent shall submit six monthly compliance reports on status of compliance of the stipulated environmental clearance conditions (both in hard copy and in email) to the respective Regional Office of the Ministry, respective Zonal Office of CPCB and the SPCB.</p>	<p>xix. The Environmental Statement for each financial year ending 31st March in Form-V is being submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently. The Environmental Statement in Form-V was uploaded on the company's website i.e. www.seclmines.com., along with the status of compliance of Environmental Clearance conditions.</p> <p>5. All commitments and recommendations made in the Environmental Impact Assessment / Environmental Management Plan report have been complied.</p> <p>6. This Environmental Clearance was granted for enhancement of annual production capacity of the project from 3.0 Million Tonnes Per Annum to 3.75 Million Tonnes Per Annum (as per Ministry of Environment, Forests & Climate Change circular for enhancement of 50% production with respective to previous Environmental Clearance or 1.0 Million Tonnes production raise ,then conducting of Environmental Public Hearing is required). As per above circular, conducting of Environmental Public Hearing was not done. However, the commitments made during public hearing conducted earlier were also fulfilled by Singareni Collieries Company Limited.</p>									
<p>xix. The Environmental statement for each financial year ending 31 March in For-V is mandated to be submitted by the project proponent for the concerned PCB.</p>	<p>9. An area level environment audit cell is setup with the following members under the chairmanship of Staff Officer to General Manager of area.</p>									
<p>5. The proponent shall abide by all the commitments and recommendations made in the EIA/EMP report so also during their presentation to the EAC.</p>	<table border="1"> <thead> <tr> <th>Sl.</th> <th>Designation</th> <th></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Staff Officer to General Manager</td> <td>Chairman</td> </tr> <tr> <td>2</td> <td>Area Engineer (Electrical & Mechanical)</td> <td>member</td> </tr> </tbody> </table>	Sl.	Designation		1	Staff Officer to General Manager	Chairman	2	Area Engineer (Electrical & Mechanical)	member
Sl.	Designation									
1	Staff Officer to General Manager	Chairman								
2	Area Engineer (Electrical & Mechanical)	member								
<p>6. The Commitment made by the Proponent</p>										



Sally
General Manager
 The Singareni Collieries Co.Ltd
 Belampalli Area
 OOLETI - 504 292
 Dist: Kumrambheem
 Arafabad (T.S)

to the issues raised during Public hearing shall be implemented.	3	Deputy General Manager (Civil)	member
	4	Area Environment Officer	member
9. The Proponent shall setup an Environment Audit cell with responsibility and accountability to ensure implementation of all the EC Conditions.	The above audit cell is conducting meeting once in a month and auditing the condition wise compliance status of all the Environmental Clearance conditions. The above audit committee prepares an Environmental Audit report and advise project authority to initiate action for compliance of conditions of the Environmental Clearance after conducting meeting.		

19. In reply to the averments made in para-14, it is submitted that the Respondent Company is taking various pollution mitigation measures in the project for control of air pollution, water pollution and soil erosion etc., and the environmental parameters monitored in and around the mine are within the stipulated norms. At Khairagura Open Cast Project, one Continuous Ambient Air Quality Monitoring Station was established in core zone and analyzing the air quality continuously and the ambient air quality data is being uploading to the Telangana State Pollution Control Board website on real time basis. The Continuous Ambient Air Quality Monitoring Station data indicates that the monitored parameters are well within the Standards stipulated for coal mines vide Notification No. GSR 742 (E), dated 25th September 2000. Also, ambient air, water, noise samples are collected in core zone and the villages falling in buffer zone and analyzed through a third party agency i.e Environment Protection Training And Research Institute, Hyderabad, a Central Pollution Control Board recognized and National Accreditation Board for Testing and Calibration Laboratories and the reports are periodically submitted to Telangana State Pollution Control Board. The



Sally
General Manager
 The Singareni Collieries Co.Ltd
 Belampalli Area
 GOLETI - 504 292
 Dist: Kumrambheem

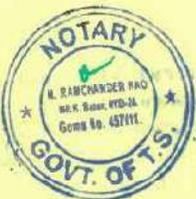
monitored data shows that values are within permissible limits in all surrounding villages including Ullipitta Village. The Pollution Control Board (TSPCB) officials inspected the Mine and Ullipitta village and conducted analysis of Air, Water and Noise samples on 29.10.2021. They have collected air samples at substation in Core Zone and in Ullipitta Village in buffer zone of Khairagura Open Cast Project. The analysis data of samples collected in nearby village indicates that monitored parameters are within permissible limits. The Particulate Matter (PM10) value recorded at core zone location (substation of the project) is 112 $\mu\text{g}/\text{m}^3$, which is well within the stipulated limit of 250 $\mu\text{g}/\text{m}^3$ as per Coal Mine standards, GSR 742(E) dated 25.09.2000. As on date, there is no complaint on health issues of villagers. A Social-audit /socio economic survey was carried out through Centre for Good Governance, Hyderabad and the study also included health survey of surrounding villages. The report clearly revealed that there are no health impacts due to mining operations and Singareni Collieries Company Limited conducting periodical health screening camps and awareness camps in surrounding villages and distributing free medicines based on diagnosis. Free Mobile Medical Van "SANJEEVANI" is being provided daily with qualified doctor, medical staff and medical facilities such as X-Ray, E.C.G. Spiro analyzer, blood test, urine test, etc. for medical checkups & treatment of people of surrounding villages & people of Rehabilitation and Resettlement centres in Bellampalli Area. There are no occupational health issues recorded in surrounding villages except some common ailments. There is no affect on water reservoir and on nearby villages due to



S. S. S.
General Manager
 The Singareni Collieries Co. Ltd.
 Bellampalli Area
 GOLETI : 504 292
 Dist: Kamfambheem
 Asifabad (T.S.)

back waters as vatti vagu diversion was carried out in a systematic manner as per the directions of Irrigation&CAD Department. Diversion of Vattivagu was taken up as per the approval and design given by Irrigation & CAD Department of Telangana State. Approval was also accorded by Irrigation & CAD Department for the proposed Phase-II diversion of Vattivagu. Diversion of Vattivagu was completed with the approval and as per the design of State Irrigation and CAD Department. For 2nd diversion of Vattivagu, approval was also accorded by Irrigation & CAD, Telangana State. Project authority has provided appropriate compensation to the project affected persons. Rehabilitation and Resettlement was implemented to all the Project Displaced Families as per the Rehabilitation and Resettlement policy. Hence, it is submitted that there is no violation of Environment Protection Act, 1986, Air Act, Water Act and Environment conditions imposed by Ministry of Environment, Forests & Climate Change in the Khairagura Opencast Project.

20. In reply to the averments made in para-15 regarding limitation, it is submitted that the Respondent Company has been implementing pollution mitigation measures in the project in compliance to Environmental Clearance and Consent For Operation conditions and the compliance reports along with pollution monitoring data are being periodically submitted to regulatory authorities like Ministry of Environment, Forests & Climate Change and Telangana State Pollution Control Board. The Environmental Clearance compliance in Khairagura Open Cast Project was also audited through Indian Council of Forestry Research and Education, Dehradun.



Sally
General Manager
 The Singareni Collieries Co. Ltd.
 Belampalli Area
 GOLETI - 504 292
 Dist. Kumrambheem
 Asifabad (T.S.)

Further, as stated supra it is submitted that the present Application is barred by law of limitation. As the Application has to be filed within a period of 30 days from the date of order or decision under Sec.14 & 16 of the NGT Act. In the instant case, Environment Clearance(EC) has been granted on 06.02.2015 and three Forest Clearances(FC) on (28.09.2000,10.09.2003 & 01.07.2011), but the applicant/petitioner for the reasons best known, has filed the Application after a lapse of about 6 years in case of Environmental Clearance and (10) years in case of Forest Clearance. Therefore, the application is liable to be dismissed in limine.

21. It is submitted that the Answering Respondent reserves his right to file an Additional Counter affidavit during the course of hearing in the said Application as and when required.

In view of the above mentioned facts, this Hon'ble Tribunal may be pleased to dismiss the Application made by the Applicants as devoid of merits and may pass orders as may deem fit in the interest of justice. The Answering Respondent prays accordingly.

Sworn and signed before me on this the
28th day of April, 2022 at Hyderabad.

Before me

Attestor

VERIFICATION

I, BHIMIREDDY SANJEEVA REDDY, Son of Sri BHEEMIREDDY KRISHNA REDDY, aged about 58 years, R/o. Goleti, KB Asifabad District, Telangana State do hereby verify that the contents of the paras 1 to 21 are true to my personal knowledge and that I have not suppressed any material fact.

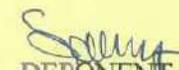

Advocate



ATTESTED
ATTESTED

M. RANACHANDER RAO
NOTARY PUBLIC
ADVOCATE at Bazar,
H. No. 22-2-2193, Moorthi Bazar,
HYD-24 T.S. India. Goma No. 457/11.


DEPONENT
General Manager
The Singareni Collieries Co.Ltd
Belampalli Area
GOLETI - 504 292
Dist. Kumrambheem
Asifabad (T.S.)


DEPONENT
General Manager
The Singareni Collieries Co.Ltd
Belampalli Area
GOLETI - 504 292
Dist. Kumrambheem
Asifabad (T.S.)

[The main body of the document contains several paragraphs of text that are extremely faint and illegible due to the low contrast of the scan. The text appears to be a formal document, possibly a contract or a legal agreement, but the specific details cannot be discerned.]

ATTESTED

M. RANCHER RAO
ADVOCATE
H. NO. 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

MITIGATIVE MEASURES

I. Air pollution control measures:

The following air pollution prevention/control measures are being taken up at the project

- 7 nos. of 28 KL & 5 no of 10KL capacity mobile water sprinklers are being deployed in every shift for dust suppression on haul roads and approach roads, dumps, coal transport road, etc.
- The coal transport road leading to Khairagura expansion project from Goleti Township is black topped. Resurfacing of coal transport road is being done at regular intervals
- The permanent roads, like road to the pit head coal handling plant, permanent internal roads at site office, etc., are laid with CC.
- Vehicular emissions are being monitored for HEMM at a frequency of once in six months. Maintenance & engine tuning of the vehicles is being carried out at regular intervals to control fuel exhaust emissions.
- The crusher house, conveyors, transfer points, discharge hoppers, etc, are closed with G.I. sheets to the extent possible to control the dust generation.
- A mist sprayer is provided at crusher of pit head coal handling plant.
- A sensor operated wetting point is provided to wet, coal loaded dumpers before unloading into crushers
- Fixed point water sprinkling arrangement is provided along permanent haul roads, in crushers, around pre weigh bin .
- So far 14,78,294 nos. of plants were planted in an area of 393.23 Ha. up to 30.09.2021, Against 528.96 Ha. As planned up to 31.03.2023 as per approved EMP
- ✓ dump area- 338.95Ha. (including 20 Ha internal dump)
- ✓ avenue & greenbelt area: 54.28Ha.
- Total 20 nos. of project affected persons (from PAFs& PDFs) are being deployed daily for sweeping, collection & disposal off dust from entire coal transport road at Bellampalli Area.
- Coal transporting trucks are being covered with tarpaulin and same is being ensured at SCCL's check posts by security personnel.
- Dust respirators are being issued workmen at regular intervals.
- Pre-weigh bin truck dispatch system is provided at this project to reduce dust during loading of trucks.
- The wet drilling is being adopted.
- Controlled blasting technique with NONELs is being practiced for effective blasting and to control the generation of dust, ground vibrations, fly rock, etc., during blasting operation
- Eight nos. of Ambient Air Quality (AAQ) monitoring stations, four at core zone and four at buffer zones were identified in consultation with Regional office, TSPCB, Nizamabad.

II. Noise pollution control measures:

- Sound proof cabins are provided in the HEMM.
- Monitoring of noise level is being done regularly and record is being maintained.
- Plantation is being carried out every year on dumps, in the vacant places, avenue and around boundary to reduce the noise levels.
- Planned preventive maintenance of HEEM & other vehicles is being done at regular intervals to control noise.
- Protective devices like acoustic wool, earplugs/ear muffs, etc. are being issued to workmen at regular intervals.
- Workmen are being subjected to occupational health surveillance periodically.
- Speed limits are fixed for HEMM/vehicles to control the noise.
- Regular fine tuning of engines is being done to reduce the noise.
- In order to control noise due to impact, some coal is being left in coal bunkers & the height of fall of coal is kept minimum to reduce noise.
- Controlled blasting technique with NONELs is being practiced to control noise also.
- Plaster shooting is avoided to the extent possible to reduce air shock wave.

III. Water pollution control measures:

The following water pollution prevention/control measures are taken at this project.

- A washing plat form is constructed near base workshop for washing of HEMM and other vehicles.

- ETP (60KLD capacity) is constructed near base workshop.
- CC drains are made for base workshop , for pit head CHP and for office.
- RO plant is provided for supply of drinking water to employees working at this project.
- The washing effluents generated from washing platform of the workshop are being treated in Effluent Treatment Plant (ETP) provided for the purpose
- A separate Effluent Treatment Plant (ETP) is constructed for CHP to treat the effluents from CHP.
- mine discharge water undergoes treatment in slow sand filter bed/sedimentation tank is being used for consumption and remaining water discharged into natural drains leading to Vattivagu
- Garland drains (dim: base width 2 m, top width 3 m, depth 3m) around the quarry and dumps are provided with settling ponds followed by check dams to settle the run off soil during rains.
- Six nos. of CC check dams are constructed for dumps to arrest silt.
- Earthen bunds (base width 5m, top width 3m, height 3m) are made all around dumps to check runoff into the
- Cleaning of drains, settling tanks, culverts, etc., are being done at regular intervals.
- A trench is made all around quarry boundary to prevent entering of rain water from surrounding area into quarry.

Post-project air quality monitoring is being carried out by an external agency i.e. M/s. Environment Protection Training & Research Institute (EPTRI)) which is CPCB recognized & NABL accredited lab as per the frequencies stipulated by CPCB/ MoEF & CC for coal mining industries. A regional lab is established by EPTRI with all required facilities at Mandamarri for serving Bellampalli region for monitoring of critical parameters in the field.

The post project ambient air quality data is being submitted to RO, MoEF & CC and RO, TSPCB, Nizamabad along with half yearly reports

IV. Blasting vibration control measures:

The following Blasting vibration control measures are taken at this project.

- The controlled Blasting activity is being carried out as per the scientific study conducted by CMRI and Approved DGMS, Controlled blasting is being done with NONEL (non-electric delay detonators). Mitigative measures like optimum charge per hole, sequence of blasting, blasting design, blasting pattern, etc., adopting to reduce the ground vibrations.
- The blasting vibration are being measured and recorded and the results are within the limits.

V. soil erosion control measures

The following soil erosion control measures are taken at this project:

- The ultimate slope of the dump is less than 28 degrees.
- year wise reclamation is being taken up as per approved EMP.
- So far 14,78,294 nos. of plants were planted in an area of 393.23 Ha. up to 30.09.2021, Against 528.96 Ha. As planned up to 31.03.2023 as per approved EMP
 - ✓ dump area- 338.95Ha. (including 20 Ha internal dump)
 - ✓ avenue & greenbelt area: 54.28Ha.
- Monitoring and management of reclaimed dump sites is being done and will be continued until the vegetation becomes self-sustaining.
- Garland drains (dim: base width 3m, top width 10m, depth 3m) around the quarry and external dumps are provided with settling ponds followed by check dams to settle the run off soil during rains.
- Six nos. of CC check dams were constructed for dumps to arrest silt.
- Earthen bunds (base width 5m, top width 3m, height 3m) are made all around external dumps to check runoff into the natural drains.

KHA OCP Noise levels monitoring data
 Sampling interval: Once in fortnight Sampling duration: 24 hours

From April 2017 – March 2018

Month	Fortnight	Khairgura OCP.Expan.(CZ)		Pathibanda village (BZ)		Ullipitta Dorli village(BZ)	
		L _{day}	L _{night}	L _{day}	L _{night}	L _{day}	L _{night}
	Std.	75	70	55	45	55	45
Apr-2017	1 st	70.2	61.2	41.1	39.4	47.2	38.7
	2 nd	69.7	58.8	45.6	37.2	49.1	32.2
May-2017	1 st	70.4	54.8	46.4	38.0	48.0	35.0
	2 nd	71.2	58.6	44.6	38.2	42.2	34.2
June-2017	1 st	70.4	55.4	42.2	35.6	45.4	33.4
	2 nd	69.4	50.2	44.0	38.2	46.2	34.5
July-2017	1 st	68.5	52.9	46.3	39.0	44.4	32.6
	2 nd	69.0	56.9	44.2	34.0	45.8	35.6
Aug-2017	1 st	70.2	54.2	42.0	37.9	46.3	33.2
	2 nd	68.0	55.9	45.6	38.4	45.2	35.0
Sep-2017	1 st	60.8	48.4	49.7	41.7	-	-
	2 nd	60.5	52.2	49.4	41.8	-	-
Oct-2017	1 st	62.7	49.2	50.6	42.5	-	-
	2 nd	61.0	46.5	49.2	42.3	-	-
Nov-2017	1 st	61.3	46.4	48.7	38.4	50.1	39.8
	2 nd	65.4	41.3	50.6	41.4	50.2	35.8
Dec-2017	1 st	62.3	47.2	49.8	39.0	49.6	39.1
	2 nd	65.1	50.5	50.9	42.2	50.6	40.2
Jan-2018	1 st	63.3	50.4	-	-	-	-
	2 nd	60.1	51.8	-	-	-	-
Feb-2018	1 st	60.4	50.8	49.3	38.9	48.5	37.3
	2 nd	60.1	50.5	47.5	38.8	47.0	36.7
Mar-2018	1 st	60.5	49.6	47.1	38.7	45.4	36.1
	2 nd	60.5	49.7	47.2	38.7	47.0	36.7
Min.		60.1	41.3	41.1	34.0	42.2	32.2
Max.		71.2	61.2	50.9	42.5	50.6	40.2
98%tile		70.8	60.1	50.8	42.4	50.5	40.1
-No electricity power Supply							

From APRIL 2018 to MARCH 2019

Month	Fort night	Khairgura OCP.Expan.(CZ)		Pathibanda village(BZ)		Ullipitta Dorli village (BZ)	
		L _{day}	L _{night}	L _{day}	L _{night}	L _{day}	L _{night}
		Stnd.	75	70	55	45	55	45
Apr-2018	1 st	61.3	50.2	47.5	38.1	47.5	36.9
	2 nd	60.5	50.1	49.3	38.1	48.4	37.1
May-2018	1 st	60.1	50.0	49.5	38.3	47.1	37.5
	2 nd	60.4	50.1	48.9	38.1	46.7	36.5
Jun-2018	1 st	60.0	49.8	47.5	38.7	46.4	36.5
	2 nd	60.4	50.3	48.3	38.0	45.0	36.8
Jul-2018	1 st	60.9	50.5	48.5	38.4	46.4	36.2
	2 nd	60.1	49.6	47.5	38.7	46.9	36.4
Aug-2018	1 st	60.5	49.5	48.6	38.4	46.1	36.1
	2 nd	61.2	49.9	48.3	38.6	46.9	36.5
Sep-2018	1 st	62.7	51.1	49.6	39.6	48.0	36.9
	2 nd	61.7	51.5	49.8	39.0	48.5	37.5
Oct-2018	1 st	61.3	50.9	50.5	39.5	49.0	37.7
	2 nd	60.4	51.0	50.9	40.0	49.6	38.1
Nov-2018	1 st	61.2	50.5	50.0	40.4	50.6	38.7
	2 nd	62.1	49.8	49.5	40.6	50.0	39.7
Dec-2018	1 st	61.3	50.5	50.3	39.9	49.4	39.3
	2 nd	61.9	51.4	50.9	40.3	50.4	40.0
Jan-2019	1 st	60.4	51.8	49.5	39.8	49.3	40.4
	2 nd	60.9	50.4	49.9	39.4	49.6	41.1
Feb-2019	1 st	61.4	52.0	50.3	40.3	50.6	40.7
	2 nd	60.9	52.5	49.8	40.9	50.0	40.1
Mar-2019	1 st	61.3	51.7	49.3	39.7	49.8	41.2
	2 nd	62.1	52.8	50.1	40.5	50.5	41.6
Min.		60.0	49.5	47.5	38.0	45.0	36.1
Max.		62.7	52.8	50.9	40.9	50.6	41.6
98%tile		62.4	52.7	50.9	40.8	50.6	41.4

From April 2019 to March 2020

Month	Fort night	Khaiargura OCP.Expan.(CZ)		Pathibanda village(BZ)		Ullipitta Dorli village (BZ)	
		L _{day}	L _{night}	L _{day}	L _{night}	L _{day}	L _{night}
	Std	75	70	55	45	55	45
Apr-2019	1 st	62.7	51.8	50.5	40.9	50.8	41
	2 nd	63.8	53.3	49.9	41.3	51.1	40.7
May-2019	1 st	63.3	52.7	50.5	42.3	51.9	40.8
	2 nd	62.8	52.4	50	41.7	50.9	41.3
Jun-2019	1 st	61.7	53.3	49.6	41.9	50.3	40.5
	2 nd	61.3	52.2	49.9	40.4	50.8	41.4
Jul-2019	1 st	61.7	51.6	49.3	51.6	49.8	39.9
	2 nd	62.3	52.8	50.1	52.8	50.4	40.3
Aug-2019	1 st	60.7	51.5	48.6	51.5	49	39.4
	2 nd	61	50.9	49.1	50.9	49.6	40
Sep-2019	1 st	60.3	50.1	48.9	50.1	49.1	39.7
	2 nd	59.9	50.6	49.1	50.6	48.9	40
Oct-2019	1 st	61.4	51.6	49.5	39.6	50.1	39.8
	2 nd	62.2	51.9	50	39.9	50.6	40.4
Nov-2019	1 st	61.5	51	49.8	39.3	49.9	39.7
	2 nd	60.9	51.7	49.3	38.8	49.3	39.2
Dec-2019	1 st	60.4	50.9	48.6	38.6	49.8	38.7
	2 nd	59.6	49.6	48	38.1	48.9	37.8
Jan-2020	1 st	59.1	48.8	48.4	37.6	49	38.2
	2 nd	60.1	48.3	48.8	38.7	49.8	38.9
Feb-2020	1 st	60.4	50.4	49.4	38.4	48.9	39.1
	2 nd	61.3	50.8	49.8	39.3	50	40.1
Mar-2020	1 st	62.2	51.8	50.3	39.7	49.5	40.6
	2 nd	62.1	50.7	49.9	38.6	48.9	39.8
Min.		59.1	48.3	48	37.6	48.9	37.8
Max.		63.8	53.3	50.5	52.8	51.9	41.4
98%tile		63.57	53.3	50.5	52.248	51.532	41.354

April 2020- March 2021

Month	Fort night Stnd.	KHA OC Project Office.(CZ)			Pathibanda village(BZ)			Thoyagudem (Ullipitta Dorli) village		
		Sample collected on	L _{day}	L _{night}	Sample collected on	L _{day}	L _{night}	Sample collected on	L _{day}	L _{night}
			75	70		55	45		55	45
Apr 2020	1 st	11.04.2020	60.40	49.40	13.04.2020	47.50	37.80	13.04.2020	48.40	38.70
	2 nd	27.04.2020	61.30	49.00	28.04.2020	47.90	37.00	28.04.2020	49.10	38.90
May 2020	1 st	12.05.2020	60.50	50.60	14.05.2020	48.40	38.00	14.05.2020	48.60	37.90
	2 nd	26.05.2020	62.40	51.20	28.05.2020	49.10	39.40	28.05.2020	49.60	39.30
Jun 2020	1 st	10.06.2020	61.70	50.90	12.06.2020	49.40	38.60	12.06.2020	49.10	38.80
	2 nd	25.06.2020	61.20	50.10	27.06.2020	48.90	38.20	27.06.2020	48.60	38.00
Jul 2020	1 st	11.07.2020	60.30	50.30	13.07.2020	48.40	37.60	13.07.2020	48.30	37.90
	2 nd	28.07.2020	59.60	49.70	29.07.2020	47.40	37.20	29.07.2020	47.30	37.30
Aug 2020	1 st	12.08.2020	60.10	49.30	13.08.2020	48.00	37.60	13.08.2020	47.90	38.00
	2 nd	27.08.2020	59.50	48.60	28.08.2020	47.40	36.50	28.08.2020	47.40	37.50
Sep 2020	1 st	10.09.2020	60.70	50.20	11.09.2020	49.00	38.50	11.09.2020	48.10	38.00
	2 nd	26.09.2020	60.30	49.00	28.09.2020	48.80	37.50	28.09.2020	47.90	37.60
Oct 2020	1 st	12.10.2020	59.80	48.50	13.10.2020	48.1	37.1	13.10.2020	47.1	37.2
	2 nd	28.10.2020	59.40	48.00	29.10.2020	47.9	36.9	29.10.2020	46.9	36.7
NOV 2020	1 st	11.11.2020	60.00	49.40	12.11.2020	48.3	37.4	12.11.2020	47.2	37.3
	2 nd	25.11.2020	60.80	49.90	26.11.2020	48.9	38.2	26.11.2020	47.6	37.7
DEC 2020	1 st	10.12.2020	59.90	48.80	11.12.2020	47.8	37.8	11.12.2020	46.9	36.6
	2 nd	28.12.2020	59.10	48.20	29.12.2020	47.2	37.1	29.12.2020	46.1	36.2
Jan 2021	1 st	11.01.2021	60.3	49.6	12.01.2021	48.1	37.9	12.01.2021	47.2	37.1
	2 nd	27.01.2021	59.5	48.6	28.01.2021	47.1	36.7	28.01.2021	46.6	36.2
Feb 2021	1 st	10.02.2021	59.9	48	11.02.2021	47.6	37	11.02.2021	47	36.9
	2 nd	25.02.2021	60.3	48.8	26.02.2021	48	37.6	26.02.2021	47.6	37.1
Mar 2021	1 st	10.03.2021	60.8	49.6	12.03.2021	48.5	38.1	12.03.2021	48	37.6
	2 nd	25.03.2021	61	50.1	26.03.2021	49	38.7	30.03.2021	48.5	38.1
Min.			59.10	48.00		47.10	36.50		46.10	36.20
Max.			62.40	51.20		49.40	39.40		49.60	39.30
98%tile			62.08	51.06		49.26	39.08		49.37	39.12

April 2021- March 2022
 Sampling interval: Once in fortnight Sampling duration: 24 hours

Month	Fort night Std.	KHA OC Project Office.(CZ)			Pathibanda village(BZ)			Thoyagudem (Ullipitta Dorli) village		
		Sample collected on	L _{day}	L _{night}	Sample collected on	L _{day}	L _{night}	Sample collected on	L _{day}	L _{night}
			75	70		55	45		55	45
Apr-2021	1 st	10.04.2021	61.4	50.9	12.04.2021	49.50	39.20	12.04.2021	49.10	38.60
	2 nd	26.04.2021	62.1	51.5	27.04.2021	50.00	39.90	27.04.2021	49.50	39.20
May 2021	1 st	11.05.2021	62.8	51.8	12.05.2021	49.90	39.70	12.05.2021	49.30	39.20
	2 nd	26.05.2021	60.5	49.8	27.05.2021	47.50	37.10	27.05.2021	48.10	37.90
Jun 2021	1 st	11.06.2021	61	50.5	12.06.2021	48.10	38.40	12.06.2021	49.00	38.10
	2 nd	25.06.2021	61.4	50.9	26.06.2021	48.60	38.80	26.06.2021	49.60	38.60
July 2021	1 st	10.07.2021	60.4	49.7	12.07.2021	47.40	37.50	12.07.2021	48.90	37.60
	2 nd	27.07.2021	60.8	48.8	28.07.2021	47.90	37.00	28.07.2021	48.30	38.10
Aug 2021	1 st	11.08.2021	59.9	48	12.08.2021	46.90	36.70	12.08.2021	47.80	37.70
	2 nd	26.08.2021	60.1	48.6	27.08.2021	47.20	37.00	27.08.2021	48.00	37.20
Sept. 2021	1 st	11.09.2021	58.7	46.6	13.09.2021	46.20	36.60	13.09.2021	47.10	36.50
	2 nd	25.09.2021	59.3	47.3	27.09.2021	46.90	36.90	27.09.2021	47.80	37.30
OCT 2021	1 st	11.10.2021	59.80	47.90	12.10.2021	46.2	36.4	12.10.2021	48	37.7
	2 nd	27.10.2021	58.90	46.90	28.10.2021	45.9	35.8	28.10.2021	47.4	36.8
NOV 2021	1 st	11.11.2021	58.00	46.20	12.11.2021	45.2	35	27.11.2021	46.1	35.8
	2 nd	26.11.2021	59.10	47.20	12.11.2021	47	36.1	27.11.2021	48.4	37.3
DEC 2021	1 st	10.12.2021	59.90	47.70	11.12.2021	46.9	36.4	11.12.2021	48.9	37.9
	2 nd	27.12.2021	59.00	46.70	28.12.2021	45.9	35.6	28.12.2021	47.6	36.7
JAN 2022	1 st	11.01.2022	60	47.8	12.01.2022	46.1	36	12.01.2022	48	37
	2 nd	27.01.2022	60.5	48.4	28.01.2022	46.9	36.7	28.01.2022	48.6	37.8
FEB 2022	1 st	10.02.2022	59.9	48.9	11.02.2022	47.2	37.2	15.02.2022	49.1	38.2
	2 nd	25.02.2022	60.1	49	26.02.2022	47.9	37.8	28.02.2022	49.8	38.9
MAR 2022	1 st	11.03.2022	60.8	49.7	12.03.2022	48.1	38.2	11.03.2022	49	39.2
	2 nd	26.03.2022	61.2	50.3	28.03.2022	48.8	38.7	26.03.2022	49.5	39.6
Min.			58.00	46.20		45.20	35.00		46.10	35.80
Max.			62.80	51.80		50.00	39.90		49.80	39.60
98%tile			62.48	51.66		49.95	39.81		49.71	39.42

Khairagura OC Ambient air quality monitoring data
 Sampling interval: Once in fortnight Sampling duration: 24 hours
 From SEPT. 2017 to MARCH 2018

Ambient Air Quality at Khairaguda Expansion OCP					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
Coal mine standards, GSR 742(E),dt:25.09.2000		250	-	120	120
1	15.09.2017	156	52.2	16.3	22.3
2	29.09.2017	165	56.1	14.5	21.4
3	14.10.2017	200.0	69.1	14.3	22.8
4	31.10.2017	185.0	92.9	17.2	24.4
5	14.11.2017	179.0	94.9	13.9	21.6
6	28.11.2017	195.0	120.9	19.8	25.7
7	13.12.2017	205.0	111.1	16.6	22.0
8	26.12.2017	207.0	96.8	15.4	23.2
9	13.01.2018	196.0	90.0	15.7	21.4
10	27.01.2018	186.0	81.8	16.6	23.5
11	12.02.2018	181.0	72.8	15.2	22.0
12	27.02.2018	173.0	68.6	17.6	21.0
13	12.03.2018	176.0	72.3	16.3	21.5
14	27.03.2018	182.0	72.3	13.4	22.8
Min.		156.00	52.20	13.40	21.00
Max.		207.00	120.90	19.80	25.70
98%tile		184.71	82.27	15.91	22.54
Average		206.48	118.352	19.228	25.362

Ambient Air Quality at Khairagura Expansion OCP weighbridge					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
Coal mine standards, GSR 742(E),dt:25.09.2000		250	-	120	120
1	14.10.2017	182.0	64.7	16.3	20.2
2	31.10.2017	190.0	83.8	19.4	26.1
3	15.11.2017	211.0	90.6	15.6	18.7
4	28.11.2017	164.0	99.5	18.2	28.5
5	14.12.2017	191.0	82.6	18.6	22.3
6	27.12.2017	191.0	102.2	14.8	22.5
7	13.01.2018	187.0	83.8	15.1	23.4
8	27.01.2018	154.0	76.0	16.3	20.6
9	10.02.2018	160.0	68.1	16.2	19.4
10	27.02.2018	153.0	63.8	14.3	21.4
11	12.03.2018	154.0	62.9	15.3	20.5
12	27.03.2018	159.0	66.7	15.8	20.3
Min.		153.0	62.9	14.3	18.7
Max.		211.0	102.2	19.4	28.5
98%tile		206.6	101.6	19.2	28.0
Average		174.6667	78.725	16.325	21.99167

Ambient Air Quality at Goverguda village					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards CPCB, dt:18.11.2009		100	60	80	80
1	15.09.2017	67.0	35.0	9.9	15.8
2	27.09.2017	62.0	44.1	9.6	12.0
3	13.10.2017	81.0	48.5	8.9	12.0
4	30.10.2017	80.0	55.9	10.1	15.8
5	15.11.2017	77.0	52.9	8.6	11.4
6	27.11.2017	86.0	52.8	9.5	14.7
7	15.12.2017	87.0	46.9	7.9	11.4
8	27.12.2017	67.0	35.3	9.1	14.6
9	15.01.2018	90.0	51.4	8.8	13.0
10	29.01.2018	87.0	51.4	12.8	15.7
11	13.02.2018	74.0	45.7	11.5	16.4
12	28.02.2018	70.0	45.7	11.5	17.1
13	14.03.2018	73.0	40.0	10.1	17.5
14	28.03.2018	77.0	51.4	10.6	17.5
Min.		62.00	35.00	7.90	11.40
Max.		90.00	55.90	12.80	17.50
98%tile		89.22	55.12	12.462	17.5
Average		77	46.92857	9.921429	14.63571

Ambient Air Quality at Pathibanada village					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards, CPCB ,dt.18.11.2009		100	60	80	80
1	13.09.2017	46.0	31.8	9.5	14.1
2	27.09.2017	69.0	41.9	11.1	14.2
3	14.10.2017	76.0	37.2	10.1	14.1
4	30.10.2017	62.0	41.7	8.0	14.4
5	15.11.2017	85.0	37.2	7.8	13.1
6	28.11.2017	50.0	40.3	10.3	15.5
7	15.12.2017	78.0	39.7	9.9	14.2
8	27.12.2017	73.0	46.5	8.2	14.0
9	13.01.2018	77.0	40.9	9.3	14.5
10	27.01.2018	74.0	36.4	11.5	16.7
11	12.02.2018	68.0	45.4	10.5	15.5
12	27.02.2018	62.0	40.9	11.6	17.1
13	13.03.2018	65.0	45.4	10.0	15.4
14	27.03.2018	64.0	45.4	11.2	18.6
Min.		46.00	31.80	7.80	13.10
Max.		85.00	46.50	11.60	18.60
98%tile		83.18	46.214	11.574	18.21
Average		67.78571	40.76429	9.928571	15.1

Ambient Air Quality at Chopidi village					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards CPCB,dt:18.11.2009		100	60	80	80
1	14.09.2017	52.0	34.5	10.3	15.2
2	27.09.2017	55.0	40.9	9.2	16.3
3	14.10.2017	61.0	40.9	9.2	14.0
4	31.10.2017	79.0	50.8	10.1	16.1
5	15.11.2017	79.0	45.4	10.0	14.0
6	29.11.2017	73.0	48.5	9.2	17.1
7	13.12.2017	77.0	46.5	9.7	12.1
8	26.12.2017	78.0	54.5	7.5	14.7
9	12.01.2018	65.0	47.5	7.3	13.9
10	26.01.2018	62.0	43.2	10.3	14.6
11	10.02.2018	65.0	43.2	11.1	14.5
12	26.02.2018	59.0	38.8	11.2	16.8
13	10.03.2018	64.0	43.2	9.6	13.4
14	26.03.2018	63.0	38.8	10.1	17.3
Min.		52.00	34.50	7.30	12.10
Max.		79.00	54.50	11.20	17.30
98%tile		79	53.538	11.1	17.2
Average		66.57	44.05	9.6	15

Ambient Air Quality at Ullipitta Dorli Village					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards, CPCB		100	60	80	80
Dated : 18.11.2009					
1	14.11.2017	88.0	42.6	6.6	13.1
2	28.11.2017	89.0	50.1	7.7	12.0
3	15.12.2017	87.0	52.2	7.1	14.1
4	27.12.2017	85.0	49.3	7.8	13.0
5	13.01.2018	84.0	51.1	8.3	13.1
6	27.01.2018	86.0	46.9	8.0	11.4
7	12.02.2018	75.0	51.1	10.9	17.0
8	27.02.2018	72.0	46.9	13.8	16.9
9	13.03.2018	72.0	42.6	11.6	15.2
10	27.03.2018	72.0	46.9	12.1	16.8
Min		72.00	42.60	6.60	11.40
MAX		89.00	52.20	13.80	17.00
98%tile		88.82	52.002	13.494	16.982
Average		81	47.97	9.39	14.26

FROM APRIL 2018 to MARCH 2019

Ambient Air Quality at Khairaguda OC Expansion Project Office (CZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
Coal mine standards,GSR 742(E), dt.25.09.2000		250.0	-	120.0	120.0
1	12.04.2018	188.0	72.8	15.5	22.9
2	26.04.2018	185.0	73.4	16.1	23.4
3	11.05.2018	176.0	75.0	16.6	22.6
4	26.05.2018	173.0	73.4	16.4	21.7
5	12.06.2018	171.0	77.3	15.6	21.4
6	27.06.2018	170.0	75.0	15.2	18.9
7	12.07.2018	167.0	73.2	17.9	22.1
8	26.07.2018	173.0	76.2	16.0	21.5
9	13.08.2018	169.0	74.4	16.1	21.0
10	27.08.2018	170.0	79.3	16.6	21.7
11	12.09.2018	175.0	75.6	17.2	23.0
12	27.09.2018	172.0	79.3	17.1	22.3
13	12.10.2018	179.0	80.0	16.9	21.0
14	29.10.2018	175.0	78.7	17.3	22.4
15	13.11.2018	170.0	75.0	17.2	21.9
16	27.11.2018	177.0	76.9	16.4	20.2
17	13.12.2018	180.0	79.3	16.8	19.6
18	27.12.2018	183.0	75.0	17.1	22.1
19	11.01.2019	181.0	79.3	16.1	21.2
20	28.01.2019	179.0	75.6	15.9	20.8
21	12.02.2019	178.0	76.9	15.2	19.5
22	27.02.2019	184.0	87.9	15.8	19.9
23	12.03.2019	180.0	75.0	16.1	20.0
24	28.03.2019	186.0	91.5	16.9	21.2
Min.		167.0	72.8	15.2	18.9
Max.		188.0	91.5	17.9	23.4
98%tile		187.1	89.8	17.6	23.2
Average		176.708	77.3333	16.4167	21.3458

Ambient Air Quality at Khairagura Expansion OCP BWS/Weigh bridge (CZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
Coal mine standards,GSR 742(E), dt.25.09.2000		250	-	120	120
1	12.04.2018	161.0	67.6	14.5	21.6
2	26.04.2018	164.0	68.1	16.3	22.8
3	11.05.2018	158.0	60.0	15.8	22.9
4	26.05.2018	155.0	60.9	13.4	20.1
5	12.06.2018	151.0	60.5	16.0	23.1
6	27.06.2018	149.0	60.0	14.7	17.4
7	12.07.2018	147.0	61.4	16.5	22.0
8	26.07.2018	146.0	62.4	16.9	21.8
9	13.08.2018	148.0	63.4	15.9	20.9
10	27.08.2018	147.0	63.4	15.2	20.8
11	12.09.2018	153.0	64.4	16.0	21.2
12	27.09.2018	149.0	65.5	16.4	21.4
13	12.10.2018	151.0	63.9	17.1	22.2
14	29.10.2018	147.0	64.4	18.0	23.4
15	13.11.2018	152.0	65.5	18.2	22.4
16	27.11.2018	155.0	65.0	17.2	21.6
17	13.12.2018	153.0	61.5	17.7	21.3
18	27.12.2018	148.0	55.0	17.9	22.6
19	11.01.2019	154.0	61.5	16.8	21.9
20	28.01.2019	152.0	50.0	16.6	21.2
21	12.02.2019	155.0	59.5	16.8	20.6
22	27.02.2019	158.0	65.0	17.1	21.8
23	12.03.2019	163.0	66.1	16.9	21.2
24	28.03.2019	172.0	75.0	17.1	21.9
Min.		146.0	50.0	13.4	17.4
Max.		172.0	75.0	18.2	23.4
98%tile		168.3	71.8	18.1	23.3
Average		153.667	62.9167	16.4583	21.5875

Ambient Air Quality at Goverguda village (BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards, CPCB,dt:18.11.2009		100	60	80	80
1	13.04.2018	71.0	45.7	9.1	16.8
2	27.04.2018	75.0	51.4	12.9	17.5
3	13.05.2018	62.0	40.0	12.9	20.4
4	28.05.2018	64.0	45.7	11.2	17.6
5	13.06.2018	61.0	45.7	10.8	15.5
6	28.06.2018	60.0	45.7	10.8	15.7
7	13.07.2018	57.0	41.6	12.3	16.4
8	27.07.2018	62.0	48.2	10.7	16.2
9	14.08.2018	59.0	42.0	10.1	15.4
10	28.08.2018	61.0	47.0	11.1	16.1
11	13.09.2018	69.0	51.4	12.0	17.8
12	28.09.2018	65.0	47.0	10.9	15.5
13	13.10.2018	70.0	50.9	10.8	15.2
14	30.10.2018	68.0	47.5	11.0	16.4
15	14.11.2018	66.0	44.9	10.6	15.0
16	28.11.2018	71.0	49.5	10.9	14.9
17	14.12.2018	67.0	49.1	11.1	15.5
18	28.12.2018	64.0	38.5	10.7	15.3
19	12.01.2019	69.0	45.3	10.2	14.2
20	29.01.2019	66.0	40.8	11.0	15.2
21	13.02.2019	69.0	47.5	11.3	16.0
22	28.02.2019	67.0	46.6	10.9	15.4
23	13.03.2019	64.0	46.1	11.0	16.1
24	29.03.2019	68.0	47.5	11.2	15.9
Min.		57.0	38.5	9.1	14.2
Max.		75.0	51.4	12.9	20.4
98%tile		73.2	51.4	12.9	19.2
Average		65.625	46.0667	11.0625	16.0833

Ambient Air Quality at Pathibanada village (BZ)					
Sl. No.	Date of Sampling	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)
NAAQ Standards, CPCB,dt:18.11.2009		100	60	80	80
1	13.04.2018	66.0	45.4	10.7	16.8
2	27.04.2018	67.0	45.4	11.1	17.5
3	13.05.2018	58.0	36.4	11.2	19.9
4	28.05.2018	56.0	36.4	12.3	16.7
5	13.06.2018	53.0	31.8	13.7	19.4
6	28.06.2018	55.0	36.4	10.6	16.2
7	13.07.2018	53.0	37.1	10.7	15.6
8	27.07.2018	57.0	40.4	12.1	17.0
9	14.08.2018	56.0	35.3	10.8	15.8
10	28.08.2018	58.0	41.2	11.4	16.3
11	13.09.2018	61.0	40.8	10.7	15.9
12	28.09.2018	57.0	41.6	10.5	14.9
13	13.10.2018	63.0	43.6	10.5	14.8
14	30.10.2018	59.0	38.5	9.8	14.9
15	14.11.2018	62.0	41.2	10.3	14.8
16	28.11.2018	60.0	40.0	9.2	13.7
17	14.12.2018	58.0	38.5	8.7	12.7
18	28.12.2018	56.0	29.1	9.4	13.5
19	12.01.2019	61.0	29.7	8.6	12.9
20	29.01.2019	69.0	45.7	9.0	14.5
21	13.02.2019	60.0	39.2	9.8	13.9
22	28.02.2019	65.0	44.0	9.4	14.1
23	13.03.2019	67.0	50.5	10.0	14.9
24	27.03.2019	52.0	35.3	8.5	12.8
Min.		52.0	29.1	8.5	12.7
Max.		69.0	50.5	13.7	19.9
98%tile		68.1	48.3	13.1	19.7
Average		59.5417	39.3125	10.375	15.3958

Ambient Air Quality at Chopidi village (BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards CPCB,dt:18.11.2009		100	60	80	80
1	12.04.2018	59.0	34.5	10.4	13.4
2	26.04.2018	65.0	38.8	10.3	16.8
3	11.05.2018	64.0	43.2	11.9	15.6
4	26.05.2018	60.0	38.8	12.9	17.5
5	12.06.2018	57.0	34.5	13.3	19.5
6	27.06.2018	58.0	38.8	10.7	17.4
7	12.07.2018	56.0	39.6	10.9	16.4
8	26.07.2018	59.0	40.8	11.7	16.6
9	13.08.2018	57.0	40.0	10.5	15.3
10	27.08.2018	60.0	41.6	10.7	16.2
11	12.09.2018	64.0	44.9	11.1	17.2
12	27.09.2018	61.0	43.2	10.1	14.8
13	12.10.2018	68.0	44.9	10.9	15.5
14	29.10.2018	64.0	43.6	10.3	15.2
15	13.11.2018	70.0	49.5	11.1	15.3
16	27.11.2018	66.0	44.9	10.3	14.7
17	13.12.2018	69.0	48.6	9.6	13.4
18	27.12.2018	71.0	43.6	9.0	14.3
19	11.01.2019	68.0	45.3	9.6	13.9
20	28.01.2019	62.0	43.6	10.2	14.9
21	14.02.2019	65.0	45.7	10.6	15.1
22	27.02.2019	68.0	51.9	11.0	15.8
23	12.03.2019	64.0	44.4	10.4	15.1
24	28.03.2019	70.0	50.9	11.0	16.1
Min.		56.0	34.5	9.0	13.4
Max.		71.0	51.9	13.3	19.5
98%tile		70.5	51.4	13.1	18.6
Average		63.5417	43.15	10.7708	15.6667

Ambient Air Quality at Ullipitta Dorli village(BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards, CPCB,dt:18.11.2009		100	60	80	80
1	13.04.2018	74.0	46.9	11.1	17.1
2	27.04.2018	72.0	46.9	12.7	17.1
3	13.05.2018	65.0	42.6	12.7	17.8
4	28.05.2018	61.0	42.6	12.0	16.4
5	13.06.2018	59.0	38.3	12.6	19.0
6	28.06.2018	60.0	46.9	8.5	12.3
7	13.07.2018	57.0	39.7	10.6	16.6
8	27.07.2018	61.0	47.6	11.1	17.1
9	14.08.2018	59.0	40.4	10.7	15.8
10	28.08.2018	60.0	40.8	10.3	15.3
11	13.09.2018	68.0	52.5	11.1	16.9
12	28.09.2018	64.0	44.1	8.0	13.6
13	13.10.2018	67.0	49.1	8.3	13.1
14	30.10.2018	61.0	38.9	8.5	14.0
15	14.11.2018	65.0	43.7	9.9	14.0
16	28.11.2018	69.0	50.1	10.1	14.2
17	14.12.2018	66.0	45.8	10.5	14.7
18	28.12.2018	59.0	29.7	11.1	15.3
19	12.01.2019	67.0	40.0	10.7	14.9
20	29.01.2019	65.0	40.4	9.9	14.2
21	13.02.2019	60.0	41.6	10.3	15.0
22	28.02.2019	64.0	45.8	10.7	14.8
23	13.03.2019	60.0	39.3	10.9	15.0
24	29.03.2019	65.0	46.2	11.2	15.7
Min.		57.0	29.7	8.0	12.3
Max.		74.0	52.5	12.7	19.0
98%tile		73.1	51.4	12.7	18.4
Average		63.6667	43.3292	10.5625	15.4125

From APRIL 2019 to MARCH 2020

Ambient Air Quality at Khairaguda OC Expansion Project Office (CZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
Coal mine standards ,GSR 742(E), Dated 25.09.2000 & NAAQS, Dated 18.11.2009		250.0	-	120.0	120.0
1	12.04.2019	182	82.7	15.8	20.3
2	26.04.2019	188	80.7	15.2	19.8
3	11.05.2019	191	89.5	16.4	20.6
4	27.05.2019	189	87.2	17.2	21.4
5	12.06.2019	186	85.7	16.9	20.8
6	27.06.2019	184	83.5	16.3	21
7	11.07.2019	181	75.6	15.9	19.8
8	26.07.2019	187	87.2	17	20.2
9	12.08.2019	177	73	16.4	19.7
10	28.08.2019	175	76.9	15.8	18.6
11	12.09.2019	170	71.8	15.9	19
12	27.09.2019	168	67.2	16	19.4
13	12.10.2019	171	71.2	16.2	20.5
14	28.10.2019	173	75	16.7	20.1
15	12.11.2019	177	76.3	17	20.4
16	27.11.2019	180	75.6	16.6	19.3
17	12.12.2019	183	84.2	17.5	20.1
18	27.12.2019	181	82	16.8	19.2
19	11.01.2020	184	78.2	16.4	19.8
20	27.01.2020	180	79.6	17.1	20.1
21	12.02.2020	182	77.6	17.3	20.7
22	27.02.2020	188	80.7	17.7	21.1
23	12.03.2020	191	88.7	18	21.5
24	26.03.2020	186	75.6	16	19.2
Min.		168	67.2	15.2	18.6
Max.		191	89.5	18	21.5
98%tile		191	89.132	17.862	21.454
Average		181.4167	79.40417	16.5875	20.10833
- No standard was specified for PM _{2.5} in core zone.					

Ambient Air Quality at Khairagura Expansion OCP BWS/Weigh bridge (CZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
Coal mine standards, GSR 742(E), Dated 25.09.2000 & NAAQS, Dated 18.11.2009		250	-	120	120
1	12.04.2019	174	74.4	16.8	21
2	26.04.2019	169	72.4	17	21.7
3	11.05.2019	177	76.3	17.2	21.3
4	27.05.2019	175	74.3	17.4	21.8
5	12.06.2019	178	75	17.1	20.6
6	27.06.2019	171	70.6	17.4	21.5
7	11.07.2019	177	69.4	16.9	20.7
8	26.07.2019	176	78.2	17.5	21.7
9	12.08.2019	167	65.5	16.7	20.1
10	28.08.2019	163	62.1	16.5	19.3
11	12.09.2019	166	69	16.2	19.7
12	27.09.2019	170	69.6	16.3	19.1
13	12.10.2019	173	73.7	16.6	19.6
14	28.10.2019	170	70	16.2	19.2
15	12.11.2019	175	72.4	16.8	19.9
16	27.11.2019	176	73	17	20.4
17	12.12.2019	180	76.9	17.3	20.5
18	27.12.2019	184	80	17.1	20
19	11.01.2020	180	80.7	16.9	19.4
20	27.01.2020	175	73	17.3	20.9
21	12.02.2020	184	81.3	17	20.1
22	27.02.2020	190	85	18	21.5
23	12.03.2020	185	81.3	18.2	21.7
24	26.03.2020	179	70	16.6	19.6
Min.		163	62.1	16.2	19.1
Max.		190	85	18.2	21.8
98%tile		187.7	83.298	18.108	21.754
Average		175.5833	73.92083	17	20.47083
- No standard was specified for PM _{2.5} in core zone.					

Ambient Air Quality at Goverguda village (BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards, CPCB,dt:18.11.2009		100	60	80	80
1	13.04.2019	64	46.6	9.6	14.4
2	27.04.2019	70	51.9	10.1	15.1
3	13.05.2019	64	44.4	10.2	13.8
4	28.05.2019	67	45.7	11.1	14.2
5	13.06.2019	63	44	10.5	13.7
6	28.06.2019	66	45.3	10.3	14.1
7	12.07.2019	62	44.9	9.6	13.9
8	27.07.2019	67	47	10.2	13.7
9	13.08.2019	62	44.4	9.3	12.8
10	29.08.2019	60	44	10.3	13.2
11	13.09.2019	64	46.6	10	12.9
12	28.09.2019	60	45.3	9.7	12.3
13	14.10.2019	62	41.2	9.9	13
14	29.10.2019	59	40.8	10.4	13.5
15	13.11.2019	63	45.7	10.7	13.1
16	28.11.2019	61	40	9.9	12.5
17	13.12.2019	66	44.4	10.3	13.2
18	28.12.2019	63	39.6	10.5	13
19	13.01.2020	65	44	10	12.5
20	28.01.2020	62	40	10.6	13.2
21	13.02.2020	60	39.2	11	14.2
22	28.02.2020	63	45.3	11.4	14.7
23	13.03.2020	65	44.4	12.1	15
24	27.03.2020	61	39.6	11.4	14.5
Min.		59	39.2	9.3	12.3
Max.		70	51.9	12.1	15.1
98%tile		68.62	49.646	11.778	15.054
Average		63.29167	43.92917	10.37917	13.60417

Ambient Air Quality at Pathibanada village (BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards, CPCB,dt:18.11.2009		100	60	80	80
1	13.04.2019	69	47	9.7	13.9
2	27.04.2019	66	45.3	10.6	14.2
3	13.05.2019	69	47	9.7	12.8
4	28.05.2019	60	38.9	8.6	12.1
5	13.06.2019	57	34.8	8.2	11.9
6	28.06.2019	54	34.6	9	12.7
7	12.07.2019	55	35.3	9.3	12.5
8	27.07.2019	58	40.8	9.8	13
9	13.08.2019	55	34.3	8.7	11.8
10	29.08.2019	54	35.3	8.6	12.2
11	13.09.2019	57	39.2	7.8	10.8
12	28.09.2019	52	34.6	8	11.2
13	14.10.2019	58	38.5	8.4	11.7
14	29.10.2019	55	33.6	8.9	12
15	13.11.2019	57	38.5	8.4	11.8
16	28.11.2019	53	33	8.7	12.1
17	13.12.2019	58	34.6	9.3	12.5
18	28.12.2019	56	33.3	9.1	11.7
19	13.01.2020	58	34.3	9.6	12.2
20	28.01.2020	54	33	8.9	11.6
21	13.02.2020	56	34.3	9.2	12
22	28.02.2020	59	35.3	9.7	13
23	13.03.2020	55	34.3	10	13.1
24	27.03.2020	52	35.3	9.7	12.8
Min.		52	33	7.8	10.8
Max.		69	47	10.6	14.2
98%tile		69	47	10.324	14.062
Average		57.375	36.87917	9.079167	12.31667

Ambient Air Quality at Chopidi village (BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards CPCB,dt:18.11.2009		100	60	80	80
1	12.04.2019	65	43.6	10.6	15.5
2	26.04.2019	68	49.5	11.1	16.1
3	11.05.2019	70	50.5	11.4	15.8
4	27.05.2019	70	47.5	10.9	13.9
5	12.06.2019	67	45.3	9.9	14
6	27.06.2019	64	40.8	10.9	15.1
7	11.07.2019	61	45.3	10.4	14.6
8	26.07.2019	66	44.4	10.8	14.2
9	12.08.2019	60	40.8	9.8	13.2
10	28.08.2019	58	39.6	8.8	11.9
11	12.09.2019	55	34.9	9	12.2
12	27.09.2019	59	39.2	9.3	12
13	12.10.2019	54	34.3	8.9	12.1
14	28.10.2019	57	35.3	8.2	12.6
15	12.11.2019	59	40	9.2	12.9
16	27.11.2019	56	34.3	9.6	13.3
17	12.12.2019	60	39.6	10.1	14
18	27.12.2019	62	43.6	9.9	12.8
19	11.01.2020	63	39.2	9.8	12.6
20	27.01.2020	59	34.9	10	13.3
21	12.02.2020	54	29.4	10.6	13
22	27.02.2020	58	39.2	9.8	12.6
23	12.03.2020	56	32.7	9.4	12.3
24	26.03.2020	57	33.3	10.1	13.2
Min.		54	29.4	8.2	11.9
Max.		70	50.5	11.4	16.1
98%tile		70	50.04	11.262	15.962
Average		60.75	39.88	9.93	13.46

Ambient Air Quality at Ullipitta Dorli village(BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards, CPCB,dt:18.11.2009		100	60	80	80
1	13.04.2019	63	44.9	9.8	14.7
2	27.04.2019	66	45.8	10.1	15.8
3	13.05.2019	68	45.8	10.5	14.6
4	28.05.2019	63	44.1	11.2	15.1
5	13.06.2019	69	51.5	10.7	14.4
6	28.06.2019	67	44.9	10.3	13.8
7	12.07.2019	64	45.8	9.8	14
8	27.07.2019	65	46.6	10.2	13.8
9	13.08.2019	61	38.6	9.8	12.6
10	29.08.2019	59	39.7	9.5	13
11	13.09.2019	58	38.6	8.9	11.9
12	28.09.2019	54	34.7	8.6	12
13	14.10.2019	46	27.8	7.2	10
14	28.10.2019	45	23.3	7.7	10.5
15	13.11.2019	48	28	7.2	10
16	28.11.2019	46	28.3	7.4	10.2
17	13.12.2019	50	29.1	7.8	11.1
18	28.12.2019	52	34.9	8.1	11.6
19	13.01.2020	54	33.3	8.4	10.7
20	28.01.2020	50	28.8	8	11.5
21	13.02.2020	47	28	8.3	11.1
22	28.02.2020	51	28.8	8.9	12.2
23	13.03.2020	50	28.3	9.1	12.8
24	27.03.2020	48	27.5	8.4	12.2
Min.		45	23.3	7.2	10
Max.		69	51.5	11.2	15.8
98%tile		68.54	49.246	10.97	15.478
Average		56	36.12917	8.995833	12.48333

FROM APRIL 2020 to MARCH 2021

Ambient Air Quality at KHA OCP Project Office(CZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
Coal mine standards,GSR 742(E), dt.25.09.2000		250.0	-	120.0	120.0
1.	11.04.2020	133	41.7	16.4	19
2.	29.04.2020	147.2	47.8	15.9	18.8
3.	13.05.2020	149	45.4	15.3	18.4
4.	27.05.2020	181	77.6	17.1	20.4
5.	11.06.2020	179	75.6	16.9	19.8
6.	26.06.2020	182	78.2	16.6	20
7.	11.07.2020	176	76.3	16	19.7
8.	28.07.2020	175	73.7	15.9	19.4
9.	12.08.2020	181	81.3	16.2	19.6
10.	27.08.2020	176	75.6	15.7	18.6
11.	10.09.2020	183	80	17	20.1
12.	26.09.2020	180	77.6	16.6	19.8
13.	12.10.2020	174	70.6	16	19.2
14.	28.10.2020	170	66.7	15.8	18.8
15.	11.11.2020	173	70.6	16.2	19.2
16.	25.11.2020	171	67.8	15.8	18.9
17.	10.12.2020	175	72.4	16.3	19.1
18.	28.12.2020	170	70.6	15.9	18.7
19.	11.01.2021	174	73	16.2	19.6
20.	27.01.2021	168	65.5	15.3	18.2
21.	10.02.2021	171	69.4	15.8	18.6
22.	25.02.2021	177	76.9	16	19.1
23.	10.03.2021	180	78.2	16.8	19.7
24.	25.03.2021	183	82	17.2	20.1
Min		133	41.7	15.3	18.2
Max		183	82	17.2	20.4
98 Percentile		183	81.678	17.154	20.262
Average		172.0	70.6	16.2	19.3
<i>- No standard was specified for PM_{2.5} in core zone.</i>					

Ambient Air Quality at KHA OC BWS/Weighbridge(CZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
Coal mine standards,GSR 742(E), dt.25.09.2000		250	-	120	120
1.	11.04.2020	123	41	16.5	19.7
2.	27.04.2020	130	42.1	17	20.5
3.	13.05.2020	135	41.4	17.3	20.2
4.	27.05.2020	173	70	17.4	21.1
5.	11.06.2020	174	72.4	17.1	20.8
6.	26.06.2020	177	75	16.9	19.8
7.	11.07.2020	172	73	16.4	19.4
8.	28.07.2020	169	71.8	16.2	19
9.	12.08.2020	175	75	17.1	20.2
10.	27.08.2020	170	71.8	16.6	19.5
11.	10.09.2020	177	75.6	17.3	20.2
12.	26.09.2020	173	74.4	17	19.9
13.	12.10.2020	169	66.7	16.8	19
14.	28.10.2020	165	63.1	16.3	19.1
15.	11.11.2020	170	66.7	16.9	20
16.	25.11.2020	167	65	16.3	19.7
17.	10.12.2020	171	70	17.1	20
18.	28.12.2020	166	66.7	16.8	19.6
19.	11.01.2021	169	65	17	20.1
20.	27.01.2021	165	61.5	15.9	19.1
21.	10.02.2021	167	66.1	16.4	19.7
22.	25.02.2021	171	70	16.7	20
23.	10.03.2021	175	71.2	17	20.3
24.	25.03.2021	179	75.6	17.5	20.9
Min		123	41	15.9	19
Max		179	75.6	17.5	21.1
98 Percentile		178.08	75.6	17.454	21.008
Average		165.9	66.3	16.8	19.9
- No standard was specified for PM _{2.5} in core zone.					

Ambient Air Quality at Gouriguda village (BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards CPCB, dt:18.11.2009		100	60	80	80
1.	13.04.2020	55	34.6	11	14.4
2.	28.04.2020	51	33.3	10.8	13.9
3.	14.05.2020	52	33.6	10.3	13.5
4.	28.05.2020	60	40	11.3	14.2
5.	12.06.2020	58	38.9	11	14.8
6.	27.06.2020	56	34.3	10.9	13.8
7.	13.07.2020	53	34.6	10.4	13.2
8.	29.07.2020	50	29.4	9.9	12.6
9.	13.08.2020	55	34.9	10.4	13.1
10.	28.08.2020	49	28	9.7	12.9
11.	10.09.2020	57	33.3	10.8	13.6
12.	26.09.2020	52	28.6	10.2	13.1
13.	12.10.2020	49	27.8	9.9	12.8
14.	28.10.2020	45	22.9	9.2	12.2
15.	11.11.2020	48	28	10	13.2
16.	25.11.2020	46	23.1	9.8	12.8
17.	10.12.2020	50	28.3	10.1	13.1
18.	28.12.2020	45	23.1	9.8	12.8
19.	11.01.2021	48	28.3	10	13.4
20.	27.01.2021	42	22.6	9.4	12.6
21.	10.02.2021	44	22.9	9.9	12
22.	25.02.2021	47	27.3	10.2	13.2
23.	10.03.2021	51	28.6	10.7	13.8
24.	25.03.2021	55	29.4	11.1	14.2
Min		42	22.6	9.2	12
Max		60	40	11.3	14.8
98 Percentile		59.08	39.494	11.208	14.616
Average		50.8	29.8	10.3	13.3

Ambient Air Quality at Pathibanda village(BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards CPCB,dt:18.11.2009		100	60	80	80
1.	10.04.2020	46	28.6	8.9	11.8
2.	25.04.2020	45	22	8.3	12.2
3.	14.05.2020	41	21.8	9	12.6
4.	28.05.2020	52	32.7	8.7	13
5.	12.06.2020	50	32.4	9.2	12.8
6.	27.06.2020	48	28	8.9	11.9
7.	13.07.2020	45	23.3	8.5	11.3
8.	29.07.2020	41	22.9	7.9	10.9
9.	11.08.2020	49	28.3	8	11.3
10.	26.08.2020	42	22.9	9.2	11.7
11.	11.09.2020	47	28	9.9	12.3
12.	28.09.2020	44	23.5	9.1	12
13.	13.10.2020	39	21.8	8.8	11.8
14.	29.10.2020	36	17.6	8.3	11.1
15.	12.11.2020	40	21.8	9.1	12.1
16.	26.11.2020	37	17.6	8.7	11.6
17.	11.12.2020	41	21.8	9	12.3
18.	29.12.2020	38	17	8.6	11.6
19.	12.01.2021	42	22.9	9.1	12.6
20.	28.01.2021	37	16.7	8.6	11.6
21.	11.02.2021	40	17.6	9	12.3
22.	26.02.2021	44	22.2	9.6	12.7
23.	12.03.2021	47	23.1	10	13.2
24.	26.03.2021	50	27.3	10.7	13.8
Min		36	16.7	7.9	10.9
Max		52	32.7	10.7	13.8
98 Percentile		51.08	32.562	10.378	13.524
Average		43.4	23.4	9.0	12.1

Ambient Air Quality at Chopidi village (BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards CPCB, dt:18.11.2009		100	60	80	80
1.	11.04.2020	51	32.7	9.5	12.7
2.	27.04.2020	49	28	9.1	12.1
3.	13.05.2020	43	27.5	8.9	11.7
4.	27.05.2020	55	33	9.4	12.2
5.	11.06.2020	52	32.7	8.9	11.8
6.	26.06.2020	50	29.4	9.1	12.2
7.	11.07.2020	48	28.3	8.8	12.1
8.	28.07.2020	45	27.3	8.4	11.8
9.	12.08.2020	50	32.7	9	12.1
10.	27.08.2020	46	27.3	8.4	11.6
11.	10.09.2020	51	29.4	9.7	12.2
12.	26.09.2020	48	28.8	8.9	11.6
13.	12.10.2020	45	23.1	8.3	11
14.	28.10.2020	41	22.2	8.1	10.9
15.	11.11.2020	44	22.9	9	11.9
16.	25.11.2020	40	21.8	8.8	11.5
17.	10.12.2020	45	23.3	9.3	12
18.	28.12.2020	42	22.2	8.9	11.7
19.	11.01.2021	46	26.8	9.4	12.8
20.	27.01.2021	41	22.4	8.4	11.4
21.	10.02.2021	43	21.8	8.9	11.8
22.	25.02.2021	45	22.9	9.2	12.1
23.	10.03.2021	49	23.5	9.7	12.7
24.	25.03.2021	52	28.8	10	13.1
Min		40	21.8	8.1	10.9
Max		55	33	10	13.1
98 Percentile		53.62	32.862	9.862	12.962
Average		46.7	26.6	9.0	12.0

Ambient Air Quality at Thoyagudem (Ullipitta Dorli) village (BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards, CPCB,dt:18.11.2009		100	60	80	80
1.	14.01.2020	39	23.3	8.7	10.9
2.	29.04.2020	35	17	7.9	10.5
3.	15.05.2020	36	17.5	8.3	11.5
4.	29.05.2020	42	22.4	8.5	11.2
5.	13.06.2020	41	22	8.8	12.1
6.	29.06.2020	40	22.2	8.4	11.6
7.	14.07.2020	38	17.8	7.9	10.8
8.	30.07.2020	39	17.6	8	11.1
9.	14.08.2020	41	22	8.3	11.4
10.	29.08.2020	37	21.8	7.6	10.8
11.	12.09.2020	42	22.4	8	11.6
12.	29.09.2020	39	17.5	7.8	11
13.	14.10.2020	35	16.8	7.3	10.7
14.	30.10.2020	32	16.2	7	10.1
15.	13.11.2020	37	17.3	7.9	11
16.	27.11.2020	35	16.8	7.6	10.4
17.	12.12.2020	39	21	8	10.9
18.	30.12.2020	34	17.5	7.6	10.3
19.	13.01.2021	38	17.1	8.2	11.9
20.	29.01.2021	33	17.3	7.8	11
21.	12.02.2021	36	16.7	8.1	10.9
22.	27.02.2021	39	17.1	8.7	11.3
23.	13.03.2021	41	17.6	9.2	12.6
24.	27.03.2021	44	21.8	8.9	11.7
Min		32	16.2	7	10.1
Max		44	44	23.3	9.2
98 Percentile		43.7	43.08	22.886	9.062
Average		38.0	19.0	8.1	11.1

From April 2021 to March 2022

Ambient Air Quality at KHA OCP Project Office(CZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
Coal mine standards,GSR 742(E), dt.25.09.2000		250.0	-	120.0	120.0
25.	10.04.2021	187	84.3	17.6	20.5
26.	26.04.2021	190	86.4	18	21.1
27.	11.05.2021	195	85	18.5	21.6
28.	26.05.2021	178	71.2	16.5	19.9
29.	11.06.2021	184	80	17.1	20.2
30.	25.06.2021	189	81.3	17.7	20.7
31.	10.07.2021	181	70.6	16.5	19.6
32.	27.07.2021	185	78.2	17.1	20.5
33.	11.08.2021	177	71.2	16.8	19.7
34.	26.08.2021	179	69.4	17	20.1
35.	11.09.2021	170	65.5	15.9	19
36.	25.09.2021	174	68.4	16.1	19.6
37.	11.10.2021	178	72.4	16.9	20.1
38.	27.10.2021	181	73	17.1	20.4
39.	11.11.2021	183	75	16.7	19.9
40.	26.11.2021	186	76.3	17	20.2
41.	10.12.2021	178	70.6	16.5	19.7
42.	30.12.2021	166	64.4	15.9	18.7
43.	15.01.2022	173	71.2	16.3	19.4
44.	31.01.2022	177	74.4	17	20.1
45.	10.02.2022	173	71.2	16.6	19.7
46.	25.02.2022	176	75	17.1	20
47.	11.03.2022	180	75.6	17.8	20.5
48.	26.03.2022	184	76.9	18.1	21.2
Min		166	64.4	15.9	18.7
Max		195	86.4	18.5	21.6
98 Percentile		192.7	85.756	18.316	21.416
Average		180.2	74.5	17.0	20.1
<i>- No standard was specified for PM_{2.5} in core zone.</i>					

Ambient Air Quality at KHA OC BWS/Weighbridge(CZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
Coal mine standards,GSR 742(E), dt.25.09.2000		250	-	120	120
25.	10.04.2021	183	76.9	18	21.3
26.	26.04.2021	187	75.6	18.3	21.7
27.	11.05.2021	191	82.7	19.1	22.1
28.	26.05.2021	175	70.6	17.4	20.3
29.	11.06.2021	180	79.3	18	21.1
30.	25.06.2021	185	80.7	18.3	21.6
31.	10.07.2021	179	70	17.1	20.5
32.	27.07.2021	182	74.4	17.2	21
33.	11.08.2021	173	68.8	17.1	20.6
34.	26.08.2021	176	71.2	17.5	20.3
35.	11.09.2021	168	66.1	16.1	19.3
36.	25.09.2021	171	67.8	16.8	19.8
37.	11.10.2021	174	68.4	17.1	20.3
38.	27.10.2021	178	67.2	17.3	20.7
39.	11.11.2021	180	69.6	16.9	20
40.	26.11.2021	184	75	17.3	20.6
41.	10.12.2021	175	71.2	16.9	19.2
42.	30.12.2021	164	60.5	16	18.9
43.	15.01.2022	171	63.9	17	20
44.	31.01.2022	175	69.4	17.7	20.7
45.	10.02.2022	171	66.7	17.1	20.1
46.	25.02.2022	174	71.2	17.9	20.8
47.	11.03.2022	177	75	18.2	21.6
48.	26.03.2022	180	76.3	18.6	21.9
Min		164	60.5	16	18.9
Max		191	82.7	19.1	22.1
98 Percentile		189.16	81.78	18.87	22.008
Average		177.2	71.6	17.5	20.6
- No standard was specified for PM _{2.5} in core zone.					

Ambient Air Quality at Gouriguda village (BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards CPCB,dt:18.11.2009		100	60	80	80
1.	10.04.2021	58	29.7	11.4	14.8
2.	26.04.2021	60	32.1	12	15
3.	11.05.2021	64	33.6	11.8	14.8
4.	26.05.2021	55	29.7	9.4	12.7
5.	11.06.2021	59	31	10.5	13.1
6.	25.06.2021	62	34.9	10.9	13.6
7.	10.07.2021	57	28.6	9.7	12.6
8.	27.07.2021	60	32.4	10.2	13
9.	11.08.2021	57	29.4	9.8	12.6
10.	26.08.2021	55	28.3	10	13.1
11.	11.09.2021	51	27.5	9	12.3
12.	25.09.2021	53	28.6	9.7	12.9
13.	11.01.2022	59	29.4	9.8	13.1
14.	27.01.2022	61	32.1	10.1	13.9
15.	14.02.2022	58	29.4	9.8	13.1
16.	25.02.2022	62	30.8	10.3	14
17.	11.03.2022	60	38.8	10.8	13.7
18.	26.03.2022	63	29.1	11.1	14.2
19.	11.01.2022	59	29.4	9.8	13.1
20.	27.01.2022	61	32.1	10.1	13.9
21.	14.02.2022	58	29.4	9.8	13.1
22.	25.02.2022	62	30.8	10.3	14
23.	11.03.2022	60	38.8	10.8	13.7
24.	26.03.2022	63	29.1	11.1	14.2
Min		51	27.5	9	12.3
Max		64	38.8	12	15
98 Percentile		63.54	38.8	11.908	14.908
Average		59.0	31.0	10.3	13.5

Ambient Air Quality at Pathibanda village(BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards CPCB,dt:18.11.2009		100	60	80	80
1.	12.04.2021	53	28.8	11	14.3
2.	27.04.2021	56	29.4	11.4	14.7
3.	12.05.2021	60	32.7	11.2	14.1
4.	27.05.2021	49	27.8	9.3	12.4
5.	12.06.2021	54	28.8	10.4	13.4
6.	26.06.2021	58	29.4	10.6	13.8
7.	12.07.2021	51	26.5	9.5	12
8.	28.07.2021	55	27.8	10	12.8
9.	12.08.2021	50	22.9	9.5	11.9
10.	27.08.2021	53	23.1	9.8	12.3
11.	13.09.2021	47	22.4	8.6	11.5
12.	27.09.2021	51	23.1	9.1	12
13.	12.01.2022	55	26.8	9	12.5
14.	28.01.2022	58	27.8	9.4	12.3
15.	10.02.2022	55	27.3	8.8	11.9
16.	25.02.2022	57	28.6	9	12.1
17.	12.03.2022	59	29.1	9.5	12.6
18.	28.03.2022	52	22.6	8.9	11.9
19.	12.01.2022	55	26.8	9	12.5
20.	28.01.2022	58	27.8	9.4	12.3
21.	10.02.2022	55	27.3	8.8	11.9
22.	25.02.2022	57	28.6	9	12.1
23.	12.03.2022	59	29.1	9.5	12.6
24.	28.03.2022	52	22.6	8.9	11.9
Min		47	22.4	8.6	11.5
Max		60	32.7	11.4	14.7
98 Percentile		59.54	31.182	11.308	14.516
Average		54.5	27.0	9.6	12.6

Ambient Air Quality at Chopidi village (BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards CPCB, dt:18.11.2009		100	60	80	80
1.	10.04.2021	56	28	10.5	13.6
2.	26.04.2021	59	28.8	10.8	14
3.	11.05.2021	63	32.1	11	14.3
4.	26.05.2021	53	28.3	8.7	11.9
5.	11.06.2021	57	29.1	9.9	12.4
6.	25.06.2021	60	32.7	10	13
7.	10.07.2021	54	27.5	9.2	12.4
8.	27.07.2021	58	28.6	9.9	13.1
9.	11.08.2021	53	23.5	8.8	12
10.	26.08.2021	56	23.3	9.2	12.6
11.	11.09.2021	46	22.6	8	11.6
12.	25.09.2021	50	23.5	8.9	11.9
13.	15.01.2022	58	27.8	9.1	12.1
14.	29.01.2022	60	29.1	9.7	13
15.	11.02.2022	57	28.3	9.3	12.8
16.	26.02.2022	59	28.8	9.8	12.7
17.	11.03.2022	61	32.7	10.3	13
18.	26.03.2022	62	29.7	10.8	13.8
19.	15.01.2022	58	27.8	9.1	12.1
20.	29.01.2022	60	29.1	9.7	13
21.	11.02.2022	57	28.3	9.3	12.8
22.	26.02.2022	59	28.8	9.8	12.7
23.	11.03.2022	61	32.7	10.3	13
24.	26.03.2022	62	29.7	10.8	13.8
Min		46	22.6	8	11.6
Max		63	32.7	11	14.3
98 Percentile		62.54	32.7	10.908	14.162
Average		57.5	28.4	9.7	12.8

Ambient Air Quality at Thoyagudem (Ullipitta Dorli) village (BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards, CPCB,dt:18.11.2009		100	60	80	80
25.	13.04.2021	48	22.6	9.3	12
26.	28.04.2021	51	23.1	9.8	12.4
27.	13.05.2021	55	23.5	10.1	13
28.	28.05.2021	46	22.2	7.9	11
29.	14.06.2021	48	23.3	8.9	11.9
30.	28.06.2021	52	23.8	9	12.1
31.	14.07.2021	49	22.9	8.7	11.4
32.	29.07.2021	46	23.3	9.5	12.4
33.	13.08.2021	41	22.2	9.1	12.7
34.	28.08.2021	44	22	8.9	11.9
35.	14.09.2021	38	20.7	7.8	10.9
36.	29.09.2021	40	20.9	8.1	11.3
37.	13.01.2022	47	22.6	8.8	11.9
38.	31.01.2022	49	23.3	9.3	12.5
39.	12.02.2022	46	22.4	9	12.1
40.	28.02.2022	50	23.5	9.7	12.6
41.	14.03.2022	53	27.5	10	12.8
42.	29.03.2022	50	23.3	10.4	13.9
43.	13.01.2022	47	22.6	8.8	11.9
44.	31.01.2022	49	23.3	9.3	12.5
45.	12.02.2022	46	22.4	9	12.1
46.	28.02.2022	50	23.5	9.7	12.6
47.	14.03.2022	53	27.5	10	12.8
48.	29.03.2022	50	23.3	10.4	13.9
Min		38	20.7	7.8	10.9
Max		55	27.5	10.4	13.9
98 Percentile		54.08	27.5	10.4	13.9
Average		47.8	23.2	9.2	12.3

KHA OCP Characteristics of effluents

Sampling interval: Once in fortnight

April 2017 to Mar 2018

Characteristics of Effluents – Khairagura expansion OCP mine discharge							
Sl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H ⁺ B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1	15.04.2017	7.2	17.0	-	20.0	-	1.0
2	28.04.2017	7.4	14.0	-	10.0	-	1.0
3	08.05.2017	7.7	19.0	-	10.0	-	1.0
4	30.05.2017	7.3	21.0	-	10.0	-	1.0
5	15.06.2017	7.8	29.0	-	10.0	-	1.0
6	30.06.2017	7.4	35.0	-	20.0	-	1.0
7	15.07.2017	7.2	34.0	-	20.0	-	1.0
8	31.07.2017	7.6	31.0	-	20.0	-	1.0
9	15.08.2017	7.5	29.0	-	10.0	-	1.0
10	24.08.2017	7.9	21.0	-	20.0	-	1.0
11	11.09.2017	6.8	25.0	-	27.0	-	2.8
12	30.09.2017	6.8	25.0	-	27.0	-	1.0
13	14.10.2017	6.9	38.0	-	19.0	-	1.8
14	31.10.2017	6.8	21.0	474.0	16.0	-	2.0
15	14.11.2017	6.5	19.0	380.0	16.0	-	1.2
16	23.11.2017	7.6	18.0	310.0	20.0	-	2.2
17	11.12.2017	8.2	42.0	320.0	24.0	-	1.0
18	30.12.2017	7.6	23.0	280.0	20.0	2.0	1.1
19	10.01.2018	7.6	11.0	682.0	20.0	2.0	1.2
20	26.01.2018	5.8	22.0	469.0	18.0	3.0	1.4
21	15.02.2018	7.4	19.0	560.0	24.0	3.0	1.6
22	16.02.2018	7.2	20.0	645.0	28.0	5.0	1.4
23	15.03.2018	8.0	48.0	390.0	20.0	3.0	1.4
24	31.03.2018	7.8	32.0	426.0	16.0	4.0	1.2
Min.		5.8	11.0	280.0	10.0	2.0	1.0
Max.		8.2	48.0	682.0	28.0	5.0	2.8
98%tile		8.1	45.2	674.6	27.5	4.9	2.5
- Parameter monitoring started recently.							

Characteristics of Effluents – Khairagura expansion OCP base workshop ETP outlet							
Sl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H ⁺ B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1	15.04.2017	7.8	12.0	-	10.0	-	1.0
2	28.04.2017	7.5	15.0	-	10.0	-	1.0
3	08.05.2017	7.3	13.0	-	20.0	-	1.0
4	30.05.2017	7.9	17.0	-	10.0	-	1.0
5	15.06.2017	8.0	26.0	-	20.0	-	1.0
6	30.06.2017	7.8	29.0	-	10.0	-	1.0
7	15.07.2017	7.6	36.0	-	10.0	-	1.0
8	31.07.2017	7.2	30.0	-	10.0	-	1.0
9	15.08.2017	7.8	27.0	-	10.0	-	1.0
10	24.08.2017	7.4	25.0	-	10.0	-	1.0
11	11.09.2017	7.8	36.0	-	63.0	-	2.6
12	30.09.2017	7.8	36.0	-	63.0	-	2.6
13	14.10.2017	6.8	47.0	897.0	77.0	-	2.0
14	31.10.2017	8.3	58.0	972.0	115.0	-	3.0
15	14.11.2017	6.9	55.0	828.0	87.0	-	3.0
16	23.11.2017	7.9	71.0	652.0	100.0	-	3.0
17	11.12.2017	8.1	68.0	544.0	97.0	11.0	2.4
18	30.12.2017	7.8	55.0	432.0	103.0	14.0	3.0
19	10.01.2018	7.5	14.0	784.0	127.0	16.0	3.6
20	26.01.2018	5.6	27.0	1205.0	90.0	36.0	3.2
21	15.02.2018	7.8	24.0	958.0	102.0	22.0	3.4
22	16.02.2018	7.0	26.0	850.0	128.0	28.0	3.2
23	15.3.2018	8.3	74.0	784.0	102.0	28.0	3.6
24	31.3.2018	8.0	83.0	911.0	82.0	16.0	3.6
Min.		5.6	12.0	432.0	10.0	11.0	1.0
Max.		8.3	83.0	1205.0	128.0	36.0	3.6
98%tile		8.3	78.9	1153.7	127.5	34.9	3.6
- Parameter monitoring started recently.							

Characteristics of Effluents – Khairagura CHP ETP outlet							
Sl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H ⁺ B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1	15.04.2017	7.7	16.0	-	10.0	-	1.0
2	28.04.2017	7.1	19.0	-	20.0	-	1.0
3	08.05.2017	7.2	17.0	-	20.0	-	1.0
4	30.05.2017	7.7	11.0	-	20.0	-	1.0
5	15.06.2017	7.9	19.0	-	10.0	-	1.0
6	30.06.2017	7.5	24.0	-	10.0	-	1.0
7	15.07.2017	7.7	30.0	-	10.0	-	1.0
8	31.07.2017	7.8	39.0	-	10.0	-	1.0
9	15.08.2017	7.4	34.0	-	20.0	-	1.0
10	24.08.2017	7.8	32.0	-	10.0	-	1.0
11	11.09.2017	6.9	24.0	-	59.0	-	2.0
12	30.09.2017	6.9	24.0	-	59.0	-	2.0
13	14.10.2017	6.5	33.0	788.0	50.0	-	1.8
14	31.10.2017	8.1	49.0	1005.0	91.0	-	2.0
15	14.11.2017	7.2	48.0	692.0	66.0	-	2.0
16	23.11.2017	7.7	50.0	970.0	93.0	-	2.8
17	11.12.2017	8.0	49.0	488.0	65.0	8.0	2.0
18	30.12.2017	8.0	42.0	398.0	79.2	11.0	1.8
19	10.01.2018	7.5	22.0	677.0	88.0	11.0	2.4
20	26.01.2018	7.1	30.0	460.0	72.0	28.0	2.2
21	15.02.2018	7.9	26.0	720.0	78.0	8.0	3.2
22	16.02.2018	7.8	30.0	678.0	96.0	12.0	2.8
23	15.03.2018	7.9	42.0	923.0	78.0	20.0	2.4
24	31.03.2018	7.7	66.0	783.0	61.0	8.0	2.6
Min.		6.5	11.0	398.0	10.0	8.0	1.0
Max.		8.1	66.0	1005.0	96.0	28.0	3.2
98%tile		8.1	58.6	997.3	94.6	26.9	3.0
- Parameter monitoring started recently.							

Characteristics of Effluents – Khairagura Expan. OCP OB Runoff / Settling Tank Outlet

S.No.	Date of Sampling	pH	TSS at 105 ⁰ C	TDS at 180 ⁰ C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/l	mg/L
Test Method		4500-H ⁺ B	2540-D	2540-C	5220-D	IS 3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1.	11.09.2017	7.1	29	1656	47	-	1.4
2.	30.09.2017	7.1	29	1288	47	-	1.4
3.	14.10.2017	7.0	26	651	69	-	1.2
4.	31.10.2017	7.9	53	456	103	-	2.4
5.	23.11.2017	7.9	48	850	85	-	2.6
Min		7	26	456	47	-	1.2
Max		7.9	53	1656	103	-	2.6
98 % tile		7.9	52.6	1626.56	101.56	-	2.584

- Found dry from April to August & December to March

From APRIL 2018 to MAR 2019

Characteristics of Effluents – Khairagura expansion OCP mine discharge							
Sl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H ⁺ B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1	14.04.2018	7.7	36.0	373.0	12.0	2.0	1.0
2	30.04.2018	7.6	28.0	455.0	19.0	2.0	1.4
3	14.05.2018	7.4	32.0	337.0	16.0	3.0	1.2
4	31.05.2018	7.4	37.0	480.0	15.0	2.0	1.0
5	15.06.2018	7.8	34.0	390.0	20.0	4.0	1.0
6	30.06.2018	8.2	42.0	520.0	24.0	3.0	1.2
7	13.07.2018	8.0	53.0	672.0	40.0	6.0	1.4
8	30.07.2018	7.6	40.0	496.0	32.0	6.0	1.2
9	15.08.2018	8.2	46.0	415.0	19.0	5.0	1.6
10	28.08.2018	7.7	42.0	436.0	16.0	4.0	1.6
11	07.09.2018	7.6	46.0	502.0	41.0	8.0	1.4
12	29.09.2018	7.5	49.0	483.0	44.0	10.0	1.2
13	14.10.2018	7.4	52.0	523.0	44.0	12.0	1.4
14	24.10.2018	7.4	48.0	542.0	48.0	8.0	1.2
15	14.11.2018	7.6	30.0	480.0	37.0	6.0	1.6
16	30.11.2018	7.1	44.0	511.0	40.0	7.0	1.0
17	13.12.2018	7.7	38.0	578.0	20.0	6.0	1.2
18	30.12.2018	7.5	49.0	630.0	16.0	4.0	1.4
19	14.01.2019	7.7	47.0	773.0	32.0	10.0	2.0
20	29.01.2019	8.0	58.0	690.0	20.0	3.0	1.6
21	14.02.2019	7.3	41.0	671.0	30.0	8.0	1.4
22	27.02.2019	7.9	52.0	814.0	39.0	11.0	1.8
23	14.03.2019	7.6	58.0	783.0	19.0	5.0	1.6
24	29.03.2019	8.1	61.0	611.0	20.0	6.0	1.4
Min.		7.1	28.0	337.0	12.0	2.0	1.0
Max.		8.2	61.0	814.0	48.0	12.0	2.0
98%tile		8.2	59.6	799.7	46.2	11.5	1.9
Characteristics of Effluents – Khairagura expansion OCP base workshop ETP outlet							
Sl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H ⁺ B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10.0
1	14.04.2018	8.1	74.0	864.0	90.0	13.0	1.2
2	30.04.2018	7.9	67.0	1,023.0	69.0	9.0	3.0

3	14.05.2018	7.9	58.0	983.0	64.0	8.0	2.8
4	31.05.2018	7.8	81.0	936.0	85.0	12.0	2.6
5	15.06.2018	8.1	74.0	964.0	88.0	13.0	2.8
6	30.06.2018	8.2	68.0	844.0	96.0	18.0	3.0
7	13.07.2018	8.3	88.0	984.0	88.0	12.0	3.6
8	30.07.2018	8.0	75.0	925.0	94.0	16.0	4.0
9	15.08.2018	8.0	78.0	785.0	104.0	19.0	3.8
10	28.08.2018	8.2	70.0	820.0	105.0	16.0	3.2
11	07.09.2018	8.0	78.0	913.0	90.0	12.0	3.8
12	29.09.2018	7.6	83.0	892.0	92.0	16.0	3.6
13	14.10.2018	7.5	95.0	956.0	96.0	24.0	3.4
14	24.10.2018	7.5	80.0	863.0	92.0	22.0	3.2
15	14.11.2018	8.0	60.0	986.0	53.0	8.0	4.0
16	30.11.2018	8.2	81.0	970.0	98.0	22.0	4.4
17	13.12.2018	7.9	76.0	993.0	84.0	19.0	3.2
18	30.12.2019	8.2	61.0	1044.00	68.0	21.0	3.0
19	14.01.2019	8.1	84.0	864.0	90.0	21.0	4.8
20	29.01.2019	8.3	74.0	784.00	102.0	28.0	5.0
21	14.02.2019	8.4	79.0	1,067.0	91.0	24.0	4.6
22	27.02.2019	8.4	91.0	1141.00	108.0	30.0	5.4
23	14.03.2019	8.2	97.00	978.0	99.0	28.0	5.2
24	29.03.2019	8.31	94.0	1013.00	80.0	26.0	5.0
Min.		7.5	58.0	784.0	53.0	8.0	1.2
Max.		8.4	97.0	1141.0	108.0	30.0	5.4
98%tile		8.4	96.1	1107.0	106.6	29.1	5.3

Characteristics of Effluents – Khairagura CHP ETP outlet							
Sl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H ⁺ B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1	15.04.2018	8.0	57.0	626.0	65.0	9.0	1.6
2	30.04.2018	7.8	71.0	881.0	65.0	7.0	2.0
3	14.05.2018	7.8	63.0	971.0	88.0	11.0	3.2
4	31.05.2018	8.0	55.0	943.0	77.0	9.0	2.2
5	15.06.2018	8.1	68.0	840.0	8.0	13.0	2.0
6	30.06.2018	8.0	49.0	683.0	65.0	9.0	2.2
7	13.07.2018	8.0	73.0	870.0	76.0	10.0	2.8
8	30.07.2018	7.9	65.0	840.0	73.0	11.0	2.4
9	15.08.2018	7.4	42.0	936.0	79.0	12.0	2.6
10	28.08.2018	7.2	38.0	952.0	85.0	12.0	2.8
11	07.09.2018	7.6	67.0	796.0	78.0	8.0	2.6
12	29.09.2018	7.7	63.0	756.0	76.0	7.0	2.4
13	14.10.2018	7.7	58.0	823.0	76.0	18.0	2.4
14	24.10.2018	7.7	56.0	795.0	72.0	18.0	2.6
15	14.11.2018	7.2	45.0	780.0	48.0	6.0	2.6
16	30.11.2018	7.8	38.0	523.0	40.0	9.0	1.2
17	13.12.2018	7.5	36.0	611.0	68.0	17.0	2.0
18	30.12.2018	7.7	52.0	789.0	40.0	9.0	2.4
19	14.01.2019	8.0	57.0	626.0	65.0	16.0	2.4
20	29.01.2019	7.9	42.0	923.0	78.0	18.0	3.6
21	14.02.2019	8.1	69.0	831.0	71.0	19.0	2.8
22	27.02.2019	8.0	71.0	983.0	88.0	22.0	4.6
23	14.03.2019	7.8	93.0	911.0	49.0	11.0	4.2
24	29.03.2019	7.9	88.0	997.0	60.0	18.0	3.8
Min.		7.2	36.0	523.0	8.0	6.0	1.2
Max.		8.1	93.0	997.0	88.0	22.0	4.6
98%tile		8.1	90.7	990.6	88.0	20.6	4.4

S.No.	Date of Sampling	pH	TSS at 105 ⁰ C	TDS at 180 ⁰ C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/l	mg/L
Test Method		4500-H ⁺ B	2540-D	2540-C	5220-D	IS 3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1.	13.07.2018	7.9	50	725	44	6	1.8
2.	30.07.2018	7.9	59	640	48	7	1.6
3.	15.08.2018	7.8	62	720	52	8	1.8
4.	28.08.2018	6.8	56	785	73	14	2.0
5.	07.09.2018	7.8	60	652	45	6	1.4
6.	29.09.2018	7.6	57	585	48	8	1.6
Min		6.8	50	585	44	6	1.4
Max		7.9	62	785	73	14	2
98%tile		7.9	61.8	779	70.9	13.4	1.98

- Found dry from April to June & October to March

From April 2019 to March 2020

Characteristics of Effluents – Khairagura expansion OCP mine discharge							
Sl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H ⁺ B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1	15.04.2019	7.2	44	580	24	6	1.2
2	30.04.2019	7.8	32	759	30	8	1.4
3	15.05.2019	7.7	49	783	19	4	2.6
4	30.05.2019	7.5	24	639	27	6	1
5	15.06.2019	7.3	36	592	11	3	<1
6	30.06.2019	8	32	530	13	2	1.2
7	15.07.2019	8.2	27	690	19	6	1
8	31.07.2019	7.5	43	808	17	3	<1
9	15.08.2019	7.8	22	721	10	3	1
10	31.08.2019	7.6	34	860	10	2	<1
11	15.09.2019	7.5	20	640	12	4	<1
12	30.09.2019	7.8	24	596	23	7	1
13	15.10.2019	7.6	33	730	27	9	1.2
14	31.10.2019	7.3	41	612	20	6	<1
15	15.11.2019	7.5	54	753	23	7	1.2
16	30.11.2019	7.7	36	628	15	2	<1
17	15.12.2019	7.4	23	574	12	2	<1
18	31.12.2019	7.3	28	637	23	7	1.4
19	15.01.2020	7.1	37	851	27	9	1.2
20	31.01.2020	7.3	22	690	19	3	1
21	15.02.2020	7.5	18	567	15	2	1.2
22	29.02.2020	7.8	28	755	20	3	1.4
23	15.03.2020	7.4	20	612	19	3	<1
24	31.03.2020	7.7	32	834	12	2	<1
Min.		7.1	18	530	10	2	1
Max.		8.2	54	860	30	9	2.6
98%tile		8.108	51.7	855.86	28.62	9	2.264-

Characteristics of Effluents – Khairagura expansion OCP base workshop ETP outlet							
Sl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H*B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10.0
1	15.04.2019	7.5	40	880	64	16	7
2	30.04.2019	7.7	32	838	70	18	8.2
3	15.05.2019	7.5	38	920	76	22	4
4	30.05.2019	7.1	36	860	58	18	6.4
5	15.06.2019	7.9	32	796	40	13	4
6	30.06.2019	7.6	26	961	31	6	5
7	15.07.2019	8	29	910	39	13	6.8
8	31.07.2019	7.2	30	975	52	16	3.6
9	15.08.2019	7.4	42	620	48	12	3.2
10	31.08.2019	7.7	26	745	23	8	4.4
11	15.09.2019	7.8	39	992	31	10	4.6
12	30.09.2019	7.8	39	992	31	10	4.6
13	15.10.2019	7.7	25	810	43	14	3.2
14	31.10.2019	7.8	38	746	67	22	4.4
15	15.11.2019	7.7	25	984	82	20	5.6
16	30.11.2019	7.5	28	815	94	23	4.2
17	15.12.2019	7.8	48	961	120	28	5.4
18	31.12.2019	7.1	66	748	190	23	4.2
19	15.01.2020	7.3	54	960	168	18	4.8
20	31.01.2020	7.5	28	771	132	15	5.2
21	15.02.2020	7.7	40	964	110	22	5.6
22	29.02.2020	7.9	67	1023	69	13	3
23	15.03.2020	7.6	51	885	86	17	3.6
24	31.03.2020	7.5	74	1137	108	23	4.2
Min.		7.1	25	620	23	6	3
Max.		8	74	1137	190	28	8.2
98%tile		7.954	70.78	1084.56	179.88	25.7	7.648
- No standard is specified for TDS.							

Characteristics of Effluents – Khairagura CHP ETP outlet							
Sl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H ⁺ B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1	15.04.2019	7.4	60	844	56	18	2
2	30.04.2019	7.4	43	920	70	20	1.3
3	15.05.2019	7.5	52	975	67	18	5.6
4	30.05.2019	7.7	40	887	62	22	3.2
5	15.06.2019	7.7	38	824	33	10	2.8
6	30.06.2019	8.5	32	738	23	4	3.6
7	15.07.2019	7.9	61	935	74	24	4.2
8	31.07.2019	7.4	34	964	60	18	4
9	15.08.2019	7.7	21	745	19	3	2.8
10	31.08.2019	7.5	48	847	31	10	1
11	15.09.2019	8	30	933	58	19	3.8
12	30.09.2019	8.2	22	840	79	26	2.6
13	15.10.2019	8	28	734	62	20	2.8
14	31.10.2019	7.7	20	890	55	18	3.6
15	15.11.2019	7.5	67	1021	68	22	4.2
16	30.11.2019	7.4	42	796	80	26	3.8
17	15.12.2019	7.9	56	810	116	23	4.2
18	31.12.2019	8.1	72	922	104	27	3.6
19	15.01.2020	7.8	68	772	121	22	3.2
20	31.01.2020	7.7	97	897	97	20	4.4
21	15.02.2020	8	76	722	78	17	4.8
22	29.02.2020	7.8	84	881	65	17	4.8
23	15.03.2020	7.9	63	1032	58	24	3.4
24	31.03.2020	8.1	88	1260	81	19	3.8
Min.		7.4	20	722	19	3	1
Max.		8.5	97	1260	121	27	5.6
98%tile		8.362	92.86	1155.12	118.7	26.54	5.232
- No standard is specified for TDS.							

Khairagura Expan. OCP OB Runoff / Settling Tank Outlet (EW4)

S.No.	Date of Sampling	pH	TSS at 105 ^o C	TDS at 180 ^o C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/l	mg/L
Test Method		4500-H ⁺ B	2540-D	2540-C	5220-D	IS 3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1.	15.07.2019	8.0	48	879	23	7	3
2.	31.07.2019	7.9	104	642	25	8	1.6
3.	15.08.2019	7.5	60	983	15	3	1.2
4.	31.08.2019	7.8	83	720	10	3	1.6
Min		7.5	48	642	10	3	1.2
Max		8	104	983	25	8	3
98%tile		7.994	102.74	976.76	24.88	7.94	2.916

From April 2020 to Mar 2021

Characteristics of effluents – KHA OCP. mine discharge							
Sl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H ⁺ B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1.	15.04.2020	7.60	24.00	970.00	23.00	3.00	1.20
2.	30.04.2020	7.80	36.00	777.00	15.00	2.00	<1
3.	15.05.2020	7.60	21.00	643.00	19.00	2.00	1.40
4.	31.05.2020	7.50	34.00	811.00	12.00	2.00	<1
5.	15.06.2020	7.40	27.00	637.00	16.00	2.00	1.20
6.	30.06.2020	7.30	22.00	710.00	20.00	3.00	<1
7.	15.07.2020	7.10	35.00	884.00	23.00	2.00	1.60
8.	31.07.2020	7.30	26.00	619.00	16.00	3.00	1.40
9.	14.08.2020	7.50	34.00	661.00	27.00	9.00	1.60
10.	31.08.2020	7.40	20.00	927.00	15.00	5.00	1.20
11.	15.09.2020	7.20	26.00	751.00	12.00	2.00	<1
12.	31.09.2020	7.60	38.00	951.00	31.00	6.00	1.40
13.	15.10.2020	7.70	42.00	833.00	20.00	5.00	1.80
14.	31.10.2020	7.40	49.00	971.00	32.00	8.00	1.40
15.	14.11.2020	6.90	38.00	774.00	19.00	4.00	1.00
16.	28.11.2020	7.60	33.00	930.00	27.00	5.00	1.60
17.	14.12.2020	7.80	38.00	778.00	32.00	6.00	1.20
18.	31.12.2020	7.60	22.00	642.00	12.00	2.00	<1
19.	12.01.2021	7.8	31	802	12	2	<1
20.	29.01.2021	7.6	24	938	19	4	1
21.	15.02.2021	7.3	38	693	23	6	1.6
22.	27.02.2021	7.5	21	875	15	4	1
23.	15.03.2021	7.6	16	744	27	7	1.4
24.	30.03.2021	7.4	27	580	15	2	<1
MIN		7.10	20.00	619.00	12.00	2.00	1.20
MAX		7.80	38.00	951.00	31.00	9.00	1.60
98% TILE		7.76	37.60	946.20	30.20	8.40	1.60
- No standard is specified for TDS.							

Characteristics of effluents – KHA OCP BWS ETP OUTLET							
Sl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H*B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1.	15.04.2020	7.20	81.00	1325.00	176.00	16.00	5.80
2.	30.04.2020	7.50	52.00	1140.00	210.00	14.00	3.80
3.	15.05.2020	7.20	38.00	958.00	166.00	17.00	4.60
4.	31.05.2020	7.00	62.00	715.00	180.00	15.00	5.40
5.	15.06.2020	7.20	81.00	840.00	150.00	26.00	4.20
6.	30.06.2020	7.40	94.00	1064.00	114.00	24.00	3.60
7.	15.07.2020	7.50	78.00	1255.00	94.00	23.00	3.20
8.	31.07.2020	7.70	41.00	977.00	71.00	21.00	2.80
9.	14.08.2020	7.80	68.00	1185.00	43.00	14.00	4.80
10.	31.08.2020	7.70	54.00	1052.00	62.00	20.00	4.20
11.	15.09.2020	7.50	42.00	839.00	87.00	16.00	4.60
12.	31.09.2020	7.90	67.00	1047.00	69.00	18.00	4.80
13.	15.10.2020	8.10	74.00	1064.00	89.00	16.00	5.20
14.	31.10.2020	8.40	84.00	1142.00	76.00	19.00	4.60
15.	14.11.2020	6.80	79.00	897.00	81.00	16.00	5.20
16.	28.11.2020	7.90	87.00	1241.00	62.00	14.00	5.00
17.	14.12.2020	7.90	76.00	1013.00	84.00	19.00	4.40
18.	31.12.2020	7.90	98.00	1226.00	98.00	23.00	4.80
19.	12.01.2021	7.6	126	1475	116	19	5.8
20.	29.01.2021	7.3	110	1307	139	25	5.2
21.	15.02.2021	7.1	142	1192	108	28	4.8
22.	27.02.2021	7.2	105	1408	90	26	4.2
23.	15.03.2021	7.4	81	1295	126	24	4.6
24.	30.03.2021	7.7	94	1526	78	21	3.8
MIN		7.00	38.00	715.00	43.00	14.00	2.80
MAX		7.90	94.00	1255.00	210.00	26.00	5.40
98% TILE		7.88	91.40	1241.00	204.00	25.60	5.28
- No standard is specified for TDS.							

Characteristics of effluents – KHA OCP CHP ETP OUTLET							
Sl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H+B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1.	15.04.2020	7.70	104.00	1029.00	62.00	20.00	3.20
2.	30.04.2020	7.20	70.00	1162.00	51.00	17.00	3.40
3.	15.05.2020	7.40	46.00	871.00	73.00	19.00	2.80
4.	31.05.2020	7.60	57.00	1035.00	90.00	22.00	3.20
5.	15.06.2020	7.30	74.00	1220.00	122.00	20.00	3.80
6.	30.06.2020	7.50	91.00	1534.00	87.00	27.00	4.40
7.	15.07.2020	7.70	65.00	1396.00	117.00	25.00	4.80
8.	31.07.2020	7.90	72.00	1513.00	126.00	28.00	4.20
9.	14.08.2020	7.70	57.00	1404.00	109.00	26.00	3.60
10.	31.08.2020	7.80	48.00	1236.00	78.00	22.00	4.40
11.	15.09.2020	7.60	75.00	995.00	55.00	18.00	4.80
12.	31.09.2020	7.80	71.00	1021.00	65.00	16.00	4.00
13.	15.10.2020	8.00	57.00	926.00	65.00	12.00	1.80
14.	31.10.2020	8.10	69.00	831.00	60.00	14.00	2.80
15.	14.11.2020	6.50	43.00	788.00	49.00	9.00	1.80
16.	28.11.2020	7.70	58.00	955.00	43.00	8.00	2.60
17.	14.12.2020	7.50	36.00	811.00	48.00	11.00	2.00
18.	31.12.2020	7.70	64.00	912.00	62.00	17.00	2.40
19.	12.01.2021	7.8	83	1179	101	15	4.6
20.	29.01.2021	7.5	71	1282	85	21	4
21.	15.02.2021	7.6	86	1410	50	16	3.2
22.	27.02.2021	7.4	62	1301	74	19	3.8
23.	15.03.2021	7.7	54	1137	55	17	3
24.	30.03.2021	7.5	78	1014	62	15	2.6
MIN		7.20	46.00	871.00	51.00	16.00	2.80
MAX		7.90	91.00	1534.00	126.00	28.00	4.80
98% TILE		7.88	87.80	1529.80	125.20	27.80	4.80
- No standard is specified for TDS.							

S.No.	Date of Sampling	pH	TSS at 105°C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/l	mg/L
Test Method		4500-H ⁺ B	2540-D	2540-C	5220-D	IS 3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1.	15.09.2020	7.7	60	632	28	9	1.2
2.	30.09.2020	8.0	55	986	23	4	1.4
3.	15.10.2020	7.5	49	874	32	8	1.6
Min		7.5	49	632	23	4	1.2
Max		8	60	986	32	9	1.6
98%tile		7.988	59.8	981.52	31.84	8.96	1.592

From April 2021 to Mar 2022

Characteristics of effluents – KHA OCP. mine discharge							
xSl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H ⁺ B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
25.	15.04.2021	7.3	22	453	12	2	<1
26.	29.04.2021	7.1	18	637	20	3	<1
27.	07.05.2021	7.4	16	812	12	2	<1
28.	31.05.2021	7.5	21	707	15	2	<1
29.	14.06.2021	7.3	27	591	27	4.4	1.2
30.	30.06.2021	7.6	18	693	19	2.8	<1
31.	13.07.2021	7.9	53	894	24	4.1	1.4
32.	30.07.2021	7.6	28	784	29	3.5	1.2
33.	13.08.2021	7.7	23	935	19	3.2	1
34.	31.08.2021	7.8	17	827	12	2.4	<1
35.	15.09.2021	7.7	31	1043	16	3.6	<1
36.	29.09.2021	7.9	20	791	28	5.3	1.2
37.	14.10.2021	7.6	25	943	12	2.1	<1
38.	30.10.2021	7.4	18	820	19	3.2	1
39.	15.11.2021	7.8	21	685	16	2.1	<1
40.	30.11.2021	7.5	36	891	23	6.5	1.4
41.	15.12.2021	7.8	28	755	31	8	1.4
42.	31.12.2021	7.7	36	973	12	3.1	1
43.	12.01.2022	7.8	47	810	20	6.1	1.6
44.	31.01.2022	8	24	1072	36	7.1	1.2
45.	14.02.2022	7.3	32	871	23	4.2	1.4
46.	24.02.2022	7.7	26	715	12	2	<1
47.	15.03.2022	7.7	21	828	27	5.3	1.4
48.	28.03.2022	7.5	29	941	23	6.4	1.2
MIN		7.10	16.00	453.00	12.00	2.00	1.00
MAX		8.00	53.00	1072.00	36.00	8.00	1.60
98% TILE		7.95	50.24	1058.66	33.70	7.59	1.55
- No standard is specified for TDS.							

Characteristics of effluents – KHA OCP BWS ETP OUTLET							
xSl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H+B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
25.	15.04.2021	7.80	50.00	1383.00	43.00	11.00	2.40
26.	29.04.2021	7.60	67.00	1611.00	67.00	16.00	2.60
27.	07.05.2021	7.80	82.00	1735.00	58.00	13.00	3.00
28.	31.05.2021	7.70	96.00	1582.00	50.00	15.00	2.20
29.	14.06.2021	7.60	50.00	1448.00	66.00	19.00	2.60
30.	30.06.2021	7.40	66.00	1681.00	50.00	14.00	3.00
31.	13.07.2021	8.30	88.00	984.00	88.00	22.40	3.60
32.	30.07.2021	8.00	75.00	1125.00	62.00	14.20	4.00
33.	13.08.2021	7.90	96.00	1341.00	47.00	11.00	3.20
34.	31.08.2021	7.50	58.00	1493.00	55.00	16.10	3.60
35.	15.09.2021	7.40	66.00	1271.00	63.00	14.90	3.00
36.	29.09.2021	7.50	74.00	1507.00	75.00	16.20	3.40
37.	14.10.2021	7.20	89.00	1658.00	58.00	13.20	2.80
38.	30.10.2021	7.60	95.00	1494.00	69.00	18.10	3.00
39.	15.11.2021	7.60	63.00	1379.00	47.00	11.30	2.40
40.	30.11.2021	7.20	77.00	1408.00	72.00	17.20	4.00
41.	15.12.2021	7.90	67.00	1023.00	67.00	20.20	4.80
42.	31.12.2021	7.60	74.00	864.00	76.00	21.40	5.20
43.	12.01.2022	7.90	81.00	891.00	62.00	19.20	5.00
44.	31.01.2022	8.30	88.00	984.00	88.00	12.20	4.60
45.	14.02.2022	7.90	79.00	1067.00	51.00	14.20	4.80
46.	24.02.2022	7.50	94.00	1254.00	70.00	16.10	4.20
47.	15.03.2022	7.10	123.00	1491.00	125.00	18.20	4.60
48.	28.03.2022	6.80	141.00	1678.00	147.00	22.00	4.80
MIN		6.80	50.00	864.00	43.00	11.00	2.20
MAX		8.30	141.00	1735.00	147.00	22.40	5.20
98% TILE		8.30	132.72	1710.16	136.88	22.22	5.11
<i>- No standard is specified for TDS.</i>							

Characteristics of effluents – KHA OCP CHP ETP OUTLET							
xSl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H+B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
25.	15.04.2021	7.60	63.00	906.00	51.00	13.00	2.80
26.	29.04.2021	7.30	41.00	1185.00	40.00	10.00	2.00
27.	07.05.2021	7.50	55.00	1416.00	46.00	11.00	2.40
28.	31.05.2021	7.30	74.00	1297.00	42.00	9.00	3.00
29.	14.06.2021	7.50	63.00	1157.00	58.00	16.00	3.20
30.	30.06.2021	7.80	45.00	1302.00	46.00	11.00	3.60
31.	13.07.2021	8.00	73.00	871.00	24.00	4.10	1.80
32.	30.07.2021	7.70	65.00	1021.00	29.00	4.10	1.40
33.	13.08.2021	7.40	81.00	1216.00	51.00	14.00	2.00
34.	31.08.2021	7.10	73.00	974.00	31.00	10.10	2.20
35.	15.09.2021	6.90	45.00	1105.00	40.00	8.90	2.80
36.	29.09.2021	7.10	38.00	1249.00	47.00	12.20	2.60
37.	14.10.2021	7.00	51.00	1370.00	35.00	9.20	2.00
38.	30.10.2021	7.20	67.00	1169.00	77.00	16.00	3.00
39.	15.11.2021	7.40	44.00	1005.00	31.00	8.30	2.00
40.	30.11.2021	7.40	62.00	1301.00	27.00	4.60	2.00
41.	15.12.2021	7.80	84.00	881.00	15.00	3.10	1.00
42.	31.12.2021	8.10	57.00	626.00	20.00	6.10	2.00
43.	12.01.2022	7.80	49.00	722.00	32.00	9.10	1.00
44.	31.01.2022	7.90	73.00	871.00	24.00	6.10	1.40
45.	14.02.2022	8.10	69.00	794.00	15.00	2.60	<1
46.	24.02.2022	7.80	48.00	1028.00	43.00	9.10	1.80
47.	15.03.2022	7.40	96.00	1287.00	106.00	20.20	3.20
48.	28.03.2022	7.00	113.00	1404.00	135.00	28.00	4.20
MIN		6.90	38.00	626.00	15.00	2.60	1.00
MAX		8.10	113.00	1416.00	135.00	28.00	4.20
98% TILE		8.10	105.18	1410.48	121.66	24.41	3.94
<i>- No standard is specified for TDS.</i>							

Characteristics of effluents – KHA OCP OB runoff settling tank outlet							
xSl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H+B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1.	14.06.2021	7.6	58	1074	27	5.2	1.2
2.	30.06.2021	7.90	51.00	725.00	44.00	11.20	1.80
3.	13.07.2021	7.50	59.00	640.00	33.00	5.10	1.60
4.	30.07.2021	7.70	47.00	807.00	23.00	5.20	1.60
5.	13.08.2021	7.90	101.00	1053.00	15.00	3.20	<1
6.	31.08.2021	8.10	59.00	928.00	15.00	4.40	<1
7.	15.09.2021	8.00	42.00	814.00	12.00	2.50	<1
8.	29.09.2021	7.50	42.00	640.00	12.00	2.50	<1
9.	14.10.2021	8.10	101.00	1053.00	44.00	11.20	1.80
10.	30.10.2021	8.09	96.80	1040.50	42.90	10.60	1.79
MIN		7.50	42.00	640.00	12.00	2.50	1.20
MAX		8.10	101.00	1074.00	44.00	11.20	1.80
98% TILE		8.10	101.00	1074.00	44.00	11.20	1.80
<i>- No standard is specified for TDS.</i>							

EFFLUENTS ALL PARAMETERS (YEARLY ONCE) Physico-Chemical and Biological characteristics of Effluent samples
2017-18

S.N Q	Test Parameter(s)	Unit	Test Method	Standards				Result			
				Part -A: Effluents (GSR 801) (E)				Land for irrigation	Khairaguda expansion OCP mine discharge	Khairaguda expansion base workshop ETP outlet	Khairaguda CHP ETP Outlet	Khairaguda OC OB Dump
Inland surface water	Public sewers	(a)	(b)	(c)	EW-1	EW-2	EW-3						EW-4
1.	Colour	Pt-co- Scale	2120. B	*	--	*	5	10	10	5	
2.	Odour	TON	2150. B	*	--	*	No odour observed	No odour observed	No odour observed	No odour observed	
3.	Total Suspended Solids	mg/L	2540. D	100	600	200	24	40	36	36	
4.	Particle size of suspended solids	mg/L		Shall pass 850 Micron IS sieve	--	--	Pass	Pass	Pass	Pass	
5.	pH	--	4500-H+B	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	7.8	7.2	7.8	7.4	
6.	Temperature	°C	2550. B	Shall not exceed 5°C above the receiving water temperature	--	--	25.5	25.4	25.3	25.2	
7.	Oil & Grease	mg/L	5520. B	10	20	10	1.4	3.2	2.0	1.2	
8.	Ammonical Nitrogen	mg/L	4500-NH3 -C	50	50	--	BDL	BDL	BDL	BDL	
9.	Total Kjeldahl Nitrogen	mg/L	4500-Noig.C	100	--	--	BDL	BDL	BDL	BDL	
10.	Free Ammonia	mg/L	4500-NH3 -D	5.0	--	--	BDL	BDL	BDL	BDL	
11.	Biochemical Oxygen Demand (3 days at 27°C)	mg/L	IS:3025	30	350	100	6	22	18	12	
12.	Chemical Oxygen Demand	mg/L	5220. D	250	--	--	30	80	65	40	
13.	Arsenic as As	mg/L	3120-B	0.2	0.2	0.2	BDL	BDL	BDL	BDL	
14.	Mercury as Hg	µg/L	3500-Hg.B	0.01	0.01	--	BDL	BDL	BDL	BDL	
15.	Lead as Pb	mg/L	3120-B	0.1	1.0	--	BDL	BDL	BDL	BDL	
16.	Cadmium as Cd	mg/L	3120-B	2.0	1.0	--	BDL	BDL	BDL	BDL	

2018-19

Effluents Quality: (In accordance with parameters analyzed once in a year)		Sample collected on 22.07.2019								
S.No	Test Parameter (s)	Unit	Test Method	Standards			Result			
				Part -A: Effluents (GSR 801) (E)	Public sewers	Land for irrigation	Khairaguda OC OB Runoff	Khairaguda expansion OCP base workshop ETP outlet	Khairaguda CHP ETP Outlet	Khairaguda OC Runoff
				(a)	(b)	(c)	EW-1	EW-2	EW-3	EW-4
1.	Colour	Pt-co-Scale	2120. B	*	--	*	5	35	25	15
2.	Odour	TON	2150. B	*	--	*	No odour observed	No odour observed	No odour observed	No odour observed
3.	Total Suspended Solids	mg/L	2540. D	100	600	200	24	46	53	56
4.	Particle size of suspended solids	mg/L		Shall pass 850 Micron IS sieve	--	--	Pass	Pass	Pass	Pass
5.	pH	--	4500-H ⁺ B	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	7.7	8.0	7.8	8.0
6.	Temperature	°C	2550. B	Shall not exceed 5°C above the receiving water temperature	--	--	25.3	25.1	25.6	25.9
7.	Oil & Grease	mg/L	5520. B	10	20	10	<1	3.8	3.1	2.0
8.	Ammonical Nitrogen	mg/L	4500-NH ₃ -C	50	50	--	BDL	BDL	BDL	BDL
9.	Total Kjeldahl Nitrogen	mg/L	4500-N _{total} -C	100	--	--	BDL	BDL	BDL	BDL
10.	Free Ammonia	mg/L	4500-NH ₃ -D	5.0	--	--	BDL	BDL	BDL	BDL
11.	Biochemical Oxygen Demand (3 days at 27°C)	mg/L	IS:3025	30	350	100	4	12	19	27

Effluents Quality: (In accordance with parameters analyzed once in a year)		Standards						Sample collected on 22.07.2019			
S.No	Test Parameter (s)	Unit	Test Method	Part -A: Effluents (GSR 801) (E)			Result				
				Inland surface water	Public sewers	Land for irrigation	Khairaguda OC OB Runoff	Khairaguda expansion OCP base workshop ETP outlet	Khairaguda CHP ETP Outlet	Khairaguda OC OB Runoff	
				(a)	(b)	(c)	EW-1	EW-2	EW-3	EW-4	
12.	Chemical Oxygen Demand	mg/L	5220. D	250	--	--	22	40	64	96	
13.	Arsenic as As	mg/L	3120-B	0.2	0.2	0.2	BDL	BDL	BDL	BDL	
14.	Mercury as Hg	µg/L	3500-Hg.B	0.01	0.01	--	BDL	BDL	BDL	BDL	
15.	Lead as Pb	mg/L	3120-B	0.1	1.0	--	BDL	BDL	BDL	BDL	
16.	Cadmium as Cd	mg/L	3120-B	2.0	1.0	--	BDL	BDL	BDL	BDL	
17.	Hexavalent Chromium as Cr ⁺⁶	mg/L	3500-Cr ⁺⁶ .B	0.1	2.0	--	BDL	BDL	BDL	BDL	
18.	Total Chromium as Cr	mg/L	3120-B	2.0	2.0	--	BDL	BDL	BDL	BDL	
19.	Copper as Cu	mg/L	3120-B	3.0	3.0	--	0.05	0.11	0.09	0.14	
20.	Zinc as Zn	mg/L	3120-B	5.0	15	--	0.65	0.12	0.37	0.73	
21.	Selenium as Se	mg/L	3120-B	0.05	0.05	--	BDL	BDL	BDL	BDL	
22.	Nickel as Ni	mg/L	3120-B	3.0	3.0	--	BDL	BDL	BDL	BDL	
23.	Fluoride as F-	mg/L	4500-F.C	2.0	15	--	0.42	0.49	0.53	0.57	
24.	Dissolved Phosphates	mg/L	4500-P.D	5.0	--	--	BDL	BDL	BDL	BDL	
25.	Sulphide	mg/L	4500-S2-G	2.0	--	--	BDL	BDL	BDL	BDL	
26.	Phenolic Compounds as C6H5OH	mg/L	5530-D	1.0	5.0	--	BDL	BDL	BDL	BDL	
27.	Bio-assay test	% survival	8010 F, G & H	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	100% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	100% survival of fish after 96 hours in 100% effluent	
28.	Manganese as Mn	mg/L	3120-B	2	2	--	0.04	0.07	0.15	0.15	

Effluents Quality: (In accordance with parameters analyzed once in a year)		Sample collected on 22.07.2019								
S.No	Test Parameter (s)	Unit	Test Method	Standards			Result			
				Part -A: Effluents (GSR 801) (E)	Public sewers	Land for irrigation	Khairaguda OC OB Runoff	Khairaguda expansion OCP base workshop ETP outlet	Khairaguda CHP ETP Outlet	Khairaguda OC OB Runoff
29.	Iron as Fe	mg/L	3120-B	(a)	(b)	(c)	EW-1	EW-2	EW-3	EW-4
30.	Vanadium as V	mg/L	3120-B	3	3	--	0.47	0.66	0.81	0.63
31.	Nitrate Nitrogen	mg/L	PDA	0.2	0.2	--	BDL	BDL	BDL	BDL
32.	Total residual chlorine	mg/L	4500-CI-B	1.0	--	--	BDL	BDL	BDL	BDL

Effluents Quality: (In accordance with parameters analyzed once in a year)		Sample collected on 24.08.2020										
S.No	Test Parameter (s)	Unit	Test Method	Standards				Result				
				Part –A: Effluents (GSR 801) (E)				Khairaguda OC OB Runoff	Khairaguda expansion OCP base workshop ETP outlet	Khairaguda CHP ETP Outlet	Khairaguda OC OB Runoff	
				Inland surface water	Public sewers	Land for irrigation	EW-1	EW-2	EW-3	EW-4		
1.	Colour	Pt-co-Scale	2120. B	*	--	*	5	10	20	10	No odour observed	No odour observed
2.	Odour	TON	2150. B	*	--	*	No odour observed	No odour observed	No odour observed	No odour observed	No odour observed	No odour observed
3.	Total Suspended Solids	mg/L	2540. D	100	600	200	24	46	54	74	Pass	Pass
4.	Particle size of suspended solids	mg/L		Shall pass 850 Micron IS sieve	--	--	Pass	Pass	Pass	Pass	Pass	Pass
5.	pH	--	4500-H ⁺ B	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	7.4	7.0	6.8	7.3	6.8	7.3
6.	Temperature	°C	2550. B	Shall not exceed 5°C above the receiving water temperature	--	--	25.0	25.1	25.1	25.1	25.1	25.1
7.	Oil & Grease	mg/L	5520. B	10	20	10	<1	<1	<1	<1	<1	<1
8.	Ammonical Nitrogen	mg/L	4500-NH ₃ -C	50	50	--	BDL	BDL	BDL	BDL	BDL	BDL
9.	Total Kjeldahl Nitrogen	mg/L	4500-N _{org} -C	100	--	--	BDL	BDL	BDL	BDL	BDL	BDL
10.	Free Ammonia	mg/L	4500-NH ₃ -D	5.0	--	--	BDL	BDL	BDL	BDL	BDL	BDL
11.	Biochemical Oxygen Demand (3 days at 27°C)	mg/L	IS:3025	30	350	100	2.5	16	12	3.2	12	3.2

Effluents Quality. (In accordance with parameters analyzed once in a year)		Standards					Sample collected on 24.08.2020			
S.No	Test Parameter (s)	Unit	Test Method	Part -A: Effluents (GSR 801) (E)			Result			
				Inland surface water	Public sewers	Land for irrigation	Khairaguda OC OB Runoff	Khairaguda expansion OCP base workshop ETP outlet	Khairaguda CHP ETP Outlet	Khairaguda OC OB Runoff
				(a)	(b)	(c)	EW-1	EW-2	EW-3	EW-4
12.	Chemical Oxygen Demand	mg/L	5220. D	250	--	--	14	50	36	16
13.	Arsenic as As	mg/L	3120-B	0.2	0.2	0.2	BDL	BDL	BDL	BDL
14.	Mercury as Hg	µg/L	3500-Hg.B	0.01	0.01	--	BDL	BDL	BDL	BDL
15.	Lead as Pb	mg/L	3120-B	0.1	1.0	--	BDL	BDL	BDL	BDL
16.	Cadmium as Cd	mg/L	3120-B	2.0	1.0	--	BDL	BDL	BDL	BDL
17.	Hexavalent Chromium as Cr ⁺⁶	mg/L	3500-Cr ⁺⁶ .B	0.1	2.0	--	BDL	BDL	BDL	BDL
18.	Total Chromium as Cr	mg/L	3120-B	2.0	2.0	--	BDL	BDL	BDL	BDL
19.	Copper as Cu	mg/L	3120-B	3.0	3.0	--	0.05	BDL	BDL	BDL
20.	Zinc as Zn	mg/L	3120-B	5.0	15	--	0.12	0.18	0.21	0.09
21.	Selenium as Se	mg/L	3120-B	0.05	0.05	--	BDL	BDL	BDL	BDL
22.	Nickel as Ni	mg/L	3120-B	3.0	3.0	--	BDL	BDL	BDL	BDL
23.	Fluoride as F-	mg/L	4500-F_C	2.0	15	--	0.52	0.48	0.43	0.29
24.	Dissolved Phosphates	mg/L	4500-P.D	5.0	--	--	BDL	BDL	BDL	BDL
25.	Sulphide	mg/L	4500-S2-G	2.0	--	--	BDL	BDL	BDL	BDL
26.	Phenolic Compounds as C6H5OH	mg/L	5530-D	1.0	5.0	--	BDL	BDL	BDL	BDL
27.	Bio-assay test	% survival	8010 F, G & H	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	100% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	100% survival of fish after 96 hours in 100% effluent

Effluents Quality. (In accordance with parameters analyzed once in a year)							Sample collected on 24.08.2020			
S.No	Test Parameter (s)	Unit	Test Method	Standards Part -A: Effluents (GSR 801) (E)			Result			
				Inland surface water	Public sewers	Land for irrigation	Khairaguda OC OB Runoff	Khairaguda expansion OCP base workshop ETP outlet	Khairaguda CHP ETP Outlet	Khairaguda OC OB Runoff
28.	Manganese as Mn	mg/L	3120-B	(a) 2	(b) 2	(c) --	EW-1 BDL	EW-2 BDL	EW-3 BDL	EW-4 BDL
29.	Iron as Fe	mg/L	3120-B	3	3	--	0.22	0.19	0.38	0.26
30.	Vanadium as V	mg/L	3120-B	0.2	0.2	--	BDL	BDL	BDL	BDL
31.	Nitrate Nitrogen	mg/L	PDA	10	--	--	4.1	3.2	4.2	3.9
32.	Total residual chlorine	mg/L	4500-Cl-B	1.0	--	--	BDL	BDL	BDL	BDL

2020-21

Effluents Quality. (In accordance with parameters analyzed once in a year)							Sample collected on 24.08.2021			
S.No	Test Parameter (s)	Unit	Test Method	Standards Part-A: Effluents (GSR 801) (E)			Result Sample collected on 24.08.2021			
				Inland surface water	Public sewers	Land for irrigation	Khairaguda OCP Exp Mine Discharge	Khairaguda OCP Exp BWS ETP Outlet	Khairaguda Exp. OCP CHP ETP Outlet	Khairaguda Exp. OCP OB Runoff / Settling Tank Outlet
1	Colour	CU	2120. B	(a) *	(b) --	(c) *	EW-1 5	EW-2 10	EW-3 20	EW-4 10
2	Odour	TON	2150. B	*	--	*	No odour observed	No odour observed	No odour observed	No odour observed
3	Total Suspended Solids	mg/L	2540. D	100	600	200	24	46	54	74
4	Particle size of suspended solids	mg/L		Shall pass 850 Micron IS sieve	--	--	Pass	Pass	Pass	Pass
5	pH	--	4500-H ⁺ B	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	7.4	7.0	6.8	7.3

S.No	Test Parameter (s)	Unit	Test Method	Standards				Result Sample collected on 24.08.2021			
				Part-A: Effluents (GSR 801) (E)		Land for irrigation		Khairagura OCP Exp Mine Discharge	Khairagura OCP Exp BWS ETP Outlet	Khairagura Exp. OCP CHP ETP Outlet	Khairagura Exp. OCP OB Runoff / Settling Tank Outlet
				(a)	(b)	(c)		EW-1	EW-2	EW-3	EW-4
6	Temperature	°C	2550. B	Shall not exceed 5°C above the receiving water temperature	--	--		25.0	25.1	25.1	25.1
7	Oil & Grease	mg/L	5520. B	10	20	10	<1	<1	<1	<1	<1
8	Ammonical Nitrogen	mg/L	4500-NH ₃ -C	50	50	--	BDL	BDL	BDL	BDL	BDL
9	Total Kjeldahl Nitrogen	mg/L	4500-N _{tot} -C	100	--	--	BDL	BDL	BDL	BDL	BDL
10	Free Ammonia	mg/L	4500-NH ₃ -D	5.0	--	--	BDL	BDL	BDL	BDL	BDL
11	Biochemical Oxygen Demand (3 days at 27°C)	mg/L	IS:3025	30	350	100	2.5	16	12	12	3.2
12	Chemical Oxygen Demand	mg/L	5220. D	250	--	--	14	50	36	36	16
13	Arsenic as As	mg/L	3120-B	0.2	0.2	0.2	BDL	BDL	BDL	BDL	BDL
14	Mercury as Hg	µg/L	3500-Hg.B	0.01	0.01	--	BDL	BDL	BDL	BDL	BDL
15	Lead as Pb	mg/L	3120-B	0.1	1.0	--	BDL	BDL	BDL	BDL	BDL
16	Cadmium as Cd	mg/L	3120-B	2.0	1.0	--	BDL	BDL	BDL	BDL	BDL
17	Hexavalent Chromium as Cr ⁺⁶	mg/L	3500-Cr ⁺⁶ .B	0.1	2.0	--	BDL	BDL	BDL	BDL	BDL
18	Total Chromium as Cr	mg/L	3120-B	2.0	2.0	--	BDL	BDL	BDL	BDL	BDL
19	Copper as Cu	mg/L	3120-B	3.0	3.0	--	0.05	BDL	BDL	BDL	BDL
20	Zinc as Zn	mg/L	3120-B	5.0	15	--	0.12	0.18	0.18	0.21	0.09
21	Selenium as Se	mg/L	3120-B	0.05	0.05	--	BDL	BDL	BDL	BDL	BDL
22	Nickel as Ni	mg/L	3120-B	3.0	3.0	--	BDL	BDL	BDL	BDL	BDL
23	Fluoride as F ⁻	mg/L	4500-F.C	2.0	15	--	0.52	0.48	0.48	0.43	0.29
24	Dissolved Phosphates	mg/L	4500-P.D	5.0	--	--	BDL	BDL	BDL	BDL	BDL
25	Sulphide	mg/L	4500-S ²⁻ .G	2.0	--	--	BDL	BDL	BDL	BDL	BDL
26	Phenolic Compounds as C ₆ H ₅ OH	mg/L	5530-D	1.0	5.0	--	BDL	BDL	BDL	BDL	BDL

S.No	Test Parameter (s)	Unit	Test Method	Standards			Result Sample collected on 24.08.2021			
				Part-A: Effluents (GSR 801) (E)			Khairagura Exp. OCP Mine Discharge	Khairagura OCP Exp BWS ETP Outlet	Khairagura Exp. OCP CHP ETP Outlet	Khairagura Exp. OCP OB Runoff / Settling Tank Outlet
		Inland surface water	Public sewers	Land for irrigation	EW-1	EW-2	EW-3	EW-4		
		(a)	(b)	(c)						
27	Bio-assay test	% survival	8010 F, G & H	90% survival of fish after 96 hours in 100% effluent	100% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	100% survival of fish after 96 hours in 100% effluent	100% survival of fish after 96 hours in 100% effluent	
28	Manganese as Mn	mg/L	3120-B	2	2	BDL	BDL	BDL	BDL	BDL
29	Iron as Fe	mg/L	3120-B	3	3	0.22	0.19	0.38	0.26	0.26
30	Vanadium as V	mg/L	3120-B	0.2	0.2	BDL	BDL	BDL	BDL	BDL
31	Nitrate Nitrogen	mg/L	PDA	10	--	4.1	3.2	4.2	3.9	3.9
32	Total residual chlorine	mg/L	4500-CI-B	1.0	--	BDL	BDL	BDL	BDL	BDL

Physico-Chemical, Bacteriological Characteristics of Groundwater Collected within the Study Area
From April 2017 to March 2018

Physico-chemical, bacteriological characteristics of groundwater collected within the study area. Sampling date:18.05.2017, 01.07.2017,21.11.2017 & 20.02.2018		RESULT							
S. No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limits	GW-1 (Ullipitta Dorii village)			
						1 st Qrt	2 nd Qrt	3 Qrt	4 th Qrt
1.	Colour	Pt-co-	2120. B	5	15	5	5	<5	<5
2.	Odour	TON	2150. B	Agreeable	Agreeable	No odour observed	No odour observed	No odour observed	No odour observed
3.	pH	-	4500-H ⁺ B	6.5 to 8.5	No relaxation	7.2	7.9	8.1	7.4
4.	Taste	FTN	2160. B	Agreeable	Agreeable	No taste observed	No taste observed	No taste observed	No taste observed
5.	Turbidity	NTU	2130. B	1	5	0.72	0.05	0.7	0.68
6.	Total Dissolved Solids at 180°C	mg/L	2540.C	500	2000	540	780	735	605
7.	Aluminium as Al	mg/L	3120-B	0.03	0.2	BDL	0.1	0.08	BDL
8.	Anionic Detergents	mg/L	IS:13428:2005K	0.2	1	<0.2	<0.2	<0.2	<0.2
9.	Barium as Ba	mg/L	3120. B	0.7	No relaxation	0.22	0.24	0.42	0.04
10.	Boron as B	mg/L	3120-B	0.5	1	BDL	BDL	0.09	BDL
11.	Calcium as Ca	mg/L	3500-Ca.B	75	200	74	82	110	94
12.	Chlorides as Cl ⁻	mg/L	4500-Cl.B	250	1000	27	30	60	37
13.	Copper as Cu	mg/L	3120-B	0.05	1.5	BDL	BDL	0.06	BDL
14.	Fluoride as F ⁻	mg/L	4500-F.C	1	1.5	0.43	0.523	0.956	0.517
15.	Residual free chlorine	mg/L	4500-Cl.B	0.2	1	BDL	BDL	BDL	BDL
16.	Iron as Fe	mg/L	3120-B	0.3	No relaxation	0.06	0.34	0.24	0.07
17.	Magnesium as Mg	mg/L	3500-Mg.B	30	100	74	66	BDL	66
18.	Manganese as Mn	mg/L	3120-B	0.1	0.3	BDL	BDL	BDL	BDL
19.	Mineral oil	mg/L	IS:3025 (part 39)	0.5	No relaxation	Absent	Absent	Absent	Absent
20.	Nitrates as NO ₃	mg/L	4500-NO ₃ .B	45	No relaxation	1	28	26	18

Physico-chemical, bacteriological characteristics of groundwater collected within the study area. Sampling date:18.05.2017, 01.07.2017,21.11.2017 & 20.02.2018									
S. No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limits	RESULT			
						1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt
21.	Phenolic compounds as C ₆ H ₅ OH	mg/L	5530-D	0.001	0.002	BDL	BDL	BDL	BDL
22.	Selenium as Se	mg/L	3120-B	0.01	No relaxation	BDL	BDL	BDL	BDL
23.	Silver as Ag	mg/L	3120. B	0.1	No relaxation	BDL	BDL	BDL	BDL
24.	Sulphates as SO ₄ ²⁻	mg/L	4500-SO ₄ ²⁻ .E	200	400	5	40	BDL	9
25.	Sulfide as S ²⁻	mg/L	4500. S ²⁻ . G	-	-	BDL	BDL	BDL	BDL
26.	Total Alkalinity as CaCO ₃	mg/L	2320. B	200	600	525	698	594	530
27.	Total Hardness asCaCO ₃	mg/L	2340. C	200	600	490	475	475	505
28.	Zinc as Zn	mg/L	3120-B	5	15	0.04	0.12	0.12	0.05
29.	Cadmium as Cd	mg/L	3120-B	0.003	No relaxation	BDL	BDL	BDL	BDL
30.	Cyanide as CN-	mg/L	4500-CN.F	0.05	No relaxation	BDL	BDL	BDL	BDL
31.	Lead as Pb	mg/L	3120-B	0.01	No relaxation	BDL	BDL	BDL	BDL
32.	Mercury as Hg	µg/L	3500-Hg.B	0.001	No relaxation	BDL	BDL	BDL	BDL
33.	Molybdenum as Mo	mg/L	3120. B	0.07	No relaxation	BDL	BDL	BDL	BDL
34.	Nickel as Ni	mg/L	3120-B	0.02	No relaxation	BDL	BDL	BDL	BDL
35.	Pesticides: α-BHC, β-BHC, γ-BHC, δ-BHC, o,p'-DDT, p,p'-DDT, Endosulfan, β-Endosulfan, Aldrin, Dieldrin	µg/L	6630. D	Absent	0.001	ND	ND	ND	ND
36.	2,4-D, Carbaryl (Carbonate) Malathion Methyl Parathion Anilophos, Chloropyriphos	Qualitative analysis	6630. D	Absent	0.001	ND	ND	ND	ND
	Polyaromatic Hydrocarbons (PAH's): Acenaphthene, Acenaphthylene, Anthracene, B(a)A, B(a)P, B(b)F, B(k)F, Pyrene, Dibenz(a,h)anthracene, Fluoranthene, Fluorene, Indeno (1,2,3-(d) Pyrene, Naphthalene, Phenanthrene, Pyrene,	µg/L	6440.C	-	-	ND	ND	ND	ND
37.	Total Arsenic as As	mg/L	3120-B	0.01	0.05	BDL	BDL	BDL	BDL
38.	Total Chromium as Cr	mg/L	3120-B	0.05	No relaxation	BDL	BDL	BDL	BDL

Physico-chemical, bacteriological characteristics of groundwater collected within the study area. Sampling date:18.05.2017, 01.07.2017,21.11.2017 & 20.02.2018									
S. No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limits	RESULT			
						1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt
39.	<i>E. coli</i>	Presence or Absence/100 mL	9221 F	-	-	Absent	Absent	Absent	Absent
40.									
41.	Total Coliforms	MPN/100 mL	9221A & B	-	-	<1.8	<1.8	<1.8	<1.8
42.	Fecal Coliforms	MPN/100 mL	9221 E	-	-	<1.8	<1.8	<1.8	<1.8
43.	Electrical Conductivity	µmhos/cm	2510-B	-	-	925	1320	1210	1020
44.	Orthophosphates	mg/L	4500-P-D	-	-	BDL	BDL	BDL	BDL
45.	Chemical Oxygen Demand	mg/L	5220. D	-	-	16	16	16	12
46.	Nitrites as NO ₂	mg/L	4500-NO ₂ .B	-	-	BDL	BDL	BDL	BDL
47.	Sodium Na	mg/L	3500 Na.B	-	-	20	57	46	30
48.	Potassium as K	mg/L	3500. K.B	-	-	1.8	1.56	2.02	1.62

From April 2018 to March 2019

S. No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limit in the absence of alternate source	RESULT							
						GW-1 (Gouriguda village)				GW-2 (Pathibanda village)			
						1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt	1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt
1.	Colour	Pt-co-	2120. B	5	15	<5	<5	<5	<5	<5	<5	<5	<5
2.	Odour	TON	2150. B	Agreeable	Agreeable	No odour observed	No odour observed	No odour observed	No odour observed	No odour observed	No odour observed	No odour observed	No odour observed
3.	pH	-	4500-H ⁺ B	6.5 to 8.5	No relaxation	7.4	7.7	7.0	7.2	7.5	7.9	7.2	7.5
4.	Taste/Flavor	FTN	2160. B	Agreeable	Agreeable	No taste observed	No flavor observed	No taste observed	No flavor observed	No taste observed	No flavor observed	No taste observed	No flavor observed
5.	Turbidity	NTU	2130. B	1	5	0.9	0.8	1.60	0.9	0.86	0.7	0.98	1.2
6.	Total Dissolved Solids at 180° C	mg/L	2540.C	500	2000	320	740	290	560	460	475	340	570
7.	Aluminium as Al	mg/L	3120-B	0.03	0.2	BDL	BDL	0.08	BDL	BDL	BDL	0.06	BDL
8.	Anionic Detergents (as MBAS)	mg/L	IS:13428:2005K	0.2	1.0	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
9.	Barium as Ba	mg/L	3120. B	0.7	No relaxation	0.5	0.75	0.05	0.16	0.23	0.55	0.14	0.09
10.	Boron as B	mg/L	3120-B	0.5	1.0	BDL	0.97	0.51	0.24	0.24	0.67	0.04	0.12
11.	Calcium as Ca	mg/L	3500-CaB	75	200	50	178	56	96	56	98	44	102
12.	Chlorides as Cl ⁻	mg/L	4500-Cl ⁻ B	250	1000	17	62	22	17	45	25	37	15
13.	Copper as Cu	mg/L	3120-B	0.05	1.5	0.09	BDL	0.05	0.05	0.09	BDL	0.09	0.04

Physico-chemical, bacteriological characteristics of groundwater samples collected on 16.05.2018,16.08.2018, 24.10.2018 & 19.02.2019													
S. No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limit in the absence of alternate source	RESULT							
						GW-1 (Gouriguda village)				GW-2 (Pathibanda village)			
						1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt	1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt
14.	Fluoride as F ⁻	mg/L	4500-F.C	1.0	1.5	0.74	0.84	0.575	0.562	0.82	0.71	0.61	0.618
15.	Residual free chlorine	mg/L	4500-Cl.B	0.2	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.	Iron as Fe	mg/L	3120-B	0.3	No relaxation	<u>0.43</u>	<u>0.66</u>	<u>0.37</u>	0.23	<u>0.53</u>	<u>0.58</u>	<u>0.23</u>	0.26
17.	Magnesium as Mg	mg/L	3500-Mg.B	30	100	32	55	21	57	38	56	11	64
18.	Manganese as Mn	mg/L	3120-B	0.1	0.3	BDL	BDL	BDL	0.04	BDL	BDL	0.04	0.04
19.	Mineral oil	mg/L	IS:3025 (part 39)	0.5	No relaxation	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
20.	Nitrates as NO ₃	mg/L	4500-NO ₃ .B	45	No relaxation	0.8	19	4.7	22	2.2	17	20	28
21.	Phenolic compounds as C ₆ H ₅ OH	mg/L	5530-D	0.001	0.002	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22.	Selenium as Se	mg/L	3120-B	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.	Silver as Ag	mg/L	3120. B	0.1	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.	Sulphates as SO ₄ ²⁻	mg/L	4500-SO ₄ ²⁻ .E	200	400	7	46	8.3	28	31	30	6	31
25.	Sulfide as S ²⁻	mg/L	4500. S ²⁻ . G	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26.	Total Alkalinity as CaCO ₃	mg/L	2320. B	200	600	282	478	221	446	299	331	252	446

Physico-chemical, bacteriological characteristics of groundwater samples collected on 16.05.2018,16.08.2018, 24.10.2018 & 19.02.2019													
S. No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limit in the absence of alternate source	RESULT							
						GW-1 (Gouriguda village)				GW-2 (Pathibanda village)			
						1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt	1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt
40.	<i>E. coli</i>	Presence or Absence/ 100 mL	9221 F	-	-	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
41.	Total Coliforms	MPN/100 mL	9221A & B	-	-	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
42.	Fecal Coliforms	MPN/100 mL	9221 E	-	-	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
43.	Electrical Conductivity	µmhos/cm	2510-B	-	-	930	1200	480	968	1000	820	585	965
44.	Orthophosphates	mg/L	4500-P-D	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
45.	Chemical Oxygen Demand	mg/L	5220. D	-	-	12	24	12	12	16	20	16	10
46.	Nitrites as NO ₂	mg/L	4500-NO ₂ -B	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
47.	Sodium Na	mg/L	3500 Na.B	-	-	12	52	13	12	40	20	25	10
48.	Potassium as K	mg/L	3500. K.B	-	-	2.1	1.5	1.6	1.2	2.0	1.0	1.8	0.9

S.No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limit in the absence of alternate source	From April 2020 to March 2021				RESULT (Samples collected on: 19.05.2020, 10.08.2020, 01.10.2020 & 17.02.2021)			
						GW-1 (Gouriguda Village)				GW-1 (Gouriguda Village)			
						1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt	1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt
1.	Colour	Pt-co-	2120. B	5	15	<5	<5	<5	<5	<5	<5	<5	<5
2.	Odour	TON	2150. B	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	pH	--	4500-H+B	6.5 to 8.5	No relaxation	7.3	7.6	7.8	7.0	7.5	8.0	7.9	7.3
4.	Taste	FTN	2160. B	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5.	Turbidity	NTU	2130. B	1	5	0.7	0.86	0.82	1.04	1.2	0.53	0.69	0.79
6.	Total Dissolved Solids at 180o C	mg/L	2540.C	500	2000	522	586	941	532	682	655	824	530
7.	Aluminium as Al	mg/L	3120-B	0.03	0.2	0.14	BDL	0.06	BDL	BDL	0.04	BDL	BDL
8.	Barium as Ba	mg/L	3120. B	0.7	No relaxation	0.26	0.12	0.06	0.12	0.35	0.26	0.04	0.20
9.	Boron as B	mg/L	3120-B	0.5	1.0	BDL	0.09	0.13	0.18	0.09	0.13	0.18	0.27
10.	Calcium as Ca	mg/L	3500-Ca.B	75	200	58	56	104	50	80	46	86	56
11.	Chlorides as Cl ⁻	mg/L	4500-Cl ⁻ .B	250	1000	40	150	103	55	177	125	65	56
12.	Copper as Cu	mg/L	3120-B	0.05	1.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.	Fluoride as F ⁻	mg/L	4500-F ⁻ .C	1.0	1.5	0.358	0.721	0.755	0.585	0.582	0.846	0.582	0.731
14.	Residual free chlorine	mg/L	4500-Cl ⁻ .B	0.2	1.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15.	Iron as Fe	mg/L	3120-B	0.3	No relaxation	0.54	0.18	0.29	0.19	0.14	0.27	0.20	0.24
16.	Magnesium as Mg	mg/L	3500-Mg.B	30	100	49	44	75	38	58	43	61	44

S.No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limit in the absence of alternate source	RESULT (Samples collected on 25.05.2021, 24.08.2021, 21.10.2021 & 15.02.2022)								
						GW-1 (Gouriguda Village)				GW-2 (Pathibanda Village)				
						1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	
25.	Polyaromatic Hydrocarbons (PAH's): Acenaphthene, Acenaphthylene, Anthracene, B(a)A, B(a)P, B(b)F, B(k)F, Pyrene, Dibenz (a,h) anthracene, Fluoranthene, Fluorene, Indeno (1,2,3-(d) Pyrene, Naphthalene, Phenanthrene, Pyrene, Methyl Naphthalene	µg/L	6440.C	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND
26.	Residual free chlorine	mg/L	4500-Cl ⁻ .B	0.2	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.	Selenium as Se	mg/L	3120-B	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.	Silver as Ag	mg/L	3120. B	0.1	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.	Sulphates as SO ₄ ²⁻	mg/L	4500-SO ₄ ²⁻ .E	200	400	58	34	58	55	62	85	74	60	60
30.	Taste	FTN	2160. B	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
31.	Total Alkalinity as CaCO ₃	mg/L	2320. B	200	600	210	395	320	220	200	465	425	175	175

S.No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limit in the absence of alternate source	RESULT (Samples collected on 25.05.2021, 24.08.2021, 21.10.2021 & 15.02.2022)									
						GW-1 (Gouriguda Village)				GW-2 (Pathibanda Village)					
						1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter	1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter		
	Total Arsenic as As	mg/L	3120-B	0.01	0.05	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
32.	Total Chromium as Cr	mg/L	3120-B	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
33.	Total Coliforms	MPN/100 mL	9221A & B	-	-	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8
34.	Total Dissolved Solids at 180o C	mg/L	2540.C	500	2000	582	564	552	536	560	1150	840	632		
35.	Total Hardness as CaCO ₃	mg/L	2340. C	200	600	270	495	200	215	260	1060	440	185		
36.	Turbidity	NTU	2130. B	1	5	0.43	0.57	0.87	0.63	0.72	1.23	0.7	0.42		
37.	Zinc as Zn	mg/L	3120-B	5	15	0.13	0.12	0.11	0.23	0.17	5	0.15	0.16		

Physical-Chemical and Bacteriological Characteristics of Surface Water at Selected Locations in the Study Area
Sampling period: Once in 3 months

Sl. No.	Parameters	Unit	Test Method	Tolerance Limits IS : 2296-1982	CPCB Water quality Criteria				RESULT											
					Class C				SW-3 (Vatti vagu U/S)						SW-4(Vatti vagu D/S)					
					Class A	Class B	Class C	Class C	1 st Qrt	2 nd Qrt	3 Qrt	4 th Qrt	1 st Qrt	2 nd Qrt	3 Qrt	4 th Qrt	1 st Qrt	2 nd Qrt	3 Qrt	4 th Qrt
1.	pH	-	4500-H ⁺ B	6.5-8.5	6.5-8.5	6.5-8.5	6.5-9	8.1	8.1	7.9	8.3	8	8	7.9	8.1	8.3				
2.	Ammonical Nitrogen as NH ₃ -N	mg/L	4500-NH ₃ -C	-	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL				
3.	Arsenic as As	mg/L	3120. B	0.01	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL				
4.	Bio chemical Oxygen Demand for 3 days at 27 ^o C	mg/L	IS: 3025	3	2 mg/l or less	3 mg/l or less	3 mg/l or	4	4	4	4	3	3	4	6	BDL				
5.	Boron as B	mg/L	3120-B	1	-	-	-	BDL	0.12	0.08	BDL	BDL	BDL	0.08	0.12	0.08				
6.	Cadmium as Cd	mg/L	3120. B	0.003	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL				
7.	Chemical Oxygen Demand	mg/L	5220. D	-	-	-	-	40	30	24	30	30	30	40	20	26				
8.	Chlorides as Cl ⁻	mg/L	4500-Cl ⁻ .B	600	-	-	-	22	21	33	52	25	25	39	20	25				
9.	Colour	Pt-co-scale	2120. B	300	-	-	-	5	5	5	10	10	10	15	10	20				
10.	Copper as Cu	mg/L	3120-B	0.05	-	-	-	BDL	BDL	0.06	BDL	BDL	BDL	BDL	BDL	BDL				
11.	Dissolved Oxygen	mg/L	4500-O.C	4	6 mg/l or more	5 mg/l or more	4 mg/l or more	5.9	6.4	6.2	6.2	6.1	6.1	6.1	5.8	6.5				
12.	Electrical Conductivity	µmhos	2510-B	-	-	-	-	778	580	900	874	806	1200	824	520					
13.	Fecal Coliforms	MPN/10 OmL	9221 E	-	-	-	-	170	23	79	110	49	13	49	70					
14.	Iron as Fe	mg/L	3120. B	50	-	-	-	--	0.2	0.48	1.43	-	0.41	0.52	0.26					
15.	Lead as Pb	mg/L	3120. B	0.01	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL				
16.	Nickel as Ni	mg/L	3120. B	0.02	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL				

From April 2017 to March 2018

Sl. No.	Parameters	Unit	Test Method	Tolerance Limits IS : 2296-1982	CPCB Water quality Criteria				RESULT (Sampling date: 18.05.2017, 01.07.2017, 21.11.2017 & 20.02.2018)							
					Class A	Class B	Class C	SW-3 (Vatti vaju U/S)				SW-4(Vatti vaju D/S)				
								1 st Qrt	2 nd Qrt	3 Qrt	4 th Qrt	1 st Qrt	2 nd Qrt	3 Qrt	4 th Qrt	
17.	Nitrates as NO ₃	mg/L	4500-NO ₃ .B	50	-	-	-	1.7	2	9.8	5	1.7	4	7	2	
18.	Nitrites as NO ₂	mg/L	4500-NO ₂ .B	-	-	-	-	0.04	0.04	0.03	0.25	0.3	0.035	BDL	0.35	
19.	Odour	TON	2150. B	-	-	-	-	No odour observed	No odour observed	No odour observed	No odour observed	No odour observed	No odour observed	No odour observed	No odour observed	
20.	Oil & Grease	mg/L	5520. B	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1	
21.	Temperature	°C	2550. B	-	-	-	-	25.2	25.3	25.1	25	25.2	25.3	25.2	25.1	
22.	Total Chromium as Cr	mg/L	3120. B	-	-	-	-	BDI	BDL	BDL	BDL	BDI	BDL	BDL	BDL	
23.	Total Coliforms	MPN/100mL	9221A & B	5000	500 or less	5000 or less	50 or less	220	46	170	280	280	49	140	170	
24.	Total Dissolved Solids at 180° C	mg/L	2540.C	-	-	-	-	452	320	522	507	449	685	478	291	
25.	Total Phosphates	mg/L	4500-P-D	-	-	-	-	BDI	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
26.	Total Suspended Solids at 105° C	mg/L	2540. D	1500	-	-	-	10	11	16	12	12	12	15	8	
27.	Turbidity	NTU	2130. B	-	-	-	-	0.2	0.6	0.7	3.2	0.3	2.2	0.7	6.5	
28.	Zinc as Zn	mg/L	3120. B	5	-	-	-	--	0.12	0.18	0.09	--	0.18	0.09	0.07	

From April 2018 to March 2019

S. No.	Parameters	Unit	Test Method	Tolerance Limits IS: 2296-1982	CPCB Water Quality Criteria			RESULT (samples collected on 16.05.2018, 16.08.2018, 24-10-2018 & 19.02.2019)							
					Class A	Class B	Class C	SW-1(VattiVaguU/S)				SW-2 (Vatti Vagu D/S)			
				Class C	Class A	Class B	Class C	1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt	1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt
1)	pH	-	4500-H ⁺ B	6.5-8.5	6.5 - 8.5	6.5 - 8.5	6.5 - 9	8.1	7.9	7.8	7.6	8.1	7.9	7.9	7.7
2)	Temperature	°C	2550. B	-	-	-	-	25.2	25.1	26.3	25.4	25.1	25.2	25.8	25.5
3)	Turbidity	NTU	2130. B	-	-	-	-	1.8	0.7	2.4	4.8	2.8	0.7	2.0	5.2
4)	Electrical Conductivity	µmhos/cm	2510-B	-	-	-	-	1650	343	480	540	1650	310	388	524
5)	Total Dissolved Solids at 180°C	mg/L	2540.C	-	-	-	-	908	210	290	313	892	168	245	305
6)	Total Suspended Solids at 105°C	mg/L	2540. D	1500	-	-	-	5	12	14	20	5	12	12	18
7)	Dissolved Oxygen	mg/L	4500-O.C	4	6 mg/l or more	5 mg/l or more	4 mg/l or more	6.3	5.1	6.2	6.1	6.2	5.0	6.0	5.9
8)	Bio chemical Oxygen Demand for 3 days at 27° C	mg/L	IS: 3025	3	2 mg/l or less	3 mg/l or less	3 mg/l or less	BDL	5	3	3	BDL	5	4	3
9)	Total Coliforms	MPN/100mL	9221A & B	5000	50 or less	500 or less	5000 or less	280	540	170	70	350	920	110	79
10)	Fecal Coliforms	MPN/100mL	9221 E	-	-	-	-	110	79	33	13	130	110	23	7.8
11)	E. coli	Presence or Absence/MPN/100 mL	9221 F	-	-	-	-	Present	Present	Absent	Absent	Present	Present	Absent	Absent
12)	Chemical	mg/L	5220. D	-	-	-	-	8	24	30	10	8	24	40	10

S. No.	Parameters	Unit	Test Method	Tolerance Limits IS: 2296-1982	CPCB Water Quality Criteria			RESULT (samples collected on 16.05.2018, 16.08.2018, 24-10-2018 & 19.02.2019)							
					Class A	Class B	Class C	SW-1(VattiVaguU/S)				SW-2 (Vatti Vagu D/S)			
				Class C	Class A	Class B	Class C	1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt	1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt
	NH ₃ -N														
29)	Total Phosphates	mg/L	4500-P-D	-	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30)	Oil & Grease	mg/L	5520. B	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	<1

From April 2019 to Mar 2020

S.No.	Parameters	Unit	Test Method	CPCB Water Quality Criteria			RESULT (Samples collected on:27.05.2019,23.08.2019,29.10.2019 and 25.02.2020)								
				Class A	Class B	Class C	SW-1 (Vatti Vagu U/S)				SW-2 (Vatti Vagu D/S)				
				6.5 -8.5	6.5 -8.5	6.5 - 9	1st Qrt	2nd Qrt	3 rd Qrt	4 th Qrt	1st Qrt	2nd Qrt	3 rd Qrt	4 th Qrt	
1.	pH	-	4500-H ⁺ B	6.5 -8.5	6.5 -8.5	6.5 - 9	7.5	7.9	8.0	7.9	7.9	7.6	7.8	7.9	8.1
2.	Temperature	°C	2550. B	-	-	-	26.1	25.2	25.2	25.2	25.2	25.2	25.3	25.9	25.4
3.	Turbidity	NTU	2130. B	-	-	-	2.2	2.8	10	2.8	2.8	2.8	3.2	12	4.2
4.	Electrical Conductivity	µmhos/cm	2510-B	-	-	-	1310	525	419	560	1330	530	589	620	620
5.	Total Dissolved Solids at 180° C	mg/L	2540.C	-	-	-	781	318	243	310	795	326	329	365	365
6.	Total Suspended Solids at 105° C	mg/L	2540. D	-	-	-	19	18	12	24	22	21	14	18	18

S.No.	Parameters	Unit	Test Method	CPCB Water Quality Criteria			RESULT (Samples collected on:27.05.2019,23.08.2019,29.10.2019 and 25.02.2020)								
				Class A	Class B	Class C	SW-1 (Vatti Vagu U/S)				SW-2 (Vatti Vagu D/S)				
							1st Qrt	2nd Qrt	3 rd Qrt	4 th Qrt	1st Qrt	2nd Qrt	3 rd Qrt	4 th Qrt	
31.	Fluoride	mg/L	4500-F.C	-	-	-	--	--	1.2	0.415	0.415	--	--	0.8	0.320
32.	Phenolic compounds as C ₆ H ₅ OH	mg/L	5530-D	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
33.	Selenium as Se	mg/L	3120-B	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

From April 2020 to Mar 2021

S.No	Parameters	Unit	Test Method	CPCB Water Quality Criteria			RESULT Samples collected on: 19.05.2020, 10.08.2020, 01.10.2020 & 17.02.2021							
				Class A	Class B	Class C	SW-1 (Vatti Vagu U/S)				SW-2 (Vatti Vagu D/S)			
							1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt	1 st Qrt	2 nd Qrt	3 rd Qrt	4 th Qrt
1.	pH	-	4500-H+B	6.5-8.5	6.5-8.5	6.0-9.0	7.9	7.3	6.8	7.5	7.8	7.6	6.8	7.7
2.	Temperature	°C	2550. B	-	-	-	25.8	25.3	24.8	25.0	25.5	25.1	25.1	25.3
3.	Turbidity	NTU	2130. B	-	-	-	6.5	1.9	2.4	1.05	8.2	2.3	3.1	1.29
4.	Electrical Conductivity	µmhos/cm	2510-B	-	-	-	518	668	531	680	520	652	456	658
5.	Total Dissolved Solids	mg/L	2540.C	-	-	-	290	376	303	415	296	371	256	390
6.	Total Suspended Solids at 105o C	mg/L	2540. D	-	-	-	15	38	24	32	25	21	32	23
7.	Dissolved Oxygen	mg/L	4500-O.C	6 mg/l	5 mg/l	4 mg/l	6.0	6.2	6.1	6.5	6.4	6.5	6.5	7.0

From April 2021 to Mar 2022

S.No	Parameters	Unit	Test Method	CPCB Water Quality Criteria			RESULT (Samples collected on 25.05.2021 & 24.08.2021)					
				Class C			SW-1 (Vatti Vagu U/S)		SW-2 (Vatti Vagu D/S)			
				Class A	Class B	Class C	1 st Quarter	2 nd Quarter	1 st Quarter	2 nd Quarter	1 st Quarter	2 nd Quarter
1.	pH	-	4500-H+B	6.5-8.5	6.5-8.5	6.0-9.0	7.3	6.7	7.7	6.9		
2.	Temperature	°C	2550. B	-	-	-	25.0	25.7	25.3	25.1		
3.	Turbidity	NTU	2130. B	-	-	-	2.5	4.3	3.2	5.1		
4.	Electrical Conductivity	µmhos/cm	2510-B	-	-	-	725	519	592	522		
5.	Total Dissolved Solids	mg/L	2540.C	-	-	-	425	310	338	315		
6.	Total Suspended Solids at 105o C	mg/L	2540. D	-	-	-	32	23	24	39		
7.	Dissolved Oxygen	mg/L	4500-O.C	6 mg/l or more	5 mg/l or more	4 mg/l or more	6.5	6.5	6.0	6.8		
8.	Bio chemical Oxygen Demand for 3 days at 27o C	mg/L	IS: 3025	2 mg/l or less	3 mg/l or less	3 mg/l or less	BDL	1.8	4	1.6		
9.	Total Coliforms	MPN/100mL	9221A & B	50 or less	500 or less	5000 or less	110	140	140	170		
10.	Fecal Coliforms	MPN/100mL	9221 E	-	-	-	17	4.5	11	11		
11.	<i>E. coli</i>	Presence or Absence/MPN/100 mL	9221 F	-	-	-	Absent	Absent	Absent	Absent		
12.	Chemical Oxygen Demand	mg/L	5220. D	-	-	-	28	10	28	10		
13.	Chlorides as Cl-	mg/L	4500-Cl-B	-	-	-	90	48	65	65		
14.	Nitrites as NO2	mg/L	4500-NO2-.B	-	-	-	BDL	BDL	BDL	BDL		
15.	Nitrates as NO3	mg/L	4500-NO3-.B	-	-	-	7.4	12	3.3	16		
16.	Sulphates as SO42-	mg/L	4500-SO42-.E	-	-	-	52	40	45	35		
17.	Arsenic as As	mg/L	3120. B	-	-	-	BDL	BDL	BDL	BDL		
18.	Lead as Pb	mg/L	3120. B	-	-	-	BDL	BDL	BDL	BDL		

Physico-Chemical Characteristics of Surface Water at Selected Locations in the Study Area

Sl.No	Parameters	Unit	Test Method	CPCB Water Quality Criteria					RESULT Samples collected on 21.10.2021 & 15.02.2022			
				Class A	Class B	Class C	Class D	Class E	SW-1 (Vatti Vagu U/S)		SW-2 (Vatti Vagu D/S)	
				6.5-8.5	6.5-8.5	6.0 – 9.0	6.5-8.5	6.0-8.5	3 rd Quarter	4 th Quarter	3 rd Quarter	4 th Quarter
1	pH	-	4500-H ⁺ B	6.5-8.5	6.5-8.5	6.0 – 9.0	6.5-8.5	6.0-8.5	6.6	7.3	6.8	8.2
2	Electrical Conductivity	µmhos/cm	2510-B	-	-	-	-	2250 µmhos/cm	492	915	505	980
3	Dissolved Oxygen (DO)	mg/L	4500-O.C	6 mg/l or more	5 mg/l or more	4 mg/l or more	4 mg/l or more	-	6.0	5.3	6.8	6.1
4	Bio chemical Oxygen Demand (3 days 27° C)	mg/L	IS: 3025	2 mg/l or less	3 mg/l or less	3 mg/l or less	3 mg/l or less	-	2.5	2.4	3.0	2.0
5	Total Coliforms	MPN/100mL	9221A & B	50 or less	500 or less	5000 or less	-	-	110	-	140	-
6	Free Ammonia (as N)	mg/L	4500-NH ₃ -F	-	-	-	1.2 mg/L or less	Less than 2 mg/L	BDL	BDL	BDL	BDL
7	Boron as B	mg/L	3120-B	-	-	-	-	Less than 26	0.22	0.11	0.19	0.08
8	SAR	-	-	-	-	-	-	-	0.7	0.92	0.83	0.84

S. No	Parameters	Unit	Test Method	SW-1 (Vatti Vagu U/S)		SW-2 (Vatti Vagu D/S)	
				3 rd Quarter	4 th Quarter	3 rd Quarter	4 th Quarter
9	Colour	Pt-co	2120. B	10	5	15	10
10	Ammonical Nitrogen as NH ₃ -N	mg/L	4500-NH ₃ -C	BDL	BDL	BDL	BDL
11	Arsenic as As	mg/L	3120. B	BDL	BDL	BDL	BDL
12	Bi-carbonates as HCO ₃	mg/L	2320. B	490	490	BDL	580

S. No	Parameters	Unit	Test Method	SW-1 (Vatti Vagu U/S)		SW-2 (Vatti Vagu D/S)	
				3 rd Quarter	4 th Quarter	3 rd Quarter	4 th Quarter
13	Cadmium as Cd	mg/L	3120. B	BDL	BDL	BDL	BDL
14	Calcium as Ca	mg/L	3500-Ca.B	32	66	38	58
15	Chemical Oxygen Demand	mg/L	5220. D	20	22	26	18
16	Chlorides as Cl ⁻	mg/L	4500-Cl ⁻ .B	43	40	60	36
17	Copper as Cu	mg/L	3120-B	BDL	BDL	BDL	BDL
18	Fecal Coliforms	MPN/100mL	9221 E	11		9.3	
19	Fluoride as F ⁻	mg/L	4500-F ⁻ .C	0.29	0.58	0.31	0.67
20	Iron as Fe	mg/L	3120. B	0.25	0.52	0.16	0.41
21	Lead as Pb	mg/L	3120. B	BDL	BDL	BDL	BDL
22	Magnesium as Mg	mg/L	3500-Mg.B	26	46	22	40
23	Nickel as Ni	mg/L	3120. B	BDL	BDL	BDL	BDL
24	Nitrates as NO ₃	mg/L	4500-NO ₃ .B	6.3	11	8.1	34
25	Nitrites as NO ₂	mg/L	4500-NO ₂ .B	BDL	BDL	BDL	BDL
26	Odour	TON	2150. B	No odour	No odour	No odour	No odour
27	Oil & Grease	mg/L	5520. B	<1	<1	<1	<1
28	Potassium as K	mg/L	3500-K.B	0.37	2.3	1.03	3.4
29	Selenium as Se	mg/L	3120-B	BDL	BDL	BDL	BDL
30	Sodium as Na	mg/L	3500-Na.B	22	40	26	34
31	Sulphates as SO ₄ ²⁻	mg/L	4500-SO ₄ ²⁻ .E	20	18	27	21
32	Temperature	°C	2550. B	25.3	25	25.1	25.6
33	Total Chromium as Cr	mg/L	3120. B	BDL	BDL	BDL	BDL
34	Total Dissolved Solids at 180° C	mg/L	2540.C	280	532	310	596
35	Total Phosphates	mg/L	4500-P-D	BDL	BDL	BDL	BDL
36	Total Suspended Solids at 105° C	mg/L	2540. D	22	14	29	17
38	Turbidity	NTU	2130. B	10.2	2.42	15	8.56
38	Zinc as Zn	mg/L	3120. B	0.16	0.1	0.09	0.04

Ullipitta vagu Sample Analysis Report
 FROM APRIL 2017 TO MARCH 2018
 Physico-chemical and bacteriological characteristics of surface water at selected locations in the study area.
 Sampling date:18.05.2017., 01.07.2017., 21.11.2017

Sl. No.	Parameters	Unit	Test Method	Tolerance Limits IS : 2296-1982	CPCB Water quality Criteria				RESULT								
					Class A	Class B	Class C	SW-1 (Ullipitta vagu U/S)			SW-2 (Ullipittavagu D/S)						
1	pH	-	4500-H ⁺ B	6.5-8.5	6.5 -8.5	6.5 - 9		1st Quarter	2nd Quarter	3rd Quarter	1st Quarter	2nd Quarter	3rd Quarter				
2	Ammonical Nitrogen as NH ₃ -N	mg/L	4500-NH ₃ -C	-	-	-		BDL	BDL	BDL	BDL	BDL	BDL	BDL			
3																	
4	Bicarbonates as HCO ₃	mg/L	2320.B	-	-	-		221			247						
5	Bio chemical Oxygen Demand for 3 days at 27° C	mg/L	IS: 3025	3	3 mg/l or less	3 mg/l or		BDL	BDL	5	6	BDL	BDL	4			
6	Boron as B	mg/L	3120-B	1	-	-			0.1	0.14							
7	Cadmium as Cd	mg/L	3120. B	0.003	-	-			BDL	BDL							
8	Chemical Oxygen Demand	mg/L	5220. D	-	-	-		30		20	40			16			
9	Chlorides as Cl ⁻	mg/L	4500-Cl.B	600	-	-		45	21	23	42	23	28				
10	Colour	Pt-co	2120. B	300	-	-		5	10	30	5	5	50				
11									BDL	0.08		BDL	BDL				
12	Dissolved Oxygen	mg/L	4500-O.C	4	6 mg/l or more	4 mg/l or more		6.1	6.2	6.4	6.4	5.9	5.9				
13	E. Coli	Presence	9221 F	-	-	-		Present	Present	Absent	Present	Present	Absent				
14	Electrical Conductivity	µmhos/cm	2510-B	-	-	-		1280	831	878	1260	591	885				
15	Fecal Coliforms	MPN/100 mL	9221 E	-	-	-		130	220	23	94	79	23				
16	Iron as Fe	mg/L	3120. B	50	-	-			0.28	0.39		0.13	0.26				

Sl. No.	Parameters	Unit	Test Method	Tolerance Limits IS : 2296-1982	CPCB Water quality Criteria				RESULT							
					Class C	Class B	Class A	Class C	SW-1 (Utlipitta vagu U/S)				SW-2 (Ullipittavagu D/S)			
									1st Quarter	2nd Quarter	3rd Quarter	1st Quarter	2nd Quarter	3rd Quarter	1st Quarter	2nd Quarter
17	Lead as Pb	mg/L	3120. B	0.01	-	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
18	Nickel as Ni	mg/L	3120. B	0.02	-	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
19	Nitrates as NO ₃	mg/L	4500-NO ₃ .B	50	-	-	-	-	2.4	2	5.6	2.1	6	9.3	9.3	
20	Nitrites as NO ₂	mg/L	4500-NO ₂ .B	-	-	-	-	-	0.07	0.043	BDL	0.04	0.043	BDL	BDL	
21	Odour	TON	2150. B	-	-	-	-	-	No odour observed	No odour observed	No odour observed	No odour observed	No odour observed	No odour observed	No odour observed	
22	Oil & Grease	mg/L	5520. B	-	-	-	-	-	<1	<1	<1	<1	<1	<1	<1	
23	Temperature	°C	2550. B	-	-	-	-	-	25.1	25.2	25.1	25.1	25.2	25.2	25	
24	Total Chromium as Cr	mg/L	3120. B	-	-	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
25	Total Coliforms	MPN/100 mL	9221A & B	5000	50 or less	500 or less	5000 or less	-	350	920	79	170	170	170	49	
26	Total Dissolved Solids at 180° C	mg/L	2540.C	-	-	-	-	-	765	485	518	745	329	522	522	
27	Total Phosphates	mg/L	4500-P-D	-	-	-	-	-	BDL	0.1	BDL	BDL	BDL	BDL	BDL	
28	Total Suspended Solids at 105° C	mg/L	2540. D	1500	-	-	-	-	14	14	16	13	16	18	18	
29	Turbidity	NTU	2130. B	-	-	-	-	-	0.3	0.7	1	0.2	0.4	1	1	
30	Zinc as Zn	mg/L	3120. B	5	-	-	-	-	0.15	0.15	0.14	0.07	0.07	0.17	0.17	
31	Calcium as Ca	mg/L	3500-Ca.B	-	-	-	-	-	48	48	48	48	48	48	48	
32	Carbonates as CO ₃	mg/L	2320.B	-	-	-	-	-	Nil	Nil	Nil	Nil	Nil	Nil	Nil	
33	Fluoride as F	mg/L	4500-F.C	-	-	-	-	-	0.492	0.492	0.731	0.731	0.731	0.731	0.731	
34	Magnesium as Mg	mg/L	3500-Mg.B	-	-	-	-	-	77	77	77	77	77	77	77	
35	Potassium as K	mg/L	3500. K.B	-	-	-	-	-	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
36	Sodium Na	mg/L	3500 Na.B	-	-	-	-	-	27	27	27	27	27	27	27	

APRIL 2018 TO MARCH 2019

Physical-chemical and bacteriological characteristics of surface water samples collected on 16.08.2018,24.10.2018,19.02.2019													
S. No	Parameters	Unit	Test Method	Toleranc e Limits IS: 2296-1982	CPCB Water Quality Criteria			RESULT					
					Class A	Class B	Class C	SW-3(Ullipitta Vagu U/S)			SW-4 (Ullipitta Vagu D/S)		
						1st Quarter	2nd Quarter	3rd Quarter	1st Quarter	2nd Quarter	3rd Quarter		
1.	pH	-	4500-H ⁺ B	6.5-8.5	6.5-8.5	6.5-9	8.0	7.6	7.5	7.9	7.7	7.5	
2.	Temperature	°C	2550. B	-	-	-	25.2	25.9	25.5	25.2	25.7	25.6	
3.	Turbidity	NTU	2130. B	-	-	-	0.9	3.2	6	0.9	2.4	6.4	
4.	Electrical Conductivity	µmhos/cm	2510-B	-	-	-	441	670	950	510	600	965	
5.	Total Dissolved Solids	mg/L	2540.C	500	2000	-	250	425	561	285	390	560	
6.	Total Suspended Solids at 105° C	mg/L	2540. D	1500	-	-	10	18	12	10	17	16	
7.	Dissolved Oxygen	mg/L	4500-O.C	4	6 mg/l or more	4 mg/l or more	5.5	5.9	6.0	5.4	6.3	5.6	
8.	Bio chemical Oxygen Demand for 3 days at 27° C	mg/L	IS: 3025	3	2 mg/l or less	3 mg/l or less	6	4	4	6	3	4	
9.	Total Coliforms	MPN/100mL	9221A & B	5000	50 or less	5000 or less	350	220	94	240	94	70	
10.	Fecal Coliforms	MPN/100mL	9221 E	-	-	-	70	33	23	79	13	13	
11.	<i>E. coli</i>	Presence or Absence/MPN/100 mL	9221 F	-	-	-	Present	Absent	Absent	Present	Absent	Absent	
12.	Chemical Oxygen Demand	mg/L	5220. D	-	-	-	26	30	20	30	30	20	

From April 2019 to March 2020

S.No.	Parameters	Unit	Test Method	CPCB Water Quality Criteria			RESULT											
				Criteria			SW-3 (Ullipitta Vagu U/S)						SW-4 (Ullipitta Vagu D/S)					
				Class A	Class B	Class C	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter				
1.	pH	-	4500-H ⁺ B	6.5 - 8.5	6.5 - 8.5	6.5 - 9	7.8	7.5	8.1	7.6	8.0	7.8	7.8	7.8	7.8			
2.	Temperature	°C	2550. B	-	-	-	26.5	25.1	25.5	25.1	26.2	25.4	25.2	25.3				
3.	Turbidity	NTU	2130. B	-	-	-	1.8	2.6	8	3.9	2.1	3.1	10	5.6				
4.	Electrical Conductivity	µmhos/cm	2510-B	-	-	-	601	606	442	552	622	612	628	490				
5.	Total Dissolved Solids at 180° C	mg/L	2540.C	-	-	-	350	372	251	300	361	378	364	286				
6.	Total Suspended Solids at 105° C	mg/L	2540. D	-	-	-	16	17	16	20	20	22	18	16				
7.	Dissolved Oxygen	mg/L	4500-O.C	6 mg/l or more	5 mg/l or more	4 mg/l or more	6.0	5.6	6.0	5.7	5.8	5.9	6.3	6.0				
8.	Bio chemical Oxygen Demand for 3 days at 27° C	mg/L	IS: 3025	2 mg/l or less	3 mg/l or less	3 mg/l or less	3	3	3	3	3	4	3	3				
9.	Total Coliforms	MPN/100mL	9221A & B	50 or less	500 or	5000 or less	280	70	94	110	170	79	540	540				

From April 2020 to March 2021

S.No.	Parameters	Unit	Test Method	CPCB Water Quality Criteria			SW-3 (Ullipitta Vagu U/S)				SW-4 (Ullipitta Vagu D/S)			
				Class			(1st Qrt)	(2nd Qrt)	(3rd Qrt)	(4th Qrt)	(1st Qrt)	(2nd Qrt)	(3rd Qrt)	(4th Qrt)
				Class A	Class B	Class C								
1.	pH	-	4500-H ⁺ B	6.5-8.5	6.5-8.5	6.5-9	7.3	7.9	7.0	7.6	7.7	6.8	7.4	7.5
2.	Temperature	°C	2550. B	-	-	-	25.1	25.1	24.7	25.4	25.3	26.2	25.0	25.0
3.	Turbidity	NTU	2130. B	-	-	-	4.4	2.1	1.8	2.49	8.5	1.5	2.7	1.72
4.	Electrical Conductivity	µmhos/cm	2510-B	-	-	-	651	735	714	910	938	632	543	1230
5.	Total Dissolved Solids at 180°C	mg/L	2540.C	-	-	-	380	478	407	535	524	361	320	730
6.	Total Suspended Solids at 105°C	mg/L	2540. D	-	-	-	32	33	21	38	28	25	28	30
7.	Dissolved Oxygen	mg/L	4500-O.C	6 mg/l or more	5 mg/l or more	4 mg/l or more	5.8	7.2	6.3	6.8	6.7	6.8	6.7	6.5
8.	Bio chemical Oxygen Demand for 3 days at 27°C	mg/L	IS: 3025	2 mg/l or less	3 mg/l or less	3mg/l or less	3	BDL	5	4	3	3	BDL	4
9.	Total Coliforms	MPN/100mL	9221A & B	50 or less	500 or less	5000 or less	140	79	110	140	94	110	210	130
10.	Fecal Coliforms	MPN/100mL	9221E	-	-	-	17	14	21	14	17	17	27	11
11.	<i>E. coli</i>	Presence or Absence/MPN/100 mL	9221F	-	-	-	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
12.	Chemical Oxygen Demand	mg/L	5220. D	-	-	-	24	28	40	30	28	36	80	30
13.	Chlorides as Cl ⁻	mg/L	4500-Cl.B	-	-	-	15	93	15	120	18	58	25	128

RESULT 19.5.2020, 10.08.2020, 01.10.2021 and 17.02.2021

S.No	Parameters	Unit	Test Method	CPCB Water Quality Criteria			RESULT Samples collected 25.05.2021 & 24.08.2021					
				Class A	Class B	Class C	SW-3 (Ullipitta Vagu U/S)		SW-4 (Ullipitta Vagu D/S)		SW-4 (Ullipitta Vagu D/S)	
							1 st Quarter	2 nd Quarter	1 st Quarter	2 nd Quarter	1 st Quarter	2 nd Quarter
27.	Odour	TON	-	-	-	No Odour Observed	No Odour Observed	No Odour Observed	No Odour Observed	No Odour Observed	No Odour Observed	
28.	Ammonical Nitrogen as NH ₃ -N	mg/L	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	
29.	Total Phosphates	mg/L	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	
30.	Oil & Grease	mg/L	-	-	-	<1	<1	<1	<1	<1	<1	
31.	Fluoride	mg/L	-	-	-	0.215	0.38	0.146	0.146	0.29	0.29	
32.	Phenolic compounds as C ₆ H ₅ OH	mg/L	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	
33.	Selenium as Se	mg/L	-	-	-	BDL	BDL	BDL	BDL	BDL	BDL	

Sample collected on 21.10.2021

S.No	Parameters	Unit	Test Method	CPCB Water Quality Criteria			RESULT	
				Class A	Class B	Class C	SW-3 (Ullipitta Vagu U/S)	SW-4 (Ullipitta Vagu D/S)
1.	pH	-	4500-H+B	6.5-8.5	6.5-8.5	6.0 – 9.0	6.8	7.1
2.	Temperature	°C	2550. B	-	-	-	25.1	25.0
3.	Turbidity	NTU	2130. B	-	-	-	12.2	18.1
4.	Electrical Conductivity	µmhos/cm	2510-B	-	-	-	560	620
5.	Total Dissolved Solids	mg/L	2540.C	-	-	-	334	390
6.	Total Suspended Solids at 105° C	mg/L	2540. D	-	-	-	23	26
7.	Dissolved Oxygen	mg/L	4500-O.C	6 mg/l or more	5 mg/l or more	4 mg/l or more	6.0	5.7
8.	Bio chemical Oxygen Demand for 3 days at 27° C	mg/L	IS: 3025	2 mg/l or less	3 mg/l or less	3 mg/l or less	2.0	2.5
9.	Total Coliforms	MPN/100mL	9221A & B	50 or less	500 or less	5000 or less	170	220
10.	Fecal Coliforms	MPN/100mL	9221 E	-	-	-	2	14
11.	Chemical Oxygen Demand	mg/L	5220. D	-	-	-	14	18
12.	Chlorides as Cl ⁻	mg/L	4500-Cl.B	-	-	-	35	68
13.	Nitrites as NO ₂	mg/L	4500-NO ₂ .B	-	-	-	BDL	BDL
14.	Nitrates as NO ₃	mg/L	4500-NO ₃ .B	-	-	-	4.8	9.3
15.	Sulphates as SO ₄ ²⁻	mg/L	4500-SO ₄ .E	-	-	-	30	32
16.	Colour	Pt-co	2120. B	-	-	-	20	25
17.	Odour	TON	2150. B	-	-	-	No odour observed	No odour observed
18.	Arsenic as As	mg/L	3120. B	-	-	-	BDL	BDL
19.	Lead as Pb	mg/L	3120. B	-	-	-	BDL	BDL

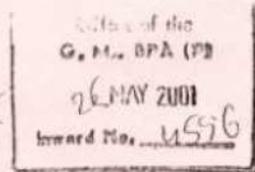
S.No	Parameters	Unit	Test Method	CPCB Water Quality Criteria			RESULT	
				Class A	Class B	Class C	SW-3 (Ullipitta Vagu U/S)	SW-4 (Ullipitta Vagu D/S)
20.	Zinc as Zn	mg/L	3120. B	-	-	-	0.22	0.19
21.	Cadmium as Cd	mg/L	3120. B	-	-	-	BDL	BDL
22.	Total Chromium as Cr	mg/L	3120. B	-	-	-	BDL	BDL
23.	Nickel as Ni	mg/L	3120. B	-	-	-	BDL	BDL
24.	Iron as Fe	mg/L	3120. B	-	-	-	0.41	0.35
25.	Copper as Cu	mg/L	3120-B	-	-	-	BDL	BDL
26.	Boron as B	mg/L	3120-B	-	-	-	0.13	0.25
27.	Selenium as Se	mg/L	3120-B	-	-	-	BDL	BDL
28.	Ammonical Nitrogen as NH ₃ -N	mg/L	4500-NH ₃ - C	-	-	-	BDL	BDL
29.	Total Phosphates	mg/L	4500-P-D	-	-	-	BDL	BDL
30.	Oil & Grease	mg/L	5520. B	-	-	-	<1	<1
31.	Fluoride	mg/L	4500-F.C	-	-	-	0.54	0.34
32.	Free Ammonia	mg/L	4500-NH ₃ -F	-	-	-	BDL	BDL
33.	SAR	-	-	-	-	-	0.99	0.92

Sample collected on 15.02.2022

Sl.No	Parameters	Unit	Test Method	CPCB Water Quality Criteria					RESULT	
				Class A	Class B	Class C	Class D	Class E	SW-3 (Ullipitta Vagu U/S)	SW-4 (Ullipitta Vagu D/S)
1	pH	-	4500-H ⁺ B	6.5-8.5	6.5-8.5	6.0-9.0	6.5-8.5	6.0-8.5	7.5	7.9
2	Electrical Conductivity	µmhos/cm	2510-B	-	-	-	-	2250 µmhos/cm	940	870
3	Dissolved Oxygen (DO)	mg/L	4500-O.C	6 mg/l or more	5 mg/l or more	4 mg/l or more	4 mg/l or more	-	6.6	6.3
4	Bio chemical Oxygen Demand (3 days 27° C)	mg/L	IS: 3025	2 mg/l or less	3 mg/l or less	3 mg/l or less	-	-	2.0	3.2
5	Free Ammonia (as N)	mg/L	4500-NH ₃ -F	-	-	-	1.2 mg/L or less	-	BDL	BDL
6	Boron as B	mg/L	3120-B	-	-	-	-	Less than 2 mg/L	0.05	0.09
7	SAR	-	-	-	-	-	-	Less than 26	0.76	1.16

S. No	Parameters	Unit	Test Method	SW-3 (Ullipitta Vagu U/S)	SW-4 (Ullipitta Vagu D/S)
1	Colour	Pt-co	2120. B	10	10
2	Odour	TON	2150. B	No odour observed	No odour observed
3	Temperature	°C	2550. B	25.4	25.3
4	Turbidity	NTU	2130. B	1.23	3.32
5	Total Dissolved Solids at 180° C	mg/L	2540.C	570	520
6	Total Suspended Solids at 105° C	mg/L	2540. D	11	18
7	Chemical Oxygen Demand	mg/L	5220. D	20	26
8	Chlorides as Cl ⁻	mg/L	4500-Cl ⁻ .B	37	49

S. No	Parameters	Unit	Test Method	SW-3 (Ullipitta Vagu U/S)	SW-4 (Ullipitta Vagu D/S)
9	Sulphates as SO_4^{2-}	mg/L	4500- SO_4^{2-} .E	16	14
10	Fluoride as F ⁻	mg/L	4500-F.C	0.55	0.47
11	Calcium as Ca	mg/L	3500-Ca.B	78	58
12	Magnesium as Mg	mg/L	3500-Mg.B	56	44
13	Sodium as Na	mg/L	3500-Na.B	36	48
14	Potassium as K	mg/L	3500-K.B	1.9	2.8
15	Nitrites as NO_2	mg/L	4500- NO_2 .B	BDL	BDL
16	Nitrates as NO_3	mg/L	4500- NO_3 .B	31	39
17	Total Phosphates	mg/L	4500-P-D	BDL	BDL
18	Ammonical Nitrogen as $\text{NH}_3\text{-N}$	mg/L	4500- NH_3 -C	BDL	BDL
19	Carbonates as CO_3	mg/L	2320. B	Nil	Nil
20	Bi-carbonates as HCO_3	mg/L	2320. B	500	415
21	Oil & Grease	mg/L	5520. B	<1	<1
22	Zinc as Zn	mg/L	3120. B	0.09	BDL
23	Iron as Fe	mg/L	3120. B	0.36	0.43
24	Arsenic as As	mg/L	3120. B	BDL	BDL
25	Lead as Pb	mg/L	3120. B	BDL	BDL
26	Cadmium as Cd	mg/L	3120. B	BDL	BDL
27	Total Chromium as Cr	mg/L	3120. B	BDL	BDL
28	Nickel as Ni	mg/L	3120. B	BDL	BDL
29	Copper as Cu	mg/L	3120-B	BDL	BDL
30	Selenium as Se	mg/L	3120-B	BDL	BDL



GOVERNMENT OF ANDHRA PRADESH
IRRIGATION & CADD DEPARTMENT

From, Sri.P.Venkat Rama Rao, B.Sc., B.E.,
Superintending Engineer, I&CADD
Medium Irrigation Projects Circle
Bellampalli, Adilabad (Dist)

To
✓ General Manger
Singarami collieries Ltd
Bellampalli.

Lr.No. SEMIP/DPL. 92/183/ Dt: 12-5-2001
Sir,

Sub:- Diversion of Vattivagu river for carrying out the mining
operations - Permission accorded.

Ref: - Your letter No. GMBTAKHA-OCT/012 Dt: 4-01-2001

With reference to your letter cited it is to inform that the Chief
Engineer, I&CADD Medium Irrigation have accorded the permission to for
diversion of the Vattivagu river in the fore shore for carrying out the mining
activities subject to certain conditions vide memo No. DCE III/012/MD/1230
VVP/ Diversion Dt: 26-4-2001. A copy of the memo enclosed for ready reference.

You are therefore requested to take further action in the matter.

Yours faith fully,

Superintending Engineer, I&CADD,
Medium Irrigation Projects Circle,
Bellampalli Adilabad (Dist)

*Project division
K. Srinivasulu
26/5*

*Received
26/5*

15/5

No.J-11015/36/2002-IA.II (M)
 Government of India
 Ministry of Environment and Forests

Paryavaran Bhavan
 C.G.O. Complex,
 Lodi Road, New Delhi-110 003

Dated the 27th August, 2002

To, ✓
 Shri G. N. Sharma,
 Director (Planning & Projects)
 Singareni Collieries Company Ltd.,
 Kothagudem Collieries-507 101,
 Bhadrachalam Road Railway Station,
 Khammam District (A. P.)

Subject: Khairagura Opencast Coal Mine near village Borjam, Tiryani Mandal Adilabad
 District Andhra Pradesh of M/s Singareni Collieries Company Ltd. - environmental
 clearance reg.

Sir,

This has reference to Department of Coal letter No 43011/14/2002/CPAM dated
 19.07.2002 forwarding the EMP of the project mentioned above. The project has been
 examined and following observations have been made:

1. Impact of mining on medium irrigation dam located at 7.5 km down stream needs to be assessed and submitted along with mitigative measures proposed to combat adverse impact and a copy of NOC from the concerned Department of the State Government.
2. Authenticated list of flora and fauna submitted does not provide details separately for core & buffer zones.
3. A note on old coal mines which are being closed down due to exhaustion of coal deposit may be provided.
4. Impact of vehicular traffic density needs to be assessed and submitted along with the mitigative measures to control vehicular pollution.
5. Permission for draw of ground water needs to be provided.
6. What is ultimate working depth of mine? A copy of detailed hydro-geological report needs to be submitted.
7. What is the current status of the court case?

1/10/02
2/10/02
3/10/02
4/10/02
5/10/02
6/10/02
7/10/02
8/10/02
9/10/02
10/10/02
11/10/02
12/10/02
13/10/02
14/10/02
15/10/02
16/10/02
17/10/02
18/10/02
19/10/02
20/10/02
21/10/02
22/10/02
23/10/02
24/10/02
25/10/02
26/10/02
27/10/02
28/10/02
29/10/02
30/10/02
31/10/02
1/11/02
2/11/02
3/11/02
4/11/02
5/11/02
6/11/02
7/11/02
8/11/02
9/11/02
10/11/02
11/11/02
12/11/02
13/11/02
14/11/02
15/11/02
16/11/02
17/11/02
18/11/02
19/11/02
20/11/02
21/11/02
22/11/02
23/11/02
24/11/02
25/11/02
26/11/02
27/11/02
28/11/02
29/11/02
30/11/02
1/12/02
2/12/02
3/12/02
4/12/02
5/12/02
6/12/02
7/12/02
8/12/02
9/12/02
10/12/02
11/12/02
12/12/02
13/12/02
14/12/02
15/12/02
16/12/02
17/12/02
18/12/02
19/12/02
20/12/02
21/12/02
22/12/02
23/12/02
24/12/02
25/12/02
26/12/02
27/12/02
28/12/02
29/12/02
30/12/02
31/12/02
1/1/03
2/1/03
3/1/03
4/1/03
5/1/03
6/1/03
7/1/03
8/1/03
9/1/03
10/1/03
11/1/03
12/1/03
13/1/03
14/1/03
15/1/03
16/1/03
17/1/03
18/1/03
19/1/03
20/1/03
21/1/03
22/1/03
23/1/03
24/1/03
25/1/03
26/1/03
27/1/03
28/1/03
29/1/03
30/1/03
31/1/03
1/2/03
2/2/03
3/2/03
4/2/03
5/2/03
6/2/03
7/2/03
8/2/03
9/2/03
10/2/03
11/2/03
12/2/03
13/2/03
14/2/03
15/2/03
16/2/03
17/2/03
18/2/03
19/2/03
20/2/03
21/2/03
22/2/03
23/2/03
24/2/03
25/2/03
26/2/03
27/2/03
28/2/03
29/2/03
30/2/03
31/2/03
1/3/03
2/3/03
3/3/03
4/3/03
5/3/03
6/3/03
7/3/03
8/3/03
9/3/03
10/3/03
11/3/03
12/3/03
13/3/03
14/3/03
15/3/03
16/3/03
17/3/03
18/3/03
19/3/03
20/3/03
21/3/03
22/3/03
23/3/03
24/3/03
25/3/03
26/3/03
27/3/03
28/3/03
29/3/03
30/3/03
31/3/03
1/4/03
2/4/03
3/4/03
4/4/03
5/4/03
6/4/03
7/4/03
8/4/03
9/4/03
10/4/03
11/4/03
12/4/03
13/4/03
14/4/03
15/4/03
16/4/03
17/4/03
18/4/03
19/4/03
20/4/03
21/4/03
22/4/03
23/4/03
24/4/03
25/4/03
26/4/03
27/4/03
28/4/03
29/4/03
30/4/03
31/4/03
1/5/03
2/5/03
3/5/03
4/5/03
5/5/03
6/5/03
7/5/03
8/5/03
9/5/03
10/5/03
11/5/03
12/5/03
13/5/03
14/5/03
15/5/03
16/5/03
17/5/03
18/5/03
19/5/03
20/5/03
21/5/03
22/5/03
23/5/03
24/5/03
25/5/03
26/5/03
27/5/03
28/5/03
29/5/03
30/5/03
31/5/03
1/6/03
2/6/03
3/6/03
4/6/03
5/6/03
6/6/03
7/6/03
8/6/03
9/6/03
10/6/03
11/6/03
12/6/03
13/6/03
14/6/03
15/6/03
16/6/03
17/6/03
18/6/03
19/6/03
20/6/03
21/6/03
22/6/03
23/6/03
24/6/03
25/6/03
26/6/03
27/6/03
28/6/03
29/6/03
30/6/03
31/6/03
1/7/03
2/7/03
3/7/03
4/7/03
5/7/03
6/7/03
7/7/03
8/7/03
9/7/03
10/7/03
11/7/03
12/7/03
13/7/03
14/7/03
15/7/03
16/7/03
17/7/03
18/7/03
19/7/03
20/7/03
21/7/03
22/7/03
23/7/03
24/7/03
25/7/03
26/7/03
27/7/03
28/7/03
29/7/03
30/7/03
31/7/03
1/8/03
2/8/03
3/8/03
4/8/03
5/8/03
6/8/03
7/8/03
8/8/03
9/8/03
10/8/03
11/8/03
12/8/03
13/8/03
14/8/03
15/8/03
16/8/03
17/8/03
18/8/03
19/8/03
20/8/03
21/8/03
22/8/03
23/8/03
24/8/03
25/8/03
26/8/03
27/8/03
28/8/03
29/8/03
30/8/03
31/8/03
1/9/03
2/9/03
3/9/03
4/9/03
5/9/03
6/9/03
7/9/03
8/9/03
9/9/03
10/9/03
11/9/03
12/9/03
13/9/03
14/9/03
15/9/03
16/9/03
17/9/03
18/9/03
19/9/03
20/9/03
21/9/03
22/9/03
23/9/03
24/9/03
25/9/03
26/9/03
27/9/03
28/9/03
29/9/03
30/9/03
31/9/03
1/10/03
2/10/03
3/10/03
4/10/03
5/10/03
6/10/03
7/10/03
8/10/03
9/10/03
10/10/03
11/10/03
12/10/03
13/10/03
14/10/03
15/10/03
16/10/03
17/10/03
18/10/03
19/10/03
20/10/03
21/10/03
22/10/03
23/10/03
24/10/03
25/10/03
26/10/03
27/10/03
28/10/03
29/10/03
30/10/03
31/10/03
1/11/03
2/11/03
3/11/03
4/11/03
5/11/03
6/11/03
7/11/03
8/11/03
9/11/03
10/11/03
11/11/03
12/11/03
13/11/03
14/11/03
15/11/03
16/11/03
17/11/03
18/11/03
19/11/03
20/11/03
21/11/03
22/11/03
23/11/03
24/11/03
25/11/03
26/11/03
27/11/03
28/11/03
29/11/03
30/11/03
31/11/03
1/12/03
2/12/03
3/12/03
4/12/03
5/12/03
6/12/03
7/12/03
8/12/03
9/12/03
10/12/03
11/12/03
12/12/03
13/12/03
14/12/03
15/12/03
16/12/03
17/12/03
18/12/03
19/12/03
20/12/03
21/12/03
22/12/03
23/12/03
24/12/03
25/12/03
26/12/03
27/12/03
28/12/03
29/12/03
30/12/03
31/12/03

CRP PP	
I.W.No.	1911
Date	9/9/02

CM (C)

-2-

- 8. A copy of R&R plan should be provided.
- 9. Mine plan approval is of August 1989, 13 years old.

You are advised to expedite the above details on priority to Ministry of Environment and Forests to facilitate further necessary action.

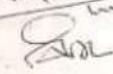
Yours' faithfully,


 (SATISH C. GARKOTI)
 Joint Director (S)

Copy to:

Section Officer (Ms. Neera Sharma), Ministry of Coal and Mines, Department of Coal, Government of India, Shastri Bhavan, New Delhi-110 001



SM (M)
 Singhania P1


for and perusal
of ENC (I)

22
10/8

GOVERNMENT OF TELANGANA
IRRIGATION & CAD (PROJECT-IV) DEPARTMENT

Memo No.1411/Projects-IVA2/2020

Dated: 07-08-2020

Sub: I&CAD Dept - Phase-II diversion of Vattivagu stream for continuing Open Cast mining operations at Khairagura- OCP mine in Bellampalli area, Goleti, Rebbana, Kumarambheem - Asifabad District- Permission to issue NOC - Accorded.

- Ref: 1. From the Engineer-in-Chief (Irrigation), Hyderabad, Letter No.ENC (I)/DCE I/ OT I /AEE I/Vattivagu/2020, Dated: 18.02.2020.
2. From the Chairman & Managing Director, the Singareni Collieries Company Limited, Hyderabad, Letter No. CMD/PS/H/53, dated: 03.06.2020.
3. Govt. Memo. No. 1411/Projects-IV/A2/2020, Dated: 22.06.2020.
4. From the Engineer-in-Chief (Irrigation), Hyderabad, Letter No. ENC (I)/ DCE I/OT I/AEE I/Vattivagu/2020, Dated: 01.07.2020.

@@@

In the circumstances reported in the reference 3rd cited, Government after careful examination of the matter hereby accord permission to the Engineer-in-Chief (Irrigation), Hyderabad to issue No Objection certificate to carry out the work "Phase-II diversion of Vattivagu stream for continuing Open Cast mining operations at Khairagura-OCP mine in Bellampalli area, Goleti, Rebbana, Kumarambheem Asifabad District by the Singareni Collieries Company Limited subject to following conditions:"

1. The diversion of the stream should not affect the capacity of Vattivagu Project.
2. The Hydraulic particulars of the diversion channel should be got approved by the Central Design Organisation of the I&CAD Department.
3. The works would be checked for quality control by the concerned division of I&CAD Department.
4. The Singareni Collieries would have to deposit the entire centage and other charges leviable as per the rules in vogue.
5. The existing diversion arrangement should not be closed till the new diversion channel is completed in full shape in all respects.
6. The SCCL has to take the necessary precautionary measures for non-accumulation of silt in the project from the dumps of over burden soil with suitable afforestation and fortify.

DR. RAJAT KUMAR
PRINCIPAL SECRETARY TO GOVERNMENT

To
The Engineer-in-Chief (Irrigation), Hyderabad.
Copy to:
The Chairman & Managing Director,
Singareni Collieries Company Limited,
Hyderabad.
SF/SC

// FORWARDED :: BY ORDER //

[Handwritten signature]

OTI
10/8

AEE
10/8

Office of the Chief Engineer,
Irrigation, Mancherla.

Memo.No. CE/DCE/OT/To/Divrsion /Vattivagu/92 Dt:-17-04-2021.

Sub: Phase-II-Diversion of Vatti Vagu Stream for continuing open cast mining operation at Khairaguda Operation OCP mine in Bellampally Area, Goleti, Rebbana, Kumuram Bheem Asifabad District - Issuing of **NO OBJECTION CERTIFICATE** - communicated.

- Ref: 1) E-in-C(Irrigation),Hyd,Lr.No:ENC(I),/DCE-/OTI/AEEI/Vattivagu/2020 Dt 18.02.2020.
2) Govt.Memo No: 1411/Projects-IV/ A2/2020, Dt: 07-08-2020.
3) Chief Engineer, Central Designs Organization, Hyderabad Letter No. CE/CDO/SE-II/EE-1/DEE-3/MI/HP's/Vattivagu/27/2021, Dt: 03.02.2021.
4) I & CAD-DEE- ISD-1-Div-3-Asf- 05 Dt:-08.4.2021.
5) EE/Div-04/Asf Lr.No: EE/ID No.4/DB/06 Dt: - 09-04-2021
6) SE, Irrigation Circle, Kaghaznagar, Lr.No: I & CAD-SE-Irrg-Circle/KGZ/09/H Dt: 09-04-2021.

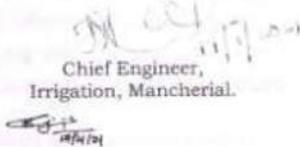
✧ ✧ ✧

The detailed report of Phase-II-Diversion of Vatti Vagu Stream for continuing open cast mining operation at Khairaguda Operation OCP mine in Bellampally Area, Goleti, Rebbana, Kumuram Bheem Asifabad by the Superintending Engineer, Irrigation Circle, Kaghaznagar vide his letter cited are generally considered for issuing **NO OBJECTION CERTIFICATE** subject to the following conditions.

- 1) The diversion of the stream should not affect the capacity of Vatti Vagu Project.
- 2) The Hydraulic Particulars of the diversion channel should be got approved by the Central Designs Organization of the I & CAD Department.
- 3) The works would be checked for quality control by the concerned divisions of I & CAD Department.
- 4) The Singareni Collieries would have to deposit the entire centage and other charges livable as per the rules in vogue.
- 5) The existing diversion arrangement should not be closed till the new diversion channel is completed in full shape in all respects.
- 6) The SCCL has to take the necessary precautionary measures for non-accumulation of silt in the project from the dumps over burden soil with suitable afforestation and fortify.
- 7) While excavating the diversion channel of Vatti Vagu, Earthen banks were formed on either side of the Channel with revetment where ever required to avoid erosion.
- 8) Projection bund around the B.C.Soil Dump and D2 Dump yard has to be raised up to required levels with 2 ½ : 1 side slopes and protect with revetment. The protected bund is to be raised with homogeneous soils of approved quarry and consolidation with 8 to 10 T power roller.

- 9) Protection with 300 mm thick revetment including Toe wall is proposed to the entire protection bund on the reservoir side.
- 10) Intensive plantation has to be taken up on the dumps and the banks of the diversion channel to avoid erosion/ soil slipping.
- 11) Any deviation in the alignment the same may be intimated to this office for according approval.
- 12) The Superintending Engineer should ensure that long & smooth approaches shall be formed on either side of the DLRB's for easy passage of traffic over the bridge.
- 13) The Superintending Engineer has to ensure the standards of carriage way width and obtain necessary permission and drawings from the concerned department before grounding the work.
- 14) The Superintending Engineer has to ensure the safety, suitability and adequacy of the proposals before grounding the work.
- 15) Quality Control and Inspection should be monitored out for this said work by Irrigation Division No.4 Asifabad.

Encl: 1- Copy of Drawings approved by Chief Engineer, Central Design Organization, Hyderabad Vide reference 3rd Cited

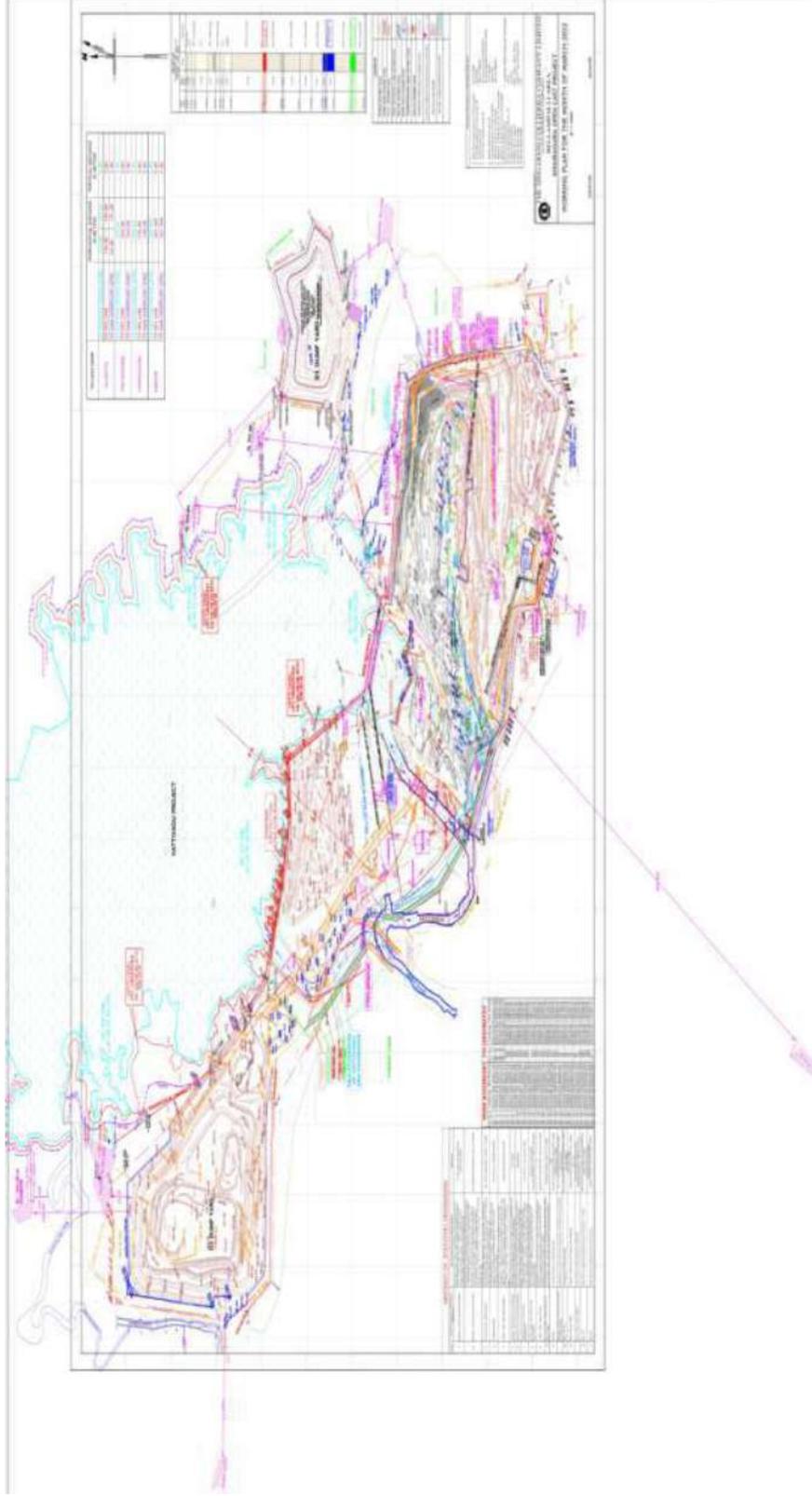

Chief Engineer,
Irrigation, Mancherla.

Vatti vagu diversion down stream side

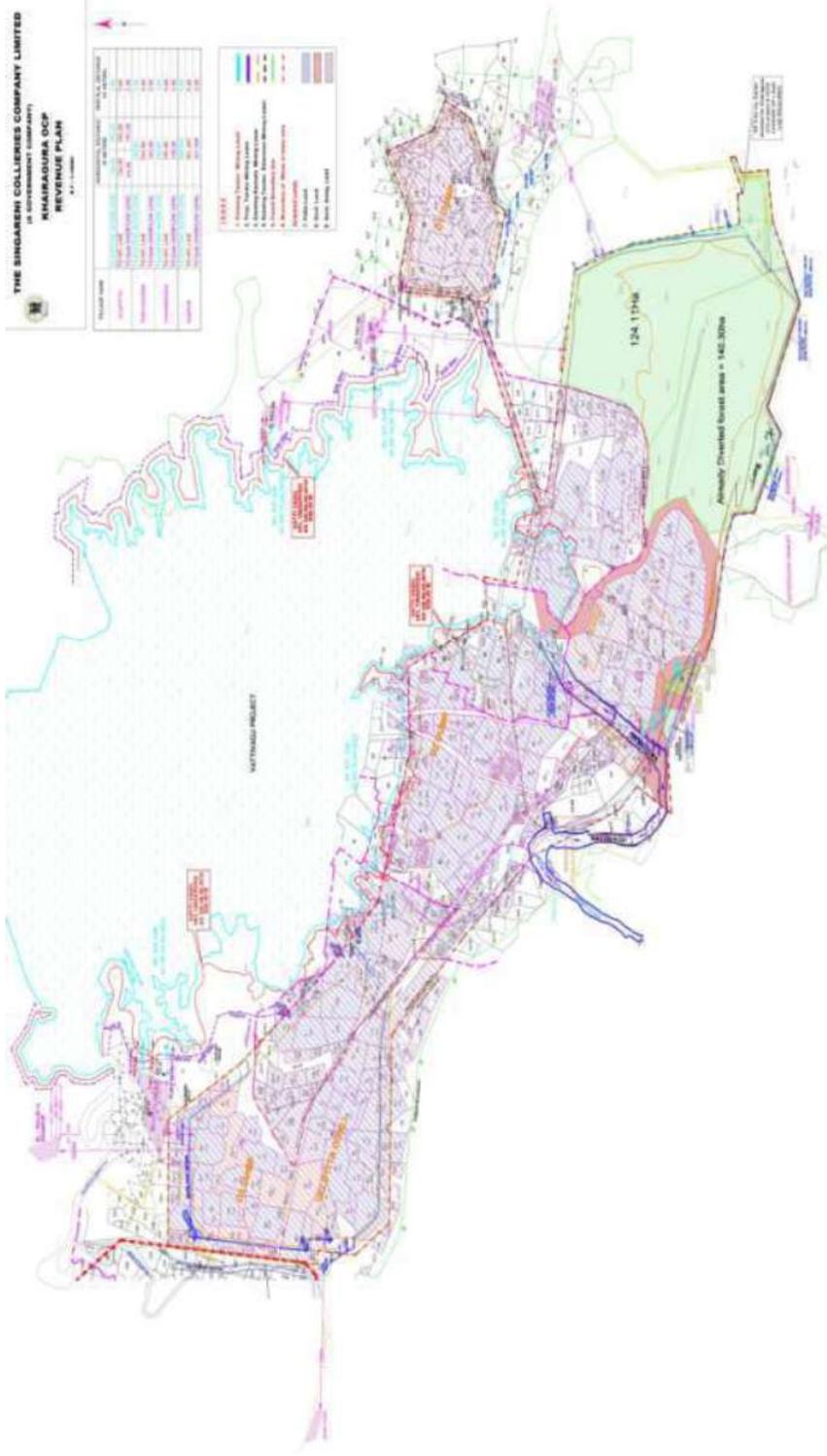


Vatti vagu diversion upstream side





KHAIIRAGURA OCP MINE WORKING PLAN with respect to surrounding villages



Khairagura OCP REVENUE PLAN with respect to surrounding villages

*Field Report On***Optimisation of blasting parameters at Khairagura Opencast Project for the safety of Vattivagu Dam****1. Backdrop**

The General Manager (R&D), The Singareni Collieries Company Limited (SCCL) requested the Director, Central Mining Research Institute (CMRI), Dhanbad for a scientific study to optimize the blast design parameters at Khairagura Opencast Project for the safety of Vattivagu Irrigation dam vide letter No. CRP/RND/B-166(2)/1024 dt. 17-12-2005.

In this regard, a team of scientists from the blasting and civil engineering departments of CMRI carried out the first phase of field investigation during 15th to 19th January 2006. During this period, two experimental trials were carried out, one in coal bench while the other in overburden bench. Blast-induced ground vibrations were monitored near the foundation of the dam as well as at different locations on the ground at varying distances. High-speed video camera was used in one of the experimental trials to assess the blast results. This field report covers the brief investigational work and observations made during the period of investigation at Khairagura Opencast Project.

2. Experimental blasts

Two experimental trials were conducted at the mine with different design and charging patterns. First blast was conducted in coal bench on 16-01-06 while the second blast was conducted in overburden bench on 19-01-06. In the first blast, the maximum explosives weight per delay was 1,722 kg whereas in the second blast, it was 108 kg. The diameter of holes was 150 mm. In coal bench blasting, cartridge explosives were used whereas in overburden blast, site-mixed emulsion (SME) explosive was utilized. The details of blast design parameters are given in Table-1. Due to soft nature of overburden rocks, blasting in overburden bench was only to create fractures in the rock. As the quarry will go deeper and deeper, the overlying strata will be expected to be harder. During that time, the design parameters will be made optimized taking fragmentation of the blasted rocks into consideration in association with safety concern of Vattivagu Dam.

Table-1. Details of blast design parameters experimented at the mine site

Date of blast & strata blasted	No. of holes	Hole dia. (mm)	Avg. Hole depth (m)	Burden x spacing (m x m)	Top stemming (m)	Avg. explosive per hole (kg)	Max st explosive per delay (kg)	Total explosive weight (kg)	Explosive used	Initiation
16-01-06 Coal	126	150	4.08	4 x 4	2.0	32.2	1,722	4,056	Mecforce & Mecpower	DF with cord relay of 42 ms
19-01-06 Sandstone	144	150	4.0 - 6.0	6 x 6	2.6 - 3.5	36	108	5,250	SME, Premier Explosive Ltd.	Nonel

3. Monitoring of Ground Vibrations and Results

Vibration and air overpressure levels induced by blasting were monitored using portable computer-operated digital seismographs namely Blastmate-II, MiniMate Blaster (Made in Canada by Instamtel Inc.) and Mini-Seis (made in USA by White Industrial Seismology Inc.). All the seismographs are four channel seismographs provided with one tri-axial transducer for monitoring vibration (in mm/s or inch/s) and one channel for monitoring air overpressure/noise in dB (L) or Pa. All seismographs record vibration in three directions i.e. Longitudinal (L), Vertical (V) and Transverse (T). They also record peak frequency of vibration in individual directions and compute the peak vector sum of vibration.

In both the rounds of blasting, one monitoring location was kept at the foundation level of Vattivagu dam while the other two monitoring locations were at varying distances in line with the dam. In coal blasting, the monitoring locations were at 500 m and 1000 m from the blasting face towards the dam whereas in overburden blasting, the monitoring locations were at 1000 m and 1550 m from the blasting face. The details of vibration and noise level recorded during the period of investigation are given in Table-2.

Table-2. Details of recorded vibration and noise levels due to blasting at Khairagura OCP

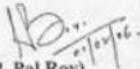
Date of blast & Strata blasted	Total charge [kg]	Max. charge/delay [kg]	Ground vibration results				AOP [dB(L)]	Flyrock
			Monitoring point	Distance [m]	PVS [mm/s]	Freq. [Hz]		
16-01-06 Coal	4,056	1,722	On ground in line of dam	500	7.07	9.1	120	No flyrock
			On ground in line of dam	1000	2.08	7.0	116.9	
			Near foundation of dam	4500 (app)	<0.13	-	-	
19-01-06 Sandstone	5,250	108	On ground in line of dam	1000	0.7521	6.9	116	No flyrock
			On ground in line of dam	1550	0.365	6.0	106	
			Near foundation of dam	4500 (app)	<0.13	-	-	

4. Remarks

The ground vibration levels recorded at a distance of 500 m was 7.07 mm/s in first blast i.e. coal blast when the explosives weight per delay was 1,722 kg. But, at a distance of 1000 m it reduced to 2.08 mm/s. When the overburden blast was carried out with SME explosives with a charge per delay of 108 kg, very low magnitudes of vibration impact could be recorded at 1000 m and 1550 m. In both of those blasts, no vibration data could be recorded near the foundation of the dam, although the instrument was set to its least trigger level in sensitive mode i.e. 0.13 mm/s. Lower values of frequency levels (< 8 Hz) were obtained in both the blasts. The recorded noise/air overpressure levels were also well within the safe limits.

To arrive at a regression equation with safe explosives weight per delay, few more experimental blasts will be conducted and the results of the blasts will be evaluated considering the safety as well as production and productivity of the mine.

It is anticipated that with the presence of water in rainy season, the level of vibration may be enhanced. Hence, to evaluate the impact of water, the experimental work will also be carried out in rainy season.


(P. Pal Roy)

Scientist-in-charge

Blasting Department

डॉ. पालूज पाल रॉय

Dr. PALUSH PAL ROY

अधीनस्थ विभाग / Scientist-in-Charge
विस्फोटक विभाग / Blasting Department
केन्द्रीय खनन अनुसंधान संस्थान
Central Mining Research Institute
झारखण्ड / Charabed, झारखण्ड / Jharkhand

PO / KHA, DORLI OCPs
Inward No. 1078
Date 9/8/17

सं. क्र.	1078
दि.	8/8/17

1

पंजीकृत डाक / REGISTERED POST



भारत सरकार / Government of India

श्रम एवं रोजगार मंत्रालय / Ministry of Labour & Employment

खान सुरक्षा महा-निदेशालय / Directorate-General of Mines Safety

हैदराबाद क्षेत्र सं-2/Hyderabad Region No.2



Telephone: 040-27534500
Fax: 040-27532504
Email: scrg2dgrms@gmail.com

हैदराबाद, दिनांक

संख्या एमजा-2/ड0म0अ0/98(1)&98(3)/40(17)/2017/
प्रेषक: खान सुरक्षा निदेशक/Director of Mines Safety
हैदराबाद क्षेत्र सं02/Hyderabad Region No.2
C.G.O. Towers, 7th Floor, Room No.701,
Kavadiyuda, Secunderabad - 500 080.

सेवा में:

अभिकर्ता / The Agent,
खारगुडा ओपेनकास्ट प्रोजेक्ट,
Khairaguda Opencast Project
मेशरी सिंगरेनी कोलरीज कंपनी / M/s SCCL,
Village : Goleti, Rebanna Mandal,
PIN : 504 292, Adilabad District.

PO/KHA
Gm/Safety
Gm/BPA
R. Srinivas

विषय: Permission under Regulations No. 98(1) & 98(3) of the Coal Mines Regulations, 1957 to keep height of benches in excess of 1.5m and to extract coal from no. 2 seam, Middle and Bottom Seams by Mechanized opencast method using HEMM and adopting deep hole blasting at Khairaguda opencast Project of M/s Singareni Collieries Co. Ltd. - Reg.

महोदय,

Please refer to your letter Nos. BPA/PO/KHAOCP/002/2017/212 dated 17.05.2017 and plans & sections enclosed therewith on the subject mentioned above.

The matter has since been considered in the light of what has been stated in your application under reference. In exercise of the powers conferred on the Chief Inspector of Mines (also designated as Director-General of Mines Safety) under Regulation 98(1) and 98 (3) of the Coal Mines Regulations, 1957, and by virtue of the authorization granted to me by the Chief Inspector of Mines (also designated as Director-General of Mines Safety) under Section 6(1) of the Mines Act, 1952, I hereby permit you to extract coal from the No. 2 Seam, Middle and Bottom Seams by Mechanized opencast method using HEMM and adopting a system of deep hole blasting at Khairaguda Opencast Project of M/s SCCL as shown in the Plan No. BPA/ SCCL/KHOCP/PERM-2017/09, Dated 06.06.2017 subject to the following conditions given in Annexure - I, II and Annexure-III, are being strictly complied with:

1.0 The permission is being issued without prejudice to any other provisions of law, which may be or may become applicable at any time.



155
04/08/17

Gm/BPA

50
07

- 2.0 This Directorate shall be informed as soon as the mining operations are commenced in accordance with the above permission. Intimation about completion of the mining operation should also be sent promptly and in any case not later than one month thereof.
- 3.0 If at any time any one of the conditions subject to which this permission has been granted is violated or not complied with, this permission shall be deemed to have been revoked with immediate effect.
- 4.0 The above permission may be amended or withdrawn at any time, if considered necessary in the interest of safety.
- 5.0 In the event of any change in the circumstances connected with this permission, which is likely to danger the mine, the mining operations for which this permission has been granted shall be stopped forthwith and intimation thereof sent to this Directorate. The said operation shall not be resumed without an express and fresh permission in writing from this Directorate.
- 6.0 Permission is valid up to a period of **five years** from the date of issue of this letter.

भवदीय / Yours faithfully,

॥

(स्वपन कुमार दत्ता)/(Swapan Kumar Dutta)
 बान सुरक्षा निदेशक/Director of Mines Safety,
 हैदराबाद क्षेत्र सं02/Hyd.RegionNo.2

जापन सं.एचआर-2/एमओओ/98(1)&98(3)/40(17)/2017/ 3243-45 हैदराबाद, दिनांक 27/7/17
 प्रतिलिपि मूवना एवं आवश्यक कार्यावली हेतु

1. निदेशक(पी & पी) एवं मनोनित मालिक / The Director(P&P) & Nominated Owner, मेसर्स सिंगरेनी कोलरीज कं.लि. / M/s Singareni Collieries Co.Ltd., पोस्ट-कोथगुडम कोलरीज / Post-Kothagudem Collieries, पिन-504101 / PIN-504101, अदिलाबाद जिला / Mancherial District.
2. महा-प्रबंधक / The General Manager, बेल्सामपल्ली परिक्षेत्र / Belampally Area, मेसर्स सिंगरेनी कोलरीज कं.लि. / M/s Singareni Collieries Co.Ltd., गोलेति गाँव / Village: Goleti, रेब्बान्ना मंडल - 504 292 / Rebenna Mandal / 504292, अदिलाबाद जिला / Mancherial District.
3. प्रबंधक / The Manager, Khairaguda Opencast Project, मेसर्स सिंगरेनी कोलरीज कं.लि. / M/s Singareni Collieries Co.Ltd., गोलेति गाँव / Village:Goleti, रेब्बान्ना मंडल - 504 292 / Rebenna Mandal / 504292, अदिलाबाद जिला / Mancherial District.

PO., Kha of &
 Dosh. of B
 SOM., Kha of / ASO

स्वपन कुमार दत्ता
 हैदराबाद क्षेत्र सं02/Hyd.RegionNo.2

3241
 Enclosure to Letter No. HR-2/SCZ/98(1)&98(3)/40(17)/2017/

Annexure - I
 Hyderabad, dated 27/3/12

Conditions for working opencast Coal mine with the help of Heavy Earth Moving Machinery and adopting a system of deep hole blasting under Regulations No. 98(1) & 98 (3) of the Coal Mines Regulations-1957 to extract coal No. 2 seam, Middle and Bottom Seams at Khairaguda OCP M/s SCCL.

I GENERAL:

- 1.0 a) Except where otherwise provided for in this conditional permission, all provisions of the Coal Mines Regulations, 1957, relating to opencast workings, use of explosives and machinery, etc., shall be strictly complied with.
- B) The Recommendations of 10th National Conference on Safety in Mines held on 26th & 27th November 2007 at New Delhi which were issued vide DGMS (Tech)(SOMA) Circular No.1, Dhanbad, dated 04.01.2008 & 11th National Conference on Safety in Mines held on 25th July 2013 at New Delhi which were issued vide DGMS (Tech) Circular.MAMID No.5, Dhanbad, dated 17.07.2013 regarding "Contractor work vis-à-vis Safety" shall be strictly adhered to. They are reproduced at Annexure II for strict compliance.

II PRECAUTIONS AGAINST SURFACE STRUCTURES:

- 1.1 Before starting any quarrying operations, all dwellings, buildings, roads, public structures not belonging to the owner, shall be vacated/diverted and demolished within 300m of site of blasting. No extraction shall be done within 300m of the structures till they are vacated/diverted and demolished.
- 1.2 You shall indemnify the occupants/owners of the houses/ dwellings/buildings or other structures of public authority concerned, if any, against the dangers to those properties or injury to them or other persons arising out of operations conducted under this permission. No working of Khairaguda Opencast Project shall be extended within 15m horizontally from tank/reservoir/nallah. Management shall completely filled up the exposed coal seam when the quarry edge reaches at proposed quarry surface limit line to prevent danger due to fire etc.
- 1.3 All nallah/ reservoir/tank/ Vattivague present within the mine boundary shall be diverted along the boundary of the mine and bund of height 3m above the HFL of the nallah shall be made as per statute.

III OPEN CAST WORKINGS:

4.0 HEIGHT AND WIDTH OF BENCHES IN OVERBURDEN:

- 4.1 The height of bench in coal, overburden or other waste rock shall not be more than the digging height of the machine used for digging, excavation or removal or 10m whichever is less.
- 4.2 Width of any bench or width of leveled surface where excavator is used shall not be less than:
- (i) Width of the widest machine plying on the bench plus 2m, or
 - (ii) If the dumper ply on the bench/leveled surface, three times the width of the dumper, or
 - (iii) Height of the bench/depth of the excavation, whichever is more.
- 4.3 In case of geologically disturbed area, suitable devices to indicate the rock pressure shall not be used to warn the persons against impending movement of in situ rock mass. Working shall be done perpendicular to the faults.

- 4.4 While removing the overburden by drilling and blasting, controlled blasting with appropriate drilling pattern shall be adopted so as to reduce blast vibrations, fly rock, sound. A code of practice for negotiating fault plans shall be framed and submitted to this Directorate
- 4.5 The overburden bench and coal bench shall not be merged.
- 5.0 GENERAL MINING CONDITIONS:
- 5.1 Quarrying operations shall be conducted from top downwards.
- 5.2 The provisions of Sub-regulation (4) & (5) of Regulation 98 shall be complied with.
- 5.3 When persons are employed within 5m of the working faces, adequate precautions shall be taken to ensure their safety by dressing the sides of the benches.
- 5.4 Special care shall be taken when any slip or other planes of weakness or other geological disturbances exist, so as to prevent danger to the work-persons.
- 5.5 No person shall be engaged or work or allowed to travel close to high sides/benches, from which he is likely to fall for more than 1.8m vertically down, unless he is provided with and uses a safety belt or rope.
- 6.0 FENCING AROUND OPENCAST WORKINGS:
- 6.1 The top edge of the opencast working shall be kept fenced with wire rope strands or barbed wire, supported by (movable) posts of timber, iron or concrete. The gap between the adjacent rope strand or wires shall not be more than 0.3m and bottom most rope, strand or wire shall not be more than 0.25m and the topmost rope, strand or wire shall not be less than 1.0m from ground level.
- 6.2 At the finishing stage, opencast working shall be fenced with a masonry wall using cement mortar not less than 0.4m thick and not less than 1.2m high, with a parapet top.
- 6.3 A similar type of fencing as given under clause 6.1 shall also be erected at the edge of every non-moving bench to prevent fall of persons.
- 7.0 HALL ROADS / APPROACH ROADS FOR TRUCKS, TIPPERS, DUMPERS, ETC.:
- 7.1 All roads for trucks, dumpers or other mobile machinery shall be maintained in good condition.
- 7.2 Where practicable, all roads from the opencast workings shall be arranged to provide one-way traffic. Where this is not practicable, no road shall be of width less than five times plus 5m width of the largest Vehicle plying on road, unless definite turnouts and waiting points are designated.
- 7.3 All corner and bends shall be made in such a way that operator of vehicle have clear view of distance of not less than 3 times the breaking distance of largest HEMM driven at 40 Km/hour. Where it is not possible to ensure a visibility for a distance as mentioned above there shall be provided with two roads of width not less than 2 times plus 3m of largest vehicle plying on the road with a strong road divider at centre with adequate lighting and reflector along the divider.
- 7.4 No road shall have gradient more than 1 in 16. Ramps with 1 in 10 gradients should not be more than 10m at one stretch without the permission obtained from this Directorate.

- 7.5 Where any road existing above level of surrounding area it shall be provided with strong parapet wall/embankment of following dimensions.
- i. Width at top-not less than 1 m.
 - ii. Width at bottom-not less than 2.5m
 - iii. The height not less than diameter of tyre of largest vehicle plying on road. It may be noted that just dumping of mud or OB shall not treated as strong parapet wall.
- 7.6 The portion of the surface haul road in the mine premises where there is heavy traffic of men and machines shall be provided with a separate lane properly fenced off from the haul road for pedestrians.
- 7.7 Vide DGMS (Tech.)Circular No.6/2010 shall be strictly implemented for maintenance of a separate road for the Light Motor Vehicles used for inspection and transportation. Except where it is not practicable, this road shall not cross the Haul Road at any place in the mine premises.
- 7.8 Where both left hand driven and right hand driven dumpers/tippers are used, they shall be allocated separate loading points and separate dump/tipping yards. As far as practicable, they shall also be provided with separate haul roads.
- 8.0 PRECAUTIONS WHILE DRILLING:
The work of drilling and blasting, including issue and transportation of explosive, in the quarry shall be placed under the charge of a person possessing at least first class Manager's Certificate of competency(hereinafter called "Blasting Officer")
- 8.1 The position of every deep hole to be drilled shall be distinctly marked by the Mine Blasting Officer so as to be readily seen by the drillers.
- 8.2
- a) No drilling shall be commenced in an area where shots have been fired, until the blaster has made a thorough examination at all places, including remaining butts of old deep holes, for unexploded charges that the drill may strike.
 - b) No drill or bore rod or pick shall be inserted in butts of old deep holes even if an examination under Clause (a) has failed to reveal presence of explosives.
 - c) Before starting drilling of dressing holes, a thorough examination for the presence of misfires, sockets or unexploded charge shall be made. If any unexploded charge present, the same shall be removed from the hole by safe means, destroyed carefully. However no drilling shall be carried in any socket.
- 8.3 No person shall remain or be permitted to remain within a radius of 20 m or within 60 m on the same bench where charging of holes with explosives is being carried out.
- 8.4 At a given time only one operation that is drilling/toppling/lifting/shifting of equipment will be carried out on any bench.
- 9.0 TRANSPORT OF EXPLOSIVES:
Where explosives are transported in bulk for deep hole blasting the following precautions shall be taken:
- 9.1 Transport of explosives from the magazine to the priming station or the site of blasting shall not be done except in the original wooden or cardboard packing cases. The quantity of explosive transported at one time to the site of blasting shall not exceed the actual quantity required for use in one round of shots. The explosives shall be transported to the site of blasting not more than 90 minutes before the commencement of charging of the holes.

- 9.2 (a) No mechanically propelled vehicle shall be used for the transport of explosives unless it is of a type approved in writing by the Licensing Authority under the Explosive Act, 1884, provided that a jeep or land rover may be used for the transport of detonators from magazines to "priming station" subject to the following conditions:
- (i) Not more than 200 detonators are transported in a vehicle at a time;
 - (ii) The detonators are packed suitably in a wooden box.
 - (iii) The wooden box containing detonators is placed inside an outer metal case of a construction approved by the Licensing Authority under the Explosive Act, 1884;
 - (iv) The outer metal case shall be suitably bolted to the floor of the vehicle or otherwise fixed in a wooden frame so that the container does not move about while the vehicle is in motion; and
 - (v) No person shall ride on the rear portion of the vehicle.
- 9.3 Every vehicle used for the transport of explosives shall be marked or placarded on both sides and ends with the word "EXPLOSIVES" in red letters not less than 15cm high on a white background.
- 9.4 Every mechanically propelled vehicle transporting explosives shall be provided with not less than two fire extinguishers (one of carbon tetrachloride type for petroleum fire and the other of carbon dioxide under pressure type for electrical fire) suitably placed for immediate use.
- 9.5 (a) The vehicle used for the transport of explosives shall not be overloaded and in no case shall the explosive cases be piled higher than the sides of its body.
- (b) Explosives and detonators shall not be transported in the same vehicle, at the same time.
- 9.6 (a) No person other than the driver and his helper (not below 18 years of age) shall ride on a mechanically propelled vehicle used for the transport of explosives.
- (b) A vehicle loaded with explosive shall not be left unattended.
- (c) The engine of a vehicle transporting explosives shall be stopped and the brakes set securely before it is unloaded or left standing.
- (d) A vehicle transporting explosives shall not be driven at a speed exceeding 25 kilometer per hour.
- (e) A vehicle loaded with explosives shall not be taken into garage or repair shop and shall not be parked in a congested place.
- (f) A vehicle transporting explosives shall not be refueled except in emergencies. If it is inevitable to re-fuel, its engine shall be stopped and other precautions taken to prevent accidents.
- (g) No trailer shall be attached to a vehicle transporting explosives.
- 9.7 (a) Every vehicle used for the transport of explosives shall be carefully inspected once in every 24 hours by a competent person to ensure that:
- (i) Fire extinguishers are filled and in place;
 - (ii) The electric wiring is well insulated and firmly secured;
 - (iii) The chassis, engine and body are clean and free from surplus oil and grease;
 - (iv) The fuel tank and feed lines are not leaking; and
 - (v) Lights (including parking, brake and side indicating lights), brakes, steering mechanism, audio-visual alarms which shall work automatically on reversal, rear view mirrors (on both sides) and seat-belts are in good working order.
- (b) The report of every inspection made under sub-clause (a) shall be signed and dated by competent person making the inspection.

- 9.8 All operations connected with the transport of explosives shall be conducted under the personal supervision of a Blasting Officer solely placed in charge of blasting operations at the mine.
- 9.9 The blaster shall personally search every person engaged in the transport and use of explosives and shall satisfy himself that no person so engaged has in his possession any cigarette, 'bin' or other smoking apparatus, or any match or any other apparatus of any kind capable of producing a light, flame or spark.
- 10.0 PRECAUTIONS DURING BLASTING:
- 10.1 a) The Provisions of Regulation 170 of the Coal Mines Regulations, 1957, shall be observed while firing the shots. It shall be ensured that all persons in the vicinity and over the entire Danger Zone area falling within the radius of 500m from the place of firing of shots have either removed or taken proper shelter. If the shots are not fired electrically, unless it is certain that all the shots have been exploded, no person shall re-enter or be permitted to re-enter the Danger Zone area falling within the radius of 500m from the place of firing of shots until 30 minutes after the firing of shots. If the shots are fired electrically, this interval may be reduced to not less than five minutes after the source of electricity has been disconnected from the shot-firing cable.
- b) Blasting operations shall be carried out during day light hours only, which shall be mutually agreed among the neighboring mines. The timing shall be fixed, displayed, publicized and notified to all the neighboring mines in writing. The notice of the blasting timing shall be clearly displayed even along the roads up to the entire Danger Zone area falling within the radius of 500m from the place of firing of shots apart from within the mine premises.
- 10.2 a) Effective systems shall be evolved and followed to ensure warning and withdrawal of persons before blasting as per Regulation 170(1) of the Coal Mines Regulations, 1957.
- b) The owner(s) of the mine shall indemnify the persons / residents in the event of any loss or damage which might be caused due to blasting operations, due to any cause whatsoever.
- c) Complaint, if any, received from persons/ resident of buildings not belonging to owner and situated within the danger zone shall be brought to the notice of this Directorate forthwith.
- 10.3 During the approach and progress of an electric storm, the following precautions shall be taken:
- a) No explosive, particularly detonators shall be handled.
- b) If charging operations have begun, the work shall be discontinued until the storm has passed.
- c) If the blast is to be fired electrically all exposed wires shall be coiled up and if possible placed in the mouth of the holes, or kept covered by something other than a metal plate.
- d) All wires shall be removed from contact with the steel rails of a haulage track so as to prevent the charge being exploded prematurely by a local strike of the lightning.
- 10.4 No Blasting shall be done within 300m of any structures unless permission is obtained for controlled blasting under relevant regulations from this Directorate.

11.0 **Blasting In Fire Area.**

- No explosive other than slurry and emulsion shall be used. Blasting shall be done with detonating fuse down the hole.
- Temperature inside the holes shall be measured (before filling with water) and if the temperature exceed 80°C in any hole, such hole shall not be charged. Record of measurement of temperature in each hole shall be maintained in a bound paged book.
- All blast holes shall be kept filled with water. When any hole is traversed by crack or fissure. Such hole shall not be charged unless it is lined with an asbestos pipe and hole filled with water. In addition, bentonite should be used for sealing any cracks at the bottom of the holes.
- Detonating fuse shall not be laid on hot ground without taking suitable precautions which will prevent it from coming in contact with hot strata.
- The charging and firing of the holes in any one round shall be completed expeditiously and in any case within 2 hours.
- Blasting operations shall be carried out under the direct supervision of first class an Assistant Manager.

12.0 **GENERAL LIGHTING:**

- 12.1 Where natural lighting is insufficient, adequate general lighting as per the standards laid down in Notification No.GSR 829 dated 18.6.1975, published in the Gazette of India dated 05.07.1975, Part-II- Section 3(i) (reproduced in DGMS (Legis.) Circular No.1 of 1976) and Gr. Tech. 4/2009, issued under Regulation 154 shall be provided during working hours in the opencast workings and along roads, dumps, overburden/material handling(CHP) areas etc.
- 12.2 For proper inspection of the high sides and benches of the opencast workings at night, suitable searchlights shall be provided.
- 12.3 For ensuring the prescribed lighting standards at the mine, sufficient number of Lux meters shall be provided and regular lighting surveys shall be conducted. The findings shall be recorded in a bound paged book kept for the purpose, by a competent person duly authorized by the manager who shall sign the entries with date. The manager shall countersign the entries with date and take suitable corrective actions.

13.0 **DESIGN & MAINTENANCE OF MACHINERY & VEHICLES:**

- 13.1 All repairs of a machinery or vehicle shall be done at properly laid repair sheds and workshops so as to ensure due protection to work persons deployed at those places from the movement of heavy earth moving machinery.
- 13.2 Every piece of drilling and earth moving machinery or equipment (hereinafter called machine) and every truck, dumper, etc, (hereinafter called vehicle), shall be maintained in good and safe working condition.
- 13.3
- a) Every machinery or vehicle shall be provided with efficient warning devices, adequate front and rear lights and efficient brakes.
 - b) Every shovel shall be so designed as to afford the operator clear and uninterrupted vision all around and shall be provided with portable lamp for emergency, suitable portable fire extinguishers and retracting ladder.
 - c) The operator's cabin of heavy earth moving machinery shall be well designed and substantially built so as to ensure adequate protection to the operator against heat, dust, noise, etc. and at the same time provide adequate safety to the operator in the event of overturning of heavy earth moving machinery. A seat belt for the safety of the operator shall be provided.

- 13.4 a) The Code of /Operating Instructions furnished by the manufacturers in the matter of maintenance of various machinery and vehicles and preventive maintenance schedules for each type of machinery and vehicle shall be strictly followed.
- b) Every machine and vehicle shall be allocated at least one day in every week for maintenance. Before the machine or vehicle is sent out for work after maintenance, it shall be thoroughly inspected by the Engineer or mechanical foreman or other competent person, appointed by the Manager in writing, who shall satisfy himself that the machine or vehicle is mechanically sound and in efficient working order.
- c) A report of every inspection made under clause (b) shall be recorded in a bound paged book kept for the purpose, and shall be signed and dated by the person making the inspection.
- d) Every machine in use shall be thoroughly inspected once at least in every 24 hours by a competent person. Any damaged or worn out parts shall be replaced immediately.
- e) A report of every inspection made under Clause (e) shall be recorded in a bound paged book kept for the purpose and shall be signed and dated by person making the inspection.
- 13.5 If the Engineer or Mechanical Foreman or other competent person making an inspection notices any defect in any machinery or vehicle, the said machinery or vehicle shall not be used until the defect has been remedied.
- 13.6 Any defect in a machinery or vehicle reported by its operator shall be promptly attended to.
- 13.7 Any machine or vehicle found to be in an unsafe operating condition shall be tagged at the operator's position "OUT OF SERVICE, DO NOT USE" and its use shall be prohibited until the unsafe condition has been corrected.
- 13.8 All repairs of a machinery or vehicle shall be done at a location which will provide a safe place for the persons engaged on repairs.
- 13.9 Except for testing, trial or adjustment, which must necessarily be done while the machine or vehicle is in motion, every machine or vehicle shall be shut down and positive means taken to prevent its operation while any repair or manual lubrication is being done.
- 13.10 Any machinery, equipment, vehicle or part thereof which is suspended or held apart by use of slings, hoists or jacks shall be substantially blocked or cribbed before men are permitted to work underneath or between such machinery, equipment, vehicle or part thereof.
- 13.11 Power shall be disconnected before undertaking repairs are made to any electric machine. Wherever, provision of locking/operating key/handle is exit, the key/handle shall be handed over by the operator to the mechanic/electrician who is repairing.
- 13.12 Fluorescent stickers shall be provided on helmets wearers engaged in the opencast mines for clear visibility in the night. All those who require to stand or walk on the roads, loading/unloading/dumping/tipping or other working areas shall also be provided with fluorescent jackets.
- 14.0 DAILY EXAMINATION OF VEHICLES:
- a) At the commencement of every shift, the engineer or mechanic or foreman or other authorized competent person(s) shall personally inspect and test every vehicle paying special attention to the following details:

- i) That the brakes and the horn or other warning devices are in working order.
 - ii) If the vehicle is required to work after day light hours, that the lights are in working order.
 - iii) He shall not permit the vehicle to be taken out for work nor shall he drive the vehicle unless he is satisfied that it is mechanically sound and in efficient working order.
- b) He shall also maintain a record of every inspection in a bound paged book kept for the purpose. Every entry in the book shall be signed and dated by the person making the inspection.

15.0 OPERATION OF MACHINERY (OTHER THAN TRANSPORTING MACHINERY):

- 15.1 a) No person other than the operator or his helper, if any, or the Manager or any person so authorized in writing by the Manager shall ride/operate on a shovel/front-end loader/back-hoe/ripper/crane.
- b) No person shall be permitted to ride in the bucket of a shovel/crane. No person shall be allowed within the swing radius of boom shovel/crane.
- c) No shovel shall be operated in a position where any part of the machine, suspended loads or lines are brought closer than 3m to exposed high voltage lines, unless the power has been cut off and the line de-energized. A notice of this requirement shall be posted at the operator's position.
- 15.2 Every shovel/excavator, dozer, grader, crane or crawler mounted drill shall be provided with suitable fire extinguishers preferably Automatic, suitably placed for operation, convenient, immediate use.
- 15.3 The shovel bucket shall be pulled out of the bank as soon as it is full.
- 15.4 When not in operation the bucket shall be kept resting on stable ground and shall not be left hanging.
- 15.5 When being operated in soft or unstable ground every shovel shall be supported by heavy planks or poles so as to distribute the load of the machine over larger area and to prevent any danger of the shovel over-turning. When not in use, the shovel shall be moved to and stationed on the stable ground.
- 15.6 If more than one stripping machine is in use in any area, either on the same bench or on different benches, the machines shall be so spaced that there is no danger of accident from flying or falling objects etc. from one machine to the other.
- 16.0 Operation of drill machines:
- a) No person other than the operator so authorized by the manager in writing shall be allowed to operate the drill machine.
 - b) Every drill machine shall be properly checked by the operator before starting the same. Proper lubricant/oils shall be topped up in all the motors, gear boxed and in on line lubricators etc.
 - c) Drill shall be placed for operation on a properly leveled ground for stable support and air pressure shall be checked.

- d) While coupling/decoupling of the drill rods, adequate precautions shall be taken. Claw coupling shall be used to connect hoses and the same claw coupling shall be tied with G.I. wire to prevent accidental uncoupling of claw coupling.
- 17.0 OPERATION OF TRUCKS-DUMPERS AND OTHER VEHICLE:
- 17.1 All precautions stipulated for truck transporting in the open cast mine given under DGMS Circular No.11 of 1973 shall be implemented.
- 17.2 No person other than its operator, including helper shall be permitted to ride in/on the truck, tipper or dumper.
- 17.3
- a) As far as possible loaded trucks or dumpers or tippers shall not be reversed on gradient.
 - b) Sufficient stop blocks shall be provided at every tipping point and these shall be used on every occasion material is dumped from the truck, dumper or other such vehicle.
 - c) "Code of Traffic Rules" shall be framed by manager and the same shall be enforced strictly for movement of all trucks, tippers and dumpers including contractors as well as those belong to the consumers in the mine. Copies shall be prominently displayed at the relevant places in the opencast workings and truck/dumpers roads, these traffic rules shall be translated into the local language and distributed among the operators of Dumpers / Tippers / Trucks belonging to the contractors and other consumers. A copy of the same shall be submitted to this Directorate. A copy of standard Traffic Rules enclosed for guidance for framing of ' Code of Traffic Rule'
- 17.4 Trucks, tippers and other heavy vehicles, not belonging to management shall not be allowed in the mine premises without a valid pass issued by the competent authority of the mine. Before the pass is issued, the mine engineer/competent person shall check the roadworthiness of such vehicles. In order to check the entry of such vehicles in the mine premises, properly manned check gate shall be provided at the mine entrance where the record of entry & exit of each vehicle shall be maintained. At the check gate the license of the drivers shall also be checked for eliminating the possibility of un-licensed persons driving the vehicle.
- 17.5 Persons engaged in surface operation and, in particular, the contractor's workers shall be provided with closer and competent supervision.
- a) All persons engaged at any work within the mine premises through the contractors shall be provided relevant training and other job related briefings and that the drivers of the vehicle belonging to contractors entering the mine premises have additionally been explained the salient provisions of "Traffic Rules"
 - b) Each and every operation, including the operation carried out through contractor's worker or by outside agency, shall be placed under the charge of a competent supervisor, duly appointed and authorized by the manager.
- 17.6 When not in use every truck or dumper shall be moved to and stood on proper parking places.
- 17.7 No person shall be permitted to work on the chassis of a truck or dumper with the body in a raised position until after the truck or dumper body has been securely blocked in position. The mechanical hoist mechanism alone shall not be depended upon to hold the body of the truck or dumper in raised position.
- 17.8 No unauthorized person shall be permitted to enter or remain in any dumping /stock yard or turning points.

- 17.9: Every Dumper/tipper/truck shall be provided with suitable fire extinguishers suitably placed for operation/convenient use. It is preferable that they operate automatically in the event of a fire.
- 17.10 Every Dumper/tipper/truck shall be provided with automatically operating audio-visual reversing alarm, which shall always be kept in working order.
- 17.11 Service Brake Test and Parking Brake Test shall be carried at regular intervals as per the DGMS Circular (Tech.) No.3 of 1981.
- 17.12 While inflating tyres, suitable protective cages shall be used. Tyres shall never be inflated by sitting either in the front or on the top of the same.
- 17.13 While the vehicle is being loaded/unloaded on gradient, the same shall be secured stationary by parking brake and other means such as suitably designed stopper blocks which could be placed below the tyres.
- 17.14 Erection, Operation, maintenance, repairs and overhaul of heavy machineries such as shovels, dumpers, dozers, cranes, etc. shall be done strictly in accordance with the Operating Instructions. The Operating Instructions and maintenance schedule could be obtained from the manufacturers. Based on the Operating Instructions as above, Code of Practice for erection, maintenance, operation and repairs of each machinery/vehicle and for each operation shall be prepared and enforced at the mine.
- 18.0 DUTIES OF MACHINERY OPERATORS:
- 18.1 a) Every heavy earth moving machinery shall be under the charge of a competent person (herein called the 'operator') authorized in writing by the Manager.
- b) Operator/driver of each HEMM shall be selected from amongst persons possessing requisite qualifications. The selection process shall comprise a test to check driving/operating skill, aptitude, health and oral examination of the candidate by a competent selection committee. The selected persons shall be trained and their competency shall be evaluated by a board constituted by the mining company.
- c) All operators of HEMM shall undergo regular checks to test their driving/operating skill, knowledge and health once in every five years.
- d) To prevent unauthorized driving, a system shall be evolved whereby the ignition key and /or cabin key always remain with the driver/operator or with specifically designated competent person. No person shall be permitted to ride on the running board of a truck or dumper.
- e) At the commencement of every shift, the operator shall also personally inspect and test the machine, paying special attention to the following details:
- i) That brakes and every warning device are in working order; and
 - ii) If the machine is required to work after day-light hours, that lights are in working order.
- He shall not take out the machine for work nor shall he operate the machine unless he is satisfied that it is mechanically sound and in efficient working order.
- 18.2 a) The operator shall not operate the machine when persons are in such proximity as to be endangered.
- b) He shall not swing the bucket of a shovel over passing haulage units. While trucks/dumpers are being loaded, he shall swing over the body of the truck/dumper and not over the cab, unless a substantially strong cover protects the cab.

18.3 The operator shall not allow any unauthorized person to ride on the machine.

19.0 DUTIES OF TRUCK/TIPPER/DUMPER OPERATORS:

19.1 Before commencing work, the driver shall generally inspect and test the vehicle for its road worthiness paying special attention to the tyre air-pressure, brakes, horn, lights, rear-view mirrors on both sides, seat-belt and audio-visual alarm which shall operate automatically on reversal of the vehicle. If he finds any defect which is likely to make the driving unsafe, he shall report the matter to the competent person and shall not operate the vehicle till the defects are remedied. Vide Notification no. 16(38)79-Gen/1973 dated 22.07.2008 reproduced in DGMS (Approval) Circular no. 04 dated 22.07.2008, the audio-visual alarm shall be of approved type and make.

- 19.2
- a) Before, starting the vehicle he shall ensure to wear the helmet with chin-strap and tighten the seat-belt.
 - b) He shall not drive too fast, shall avoid distractions and shall drive defensively. He shall not attempt to overtake another vehicle unless he can see clearly far enough ahead to be sure that he can pass it safely. He shall also sound the audible warning signal before overtaking.
 - c) When approaching a stripping equipment, the driver of the truck or dumper shall sound the audible warning signal and shall not attempt to pass the stripping equipment until he has received a proper audible signal in reply.
 - d) Before crossing a road or railway line, he shall reduce his speed, look in both directions along the road or line and shall proceed across the road or line only if it is safe to do so.
 - e) The driver shall sound the audible warning signal while approaching 'blind' corner or any other points from where persons may walk in front unexpectedly.
 - f) The driver shall not operate the truck or dumper in reverse unless he has a clear view of the area behind the vehicle and take help of an automatically operating audio-visual reversing alarm before reversing a truck or dumper.
 - g) The driver shall be sure of clearance before driving through tunnels, archways, plant, structures etc.

19.3 The driver shall see that the vehicle is not overloaded and that the material is not loaded in a truck or dumper so as to project horizontally beyond the sides of its body and that any material projecting beyond the front or rear is indicated by a red flag during day and by red light after day light hours.

19.4 The driver shall not allow any unauthorized person to ride on the vehicle. He shall also not allow more than authorized number of persons to ride on the vehicle.

20.0 DUTIES OF MECHANICS/FITTERS/ELECTRICIANS:

20.1 At the commencement of every shift he shall personally inspect and test every machine, paying special attention to the following details.

- a) That the brakes and warning devices are in working order.
- b) That if the Machine is required to work after day light hours that the lights are in working order. He shall not permit the machine to be taken out for work unless he is satisfied that it is mechanically sound and in efficient working order.

20.2 The electrician shall see that all electrical equipments are kept in good and safe working conditions. He shall test all electrical operated machines for supply voltage, over load relays, earth leakage relays, presence of loose wires and proper jointing of cables, fuse wires, push button switches etc. at regular intervals. He shall also see that all electrical cables shall be laid in such a manner that they are not endangered either by falling rocks or by movement of any

mobile equipment. He shall also see that electrical panels are regularly cleaned using hand-held blowers and switches shall be kept dry and protected from moisture and rain.

20.3 Every mechanic/fitter/electrician shall maintain a record of every inspection, test and maintenance in a bound paged book kept for the purpose and shall sign with date by him and countersign with date by the engineer/foreman/electrical supervisor.

20.4 **DUMPER:** The following safety feature shall be provided in dumper/tippers.

- i. Mechanical steering locking to prevent untoward movement of steering wheel and tyre while work persons working below the cabin while engine is running.
- ii. Blind spot mirror apart from rear view mirror to enable operator to have clear visibility of blind spot in and around dumpers.
- iii. Mechanical type Anti collision device to avoid head to tail collision on haul road such as tail gate, bumper extension or any other strong device.
- i. Fire resistant hydraulic hoses in place of ordinary hoses to decrease the chance of fire. All the sleeves and conducts where cable/wire are passed shall be fire resistant.
- ii. Seat belt for operator.
- iii. The maximum speed of vehicle shall be restricted to 30Km/hour by blocking higher gear or any other automatic means.
- iv. Proper shaft guard.
- v. Proximity working device.

20.5 **EXCAVATORS:** The following safety feature shall be provided.

- i. All functions cut off switch.
- ii. Swing Motor Brake.
- iii. Fire resistant hydraulic hoses in place of ordinary hoses to decrease the chance of fire. All the sleeves and conducts where cable/wire are passed shall be fire resistant.
- iv. Turbo charge guard.
- v. Seat belt.
- vi. Vent valve on top of hydraulic tank should be able to be removed without any tool.
- vii. A baffle plate between cold zone and hot zone.
- viii. Provision for limiting of hydraulic cylinders – Stoppers.

20.6 **DRILLS:** The following safety feature shall be provided.

- 1) Approved type of dust prevention or suppression system.
- 2) Each moving parts of the machinery shall be guarded/ fenced and also ensure its effectiveness all the time.
- 3)
 - i) Emergency of push bottom in
 - a) Operator's cabin.
 - b) Main frame
 - c) Propeller pendent
 - d) Rear end.
 - ii) Tripping device to trip the field switch.
- 4) Thermostat motor protection relay in winding temperature and other related parts.
- 5) Explosive vent in transformer
- 6) Propel interlock (an electric interlock between drilling and propeller operation)
- 7) High air discharge temperature switch.
- 8) Low lub oil pressure switch.
- 9) Oil stop valve (electric solenoid valve in compressor lubrication line.
- 10) No bump circuit.
- 11) Tower lock and lock check valve.

- 12) Propel joystick-spring loaded type to return to neutral (dead man safety)
 - 13) Disk-brake and brake valve and its testing parameters.
 - 14) Lock check valve for preventing creeping in drill.
 - 15) Seat belt
 - 16) Fire resistant hydraulic hoses and wiring near hot zone.
 - 17) Turbo charge guard.
 - 18) Cabin for the operator.
- 20.7. **DOZERS:** The following safety feature shall be provided.
- 1) Roll over protection
 - 2) Turbo charge guard.
 - 3) Fire resistant hydraulic hoses and wiring near hot zone.
 - 4) Seat belt.
- 21.0 SPOIL BANKS:
- 21.1
- a) The slope of a spoil-bank face shall be determined by the natural angle of repose of the material being deposited/piled/dumped, but shall in no case exceed 37½ degree from the horizontal. The spoil-bank face shall not be retained by artificial means at an angle in excess of its natural angle of repose or 37½ degree from horizontal or whichever is lower. "
 - b) OB dump shall not be located within 80m of the top edge of the quarry.
 - c) Any spoil bank, exceeding 30m in height, shall be benched so that no bench exceeds 30m in height and the general slope does not exceed 1.0m vertical to 1.5m horizontal. If dump height exceeds 60m, then scientific study shall be made for stability of the dump.
- 21.2
- a) The toe of a spoil-bank face shall not be permitted to approach a railway or other public works, public road or building or other permanent structure not belonging to the owner of the mine, closer than a distance equal to the vertical height of its face.
 - b) A suitable fence shall be erected between any railway or public works or road or building or structure and the toe of an active spoil-bank so as to prevent unauthorized persons from approaching the spoil-bank.
 - c) No O. B. dump shall be formed directly beneath overhead power lines or on top of the underground power line.
 - d) Seven meters minimum horizontal distances shall apply from beneath power lines to top of any dump.
 - e) Access of dump shall not be from beneath overhead power lines.
 - f) High dumps shall not be located where high wind conditions may suddenly occur.
 - g) Dump management plan for monitoring of high wall and dump slide shall be made at the mine. Monitoring of the high wall and dump by fixing prism at strategic locations and measuring by Total Station shall be done and the report shall be recorded. If, any movement observed, the persons shall be withdrawn from the toe of the high wall and dump.
- 21.3 No person shall or be permitted to approach the toe of an active spoil-bank where he may be endangered from material rolling down the face.
- 22.0 SUPERVISION:
- 22.1 A person possessing First Class Mine Manager's certificate of competency shall be appointed as the Manager of the mine.
- 23.2 A duly qualified engineer shall be appointed to hold general charge of HEMM and shall be responsible for their installation/erection, maintenance and safe working/repairs/overhaul. It shall be his duty to frame and enforce the Code of Practices of as described earlier.

- 23.3 During every shift, the opencast workings shall be placed under the charge of an Assistant Manager (Second Class Manager Certificate) and during maintenance shift, the workings shall be placed under the charge of a Mechanical Foreman, who shall be responsible to see that all the regulations and the orders made there under are strictly complied with. The Assistant Manager shall also supervise Transport and loading operation being done by the contractor including the customer trucks allotted to enter into the mine / CHP. The Assistant Manager shall be assisted by sufficient number of Overmen and Mining sirdars so as to ensure safe working of men and machinery.
- 22.4 Assistant Manager shall in particular:-
- a) Make frequent inspections for evidence of slides or of material that any slide or roll from the high wall (including the face and sides) or spoil-banks;
 - b) not allow any person to work under overhanging ledges or where there is evidence of slides, until such danger has been removed;
 - c) Ensure that every person engaged in dressing operations on high walls/sides is provided with, and uses, a safety belt of a type approved by the Chief Inspector;
 - d) Ensure that all loose material is removed from high wall/side before drillers/loaders are engaged there, and
 - e) Ensure that parapet walls along truck-roads are properly maintained.
- 24.0 PROTECTION OF WORKERS AGAINST DUST, NOISE AND VIBRATION:
- Suitable steps shall be taken by all appropriate means to reduce the exposure of workers to any excessive respirable dust, noise and vibration. Adequate arrangements to allay dry dust by wetting shall be made, if during any operation of drilling, loading, unloading, crushing, dressing etc., dust is likely to be produced in such quantity (not more than 3mg/m³) as may be injurious to the health of persons, as also on roads and benches where trucks and dumpers operate. Airborne dust surveys shall be done as laid down in Regulation 123 of the Coal Mines Regulations, 1957.
- 25.0 PROTECTIVE EQUIPMENT:**
Every persons working in the opencast working shall be provided with and shall use protective footwear and hard hat of a type approved by Chief Inspector of Mines and such other protective equipment as may be prescribed by the Regional Inspector or of the Chief Inspector, in accordance with the provision of Regulations 191B of the Coal Mines Regulations, 1957.
- 26.0 MISCELLANEOUS:**
- 26.1 For maintaining the final slope configurations and monitoring the ground movement along the final slope, the following shall be strictly followed.
- a. Permanent survey points were to be established in each bench of the final slope at an interval of 200 m for monitoring the ground movement, if any. Once at least in a month, survey shall be conducted at all such established points to note ground movement, if any. The details of such survey shall be recorded in a bound paged book kept for the purpose, and shall be signed and dated by the person making the survey and also by the Manager.
 - b. Drainage arrangement shall be established in benches of the ultimate pit slope for diverting rain/other water flow in a systematic manner.
- 26.2 For effectively monitoring and controlling spontaneous heating and other open fires in the coal benches and in other areas, a proper fire fighting organization shall be constituted in the mine under direct control of a person holding a First Class certificate of competency. In each shift, a fire fighting crew with a supervisor should be engaged for fire fighting and quenching works. It shall be the duty of the fire fighting team to always ensure that adequate fire fighting facilities including a high pressure water spraying line along the exposed coal

benches of top, middle and bottom Seams are established and are available in working order. Exposed coal bench shall be blanketed with overburden material. After blasting, coal bench shall be compacted to prevent breathing of air. The fire fighting team shall also ensure that normally, there is no fire in the mine. A daily record shall be maintained of the activities of the fire fighting organization and shall be signed by the head of the organization.

- 26.3 No work of extraction shall be conducted at, or extended to, any point within 45m of the public road and 33KV transmission lines without prior permission from this Directorate or until it has been dismantled, diverted or vacated as the case may be.
- 26.4 Water shall not be allowed accumulate at the bottom of opencast workings and arrangement shall be made for sump located at appropriate location, so that all seepage water or water from any other source directly flows into the water sump, where adequate capacity pumps shall be installed to pump water to surface drainage.
- 26.5 Service vehicle like small vehicles used for transport of maintenance crew and supervisory personnel shall not be taken inside the active bench. Those vehicles shall be parked at a pre-designated position outside the bench. A service/ supervisory personnel may then walk down to the place through well-laid footpath. It shall be the duty of the Assistant Manager/ In charge of the shift and the Overman- In charge of the bench to maintain such pre-designated parking place.
- 26.6 Small vehicles to be used for transportation of service crew/supervisory personnel shall be provided with strong blinking red light on top of those so that the dumper operators can easily locate them while those move inside the quarry.
- 26.7 Transport of the workmen to the place shall be done in transport vehicles only. Dumpers shall not be used for the purpose.
- 26.8 No tipper truck and trucker trailers shall be used inside the quarry.
- 26.9 In the dump yard, the dumper shall not be permitted to be taken to the edge of the dump yards for the purpose of unloading. At the edge of the dump, a safety berm is to be left by the Dozer Operator. This berm shall be formed from the dumped material and have a height of not less than the wheel dia of the truck/dumper dumping. In any event, this berm shall not be less than one metre in width of the top.
- 26.10 The trip counter in the dump yard shall be positioned in an elevated island not less than 2m height. The island shall be made distinctly visible by blinking a red light on it.
- 26.11 In the active face area, no person shall be employed to position the dumpers or to help the shovel operators. Workers engaged for greasing of shovels shall be stationed in a pre-designated safe place from where they may be taken to the bench as and when required. The dumper operators shall be well trained so that they can place the dumpers in a bench themselves. A trip counter may be placed in a bench outside the active area at a pre-designated safe platform.
- 26.15 Provision of Regulation 170 of Coal Mine Regulation, 1957 shall be strictly complied

मान प्रकाश मिश्रा
 हैदराबाद-११/१/१७

Recommended permissible standards of blast induced ground vibrations:

Technical considerations

Permissible standards for different type of structures have been arrived at considering the importance of building and structures. The buildings of historical importance and multi- storied structures are likely to get damaged with low level of vibration and therefore permissible standards are to be lowest. Similarly buildings not belonging to the owner but with mud/brick in cement construction and others with good construction (RCC and framed structures) should also be protected but higher permissible standards than that of the level fixed for first category has been allowed.

The buildings belonging to the owner of the mine are constructed for a limited period generally equal to the life of the project. The management accept that these buildings constructed within the mining area are likely to suffer some damages during the extraction of minerals, but the damages should be repairable. Therefore, slightly higher permissible levels of vibrations have been allowed in such cases.

Permissible standards

Depending on the type of structures and the dominant excitation, the peak particle velocity (ppv) on the ground adjacent to the structure shall not exceed the values given below in the table.

Table: Permissible Peak Particle Velocity (ppv) at the foundation level of structures in Mining Areas in mm/s

Type of structure	Dominant excitation Frequency, Hz		
	<8 Hz	8-25 Hz	>25 Hz
(A) Buildings/structures not belong to the owner			
(i) Domestic houses/structures (kuchha brick & cement)	5	10	15
(ii) Industrial Buildings (RCC & Framed structures)	10	20	25
(iii) Objects of historical importance & sensitive structures	2	5	10
(B) Buildings belonging to owner with limited span of life			
(i) Domestic houses/structures (kuchha, brick & cement)	10	15	25
(ii) Industrial buildings (RCC & framed structures)	15	25	50

Minimate Records January 2021 to APRIL-2022

JANUARY 2021

Date	Location RL	Area	No. of Holes	Avg. Depth	Type of Burden	Spacing	Burden	Avg. Charge	Max. Charge	Total Charge	Initiation	Location	Distance in meters	PPV MM/Sec	AOP	Remarks
05.1.2021	910 W	GRN	93	5.7	HARD	6	5	30	40	3670	NONELS	BLASTING VIEW POINT	1500	1.905	101.9	
08.1.2021	830 EM	GRN	41	3.8	HARD	6	5	40	40	1000	NONELS	BLASTING VIEW POINT	1500	0.508	114.0	
08.1.2021	830 M	GRN	116	5.6	HARD	6	5	30	40	4470	NONELS	BLASTING VIEW POINT	1500	0.762	118.2	
08.1.2021	910 M	GRN	184	5.3	HARD	6	5	30	40	6490	NONELS	BLASTING VIEW POINT	1500	1.905	104.2	
10.1.2021	870 E	GRN	97	5.1	HARD	6	5	35	40	3409	NONELS	BLASTING VIEW POINT	1500	1.524	94.0	
12.1.2021	940 E	GRN	98	4.9	HARD	7	6	35	40	3600	NONELS	BLASTING VIEW POINT	1500	0.889	97.5	
12.1.2021	820 W	GRN	112	5.2	HARD	6	5	35	40	3930	NONELS	BLASTING VIEW POINT	1200	0.635	116.1	
14.1.2021	935 M	GRN	182	4.4	HARD	6	5	30	40	5460	NONELS	BLASTING VIEW POINT	1300	0.508	112.3	
14.1.2021	935 E	GRN	100	4.3	HARD	6	5	28	35	2790	NONELS	BLASTING VIEW POINT	1300	0.889	88.0	
16.1.2021	820 E	GRN	150	4.6	HARD	6	5	30	40	4510	NONELS	BLASTING VIEW POINT	1200	0.508	118.7	
20.1.2021	880 M	GRN	163	5.6	HARD	6	5	40	40	6520	NONELS	BLASTING VIEW POINT	1200	0.889	119.8	
20.1.2021	900 W	GRN	95	5.3	HARD	6	5	36	40	3480	NONELS	BLASTING VIEW POINT	1000	0.731	101.0	
24.1.2021	920 E	GRN	100	5.4	HARD	6	5	40	40	4100	NONELS	BLASTING VIEW POINT	1400	0.508	109.5	
28.1.2021	POB W	GPL	140	5.6	HARD	6	5	39	40	5500	NONELS	BLASTING VIEW POINT	1000	0.508	88.0	

FEBRUARY 2021																
Date	Location RL	Area	No. of Holes	Avg. Depth	Type of Burden	Spacing	Burden	Avg. Charge	Max. Charge	Total Charge	Initiation	Location	Distance in meters	PPV MM/Sec	AOP	Remarks
01.2.2021	860 E	GRN	118	5.5	HARD	6	5	40	40	4900	NONELS	BLASTING VIEW POINT	1400	1.270	105.5	
01.2.2021	870 W	GRN	182	4.4	HARD	6	5	30	40	5290	NONELS	BLASTING VIEW POINT	1400	0.280	100.0	
03.2.2021	920 E	GRN	100	4.9	HARD	6	5	37	40	3700	NONELS	BLASTING VIEW POINT	1300	0.635	115.9	
10.2.2021	POB W	GPL	150	5.6	HARD	5	4	45	40	6000	NONELS	BLASTING VIEW POINT	1000	0.635	108.4	
12.2.2021	850	GRN	156	4.7	HARD	6	5	36	40	5620	NONELS	BLASTING VIEW POINT	1000	0.635	118.7	
12.2.2021	POB	GRN	186	4.3	HARD	5	4	32	43	6000	NONELS	BLASTING VIEW POINT	1000	1.840	94.0	
13.2.2021	930	GRN	207	4.8	HARD	6	5	37	40	7810	NONELS	BLASTING VIEW POINT	1300	0.635	97.5	
14.2.2021	POB E	GRN	168	4.3	HARD	6	5	27	40	4600	NONELS	BLASTING VIEW POINT	1000	0.635	119.6	
16.2.2021	POB W	GPL	100	4.5	HARD	6	5	33	40	3300	NONELS	BLASTING VIEW POINT	1000	0.635	117.2	
21.2.2021	915 E	GRN	151	5.0	HARD	6	5	37	40	5590	NONELS	BLASTING VIEW POINT	1300	0.508	88.0	
21.2.2021	860	GPL	44	5.6	HARD	6	5	40	40	1800	NONELS	BLASTING VIEW POINT	1200	0.381	88.0	
22.2.2021	POB W	GPL	140	4.3	HARD	6	5	29	40	4000	NONELS	BLASTING VIEW POINT	1000	0.782	109.5	
27.2.2021	930 W	GRN	39	3.0	HARD	5	5	25	40	970	NONELS	EAST VIEW POINT	700	0.889	91.5	

MARCH 2021																
Date	Location RL	Area	No. of Holes	Avg. Depth	Type of Burden	Spacing	Burden	Avg. Charge	Max. Charge	Total Charge	Initiation	Location	Distance in meters	PPV MM/Sec	AOP	Remarks
03.3.2021	POB W	GRN	80	3.1	HARD	5	4	23	40	1808	NONELS	EAST VIEW POINT	800	0.635	95.9	
05.3.2021	POB W	GRN	156	3.9	HARD	6	5	20	40	3200	NONELS	EAST VIEW POINT	600	1.651	101.9	
05.3.2021	910 W	GRN	112	5.0	HARD	6	5	35	40	4000	NONELS	EAST VIEW POINT	800	1.651	94.0	
08.3.2021	POB E	GRN	244	3.5	HARD	5	4	22	40	5524	NONELS	EAST VIEW POINT	600	0.508	88.0	
10.3.2021	890	GRN	50	5.6	HARD	5	5	40	40	2000	NONELS	EAST VIEW POINT	700	0.635	100.0	
11.3.2021	920 E	GRN	16	5.6	HARD	5	5	40	40	650	NONELS	EAST VIEW POINT	800	1.651	112.8	
12.3.2021	890 E	GRN	106	5.8	HARD	6	5	40	40	5170	NONELS	EAST VIEW POINT	700	0.635	88.0	
12.3.2021	POB E	GRN	120	2.5	HARD	6	5	20	40	2400	NONELS	EAST VIEW POINT	600	0.508	111.8	
13.3.2021	840 W	GRN	139	4.1	HARD	5	4	30	40	4013	NONELS	EAST VIEW POINT	800	0.762	91.5	
14.3.2021	POB E	GRN	52	1.8	HARD	5	4	10	40	405	NONELS	EAST VIEW POINT	600	1.778	102.8	
15.3.2021	910 E	GRN	119	4.5	HARD	6	5	39	40	4711	NONELS	EAST VIEW POINT	800	0.635	113.3	
16.3.2021	890 M	GRN	125	3.1	HARD	5	5	20	40	2600	NONELS	EAST VIEW POINT	700	0.635	114.0	
19.3.2021	POB E	GRN	262	1.5	HARD	5	5	10	40	2426	NONELS	EAST VIEW POINT	800	0.381	88.0	
26.3.2021	840 M	GRN	200	4.9	HARD	5	6	32	40	6440	NONELS	EAST VIEW POINT	600	0.889	109.9	
28.3.2021	930 RLE	GRN	125	3.2	HARD	5	6	21	40	2722	NONELS	EAST VIEW POINT	800	0.508	98.9	
29.3.2021	850 W	GRN	60	3.8	HARD	5	6	30	40	1766	NONELS	EAST VIEW POINT	700	0.508	88.0	
29.3.2021	POB W	GRN	156	3.9	HARD	6	5	20	40	3200	NONELS	EAST VIEW POINT	600	0.381	88.0	
29.3.2021	890	GRN	50	5.6	HARD	6	5	40	40	2000	NONELS	EAST VIEW POINT	700	0.508	88.0	
29.3.2021	840 W	GRN	139	4.4	HARD	6	5	30	40	4013	NONELS	EAST VIEW POINT	600	1.270	111.2	

APRIL 2021																
Date	Location RL	Area	No. of Holes	Avg. Depth	Type of Burden	Spacing	Burden	Avg. Charge	Max. Charge	Total Charge	Initiation	Location	Distance in meters	PPV in MM/Sec	AOP	Remarks
01.4.2021	840 M	GRN	198	5.3	HARD	6	5	35	40	7119	NONELS	EAST VIEW POINT	600	1.651	88.00	
01.4.2021	910 E	GRN	128	3.2	HARD	6	5	23	40	3032	NONELS	EAST VIEW POINT	700	0.635	115.60	
01.4.2021	900 E	GRN	79	5.7	HARD	6	5	40	40	3607	NONELS	EAST VIEW POINT	700	0.508	93.98	
02.4.2021	920 M	GRN	107	2.7	HARD	6	5	15	40	1610	NONELS	EAST VIEW POINT	700	0.762	116.90	
03.4.2021	840 W	GRN	71	5.2	HARD	5	6	40	40	3007	NONELS	EAST VIEW POINT	600	0.635	105.50	
05.4.2021	820 E	GRN	125	4.5	HARD	5	6	31	40	3852	NONELS	EAST VIEW POINT	600	0.762	91.48	
06.4.2021	890 E	GRN	165	5.0	HARD	5	6	34	40	5676	NONELS	EAST VIEW POINT	700	1.651	92.98	
07.4.2021	890 W	GRN	100	5.7	HARD	5	6	40	40	4060	NONELS	EAST VIEW POINT	700	0.508	115.20	
08.4.2021	830 M	GRN	154	5.0	HARD	6	5	35	40	5500	NONELS	EAST VIEW POINT	700	0.635	108.80	
09.4.2021	890 E	GRN	158	4.5	HARD	5	6	31	40	5015	NONELS	EAST VIEW POINT	700	0.635	88.00	
09.4.2021	830	GRN	136	5.1	HARD	5	6	33	40	4490	NONELS	EAST VIEW POINT	700	0.620	93.98	
10.4.2021	830 M	GRN	155	5.2	HARD	5	6	38	40	5915	NONELS	EAST VIEW POINT	700	0.762	88.00	
10.4.2021	920 E	GRN	143	3.4	HARD	5	6	23	40	3334	NONELS	EAST VIEW POINT	800	0.635	95.92	
12.4.2021	890 E	GRN	160	5.2	HARD	5	6	37	40	6056	NONELS	EAST VIEW POINT	700	1.016	93.96	
12.4.2021	920 E	GRN	115	5.1	HARD	5	6	36	40	4211	NONELS	EAST VIEW POINT	800	0.985	91.48	

13.4.2021	900 M	GRN	178	4.6	HARD	5	6	33	40	5887	NONELS	EAST VIEW POINT	800	0.762	119.80	
14.4.2021	900 E	GRN	200	4.3	HARD	5	4	30	40	6170	NONELS	EAST VIEW POINT	800	0.889	109.20	
17.4.2021	890 E	GRN	130	4.1	HARD	5	6	25	40	3373	NONELS	EAST VIEW POINT	700	0.508	117.90	
17.4.2021	910 E	GRN	190	4.6	HARD	5	6	31	40	6019	NONELS	EAST VIEW POINT	800	0.381	101.90	
17.4.2021	830 M	GRN	133	5.1	HARD	5	6	37	40	5013	NONELS	EAST VIEW POINT	700	0.635	106.50	
19.4.2021	870 W	GRN	63	4.5	HARD	5	6	31	40	2006	NONELS	EAST VIEW POINT	700	0.635	88.00	
19.4.2021	830 W	GRN	182	5.1	HARD	5	6	39	40	7248	NONELS	EAST VIEW POINT	700	0.889	120.10	
20.4.2021	890 W	GRN	108	5.6	HARD	5	6	39	40	4310	NONELS	EAST VIEW POINT	700	0.635	88.00	
20.4.2021	890 W	GRN	150	5.7	HARD	5	6	40	40	6015	NONELS	EAST VIEW POINT	700	0.762	88.00	
20.4.2021	910 E	GRN	57	4.8	HARD	5	6	32	40	1865	NONELS	EAST VIEW POINT	800	1.143	91.48	
21.4.2021	890 E	GRN	177	4.7	HARD	5	6	30	40	5417	NONELS	EAST VIEW POINT	700	0.762	88.00	
21.4.2021	890 E	GRN	160	2.8	HARD	5	6	14	40	2286	NONELS	EAST VIEW POINT	700	0.508	95.92	

MAY/2021																
Date	Location	Area	No. of Holes	Avg. Depth	Type of Burden	Spacing	Burden	Avg. Charge	Max. Charge	Total Charge	Initiation	Location	Distance in meters	PPV MM/Sec	AOP	Remarks
03.5.2021	890 E	GRN	93	5.0	HARD	5	6	35	40	3259	NONELS	EAST VIEW POINT	700	0.889	88.0	
05.5.2021	890 M	GRN	100	3.9	HARD	5	6	25	40	2510	NONELS	EAST VIEW POINT	700	0.635	119.9	
05.5.2021	890 M	GRN	123	5.3	HARD	5	6	39	40	4872	NONELS	EAST VIEW POINT	700	1.524	94.0	
06.5.2021	890 M	GRN	153	4.4	HARD	5	6	28	40	4315	NONELS	EAST VIEW POINT	700	0.508	88.0	
07.5.2021	POB E	GRN	64	2.1	HARD	5	4	5	40	256	NONELS	EAST VIEW POINT	800	0.635	94.0	
07.5.2021	POB 807	GRN	113	2.6	HARD	6	5	18	40	2133	NONELS	EAST VIEW POINT	800	0.635	100.0	
07.5.2021	820 E	GRN	271	4.6	HARD	6	5	25	40	6977	NONELS	EAST VIEW POINT	700	0.635	98.8	
07.5.2021	890 E	GRN	123	5.3	HARD	6	5	39	40	4892	NONELS	EAST VIEW POINT	600	0.762	94.0	
09.5.2021	820 M	GRN	276	3.4	HARD	6	5	21	40	5827	NONELS	EAST VIEW POINT	600	0.635	88.0	
10.5.2021	840 M	GRN	150	5.4	HARD	6	5	32	40	4835	NONELS	EAST VIEW POINT	700	0.762	88.0	
11.5.2021	870	GRN	137	5.6	HARD	6	5	36	40	5033	NONELS	EAST VIEW POINT	600	0.762	119.7	
12.5.2021	POB W	GRN	117	2.3	HARD	6	5	17	40	2011	NONELS	EAST VIEW POINT	800	1.016	88.0	
13.5.2021	800	GRN	109	1.9	HARD	6	5	13	40	1510	NONELS	EAST VIEW POINT	700	1.524	88.0	
13.5.2021	820 M	GRN	78	3.4	HARD	6	5	20	40	1607	NONELS	EAST VIEW POINT	700	0.635	94.0	

13.5.2021	890 E	GRN	151	4.1	HARD	6	5	26	40	4005	NONELS	EAST VIEW POINT	600	0.762	88.0	
14.5.2021	POB M	GRN	214	4.4	HARD	6	5	27	40	5821	NONELS	EAST VIEW POINT	800	0.889	88.0	
15.5.2021	895 E	GRN	171	5.7	HARD	6	5	40	40	6917	NONELS	EAST VIEW POINT	600	0.508	88.0	
16.5.2021	POB E	GRN	167	3.5	HARD	5	4	24	40	4100	NONELS	EAST VIEW POINT	800	0.762	88.0	
16.5.2021	POB E	GRN	200	3.5	HARD	5	4	24	40	4900	NONELS	EAST VIEW POINT	600	0.762	88.0	
16.5.2021	POB W	SCCL	161	2.0	HARD	6	5	10	40	1520	NONELS	EAST VIEW POINT	800	0.635	88.0	
17.5.2021	POB E	GRN	222	3.5	HARD	5	4	26	40	5850	NONELS	EAST VIEW POINT	600	0.381	88.0	
17.5.2021	POB M	GRN	200	3.6	HARD	5	4	26	40	5300	NONELS	EAST VIEW POINT	700	0.608	88.0	
17.5.2021	POB W	SCCL	13	3.0	HARD	6	5	5	40	250	NONELS	EAST VIEW POINT	800	0.254	88.0	
18.5.2021	810 M	GRN	134	3.6	HARD	5	5	22	40	3000	NONELS	EAST VIEW POINT	700	0.889	91.5	
18.5.2021	810 M	GRN	300	3.8	HARD	5	5	24	40	7230	NONELS	EAST VIEW POINT	700	1.524	88.0	
19.5.2021	890 E	GRN	184	4.4	HARD	6	5	29	40	5390	NONELS	EAST VIEW POINT	800	0.635	101.0	
19.5.2021	890 E	GRN	125	5.2	HARD	6	5	36	40	4500	NONELS	EAST VIEW POINT	700	1.270	110.9	
20.5.2021	POB M	GRN	78	3.5	HARD	5	4	25	40	2000	NONELS	EAST VIEW POINT	800	0.381	100.0	
20.5.2021	500 M	GRN	64	4.4	HARD	6	5	29	40	1900	NONELS	EAST VIEW POINT	700	1.778	102.8	
20.5.2021	870 M	GRN	140	5.6	HARD	6	5	40	40	6090	NONELS	EAST VIEW POINT	700	1.143	88.0	
21.5.2021	810 W	GRN	196	2.0	HARD	4	5	10	40	1800	NONELS	EAST VIEW POINT	700	1.778	98.8	

21.5.2021	840 M	GRN	100	5.5	HARD	6	5	36	40	3600	NONELS	EAST VIEW POINT	700	0.381	88.0
21.5.2021	840 M	GRN	170	5.8	HARD	6	5	40	40	6800	NONELS	EAST VIEW POINT	700	0.508	94.0
22.5.2021	890 E	GRN	200	3.0	HARD	5	5	18	40	3600	NONELS	EAST VIEW POINT	600	0.508	88.0
22.5.2021	890 E	GRN	200	4.1	HARD	6	5	26	40	5220	NONELS	EAST VIEW POINT	600	0.381	88.0
23.5.2021	820 W	SCCL	91	1.9	HARD	6	5	9	40	820	NONELS	EAST VIEW POINT	800	0.889	88.0
23.5.2021	POB W	SCCL	164	5.4	HARD	6	5	34.75	40	5700	NONELS	EAST VIEW POINT	800	0.508	91.5
23.5.2021	890 M	GRN	191	4.3	HARD	6	5	34	40	6000	NONELS	EAST VIEW POINT	600	0.635	88.0
24.5.2021	840 M	GRN	149	5.6	HARD	6	5	38	40	5800	NONELS	EAST VIEW POINT	700	0.508	95.9
24.5.2021	870	GRN	105	5.6	HARD	6	5	40	40	4250	NONELS	EAST VIEW POINT	700	0.889	107.0
24.5.2021	840 ME	GRN	100	5.1	HARD	6	5	34	40	3400	NONELS	EAST VIEW POINT	700	0.254	109.2
25.5.2021	880 W	GRN	85	5.1	HARD	6	5	35	40	3010	NONELS	EAST VIEW POINT	700	0.508	88.0
25.5.2021	880 W	GRN	150	5.1	HARD	6	5	35	40	5350	NONELS	EAST VIEW POINT	700	0.635	88.0
25.5.2021	810 W	GRN	240	4.3	HARD	5	5	26	40	6370	NONELS	EAST VIEW POINT	800	1.905	88.0
27.5.2021	880 E	GRN	175	5.5	HARD	6	5	39	40	4950	NONELS	EAST VIEW POINT	600	0.889	102.8
27.5.2021	870 E	GRN	198	5.3	HARD	6	5	40	40	8000	NONELS	EAST VIEW POINT	600	0.889	107.5
27.5.2021	840 E	GRN	150	5.8	HARD	6	5	40	40	6100	NONELS	EAST VIEW POINT	700	1.143	88.0
29.5.2021	870 E	GRN	180	4.8	HARD	6	5	36	40	6580	NONELS	EAST VIEW POINT	600	0.762	88.0

29.5.2021	POB MW	GRN	167	2.9	HARD	5	5	15	40	2500	NONELS	EAST VIEW POINT	700	1.778	94.0
30.5.2021	890 M	GRN	162	5.5	HARD	6	5	40	40	6940	NONELS	EAST VIEW POINT	700	1.778	88.0

JUNE 2021																
Date	Location	Area	No. of Holes	Avg. Depth	Type of Burden	Spacing	Burden	Avg. Charge	Max. Charge	Total Charge	Initiation	Location	Distance in meters	PPV MM/Sec	AOP	Remarks
01.6.2021	830	GRN	144	5.5	HARD	6	5	40	40	6600	NONELS	EAST VIEW POINT	600	1.143	88.0	
02.6.2021	930	GRN	156	3.8	HARD	6	5	27	40	4315	NONELS	EAST VIEW POINT	900	0.477	88.0	
04.6.2021	870 E	GRN	150	5.8	HARD	6	5	40	40	6200	NONELS	EAST VIEW POINT	600	0.762	88.0	
04.6.2021	810 M	GRN	66	2.1	HARD	5	4	12	40	800	NONELS	EAST VIEW POINT	600	1.397	88.0	
04.6.2021	870 E	GRN	128	5.7	HARD	6	5	40	40	5300	NONELS	EAST VIEW POINT	600	1.143	88.0	
05.6.2021	880 E	GRN	118	5.8	HARD	6	5	40	40	4680	NONELS	EAST VIEW POINT	700	0.635	88.0	
05.6.2021	875 E	GRN	146	5.4	HARD	6	5	38	40	5600	NONELS	EAST VIEW POINT	700	0.508	88.0	
05.6.2021	875 E	GRN	168	5.6	HARD	6	5	40	40	6920	NONELS	EAST VIEW POINT	700	0.635	88.0	
06.6.2021	POB M	GRN	187	2.9	HARD	6	5	15	40	2920	NONELS	EAST VIEW POINT	800	0.762	88.0	
06.6.2021	870 WM	GRN	16	5.8	HARD	6	5	40	40	700	NONELS	EAST VIEW POINT	600	0.254	88.0	
08.6.2021	890 M	GRN	100	5.5	HARD	6	5	40	40	4000	NONELS	EAST VIEW POINT	700	0.889	109.9	
09.6.2021	880 M	GRN	105	5.2	HARD	6	5	36	40	3870	NONELS	EAST VIEW POINT	700	0.635	88.0	
09.6.2021	810 E	GRN	81	5.3	HARD	6	5	38	40	3108	NONELS	EAST VIEW POINT	700	0.635	95.9	
12.6.2021	920	GRN	112	3.4	HARD	6	5	38	40	3810	NONELS	EAST VIEW POINT	800	1.651	88.0	

19.7.2021	830 E	GRN	264	3.8	HARD	5	5	23	40	6000	NONELS	EAST VIEW POINT	600	0.635	88.00	
20.7.2021	920 W	GRN	315	3.9	HARD	6	5	26	40	8170	NONELS	EAST VIEW POINT	800	0.635	93.98	
28.7.2021	910 W	GRN	340	4.7	HARD	6	5	37	40	12870	NONELS	EAST VIEW POINT	800	0.381	88.00	
28.7.2021	830 E	GRN	187	5.5	HARD	6	5	39	40	7400	NONELS	EAST VIEW POINT	600	0.762	88.00	
29.7.2021	820 E	GRN	284	5.1	HARD	6	5	34	40	9780	NONELS	EAST VIEW POINT	600	0.985	91.48	
30.7.2021	820 E	GRN	160	5.6	HARD	5	4	36	40	5850	NONELS	EAST VIEW POINT	600	0.508	95.92	

AUGUST 2021																
Date	Location	Area	No. of Holes	Avg. Depth	Type of Burden	Spacing	Burden	Avg. Charge	Max. Charge	Total Charge	Initiation	Location	Distance in meters	PPV MM/Sec	AOP	Remarks
01.8.2021	920 W	GRN	142	5.4	HARD	6	5	37	40	5360	NONELS	EAST VIEW POINT	1000	0.762	101.90	
03.8.2021	920 W	GRN	86	4.8	HARD	6	5	34	40	2980	NONELS	EAST VIEW POINT	1000	0.635	91.48	
03.8.2021	820 E	GRN	100	5.4	HARD	6	5	40	40	4000	NONELS	EAST VIEW POINT	600	0.761	88.00	
07.8.2021	920 W	GRN	200	4.2	HARD	6	5	21	40	4300	NONELS	EAST VIEW POINT	1000	0.635	109.20	
07.8.2021	910 W	GRN	159	5.6	HARD	6	5	35	40	5700	NONELS	EAST VIEW POINT	1000	0.937	88.00	
10.8.2021	860 RL	GRN	180	4.2	HARD	6	5	40	40	4620	NONELS	EAST VIEW POINT	800	0.381	97.50	
14.8.2021	860 M	GRN	136	5.1	HARD	6	5	40	40	5200	NONELS	EAST VIEW POINT	600	0.508	104.20	
14.8.2021	860 M	GRN	145	5.3	HARD	6	5	40	40	5000	NONELS	EAST VIEW POINT	800	1.778	88.00	

SEPTEMBER 2021																
Date	Location	Area	No. of Holes	Avg. Depth	Type of Burden	Spacing	Burden	Avg. Charge	Max. Charge	Total Charge	Initiation	Location	Distance in meters	PPV MM/Sec	AOP	Remarks
12.9.2021	860 RL M	GRN	82	5.5	HARD	6	5	40	40	3460	NONELS	EAST VIEW POINT	700	0.635	88.00	
15.9.2021	860 RL	GRN	195	5.3	HARD	6	5	4	4	7800	NONELS	EAST VIEW POINT	800	1.651	88.00	
18.9.2021	870 RL M	GRN	110	3.9	HARD	6	5	37.8	40	4100	NONELS	EAST VIEW POINT	700	0.635	91.48	
18.9.2021	910 RL M	GRN	166	5.5	HARD	6	5	40	40	6790	NONELS	EAST VIEW POINT	800	0.635	95.98	
25.9.2021	920 RL	GRN	153	5.5	HARD	6	5	35	40	5400	NONELS	EAST VIEW POINT	700	0.635	117.80	
25.9.2021	850 W	GRN	200	5.4	HARD	6	5	40	40	6380	NONELS	EAST VIEW POINT	800	0.635	110.60	
27.9.2021	870 RL M	GRN	134	4.5	HARD	6	5	36	40	5440	NONELS	EAST VIEW POINT	800	1.016	91.48	
30.9.2021	910 RL	GRN	100	4.5	HARD	6	5	37	40	3900	NONELS	EAST VIEW POINT	600	0.635	91.48	

OCTOBER 2021																
Date	Location	Area	No. of Holes	Avg. Depth	Type of Burden	Spacing	Burden	Avg. Charge	Max. Charge	Total Charge	Initiation	Location	Distance in meters	PPV MM/Sec	AOP	Remarks
03.10.2021	880 RL	GRN	153	4.6	HARD	6	5	36	40	5640	NONELS	EAST VIEW POINT	600	0.762	88.00	
03.10.2021	920 RL	GRN	97	3.4	HARD	6	5	37	40	3590	NONELS	EAST VIEW POINT	700	0.381	88.00	
06.10.2021	870 RL	GRN	126	4.2	HARD	6	5	40	40	5090	NONELS	EAST VIEW POINT	800	0.635	104.20	
06.10.2021	920 RL	GRN	178	4.5	HARD	6	5	40	40	7100	NONELS	EAST VIEW POINT	800	0.254	91.48	
07.10.2021	840 RL	GRN	135	4.3	HARD	6	5	40	40	5310	NONELS	EAST VIEW POINT	600	0.254	91.48	
07.10.2021	840 RL E	GRN	150	4.5	HARD	6	5	40	40	6200	NONELS	EAST VIEW POINT	800	0.254	88.00	
08.10.2021	840 RL	GRN	190	4.8	HARD	6	5	40	40	7400	NONELS	EAST VIEW POINT	700	0.254	100.00	
08.10.2021	880 RL	GRN	90	4.5	HARD	6	5	37	40	3280	NONELS	EAST VIEW POINT	800	0.254	104.20	
08.10.2021	910 RL	GRN	200	5.0	HARD	6	5	40	40	7600	NONELS	EAST VIEW POINT	700	0.254	102.80	
09.10.2021	910 RL	GRN	148	4.5	HARD	6	5	40	40	5600	NONELS	EAST VIEW POINT	600	0.381	109.50	
09.10.2021	890 RL	GRN	141	4.3	HARD	6	5	40	40	5460	NONELS	EAST VIEW POINT	800	0.254	107.50	
09.10.2021	880 RL	GRN	100	3.5	HARD	6	5	37	40	3700	NONELS	EAST VIEW POINT	700	0.254	100.00	
11.10.2021	880 RL E	GRN	137	3.8	HARD	6	5	38	40	5170	NONELS	EAST VIEW POINT	700	1.254	100.00	

11.10.2021	910 RL W	GRN	171	4.3	HARD	6	5	40	40	40	6100	NONELS	EAST VIEW POINT	800	0.254	101.90	
11.10.2021	850 RL E	GRN	150	4.4	HARD	6	5	40	40	40	6200	NONELS	EAST VIEW POINT	600	0.635	118.60	
12.10.2021	870 RL E	GRN	150	3.5	HARD	6	5	40	40	40	6000	NONELS	EAST VIEW POINT	800	0.508	101.00	
12.10.2021	920 RL	GRN	140	3.3	HARD	6	5	38	40	40	5370	NONELS	EAST VIEW POINT	700	0.254	102.80	
17.10.2021	860 RL E	GRN	150	4.5	HARD	6	5	40	40	40	600	NONELS	EAST VIEW POINT	800	0.635	113.10	
17.10.2021	860 RL E	GRN	100	3.2	HARD	6	5	35	40	40	4000	NONELS	EAST VIEW POINT	600	0.635	108.60	
17.10.2021	860 RL M	GRN	168	4.4	HARD	6	5	40	40	40	6900	NONELS	EAST VIEW POINT	800	0.381	103.50	
18.10.2021	870 RL	GRN	133	4.2	HARD	6	5	39	40	40	6200	NONELS	EAST VIEW POINT	700	0.254	105.50	
18.10.2021	840 RL	GRN	165	4.5	HARD	6	5	40	40	40	6930	NONELS	EAST VIEW POINT	600	0.254	103.50	
18.10.2021	840 RL E	GRN	150	4.6	HARD	6	5	40	40	40	6200	NONELS	EAST VIEW POINT	800	0.254	104.90	
18.10.2021	900 RL	GRN	162	4.7	HARD	6	5	40	40	40	5530	NONELS	EAST VIEW POINT	700	0.254	100.00	
18.10.2021	870 RL E	GRN	130	4.5	HARD	6	5	40	40	40	6000	NONELS	EAST VIEW POINT	600	0.254	101.00	
19.10.2021	840 RL	GRN	150	4.7	HARD	6	5	40	40	40	6600	NONELS	EAST VIEW POINT	800	0.635	88.00	
19.10.2021	920 RL	GRN	117	4.5	HARD	6	5	40	40	40	4400	NONELS	EAST VIEW POINT	700	0.254	106.00	
19.10.2021	860 RL	GRN	193	5.2	HARD	6	5	40	40	40	6500	NONELS	EAST VIEW POINT	800	0.254	115.70	
20.10.2021	880 RL	GRN	140	4.5	HARD	6	5	39	40	40	6300	NONELS	EAST VIEW POINT	700	0.254	103.50	
20.10.2021	840 RL	GRN	142	4.7	HARD	6	5	40	40	40	5500	NONELS	EAST VIEW POINT	600	0.381	114.60	

22.10.2021	830 RL	GRN	142	4.7	HARD	6	5	35	40	4000	NONELS	EAST VIEW POINT	800	0.254	100.00
22.10.2021	830 RL	GRN	100	4.6	HARD	6	5	40	40	4190	NONELS	EAST VIEW POINT	600	0.381	109.20
22.10.2021	870 RL	GRN	150	5.0	HARD	6	5	40	40	6200	NONELS	EAST VIEW POINT	800	0.254	109.90
22.10.2021	860 RL	GRN	136	4.7	HARD	6	5	40	40	5900	NONELS	EAST VIEW POINT	700	0.381	116.90
23.10.2021	860 RL	GRN	162	5.0	HARD	6	5	40	40	6800	NONELS	EAST VIEW POINT	800	0.254	110.60
23.10.2021	860 RL	GRN	100	4.0	HARD	6	5	40	40	3570	NONELS	EAST VIEW POINT	700	0.254	102.80
23.10.2021	910 RL	GRN	107	4.5	HARD	6	5	40	40	3280	NONELS	EAST VIEW POINT	800	0.381	101.00
24.10.2021	910 RL	GRN	160	4.7	HARD	6	5	40	40	5700	NONELS	EAST VIEW POINT	700	0.254	102.80
24.10.2021	840 RL	GRN	77	4.9	HARD	6	5	40	40	3600	NONELS	EAST VIEW POINT	600	0.381	101.00
24.10.2021	910 RL	GRN	170	5.0	HARD	6	5	40	40	6000	NONELS	EAST VIEW POINT	800	0.254	101.00
24.10.2021	840 RL	GRN	100	5.0	HARD	6	5	40	40	4300	NONELS	EAST VIEW POINT	700	0.254	104.90
24.10.2021	840 RL	GRN	134	4.5	HARD	6	5	40	40	5860	NONELS	EAST VIEW POINT	600	0.254	101.90
25.10.2021	840 RL	GRN	118	4.7	HARD	6	5	40	40	4720	NONELS	EAST VIEW POINT	800	0.254	103.50
25.10.2021	840 RL	GRN	100	4.5	HARD	6	5	40	40	3960	NONELS	EAST VIEW POINT	700	0.254	113.80
25.10.2021	800 RL	GRN	94	4.6	HARD	6	5	35	40	2400	NONELS	EAST VIEW POINT	800	0.381	106.00
25.10.2021	870 RL M	GRN	150	4.8	HARD	6	5	40	40	5000	NONELS	EAST VIEW POINT	600	0.254	102.80
26.10.2021	860 RL	GRN	107	4.5	HARD	6	5	40	40	4260	NONELS	EAST VIEW POINT	700	0.254	104.20

26.10.2021	860 RL	GRN	100	4.7	HARD	6	5	35	40	4300	NONELS	EAST VIEW POINT	800	0.381	111.50	
26.10.2021	910 RL	GRN	98	4.5	HARD	6	5	36	40	3090	NONELS	EAST VIEW POINT	700	0.254	115.20	
26.10.2021	860 RL	GRN	100	4.7	HARD	6	5	40	40	4300	NONELS	EAST VIEW POINT	800	0.254	118.60	
27.10.2021	860 RL	GRN	100	4.7	HARD	6	5	40	40	4470	NONELS	EAST VIEW POINT	600	0.254	100.00	
27.10.2021	860 RL	GRN	100	4.7	HARD	6	5	40	40	4460	NONELS	EAST VIEW POINT	800	0.254	101.00	
27.10.2021	900 RL	GRN	167	4.8	HARD	6	5	40	40	4770	NONELS	EAST VIEW POINT	700	0.381	115.40	
27.10.2021	910 RL	GRN	95	4.5	HARD	6	5	40	40	3170	NONELS	EAST VIEW POINT	600	0.254	104.20	
27.10.2021	860 RL M	GRN	143	4.7	HARD	6	5	40	40	6430	NONELS	EAST VIEW POINT	800	0.254	101.90	
27.10.2021	860 RL	GRN	150	4.8	HARD	6	5	40	40	6750	NONELS	EAST VIEW POINT	600	0.254	102.80	
28.10.2021	920 RL	GRN	111	4.5	HARD	6	5	40	40	4440	NONELS	EAST VIEW POINT	700	0.254	101.90	
28.10.2021	920 RL	GRN	124	4.7	HARD	6	5	35	40	4980	NONELS	EAST VIEW POINT	800	0.762	113.30	
28.10.2021	860 RL	GRN	100	4.5	HARD	6	5	40	40	4000	NONELS	EAST VIEW POINT	600	0.254	100.00	
28.10.2021	860 RL	GRN	89	4.9	HARD	6	5	40	40	3930	NONELS	EAST VIEW POINT	700	0.254	104.90	
28.10.2021	860 RL	GRN	100	4.5	HARD	6	5	40	40	3200	NONELS	EAST VIEW POINT	600	0.254	118.30	
29.10.2021	840 RL E	GRN	100	5.0	HARD	6	5	40	40	4200	NONELS	EAST VIEW POINT	800	0.254	100.00	
29.10.2021	840 RL E	GRN	136	5.3	HARD	6	5	40	40	5570	NONELS	EAST VIEW POINT	600	0.254	101.00	
29.10.2021	840 RL E	GRN	100	5.5	HARD	6	5	38.5	40	4200	NONELS	EAST VIEW POINT	600	0.254	102.80	

30.10.2021	860 RL	GRN	150	5.5	HARD	6	5	40	40	5860	NONELS	EAST VIEW POINT	700	0.254	108.00	
30.10.2021	840 RL	GRN	115	5.6	HARD	6	5	40	40	4830	NONELS	EAST VIEW POINT	600	0.254	110.60	
30.10.2021	860 RL	GRN	106	5.7	HARD	6	5	40	40	4800	NONELS	EAST VIEW POINT	800	0.254	100.00	
31.10.2021	840 RL	GRN	100	4.5	HARD	6	5	40	40	4400	NONELS	EAST VIEW POINT	700	0.508	114.60	
31.10.2021	860 RL	GRN	100	5.6	HARD	6	5	40	40	4525	NONELS	EAST VIEW POINT	600	0.254	116.40	
31.10.2021	910 RL	GRN	150	5.8	HARD	6	5	39.5	40	6470	NONELS	EAST VIEW POINT	700	0.508	113.50	

NOVEMBER 2021																
Date	Location	Area	No. of Holes	Avg. Depth	Type of Burden	Spacing	Burden	Avg. Charge	Max. Charge	Total Charge	Initiation	Location	Distance in meters	PPV MM/Sec	AOP	Remarks
1.11.2021	910 RL	GRN	100	4.5	HARD	6	5	40	40	4200	NONELS	EAST VIEW POINT	600	0.254	88.00	
1.11.2021	840 RL	GRN	144	5.0	HARD	6	5	40	40	6340	NONELS	EAST VIEW POINT	700	0.254	117.60	
1.11.2021	880 RL	GRN	143	5.0	HARD	6	5	40	40	6400	NONELS	EAST VIEW POINT	600	0.254	100.00	
1.11.2021	910 RL	GRN	150	5.5	HARD	6	5	40	40	6480	NONELS	EAST VIEW POINT	700	0.635	88.00	
2.11.2021	910 RL W	GRN	140	5.7	HARD	6	5	40	40	6200	NONELS	EAST VIEW POINT	600	0.508	115.20	
2.11.2021	860 RL W	GRN	100	5.6	HARD	6	5	40	40	4500	NONELS	EAST VIEW POINT	600	0.254	102.80	
2.11.2021	840 RL	GRN	100	5.7	HARD	6	5	40	40	4100	NONELS	EAST VIEW POINT	700	0.254	112.00	
2.11.2021	910 RL	GRN	130	5.8	HARD	6	5	39	40	6000	NONELS	EAST VIEW POINT	700	0.254	117.40	
3.11.2021	860 RL	GRN	100	5.7	HARD	6	5	40	40	5500	NONELS	EAST VIEW POINT	700	0.508	109.20	
3.11.2021	870 RL	GRN	88	5.8	HARD	6	5	40	40	4200	NONELS	EAST VIEW POINT	600	0.254	101.00	
3.11.2021	840 RL	GRN	144	5.5	HARD	6	5	40	40	5970	NONELS	EAST VIEW POINT	700	0.381	108.80	
4.11.2021	860 RL	GRN	119	5.5	HARD	6	5	40	40	6020	NONELS	EAST VIEW POINT	600	0.254	101.00	
5.11.2021	860RL	GRN	80	5.7	HARD	6	5	40	40	4160	NONELS	EAST VIEW POINT	600	0.254	106.50	
5.11.2021	880 RL	GRN	137	4.8	HARD	6	5	40	40	6300	NONELS	EAST VIEW POINT	700	0.258	111.20	

6.11.2021	860 RL	GRN	100	4.9	HARD	6	5	40	40	40	4600	NONELS	POINT	600	0.381	119.80	
6.11.2021	840 RL	GRN	146	5.0	HARD	6	5	40	40	40	5980	NONELS	EAST VIEW POINT	600	0.254	119.80	
7.11.2021	850 RL	GRN	100	5.2	HARD	6	5	40	40	40	5000	NONELS	EAST VIEW POINT	700	0.635	108.80	
7.11.2021	840 RL	GRN	89	5.3	HARD	6	5	40	40	40	4200	NONELS	EAST VIEW POINT	600	0.508	91.48	
7.11.2021	900 RL	GRN	148	5.5	HARD	6	5	40	40	40	6700	NONELS	EAST VIEW POINT	600	0.762	101.00	
7.11.2021	910 RL	GRN	150	5.7	HARD	6	5	40	40	40	6000	NONELS	EAST VIEW POINT	600	0.635	98.84	
8.11.2021	910 RL	GRN	150	5.5	HARD	6	5	40	40	40	6500	NONELS	EAST VIEW POINT	600	0.254	100.00	
8.11.2021	850 RL	GRN	100	5.2	HARD	6	5	40	40	40	4600	NONELS	EAST VIEW POINT	700	0.254	103.50	
8.11.2021	840 RL	GRN	140	5.2	HARD	6	5	40	40	40	6020	NONELS	EAST VIEW POINT	600	0.254	115.90	
9.11.2021	900 RL	GRN	88	4.5	HARD	6	5	40	40	40	3770	NONELS	EAST VIEW POINT	800	0.254	110.90	
9.11.2021	880 RL	GRN	90	5.0	HARD	6	5	40	40	40	4300	NONELS	EAST VIEW POINT	700	0.240	111.50	
9.11.2021	870 RL	GRN	100	5.2	HARD	6	5	40	40	40	4600	NONELS	EAST VIEW POINT	800	0.254	118.70	
10.11.2021	910 RL	GRN	100	4.5	HARD	6	5	40	40	40	4200	NONELS	EAST VIEW POINT	600	0.254	100.00	
10.11.2021	840 RL	GRN	90	5.0	HARD	6	5	40	40	40	4020	NONELS	EAST VIEW POINT	700	0.254	101.00	
10.11.2021	910 RL	GRN	163	5.0	HARD	6	5	40	40	40	6610	NONELS	EAST VIEW POINT	600	0.254	106.50	
10.11.2021	860 RL	GRN	180	5.5	HARD	6	5	40	40	40	8100	NONELS	EAST VIEW POINT	700	0.254	107.00	

12.11.2021	900 RL	GRN	133	5.4	HARD	6	5	40	40	40	6000	NONELS	EAST VIEW POINT	800	0.254	101.00	
12.11.2021	930 RL	GRN	83	4.7	HARD	6	5	40	40	40	3250	NONELS	EAST VIEW POINT	600	0.254	108.80	
12.11.2021	840 RL	GRN	100	4.7	HARD	6	5	40	40	40	4400	NONELS	EAST VIEW POINT	600	0.254	102.80	
13.11.2021	930 RL	GRN	199	5.0	HARD	6	5	40	40	40	7880	NONELS	EAST VIEW POINT	600	0.762	97.50	
13.11.2021	840 RL	GRN	100	4.5	HARD	6	5	40	40	40	4350	NONELS	EAST VIEW POINT	600	0.580	114.40	
13.11.2021	880 RL	GRN	127	4.7	HARD	6	5	40	40	40	5390	NONELS	EAST VIEW POINT	800	0.254	110.20	
14.11.2021	890 RL	GRN	100	4.5	HARD	6	5	40	40	40	4280	NONELS	EAST VIEW POINT	800	0.381	112.60	
14.11.2021	840 RL	GRN	150	5.2	HARD	6	5	40	40	40	6200	NONELS	EAST VIEW POINT	600	0.381	113.10	
14.11.2021	910 RL	GRN	128	5.0	HARD	6	5	40	40	40	5600	NONELS	EAST VIEW POINT	600	0.254	104.90	
14.11.2021	870 RL	GRN	122	5.0	HARD	6	5	40	40	40	6100	NONELS	EAST VIEW POINT	700	0.254	100.00	
15.11.2021	850 RL	GRN	100	5.2	HARD	6	5	40	40	40	4300	NONELS	EAST VIEW POINT	600	0.381	108.00	
15.11.2021	860 RL	GRN	200	5.5	HARD	6	5	40	40	40	5400	NONELS	EAST VIEW POINT	600	0.254	100.00	
15.11.2021	830 RL	GRN	181	5.2	HARD	6	5	40	40	40	6430	NONELS	EAST VIEW POINT	700	0.254	101.90	
15.11.2021	870 RL	GRN	200	5.5	HARD	6	5	40	40	40	5610	NONELS	EAST VIEW POINT	600	0.254	113.80	
16.11.2021	860 RL	GRN	150	5.3	HARD	6	5	40	40	40	6000	NONELS	EAST VIEW POINT	600	0.381	103.50	
16.11.2021	850 RL	GRN	140	5.0	HARD	6	5	40	40	40	5890	NONELS	EAST VIEW POINT	600	0.254	102.80	
16.11.2021	930 RL	GRN	103	4.7	HARD	6	5	40	40	40	3500	NONELS	EAST VIEW POINT	700	0.254	101.00	

16.11.2021	910 RL	GRN	189	5.5	HARD	6	5	40	40	7510	NONELS	EAST VIEW POINT	600	0.381	109.20
18.11.2021	890 RL	GRN	125	4.9	HARD	6	5	40	40	6000	NONELS	EAST VIEW POINT	600	0.381	102.80
18.11.2021	840 RL	GRN	100	4.5	HARD	6	5	40	40	3900	NONELS	EAST VIEW POINT	600	0.381	113.80
18.11.2021	890 RL	GRN	120	5.0	HARD	6	5	40	40	5600	NONELS	EAST VIEW POINT	600	0.254	111.80
18.11.2021	830 RL	GRN	152	4.7	HARD	6	5	40	40	5660	NONELS	EAST VIEW POINT	600	0.381	111.20
19.11.2021	860 RL	GRN	100	4.5	HARD	6	5	40	40	5200	NONELS	EAST VIEW POINT	700	0.254	100.00
19.11.2021	890 RL	GRN	124	4.7	HARD	6	5	40	40	4810	NONELS	EAST VIEW POINT	700	0.254	102.80
19.11.2021	830 RL	GRN	147	5.1	HARD	6	5	40	40	6110	NONELS	EAST VIEW POINT	700	0.254	104.90
19.11.2021	930 RL	GRN	100	4.5	HARD	6	5	40	40	4310	NONELS	EAST VIEW POINT	600	0.254	101.00
20.11.2021	850 RL	GRN	150	5.3	HARD	6	5	40	40	6400	NONELS	EAST VIEW POINT	600	0.254	101.00
20.11.2021	880 RL	GRN	137	5.0	HARD	6	5	40	40	5000	NONELS	EAST VIEW POINT	600	0.254	114.60
22.11.2021	910 RL	GRN	110	5.0	HARD	6	5	40	40	4880	NONELS	EAST VIEW POINT	600	0.381	109.50
22.11.2021	840 RL	GRN	100	4.9	HARD	6	5	40	40	4400	NONELS	EAST VIEW POINT	600	0.240	100.00
23.11.2021	930 RL	GRN	160	5.2	HARD	6	5	40	40	4480	NONELS	EAST VIEW POINT	700	0.254	100.00
23.11.2021	900 RL	GRN	120	5.5	HARD	6	5	40	40	5400	NONELS	EAST VIEW POINT	700	0.254	101.90
23.11.2021	830 RL	GRN	166	5.6	HARD	6	5	40	40	6900	NONELS	EAST VIEW POINT	600	0.254	107.00
24.11.2021	820 RL	GRN	100	5.5	HARD	6	5	40	40	4300	NONELS	EAST VIEW POINT	600	0.889	91.48

24.11.2021	830 RL	GRN	129	5.6	HARD	6	5	40	40	60	NONELS	EAST VIEW POINT	600	0.635	118.10	
25.11.2021	890 RL	GRN	100	5.7	HARD	6	5	40	40	4250	NONELS	EAST VIEW POINT	600	0.254	101.90	
25.11.2021	850 RL	GRN	131	5.0	HARD	6	5	40	40	5200	NONELS	EAST VIEW POINT	600	0.254	102.80	
25.11.2021	890 RL	GRN	100	5.0	HARD	6	5	40	40	4200	NONELS	EAST VIEW POINT	600	0.254	100.00	
25.11.2021	890 RL	GRN	131	5.5	HARD	6	5	40	40	5200	NONELS	EAST VIEW POINT	600	0.254	104.90	
25.11.2021	890 RL	GRN	70	5.6	HARD	6	5	40	40	3050	NONELS	EAST VIEW POINT	700	0.254	103.50	
26.11.2021	890 RL	GRN	140	5.5	HARD	6	5	40	40	6200	NONELS	EAST VIEW POINT	600	0.254	100.00	
26.11.2021	830 RL	GRN	120	5.0	HARD	6	5	40	40	4890	NONELS	EAST VIEW POINT	600	0.254	104.90	
26.11.2021	850 RL	GRN	100	5.7	HARD	6	5	40	40	3180	NONELS	EAST VIEW POINT	600	0.254	106.00	
27.11.2021	910 RL	GRN	150	5.0	HARD	6	5	40	40	6000	NONELS	EAST VIEW POINT	600	0.254	101.90	
27.11.2021	860 RL	GRN	100	5.5	HARD	6	5	40	40	4200	NONELS	EAST VIEW POINT	800	0.254	103.50	
28.11.2021	890 RL	GRN	139	5.5	HARD	6	5	40	40	5970	NONELS	EAST VIEW POINT	700	0.254	111.20	
28.11.2021	860 RL	GRN	100	5.0	HARD	6	5	40	40	4000	NONELS	EAST VIEW POINT	800	0.254	103.50	
29.11.2021	840 RL	GRN	10	5.7	HARD	6	5	40	40	4200	NONELS	EAST VIEW POINT	700	0.254	101.50	
29.11.2021	920 RL	GRN	150	5.5	HARD	6	5	40	40	4900	NONELS	EAST VIEW POINT	800	0.254	104.50	
29.11.2021	840 RL	GRN	134	5.7	HARD	6	5	40	40	5840	NONELS	EAST VIEW POINT	700	0.254	115.60	
30.11.2021	920 RL	GRN	150	5.6	HARD	6	5	40	40	4900	NONELS	EAST VIEW POINT	600	0.254	104.20	

30.11.2021	860 RL	GRN	110	5.6	HARD	6	5	40	40	4400	NONELS	EAST VIEW POINT	600	0.254	106.00
30.11.2021	900 RL	GRN	70	5.8	HARD	6	5	40	40	3010	NONELS	EAST VIEW POINT	700	0.254	110.20

DECEMBER 2021																
Date	Location	Area	No. of Holes	Avg. Depth	Type of Burden	Spacing	Burden	Avg. Charge	Max. Charge	Total Charge	Initiation	Location	Distance in meters	PPV MM/Sec	AOP	Remarks
1.12.2021	890 RL	GRN	156	5.4	HARD	6	5	40	40	5060	NONELS	EAST VIEW POINT	700	0.254	100.00	
1.12.2021	810 RL	GRN	100	5.5	HARD	6	5	40	40	3490	NONELS	EAST VIEW POINT	800	0.254	104.20	
2.12.2021	860 RL	GRN	100	5.0	HARD	6	5	40	40	4500	NONELS	EAST VIEW POINT	700	0.508	95.92	
2.12.2021	860 RL	GRN	116	5.5	HARD	6	5	40	40	5100	NONELS	EAST VIEW POINT	900	0.381	101.50	
2.12.2021	890 RL	GRN	150	5.6	HARD	6	5	40	40	5800	NONELS	EAST VIEW POINT	800	0.254	101.90	
3.12.2021	810 RL	GRN	127	5.7	HARD	6	5	40	40	5660	NONELS	EAST VIEW POINT	700	0.381	109.20	
3.12.2021	840 RL	GRN	60	5.7	HARD	6	5	40	40	2640	NONELS	EAST VIEW POINT	800	0.254	113.10	
4.12.2021	860 RL	GRN	100	5.7	HARD	6	5	39	40	4500	NONELS	EAST VIEW POINT	700	0.762	88.00	
4.12.2021	860 RL	GRN	80	5.0	HARD	6	5	40	40	3080	NONELS	EAST VIEW POINT	600	0.254	101.00	
4.12.2021	860 RL	GRN	150	5.3	HARD	6	5	40	40	5500	NONELS	EAST VIEW POINT	800	0.254	103.50	
4.12.2021	900 RL	GRN	120	5.0	HARD	6	5	40	40	4500	NONELS	EAST VIEW POINT	700	0.254	102.80	
6.12.2021	880 RL	GRN	112	4.7	HARD	6	5	40	40	4100	NONELS	EAST VIEW POINT	600	0.254	103.50	
6.12.2021	810 RL	GRN	160	4.5	HARD	6	5	40	40	4000	NONELS	EAST VIEW POINT	800	0.762	98.84	

6.12.2021	880 RL	GRN	120	5.1	HARD	6	5	40	40	40	4200	NONELS	EAST VIEW POINT	600	0.508	97.50	
8.12.2021	860 RL	GRN	145	5.2	HARD	6	5	40	40	40	4970	NONELS	EAST VIEW POINT	700	0.508	105.50	
10.12.2021	860 RL	GRN	140	5.0	HARD	6	5	40	40	40	6100	NONELS	EAST VIEW POINT	800	0.254	100.00	
10.12.2021	870 RL	GRN	135	5.1	HARD	6	5	40	40	40	5800	NONELS	EAST VIEW POINT	700	0.254	101.00	
11.12.2021	840 RL	GRN	135	5.1	HARD	6	5	40	40	40	5600	NONELS	EAST VIEW POINT	800	0.254	101.90	
11.12.2021	870 RL	GRN	174	5.4	HARD	6	5	40	40	40	6800	NONELS	EAST VIEW POINT	700	0.254	106.50	
12.12.2021	860 RL	GRN	150	5.0	HARD	6	5	40	40	40	6750	NONELS	EAST VIEW POINT	600	0.254	107.00	
12.12.2021	880 RL	GRN	122	5.1	HARD	6	5	40	40	40	4800	NONELS	EAST VIEW POINT	600	0.381	117.60	
13.12.2021	840 RL	GRN	105	4.2	HARD	6	5	40	40	40	3800	NONELS	EAST VIEW POINT	800	0.254	107.50	
13.12.2021	930 RL	GRN	78	4.7	HARD	6	5	40	40	40	2630	NONELS	EAST VIEW POINT	700	0.254	106.00	
14.12.2021	910 RL	GRN	200	5.5	HARD	6	5	40	40	40	6400	NONELS	EAST VIEW POINT	800	0.254	106.50	
14.12.2021	850 RL	GRN	125	4.8	HARD	6	5	40	40	40	4900	NONELS	EAST VIEW POINT	600	0.254	114.20	
14.12.2021	810 RL	GRN	119	4.9	HARD	6	5	40	40	40	4100	NONELS	EAST VIEW POINT	700	0.254	115.60	
15.12.2021	880 RL	GRN	150	5.2	HARD	6	5	40	40	40	6500	NONELS	EAST VIEW POINT	600	0.254	101.00	
15.12.2021	810 RL	GRN	200	5.5	HARD	6	5	40	40	40	7040	NONELS	EAST VIEW POINT	800	0.254	102.80	
15.12.2021	850 RL	GRN	100	5.5	HARD	6	5	40	40	40	4300	NONELS	EAST VIEW POINT	800	0.254	104.90	
16.12.2021	910 RL	GRN	100	5.7	HARD	6	5	40	40	40	2300	NONELS	EAST VIEW POINT	600	0.381	114.40	

16.12.2021	910 RL	GRN	168	5.5	HARD	6	5	40	40	40	3190	NONELS	EAST VIEW POINT	700	0.381	119.70	
17.12.2021	880 RL	GRN	150	5.7	HARD	6	5	40	40	40	6200	NONELS	EAST VIEW POINT	600	0.254	100.00	
17.12.2021	860 RL	GRN	100	5.6	HARD	6	5	40	40	40	4200	NONELS	EAST VIEW POINT	700	0.254	101.00	
17.12.2021	840 RL	GRN	99	5.4	HARD	6	5	40	40	40	3400	NONELS	EAST VIEW POINT	800	0.254	106.00	
17.12.2021	850 RL	GRN	150	5.5	HARD	6	5	40	40	40	6000	NONELS	EAST VIEW POINT	700	0.254	104.90	
17.12.2021	850 RL	GRN	100	5.4	HARD	6	5	40	40	40	4000	NONELS	EAST VIEW POINT	700	0.254	104.20	
18.12.2021	930 RL	GRN	100	5.4	HARD	6	5	40	40	40	4200	NONELS	EAST VIEW POINT	700	0.254	102.80	
18.12.2021	840 RL	GRN	126	5.5	HARD	6	5	39.4	40	40	4970	NONELS	EAST VIEW POINT	600	0.254	101.90	
18.12.2021	800 RL	GRN	148	4.5	HARD	6	5	30	40	40	4400	NONELS	EAST VIEW POINT	600	0.254	102.80	
18.12.2021	930 RL	GRN	100	4.5	HARD	6	5	36.4	40	40	3640	NONELS	EAST VIEW POINT	700	0.254	100.00	
19.12.2021	900 RL	GRN	150	4.5	HARD	6	5	35.3	40	40	5300	NONELS	EAST VIEW POINT	600	0.254	101.90	
19.12.2021	930 RL	GRN	130	4.7	HARD	6	5	40	40	40	5200	NONELS	EAST VIEW POINT	600	0.254	100.00	
19.12.2021	930 RL	GRN	145	4.6	HARD	6	5	40	40	40	5800	NONELS	EAST VIEW POINT	700	0.254	101.00	
19.12.2021	930 RL	GRN	125	4.7	HARD	6	5	37.6	40	40	4700	NONELS	EAST VIEW POINT	600	0.254	107.00	
19.12.2021	880 RL	GRN	158	5.5	HARD	6	5	40	40	40	6300	NONELS	EAST VIEW POINT	600	0.254	102.80	
21.12.2021	930 RL	GRN	129	4.0	HARD	6	5	30	40	40	3520	NONELS	EAST VIEW POINT	600	0.254	106.00	
21.12.2021	920 RL	GRN	144	4.5	HARD	6	5	31.5	40	40	4500	NONELS	EAST VIEW POINT	700	0.254	100.00	

21.12.2021	900 RL	GRN	150	5.5	HARD	6	5	40	40	40	6000	NONELS	EAST VIEW POINT	800	0.254	105.50	
21.12.2021	890 RL	GRN	115	5.7	HARD	6	5	40	40	40	4600	NONELS	EAST VIEW POINT	700	0.254	104.20	
21.12.2021	840 RL	GRN	135	5.6	HARD	6	5	40	40	40	5100	NONELS	EAST VIEW POINT	800	0.254	105.50	
22.12.2021	840 RL	GRN	150	5.6	HARD	6	5	40	40	40	6300	NONELS	EAST VIEW POINT	800	0.254	101.00	
22.12.2021	880 RL	GRN	136	5.5	HARD	6	5	40	40	40	5900	NONELS	EAST VIEW POINT	700	0.508	108.00	
23.12.2021	890 RL	GRN	192	4.2	HARD	6	5	31	40	40	5850	NONELS	EAST VIEW POINT	800	0.254	101.90	
24.12.2021	920 RL	GRN	160	4.3	HARD	6	5	32	40	40	5100	NONELS	EAST VIEW POINT	900	0.254	101.90	
24.12.2021	870 RL	GRN	175	5.5	HARD	6	5	40	40	40	7000	NONELS	EAST VIEW POINT	700	0.381	106.50	
25.12.2021	870 RL	GRN	91	5.6	HARD	6	5	40	40	40	3800	NONELS	EAST VIEW POINT	700	0.254	106.50	
25.12.2021	840 RL	GRN	184	5.7	HARD	6	5	40	40	40	8000	NONELS	EAST VIEW POINT	800	0.254	106.00	
25.12.2021	920 RL	GRN	150	5.7	HARD	6	5	40	40	40	6000	NONELS	EAST VIEW POINT	800	0.254	101.00	
26.12.2021	870 RL	GRN	57	5.7	HARD	6	5	40	40	40	2390	NONELS	EAST VIEW POINT	900	0.254	101.90	
26.12.2021	840 RL	GRN	150	5.7	HARD	6	5	40	40	40	6000	NONELS	EAST VIEW POINT	700	0.254	101.00	
27.12.2021	920 RL	GRN	142	5.8	HARD	6	5	40	40	40	5700	NONELS	EAST VIEW POINT	800	0.254	101.90	
27.12.2021	900 RL	GRN	167	5.6	HARD	6	5	39	40	40	6400	NONELS	EAST VIEW POINT	900	0.254	103.50	
27.12.2021	870 RL	GRN	57	5.0	HARD	6	5	32	40	40	1800	NONELS	EAST VIEW POINT	800	0.254	104.90	
28.12.2021	840 RL	GRN	150	5.7	HARD	6	5	40	40	40	6400	NONELS	EAST VIEW POINT	900	0.254	101.90	

30.12.2021	870 RL	GRN	130	5.8	HARD	6	5	40	40	6300	NONELS	EAST VIEW POINT	800	0.254	110.00	
31.12.2021	840 RL	GRN	118	5.8	HARD	6	5	40	40	4990	NONELS	EAST VIEW POINT	800	0.254	100.00	

JANUARY 2022																
Date	Location	Area	No. of Holes	Avg. Depth	Type of Burden	Spacing	Burden	Avg. Charge	Max. Charge	Total Charge	Initiation	Location	Distance in meters	PPV MM/Sec	AOP	Remarks
01.01.2022	930 RL	GRN	125	4.5	HARD	6	5	35	40	4000	NONELS	EAST VIEW POINT	900	0.254	111.50	
01.01.2022	830 RL	GRN	120	5.7	HARD	6	5	40	40	5100	NONELS	EAST VIEW POINT	700	0.254	112.30	
02.01.2022	870 RL	GRN	136	5.7	HARD	6	5	40	40	5500	NONELS	EAST VIEW POINT	600	0.762	111.20	
02.01.2022	870 RL	GRN	100	5.7	HARD	6	5	40	40	4000	NONELS	EAST VIEW POINT	600	0.254	103.50	
03.01.2022	850 RL	GRN	100	5.7	HARD	6	5	40	40	4400	NONELS	EAST VIEW POINT	800	0.254	103.50	
04.01.2022	860 RL	GRN	125	5.5	HARD	6	5	40	40	4820	NONELS	EAST VIEW POINT	700	0.254	113.10	
04.01.2022	890 RL	GRN	35	5.5	HARD	6	5	40	40	1500	NONELS	EAST VIEW POINT	800	0.254	111.50	
04.01.2022	830 RL	GRN	100	5.8	HARD	6	5	40	40	4000	NONELS	EAST VIEW POINT	900	0.254	113.50	
05.01.2022	840 RL	GRN	120	5.8	HARD	6	5	40	40	5500	NONELS	EAST VIEW POINT	800	0.762	88.00	
05.01.2022	810 RL	GRN	137	5.5	HARD	6	5	38	40	5190	NONELS	EAST VIEW POINT	900	0.889	88.00	
05.01.2022	840 RL	GRN	125	5.8	HARD	6	5	40	40	5000	NONELS	EAST VIEW POINT	800	0.254	101.90	
05.01.2022	910 RL	GRN	100	5.2	HARD	6	5	38	40	3800	NONELS	EAST VIEW POINT	900	0.254	101.00	

06.01.2022	860 RL	GRN	147	5.6	HARD	6	5	40	40	40	6010	NONELS	EAST VIEW POINT	800	0.254	100.00	
06.01.2022	830 RL	GRN	150	5.8	HARD	6	5	40	40	40	6140	NONELS	EAST VIEW POINT	900	0.254	101.90	
06.01.2022	830 RL	GRN	110	5.6	HARD	6	5	40	40	40	4300	NONELS	EAST VIEW POINT	800	0.254	101.90	
08.01.2022	880 RL	GRN	114	5.7	HARD	6	5	40	40	40	4200	NONELS	EAST VIEW POINT	900	0.254	100.00	
08.01.2022	800 RL	GRN	120	5.6	HARD	6	5	40	40	40	4530	NONELS	EAST VIEW POINT	800	0.254	102.80	
09.01.2022	850 RL	GRN	150	5.8	HARD	6	5	40	40	40	6000	NONELS	EAST VIEW POINT	900	0.635	97.50	
09.01.2022	850 RL	GRN	142	5.8	HARD	6	5	40	40	40	5800	NONELS	EAST VIEW POINT	800	0.254	101.90	
09.01.2022	930 RL	GRN	109	5.5	HARD	6	5	40	40	40	4000	NONELS	EAST VIEW POINT	700	0.254	101.00	
09.01.2022	830 RL	GRN	185	5.6	HARD	6	5	40	40	40	7290	NONELS	EAST VIEW POINT	800	0.254	103.50	
10.01.2022	890 RL	GRN	123	5.7	HARD	6	5	40	40	40	5140	NONELS	EAST VIEW POINT	800	0.254	100.00	
10.01.2022	830 RL	GRN	128	5.7	HARD	6	5	40	40	40	5700	NONELS	EAST VIEW POINT	900	0.254	101.00	
14.01.2022	850 RL	GRN	100	5.7	HARD	6	5	40	40	40	4200	NONELS	EAST VIEW POINT	800	0.254	101.90	
14.01.2022	830 RL	GRN	150	5.7	HARD	6	5	40	40	40	6800	NONELS	EAST VIEW POINT	900	0.254	100.00	
15.01.2022	880 RL	GRN	160	5.5	HARD	6	5	39	40	40	6100	NONELS	EAST VIEW POINT	600	0.254	101.00	
16.01.2022	840 RL	GRN	140	5.7	HARD	6	5	40	40	40	4300	NONELS	EAST VIEW POINT	700	0.254	108.00	
17.01.2022	910 RL	GRN	100	3.8	HARD	6	5	30	40	40	3000	NONELS	EAST VIEW POINT	700	0.254	104.90	

17.01.2022	880 RL	GRN	120	5.3	HARD	6	5	36.7	40	4400	NONELS	EAST VIEW POINT	800	0.508	108.80	
18.01.2022	870 RL	GRN	95	4.5	HARD	6	5	38.8	40	3680	NONELS	EAST VIEW POINT	900	0.524	100.00	
18.01.2022	830 RL	GRN	140	5.0	HARD	6	5	39.5	40	5500	NONELS	EAST VIEW POINT	1000	0.254	102.80	
18.01.2022	870 RL	GRN	138	5.4	HARD	6	5	40	40	5600	NONELS	EAST VIEW POINT	900	0.254	101.00	
18.01.2022	880 RL	GRN	115	4.8	HARD	6	5	38	40	4350	NONELS	EAST VIEW POINT	800	0.254	101.90	
19.01.2022	830 RL	GRN	140	5.5	HARD	6	5	40	40	4000	NONELS	EAST VIEW POINT	1000	0.254	103.50	
19.01.2022	870 RL	GRN	125	5.4	HARD	6	5	39	40	4850	NONELS	EAST VIEW POINT	900	0.254	113.30	
20.01.2022	870 RL	GRN	183	5.0	HARD	6	5	39	40	6920	NONELS	EAST VIEW POINT	900	0.508	88.00	
20.01.2022	830 RL	GRN	115	5.0	HARD	6	5	37	40	4280	NONELS	EAST VIEW POINT	1000	0.889	88.00	
20.01.2022	830 RL	GRN	175	5.5	HARD	6	5	40	40	7000	NONELS	EAST VIEW POINT	1000	0.381	88.00	
21.01.2022	830 RL	GRN	95	5.6	HARD	6	5	40	40	4000	NONELS	EAST VIEW POINT	900	0.381	88.00	
22.01.2022	830 RL	GRN	152	4.5	HARD	6	5	36.2	40	5490	NONELS	EAST VIEW POINT	900	0.254	100.00	
22.01.2022	910 RL	GRN	100	4.7	HARD	6	5	37.5	40	3750	NONELS	EAST VIEW POINT	1000	0.254	101.90	
22.02.2022	830 RL	GRN	132	5.5	HARD	6	5	40	40	5800	NONELS	EAST VIEW POINT	900	0.254	102.80	
23.01.2022	870 RL	GRN	114	5.6	HARD	6	5	40	40	5200	NONELS	EAST VIEW POINT	800	0.254	101.90	
23.01.2022	870 RL	GRN	138	5.7	HARD	6	5	40	40	6000	NONELS	EAST VIEW POINT	800	0.254	101.00	
23.01.2022	850 RL	GRN	70	5.7	HARD	6	5	40	40	2970	NONELS	EAST VIEW POINT	700	0.254	105.00	

25.01.2022	880 RL	GRN	156	5.5	HARD	6	5	40	40	6110	NONELS	EAST VIEW POINT	800	0.254	100.00
25.01.2022	820 RL	GRN	100	5.0	HARD	6	5	36.4	40	3640	NONELS	EAST VIEW POINT	1000	0.254	107.00
26.01.2022	830 RL	GRN	100	5.7	HARD	6	5	40	40	4240	NONELS	EAST VIEW POINT	900	0.381	108.8
26.01.2022	830 RL	GRN	100	5.7	HARD	6	5	40	40	4240	NONELS	EAST VIEW POINT	900	0.635	88.0
27.01.2022	920 RL	GRN	100	5.5	HARD	6	5	39	40	3900	NONELS	EAST VIEW POINT	1000	0.254	101.9
27.01.2022	910 RL	GRN	135	4.5	HARD	6	5	36.3	40	4910	NONELS	EAST VIEW POINT	900	0.254	100.0
27.01.2022	830 RL	GRN	150	5.7	HARD	6	5	40	40	6000	NONELS	EAST VIEW POINT	1000	0.254	102.8
27.01.2022	830 RL	GRN	135	5.6	HARD	6	5	40	40	5900	NONELS	EAST VIEW POINT	1000	0.254	101.9
28.01.2022	890 RL	GRN	130	5.0	HARD	6	5	36.5	40	4800	NONELS	EAST VIEW POINT	700	0.254	100.0
28.01.2022	830 RL	GRN	96	5.7	HARD	6	5	40	40	4000	NONELS	EAST VIEW POINT	1000	0.254	101.9
28.01.2022	890 RL	GRN	135	5.5	HARD	6	5	40	40	4900	NONELS	EAST VIEW POINT	700	0.254	98.8
31.01.2022	880 RL	GRN	143	5.7	HARD	6	5	40	40	5800	NONELS	EAST VIEW POINT	900	0.254	101.9

FEBRUARY 2022																
Date	Location	Area	No. of Holes	Avg. Depth	Type of Burden	Spacing	Burden	Avg. Charge	Max. Charge	Total Charge	Initiation	Location	Distance in meters	PPV MM/Sec	AOP	Remarks
02.02.2022	820 RL	GRN	106	5.5	HARD	6	5	40	40	4380	NONELS	EAST VIEW POINT	600	0.381	109.20	
02.02.2022	840 RL	GRN	176	5.0	HARD	6	5	39.7	40	7000	NONELS	EAST VIEW POINT	500	0.254	100.00	
02.02.2022	830 RL	GRN	150	5.7	HARD	6	5	40	40	6450	NONELS	EAST VIEW POINT	600	0.254	103.50	
03.02.2022	860 RL	GRN	148	5.5	HARD	6	5	39.1	40	5800	NONELS	EAST VIEW POINT	800	0.254	101.90	
03.02.2022	830 RL	GRN	130	5.8	HARD	6	5	40	40	5700	NONELS	EAST VIEW POINT	600	0.254	103.50	
03.02.2022	850 RL	GRN	90	5.6	HARD	6	5	40	40	3800	NONELS	EAST VIEW POINT	700	0.254	101.00	
03.02.2022	820 RL	GRN	75	5.7	HARD	6	5	40	40	3000	NONELS	EAST VIEW POINT	600	0.254	102.80	
04.02.2022	800 RL	GRN	157	5.8	HARD	6	5	40	40	6500	NONELS	EAST VIEW POINT	900	0.254	100.00	
04.02.2022	890 RL	GRN	139	5.5	HARD	6	5	40	40	5400	NONELS	EAST VIEW POINT	1000	0.254	103.50	
04.02.2022	800 RL	GRN	80	5.7	HARD	6	5	40	40	3600	NONELS	EAST VIEW POINT	900	0.254	101.90	
06.02.2022	870 RL	GRN	157	5.5	HARD	6	5	40	40	6400	NONELS	EAST VIEW POINT	700	0.254	101.00	
06.02.2022	830 RL	GRN	163	5.6	HARD	6	5	40	40	6500	NONELS	EAST VIEW POINT	600	0.254	101.90	
07.02.2022	820 RL	GRN	110	5.5	HARD	6	5	40	40	4460	NONELS	EAST VIEW POINT	600	0.635	88.00	
08.02.2022	820 RL	GRN	103	5.4	HARD	6	5	40	40	4600	NONELS	EAST VIEW POINT	600	0.254	101.00	

08.02.2022	820 RL	GRN	100	5.8	HARD	6	5	40	40	40	4000	NONELS	EAST VIEW POINT	600	0.254	100.00	
08.02.2022	800 RL	GRN	125	5.6	HARD	6	5	40	40	40	5100	NONELS	EAST VIEW POINT	800	0.254	101.90	
09.02.2022	820 RL	GRN	100	5.5	HARD	6	5	40	40	40	3950	NONELS	EAST VIEW POINT	600	0.254	101.00	
09.02.2022	870 RL	GRN	128	5.0	HARD	6	5	40	40	40	5500	NONELS	EAST VIEW POINT	700	0.254	102.80	
10.02.2022	870 RL	GRN	120	5.0	HARD	6	5	40	40	40	4800	NONELS	EAST VIEW POINT	800	0.254	103.50	
14.02.2022	800 RL	GRN	115	5.7	HARD	6	5	40	40	40	4580	NONELS	EAST VIEW POINT	900	0.254	101.90	
14.02.2022	860 RL	GRN	89	5.5	HARD	6	5	40	40	40	3470	NONELS	EAST VIEW POINT	600	0.254	101.00	
15.02.2022	860 RL	GRN	95	5.4	HARD	6	5	40	40	40	3800	NONELS	EAST VIEW POINT	600	0.254	101.00	
15.02.2022	830 RL	GRN	125	5.5	HARD	6	5	40	40	40	5000	NONELS	EAST VIEW POINT	600	0.254	102.80	
16.02.2022	870 RL	GRN	125	5.6	HARD	6	5	40	40	40	5150	NONELS	EAST VIEW POINT	600	0.254	101.00	
17.02.2022	860 RL	GRN	127	5.7	HARD	6	5	40	40	40	5142	NONELS	EAST VIEW POINT	500	0.254	101.90	
17.02.2022	830 RL	GRN	96	5.8	HARD	6	5	40	40	40	3950	NONELS	EAST VIEW POINT	500	0.254	100.00	
17.02.2022	870 RL	GRN	100	5.6	HARD	6	5	40	40	40	4000	NONELS	EAST VIEW POINT	600	0.254	102.80	
17.02.2022	860 RL	GRN	127	5.7	HARD	6	5	40	40	40	5142	NONELS	EAST VIEW POINT	500	0.254	101.00	
19.02.2022	860 RL	GRN	130	5.6	HARD	6	5	40	40	40	5150	NONELS	EAST VIEW POINT	500	0.254	101.90	
19.02.2022	920 RL	GRN	135	5.7	HARD	6	5	40	40	40	5370	NONELS	EAST VIEW POINT	700	0.254	100.00	
19.02.2022	800 RL	GRN	170	5.3	HARD	6	5	39.5	40	40	7500	NONELS	EAST VIEW POINT	800	0.254	102.80	

19.02.2022	930 RL	GRN	95	5.7	HARD	6	5	40	40	3800	NONELS	EAST VIEW POINT	800	0.764	98.84	
20.02.2022	850 RL	GRN	125	5.7	HARD	6	5	40	40	5110	NONELS	EAST VIEW POINT	800	0.254	100.00	
20.02.2022	830 RL	GRN	120	5.6	HARD	6	5	40	40	4300	NONELS	EAST VIEW POINT	500	0.254	11.00	
20.02.2022	810 RL	GRN	95	5.7	HARD	6	5	40	40	3680	NONELS	EAST VIEW POINT	600	0.254	102.80	
20.02.2022	910 RL	GRN	140	5.6	HARD	6	5	40	40	5700	NONELS	EAST VIEW POINT	700	0.254	101.00	
25.02.2022	830 RL	GRN	145	5.6	HARD	6	5	40	40	5860	NONELS	EAST VIEW POINT	600	0.254	100.00	
25.02.2022	800 RL	GRN	120	5.5	HARD	6	5	40	40	4720	NONELS	EAST VIEW POINT	500	0.254	101.00	
26.02.2022	850 RL	GRN	175	5.6	HARD	6	5	40	40	7500	NONELS	EAST VIEW POINT	500	0.254	100.00	
26.02.2022	800 RL	GRN	190	5.7	HARD	6	5	40	40	7800	NONELS	EAST VIEW POINT	600	0.254	102.80	
26.02.2022	820 RL	GRN	110	5.8	HARD	6	5	40	40	4300	NONELS	EAST VIEW POINT	600	0.254	101.90	
27.02.2022	800 RL	GRN	115	5.7	HARD	6	5	40	40	4600	NONELS	EAST VIEW POINT	500	0.254	100.00	
27.02.2022	910 RL	GRN	113	5.8	HARD	6	5	40	40	4500	NONELS	EAST VIEW POINT	700	0.254	101.90	
28.02.2022	850 RL	GRN	135	5.8	HARD	6	5	40	40	5500	NONELS	EAST VIEW POINT	600	0.635	88.00	
28.02.2022	850 RL	GRN	105	5.7	HARD	6	5	40	40	4300	NONELS	EAST VIEW POINT	600	0.254	102.80	

MARCH 2022																
Date	Location	Area	No. of Holes	Avg. Depth	Type of Burden	Spacing	Burden	Avg. Charge	Max. Charge	Total Charge	Initiation	Location	Distance in meters	ppv MM/Sec	AOP	Remarks
01.03.2022	930 RL	GRN	125	6.0	HARD	6	5	40	40	5000	NONELS	EAST VIEW POINT	600	0.254	100.00	
01.03.2022	830 RL	GRN	83	5.9	HARD	6	5	40	40	3450	NONELS	EAST VIEW POINT	600	0.254	101.90	
01.03.2022	870 RL	GRN	60	6.0	HARD	6	5	40	40	2500	NONELS	EAST VIEW POINT	700	0.254	103.50	
02.03.2022	870 RL	GRN	95	6.0	HARD	6	5	40	40	3970	NONELS	EAST VIEW POINT	600	0.254	100.00	
02.03.2022	850 RL	GRN	125	6.0	HARD	6	5	40	40	5000	NONELS	EAST VIEW POINT	700	0.254	102.80	
02.03.2022	860 RL	GRN	80	5.5	HARD	6	5	37.5	40	3000	NONELS	EAST VIEW POINT	600	0.254	101.00	
04.03.2022	890 RL	GRN	120	6.0	HARD	6	5	40	40	4860	NONELS	EAST VIEW POINT	900	0.635	91.48	
05.03.2022	830 RL	GRN	150	6.0	HARD	6	5	40	40	6400	NONELS	EAST VIEW POINT	600	0.254	104.90	
05.03.2022	840 RL	GRN	90	6.0	HARD	6	5	40	40	3800	NONELS	EAST VIEW POINT	700	0.254	100.00	
05.03.2022	810 RL	GRN	70	6.0	HARD	6	5	40	40	2800	NONELS	EAST VIEW POINT	600	0.254	104.00	
05.03.2022	840 RL	GRN	113	6.0	HARD	6	5	40	40	5300	NONELS	EAST VIEW POINT	800	0.254	101.00	
06.03.2022	910 RL	GRN	150	5.8	HARD	6	5	38.5	40	5760	NONELS	EAST VIEW POINT	600	0.254	100.00	
07.03.2022	860 RL	GRN	120	5.5	HARD	6	5	36.6	40	4400	NONELS	EAST VIEW POINT	700	0.254	100.00	
07.03.2022	830 RL	GRN	100	6.0	HARD	6	5	40	40	4000	NONELS	EAST VIEW POINT	800	0.508	101.00	

08.03.2022	830 RL	GRN	155	6.0	HARD	6	5	40	40	40	6480	NONELS	EAST VIEW POINT	700	0.254	100.00	
08.03.2022	880 RL	GRN	120	6.0	HARD	6	5	40	40	40	4828	NONELS	EAST VIEW POINT	600	0.254	101.00	
09.03.2022	800 RL	GRN	165	6.0	HARD	6	5	40	40	40	6600	NONELS	EAST VIEW POINT	600	0.254	104.20	
09.03.2022	850 RL	GRN	130	6.0	HARD	6	5	40	40	40	5200	NONELS	EAST VIEW POINT	700	0.254	101.00	
09.03.2022	850 RL	GRN	122	6.0	HARD	6	5	40	40	40	4900	NONELS	EAST VIEW POINT	600	0.254	101.90	
10.3.2022	930 RL	GRN	150	6.0	HARD	6	5	40	40	40	6500	NONELS	EAST VIEW POINT	600	0.254	101.00	
10.03.2022	830 RL	GRN	75	6.0	HARD	6	5	40	40	40	3000	NONELS	EAST VIEW POINT	600	0.254	104.20	
11.03.2022	890 RL	GRN	141	6.0	HARD	6	5	40	40	40	5650	NONELS	EAST VIEW POINT	700	0.254	100.00	
11.03.2022	830 RL	GRN	166	6.0	HARD	6	5	40	40	40	6800	NONELS	EAST VIEW POINT	600	0.254	104.90	
11.03.2022	850 RL	GRN	145	6.0	HARD	6	5	40	40	40	5800	NONELS	EAST VIEW POINT	700	0.254	104.20	
13.03.2022	830 RL	GRN	120	6.0	HARD	6	5	40	40	40	4800	NONELS	EAST VIEW POINT	600	0.508	88.00	
13.03.2022	880 RL	GRN	189	6.0	HARD	6	5	40	40	40	7590	NONELS	EAST VIEW POINT	700	0.762	88.00	
15.03.2022	840 RL	GRN	147	6.0	HARD	6	5	40	40	40	5900	NONELS	EAST VIEW POINT	600	0.254	101.00	
15.03.2022	910 RL	GRN	173	6.0	HARD	6	5	40	40	40	6980	NONELS	EAST VIEW POINT	700	0.254	104.90	
16.03.2022	880 RL	GRN	120	6.0	HARD	6	5	40	40	40	4900	NONELS	EAST VIEW POINT	700	0.254	101.00	
17.03.2022	870 RL	GRN	128	6.0	HARD	6	5	40	40	40	5120	NONELS	EAST VIEW POINT	600	0.254	100.00	
17.03.2022	830 RL	GRN	109	6.0	HARD	6	5	40	40	40	4350	NONELS	EAST VIEW POINT	800	0.635	98.84	

17.03.2022	870 RL	GRN	162	6.0	HARD	6	5	40	40	40	6500	NONELS	EAST VIEW POINT	700	0.254	101.00	
18.03.2022	880 RL	GRN	147	6.0	HARD	6	5	40	40	40	5850	NONELS	EAST VIEW POINT	900	0.254	104.90	
18.03.2022	830 RL	GRN	145	6.0	HARD	6	5	40	40	40	5800	NONELS	EAST VIEW POINT	600	0.254	104.90	
18.03.2022	870 RL	GRN	119	6.0	HARD	6	5	40	40	40	4860	NONELS	EAST VIEW POINT	800	0.254	100.00	
19.03.2022	870 RL	GRN	160	6.0	HARD	6	5	40	40	40	6700	NONELS	EAST VIEW POINT	700	0.381	93.98	
19.03.2022	830 RL	GRN	130	6.0	HARD	6	5	40	40	40	5300	NONELS	EAST VIEW POINT	600	0.889	97.50	
19.03.2022	830 RL	GRN	75	6.0	HARD	6	5	40	40	40	3000	NONELS	EAST VIEW POINT	800	0.762	88.00	
20.03.2022	830 RL	GRN	145	6.0	HARD	6	5	40	40	40	5900	NONELS	EAST VIEW POINT	700	0.762	88.00	
20.03.2022	830 RL	GRN	125	6.0	HARD	6	5	40	40	40	5010	NONELS	EAST VIEW POINT	700	0.635	88.00	
20.03.2022	910 RL	GRN	150	6.0	HARD	6	5	40	40	40	6140	NONELS	EAST VIEW POINT	600	0.889	95.92	
20.03.2022	830 RL	GRN	110	6.0	HARD	6	5	40	40	40	4500	NONELS	EAST VIEW POINT	700	0.635	91.48	
21.03.2022	870 RL	GRN	192	6.0	HARD	6	5	40	40	40	7900	NONELS	EAST VIEW POINT	700	0.254	101.90	
21.03.2022	870 RL	GRN	85	6.0	HARD	6	5	40	40	40	3400	NONELS	EAST VIEW POINT	800	0.254	101.00	
21.03.2022	850 RL	GRN	80	6.0	HARD	6	5	40	40	40	3900	NONELS	Chopidi Village	3000	0.381	91.48	
22.03.2022	880 RL	GRN	130	6.0	HARD	6	5	40	40	40	5200	NONELS	Middle VIEW POINT	800	0.381	100.00	
22.03.2022	820 RL	GRN	125	6.0	HARD	6	5	40	40	40	5210	NONELS	EAST VIEW POINT	600	0.254	100.00	
22.03.2022	830 RL	GRN	137	6.0	HARD	6	5	40	40	40	5500	NONELS	Gouriguda Village	1500	0.381	91.48	

23.03.2022	830 RL	GRN	125	6.0	HARD	6	5	40	40	40	5210	NONELS	EAST VIEW POINT	700	0.254	102.80	
24.03.2022	920 RL	GRN	110	6.0	HARD	6	5	40	40	40	4500	NONELS	EAST VIEW POINT	800	0.254	103.50	
24.03.2022	910 RL	GRN	85	6.0	HARD	6	5	40	40	40	3440	NONELS	Chopidi Village	3000	0.635	93.98	
25.03.2022	830 RL	GRN	140	5.4	HARD	6	5	37.3	40	40	5100	NONELS	Middle VIEW POINT	900	0.635	100.00	
25.03.2022	830 RL	GRN	150	5.3	HARD	6	5	37.9	40	40	5200	NONELS	EAST VIEW POINT	800	0.762	93.98	
25.03.2022	890 RL	GRN	120	6.0	HARD	6	5	40	40	40	4660	NONELS	EAST VIEW POINT	900	0.635	91.48	
25.03.2022	830 RL	GRN	126	6.0	HARD	6	5	40	40	40	5400	NONELS	Ulippitta Village	3500	0.762	95.92	
26.03.2022	890 RL	GRN	145	6.0	HARD	6	5	40	40	40	6000	NONELS	EAST VIEW POINT	800	0.889	102.80	
28.03.2022	880 RL	GRN	120	6.0	HARD	6	5	40	40	40	4800	NONELS	Chopidi Village	3000	0.762	88.00	
28.03.2022	800 RL	GRN	100	6.0	HARD	6	5	40	40	40	4000	NONELS	Gouriguda Village	1500	0.889	88.00	
30.03.2022	820 RL	GRN	110	6.0	HARD	6	5	40	40	40	4320	NONELS	Gouriguda Village	1500	0.635	97.50	
30.03.2022	880 RL	GRN	140	6.0	HARD	6	5	40	40	40	5300	NONELS	Middle VIEW POINT	800	0.635	95.92	
30.03.2022	870 RL	GRN	150	6.0	HARD	6	5	40	40	40	6000	NONELS	EAST VIEW POINT	700	0.508	95.92	
31.03.2022	820 RL	GRN	110	6.0	HARD	6	5	40	40	40	4500	NONELS	Chopidi Village	3000	0.381	88.00	

APRIL-2022																
Date	Location	Area	No. of Holes	Avg. Depth	Type of Burden	Spacing	Burden	Avg. Charge	Max. Charge	Total Charge	Initiation	Location	Distance in meters	PPV MM/Sec	AOP	Remarks
01.04.2022	830 RL	GRN	130	6.0	HARD	6	5	40	40	5200	NONELS	MIDDLE VIEW POINT	500	0.254	100.00	
01.04.2022	800 RL	GRN	150	5.0	HARD	6	5	37.2	40	5540	NONELS	MIDDLE VIEW POINT	500	0.254	100.00	
02.04.2022	820 RL	GRN	155	6.0	HARD	6	5	40	40	6200	NONELS	VATTI VAGU DAM	3000	0.254	100.00	
02.04.2022	820 RL	GRN	120	5.5	HARD	6	5	37.5	40	4500	NONELS	VATTI VAGU DAM	3000	0.254	101.00	
02.04.2022	800 RL	GRN	50	5.0	HARD	6	5	36	40	1800	NONELS	VATTI VAGU DAM	3000	0.254	100.00	
04.04.2022	880 RL	GRN	120	5.0	HARD	6	5	35.8	40	4300	NONELS	CHOOPIDI VILLAGE	3000	0.254	101.00	
04.04.2022	820 RL	GRN	100	6.0	HARD	6	5	40	40	4000	NONELS	CHOOPIDI VILLAGE	3000	0.254	101.00	
07.04.2022	890 RL	GRN	145	6.0	HARD	6	5	40	40	6000	NONELS	THOYAGUDAM	2000	0.254	101.90	
07.04.2022	850 RL	GRN	150	5.5	HARD	6	5	36	40	5500	NONELS	THOYAGUDAM	2000	0.254	101.00	
07.04.2022	880 RL	GRN	75	5.5	HARD	6	5	37.5	40	2800	NONELS	THOYAGUDAM	2000	0.254	100.00	
08.04.2022	810 RL	GRN	125	6.0	HARD	6	5	40	40	5200	NONELS	EAST VIEW POINT	500	0.254	100.00	
08.04.2022	850 RL	GRN	138	6.0	HARD	6	5	40	40	5600	NONELS	MIDDLE VIEW POINT	500	0.254	102.80	
09.04.2022	840 RL	GRN	148	6.0	HARD	6	5	40	40	6000	NONELS	EAST VIEW POINT	500	0.254	102.80	
09.04.2022	850 RL	GRN	120	4.5	HARD	6	5	34	40	4000	NONELS	EAST VIEW POINT	500	0.381	106.50	
10.04.2022	850 RL	GRN	150	5.5	HARD	6	5	38	40	6300	NONELS	MIDDLE VIEW POINT	500	0.889	88.00	
10.04.2022	850 RL	GRN	96	6.0	HARD	6	5	40	40	3900	NONELS	MIDDLE VIEW POINT	500	0.762	88.00	
11.04.2022	820 RL	GRN	76	5.5	HARD	6	5	39	40	2900	NONELS	EAST VIEW POINT	500	0.381	108.00	
11.04.2022	850 RL	GRN	63	6.0	HARD	6	5	40	40	2500	NONELS	EAST VIEW POINT	500	0.127	100.00	

12.04.2022	900 RL	GRN	105	5.7	HARD	6	5	38	40	4000	NONELS	EAST VIEW POINT	500	0.254	101.90	
12.04.2022	840 RL	GRN	86	4.5	HARD	6	5	33	40	2600	NONELS	EAST VIEW POINT	500	0.254	101.00	
12.04.2022	810 RL	GRN	75	6.0	HARD	6	5	40	40	3000	NONELS	EAST VIEW POINT	500	0.254	109.00	
13.04.2022	840 RL	GRN	120	6.0	HARD	6	5	40	40	5700	NONELS	MIDDLE VIEW POINT	500	0.889	97.50	
13.04.2022	840 RL	GRN	75	5.8	HARD	6	5	39	40	2900	NONELS	MIDDLE VIEW POINT	500	0.254	101.00	
13.04.2022	840 RL	GRN	155	5.0	HARD	6	5	36	40	5500	NONELS	MIDDLE VIEW POINT	500	0.254	100.00	
13.04.2022	840 RL	GRN	85	4.8	HARD	6	5	35	40	3000	NONELS	MIDDLE VIEW POINT	500	0.381	88.00	
13.04.2022	840 RL	GRN	95	6.0	HARD	6	5	40	40	3800	NONELS	EAST VIEW POINT	500	0.635	95.92	
14.04.2022	900 RL	GRN	127	6.0	HARD	6	5	40	40	5200	NONELS	EAST VIEW POINT	500	0.127	101.00	
14.04.2022	860 RL	GRN	85	6.0	HARD	6	5	40	40	3300	NONELS	EAST VIEW POINT	500	0.762	88.00	
15.04.2022	840 RL	GRN	125	6.0	HARD	6	5	40	40	5000	NONELS	EAST VIEW POINT	500	0.254	101.00	
15.04.2022	790 RL	GRN	137	6.0	HARD	6	5	40	40	5500	NONELS	EAST VIEW POINT	500	0.635	97.50	
18.04.2022	840 RL	GRN	120	6.0	HARD	6	5	40	40	4500	NONELS	MIDDLE VIEW POINT	500	0.254	102.80	
18.04.2022	860 RL	GRN	75	6.0	HARD	6	5	40	40	3000	NONELS	MIDDLE VIEW POINT	500	0.127	100.00	
18.04.2022	900 RL	GRN	123	6.0	HARD	6	5	40	40	5000	NONELS	MIDDLE VIEW POINT	500	0.127	101.00	



Event Report

Date/Time MicL at 15:36:04 April 8, 2022
Trigger Source Geo: 0.600 mm/s, Mic: 100.0 dB(L)
Range Geo: 254.0 mm/s
Record Time 3.0 sec at 4096 sps

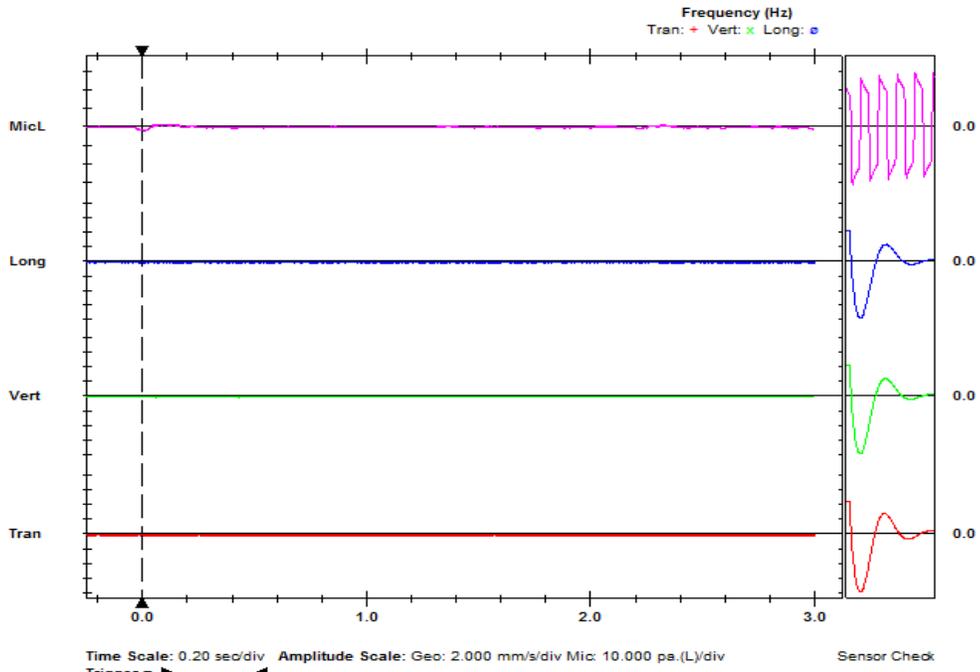
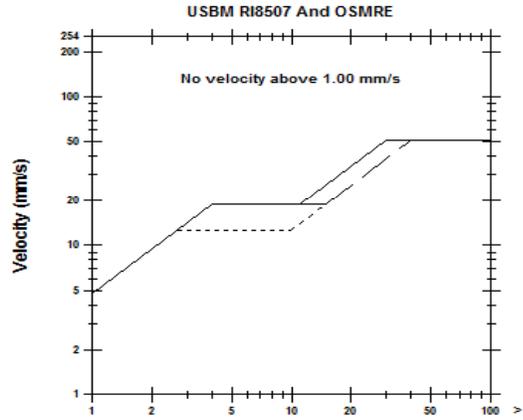
Serial Number BE22121 V 10.72-1.1 Minimate Blaster
Battery Level 5.7 Volts (Battery Low)
Unit Calibration March 4, 2019 by UES, New Delhi
File Name X121JG6R.C40

Notes
 Location:
 Client: SCCL
 User Name: kharagura
 General:

Microphone Linear Weighting
PSPL 101.0 dB(L) 2.250 pa.(L) at 0.003 sec
ZC Freq 7.3 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 416 mv)

	Tran	Vert	Long	
PPV	0.254	0.254	0.254	mm/s
ZC Freq	>400	>400	>400	Hz
Time (Rel. to Trig)	-0.246	0.060	-0.236	sec
Peak Acceleration	0.106	0.106	0.106	g
Peak Displacement	0.000	0.000	0.000	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.6	7.4	7.2	Hz
Overswing Ratio	3.1	3.7	3.7	

Peak Vector Sum 0.381 mm/s at -0.236 sec





Event Report

Date/Time MicL at 15:36:15 April 8, 2022
Trigger Source Geo: 0.600 mm/s, Mic: 100.0 dB(L)
Range Geo: 254.0 mm/s
Record Time 3.0 sec at 4096 sps

Serial Number BE22121 V 10.72-1.1 Minimate Blaster
Battery Level 5.7 Volts (Battery Low)
Unit Calibration March 4, 2019 by UES, New Delhi
File Name X121JG6R.CF0

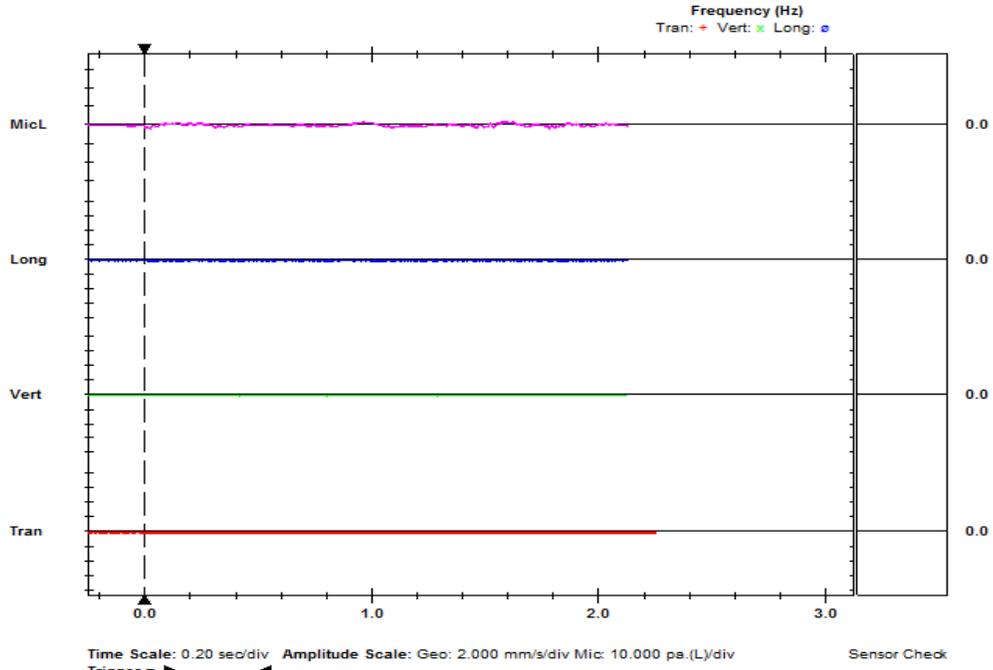
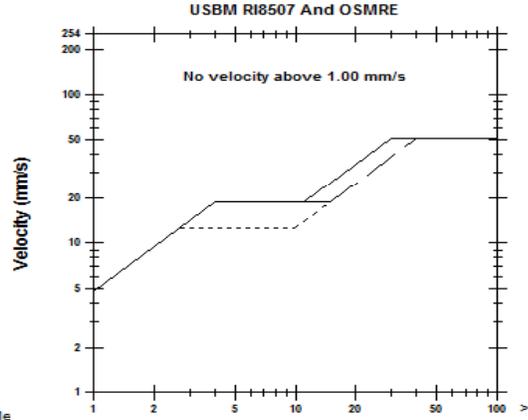
Notes
 Location:
 Client: SCCL
 User Name: kharagura
 General:

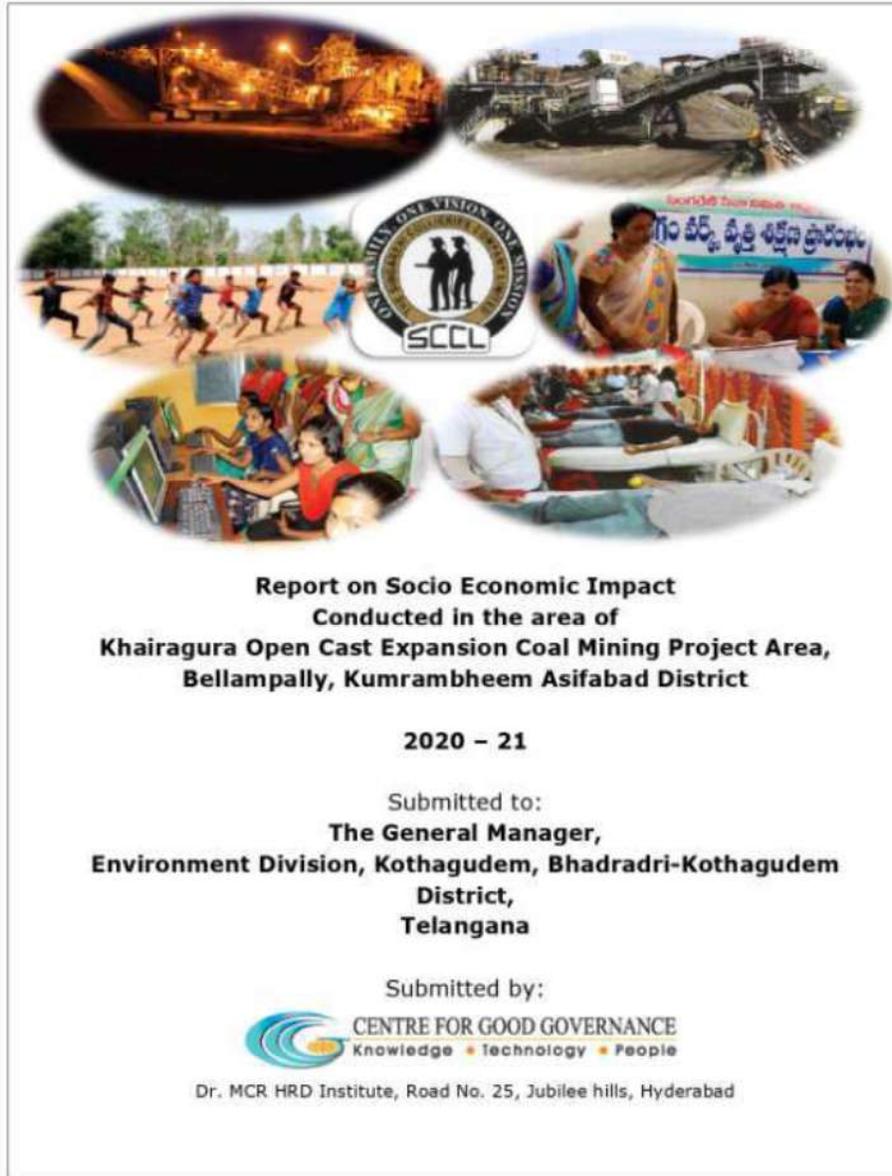
Microphone Linear Weighting
P SPL 101.9 dB(L) 2.500 pa.(L) at 0.024 sec
ZC Freq 14.5 Hz
Channel Test Passed (Freq = 20.1 Hz Amp = 416 mv)

	Tran	Vert	Long	
PPV	0.254	0.254	0.254	mm/s
ZC Freq	>400	>400	>400	Hz
Time (Rel. to Trig)	-0.249	0.418	-0.236	sec
Peak Acceleration	0.106	0.106	0.106	g
Peak Displacement	0.000	0.000	0.000	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.6	7.4	7.2	Hz
Overswing Ratio	3.1	3.7	3.7	

Peak Vector Sum 0.381 mm/s at 0.009 sec

Monitor Log
 Apr 8 /22 15:36:12 Apr 8 /22 15:36:18 Event recorded. (Me





Contents

I. Introduction	4
II. Background	4
a. About CSR Activities at SCCL	5
b. About CSR Activities at Khairagura Open Cast Expansion Coal mining Project	6
III. About the Mine:	6
IV. Methodology	9
a. Sample Selection:	9
b. Designing of the Questionnaire:	10
c. Survey:	10
d. Collation of the Data:	10
e. Analysis of the Data:	10
f. Analysis of the qualitative data:	11
g. Collation of the suggestions:	11
V. CSR Process & Practices	12
a. SCCL – CSR Priority areas	12
b. Baseline survey:	14
c. Monitoring:	14
d. Sustainability:	14
e. CSR Priority sectors & Sustainable Development Goals:	14
f. CSR Implementation:	16
VI. Details of the Sampling	19
a. Economic strata of the respondents:	20
b. Social Distribution of respondents:	20
c. Social distribution	22
VII. Socio – Economic Study details	23
a. Quality of Life:	23
b. Wealth & Economic Growth:	26
c. Infrastructure Development Projects:	28
d. Education & Human Capital Development:	28
e. Jobs & Employment:	29
f. Health & Wellness:	30
g. Clean Environment:	32
h. Socio-economic Impact from Pre to Post establishment of mine	32
i. Summary of the aspirations of the respondents	34
VIII. Village wise Analysis	35
a. Demographic details of the villages	35
b. Occupational Details	36
c. Standard of Living	37
d. Health Details	37
e. Khairagura Open Cast Expansion Coal mining Project interventions in villages	38
IX. CSR Activities under Khairagura Open Cast Expansion Coal mining Project: ..	39
X. Inferences from the Survey	45
XI. Conclusion:	47

Tables:

Table 1: CSR Fund Allocation – SCCL.....	5
Table 2: Demographic details of villages within 10 km. radius.....	8
Table 3: Village-wise Sample details.....	19
Table 4: Caste wise Distribution of Sample	22
Table 5: Quality of Life - Parameters	24
Table 6: QOL Scores Village-wise	25
Table 7: Economic Impact - Pre & Post power Mine establishment.....	26
Table 8: Indicators of Cost of Living - Pre & Post mine establishment.....	27
Table 10: Occupation details of Sample villages	30
Table 12: Socio Economic Impact on Prominent Indicators – Pre & Post Khairagura Open Cast Expansion Coal mining Project.....	33
Table 13: Demographic details of Surveyed Villages.....	35
Table 14: Occupational details of survey villages	36
Table 15: Standard of living map of surveyed villages	37
Table 16: Common ailments	38
Table 17: Abstract of CSR Works undertaken	41
Table 18: Village-wise Aspirations	45

Figures:

Figure 1: Location map of Khairagura Open Cast Expansion Coal mining Project	7
Figure 2: SDG Goals	15
Figure 3: Sample Size Village wise	19
Figure 4: Types of House in Sampling.....	20
Figure 5: Annual Income distribution of Sample	21
Figure 6: Socio Economic Aspects	23
Figure 7: QOL Comparison.....	26
Figure 8: Occupation-wise Depiction.....	36
Figure 9: CSR activities of Khairagura Open Cast Expansion Coal mining Project.....	44

Annexures:

Annexure-I	EC Condition
Annexure-II	CSR Policy of SCCL
Annexure-III	Data item comparison of indicators for Kumrambheem Asifabad District from NRHM report & Inferences
Annexure-IV	Overall Health trend of Kumrambheem Asifabad District in Squarified format
Annexure-V	Environmental Report of the mine
Annexure-VI	Questionnaire for Data Collection from Households
Annexure-VII	Questionnaire for collection of Village level information
Annexure-VIII	Questionnaire for collection of mine Level Data
Annexure-IX	Format for FGD with Educated person/local representative

I. Introduction

The Singareni Collieries Company Limited (SCCL) is a Government Company jointly owned by Government of Telangana and Government of India holding equity in the ratio of 51: 49 respectively. The Singareni coal mining operations are spread across 350 km stretch in the state of Telangana and is the topmost employer in the state with its operations spread across 6 districts of Komrambheem Asifabad, Mancherial, Jayshankar Bhoopalpalli, Khammam, Bhadradi Kothagudem, Peddapalli popularly known as coal belt region in the state. SCCL employs around 43,900 employees (as on 31-01-2021).

SCCL in pursuit of expansion of its operations, have gone in for expansion of Khairagura Open Cast Expansion (KOC – Expansion) Coal mining Project from the production capacity of 3 MTPA to 3.75 MTPA.

Ministry of Environment, Forest and climate change, Government of India has issued environmental clearance (EC), based on the proposal submitted by SCCL. One of the clauses of the clearance specifies that SCCL must fulfil in CSR front after carrying out need based assessment and implementation of the programme for economic and social upliftment of the people living in the region and get the same evaluated by a Government Organisation of repute in the region.

SCCL has awarded the work of carrying out social audit to Centre for Good Governance (CGG) through an open tender. The social audit is planned to be carried out through Centre for Good Governance, an independent third party audit organisation selected as per the EC condition. The purpose being, to carryout detailed study of the Corporate Social Responsibility (CSR) activities of Khairagura Open Cast Expansion Coal during the period of mining & specific to the financial year 2020 – 21 and impact on the Socio Economic conditions in the region, as part of Environmental Clearance conditions.

II. Background

As part of the assignment, the social audit of Khairagura Open Cast Expansion Coal mining Project, the assignment of Socio-economic impact assessment was carried out by Centre for Good Governance.

The Environmental Clearance (EC) for mining was obtained vide J-11015/28/2013-IA. II (M) dated February 6, 2015 and the relevant clause in the EC, numbered xlvi, read as follows, A copy of the EC is attached as **Annexure - I**:

Condition xlvi of EC:

"The Project Authorities shall in consultation with the panchayats of the local villages and administration identify socio-economic and welfare measures under CSR to be carried out over the balance life of mine."

Hence, the core objective of the study is to assess the CSR activities carried out in the sample villages selected for the survey in the area of influence of the mine, understand the perspective of these villagers regarding the activities carried out and understand the requirements of the village in consultation with the village representatives and correlate the requirements of the village with that of the activities carried out by Khairagura Open Cast Expansion Coal mining Project.

a. About CSR Activities at SCCL

Singareni Collieries Company Limited (SCCL) is obligated to follow the laws laid down pertaining to Corporate Social Responsibility (CSR) as laid down in different statutory acts as well as the conditions laid down in the environmental clearances that were issued for the plant & mines.

Accordingly, SCCL adheres to the laws laid down pertaining to the CSR activities. A glimpse of the CSR fund allocation of SCCL in last 4 years provides understanding regarding the volume of the CSR activities that are undertaken by SCCL.

Table 1: CSR Fund Allocation - SCCL

Financial Year	CSR Allocation
2016 - 17	13.57 Cr.
2017 - 18	19.41 Cr.
2018 - 19	19.36 Cr.
2019 - 20	40.00 Cr.

As per the relevant statutory provisions, SCCL was supposed to allocate Rs. 34.86 Crores, i.e., 2% of average net profit of preceding three financial years, however, SCCL has allocated Rs. 40.00 Cr. For CSR activities, which is calculated to 2.29% of preceding three financial years. It may be inferred that SCCL is spending higher amount than the statutory requirements.

SCCL has devised a specific CSR policy for the company that is titled "Corporate Social Responsibility" policy of the Singareni Collieries Company Limited, and it was approved by the SCCL board of directors in the meeting held on 31-01-2015. A copy of the Corporate Environment Policy, objectives, major thrust areas and the methodology of its implementation are enclosed as **Annexure - II**.

The CSR allocation is for the entire SCCL and there is no separate allocation is made from the Khairagura Open Cast Expansion Coal mining Project. However, CSR activities are carried out in the Khairagura Open Cast Expansion Coal mining Project area out of the funds allocated by SCCL as per the statutory guidelines.

b. About CSR Activities at Khairagura Open Cast Expansion Coal mining Project

Khairagura Open Cast Expansion Coal mining Project carries out various CSR activities that include infrastructure development projects, Skill development programmes, Health related programmes, provision of amenities in public places, provision of village level utilities that include borewells, distribution of fruit bearing plants and other plants. details of these activities are specified in the subsequent chapters of this report.

III. About the Mine:

Khairagura Open Cast Expansion Coal mining Project was Expansion Coal mining Project for increasing the production capacity from 3 MTPA to 3.75 MTPA in an ML area of 1217.50 ha. The mine is located near Bojaram Village of Tiryani Mandal of Kumrambheem Asifabad district of Telangana State. SCCL obtained Environmental Clearance from MoEF &CC, New Delhi during the year 2015 for expansion of the capacity of production. The mine is well connected to state capital Hyderabad which is 290 Km away from the mine and the district headquarters Mancheril is at a distance of 19.5 km by road.

Location of the project:

Khairagura block falls in Bellampalli – Goleti coal belt area located in northwestern extremity of the Godavari Valley Coalfield. The project area is covered in Survey of India Topo Sheet No. 56 M/7 & 56 M/8 and is bound by Latitudes N 19°14'10" to 19°15'20" and Longitudes E 79°16'00" to E 79°18'15". The project is located near Borjam village of Tiryani Mandal in Adilabad district in the state of Andhra Pradesh.

Mine boundaries of Khairagura Opencast Project are follows:

North: 200m depth line of bottom section of Bottom Seam at 750m RL.

South: In crop of bottom section, Bottom Seam and Toe of Chopri Hill

East: F2-F2 Fault and Toe of Chopri Hill

West: F3-F3 fault near Bore hole No.62



Figure 1: Location map of Khairagura Open Cast Expansion Coal mining Project.

Details of the population of villages within the radius of 10 Kms of KOC – Expansion mine are depicted below.

Table 2: Demographic details of villages within 10 km. radius

S. No	Name of the Village	Population			SC	ST
		Total	Male	Female		
1	Kommuguda	52	31	21	0	0
2	Buruguda	2046	1023	1023	227	0
3	Kommuguda	355	173	182	52	0
4	Chilatiguda	602	306	296	0	66
5	Ada-Desnapur	256	115	141	0	256
6	Mowad	504	242	262	0	498
7	Chirrakunta	2424	1233	1191	488	896
8	Mondepalle	84	42	42	0	84
9	Addaghat	234	119	115	0	234
10	Devadurgam	37	21	16	0	37
11	Loddiguda	911	459	452	0	900
12	Goena	363	185	178	0	358
13	Dantanpalle	450	238	212	89	361
14	Pangidimadra	1897	936	961	0	1857
15	Ullipitadorli	918	465	453	327	446
16	Lingiguda	79	42	37	0	79
17	Rudrapur	71	34	37	0	25
18	Devaiguda	487	235	252	304	148
19	Boardham	415	225	190	0	380
20	Pedakunta	12	6	6	0	12
21	Areguda	113	56	57	0	112
22	Chopidi	6	4	2	0	6
23	Jewni	25	12	13	0	25
24	Goyagaon	399	212	187	0	316
25	Dongargaon	75	38	37	0	75
26	Dorli	918	465	453	-	-

(Source: Census Data -2011)

IV. Methodology

The methodology adopted for the social audit is primary survey using Computer Assisted Personal Interview (CAPI) method. The process of the study in brief is detailed below.

- Total population and households in the area of influence were ascertained, to scientifically calculate the sample size for the study
- The sample villages were identified based on the distance from the mine
- The pre-designed questionnaires were administered in CAPI method
- At each of the sample villages a Focus Group Discussion was carried out involving the local educated youth, elected representatives and the villagers
- Personal interviews were carried out with the local body elected representatives, such as sarpanch, ward members etc.
- The data so collected is analysed for different parameters that would provide leads to the assessment of the socio-economic status of the village.
- Aspects that were included to be assessed are: Quality of Life of the villagers, Economic improvement from pre-mining to post-mining, Impact of mining on the social aspects such as Health & Education, Environmental components, Political activism etc.
- The identified socio-economic aspects were assessed from the spectrum of Corporate Social Responsibility (CSR) activities carried out by SCCL in the area of influence of the mine.

a. Sample Selection:

The sample for the survey was selected in a scientific manner. For selection of the sample size, Sample determination models such as Slovin's formula and Cochran's formula, which are widely accepted models for determining the sample size are employed for calculation of the sample size for survey.

Using the formula, the sample size is determined as 1368 individuals spread across 6 villages in the area of influence of the mine. Detailed numbers are explained in this report.

b. Designing of the Questionnaire:

It was planned to capture the information from different sources in the area of influence. The information pertaining to various aspects were captured from different stakeholders such as households, individuals, elected representatives, educated youth of the village and villagers at large.

Different questionnaires were designed to capture the data from different sources. The household survey was carried out using CAPI method and rest all were through Pen and Paper Interview (PAPI) method.

c. Survey:

The survey was carried out in the identified villages for the sample size as determined during the period 1.3.2021 to 6.3.2021. The survey was basically of two types, primary and secondary.

The household interview, individual interview, discussions with elected representatives, educated youth of the village etc. were through primary method, wherein the professional enumerators have personally interviewed the respondents.

The data pertaining to the village such as health data, education data and other data pertaining to the village at macro level were collected using secondary survey, from the authentic sources such as Government published data, data that is submitted by different relevant sources to Government authentication etc.

d. Collation of the Data:

The data collected from different villages from different respondents was collated to arrive at a common data pertaining to the area of influence of the mine. The data collected from different sources through primary and secondary are collated to draw inferences from the sample data to the population.

e. Analysis of the Data:

The data collated is analysed using various statistical techniques that include correlation, regression techniques to draw the inferences. These techniques were used with the village as unit to the entire data collected, between different villages so as to draw inferences regarding each aspect of the socio-economic study with regards to the CSR components that are mandated for the mine.

f. Analysis of the qualitative data:

The data collected included quantitative as well as qualitative assessment. While statistical techniques were used for quantitative data analysis, qualitative data collected was analysed using techniques of content analysis, narrative analysis, framework analysis etc.

The data collected included the information pertaining to CSR activities carried out in their village and the impact of the same apart from the activities that they want in their villages as part of the CSR initiatives of the SCCL.

g. Collation of the suggestions:

The suggestions collected from different stakeholder regarding improvement of the CSR activities of SCCL are collated and along with the inferences drawn and recommendations of the visiting team report is submitted to SCCL.

V. CSR Process & Practices

Singareni Collieries Company Limited (SCCL) is obligated to follow the laws laid down pertaining to Corporate Social Responsibility (CSR) as laid down in different statutory acts as well as the conditions laid down in the environmental clearances that were issued for the mines.

SCCL has devised a specific CSR policy for the company that is titled "Corporate Social Responsibility Policy of The Singareni Collieries Company Limited. SCCL has meticulously devised the policy for not only allocation of the funds but also for efficient utilisation of the funds with proper monitoring and sustainability plans.

a. SCCL – CSR Priority areas

The major thrust areas identified by SCCL for CSR fund utilisation are:

- Basic Services (Drinking Water Supply, Sanitation etc.)
- Health
- Education
- Livelihood and Local Economic Development
- Interventions for marginalized communities such as SCs and STs
- Other related activities

The scope of activities that are to be taken up under CSR are aligned with that of the Schedule VII of the Companies Act, 2013. As per scope defined in the policy major aspects are:

Environment:

- Involvement of community for additional efforts to create better environment while complying with applicable environmental regulations
- Minimise environmental impacts and risks to provide opportunities for building relationships with local communities
- Promote environment friendly technologies

Communities & Society:

- Promote multi stakeholder partnerships to look at long-term sustainable solutions
- Build two-way and inclusive channel of communication with communities
- Provide support during natural calamities, disasters and other emergencies

Business

- Provide opportunities to local and small entrepreneurs for business participation through ancillarisation.

From the above specified scope it can be inferred that, the core focus areas of SCCL for its CSR activities encompasses environmental protection, community development both social and economical.

CSR policy of SCCL also defines that 80% of the allocated funds of CSR has to be spent in the districts where SCCL has project site and only 20% can be in other than the districts.

SCCL has clearly defined that the CSR would be closely monitored even at the Board level through a committee of the Board of Directors, tilted as CSR Committee of Directors, formed specifically for the purpose.

Below the Board level, the C&MD and functional director are responsible for integrating CSR activities ensuring sustainability. General Manager level officer is bestowed with the responsibility for identification of the proposals of CSR in coordination with the Corporate, Area CGMs, GMs concerned and present the same to the Director for making suitable recommendation to the Board for approval.

The involvement of the officers at Board level brings proper Governance of the activities that are taken up under CSR. It is also made mandatory to ensure sustainability of the CSR activities. Due to involvement of the Board Directors from shortlisting of the projects for CSR and continuous monitoring of the activities taken up, the effective implementation of the programme is ensured with sustainability.

b. Baseline survey:

As per CSR Policy it is clearly defined that, the activities that are of more than Rs. 1.00 Cr. Shall carry out a social benefit analysis through baseline survey by external agency. In all other cases, proper justification regarding social benefit of such activity shall be ascertained and proper documentation at each stage of the activity shall be maintained.

c. Monitoring:

The CGM, GM are required to monitor the activities in their area of operation and monthly progress to be submitted and in turn would submit the same to the CSR Committee of Directors, who in turn would appraise the board and the CMD. This ensures proper implementation of the activities undertaken under the CSR.

d. Sustainability:

SCCL's CSR policy prescribes for maintenance of the assets created under CSR and envisages to involve NGOs, State Government bodies, local bodies or public representatives to ensure maintenance and upkeep of the asset created under CSR funds by SCCL.

e. CSR Priority sectors & Sustainable Development Goals:

It may also be observed that the priority sectors identified by SCCL for its CSR activities are in tune with the United Nation's Sustainable Development Goals.

United Nation's Sustainable Development Goals are depicted below:

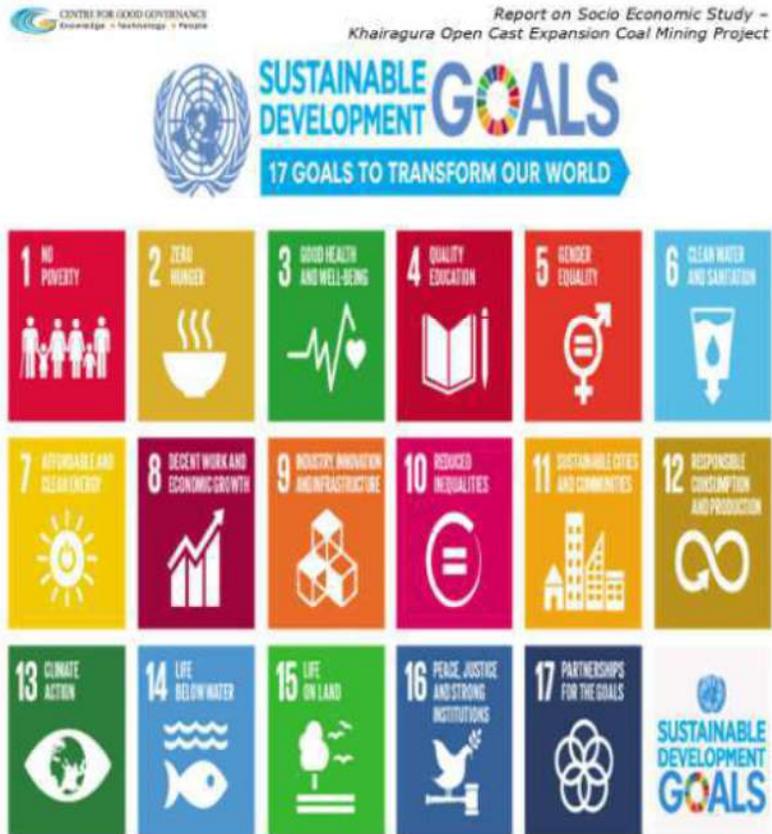


Figure 2: SDG Goals

It may be observed that of the 17 SDGs, SCCL's CSR thrust areas subsume most of the SDG goals. Hence, it may be concluded that CSR thrust areas of SCCL are designed carefully to contribute to the achievement of the SDGs.

f. CSR Implementation:

Singareni Collieries Company Limited carries out its service activities through the Non-Governmental Organisations (NGO) that are involved in providing services to the society.

SCCL majorly works with the NGOs such as Singareni Seva Samithi (SSS) and Singareni Employees Wives Association (SEWA).

Singareni Seva Samithi (SSS)

Singareni Seva Samithi (SSS) was formed by SCCL as a society to train unemployed youth and educating families of workmen to channelize their energies through skill development and vocational training, the outcome of which shall be to enable them to earn livelihood through wage employment or self-employment. SSS also is involved in promoting literacy activities to improve literacy in the region and the Samithi also works innovatively in spreading awareness of AIDS, alcoholism and also promote the benefits of the small savings.

The activities of SSS are spread across the SCCL project areas with a view to contribute to the development of the villages. SSS enables the trainees towards entrepreneurship development. SSS provides the platform for economic development in the SCCL Project area and villages around the project site.

SSS plays a vital role in socio-economic development of the area under influence and to the project affected persons.

The survey outcomes from the villages that were surveyed under the mine have shown significant improvement in the Socio-economic condition of the villages.

SCCL funds SSS for implementation of these programmes from the funds earmarked for the CSR activities. As SCCL's own society implements the programmes of CSR, it can be understood that entire money earmarked is used for implementation of the project and no service charges are involved in spending of the CSR funds allocated.

Major activities carried out by SSS and their outcomes are detailed below:

- Preparing the unemployed youth to take up competitive exams to get the jobs in Army, Police and Para Military Forces. Under this programme, SSS has enabled 442 unemployed youth to get jobs in Army, Police and Para Military Forces
- Under literacy promotion activities SSS has made 34,000 illiterate to become literates, with majority of them being workmen and their spouse
- Vocational Training was provided to more than 3,000 unemployed youth in the region.
- Through its Entrepreneurship Development programmes and the support of SCCL in promoting ancillary industries, around 1,000 persons have initiated their own self-employment avenues in their own villages, which has minimized migration, which has immensely contributed to the socio-economic condition in the villages.

Singareni Employees Wives' Association (SEWA):

Singareni Employees Wives' Association (SEWA) works in association with SSS to create awareness among the workmen and their families. The workmen and their families constitute major part of the society in the areas of project. Any improvement in socio-economic aspects of this major part of the society would have its spiral effect on other constituents of the society.

SEWA carried out awareness activities in the areas of savings habits, health & hygiene, Children's education etc. SCCL through SSS provides funding for these activities which are majorly allocated from the CSR budget of the Company.

SEWA has carried out activities which have impacted the lives of the employees and their families, which in turn had a positive impact on the overall socio-economic aspect of the society at large. Some of the activities carried out SEWA are listed below along with their impact on the society:

- Adult literacy drives of SEWA have educated around 24,000 employees and their families.
- Medical Counselling is conducted on regular basis to promote personal hygiene, cleanliness etc.

- Post retirement financial planning is one of the core activity of SEWA which educates the employees in properly planning their financials for their post retirement. This has a lot of impact on the retiring employee maintain socio-economic status of the employee, without which there may be devastating repercussions on the lives of not only the retiring employee but also on the society.
- Awareness programmes on women rights, Anti-tobacco initiatives, Anti-Aids initiatives, Anti Eve-teasing programmes, Anti-alcoholic drives and other social evils. Due to these awareness programmes there has been tremendous impact on the Socio-economic aspects in the region.
- Environmental initiatives such as Plantation, fuel economy, energy savings etc. are undertaken by SEWA, which have positive impact on the society at large.

Other NGOs, Local Bodies, Government Organisations:

SCCL also works with NGOs, Governmental Organisations, Local Bodies and public representatives in furthering the Social Responsibility activities of SCCL.

SCCL partners with Government agencies and contributes for the larger good of the society by participating in the activities initiated by the Government Organisations including local bodies. In some cases where public representatives request for contributions for the development of the area which falls under the SCCL project area of the districts, SCCL positively considers the request in lines with its CSR policy and then contributes for the development activity and continuously monitors the progress of the projects.

Some of the activities taken up along with the NGOs, Government Organisations, Local Bodies and public representatives include, tree plantation, supply of trees from nurseries of SCCL, setting up of Blood Banks, Street lighting, Provision of infrastructure in schools, farmer awareness programmes etc.

VI. Details of the Sampling

Based on the Cochran's formula, the total sample size is calculated as 343 households, based on the total population in the villages identified for the survey. Of the total villages, 6 villages that were shortlisted for the survey are listed below. Total respondents from these villages count to around 1368 respondents.

Villages that were covered in the survey are listed below, along with the details of the number of households covered and the respondents per village.

Table 3: Village-wise Sample details

Details of the villages and number of Household & Contacts		
Village Name	Household	Total Contacts
Chirragunta	40	160
Chopidi	69	274
Dorli	82	329
Gowriguda	28	110
Indiranagar	88	351
Thoyagudem	36	144
Total	343	1368

The distribution of respondents among the selected villages is depicted below.

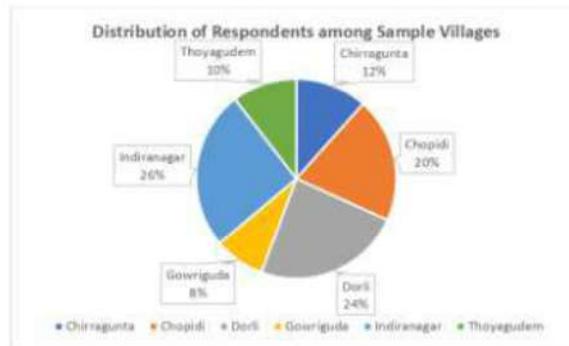


Figure 3: Sample Size Village wise

a. Economic strata of the respondents:

Of the total respondents only 9 respondents have pink ration card that earn higher than Rs. 1,00,000/-, meaning which most of the population, i.e., 1359 of the sample of the population is under the annual income of less than Rs. 1,00,000/-.

It may be noted that the process adopted by the relevant Government Departments is not a fool proof process, however, the data pertaining to ration cards is considered as a standardised data for various analysis within as well as outside the Government.

b. Social Distribution of respondents:

Some of the aspects pertaining to social strata and that can facilitate to infer the findings of the survey are specified herewith.

The villages in the area of influence of mine started to undergo urbanisation. This is evident by the ratio of joint families to that of the nuclear families. It may be inferred that the urbanisation influence has increased the number of nuclear families in the survey areas. The percentage of joint families is 40% while nuclear families is 60%. This is one of the accepted indicators of urbanisation, the same was reiterated in many researches including that of the forbes study in 2017.

Types of Houses:

Types of houses divided as Kutcha houses, Semi-pucca houses and Pucca houses provide a cue to understand the economic conditions of a region. Higher number of Kutcha houses is inferred as poor economic condition of the population.

The distribution of the total households' studies in the identified villages and types of houses in these villages is depicted as below.

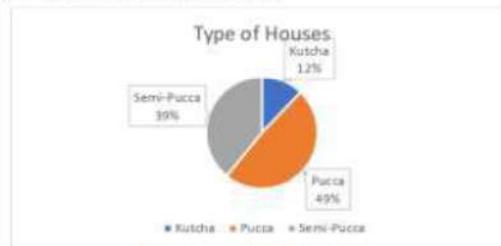


Figure 4: Types of House in Sampling

It may be observed that the pucca and semi pucca houses are more in number and kutcha houses are less, meaning which the economic status of these villages moderately good as 88% the respondent own the pucca and semi pucca house. There is scope for shifting of the people having kutcha houses to semi pucca houses and people from semi pucca to pucca houses regime in the near future as the income level are slowly growing.

Income-wise distribution of households:

Annual income is one of the key indicators of Socio-Economic survey and the distribution of the household's income wise can provide inputs to infer the outcomes of the Socio-economic survey of the region.

The income wise distribution of the households covered under the survey is depicted in the chart below, which is self-explanatory.

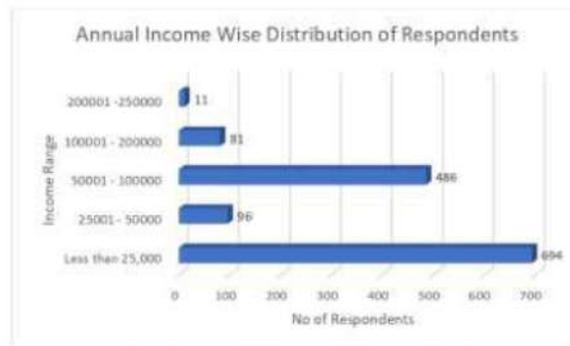


Figure 5: Annual Income distribution of Sample

It may be observed that majority of the household's annual income is less than Rs 25,000 and Rs 50001-Rs 100000. This may be correlated with the number of white ration cards that are in vogue in the survey area. However, it is observed during the study that some of the respondent's income is more than Rs. 1 lakh per annum, however, they too possess White Ration cards and very few respondents earn more than Rs 1 Lakh.

c. Social distribution

The social distribution of the respondents, religion wise gives a conclusion that most of the respondents are Hindus and only a meagre population in the region are of Muslim or Christian religions.

The caste wise distribution of the sample is detailed below.

Table 4: Caste wise Distribution of Sample

Caste wise Distribution	
Caste	Number of Respondents
ST	864
SC	323
BC	163
Other	18
Total	1368

The caste wise distribution is depicted to provide the spectrum of the social fabric of the area around the mine.

VII. Socio – Economic Study details

The survey carried out to assess the impact of the power mine on the Socio-Economic aspects in the study area has provided inferences on various components. The aspects on which the assessments have been carried out are depicted below:



Figure 6: Socio Economic Aspects

The impacts of the mine on different components of Socio-Economic Transformation are detailed based on the information collected from the sample villages selected for the purpose of the study.

a. Quality of Life:

The Quality of Life Index (QOL) is computed based on the responses given by the households. Most commonly used Quality of Life Index (QOL) in power mine is used to carry out the survey.

The Quality of Life concept has grown out of the social indicators' movement of the 1960s (Day and Jankey, 1996) and investigators started using a social indicator approach to define what QOL meant to them. However, subsequently many researchers adopted both subjective and objective approaches to assess QOL based on wide literature on the subject (Erikson, 1993). Sheykhi (2006) made an extensive

sociological study of Quality of Life by examining the fertility behaviour from a multidimensional perspective. Echevarria-Usher (1999) equated health, in its fullest and multicultural connotation, with wellbeing or quality of life. Understanding of QOL needs exploration of relationship between various components-economic, biophysical, socio-cultural and political – to arrive at the priority determinants of health and wellbeing (Forget and Lebel, 2001). Noronha and Nairy (2005) adopted participation process, case histories, biomedical health analysis and spatial and environmental analysis in developing a Quality of Life tool.

The tool is modified to suit the requirements of the mine and the QOL is calculated for each of the sample villages in the area of influence of power mine. The tool used is a popular tool used to measure the socio-economic condition of the villages along with some pointers to impact of power mine in the area of influence.

Detailed questionnaire along with the weightages assigned to each aspect of the quality of life are detailed in the annexure.

The comparative scores of the QOL are discussed elaborately hereunder.

Components that are measured to arrive at QOL are listed below.

Table 5: Quality of Life - Parameters

S. No.	Parameter	S. No.	Parameter
1	Housing	2	Source of Water
3	Sanitary Facilities	4	Food Type
5	Roads & Transport Facilities	6	Vehicles Possessed
7	Prevalence of Common Diseases	8	Medical Treatment Facilities
9	Fuel and Energy Used	10	Entertainment
11	Assets Possessed	12	Educational Qualifications
13	Per-capita Income		

The Average QOL score of the surveyed households was found to be 6.01 on the rating scale of 1 -10, 10 being the best. Through which it can be inferred that the Quality of Life of the people living in the surveyed villages is Good, though there is scope for improvement of the quality of life.

The score of 6.01 is very positive indicator collated from the area of influence of the mine. This can be ascribed to many reasons, which include but not limited to the contribution of Khairagura Open Cast Expansion Coal mining Project to the region in aspects like economic development, educational development, financial inclusion, provision of facilities in the region and above all its contribution for the social development of the region, some of the activities of which are undertaken under Corporate Social Responsibility (CSR) segment of the SCCL. However there is further scope for improvement of Quality of Life by contributing to the different social welfare measures and providing infrastructure in the surrounding villages.

Village wise QOL Analysis:

The Quality of Life index scores of the villages surveyed is depicted below.

Table 6: QOL Scores Village-wise

Name of the Village	QOL Index Average Score
Chirragunta	7.23
Chopidi	5.64
Dorli	5.62
Gowriguda	5.78
Indiranagar	6.19
Thoyagudem	5.99

It is to be understood that their overall score is 6.01 which is a good score in the QOL Index. It may be observed that all the villages that were surveyed has similar QOL scores, meaning which even the populations QOL would be around 6.0, which is a good QOL score as per the indices.

The expansion operations of the mine few years back and it would take some time for the surrounding villages to start deriving benefits of the mine. It is expected that the QOL score shall increase significantly in near future.



Figure 7: QOL Comparison

b. Wealth & Economic Growth:

It is observed that there has been a significant improvement on the economic front in the region. There has been improvement in various economic factors in the region due to the mine. Furthermore, there have been indicators regarding the wealth creation.

From the data collected it is observed that the mine has impacted the people in the region positively wherein the wealth started growing in the region and the individuals also have benefitted by it, meaning which there has been wealth creation at all levels of the society.

A view of some of the indicators that can be considered to compare the economic condition of the surveyed villages is depicted with the details of pre-establishment of power mine to that of post-establishment of power mine.

Table 7: Economic Impact - Pre & Post power Mine establishment

Indicator	Pre-Establishment of Mine	Post establishment of the mine	Difference
Total Average House-hold income	Rs. 61,619/-	Rs. 93,903/-	34.37% Increase
Average cost of Agriculture land per Acre	Rs. 97,686/-	Rs. 1,24,655/-	27.60% Increase

It can be observed that the average house-hold income has started growing comparatively from pre-establishment stage of the mine to post-establishment of the mine, the wealth has grown around 34.37%.

Apart from that, it can be inferred from the above table that the wealth creation also grew at considerable rate. The average cost per agriculture land per acre has increased by 27.60%. Reasons for this cannot be attributed only to the mine, since, the Telangana Government has carved out new districts, the agriculture land rates have increased significantly.

Asifabad district was carved out of erstwhile Adilabad district and the mine is located around 26 Km from the district headquarters. This is the main reason for the increase in the land rates in the region where mine is located.

It is not out of context to quote that; it is recorded that the average cost of the mobile phone used in the region is around Rs. 6,604/- which provides hints at the improving economic condition of the people living in the region.

While there have been aspects of economic growth and wealth creation, the cost of living has also increased in the region, mainly due to increase in the purchase power of the region. Couple of indicators to depict the increase in the cost of living are detailed below.

Table 8: Indicators of Cost of Living - Pre & Post mine establishment.

Indicator	Pre-mine establishment	Post-mine establishment	Percentage of Increase
School Fee for High school	Rs. 221/-	Rs. 426/-	92.76%
Average cost of transport from village to nearest town	Rs. 12/-	Rs. 15/-	25%

However, SCCL provides education in its schools to the general public as well and it is observed that most of the students are from the households of the villages around the mine. This mitigates the hardships faced by villagers due to increase in the school fees, though indirectly the outcome of the development due to the mine.

c. Infrastructure Development Projects:

Khairagura Open Cast Expansion Coal mining Project has been carrying out various infrastructure development projects within the area of influence of the mine. The Infrastructure development such as construction of CC Roads, Drilling of bore wells, construction of schools buildings, service reservoir, temples in identified villages, community halls, CC drains and culverts to name a few, whereas many works were carried out as part of CSR activities of the project which are mentioned in the list of CSR activities.

The specified works are carried out spread across the different villages. These infrastructure development works apart from providing required infrastructure in the village also provides livelihood to the labour from these villages whose services are used in these villages.

Detailed list of CSR Activities carried out by Khairagura Open Cast Expansion Coal mining Project are mentioned in this document.

d. Education & Human Capital Development:

SCCL has been focusing on promotion of education in the areas of operation and the villages that are in zone of influence. For this purpose, SCCL has been operating schools and colleges to serve their employees as well as general public.

It may be observed that more than 80% of the students of the schools run by SCCL are children of general public.

Apart from operating the educational institutions for the benefit of the society, SCCL also provides infrastructure such as benches, educational aids etc. in the Government schools that are in the villages surrounding the SCCL project area as a part of its CSR activities.

SCCL is carrying out various Skill Development and Vocational Training programmes in the area through Singareni Employees Wives' Association (SEWA) and Singareni Seva Samithi (SSS). These programmes are sponsored under CSR of SCCL. Through this programme various human development activities are undertaken by SCCL.

Khairagura Open Cast Expansion Coal mining Project has conducted 5 skill development programmes in the trades such as Tailoring, Motor Driving, Training Vidya Volunteer , X-ray and Lab technicians for wage employment and 40 candidates trained for Army recruitment.

Khairagura Open Cast Expansion Coal mining Project is actively considering imparting of Self-employment programmes to enable the youth of the surrounding villages by providing the entrepreneurship development programmes for various activities so that the trained candidates may become self-employed and set up ancillary activities.

e. Jobs & Employment:

Mining activity has created Job opportunities for different segments of people. While direct employment is one source for creating employment, the ancillarisation has provided opportunities to many interested and un-employed youth the opportunities of self-employment in the region.

Since mining has generated employment and self-employment opportunities, there has been a significant improvement in the economic activity in the region. This has enabled establishment of new businesses that in turn has started creating employment. Thereby entire economic activity in the region has got a boost.

Apart from providing direct and indirect employment opportunities, SCCL also conducts various skill development and vocational training programmes to enable the unemployed youth to earn their livelihood through wage employment or self-employment.

SCCL has taken up the task to empower youth of these villages to enable them to attain white collar jobs. For this SCCL through its CSR activities have started training youth of the villages to face the competitive exams at different levels, so that the youth aim to get a Government job.

For this purpose, SCCL as part of its CSR activity carries out residential programmes of skill development at a central location, so that the youth from the villages get not only skill upgradation but also behavioural modification since they are exposed to different environment while studying at the residential facility organised by SCCL.

The unemployed youth from the surrounding villages are trained for Government jobs such as Army selections, Police Selection and Para Military selections.

Village wise occupation data of the surveyed villages is depicted below.

The occupation of the majority of the respondents to the survey is labour. The respondents have specified either their occupation or the occupation of the earning member of the family.

It can be construed that due to mining, people in the area started earning livelihood in one or the other occupation associated to mining or ancillary activities generated due to mining. Details of the number of persons occupation wise in the survey area are as below:

Table 9: Occupation details of Sample villages

Occupation	Number of Persons
Labour	866
Agriculture	380
SCCL Employee	51
Self-Employed	33
Government Employee	24
Other Employee	14

It can be observed that 51 members are working in SCCL in the area and it was also found that most of the people engaged in other occupations earn their livelihood in the region depend directly or indirectly on the operations of SCCL mining operation of the Khairagura Open Cast Expansion Coal mining Project. The 866 labour of surveyed population are involved in Agriculture as well as are working in the allied activities of singareni.

f. Health & Wellness:

SCCL has set up its hospitals in all the mining areas. Though their mandate is to treat the employees of SCCL, in case of emergencies, the hospitals provide services even to general public.

SCCL conducts various awareness camps, screening camps, treatment camps in the mining areas, with an objective to educate the villagers regarding Health & hygiene, screen for any ailments so that the ailments can be treated at early stage.

SCCL has been organizing Medical camps in the nearby villages and conducting health awareness camps in the villages around the mines. In addition to the mobile medical camps based on the need and requirement Mega Medical camps are being organized.

SCCL also conducts School Health screening programmes, that cover not only schools run by SCCL but also the private schools. Under School Health programmes, in Khairagura Open Cast Expansion Coal mining Project 750 students were covered for basic ailments such as eye, dental and other basic health ailments. The students who suffer from any ailment that needs further medication were referred to Singareni run area hospitals for further treatment.

It was found that around 34 are suffering from chronic diseases in the households where the survey is conducted. It was specified by the respondents that, there are some stray cases of asthma in the survey villages.

The other aspects covered during the survey related to medical and health are sanitation facilities available at home, Medical facilities available in the villages and nearby villages and also captured the details of chronic diseases and morbidity pattern in the households to infer whether mining has any causes for the deaths in the villages.

It was observed that the households surveyed were having adequate sanitation facilities such as lavatories at their houses and adequate water facilities due to which the water stagnation areas were not reported. Because of better sanitation facilities available in the area, the vector borne diseases were not reported.

All the villages surveyed were having the Rural Medical Practitioners (RMP) for treating the basic health related issues and the MBBS doctors were available in few big villages.

To ensure Health and Wellness of the people living in the surrounding places of mine, SCCL is carrying out awareness programmes in addition to the health camps for creating awareness on health and hygiene in the villages.

The respondents while discussing about the health camps organized by the SCCL opined that these efforts should continue for creating awareness, support for the diagnostic services and treatment for the identified diseases.

Medical department of SCCL analyses the health profiles of the people of the villages to know their health status and accordingly organizes the camps with adequate pharma available with them for distribution during the medical camps.

The villagers stated that due to the frequency of medical camps and treatment provided by SCCL, post-mining medical facilities have significantly increased in comparison to pre-mining medical facilities. The overall data pertaining to different ailments in the district are detailed in **Annexure – III**.

g. Clean Environment:

It is a known fact that any kind of mining generates pollution and can be a cause of concern from environment point of view. The Ministry of Environment, Forest (MoEF) accords Environmental Clearance for mining.

SCCL has been adhering the to the conditions of Environmental Clearances as issued by the ministry. Strict adherence to the environmental standards is monitored by concerned officials at different levels to ensure compliance.

The environmental parameters are being monitored regularly on fortnight basis as per EC conditions and any deviations from the standards are addressed accordingly. The latest data pertaining to monitoring of environmental parameters is attached to this report as **Annexure – V**.

h. Socio-economic Impact from Pre to Post establishment of mine

A detailed survey is carried out to understand the impact of establishment of the mine on various social aspects and the average of these aspects was calculated to assess the social impact that power mine has on the villages that are in the zone of influence of the mine.

The survey regarding socio-economic impact was carried out using perception analysis.

Table 10: Socio Economic Impact on Prominent Indicators – Pre & Post Khairagura Open Cast Expansion Coal mining Project

Indicator	Change from Pre-power mine to Post-power mine
Village Social Spectrum	
Customs /Traditions	Increased
Ceremonies / Festivals	Increased
Male control over Female	Decreased
Parental control over Child	Decreased
Honesty	Increased
Incidence of Thefts	Decreased
Inter Family Bonds	Increased
Juvenile Delinquency (Juvenile criminal behavior)	Decreased
Household aspects	
Family Assets	Increased
Farming	Increased
Firewood Procurement	Increased
Access to output Markets	Increased
Access to input Markets	Increased
Cattle grazing	Increased
Crime Rate	Decreased
Village Infrastructure	
Village Roads	Increased
Village Hygiene	Increased
Drinking Water Facility	Increased
Health Facilities	Significantly Increased
Housing	Increased
Schooling	Significantly Increased
Telecommunication	Significantly Increased
Transport Facility	Increased
Employment Opportunities	Increased

It can be observed from the reactions of the respondents that the overall socio-economic scenario in the villages in general and the surveyed villages in particular have derived various positive outcomes due to the activity catalysed by the mine.

The respondents perceived that due to establishment of the mine Health and Education in the area have significantly increased.

The Khairagura Open Cast Expansion Coal mining Project activity has provided the households in the region better economic power which has in turn impacted on various other social parameters, that has improved the standard of living of the villagers, who live in the zone of influence of the mine.

It was observed that there is overall satisfaction regarding the works being carried out by SCCL, for the benefit of the villages. It was found that SCCL has been carrying out its corporate social responsibility activities in different aspects, which have contributed to the overall Socio-Economic development of the region.

The overall Quality of Life (QOL) has increased in the area compared to the pre-establishment of the mine. This can be attributed to various developmental activities that were initiated by Khairagura Open Cast Expansion Coal mining Project.

The CSR activities of the Khairagura Open Cast Expansion Coal mining Project, that have focused on overall socio-economic growth, have shown positive results. The villages that were surveyed have expressed satisfaction regarding the developmental activities carried out by Khairagura Open Cast Expansion Coal mining Project. These villages have also expressed that the SCCL needs to take up further developmental activities in their villages so that the villages can further develop.

The list of the activities that these villages want SCCL to undertake are listed separately for ready reference of the officials dealing with CSR activities.

i. Summary of the aspirations of the respondents

All the respondents have expressed that their standard of living has improved due to Khairagura Open Cast Expansion Coal mining Project and the same was visible through their responses to the Quality of Life and other related survey details.

The respondents have recorded their aspirations, which may provide hints to Khairagura Open Cast Expansion Coal mining Project in taking up their future developmental plans in the areas of influence under this mine. Most prominent aspirations are listed below.

- Construction of Primary Health Centre.
- Construction of CC Roads
- Construction of Hospitals
- Development of Drainage.
- Construction of community toilets.
- Street Lighting.
- Skill Development Trainings to unemployed youth

VIII. Village wise Analysis

As detailed, total respondents surveyed were 1368, spread across 6 villages that were selected scientifically for the study. For better understanding of the surveyed villages some of the significant data pertaining to these villages is depicted in this section.

The survey was carried out in the villages namely Chirrakunta, Chopidi, Droll, Gowriguda, Indiranagar and Thoyagudem. Details of the village are specified below and this section deals with different socio-economic parameters along with the requirements of the villages that were expressed by the villagers during a Focus Group Discussion (FGD) that was carried out.

a. Demographic details of the villages

The villages surveyed provide some interesting data pertaining to socio-economic aspects as well as improvement in the vital indicators.

Table 11: Demographic details of Surveyed Villages

Name of the Village	No. of Household	Total Population	Male	Female	Male:Female Ratio (Above 60)	Male Vs. Female Ratio (0-10)
Chirrakunta	378	1286	603	683	1:1	1:2
Chopidi	70	600	400	200	2:1	2:1
Dorli	100	1400	800	600	1:1	2:1
Gowriguda	23	120	70	50	1:1	2:1
Indiranagar	320	2000	1200	800	1:1	1:1
Thoyagudem	26	100	50	50	1:1	1:1

It can be observed from the above specified demographic details that there is an improvement in the Male, Female ratio in the age group of 0 – 10 years when compared to above 60 years.

Some of the reasons for this can be construed to the following:

- Improvement in the economic activity of the area which is due to presence of SCCL
- Better awareness about health and hygiene among the villagers, to which SCCL has also contributed in a big way through its CSR activities of awareness generation

- Promotion of literacy programmes especially among women. SCCL has contributed to this cause by conducting literacy development programmes through its SEWA and SSS, which were inturn funded through CSR funds of SCCL

Apart from the above specified there are other reasons for this development, such as Government schemes such as Beti Bacho – Bet Padhao, Sukanya Samruddi yojana etc.

b. Occupational Details

The occupational details of the population of the villages selected for survey are depicted below for analysis.

Table 12: Occupational details of survey villages

Occupation	Number of persons
Agriculture	1470
Govt. Employees	62
Business	136
SCCL	320
Labour	1421
Unemployed	800
Migrants	0

It can be depicted in the following format.

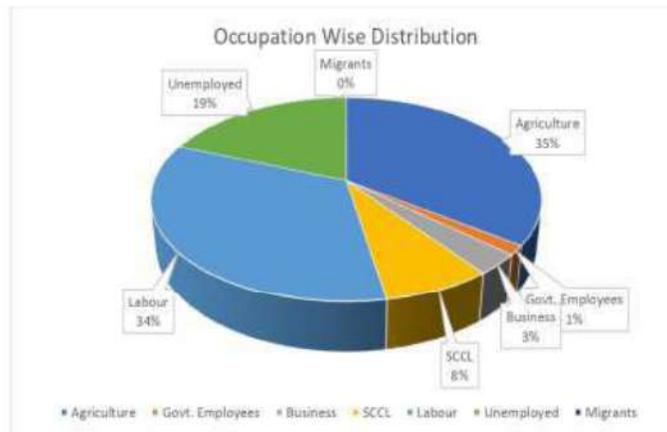


Figure 8: Occupation-wise Depiction

It may be observed that 34% of total population are working as Labour, around 35% are into agriculture and 19% are unemployed. While the percentage of population into self-employment counts to 3%, SCCL and Government employees are 9%.

c. Standard of Living

The village's standard of living can be assessed through different parameters one of those being possession of movable assets.

The village wise profiling of the movable assets that they possess is specified below and the inferences thereon are detailed.

Table 13: Standard of living map of surveyed villages

Name of the Village	Cycle	Two Wheeler	Four wheeler	Number of Agri Vehicles - Earlier	Number of Agri Vehicles - Current
Chirrakunta	20	60	4	1	24
Chopidi	10	5	0	10	15
Dorli	10	20	0	0	3
Gowriguda	3	10	0	8	13
Indiranagar	30	40	5	0	3
Total	73	135	9	19	58

It can be observed that there are higher two-wheeler vehicles compared to that of the cycle or four wheelers, meaning which the large population is middle class economically. It was observed that the labour in these villages also own Two-wheelers basically bikes, which cost around Rs. 60,000/-. Of the total 891 households in the surveyed villages, at least 15% of the households own two wheelers. However only a meagre percentage owns four wheelers, indicating that most of the households are middle class families.

Largely, presence of Khairagura Open Cast Expansion Coal mining Project has boosted the economy in these villages and it was observed that majority of the households gets benefitted by presence of Khairagura Open Cast Expansion Coal mining Project, directly or indirectly.

d. Health Details

The surveyed villages, which fall in the zone of influence of the power mine have provided information regarding the common diseases. The team have identified the common ailments that were reported in these villages. The same are depicted below.

Table 14: Common ailments

Name of the Village	Common Ailments in the village
Chirrakunta	Viral fever, Diarrhea, Ulcer, Typhoid
Chopidi	Viral fever, Asthma
Dorli	Fever, TB, Diarrhea
Gowriguda	Abdominal Pain, Diarrhea, Typhoid
Indiranagar	BP, Sugar, Thyroid
Thoyagudem	Fever, Sugar

However, it is suggested that Khairagura Open Cast Expansion Coal mining Project may devise a strategy to counter the causes of these ailments through its future CSR plans based on the health information provided by the villages.

e. *Khairagura Open Cast Expansion Coal mining Project interventions in villages*

Khairagura Open Cast Expansion Coal mining Project has been carrying out various interventions in these villages. While, some of these activities are general development programmes of Khairagura Open Cast Expansion Coal mining Project, some are under its CSR works.

Khairagura Open Cast Expansion Coal mining Project works closely with the village's public representatives in finalising the programmes under the CSR activities. General Process undertaken by Khairagura Open Cast Expansion Coal mining Project for finalising CSR programmes are detailed in next chapter.

Khairagura Open Cast Expansion Coal mining Project, through its consultation process have carried out the activities, some of which are specific in the village and some are for common good of the area. The list of the activities is as specified below:

- Construction of Community Hall.
- Construction of CC Roads
- Construction of Hospitals
- Providing water Tanks.
- Development of Drainage.
- Construction of community toilets.
- Street Lighting.
- Skill Development Trainings to unemployed youth

IX. CSR Activities under Khairagura Open Cast Expansion Coal mining Project:

SCCL has been carrying out various CSR activities in the 6 districts of Telangana, namely Komurambheem Asifabad, Mancherial, Jayshankar Bhoopalpalli, Khammam, Bhadradi Kothagudem, Peddapalli in which the mines are spread across.

In the Khairagura Open Cast Expansion Coal mining Project, which is in Kumram Bheem Asifabad districts, there have been many initiatives undertaken for societal good by Khairagura Open Cast Expansion Coal mining Project. Some of the activities are taken up under the CSR activities of the Company.

The Environmental Clearance (EC) clause in the EC, numbered xlvi, specifies that *"The Project Authorities shall in consultation with the panchayats of the local villages and administration identify socio-economic and welfare measures under CSR to be carried out over the balance life of mine."*

The study is carried out to understand the activities carried out by Khairagura Open Cast Expansion Coal mining Project under the CSR activities in the areas of influence.

Some of the observations of the team regarding process of CSR activities approval are detailed below:

- The process of CSR activities is initiated with the interaction of the concerned CSR officer with the villagers and elected representatives of the panchayats, that are under the area of influence and finds the requirements of the villages.
- On obtaining the requirements the officer prioritises the works based on the available budgets and proposed the activities in consonance with the respective village panchayats.
- The proposal is then submitted to the Executive Director of Khairagura Open Cast Expansion Coal mining Project for his approval and upon approval of the Executive Director the proposal is forwarded to SCCL Board of Directors for approval.
- On receipt of the approval of the activities by the Board, the activity is initiated and based on the convenience, the activity is carried out through SSS or SEWA or NGO/Government body etc. as deemed fit

- Continuous monitoring of the progress is carried out for timely completion of the activities undertaken

CSR Activities undertaken by Khairagura Open Cast Expansion Coal mining Project are listed below:

- The Project has organized 5 skill development programmes in the trades such as Tailoring, Motor Driving, Training Vidya Volunteer, X-ray and Lab technicians for wage employment and total 40 candidates were trained for Army/Police/Area-Military Recruitments.
- The unemployed youth from the surrounding villages are trained for Government jobs such as Army selections, Police Selection and Para Military selections.
- SCCL on regular basis is conducting Health awareness programmes. Under this programme around 1600 people were contacted and oriented regarding health and hygiene
- Extensive tree plantation as part of the initiative of the Government of Telangana's "Telangana ku Haritha Haram"
- Apart from the specified specific CSR activities, Khairagura Open Cast Expansion Coal mining Project undertakes various general service-oriented aspects. The same are grouped and detailed below:
 - o Health - SCCL also runs the area hospital and in case of emergencies, even for general public, the first aid is provided, and the patient is stabilised before referring them to higher medical centres.
 - o Environment – SCCL supports the local Government authorities in planting the trees. One of the prestigious programmes of the Telangana Government, Telangana Ku Haritha Haram (TKHH) is supported by SCCL through its nurseries in the areas where SCCL has nurseries. This is apart from the mandated mining that SCCL carries out.
 - o Education – SCCL runs schools in the identified locations and these schools serve not only the children of SCCL employees but also the children of general public. It may be noted that the number of children of General Public constitute more than 80% of the total school strength.

- o Education Infrastructure – SCCL provides infrastructure such as benches, drinking water mines etc. in the schools that are run by the Government in the area of operation.
 - o In order to encourage and promote the development of physically challenged, socially marginalised and identify suitable candidates for trainings organizes the sports & games for the local candidates.
- Khairagura Open Cast Expansion Coal mining Project Carries out various infrastructure development programmes in the surrounding villages. An abstract of the infrastructure development activities carried out village wise are detailed below.

An abstract of the works undertaken village wise is presented below.

Table 15: Abstract of CSR Works undertaken

CSR Activity	Amount Spent (Rs .in Lakhs)
Providing 10 no hand bore wells at Chopri R&R site	6.04
Providing WBM road, CC roads, CC drains, culvers and syntax R&R site Chopidi	23.47
Construction for masonry drain in Chopidi R&R site	23.36
Providing CC road at Chopidi R&R site in BPA Area.	20.31
Providing WBM road, CC roads, CC drains etc	55.35
Community hall Building	10.89
Construction of Primary School building	12.00
Construction of 20KL capacity Elevated Service Reservoir	9.30
Providing WBM road, CC road, CC drains, culverts and syntax tank at R&R Site Indiranagar.	28.58
Drilling of bore wells (PO no 7500014461)	6.51
Construction of community hall Building at Indiranagar R&R centre in BPA Area Io no 5012693	23.51
Construction of CC drains and filling of low lying plots at Indiranagar R&R centre in BPA Area	19.11
Construction of toe wall and stone pitching to adjoining nallah IO no 5012693	29.61
Construction of primary School Building	21.96
Construction of 20KL capacity Elevated Service Reservoir	9.30
Construction of bheemanna temple at Gouri Guda	2.86
Drilling 30 no of borewells in surround villages	29.45
Compound at community hall in Dorli village	4.00

CSR Activity	Amount Spent (Rs. in Lakhs)
Community hall at chirrakunta	5.00
Maintenance and repair works to Bore wells at R&R centres in BPA Area T- 1928	3.47
M&R works to R&R sites in Bellampally area T-1994	6.90
Maintenance works to Bore wells at R&R sites in Bellampally T-2076	3.93
Maintenance and repair works to existing Bore wells at R&R centres in Bellampally	8.68
Drilling of 14 nos Bore wells at R&R Sites and 6 nos Bore wells at KHA OCP in Bellampally area	16.48
Providing WBM road, CC road, CC drains, culverts, and syntax tank etc.	40.07
Filling of Gravel in low lying plots etc.	3.85
Construction of community hall building at Keslapur R&R centre in BPA Area	23.67
Construction of 20KL capacity Elevated Service Reservoir	9.30
Construction of Primary School Building at Keslapur	17.11

The survey that was carried out in the identified villages have provided insights on the kind of activities that SCCL is carrying out in the region for overall socio-economic development of the society at large and the villages in the zone of influence.

The initiatives of SCCL have bettered the economic condition of the villages and thereby had a positive impact on the social spectrum. The same was proved through the study carried out.

Details of the expenditure incurred for R&R centres of Bellampally Area are mentioned below.

Sl.No	Location of R&R centre	No of plots developed	Expenditure incurred (Rs.Lakhs)
1	Dampur	157	92.21
2	Ontimamidi	121	132.17
3	Chirakunta	35	73.59
4	Chopidi	90	160.76
5	Ginnedhari	44	129.50
6	Saleguda	25	93.93
7	Indiranagar	87	120.19
8	Rambaiguda	30	62.08
9	Keslapur	53	94.04
10	Maintenance and repair works to Bore wells at R&R centres Incl drilling in BPA Area.		39.47
Total		642	997.94

Some of the glimpses of the programmes carried out by SCCL as part of CSR activities:





Figure 9: CSR activities of Khairagura Open Cast Expansion Coal mining Project

The initiatives of SCCL are usually taken up in consultation with the local representatives of the specific village. Usually the elected representatives of the village are involved in collection of the village requirements. In some of the villages grama shabhas were used to understand the requirements.

The survey team has tried to identify the future needs of the villages, that can be used as input by SCCL to carry out the CSR activities in the Khairagura Open Cast Expansion Coal mining Project.

Village wise requirement expressed by the local representatives and educated youth of the village are specified for ready reference for the officials of the mine.

Table 16: Village-wise Aspirations

Name of the Village	Requirements expressed by the village
Chirragunta	- Provision of Bore wells, Village Drainage System, CC Road, Community Hall
Chopidi	- Providing water tankers, CC Roads, Hospital
Dorli	- CC Roads, Development of Drainage System, Community Hall
Gowriguda	- Street Lighting, Drainage, Construction of school
Indiranagar	- Construction of Primary Health Centre, CC Roads, Community Hall
Thoyagudem	- Skill Development programmes, Drilling of borewells, CC Roads

Khairagura Open Cast Expansion Coal mining Project may consider the requirements that are expressed by these villagers before initiating the CSR activities in the villages. It may be noted that, these requests expressed by villagers are apart from the regular programmes that Khairagura Open Cast Expansion Coal mining Project is conducting in their villages.

X. Inferences from the Survey

The Survey was carried out extensively through Computer Assisted Personal Interaction (CAPI) method. Wherein the enumerators have interacted with the respondents and the data so collected was captured through software.

The interactions were carried out in Gram Sabhas, Panchayat Sarpanches, Educated youth of the village and other stakeholders in the village apart from the individual level personal interactions.

Some of the glimpses of the interactions of enumerators with the villagers are displayed below.

After careful collection and collation of the information from the villages, which were selected scientifically for the survey, the inferences that were drawn by the team of surveyors and the analysis team are listed below:

- Khairagura Open Cast Expansion Coal mining Project has contributed positively in improvement of the Socio-economic condition of the villages in the zone of influence
- The Socio-economic condition of the villages have improved tremendously due to the activities of the mine in the area.

- The economic condition of the villages has improved due to Khairagura Open Cast Expansion Coal mining Project operations, the beneficiaries either deriving direct benefit or indirect benefit from the economic surge in the region due to Khairagura Open Cast Expansion Coal mining Project operations.
- The Social indicators such as health, education and employment are positively impacted by Khairagura Open Cast Expansion Coal mining Project through the works that are carried out under CSR projects of Khairagura Open Cast Expansion Coal mining Project.
- SCCL has a specific policy, process and implementation-cum-monitoring guidelines that governs the CSR activities which are largely collaborative in nature with the village representatives.
- SCCL conducts the programmes through its societies namely Singareni Seva Samithi (SSS) and Singareni Employees Wives' Association (SEWA) apart from working with local government bodies.
- Khairagura Open Cast Expansion Coal mining Project's flagship programmes include Skill Development, Vocational training programmes. SCCL also organises programmes to train the unemployed youth to get Government jobs such as into Army, Police selections and para-military selections.
- Khairagura Open Cast Expansion Coal mining Project does lot of work for social development; however, it is observed that the documentation of the activities carried out by Khairagura Open Cast Expansion Coal mining Project has great scope for improvement.
- The villagers do not differentiate between the works carried out by Khairagura Open Cast Expansion Coal mining Project and other Government bodies, the general perception is all the developmental or welfare activities are carried out by Government though the activities were by Khairagura Open Cast Expansion Coal mining Project, hence, Khairagura Open Cast Expansion Coal mining Project may consider branding of all the CSR activities that it carries out.
- Khairagura Open Cast Expansion Coal mining Project may continue to do the development and welfare activities under its CSR activities.

XI. Conclusion:

Khairagura Open Cast Expansion Coal mining Project is carrying out various developmental works in the zone of influence of the mine. The Environmental Clearance norms conditions, as far as the social aspects are concerned are being adhered to strictly.

Khairagura Open Cast Expansion Coal mining Project is carrying out its CSR activities under the mine through its extended societies such as Singareni Seva Samithi (SSS) and Singareni Employees Wives' Association (SEWA) apart from working with other Non-Governmental Organisations, Government local bodies etc. The activities includes construction of roads, providing the need based amenities to the villagers, medical camps, army recruitment trainings etc.

The respondents of the survey have by and large expressed their satisfaction regarding the developmental and welfare activities that are being conducted by Khairagura Open Cast Expansion Coal mining Project. The quality-of-life index of these villages indicates their satisfaction levels regarding the socio-economic condition of their villages. However, there is scope for improvement of the quality of life of the villagers as large number of populations are having potential to shift to pucca houses from semi pucca houses in the near future. The villagers have expressed their satisfaction and their further needs that are required for common good of the villagers.

It is observed that, though Khairagura Open Cast Expansion Coal mining Project undertakes various social development and welfare-oriented projects, the documentation of the activities being carried out, has lot of scope to improve. Since, in the villages, the villagers may not differentiate between the works being carried out by the Government agencies and Khairagura Open Cast Expansion Coal mining Project in particular, branding of Khairagura Open Cast Expansion Coal mining Project in the works carried out by Khairagura Open Cast Expansion Coal mining Project can improve the positive perception that villagers have about Khairagura Open Cast Expansion Coal mining Project. The project office has also carried out the R&R centres for the development activities by developing the plots and drilling of the bore wells for the families.

The process of selection of the works under CSR are carried out in consonance with the village public representatives, because of which the most required works of the village are taken up under CSR Activities.

The CSR activities have encompassed activities of the concern for the people living in the region that include, Infrastructure development in the surrounding villages, Health camps & awareness generation, extensive tree plantation for ecological balancing, conduct of Vocational trainings, Skill Development trainings to enable unemployed youth earn livelihood through wage or self-employment, Entrepreneurship development programmes to promote self-employment among youth and providing support to the Project Affected Persons (PAPs) in form of awarding contracts to them for the vendor services to SCCL.

Khairagura Open Cast Expansion Coal mining Project has been working towards overall Socio-economic development of the people living in the zone of influence of mines though their CSR activities designed and customised as per the requirements of the villages.

No. J-11015/28/2013-IA-II(M)
 Government of India
 Ministry of Environment, Forests & Climate Change
 IA-II (Coal mining) Division

Indira Paryavaran Bhawan,
 Jorbagh Road,
 New Delhi-110003

Dated: 6th February, 2015

To,
 The Director (Planning & Project)
 M/s Singareni Collieries Company Ltd.,
 Kothagudem Collieries,
 Kothagudem,
 Andhra Pradesh

VCA (Env)
Santhosh
Santhosh
Santhosh
 Subject: **Khairagura Opencast Expansion Coal Mining Project (from 3.0 MTPA to 3.75 MTPA in an ML area of 1217.50 ha; Latitude 19° 14' 10" to 19° 15' 20" (North) and Longitude 79° 16' 00" to 79° 18' 15" (East)) of M/s The Singareni Collieries Co. Ltd., Dist. Adilabad, Telangana- Expansion under 7(ii) of EIA Notification 2006- Environmental Clearance-reg.**

Sir,
 This is with reference to letter no. CRP/ENV/A/493/43 dated 19.01.2013 and revised application reference to letter no. CRP/ENV/A/493/601 dated 28.08.2013 and subsequent letter no. dated 23.12.2013; 12.11.2014 and 16.12.2014 along with the application for expansion of the production under section 7(ii) of the EIA Notification, 2006. EC was granted to the project vide letter no J-11015/689/2007-IA-II(M) of dated 22.10.2007.

2. The Ministry of Environment, Forests & Climate Change has considered the application. It is noted that the proposal is for grant of Environmental Clearance for **Khairagura Opencast Expansion Coal Mining Project (from 3.0 MTPA to 3.75 MTPA in an ML area of 1217.50 ha; Latitude 19° 14' 10" to 19° 15' 20" (North) and Longitude 79° 16' 00" to 79° 18' 15" (East)) of M/s The Singareni Collieries co. Ltd., Dist. Adilabad, Telangana under 7(ii) of EIA Notification 2006.** The proposal was considered in 71st EAC meeting held during 8th - 9th April, 2013; 7th EAC meeting held during 12th - 13th December, 2013 and 27th EAC meeting held on 18th - 19th December, 2014. The proponent has informed that:

- i. It is the expansion project of M/s SCCL to which Ministry accorded EC vide letter no. J-11015/36/2003-IA-II(M) dated 16.09.2004 for at a rated capacity of 0.72 MTPA in a lease area of 338.78 ha. and the proposal was again granted environmental clearance vide MOEF letter No. J-11015/689/2007-IA-II(M) dated 22.10.2007 for expansion in rated capacity from 0.72 MTPA to 2.5 MTPA with a peak production of 3 MTPA and increase in lease area from 338.78

Khairagura_Expansion_EC

Santhosh

Page 1 of 10



ha to 1217.50 ha.

- ii. The proposal is for expansion in production from 3 MTPA to 3.75 MTPA with in the same mine lease area with 25 % expansion.
- iii. The latitude and longitude of the project are 19° 14' 10" to 19° 15' 20" (North) and 79° 16' 00" to 79° 18' 15" (East) respectively.
- iv. The land usage of the project:

Pre-mining: Total land area of the project is 1217.50 Ha out of which forest land is 296.86 ha and non-forest land is 920.64 ha.

Post Mining:

Sl. No	Description	LAND USE DETAILS (Ha.)				
		Plantation	Water body	Public Use	Other Uses	Total
1	Excavation Area					
2	(a) Backfilled area	261.93	--	--	--	261.93
3	(b) Void area left	--	280.98	--	--	280.98
4	External waste dump	388.57	---	---	---	388.57
5	Vattivagu Diversion		11.56			11.56
6	Approach road to Khairagura OCP			29.85		29.85
7	Road to Dorli OCP			12.82		12.82
8	Service Buildings & CHP	9.80				9.80
9	Protective bund around quarry	15.53				15.53
10	Protective bund around dump yard	16.93				16.93
11	Safety distance, bund, drains etc.	189.53				189.53
	TOTAL	882.29	292.54	42.67		1217.5

Core area:

S. No	Particulars	Forest Land	Non-forest Land	Total
1	Quarry, excavation area.	217.14	325.77	542.91
2	External OB dumps(including top soil storage)		388.57	388.57
3	Approach road to Khairagura OCP	29.85		29.85
4	Road to Dorli OCP	4.58	8.24	12.82
5	Vattivagu Diversion		11.56	11.56
6	Service Buildings & CHP	9.80		9.80
7	Protective bund around quarry	1.74	13.79	15.53
8	Protective bund around dump yard		16.93	16.93
9	Safety distance, bund, drains etc.	33.75	155.78	189.53
10	Total Land Requirement	296.86	920.64	1217.50

- v. The total geological reserve is 74.31 MT. The mineable reserve 66.87 MT, extractable reserve is 66.87MT. The per cent of extraction would be 90 %.
- vi. The coal grade is G-9/G-11. The stripping ratio is 9.86 Cum/ton (Average). The average Gradient is 1 in 6.5. There will be three composite seams with thickness ranging from 0.30 m to 8.00 m.
- vii. The total estimated water requirement is 2250 m³/day. The level of ground water ranges from 1.2 m to 15.4 m.
- viii. The Method of mining would be Opencast with Shovel – Dumper Combination.
- ix. There are three external OB Dumps covering an area 388.57 ha. With the height upto 120 m. The quantity will be 184.58 Mm³. There is one internal dumps covering an area 371.00 ha. with the height upto 90 agl. The quantity will be 395.91 Mm³. The final void area 292.54 ha with a depth of 222 m.
- x. The seasonal data for ambient air quality has been documented and all results at all stations are within prescribed limits.
- xi. The **life of mine** is 14 Years (From 1.4.2013).
- xii. **Transportation:** Coal transportation in pit Crusher to surface CHP through belt conveyor (1.5 Km length). Surface to Siding by trucks 14 Km and siding to loading by wagon.
- xiii. There is R & R involved. There are 538 PAFs for these production.
- xiv. **Cost:** Total capital cost of the project is Rs. 50.46 Crores. CSR Cost Rs. 5.00 per tonne. R&R Cost Rs 17.83 Crores. Environmental Management Cost (Additional environmental capital expenditure shall be Rs. 4.10 Lakhs, Revenue Expenditure shall be Rs. 18.72 per Tonne).
- xv. **Water body :** Vatti vagu (Diversion of Phase-I completed and Ph-II yet to be carried out)
- xvi. **Approvals:** Ground water clearance has been obtained on 02.07.2007. Revised Mine plan and mine closure plan approved by the MOC vide letter no. 13016/2/2006-CA-II dated 17th October, 2014.
- xvii. **Wildlife issues:** There are no national Parks, wildlife sanctuary, biosphere reserves found in the 10 km buffer zone.
- xviii. **Forestry issues:** Total forest area involved for mining is 296.86 ha. Forest Clearance details are below:

S. No.	Area in Ha	FC, vide letter no.& date
1	29.85	8-28/94-FC dated 20.09.2000
2	140.30	8-102/2000-FC dated 20.09.2003
3	126.71	8-28/94-FC dated 20.09.2011
Total	296.86	

- xix. Total **afforestation** plan shall be implemented covering an area of 882.29 ha at the end of mining. Green Belt over an area of 231.79 ha. Density of tree plantation 2500 trees/ ha of plants.
- xx. **Public hearing:** The Public Hearing was held on 09.03.2007.
- xxi. There are no **court cases**/violation pending with the project proponent.
- xxii. The proponent also mentioned that total 556 families were already displaced. 18 families were displaced as a part of Khairagura OC in of Rs 17.83 Crs has already paid under R&R package

2005 before R&R policy. Another 49 families who are near Vattivagu are also proposed for rehabilitation on their request. An amount of Rs. 365.21 Lakhs provided and R&R will be carried through State Government.

3. **EC Compliance report:** The Compliance Monitoring Report of the MoEF, Regional office, Bangalore vide letter no. EP/12.1/660 dated 06.08.2013 which was deliberated in the Committee which noted that the proponent has largely complied with the conditions of the earlier EC and other conditions are in the process of compliance which include the following:

- i. Crushers at the CHP be operated with system to check fugitive emissions; Drills should be wet operated; Controlled blasting should be practiced only during day time; Afforestation shall be done in a phased manner up to total area of 819.65 Ha; Progressive mine closure plan be implemented by reclaiming quarry area; Regular monitoring of ground water and quality shall be carried out; artificial ground water recharge measures; 10% of workmen should be subjected to occupational health checkup; Establishment of four ambient air quality monitoring stations ;Control of fugitive dust emissions from all the sources ;regular submission of data on ambient air quality; Adequate measures control noise levels
- ii. Proper collection and treatment of industrial waste water;
- iii. Regular monitoring and control of vehicular emissions; Provision of personal safety devices and occupational health surveillance

4. The proposal was considered and recommended in its 27th EAC meeting held on 18th - 19th December, 2014 for granting Environmental Clearance. The Ministry of Environment, Forests and Climate Change hereby accords environmental clearance for the above-mentioned **Khairagura Opencast Expansion Coal Mining Project (from 3.0 MTPA to 3.75 MTPA in an ML area of 1217.50 ha; Latitude 19° 14' 10" to 19° 15' 20" (North) and Longitude 79° 16' 00" to 79° 18' 15" (East)) of M/s The Singareni Collieries co. Ltd., Dist. Adilabad, Telangana under 7(ii) of EIA Notification 2006** under the provisions of the Environment Impact Assessment Notification, 2006 and subsequent amendments/circulars thereto subject to the compliance of the terms and conditions mentioned below:

A. Specific Conditions:

- i. The maximum production from the mine at any given time shall not exceed the limit as prescribed in the EC.
- ii. The validity of the EC is for the life of the Mine or as specified in the EIA Notification, 2006, whichever is earlier.
- iii. The Voids shall be filled upto the near ground level by the OB from the new Ullipetta Dorli mine. The coal transportation on road by mechanically covered trucks.
- iv. The coal loading at siding shall be by conveyer belt.
- v. The social audit report of the CSR be submitted to the MOEF for record and be uploaded on to the Company's website.
- vi. Instead of provision of bag filters, effective sensor operated water sprinkling system be provided for dust suppression at crusher house and transfer points at pit head coal handling arrangement.



- vii. The proponent shall utilize the final void for dumping of overburden generated from the proposed "Ullipetta Block" (Relay project) which is adjacent to the Khairagura OC project.
- viii. The final mine closure plan will be submitted to MOEF 5 year in advance of final mine closure for approval.
- ix. Coal transportation in pit Crusher to surface CHP through belt conveyor (1.5 Km length). Surface to Siding by trucks 14 Km and siding to loading by wagon.
- x. The production shall be within the same Mining Lease area.
- xi. The depth of the internal void shall be 40 m from the ground level and should be adequate for fishery purpose.
- xii. All safety measures shall be taken as per CMR, 1957 & related Circulars.
- xiii. The production shall be within the same Mining Lease area.
- xiv. The OB shall be completely re-handled at the end of the mining and will be back filled upto the ground level and covered with about a meter thick top soil and put to use. The land after mining shall be brought back for agriculture purpose.
- xv. Garland drains be provided.
- xvi. Appropriate embankment shall be provided along the side of the river/nallah flowing near or adjacent to the mine.
- xvii. The CSR cost should be Rs 5 per Tonnes of Coal produced which should be adjusted as per the annual inflation.
- xviii. Everybody in the core area should be provided with mask for protection against fugitive dust emissions.
- xix. Dust mask to be provided to everyone working in the mining area.
- xx. The supervisory staff should be held personally responsible for ensuring compulsory regarding wearing of dust mask in the core area.
- xxi. People working in the core area should be periodically tested for the lung diseases and the burden of cost on account of working in the coal mine area.
- xxii. The mining area should be surrounded by green belt having thick closed thick canopy of the tree cover.
- xxiii. The embankment constructed along the river boundary shall be of suitable dimensions and critical patches shall be strengthened by stone pitching on the river front side and stabilised with plantation so as to withstand the peak water flow and prevent mine inundation.
- xxiv. There shall be no overflow of OB into the river and into the agricultural fields and massive plantation of native species shall be taken up in the area between the river and the project.
- xxv. OB shall be stacked at four earmarked external OB dumpsite(s) only. The ultimate slope of the dump shall not exceed 28°. Monitoring and management of existing reclaimed dumpsites shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forests & Climate Change and its concerned Regional office on yearly basis.
- xxvi. Catch drains and siltation ponds of appropriate size shall be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected shall be utilised for watering the mine area, roads, green belt development, etc. The drains shall be regularly desilted and maintained properly. Garland drains (size, gradient and length) and sump capacity shall be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area

- adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material.
- xxvii. Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data.
 - xxviii. Crushers at the CHP of adequate capacity for the expansion project shall be operated with high efficiency bag filters, water sprinkling system shall be provided to check fugitive emissions from crushing operations, conveyor system, haulage roads, transfer points, etc.
 - xxix. Drills shall be wet operated. Roads shall be metal topped and mechanical sweepers shall be regularly deployed to clear the dust off the main approach and mineral transportation roads. Water sprinkling (fixed and mist type, mobile) shall be regularly done along the main haul roads.
 - xxx. The project authorities shall undertake regular repairing and tarring of roads used for mineral transportation. A 3-tier green belt comprising of a mix of native species shall be developed all along the major approach roads.
 - xxxi. Controlled blasting shall be practiced with use of delay detonators and only during daytime. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders shall be implemented.
 - xxxii. A Progressive afforestation plan shall be implemented covering an area of 882.29 ha at the end of mining, which includes reclaimed External OB dump area (388.57 ha), Internal OB dump area (261.93 ha), and Green belt (231.79 ha) in township located outside the lease by planting native species in consultation with the local DFO/Agriculture Department. The density of the trees shall be around 2500 plants per ha. Massive plantation shall be carried out in open spaces in and around the mine and a 3-tier avenue plantation along the main approach roads to the mine.
 - xxxiii. An estimated total 578.49 Mm³ of OB will be generated during the entire life of the mine. Out of which 184.58 Mm³ of OB will be dumped in three external OB Dumps in an earmarked area covering 331.75 ha of land. 393.91 Mm³ of OB will be dumped in one internal OB Dumps in an earmarked area covering 280.98 ha of land. The maximum height of external OB dump will not exceed 90 m. The maximum slope of the dump shall not exceed 28 degrees. Monitoring and management of reclaimed dump sites shall continue till the vegetation becomes self-sustaining and compliance status shall be submitted to MOEF and its Regional Office on yearly basis.
 - xxxiv. The proponent should prepare restoration and reclamation plan for the degraded area. The land be used in a productive and sustainable manner.
 - xxxv. Compensatory Ecological & Restoration of waste land, other degraded land and OB dumps in lieu of breaking open the land be carried out.
 - xxxvi. The mining should be phased out in sustainable manner. No extra over burden dumps are permitted.
 - xxxvii. No groundwater shall be used for mining operations.
 - xxxviii. Of the total quarry area of 542.91 h, the backfilled quarry area of 261.93 ha shall be reclaimed with plantation and a void of 280.98 ha at a depth of 40 m which is proposed to be converted into a water body shall be gently sloped and the upper benches shall be terraced and stabilised with plantation/afforestation by planting native plant species in consultation with the local DFO/Agriculture Department. The density of the trees shall be around 2500 plants per ha.
 - xxxix. Regular monitoring of groundwater level and quality shall be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter

(January) seasons and for quality in May. Data thus collected shall be submitted to the Ministry of Environment, Forests & climate change and the Central Pollution Control Board quarterly within one month of monitoring.

- xi. The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource in case monitoring indicates a decline in water table. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.
- xii. Sewage treatment plant shall be installed in the existing colony. ETP shall also be provided for workshop and CHP wastewater.
- xiii. Besides carrying out regular periodic health check-up of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, through an specialised agency /institution within the District/State and the results reported to this Ministry and to DGMS.
- xliii. Land oustees shall be compensated as per the norms laid out R&R Policy of CIL or the National R&R Policy or R&R Policy of the State Government whichever is higher.
- xliv. For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1: 5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MOEF&CC and its concerned Regional office
- xlv. A detailed Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment, Forests & Climate Change within 6 months of grant of Environmental Clearance.
- xlvi. The project authorities shall in consultation with the Panchayats of the local villages and administration identify socio-economic and welfare measures under CSR to be carried out over the balance life of the mine.
- xlvi. Corporate Environment Responsibility:
 - a) The Company shall have a well laid down Environment Policy approved by the Board of Directors.
 - b) The Environment Policy shall prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.
 - c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions shall be furnished.
 - d) To have proper checks and balances, the company shall have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.

B. General Conditions

- i. No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment, Forests & Climate Change.

Kharagura_Expansion_EC



- ii. No change in the calendar plan of production for quantum of mineral coal shall be made.
- iii. Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM₁₀, PM_{2.5}, SO₂ and NO_x monitoring. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.
- iv. Data on ambient air quality (PM₁₀, PM_{2.5}, SO₂ and NO_x) and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly submitted to the Ministry including its concerned Regional Office and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognised under the EPA rules, 1986 shall be furnished as part of compliance report.
- v. Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with ear plugs/muffs.
- vi. Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.
- vii. Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.
- viii. Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analysed through a laboratory recognised under EPA Rules, 1986.
- ix. Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.
- x. Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed and records maintained thereof. The quality of environment due to outsourcing and the health and safety issues of the outsourced manpower should be addressed by the company while outsourcing.
- xi. A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company.
- xii. The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its concerned Regional Office.
- xiii. The Project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution control Board and may also be seen at the website of the Ministry of Environment, Forests & Climate Change at <http://envfor.nic.in>.
- xiv. A copy of the environmental clearance letter shall be marked to concern Panchayat/Zila Parishad, Municipal Corporation or Urban local body and local NGO, if any, from whom any



suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on company's website.

- xv. A copy of the environmental clearance letter shall be shall also be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, District Industry Sector and Collector's Office/Tehsildar's Office for 30 days.
- xvi. The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated environmental clearance conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain. The monitoring data of environmental quality parameter (air, water, noise and soil) and critical pollutant such as PM₁₀, PM_{2.5}, SO₂ and NO_x (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.
- xvii. The project proponent shall submit six monthly compliance reports on status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the Ministry, respective Zonal Office s of CPCB and the SPCB.
- xviii. The Regional Office of this Ministry located in the Region shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/ information/monitoring reports.
- xix. The Environmental statement for each financial year ending 31 March in For -V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MoEF&CC by e-mail.

5. The proponent shall abide by all the commitments and recommendations made in the ELA/EMP report so also during their presentation to the EAC.

6. The commitment made by the Proponent to the issue raised during Public Hearing shall be implemented by the Proponent

7. The proponent is required to obtain all necessary clearances/approvals that may be required before the start of the project. The Ministry or any other competent authority may stipulate any further condition for environmental protection.

8. The Ministry or any other competent authority may stipulate any further condition for environmental protection.

9. The Proponent shall setup an Environment Audit cell with responsibility and accountability to ensure implementation of all the EC Conditions.

10. Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.

11. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India/High Courts and any other Court of Law relating to the subject matter. The proponent shall ensure to undertake and provide for the costs incurred for taking up remedial measures in case of soil contamination, contamination of groundwater and surface water, and occupational and other diseases due to the mining operations.

12. Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

13. This EC supersedes the earlier EC vide letter no.J-11015/36/2003-IA-II(M) dated 16.09.2004 for at a rated capacity of 0.72 MTPA in a lease area of 338.78 ha. and environmental clearance vide MOEF letter No. J-11015/689/2007-IA-II(M) dated 22.10.2007 for expansion in rated capacity from 0.72 MTPA to 2.5 MTPA with a peak production of 3 MTPA and increase in lease area from 338.78 ha to 1217.50 ha.


(Dr. Manoranjan Hota)
Director

Copy to:

1. Secretary, Ministry of Coal, Shastri Bhawan, New Delhi.
2. Secretary, Department of Environment, Forests & Climate Change, Government of Telangana, Secretariat, Hyderabad.
3. Chief Conservator of Forests, Regional office (SZ), Ministry of Environment, Forests & Climate Change, 4th Floor, F-Wing, Kenriya Sadan Block, Kormangala, Bangalore – 560034.
4. Member Secretary, Telangana State Pollution Control Board, Paryavaran Bhawan, A-3 Industrial Estate, Sanatnagar, Hyderabad – 500038.
5. Member Secretary, Central Pollution Control Board, CBD-cum-Office Complex, East Arjun Nagar, New Delhi -110032.
6. Member-Secretary, Central Ground Water Authority, Ministry of Water Resources, Curzon Road Barracks, A-2, W-3 Kasturba Gandhi Marg, New Delhi.
7. District Collector, Adilabad, Government of Telangana.
8. Monitoring File 9. Guard File 10. Record File 11. Notice Board.


(Dr. Manoranjan Hota)
Director



SINGARENI COLLIERIES COMPANY LIMITED
(A Government Company)

CORPORATE SOCIAL RESPONSIBILITY POLICY

The Policy is known as Corporate Social Responsibility Policy of The Singareni Collieries Company Limited.

Preamble:

One of the greatest challenges facing the world today is integrating economic activity with environmental and social concerns. The objective of such integration is achievement of 'sustainable development'. The mining and mineral industry has come under tremendous pressure to address/ improve social, developmental and environmental concerns. Like other parts of business world, companies are more routinely expected to perform to highest standards of behaviour, going well beyond achieving profitability goals. They are also increasingly being asked to be more transparent. In response to this The Singareni Collieries Company Limited (SCCL) has committed to bringing economic and social benefits through its Corporate Social Responsibility (CSR) initiatives. This policy document may therefore serve SCCL in extending CSR activities for the benefit of Society at large.

Objective:

The CSR policy has been framed in accordance with the provisions of the Companies Act, 2013 and the Rules made thereunder.

The main objective of this Policy is to integrate CSR and Sustainability as a key business process for achieving triple-bottom line impact as mentioned below;

- SCCL recognizes that pursuit of sustainable development is an integral part of growing its business, creating value for its stakeholders and in building a responsible future through ethical business practices and governance.
- SCCL supports practical measures and policies that will help to protect and improve the environment.

- SCCL adopts a responsible approach towards communities and aim for sustainable development without creating dependency.

Major Thrust Areas:

The major thrust areas of the CSR policy are identified with a view to have long term benefits to the Society which are as under:

1. Basic Services (Drinking Water supply, Sanitation etc.)
2. Health
3. Education
4. Livelihood and Local Economic Development
5. Interventions for marginalized communities such as SCs and STs
6. Other related activities.

Scope & Implementation:

Scope:

The scope of CSR activities of SCCL in line with Schedule VII of Companies Act, 2013 is as follows:

➤ Environment

- ✓ Involvement of community for additional efforts to create better environment while complying with applicable environmental regulations.
- ✓ Minimise environmental impacts and risks to provide opportunities for building relationships with local communities.
- ✓ Promote environment friendly technologies.

➤ Communities & Society

- ✓ Promote multi-stakeholder partnerships to look at longer-term, sustainable solutions.
- ✓ Build two-way and inclusive channel of communication with communities.
- ✓ Provide support during natural calamities, disasters and other emergencies.

➤ Business

- ✓ Provide opportunities to local and small entrepreneurs for business participation through ancillarisation.

Geographical area to be covered:

A substantial portion of CSR Budget i.e., to the extent of 80% shall be spent on CSR activities in all the four districts of Telangana State viz., Khammam, Warangal, Karimnagar and Adilabad where the coal fields are located and 20% may be spent outside the aforesaid four districts of Telangana State.

Implementation:

- ❖ A major portion of the CSR activities should be undertaken in project mode. Every project shall be time framed.
- ❖ Identified CSR activities are to be implemented / carried out by the company itself or by other agencies as prescribed in the provisions of the Companies Act, 2013 and the Rules made thereunder.

To support implementation of the policy, SCCL will undertake the following:

- ✓ Ensure active involvement of the top management through their visible support in spreading the message of CSR & Sustainability within the organization.
- ✓ Devise internal communication strategies to spread awareness of CSR and Sustainability amongst the employees.
- ✓ Ensure committed involvement of all employees in carrying forward the agenda of CSR and Sustainability.
- ✓ Create a suitable organization structure to oversee implementation of the policy.
- ✓ Allocate budget for implementation of CSR and Sustainability initiatives.
- ✓ Periodically measure, review, communicate and report CSR & Sustainability performance as per multi-year plan made in consultation with key stakeholders to the Board.

Institutional arrangements

Implementation of the CSR Policy would be driven by:

➤ At the Board level:

There shall be a CSR Committee of Directors which presently comprises Advisor (Projects), Ministry of Coal, Govt. of India as Chairman; and Director (Finance), Director (Operations) as Members & Director (P.A&W) as Member Convener.

➤ Below Board level:

- ✓ C&MD & Functional Directors shall be responsible and accountable for integrating CSR, Sustainability and Community Development into business processes and support progress towards application of principles of sustainable development into business operations.
- ✓ General Manager (Personnel) Welfare & CSR facilitates integration of CSR, Sustainability and Community Development in business and management systems. He consolidates CSR proposals in consultation with Corporate / Area CGMs / GMs concerned and presents them to Director(PA&W) for making suitable recommendations, with concurrence of Director(Finance), for approval of C&MD / Board in accordance with extant delegation of powers.

Base Line Survey & Documentation:

- ❖ CSR activities which are of more than Rs. 1.0 Crore value shall be taken up after ascertaining Social Benefit Analysis through Base Line Survey through the external agency having relevant professional expertise in the field or through internal mechanism.
- ❖ CSR activities relating to providing infrastructure to Schools, Colleges, Professional institutions where social benefit is involved, Base Line Survey is not required. However, the social benefit and justification has to be ascertained.
- ❖ Proper Documentation of CSR activities, expenditure, procurement etc., shall be done and put in the Public Domain i.e., SCCL's Website.

Monitoring :

- The CGM / GM concerned shall monitor implementation of CSR activities / Programmes / Projects and send monthly status report to the General Manager (Personnel) Welfare & CSR.
- GM (Personnel) Welfare & CSR shall prepare a consolidated Monthly Report on status of implementation of CSR activities in the company and submits the same to the Committee of Functional Directors who in turn apprises C&MD & CSR Committee.
- CSR Committee at Board level shall review implementation of CSR activities / programmes / projects across the company on quarterly basis.
- Utilization Certificate with statement of expenditure duly certified by a practicing Chartered Accountant/Authorised Auditor shall be submitted by the Organisation/Institution/Trust to whom CSR fund is allocated.

Upkeep and maintenance of assets created:

Maintenance of assets created under CSR activities would be the responsibility of the State Government, local representative of the society and NGO concerned through which CSR activities are implemented and undertaking/consent shall also be taken to that effect.

Reflection of CSR activities:

All the CSR activities undertaken by the company shall be audited by a local authorized auditor. CSR activities will be reflected in the Annual Report under Social Overhead (CSR).

Conclusion:

This Policy supersedes the Policy relating to Surrounding Habitat Assistance Programme (SHAPE).

Annexure 3: Data Item Comparison of Indicators

for Komarambheem Asifabad District from NRHM Report & Inferences:

Some of the major observations from the report of the secondary data of NRHM are mentioned below:

- i) Number of pregnant women registered for ANC has improved and immunisation of children has reduced by 67.64% (SI no. 1.1)
- ii) Number of Malaria (Microscopy Tests) - Plasmodium Vivax test positive have reduced by 100%. (SI no. 11.1.1.b)
- iii) Number of outpatients with Acute Heart Diseases have gone down by 75%. (SI no 14.1.4)
- iv) Number of deaths due to Tuberculosis has gone down by 100%. (SI. no. 16.7.2)
- v) Number of deaths due to respiratory diseases including infections (other than TB) has reduced by 100%. (16.7.3)

Table 1: Data Item Comparison of Indicators for Komarambheem Asifabad District from NRHM Report.

Data Item Comparison Report of Komarambheem Asifabad District (Telangana) for 2019-20 & 2020-21

Source: https://nrhm-mis.nic.in/hmisreports/frmstandard_reports.aspx

Sl.No	Parameter	Indicator	Total Upto March 19-20	Total Upto March 20-21	% of Difference from 2019-20 to 2020-21
1.1	M1 [Ante Natal Care (ANC)]	Total number of pregnant women registered for ANC	124289	40226	-67.64
1.1.1	M1 [Ante Natal Care (ANC)]	Out of the total ANC registered, number registered within 1st trimester (within 12 weeks)	90789	28225	-68.91
1.2.1	M1 [Ante Natal Care (ANC)]	Number of PW given TT1	106027	36127	-65.93
1.2.2	M1 [Ante Natal Care (ANC)]	Number of PW given TT2	74552	26763	-64.10
1.2.3	M1 [Ante Natal Care (ANC)]	Number of PW given TT Booster	9211	4158	-54.86
1.2.4	M1 [Ante Natal Care (ANC)]	Number of PW given 180 Iron Folic Acid (IFA) tablets	104485	35951	-65.59
1.2.5	M1 [Ante Natal Care (ANC)]	Number of PW given 360 Calcium tablets	20842	12511	-39.97
1.2.6	M1 [Ante Natal Care (ANC)]	Number of PW given one Albendazole tablet after 1st trimester	6431	2797	-56.51
1.2.7	M1 [Ante Natal Care (ANC)]	Number of PW received 4 or more ANC check ups	110050	38162	-65.32

Sl.No	Parameter	Indicator	Total Upto March 19-20	Total Upto March 20-21	% of Difference from 2019-20 to 2020-21
1.2.8	M1 [Ante Natal Care (ANC)]	Number of PW given ANC Corticosteroids in Pre Term Labour	886	168	-81.04
1.3.1	M1 [Ante Natal Care (ANC)]	New cases of PW with hypertension detected	3113	249	-92.00
1.3.1.a	M1 [Ante Natal Care (ANC)]	Out of the new cases of PW with hypertension detected, cases managed at institution	2244	208	-90.73
1.3.2	M1 [Ante Natal Care (ANC)]	Number of Eclampsia cases managed during delivery	83	4	-95.18
1.4.1	M1 [Ante Natal Care (ANC)]	Number of PW tested for Haemoglobin (Hb) 4 or more than 4 times for respective ANCs	113923	38980	-65.78
1.4.2	M1 [Ante Natal Care (ANC)]	Number of PW having Hb level<11 (tested cases)(7.1 to 10.9)	28426	9505	-66.56
1.4.3	M1 [Ante Natal Care (ANC)]	Number of PW having Hb level<7 (tested cases)	3230	1435	-55.57
1.4.4	M1 [Ante Natal Care (ANC)]	Number of PW having severe anaemia (Hb<7) treated	633	110	-82.62
1.5.1	M1 [Ante Natal Care (ANC)]	Number of PW tested for blood sugar using OGTT (Oral Glucose Tolerance Test)	527	86	-83.68
1.6.1.a	M1 [Ante Natal Care (ANC)]	Number of PW tested using POC test for Syphilis	4059	781	-80.76
1.6.2.a	M1 [Ante Natal Care (ANC)]	Number of pregnant women tested for Syphilis	10779	1695	-84.27
2.1.1.a	M2 [Deliveries]	Number of Home Deliveries attended by Skill Birth Attendant(SBA) (Doctor/Nurse/ANM)	1424	250	-82.44
2.1.1.b	M2 [Deliveries]	Number of Home Deliveries attended by Non SBA (Trained Birth Attendant(TBA) /Relatives/etc.)	4343	808	-81.40
2.1.2	M2 [Deliveries]	Number of PW given Tablet Misoprostol during home delivery	46	12	-73.91
2.1.3	M2 [Deliveries]	Number of newborns received 7 Home Based Newborn Care (HBNC) visits in case of Home delivery	4887	1372	-71.93
2.2	M2 [Deliveries]	Number of Institutional Deliveries conducted (Including C-Sections)	68614	25503	-62.83
2.2.1	M2 [Deliveries]	Out of total institutional deliveries number of	42567	14364	-66.26

Sl.No	Parameter	Indicator	Total Upto March 19-20	Total Upto March 20-21	% of Difference from 2019-20 to 2020-21
		women discharged within 48 hours of delivery			
2.2.2	M2 [Deliveries]	Number of newborns received 6 HBNC visits after Institutional Delivery	35102	30261	-13.79
3.1	M3 [Number of Caesarean (C-Section) deliveries]	Total C -Section deliveries performed	2667	525	-80.31
3.1.1		C-sections, performed at night (8 PM- 8 AM)	532	165	-68.98
4.1.1.a	M4 [Pregnancy outcome & details of new-born]	Live Birth - Male	38583	13840	-64.13
4.1.1.b	M4 [Pregnancy outcome & details of new-born]	Live Birth - Female	35776	12213	-65.86
4.1.2	M4 [Pregnancy outcome & details of new-born]	Number of Pre term newborns (< 37 weeks of pregnancy)	822	306	-62.77
4.1.3	M4 [Pregnancy outcome & details of new-born]	Still Birth	511	222	-56.56
4.2	M4 [Pregnancy outcome & details of new-born]	Abortion (spontaneous)	278	14	-94.96
4.3.1.a	M4 [Pregnancy outcome & details of new-born]	MTP up to 12 weeks of pregnancy	119	3	-97.48
4.3.1.b	M4 [Pregnancy outcome & details of new-born]	MTP more than 12 weeks of pregnancy	12	0	-100.00
4.3.2.a	M4 [Pregnancy outcome & details of new-born]	Post Abortion/ MTP Complications Identified	30	0	-100.00
4.3.3	M4 [Pregnancy outcome & details of new-born]	Number of women provided with post abortion/ MTP contraception	24	0	-100.00
4.4.1	M4 [Pregnancy outcome & details of new-born]	Number of newborns weighed at birth	69836	25642	-63.28
4.4.2	M4 [Pregnancy outcome & details of new-born]	Number of newborns having weight less than 2.5 kg	4924	1723	-65.01
4.4.3	M4 [Pregnancy outcome & details of new-born]	Number of Newborns breast fed within 1 hour of birth	69025	25247	-63.42
5.1	M5 [Complicated Pregnancies]	Number of cases of pregnant women with Obstetric Complications attended (Antepartum haemorrhage (APH), Post-Partum Hemorrhage (PPH), Sepsis, Eclampsia and others)	232	28	-87.93
5.2	M5 [Complicated Pregnancies]	Number of Complicated pregnancies treated with Blood Transfusion	20	2	-90.00

Sl.No	Parameter	Indicator	Total Upto March 19-20	Total Upto March 20-21	% of Difference from 2019-20 to 2020-21
6.1	M6 [Post Natal Care (PNC)]	Women receiving 1st post partum checkup within 48 hours of home delivery	53960	14939	-72.31
6.2	M6 [Post Natal Care (PNC)]	Women receiving 1st post partum checkup between 48 hours and 14 days	35831	15338	-57.19
6.3	M6 [Post Natal Care (PNC)]	Number of mothers provided full course of 180 IFA tablets after delivery	25372	7766	-69.39
6.4	M6 [Post Natal Care (PNC)]	Number of mothers provided 360 Calcium tablets after delivery	13055	5022	-61.53
7.1.1	M7 [Reproductive Tract Infections/Sexually Transmitted Infections (RTI/STI) Cases]	New RTI/STI cases identified - Male	1222	230	-81.18
7.1.2	M7 [Reproductive Tract Infections/Sexually Transmitted Infections (RTI/STI) Cases]	New RTI/STI cases identified - Female	2593	364	-85.96
7.2.1	M7 [Reproductive Tract Infections/Sexually Transmitted Infections (RTI/STI) Cases]	RTI/STI for which treatment initiated - Male	1222	230	-81.18
7.2.2	M7 [Reproductive Tract Infections/Sexually Transmitted Infections (RTI/STI) Cases]	RTI/STI for which treatment initiated - Female	2593	364	-85.96
8.1.1	M8 [Family Planning]	Number of Non Scalpel Vasectomy (NSV) / Conventional Vasectomy conducted	16	0	-100.00
8.2.1	M8 [Family Planning]	Number of Laparoscopic sterilizations (excluding post abortion) conducted	4251	1816	-57.28
8.2.2	M8 [Family Planning]	Number of Interval Minilap (other than post-partum and post-abortion) sterilizations conducted	715	36	-94.97
8.2.3	M8 [Family Planning]	Number of Postpartum sterilizations (within 7 days of delivery by minilap or concurrent with caesarean section) conducted	50	8	-84.00

Sl.No	Parameter	Indicator	Total Upto March 19-20	Total Upto March 20-21	% of Difference from 2019-20 to 2020-21
8.2.4	M8 [Family Planning]	Number of Post Abortion sterilizations (within 7 days of spontaneous or surgical abortion) conducted	1	0	-100.00
8.3	M8 [Family Planning]	Number of Interval IUCD Insertions (excluding PPIUCD and PAIUCD)	6798	1392	-79.52
8.4	M8 [Family Planning]	Number of Postpartum (within 48 hours of delivery) IUCD insertions	3010	1301	-56.78
8.5	M8 [Family Planning]	Number of Post Abortion (within 12 days of spontaneous or surgical abortion) IUCD insertions	64	30	-53.13
8.6	M8 [Family Planning]	Number of IUCD Removals	588	143	-75.68
8.7	M8 [Family Planning]	Number of complications following IUCD Insertion	193	10	-94.82
8.8	M8 [Family Planning]	Injectable Contraceptive- Antara Program- First Dose	2085	376	-81.97
8.9	M8 [Family Planning]	Injectable Contraceptive- Antara Program- Second Dose	592	167	-71.79
8.10	M8 [Family Planning]	Injectable Contraceptive- Antara Program- Third Dose	315	110	-65.08
8.11	M8 [Family Planning]	Injectable Contraceptive- Antara Program- Fourth or more than fourth	313	110	-64.86
8.12	M8 [Family Planning]	Number of Combined Oral Pill cycles distributed	25453	14760	-42.01
8.13	M8 [Family Planning]	Number of Condom pieces distributed	231491	104510	-54.85
8.14	M8 [Family Planning]	Number of Centchroman (weekly) pill strips distributed	14326	8308	-42.01
8.15	M8 [Family Planning]	Number of Emergency Contraceptive Pills (ECP) given	10019	5729	-42.82
8.16	M8 [Family Planning]	Number of Pregnancy Test Kits (PTK) used	9754	4071	-58.26
8.17.4	M8 [Family Planning]	Failures following female sterilization	1	0	-100.00
9.1.1	M9 [CHILD IMMUNISATION]	Child immunisation - Vitamin K1 (Birth Dose)	8531	3867	-54.67
9.1.2	M9 [CHILD IMMUNISATION]	Child immunisation - BCG	103449	39569	-61.75
9.1.3	M9 [CHILD IMMUNISATION]	Child immunisation - DPT1	171	7	-95.91
9.1.4	M9 [CHILD IMMUNISATION]	Child immunisation - DPT2	119	0	-100.00
9.1.5	M9 [CHILD IMMUNISATION]	Child immunisation - DPT3	324	3	-99.07
9.1.6	M9 [CHILD IMMUNISATION]	Child immunisation - Pentavalent 1	92965	28960	-68.85

Sl.No	Parameter	Indicator	Total Upto March 19-20	Total Upto March 20-21	% of Difference from 2019-20 to 2020-21
9.1.7	M9 [CHILD IMMUNISATION]	Child immunisation - Pentavalent 2	87728	26421	-69.88
9.1.8	M9 [CHILD IMMUNISATION]	Child immunisation - Pentavalent 3	94030	26459	-71.86
9.1.9	M9 [CHILD IMMUNISATION]	Child immunisation - OPV 0 (Birth Dose)	42984	17186	-60.02
9.1.10	M9 [CHILD IMMUNISATION]	Child immunisation - OPV1	90728	28529	-68.56
9.1.11	M9 [CHILD IMMUNISATION]	Child immunisation - OPV2	85816	26108	-69.58
9.1.12	M9 [CHILD IMMUNISATION]	Child immunisation - OPV3	87422	25819	-70.47
9.1.13	M9 [CHILD IMMUNISATION]	Child immunisation - Hepatitis-B0 (Birth Dose)	23826	13396	-43.78
9.1.14	M9 [CHILD IMMUNISATION]	Child immunisation - Hepatitis-B1	127	17	-86.61
9.1.15	M9 [CHILD IMMUNISATION]	Child immunisation - Hepatitis-B2	104	14	-86.54
9.1.16	M9 [CHILD IMMUNISATION]	Child immunisation - Hepatitis-B3	172	15	-91.28
9.1.17	M9 [CHILD IMMUNISATION]	Child immunisation - Inactivated Polio Vaccine 1 (IPV 1)	85216	28306	-66.78
9.1.18	M9 [CHILD IMMUNISATION]	Child immunisation - Inactivated Polio Vaccine 2 (IPV 2)	81379	25855	-68.23
9.1.19	M9 [CHILD IMMUNISATION]	Child immunisation - Rotavirus 1	84500	28178	-66.65
9.1.20	M9 [CHILD IMMUNISATION]	Child immunisation - Rotavirus 2	78694	25751	-67.28
9.1.21	M9 [CHILD IMMUNISATION]	Child immunisation - Rotavirus 3	79101	25658	-67.56
9.2.1	M9 [CHILD IMMUNISATION]	Child immunisation (9-11months) - Measles & Rubella (MR)- 1st Dose	98071	29353	-70.07
9.2.2	M9 [CHILD IMMUNISATION]	Child immunisation (9-11months) - Measles 1st dose	6892	229	-96.68
9.2.3	M9 [CHILD IMMUNISATION]	Child immunisation (9-11months) - JE 1st dose	92191	28955	-68.59
9.2.4.a	M9 [CHILD IMMUNISATION]	Children aged between 9 and 11 months fully immunized- Male	50282	15427	-69.32
9.2.4.b	M9 [CHILD IMMUNISATION]	Children aged between 9 and 11 months fully immunized - Female	45284	13913	-69.28
9.3.1	M9 [CHILD IMMUNISATION]	Child immunisation - Measles & Rubella (MR)- 1st Dose	20838	4310	-79.32
9.3.2	M9 [CHILD IMMUNISATION]	Child immunisation - Measles-1st dose	4028	131	-96.75
9.3.3	M9 [CHILD IMMUNISATION]	Child immunisation - JE 1st dose	21888	4122	-81.17
9.4.1	M9 [CHILD IMMUNISATION]	Child immunisation - Measles & Rubella (MR)- 2nd Dose (16-24 months)	78950	25493	-67.71

Sl.No	Parameter	Indicator	Total Upto March 19-20	Total Upto March 20-21	% of Difference from 2019-20 to 2020-21
9.4.2	M9 [CHILD IMMUNISATION]	Child immunisation - Measles 2nd dose (More than 16 months)	5860	211	-96.40
9.4.3	M9 [CHILD IMMUNISATION]	Child immunisation - DPT 1st Booster	79476	24683	-68.94
9.4.4	M9 [CHILD IMMUNISATION]	Child immunisation - OPV Booster	79283	24733	-68.80
9.4.5	M9 [CHILD IMMUNISATION]	Child immunisation - Measles, Mumps, Rubella (MMR) Vaccine	1376	185	-86.56
9.4.6	M9 [CHILD IMMUNISATION]	Number of children more than 16 months of age who received Japanese Encephalitis (JE) vaccine	77066	25500	-66.91
9.5.1	M9 [CHILD IMMUNISATION]	Child immunisation - Typhoid	555	67	-87.93
9.5.2	M9 [CHILD IMMUNISATION]	Children more than 5 years received DPT5 (2nd Booster)	64279	15462	-75.95
9.5.3	M9 [CHILD IMMUNISATION]	Children more than 10 years received TT10	47496	11891	-74.96
9.5.4	M9 [CHILD IMMUNISATION]	Children more than 16 years received TT16	58378	15016	-74.28
9.6.1	M9 [CHILD IMMUNISATION]	Number of cases of AEFI - Abscess	31	35	12.90
9.7.1	M9 [CHILD IMMUNISATION]	Immunisation sessions planned	40427	12384	-69.37
9.7.2	M9 [CHILD IMMUNISATION]	Immunisation sessions held	39581	10829	-72.64
9.7.3	M9 [CHILD IMMUNISATION]	Number of Immunisation sessions where ASHAs were present	37804	10252	-72.88
9.8.1	M9 [CHILD IMMUNISATION]	Child immunisation - Vitamin A Dose - 1	89524	28289	-68.40
9.8.2	M9 [CHILD IMMUNISATION]	Child immunisation - Vitamin A Dose - 5	66787	35551	-46.77
9.8.3	M9 [CHILD IMMUNISATION]	Child immunisation - Vitamin A Dose - 9	60585	26025	-57.04
9.9	M9 [CHILD IMMUNISATION]	Number of children (6-59 months) provided 8-10 doses (1ml) of IFA syrup (Bi weekly)	171	1295	657.31
9.10	M9 [CHILD IMMUNISATION]	Number of children (12-59 months) provided Albendazole	34	23	-32.35
9.11	M9 [CHILD IMMUNISATION]	Number of severely underweight children provided Health Checkup (0-5 yrs)	76	19	-75.00
10.1	M10 [Number of cases of Childhood Diseases (0-5 years)]	Childhood Diseases - Pneumonia	264	5	-98.11
10.2	M10 [Number of cases of Childhood Diseases (0-5 years)]	Childhood Diseases - Asthma	55	1	-98.18

Sl.No	Parameter	Indicator	Total Upto March 19-20	Total Upto March 20-21	% of Difference from 2019-20 to 2020-21
10.3	M10 [Number of cases of Childhood Diseases (0-5 years)]	Childhood Diseases - Sepsis	83	2	-97.59
10.4	M10 [Number of cases of Childhood Diseases (0-5 years)]	Childhood Diseases - Diphtheria	2	0	-100.00
10.7	M10 [Number of cases of Childhood Diseases (0-5 years)]	Childhood Diseases - Tuberculosis (TB)	92	5	-94.57
10.8	M10 [Number of cases of Childhood Diseases (0-5 years)]	Childhood Diseases - Acute Flaccid Paralysis(AFP)	130	0	-100.00
10.9	M10 [Number of cases of Childhood Diseases (0-5 years)]	Childhood Diseases - Measles	121	0	-100.00
10.10	M10 [Number of cases of Childhood Diseases (0-5 years)]	Childhood Diseases - Malaria	10	0	-100.00
10.11	M10 [Number of cases of Childhood Diseases (0-5 years)]	Childhood Diseases - Diarrhoea	1011	122	-87.93
10.12	M10 [Number of cases of Childhood Diseases (0-5 years)]	Childhood Diseases - Diarrhoea treated in Inpatients	126	173	37.30
10.13	M10 [Number of cases of Childhood Diseases (0-5 years)]	Children admitted with upper respiratory infections	71	0	-100.00
10.14	M10 [Number of cases of Childhood Diseases (0-5 years)]	Childhood Diseases - Severe Acute Malnutrition (SAM)	47	1	-97.87
11.1.1.a	M11 [NVBDPC]	Total Blood Smears Examined for Malaria	10256	113	-98.90
11.1.1.b	M11 [NVBDPC]	Malaria (Microscopy Tests) - Plasmodium Vivax test positive	821	0	-100.00
11.1.2.a	M11 [NVBDPC]	RDT conducted for Malaria	3678	75	-97.96
11.1.2.b	M11 [NVBDPC]	Malaria (RDT) - Plasmodium Vivax test positive	76	0	-100.00
11.1.2.c	M11 [NVBDPC]	Malaria (RDT) - Plasmodium Falciparum test positive	35	0	-100.00
11.2.1	M11 [NVBDPC]	Kala Azar (RDT) - Tests Conducted	375	32	-91.47
11.2.2	M11 [NVBDPC]	Kala Azar Positive Cases	46	8	-82.61
11.3.1	M11 [NVBDPC]	Dengue - RDT Test Positive	115	2	-98.26

Sl.No	Parameter	Indicator	Total Upto March 19-20	Total Upto March 20-21	% of Difference from 2019-20 to 2020-21
11.4.1	M11 [NVBDCP]	Tests Conducted for JE	144	21	-85.42
11.4.2	M11 [NVBDCP]	Tests Positive for JE	6	1	-83.33
13.1	M13 [Directly Observed Treatment, Short-course (DOTS)]	Number of on-going DOTS patients registered	3753	623	-83.40
13.2		Number of DOTS cases completed successfully	717	151	-78.94
14.1.1	M14 [Patient Services]	Outpatient - Diabetes	1739	105	-93.96
14.1.2	M14 [Patient Services]	Outpatient - Hypertension	2299	80	-96.52
14.1.3	M14 [Patient Services]	Outpatient - Stroke (Paralysis)	10	12	20.00
14.1.4	M14 [Patient Services]	Outpatient - Acute Heart Diseases	64	16	-75.00
14.1.5	M14 [Patient Services]	Outpatient - Mental illness	18	10	-44.44
14.1.6	M14 [Patient Services]	Outpatient - Epilepsy	16	16	0.00
14.1.7	M14 [Patient Services]	Outpatient - Ophthalmic Related	31606	787	-97.51
14.1.8	M14 [Patient Services]	Outpatient - Dental	23915	293	-98.77
14.1.9	M14 [Patient Services]	Outpatient - Oncology	107	0	-100.00
14.2.1	M14 [Patient Services]	Allopathic- Outpatient attendance	105741	119128	-88.73
14.2.2	M14 [Patient Services]	Ayush - Outpatient attendance	111402	6361	-94.29
14.3.1.a	M14 [Patient Services]	Inpatient (Male)- Children<18yrs	18691	5532	-70.40
14.3.1.b	M14 [Patient Services]	Inpatient (Male)- Adults	25926	3756	-85.51
14.3.2.a	M14 [Patient Services]	Inpatient (Female)- Children<18yrs	14593	4427	-69.66
14.3.2.b	M14 [Patient Services]	Inpatient (Female)- Adults	25673	5424	-78.87
14.3.3	M14 [Patient Services]	Number of Left Against Medical Advice (LAMA) cases	768	1102	43.49
14.4.1	M14 [Patient Services]	Inpatient - Malaria	557	2	-99.64
14.4.3	M14 [Patient Services]	Inpatient - Typhoid	1398	70	-94.99
14.4.4	M14 [Patient Services]	Inpatient - Asthma, Chronic Obstructive Pulmonary Disease (COPD), Respiratory infections	1408	34	-97.59
14.4.5	M14 [Patient Services]	Inpatient - Tuberculosis	45	0	-100.00
14.4.6	M14 [Patient Services]	Inpatient - Pyrexia of unknown origin (PUO)	2135	87	-95.93
14.4.7	M14 [Patient Services]	Inpatient - Diarrhea with dehydration	726	128	-82.37
14.4.8	M14 [Patient Services]	Inpatient - Hepatitis	12	1	-91.67

Sl.No	Parameter	Indicator	Total Upto March 19-20	Total Upto March 20-21	% of Difference from 2019-20 to 2020-21
14.5	M14 [Patient Services]	Patients registered at Emergency Department	49088	14869	-69.71
14.6.1	M14 [Patient Services]	Emergency - Trauma (accident, injury, poisoning etc)	1985	489	-75.37
14.6.2	M14 [Patient Services]	Emergency - Burn	280	171	-38.93
14.6.3	M14 [Patient Services]	Emergency - Obstetrics complications	53	64	20.75
14.6.4	M14 [Patient Services]	Emergency - Snake Bite	701	431	-38.52
14.6.5	M14 [Patient Services]	Emergency - Acute Cardiac Emergencies	227	90	-60.35
14.6.7	M14 [Patient Services]	Emergency - CVA (Cerebrovascular Disease)	273	130	-52.38
14.7	M14 [Patient Services]	Number of deaths occurring at Emergency Department	287	136	-52.61
14.8.1	M14 [Patient Services]	Operation major (General and spinal anaesthesia)	1650	527	-68.06
14.8.2	M14 [Patient Services]	Out of Operation major, Gynecology-Hysterectomy surgeries	69	3	-95.65
14.8.3	M14 [Patient Services]	Major Surgeries excluding Obstetrics, Gynaecology and Ophthalmology etc.	372	2	-99.46
14.8.4	M14 [Patient Services]	Operation minor (No or local anaesthesia)	1188	244	-79.46
14.8.5	M14 [Patient Services]	Number of post operative Surgical Site infection	3	1	-66.67
14.8.6	M14 [Patient Services]	Number of blood units issued	4	0	-100.00
14.8.7	M14 [Patient Services]	Number of blood transfusions done	3	0	-100.00
14.9.1	M14 [Patient Services]	Inpatient Deaths - Male	263	125	-52.47
14.9.2	M14 [Patient Services]	Inpatient Deaths - Female	204	91	-55.39
14.10	M14 [Patient Services]	In-Patient Head Count at midnight	37581	15515	-58.72
14.11	M14 [Patient Services]	Number of Admission in NBSU (New Born Stabilisation Unit)	253	2	-99.21
14.12.1	M14 [Patient Services]	Special Newborn Care Unit (SNCU Admissions) - Inborn Male	450	92	-79.56
14.12.2	M14 [Patient Services]	Special Newborn Care Unit (SNCU Admissions) - Inborn Female	292	60	-79.45
14.12.3	M14 [Patient Services]	Outborn - Male	2049	481	-76.53
14.12.4	M14 [Patient Services]	Outborn - Female	1145	251	-78.08
14.12.5	M14 [Patient Services]	Number of newborns admitted in SNCU - referred by ASHA	1830	486	-73.44

Sl.No	Parameter	Indicator	Total Upto March 19-20	Total Upto March 20-21	% of Difference from 2019-20 to 2020-21
14.13	M14 [Patient Services]	Number of deaths occurring at SNCU	180	45	-75.00
14.14.1	M14 [Patient Services]	Number of children admitted in NRC	157	8	-94.90
14.14.2	M14 [Patient Services]	Number of children discharged with target weight gain from the NRCs	88	4	-95.45
14.15	M14 [Patient Services]	Number of Rogi Kalyan Samiti (RKS) meetings held	25	5	-80.00
14.16	M14 [Patient Services]	Number of Anganwadi centres/ UPHCs reported to have conducted Village Health & Nutrition Day (VHNDs)/ Urban Health & Nutrition Day (UHNDs)/ Outreach / Special Outreach	7393	2394	-67.62
14.17	M14 [Patient Services]	Stock out rate of essential Drugs	69	12	-82.61
14.18	M14 [Patient Services]	Blood Units Issued on replacement (Family Donors to be considered as replacement donations)	2748	1271	-53.75
14.19	M14 [Patient Services]	Total number of blood units issued in year	2173	297	-86.33
14.20	M14 [Patient Services]	Patient Satisfaction Score of the facility in percentage (from Mera Aspatal)	564	400	-29.08
15.1	M15 [Laboratory Testing]	Number of Lab Tests done	344043	46398	-86.51
15.2.1	M15 [Laboratory Testing]	Number of Hb tests conducted	108902	12798	-88.25
15.2.2	M15 [Laboratory Testing]	Out of the total number of Hb tests done, Number having Hb < 7 mg	1660	317	-80.90
15.3.1.a	M15 [Laboratory Testing]	Male HIV - Number Tested	9260	1572	-83.02
15.3.1.b	M15 [Laboratory Testing]	Male HIV - Number Positive	353	46	-86.97
15.3.2.a	M15 [Laboratory Testing]	Female Non ANC HIV - Number Tested	8279	1551	-81.27
15.3.2.b	M15 [Laboratory Testing]	Female Non ANC HIV - Number Positive	237	32	-86.50
15.3.3.a	M15 [Laboratory Testing]	Number of pregnant women screened for HIV	123822	37245	-69.92
15.3.3.b	M15 [Laboratory Testing]	Out of the above, number screened positive	262	239	-8.78
15.3.3.c	M15 [Laboratory Testing]	Out of the above number screened positive, number confirmed with HIV infection at Integrated Counselling	12	4	-66.67

Sl.No	Parameter	Indicator	Total Upto March 19-20	Total Upto March 20-21	% of Difference from 2019-20 to 2020-21
		and Testing Centre (ICTC)			
15.3.4.a	M15 [Laboratory Testing]	Number of Male STI/RTI attendees tested for syphilis	1561	211	-86.48
15.3.4.b	M15 [Laboratory Testing]	Number of Male STI/RTI attendees found sero Positive for syphilis	15	0	-100.00
15.3.4.c	M15 [Laboratory Testing]	Number of Female (Non ANC)STI/RTI attendees tested for syphilis	2700	341	-87.37
15.3.4.d	M15 [Laboratory Testing]	Number of Female (Non ANC) STI/RTI attendees found sero Positive for syphilis	3	0	-100.00
15.4.1	M15 [Laboratory Testing]	Widal tests - Number Tested	30872	2114	-93.15
15.4.2	M15 [Laboratory Testing]	Widal tests - Number Positive	5074	396	-92.20
15.5.1	M15 [Laboratory Testing]	Radiology - X-ray	63140	10180	-83.88
15.5.2	M15 [Laboratory Testing]	Radiology - Ultrasonography (USG)	4920	1238	-74.84
16.1	M16 [Details of deaths reported with probable causes:]	Infant deaths within 24 hrs(1 to 23 Hrs) of birth	20	3	-85.00
16.2.1	M16 [Details of deaths reported with probable causes:]	Infant Deaths up to 4 weeks due to Sepsis	2	0	-100.00
16.2.3	M16 [Details of deaths reported with probable causes:]	Infant Deaths up to 4 weeks due to Other causes	23	2	-91.30
16.3.5	M16 [Details of deaths reported with probable causes:]	Number of Infant Deaths (1 -12 months) due to Others	2	0	-100.00
16.4.1	M16 [Details of deaths reported with probable causes:]	Number of Child Deaths (1 -5 years) due to Pneumonia	3	0	-100.00
16.4.5	M16 [Details of deaths reported with probable causes:]	Number of Child Deaths (1 -5 years) due to Others	33	0	-100.00
16.5.1	M16 [Details of deaths reported with probable causes:]	Number of Maternal Deaths due to Bleeding	3	1	-66.67
16.5.2	M16 [Details of deaths reported with probable causes:]	Number of Maternal Deaths due to High fever	9	0	-100.00
16.5.6	M16 [Details of deaths reported	Number of Maternal Deaths due to Other	11	2	-81.82

Sl.No	Parameter	Indicator	Total Upto March 19-20	Total Upto March 20-21	% of Difference from 2019-20 to 2020-21
	with probable causes:]	Causes (including causes not known)			
16.7.1	M16 [Details of deaths reported with probable causes:]	Number of Adolescent / Adult deaths due to Diarrhoeal diseases	6	0	-100.00
16.7.2	M16 [Details of deaths reported with probable causes:]	Number of Adolescent / Adult deaths due to Tuberculosis	1	0	-100.00
16.7.3	M16 [Details of deaths reported with probable causes:]	Number of Adolescent / Adult deaths due to Respiratory diseases including infections (other than TB)	10	0	-100.00
16.7.4	M16 [Details of deaths reported with probable causes:]	Number of Adolescent / Adult deaths due to Other Fever Related	2	0	-100.00
16.7.5	M16 [Details of deaths reported with probable causes:]	Number of Adolescent / Adult deaths due to HIV/AIDS	1	0	-100.00
16.7.6	M16 [Details of deaths reported with probable causes:]	Number of Adolescent / Adult deaths due to Heart disease/Hypertension related	9	0	-100.00
16.7.7	M16 [Details of deaths reported with probable causes:]	Number of Adolescent / Adult deaths due to Cancer	8	0	-100.00
16.7.8	M16 [Details of deaths reported with probable causes:]	Number of Adolescent / Adult deaths due to Neurological disease including strokes	3	0	-100.00
16.7.9	M16 [Details of deaths reported with probable causes:]	Number of Adolescent / Adult deaths due to Accidents/Burn cases	37	0	-100.00
16.7.10	M16 [Details of deaths reported with probable causes:]	Number of Adolescent / Adult deaths due to Suicide	1	1	0.00
16.7.11	M16 [Details of deaths reported with probable causes:]	Number of Adolescent / Adult deaths due to Animal bites and stings	9	0	-100.00
16.7.13	M16 [Details of deaths reported with probable causes:]	Number of Adolescent / Adult deaths due to Known Chronic Disease	1	0	-100.00
16.7.14	M16 [Details of deaths reported with probable causes:]	Number of Adolescent / Adult deaths due to Causes not known	61	0	-100.00

Overall Health trend of Kumuram Bheem Asafabad District (Arogya Sri in Squarified format)

It can be observed from the below depicted that, in the district of Kumuram Bheem Asafabad, the secondary data of Government of Telangana source shows that there are high number of cases of Medical Oncology, Nephrology, Poly Trauma, Cardiology and other urinary diseases. Comparatively Orthopaedic cases are very less. The data collected from the village sources through survey that include household, elected representatives and the educated of the subjected villages, it was found that orthopaedic cases are not many and are almost they are linked to the accident cases, which correlates with the District data. For easier identification, the Orthopaedics square is highlighted.



(Source: Arogya Sri, Government of Telangana)

<https://app.aarogyaar.sri.gov.in/ASRI2.0/reportAction.do?actionId=PatDistrictCatPerf&stateId=te>

Annexure -I

Khairagura OC Ambient air quality monitoring data
Sampling interval: Once in fortnight Sampling duration: 24 hours

Ambient Air Quality at KHA OCP Project Office(CZ)

Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
Coal mine standards,GSR 742(E), dt.25.09.2000		250.0	-	120.0	120.0
1.	12.10.2020	174	70.6	16	19.2
2.	28.10.2020	170	66.7	15.8	18.8
3.	11.11.2020	173	70.6	16.2	19.2
4.	25.11.2020	171	67.8	15.8	18.9
5.	10.12.2020	175	72.4	16.3	19.1
6.	28.12.2020	170	70.6	15.9	18.7
Min		170	66.7	15.8	18.7
Max		175	72.4	16.3	19.2
98 Percentile		174.9	72.22	16.29	19.2

- No standard was specified for PM_{2.5} in core zone.

Ambient Air Quality at KHA OC BWS/Weighbridge(CZ)

Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
Coal mine standards,GSR 742(E), dt.25.09.2000		250	-	120	120
1.	12.10.2020	169	66.7	16.8	19
2.	28.10.2020	165	63.1	16.3	19.1
3.	11.11.2020	170	66.7	16.9	20
4.	25.11.2020	167	65	16.3	19.7
5.	10.12.2020	171	70	17.1	20
6.	28.12.2020	166	66.7	16.8	19.6
Min		165	63.1	16.3	19
Max		171	70	17.1	20
98 Percentile		170.9	69.67	17.08	20

- No standard was specified for PM_{2.5} in core zone.

Ambient Air Quality at Gouriguda village (BZ)

Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards CPCB,dt:18.11.2009		100	60	80	80
1.	12.10.2020	49	27.8	9.9	12.8
2.	28.10.2020	45	22.9	9.2	12.2
3.	11.11.2020	48	28	10	13.2
4.	25.11.2020	46	23.1	9.8	12.8
5.	10.12.2020	50	28.3	10.1	13.1
6.	28.12.2020	45	23.1	9.8	12.8

Min	45	22.9	9.2	12.2
Max	50	28.3	10.1	13.2
98 Percentile	49.9	28.27	10.09	13.19

Ambient Air Quality at Pathibanda village(BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards CPCB,dt:18.11.2009		100	60	80	80
1.	13.10.2020	39	21.8	8.8	11.8
2.	29.10.2020	36	17.6	8.3	11.1
3.	12.11.2020	40	21.8	9.1	12.1
4.	26.11.2020	37	17.6	8.7	11.6
5.	11.12.2020	41	21.8	9	12.3
6.	29.12.2020	38	17	8.6	11.6
Min		36	17	8.3	11.1
Max		41	21.8	9.1	12.3
98 Percentile		40.9	21.8	9.09	12.28

Ambient Air Quality at Chopidi village (BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards CPCB, dt:18.11.2009		100	60	80	80
1.	12.10.2020	45	23.1	8.3	11
2.	28.10.2020	41	22.2	8.1	10.9
3.	11.11.2020	44	22.9	9	11.9
4.	25.11.2020	40	21.8	8.8	11.5
5.	10.12.2020	45	23.3	9.3	12
6.	28.12.2020	42	22.2	8.9	11.7
Min		40	21.8	8.1	10.9
Max		45	23.3	9.3	12
98 Percentile		45	23.28	9.27	11.99

Ambient Air Quality at Thoyagudem (Ullipitta Dorli) village (BZ)					
Sl. No.	Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
NAAQ Standards, CPCB,dt:18.11.2009		100	60	80	80
1.	13.10.2020	40	21.6	7.9	10.9
2.	29.10.2020	37	17.2	7.4	10.3
3.	12.11.2020	41	22.5	8.2	11.2
4.	26.11.2020	38	17.5	7.9	10.6
5.	11.12.2020	43	22.9	8.3	11.1
6.	28.12.2020	40	21.6	7.8	10.9
Min		37	16.2	7	10.1
Max		43	22.9	8.3	11.1
98 Percentile		40.99	21.6	7.8	10.9

KHA OCP Noise levels monitoring data
Sampling interval: Once in fortnight Sampling duration: 24 hours

Month	Fortnight	KHA OCP Project Office (CZ)			Pathibanda village(BZ)			Thoyagudem (Ullipitta Dorli) village		
		Sample collected on	L _{day}	L _{night}	Sample collected on	L _{day}	L _{night}	Sample collected on	L _{day}	L _{night}
			75	70		55	45		55	45
Oct 2020	1 st	12.10.2020	59.8	48.5	13.10.2020	48.1	37.1	13.10.2020	47.1	37.2
	2 nd	28.10.2020	59.4	48	29.10.2020	47.9	36.9	29.10.2020	46.9	36.7
NOV 2020	1 st	11.11.2020	60	49.4	12.11.2020	48.3	37.4	12.11.2020	47.2	37.3
	2 nd	25.11.2020	60.8	49.9	26.11.2020	48.9	38.2	26.11.2020	47.6	37.7
DEC 2020	1 st	10.12.2020	59.9	48.8	11.12.2020	47.8	37.8	11.12.2020	46.9	36.6
	2 nd	28.12.2020	59.1	48.2	29.12.2020	47.2	37.1	29.12.2020	46.1	36.2
Min.			59.1	48		47.2	36.9		46.1	36.2
Max.			60.8	49.9		48.9	38.2		47.6	37.7
98%tile			60.72	49.85		48.84	38.16		47.56	37.66

Annexure –II

KHA OCP Characteristics of effluents
Sampling interval: Once in fortnight

Characteristics of effluents – KHA OCP. mine discharge							
xSI.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit		--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method		4500-H'B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines		5.5 to 9.0	100	--	250	30	10
1.	15.10.2020	7.7	42	833	20	5	1.8
2.	31.10.2020	7.4	49	971	32	8	1.4
3.	14.11.2020	6.9	38	774	19	4	1
4.	28.11.2020	7.6	33	930	27	5	1.6
5.	14.12.2020	7.8	38	778	32	6	1.2
6.	31.12.2020	7.6	22	642	12	2	<1
MIN		6.9	22.0	642.0	12.0	2.0	<1
MAX		7.8	49.0	971.0	32.0	8.0	1.8
98% TILE		7.8	48.3	966.9	32.0	7.8	1.8
- No standard is specified for TDS.							

Characteristics of effluents – KHA OCP BWS ETP OUTLET							
xSI.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease

Unit	--	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method	4500-H'B	2540-D	2540-C	5220-D	IS3025	5520-B
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines	5.5 to 9.0	100	--	250	30	10
1. 15.10.2020	8.1	74	1064	89	16	5.2
2. 31.10.2020	8.4	84	1142	76	19	4.6
3. 14.11.2020	6.8	79	897	81	16	5.2
4. 28.11.2020	7.9	87	1241	62	14	5
5. 14.12.2020	7.9	76	1013	84	19	4.4
6. 31.12.2020	7.9	98	1226	98	23	4.8
MIN	6.8	74.0	897.0	62.0	14.0	4.4
MAX	8.4	98.0	1241.0	98.0	23.0	5.2
98% TILE	8.4	96.9	1239.5	97.1	22.6	5.2
- No standard is specified for TDS.						

Characteristics of effluents – KHA OCP CHP ETP OUTLET							
xSl.No.	Date of Sampling	pH (at 25°C)	TSS at 105 °C	TDS at 180°C	COD	BOD	Oil & Grease
Unit	--	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Test Method	4500-H'B	2540-D	2540-C	5220-D	IS3025	5520-B	
MoEF GSR 742 (E) and GSR 801(E) Effluent Standards for coal mines	5.5 to 9.0	100	--	250	30	10	
1. 15.10.2020	8	57	926	65	12	2	
2. 31.10.2020	8.1	69	831	60	14	3	
3. 14.11.2020	6.5	43	788	49	9	2	
4. 28.11.2020	7.7	58	955	43	8	3	
5. 14.12.2020	7.5	36	811	48	11	2	
6. 31.12.2020	7.7	64	912	62	17	2	
MIN	6.5	36.0	788.0	43.0	8.0	1.8	
MAX	8.1	69.0	955.0	65.0	17.0	2.8	
98% TILE	8.1	68.5	952.1	64.7	16.7	2.8	
- No standard is specified for TDS.							

Physical-Chemical and Bacteriological Characteristics of Surface Water at Selected Locations in the Study Area
 Sampling period once in 3 months samples collected on 01.10.2020

S.No	Parameters	Unit	Test Method	CPCB Water Quality Criteria			RESULT	
				Class A	Class B	Class C	SW-1 (Vatti Vagu U/S)	SW-2 (Vatti Vagu D/S)
1.	pH	-	4500-H+B	6.5-8.5	6.5-8.5	6.0-9.0	6.8	6.8
2.	Temperature	°C	2550. B	-	-	-	24.8	25.1
3.	Turbidity	NTU	2130. B	-	-	-	2.4	3.1
4.	Electrical Conductivity	µmhos/cm	2510-B	-	-	-	531	456
5.	Total Dissolved Solids	mg/L	2540.C	-	-	-	303	256
6.	Total Suspended Solids at105o C	mg/L	2540. D	-	-	-	24	32
7.	Dissolved Oxygen	mg/L	4500-O.C	6 mg/l or more	5 mg/l or more	4 mg/l or more	6.1	6.5
8.	Bio chemical Oxygen Demand for 3 days at 27o C	mg/L	IS: 3025	2 mg/l or less	3 mg/l or less	3 mg/l or less	3	BDL
9.	Total Coliforms	MPN/100ml	9221A & B	50 or less	500 or less	5000 or less	350	170
10.	Fecal Coliforms	MPN/100ml	9221 E	-	-	-	33	26
11.	E. coli	Presence or Absence/ MPN/100 ml	9221 F	-	-	-	Absent	Absent
12.	Chemical Oxygen Demand	mg/L	5220. D	-	-	-	36	28

13.	Chlorides as Cl ⁻	mg/L	4500-Cl-B	-	-	-	18	18
14.	Nitrites as NO ₂	mg/L	4500-NO ₂ -B	-	-	-	BDL	BDL
15.	Nitrates as NO ₃	mg/L	4500-NO ₃ -B	-	-	-	11	8.5
16.	Sulphates as SO ₄ ²⁻	mg/L	4500-SO ₄ ²⁻ -E	-	-	-	22	23
17.	Arsenic as As	mg/L	3120-B	-	-	-	BDL	BDL
18.	Lead as Pb	mg/L	3120-B	-	-	-	BDL	BDL
19.	Zinc as Zn	mg/L	3120-B	-	-	-	0.05	0.09
20.	Cadmium as Cd	mg/L	3120-B	-	-	-	BDL	BDL
21.	Total Chromium as Cr	mg/L	3120-B	-	-	-	BDL	BDL
22.	Nickel as Ni	mg/L	3120-B	-	-	-	BDL	BDL
23.	Iron as Fe	mg/L	3120-B	-	-	-	0.15	0.08
24.	Copper as Cu	mg/L	3120-B	-	-	-	BDL	BDL
25.	Boron as B	mg/L	3120-B	-	-	-	0.16	0.17
26.	Colour	Pt-co	2120-B	-	-	-	5	10
27.	Odour	TON	2150-B	-	-	-	No Odour Observed	No Odour Observed
28.	Ammonical Nitrogen as NH ₃ -N	mg/L	4500-NH ₃ -C	-	-	-	BDL	BDL
29.	Total Phosphates	mg/L	4500-P-D	-	-	-	BDL	BDL
30.	Oil & Grease	mg/L	5520-B	-	-	-	<1	<1
31.	Fluoride	mg/L	4500-F-C	-	-	-	0.359	0.421
32.	Phenolic compounds as C ₆ H ₅ OH	mg/L	5530-D	-	-	-	BDL	BDL
33.	Selenium as Se	mg/L	3120-B	-	-	-	BDL	BDL

Physico-Chemical, Bacteriological Characteristics of Groundwater Collected within the Study Area
 Sampling period once in 3 months samples collected on 01.10.2020

S.No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limit in the absence of alternate source	RESULT	
						GW-1 (Gouriguda Village)	GW-2 (Pathibanda Village)
1.	Colour	Pt-co-	2120. B	5	15	<5	<5
2.	Odour	TON	2150. B	Agreeable	Agreeable	Agreeable	Agreeable
3.	pH	--	4500-H+B	6.5 to 8.5	No relaxation	7.8	7.9
4.	Taste	FTN	2160. B	Agreeable	Agreeable	Agreeable	Agreeable
5.	Turbidity	NTU	2130. B	1	5	0.82	0.69
6.	Total Dissolved Solids at 180o C	mg/L	2540.C	500	2000	541	824
7.	Aluminium as Al	mg/L	3120-B	0.03	0.2	0.06	BDL
8.	Barium as Ba	mg/L	3120. B	0.7	No relaxation	0.06	0.04
9.	Boron as B	mg/L	3120-B	0.5	1.0	0.13	0.18
10.	Calcium as Ca	mg/L	3500-Ca B	75	200	104	86
11.	Chlorides as Cl	mg/L	4500-Cl B	250	1000	103	65
12.	Copper as Cu	mg/L	3120-B	0.05	1.5	BDL	BDL
13.	Fluoride as F	mg/L	4500-F.C	1.0	1.5	0.755	0.582
14.	Residual free chlorine	mg/L	4500-Cl B	0.2	1.0	BDL	BDL

15.	Iron as Fe	mg/L	3120-B	0.3	No relaxation	0.29	0.20
16.	Magnesium as Mg	mg/L	3500-Mg B	30	100	25	61
17.	Manganese as Mn	mg/L	3120-B	0.1	0.3	BDL	BDL
18.	Nitrates as NO ₃	mg/L	4500-NO ₃ β	45	No relaxation	46	42
19.	Phenolic compounds as C ₆ H ₅ OH	mg/L	5530-D	0.001	0.002	BDL	BDL
20.	Selenium as Se	mg/L	3120-B	0.01	No relaxation	BDL	BDL
21.	Silver as Ag	mg/L	3120. B	0.1	No relaxation	BDL	BDL
22.	Sulphates as SO ₄ ²⁻	mg/L	4500-SO ₄ ²⁻ E	200	400	46	34
23.	Total Alkalinity as CaCO ₃	mg/L	2320. B	200	600	610	585
24.	Total Hardness as CaCO ₃	mg/L	2340. C	200	600	520	465
25.	Zinc as Zn	mg/L	3120-B	5	15	0.16	0.18

Parameters Concerning Toxic Substances

S.No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limit in the absence of alternate source	RESULT	
						GW-1 (Gouriguda Village)	GW-2 (Pathbanda Village)
1	Cadmium as Cd	mg/L	3120-B	0.003	No relaxation	BDL	BDL
2	Cyanide as CN-	mg/L	4500-CN.F	0.05	No relaxation	BDL	BDL
3	Lead as Pb	mg/L	3120-B	0.01	No relaxation	BDL	BDL
4	Molybdenum as Mo	mg/L	3120.B	0.07	No relaxation	BDL	BDL
5	Nickel as Ni	mg/L	3120-B	0.02	No relaxation	BDL	BDL
6	Pesticides, α -BHC, β -BHC, γ -BHC, δ -BHC, o,p-DDT, p,p'-DDT, Endosulfan, β -Endosulfan, Aldrin, Dieldrin	μ g/L	6630.D	Absent	0.001	ND	ND
	2,4-D, Carbaryl (Carbonate) Malathion Methyl Parathion Anilophos, Chloropyrifos	Qualitative analysis	6630.D	Absent	0.001	ND	ND
7	Polyaromatic Hydrocarbons (PAH's), Acenaphthene, Acenaphthylene, Anthracene, B(a)A, B(a)P, B(b)F, B(k)F, Pyrene, Dibenz (a,h) anthracene, Fluoranthene, Fluorene, Indeno (1,2,3-cd) Pyrene, Naphthalene, Phenanthrene, Pyrene, Methyl Naphthalene	μ g/L	6440.C	-	-	ND	ND
8	Total Arsenic as As	mg/L	3120-B	0.01	0.05	BDL	BDL
9	Total Chromium as Cr	mg/L	3120-B	0.05	No relaxation	BDL	BDL

Bacteriological Quality of Drinking Water

S.No.	Parameters	Unit	Test Method	IS: 10500 Requirement (Acceptable Limit)	IS: 10500 Permissible Limit in the absence of alternate source	RESULT	
						GW-1 (Gouriguda Village)	GW-2 (Pathibanda Village)
1	E. coli	Presence or Absence/100 ml.	S221 F	-	-	Absent	Absent
2	Total Coliforms	MPN/100 ml.	S221A & B	-	-	<1.8	<1.8
3	Fecal Coliforms	MPN/100 ml.	S221 E	-	-	<1.8	<1.8

NTU - Nephelometric Turbidity Unit; TDS - Threshold Odour Number; FTN - Flavour Threshold Number; BCL - Bacteriological Coliform Limit; Detector Limit - Phenols - 0.1 mg/L; Cyanide - 0.05 mg/L; Free Chlorine - 0.05 mg/L; Copper - 0.02 mg/L; Manganese - 0.01 mg/L; Cadmium - 0.01 mg/L; Selenium - 0.04 mg/L; Arsenic - 0.04 mg/L; Lead - 0.04 mg/L; Aluminium - 0.04 mg/L; Chromium - 0.01 mg/L; Nickel - 0.01 mg/L; Residual Free Chlorine - 1 mg/L; Nitrate - 50 mg/L; Orthophosphate - 0.05 mg/L; NO-Nitrate
 Detected Detection Limit - Ascorbic - 1 ppm; PAK - 1 ppm.

details of Mobile Medical Camps conducted at Tribal Habitats at Bellampalli Area during DECEMBER – 2019 to MAR-2022						
Name of the Dr. M. Rathan kumar, Dy. CMO & Paramedical Staff						
S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	Total
1	01/12/2019	Sunday				
2	02/12/2019	Keslapur, Indranagar, Chopidi & Sonapur	13	19	0	32
3	03/12/2019	Ullipattu, Dorli, Vattivagu & Dampur	25	13	3	41
4	04/12/2019	Bhordham Colony, Saleguda & Somijinagar	12	16	5	33
5	05/12/2019	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	23	2	35
6	06/12/2019	Ullipattu, Dorli, Vattivagu & Dampur	17	16	13	46
7	07/12/2019	Kerloddin, Dhanthanpalli & Janduguda	13	5	13	31
8	08/12/2019	Sunday	0	0	0	0
9	09/12/2019	Chopidi, Sonapur, IndiraNagar & Keslapur	20	15	13	48
10	10/12/2019	Kerloddin, Dhanthanpalli & Janduguda	14	7	7	28
11	11/12/2019	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	13	12	13	38
12	12/12/2019	Bhordham Colony, Saleguda & Somijinagar	9	19	3	31
13	13/12/2019	Ullipattu, Dorli, Vattivagu & Kothaguda	19	14	2	35
14	14/12/2019	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	12	16	4	32
15	15/12/2019	Sunday	0	0	0	0
16	16/12/2019	Keslapur, Indranagar, Chopidi & Sonapur	12	14	6	32
17	17/12/2019	Ullipattu, Dorli, Vattivagu & Dampur	9	21	2	32
18	18/12/2019	Kerloddin, Dhanthanpalli & Janduguda	17	9	8	34
19	19/12/2019	Bhordham Colony, Saleguda & Somijinagar	12	13	3	28
20	20/12/2019	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	11	16	8	35
21	21/12/2019	Chopidi, Sonapur, IndiraNagar & Keslapur	18	12	6	36
22	22/12/2019	Sunday	0	0	0	0
23	23/12/2019	Kerloddin, Dhanthanpalli & Janduguda	11	12	7	30
24	24/12/2019	Bhordham Colony, Saleguda & Somijinagar	6	8	6	20
25	25/12/2019	Ullipattu, Dorli, Vattivagu & Dampur	17	17	3	37
26	26/12/2019	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	11	16	1	28
27	27/12/2019	Chopidi, Sonapur, IndiraNagar & Keslapur	22	22	3	47
28	28/12/2019	Kerloddin, Dhanthanpalli & Janduguda	12	8	5	25
29	29/12/2019	Sunday	0	0	0	0
30	30/12/2019	Chopidi, Sonapur, IndiraNagar & Keslapur	17	7	5	29
31	31/12/2019	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	9	9	3	21
	26 Days	99 Villages	361	359	144	843

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	Total
1	01/01/2020	Danthupally, Kerlouddin & Jendugudu	27	7	2	36
2	02/01/2020	Chopidi, Sonupur & Abbapur	10	10	8	28
3	03/01/2020	Salegudu, Somjinagar& Bhordhan	13	7	1	21
4	04/01/2020	Ullipitta, Dorli , Dampur & Vuttivagu	15	19	0	34
5	05/01/2020	Sunday	0	0	0	0
6	06/01/2020	Chopidi, Sonupur, Indiranagar & Keshlapur	13	15	13	41
7	07/01/2020	Ullipitta, Dorli , Dhanpur & Vuttivagu	10	10	5	25
8	08/01/2020	Salegudu, Somjinagar& Bhordhan	10	12	0	22
9	09/01/2020	Lingiguda, Narsapur & Abbapur	15	23	6	44
10	10/01/2020	Chopidi, Sonupur & Abbapur	13	8	3	24
11	11/01/2020	Ullipitta, Dorli , Dhampur, Vuttivagu & Kottaguda	5	13	4	22
12	12/01/2020	Sunday	0	0	0	0
13	13/01/2020	Dhampur, Vuttivagu & Kottaguda	9	14	0	23
14	14/01/2020	Chopidi, Sonupur, Indiranagar & Keshlapur	16	30	10	56
15	15/01/2020	Narsapur, Abbapur & MVK-5 Incl	11	18	0	29
16	16/01/2020	Lingiguda (Rembhaigude)	6	4	0	10
17	17/01/2020	Danthupally, Kerlouddin & Jendugudu	17	8	7	32
18	18/01/2020	Salegudu, Somjinagar& Bhordhan	14	4	4	22
19	19/01/2020	Sunday	0	0	0	0
20	20/01/2020	Chopidi, Sonupur, Indiranagar & Keshlapur	24	10	1	35
21	21/01/2020	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	12	9	2	23
22	22/01/2020	Danthupally, Kerlouddin & Jendugudu	12	17	0	29
23	23/01/2020	Salegudu, Somjinagar& Bhordhan	12	17	1	30
24	24/01/2020	Ullipitta, Dorli , Dhampur, Vuttivagu & Kottaguda	12	27	3	42
25	25/01/2020	Lingiguda (Rambhaiguda) , Abbapur , Narsapur & MVK - 5 Incl.	11	16	1	28
26	26/01/2020	Sunday	0	0	0	0
27	27/01/2020	Chopidi, Sonupur, Indiranagar & Keshlapur	7	25	5	37
28	28/01/2020	Ullipitta, Dorli , Dhampur, Vuttivagu & Kottaguda	12	25	4	41
29	29/01/2020	Danthupally, Kerlouddin & Jendugudu	14	14	6	34
30	30/01/2020	Salegudu, Somjinagar& Bhordhan	10	2	3	15
31	31/01/2020	Lingiguda (Rambhaiguda) , Abbapur , Narsapur & MVK - 5 Incl.	17	12	3	32
	26 Days	95 Villages	347	376	92	815

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	Total
1	01/02/2020	Chopidi, Sonapur, IndiraNagar & Keslapur	11	20	8	39
2	02/02/2020	Sunday	0	0	0	0
3	03/02/2020	Kerloddin, Dhanthanpalli & Janduguda	17	8	9	34
4	04/02/2020	Ullipattu, Dorli, Vattivagu & Dampur	18	22	1	41
5	05/02/2020	Chopidi, Sonapur, IndiraNagar & Keslapur	12	9	1	22
6	06/02/2020	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	13	15	6	34
7	07/02/2020	Bhordham Colony, Saleguda & Somijinagar	18	10	0	28
8	08/02/2020	Kerloddin, Dhanthanpalli & Janduguda	23	4	3	30
9	09/02/2020	Sunday	0	0	0	0

10	10/02/2020	Chopidi, Sonapur, IndiraNagar & Keslapur	18	13	6	37
11	11/02/2020	Ullipattu, Dorli, Vattivagu & Dampur	9	9	1	19
12	12/02/2020	Kerloddin, Dhanthanpalli & Janduguda	6	12	5	23
13	13/02/2020	Salegudu, Somjinagar& Bhordhan	18	10	2	30
14	14/02/2020	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	13	18	6	37
15	15/02/2020	Chopidi, Sonapur, IndiraNagar & Keslapur	15	14	3	32
16	16/02/2020	Sunday	0	0	0	0
17	17/02/2020	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	8	12	6	26
18	18/02/2020	Kerloddin, Dhanthanpalli & Janduguda	7	14	2	23
19	19/02/2020	Chopidi, Sonapur, IndiraNagar & Keslapur	8	9	5	22
20	20/02/2020	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	13	20	5	38
21	21/02/2020	Ullipattu, Dorli, Vattivagu & Dampur	15	19	4	38
22	22/02/2020	Salegudu, Somjinagar& Bhordhan	8	8	2	18
23	23/02/2020	Sunday	0	0	0	0
24	24/02/2020	Kerloddin, Dhanthanpalli & Janduguda	12	13	0	25
25	25/02/2020	Chopidi, Sonapur, IndiraNagar & Keslapur	18	5	9	32
26	26/02/2020	Ullipattu, Dorli, Vattivagu & Dampur	14	22	1	37
27	27/02/2020	Kerloddin, Dhanthanpalli & Janduguda	16	10	6	32
28	28/02/2020	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	8	19	2	29
29	29/02/2020	Salegudu, Somjinagar& Bhordhan	8	14	4	26
	25 Days	90 Villages	326	329	97	752

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	TOTAL
1	01/12/2020	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	6	9	1	16
2	02/12/2020	Ullipitta, Dorli , Dampur & Vuttivagu	19	15	2	36
3	03/12/2020	Salegudu, Somjinagar& Bhordhan	16	12	1	29
4	04/12/2020	Danthupally, Kerlouddin & Jendugudu	12	7	2	21
5	05/12/2020	Chopidi, Sonupur, Indiranagar & Keshlapur	18	3	5	26
6	06/12/2020	SUNDAY	0	0	0	0
7	07/12/2020	Chopidi, Sonupur, Indiranagar & Keshlapur	14	18	2	34
8	08/12/2020	Ullipitta, Dorli , Dampur & Vuttivagu	29	13	5	47
9	09/12/2020	Danthupally, Kerlouddin & Jendugudu	13	3	2	18
10	10/12/2020	Salegudu, Somjinagar& Bhordhan	12	12	2	26
11	11/12/2020	0	0	0	0	0
12	12/12/2020	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	13	26	1	40
13	13/12/2020	SUNDAY	0	0	0	0
14	14/12/2020	Chopidi, Sonupur, Indiranagar & Keshlapur	10	16	3	29
15	15/12/2020	Ullipitta, Dorli , Dampur & Vuttivagu	15	16	10	41
16	16/12/2020	Danthupally, Kerlouddin & Jendugudu	18	5	4	27
17	17/12/2020	Salegudu, Somjinagar& Bhordhan	11	9	2	22
18	18/12/2020	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	14	16	1	31
19	19/12/2020	Chopidi, Sonupur, Indiranagar & Keshlapur	15	11	2	28
20	20/12/2020	SUNDAY	0	0	0	0
21	21/12/2020	Chopidi, Sonupur, Indiranagar & Keshlapur	15	10	1	26

22	22/12/2020	Ullipitta, Dorli , Dampur & Vuttivagu	11	11	2	24
23	23/12/2020	Danthupally, Kerlouddin & Jendugudu	6	18	5	29
24	24/12/2020	Salegudu, Somjinagar& Bhordhan	16	10	2	28
25	25/12/2020	Lingiguda (Rambhaiguda) , Abbapur , Narsapur & MVK - 5 Incl.	10	7	5	22
26	26/12/2020	Danthupally, Kerlouddin & Jendugudu	7	10	2	19
27	27/12/2020	SUNDAY	0	0	0	0
28	28/12/2020	Chopidi, Sonupur, Indiranagar & Keshlapur	9	9	3	21
29	29/12/2020	Ullipitta, Dorli , Dampur & Vuttivagu	10	18	3	31
30	30/12/2020	Danthupally, Kerlouddin & Jendugudu	13	10	2	25
31	31/12/2020	Lingiguda (Rambhaiguda) , Abbapur , Narsapur & MVK - 5 Incl.	15	15	2	32
	26 Days	95 Villages	347	309	72	728

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	TOTAL
1	01/01/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	11	14	2	27
2	02/01/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	16	7	2	25
3	03/01/2021	SUNDAY	0	0	0	0
4	04/01/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	12	4	13	29
5	05/01/2021	Ullipitta, Dorli , Dampur & Vuttivagu	15	12	3	30
6	06/01/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	6	16	2	24
7	07/01/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	10	13	3	26
8	08/01/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	8	13	4	25
9	09/01/2021	Danthupally, Kerlouddin & Jendugudu	21	5	3	29
10	10/01/2021	SUNDAY	0	0	0	0
11	11/01/2021	Indent,Chopidi	5	4	0	9
12	12/01/2021	Ullipitta, Dorli , Dampur & Vuttivagu	11	15	5	31
13	13/01/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	16	2	28
14	14/01/2021	(Sankranthi)	0	0	0	0
15	15/01/2021	Danthupally, Kerlouddin & Jendugudu	15	8	5	28
16	16/01/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	13	11	6	30
17	17/01/2021	SUNDAY	0	0	0	0
18	18/01/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	13	16	4	33
19	19/01/2021	Ullipitta, Dorli , Dampur & Vuttivagu	12	18	2	32
20	20/01/2021	Danthupally, Kerlouddin & Jendugudu	16	10	4	30
21	21/01/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	10	12	2	24
22	22/01/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	9	25	1	35
23	23/01/2021	Ullipitta, Dorli , Dampur & Vuttivagu	19	10	9	38
24	24/01/2021	SUNDAY	0	0	0	0
25	25/01/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	11	16	0	27
26	26/01/2021	(REPUBLIC DAY)	0	0	0	0
27	27/01/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	3	7	3	13
28	28/01/2021	Danthupally, Kerlouddin & Jendugudu	26	4	3	33
29	29/01/2021	Ullipitta, Dorli , Dampur & Vuttivagu	17	9	4	30
30	30/01/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	17	10	4	31
31	31/01/2021	SUNDAY	0	0	0	0
	26 Days	95 Villages	306	275	86	667
S.N	Date	Name of the Village	No.of Beneficiaries			

o			Male	Female	Child	TOTAL
1	01/02/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	17	14	4	35
2	02/02/2021	Ullipitta, Dorli , Dampur & Vuttivagu	15	16	8	39
3	03/02/2021	Danthupally, Kerlouddin & Jendugudu	17	4	3	24
4	04/02/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	8	10	5	23
5	05/02/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	11	17	6	34
6	06/02/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	13	18	3	34
7	07/02/2021	SUNDAY	0	0	0	0
8	08/02/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	9	19	6	34
9	09/02/2021	Ullipitta, Dorli , Dampur & Vuttivagu	19	9	1	29
10	10/02/2021	Danthupally, Kerlouddin & Jendugudu	13	10	5	28
11	11/02/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	9	11	3	23
12	12/02/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	8	12	3	23
13	13/02/2021	Danthupally, Kerlouddin & Jendugudu	3	7	1	11
14	14/02/2021	SUNDAY	0	0	0	0
15	15/02/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	13	19	2	34
16	16/02/2021	Ullipitta, Dorli , Dampur & Vuttivagu	14	13	2	29
17	17/02/2021	Danthupally, Kerlouddin & Jendugudu	13	6	5	24
18	18/02/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	12	12	7	31
19	19/02/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	12	2	24
20	20/02/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	11	16	1	28
21	21/02/2021	SUNDAY	0	0	0	0
22	22/02/2021	(VACCINATION)	0	0	0	0
23	23/02/2021	Ullipitta, Dorli , Dampur & Vuttivagu	9	11	1	21
24	24/02/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	11	10	1	22
25	25/02/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	12	24	1	37
26	26/02/2021	Chirrakunta,chopidi,Dorli,govarquda, Thoyaguda	11	6	0	17
27	27/02/2021	Abbapur, Narsapur, MVK-5 Inc. & Indranagar	12	20	0	32
28	28/02/2021	SUNDAY	0	0	0	0
	24 Days	95 Villages	270	296	70	636

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	TOTAL
1	01/03/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	15	13	3	31
2	02/03/2021	Danthupally, Kerlouddin & Jendugudu	19	11	2	32
3	03/03/2021	Ullipitta, Dorli , Dampur & Vuttivagu	13	19	3	35
4	04/03/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	7	12	4	23
5	05/03/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	15	4	29
6	06/03/2021	Chopidi, Sonupur, Indiranagar & Keshlapur,goverguda,koyaguda	14	13	4	31
7	07/03/2021	SUNDAY	0	0	0	0
8	08/03/2021	Indiranagar ,keshlapur	6	14	2	22
9	09/03/2021	Ullipitta, Dorli , Dampur & Vuttivagu	25	16	4	45
10	10/03/2021	Danthupally, Kerlouddin & Jendugudu	17	3	8	28
11	11/03/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	9	9	2	20
12	12/03/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	8	14	0	22
13	13/03/2021	Chopidi, Keshlapur,goverguda	13	5	4	22
14	14/03/2021	SUNDAY	0	0	0	0
15	15/03/2021	Sonupur, Indiranagar & Keshlapur	7	15	4	26
16	16/03/2021	Ullipitta, Dorli , Dampur & Vuttivagu	8	12	6	26
17	17/03/2021	Bellampally Camp Indent	0	0	0	0
18	18/03/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	8	17	3	28
19	19/03/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	5	19	2	26
20	20/03/2021	Chopidi, koyaguda,goverguda	18	6	2	26
21	21/03/2021	SUNDAY	0	0	0	0
22	22/03/2021	Ullipitta, Dorli , Dampur & Vuttivagu	15	13	2	30
23	23/03/2021	Abbapur, Narsapur, MVK-5 Inc. & Indranagar	10	15	2	27
24	24/03/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	11	13	2	26
25	25/03/2021	Danthupally, Kerlouddin & Jendugudu	15	11	2	28
26	26/03/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	5	10	5	20
27	27/03/2021	Chopidi, koyaguda	3	7	2	12
28	28/03/2021	SUNDAY	0	0	0	0
29	29/03/2021	HOLI	0	0	0	0
30	30/03/2021	Ullipitta, Dorli , Dampur & Vuttivagu	15	11	6	32
31	31/03/2021	Danthupally, Kerlouddin & Jendugudu	7	8	8	23
	24 Days	95 Villages	283	301	86	670

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	TOTAL
1	01/04/2021	Sonupur, Indiranagar & Keshlapur	5	16	5	26
2	02/04/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	8	12	6	26
3	03/04/2021	Chopidi, koyaguda,goverguda	8	6	3	17
4	04/04/2021	SUNDAY	0	0	0	0
5	05/04/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	8	4	2	14
6	06/04/2021	Ullipitta, Dorli , Dampur & Vuttivagu	6	10	6	22
7	07/04/2021	Danthupally, Kerlouddin & Jendugudu	15	12	2	29
8	08/04/2021	Sonupur, Indiranagar & Keshlapur	9	11	2	22
9	09/04/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	8	8	0	16

10	10/04/2021	Chopidi, koyaguda,goverguda	6	12	3	21
11	11/04/2021	SUNDAY	0	0	0	0
12	12/04/2021	Sonupur, Indiranagar & Keshlapur	6	8	1	15
13	13/04/2021	Ullipitta, Dorli , Dampur & Vuttivagu	6	10	6	22
14	14/04/2021	Ambedkar Jayanthi (PHD)	0	0	0	0
15	15/04/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	13	7	7	27
16	16/04/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	6	12	3	21
17	17/04/2021	Ullipitta, Dorli , Dampur & Vuttivagu	4	11	8	23
18	18/04/2021	SUNDAY	0	0	0	0
19	19/04/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	8	9	5	22
20	20/04/2021	Danthupally, Kerlouddin & Jendugudu	10	10	6	26
21	21/04/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	3	3	5	11
22	22/04/2021	0	0	0	0	0
23	23/04/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	14	6	4	24
24	24/04/2021	Chopidi, koyaguda,goverguda	7	16	8	31
25	25/04/2021	SUNDAY	0	0	0	0
26	26/04/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	9	6	1	16
27	27/04/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	9	4	9	22
28	28/04/2021	Danthupally, Kerlouddin & Jendugudu	11	7	0	18
29	29/04/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	6	8	6	20
30	30/04/2021	Chopidi, koyaguda,goverguda	6	12	6	24
	24 Days	95 Villages	191	220	104	515

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	TOTAL
1	01/05/2021	MAY DAY - PHD	0	0	0	0
2	02/05/2021	SUNDAY	0	0	0	0
3	03/05/2021	Sonupur, Indiranagar & Keshlapur	5	7	4	16
4	04/05/2021	Ullipitta, Dorli , Dampur & Vuttivagu	12	8	6	26
5	05/05/2021	Danthupally, Kerlouddin & Jendugudu	6	4	5	15
6	06/05/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	5	10	4	19
7	07/05/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	7	18	6	31
8	08/05/2021	Chopidi, koyaguda,goverguda	8	3	3	14
9	09/05/2021	SUNDAY				
10	10/05/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	5	13	5	23
11	11/05/2021	Ullipitta, Dorli , Dampur & Vuttivagu	5	15	2	22
12	12/05/2021	Danthupally, Kerlouddin & Jendugudu	10	5	4	19
13	13/05/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	15	10	5	30
14	14/05/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	15	5	30
15	15/05/2021	Chopidi, koyaguda,goverguda	5	15	5	25
16	16/05/2021	SUNDAY				
17	17/05/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	11	10	5	26
18	18/05/2021	Ullipitta, Dorli , Dampur & Vuttivagu	5	11	5	21
19	19/05/2021	Danthupally, Kerlouddin & Jendugudu	19	8	4	31
20	20/05/2021	Saleguda,somajinagar,bhordham	17	14	1	32

		colony(ginnedhari)				
21	21/05/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	1	20		21
22	22/05/2021	Chopidi, koyaguda, goverguda	13	8	1	22
23	23/05/2021	SUNDAY				
24	24/05/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	17	17		34
25	25/05/2021	Ullipitta, Dorli , Dampur & Vuttivagu	8	8	2	18
26	26/05/2021	Danthupally, Kerlouddin & Jendugudu	5	10	5	20
27	27/05/2021	Saleguda, somajinagar, bhordham colony(ginnedhari)	8	6	5	19
28	28/05/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	3	12	4	19
29	29/05/2021	Chopidi, koyaguda, goverguda	7	7	6	20
30	30/05/2021	SUNDAY				
31	31/05/2021	Sonupur, Indiranagar & Keshlapur	8	8	4	20
	24 Days	95 Villages	215	262	96	573

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	TOTAL
1	01/06/2021	Ullipitta, Dorli , Dampur & Vuttivagu	7	7	4	18
2	02/06/2021	Danthupally, Kerlouddin & Jendugudu	8	6	6	20
3	03/06/2021	Saleguda, somajinagar, bhordham colony(ginnedhari)	15	7	4	26
4	04/06/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	7	8	5	20
5	05/06/2021	Chopidi, koyaguda, goverguda	11	9	3	23
6	06/06/2021	SUNDAY	0	0	0	0
7	07/06/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	14	11	2	27
8	08/06/2021	Ullipitta, Dorli , Dampur & Vuttivagu	16	13	5	34
9	09/06/2021	Danthupally, Kerlouddin & Jendugudu	12	13	2	27
10	10/06/2021	Saleguda, somajinagar, bhordham colony(ginnedhari)	12	16	2	30
11	11/06/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	9	16	6	31
12	12/06/2021	Chopidi, koyaguda, goverguda	13	2	1	16
13	13/06/2021	SUNDAY	0	0	0	0
14	14/06/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	11	13	1	25
15	15/06/2021	Ullipitta, Dorli , Dampur & Vuttivagu	12	8	0	20
16	16/06/2021	Danthupally, Kerlouddin & Jendugudu	22	14	0	36
17	17/06/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	11	11	1	23
18	18/06/2021	Saleguda, somajinagar, bhordham colony(ginnedhari)	6	13	3	22
19	19/06/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	8	5	2	15
20	20/06/2021	SUNDAY	0	0	0	0
21	21/06/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	7	2	0	9
22	22/06/2021	Ullipitta, Dorli , Dampur & Vuttivagu	12	17	2	31
23	23/06/2021	Narsapur, Abbapur	2	9	2	13
24	24/06/2021	Saleguda, somajinagar, bhordham colony(ginnedhari)	16	5	2	23
25	25/06/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	13	14	3	30
26	26/06/2021	Chopidi, Koyaguda, Goverguda	10	7	2	19
27	27/06/2021	SUNDAY	0	0	0	0
28	28/06/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	10	17	3	30
29	29/06/2021	Ullipitta, Dorli , Dampur & Vuttivagu	20	12	0	32
30	30/06/2021	Saleguda, somajinagar, bhordham colony(ginnedhari)	17	10	1	28

24 Days	95 Villages	301	265	62	628
---------	-------------	-----	-----	----	-----

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	TOTAL
1	01/07/2021	Danthupally, Kerlouddin & Jendugudu	17	10	0	27
2	02/07/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	13	16	1	30
3	03/07/2021	Chopidi, koyaguda,goverguda	14	6		20
4	04/07/2021	SUNDAY	0	0	0	0
5	05/07/2021	Chopidi, Sonupur, Indiranagar & Keshlapur	12	14	4	30
6	06/07/2021	Ullipitta, Dorli , Dampur & Vuttivagu	19	14	3	36
7	07/07/2021	Danthupally, Kerlouddin & Jendugudu	13	9	3	25
8	08/07/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	11	8	3	22
9	09/07/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	4	13	1	23
10	10/07/2021	Chopidi, Thoyaguda,goverguda	9	13	1	23
11	11/07/2021	SUNDAY	0	0	0	0
12	12/07/2021	Sonupur, Indiranagar & Keshlapur	12	14	1	27
13	13/07/2021	Ullipitta, Dorli , Dampur & Vuttivagu	11	5	3	19
14	14/07/2021	Danthupally, Kerlouddin & Jendugudu	16	4	3	23
15	15/07/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	14	4	2	20
16	16/07/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	2	1	2	5
17	17/07/2021	Chopidi, Thoyaguda,goverguda	11	7	3	21
18	18/07/2021	SUNDAY	0	0	0	0
19	19/07/2021	Sonupur, Indiranagar & Keshlapur	11	15	4	30
20	20/07/2021	Ullipitta, Dorli , Dampur & Vuttivagu	8	10	0	18
21	21/07/2021	Danthupally, Kerlouddin & Jendugudu	15	6	2	28
22	22/07/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	16	10	2	28
23	23/07/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	3	19	1	23
24	24/07/2021	Chopidi, Thoyaguda,goverguda	14	8	4	26
25	25/07/2021	SUNDAY	0	0	0	0
26	26/07/2021	Sonupur, Indiranagar & Keshlapur	8	24	0	32
27	27/07/2021	Ullipitta, Dorli , Dampur & Vuttivagu	12	5	6	23
28	28/07/2021	Danthupally, Kerlouddin & Jendugudu	14	8	2	24
29	29/07/2021	Saleguda,somajinagar,bhordham colony(ginnedhari)	13	11	4	28
30	30/07/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	8	10	2	20
31	31/07/2021	Chopidi, Thoyaguda,goverguda	6	4		10
	24 Days	95 Villages	306	279	58	643

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	TOTAL
1	01/08/2021	SUNDAY	0	0	0	0
2	02/08/2021	Sonupur, Indiranagar & Keshlapur	7	11	2	20
3	03/08/2021	Ullipitta, Dorli , Dampur & Vuttivagu	8	11	6	25
4	04/08/2021	Danthupally, Kerlouddin & Jendugudu	17	9	3	29
5	05/08/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	9	4	23
6	06/08/2021	Saleguda,somajinagar,Ginnadhar	10	15	6	31
7	07/08/2021	Chopidi, Thoyaguda,goverguda	11	6	3	20
8	08/08/2021	SUNDAY	0	0	0	0
9	09/08/2021	Sonupur, Indiranagar & Keshlapur	14	16	0	30
10	10/08/2021	Ullipitta, Dorli , Dampur & Vuttivagu	17	11	0	28
11	11/08/2021	Danthupally, Kerlouddin & Jendugudu	10	10	2	22
12	12/08/2021	Saleguda,somajinagar,Ginnadhar	10	5	2	17
13	13/08/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	8	2	20
14	14/08/2021	Chopidi, Thoyaguda,goverguda	8	9	10	27
15	15/08/2021	SUNDAY	0	0	0	0
16	16/08/2021	Sonupur, Indiranagar & Keshlapur	10	10	13	33
17	17/08/2021	Ullipitta, Dorli , Dampur & Vuttivagu	6	15	20	23
18	18/08/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	12	8	30
19	19/08/2021	Saleguda,somajinagar,Ginnadhar	20	12	13	45
20	20/08/2021	moharam	0	0	0	0
21	21/08/2021	Chopidi, Thoyaguda,goverguda	6	6	1	13
22	22/08/2021	SUNDAY	0	0	0	0
23	23/08/2021	Sonupur, Indiranagar & Keshlapur	6	2	5	13
24	24/08/2021	Chopidi, megu camp	7	10	5	22
25	25/08/2021	Danthupally, Kerlouddin & Jendugudu	9	9	10	28
26	26/08/2021	Saleguda,somajinagar,Ginnadhar	18	0	5	25
27	27/08/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	12	8	30
28	28/08/2021	Chopidi, Thoyaguda,goverguda	10	3	0	13
29	29/08/2021	SUNDAY	0	0	0	0
30	30/08/2021	Sonupur, Indiranagar & Keshlapur	10	2	8	20
31	31/08/2021	Ullipitta, Dorli , Dampur & Vuttivagu	16	4	2	22
	24 Days	95 Villages	270	219	120	609

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	TOTAL
1	01/09/2021	Ullipitta, Dorli , Dampur & Vuttivagu	15	18	10	43
2	02/09/2021	Danthupally, Kerlouddin & Jendugudu	13	14	5	32
3	03/09/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	12	10	10	32
4	04/09/2021	Chopidi, Thoyaguda,goverguda	13	8	3	24
5	05/09/2021	SUNDAY	0	0	0	0
6	06/09/2021	Sonupur, Indiranagar & Keshlapur	12	11	2	25
7	07/09/2021	Ullipitta, Dorli , Dampur & Vuttivagu	14	9	3	26
8	08/09/2021	Danthupally, Kerlouddin & Jendugudu	10	12	4	26
9	09/09/2021	Saleguda,somajinagar,Ginnadhar	9	16	1	26
10	10/09/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	8	4	3	15
11	11/09/2021	Chopidi, Thoyaguda,goverguda	8	7	8	23
12	12/09/2021	SUNDAY	0	0	0	0
13	13/09/2021	Sonupur, Indiranagar & Keshlapur	19	6	3	28
14	14/09/2021	Ullipitta, Dorli , Dampur & Vuttivagu	4	6	2	12
15	15/09/2021	Danthupally, Kerlouddin & Jendugudu	14	4	3	21
16	16/09/2021	Saleguda,somajinagar,Ginnadhar	7	11	2	20
17	17/09/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	3	5	7	15
18	18/09/2021	Chopidi, Thoyaguda,goverguda	6	3	4	13
19	19/09/2021	SUNDAY	0	0	0	0
20	20/09/2021	Sonupur, Indiranagar & Keshlapur	13	7	4	24
21	21/09/2021	Ullipitta, Dorli , Dampur & Vuttivagu	12	5	10	27
22	22/09/2021	Danthupally, Kerlouddin & Jendugudu	10	12	10	32
23	23/09/2021	Saleguda,somajinagar,Ginnadhar	15	14	10	39
24	24/09/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	12	13	5	30
25	25/09/2021	Chopidi, Thoyaguda,goverguda	10	5	3	18
26	26/09/2021	SUNDAY	0	0	0	0
27	27/09/2021	Sonupur, Indiranagar & Keshlapur	14	10	5	29
28	28/09/2021	Ullipitta, Dorli , Dampur & Vuttivagu	18	12	10	40
29	29/09/2021	Danthupally, Kerlouddin & Jendugudu	10	5	5	20
30	30/09/2021	Saleguda,somajinagar,Ginnadhar	18	10	7	35
	24 Days	95 Villages	299	237	139	675

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	TOTAL
1	01/10/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	14	10	9	33
2	02/10/2021	GANDHI JAYANTHI	0	0	0	0
3	03/10/2021	SUNDAY	0	0	0	0
4	04/10/2021	Sonupur, Indiranagar & Keshlapur	12	18	9	39
5	05/10/2021	Ullipitta, Dorli , Dampur & Vuttivagu	14	12	8	34
6	06/10/2021	Danthupally, Kerlouddin & Jendugudu	11	10	6	27
7	07/10/2021	Saleguda,somajinagar,Ginnadhar	15	14	10	39
8	08/10/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	7	8	5	20
9	09/10/2021	Chopidi	10	9	8	27
10	10/10/2021	SUNDAY	0	0	0	0
11	11/10/2021	Sonupur, Indiranagar & Keshlapur	12	5	9	26
12	12/10/2021	Danthupally, Jendugudu	12	10	9	31
13	13/10/2021	ullipitta, dorli,Dampur vuttivagudu	14	12	10	36
14	14/10/2021	Saleguda,somajinagar,Ginnadhar	11	9	10	30
15	15/10/2021	DUSSEHRA	0	0	0	0
16	16/10/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	12	10	5	27
17	17/10/2021	SUNDAY	0	0	0	0
18	18/10/2021	Sonupur, Indiranagar & Keshlapur	10	14	10	34
19	19/10/2021	Ullipitta, Dorli , Dampur & Vuttivagu	12	10	8	30
20	20/10/2021	Danthupally, Jendugudu	14	11	4	34
21	21/10/2021	Saleguda,somajinagar,Ginnadhar	10	10	4	24
22	22/10/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	18	14	10	42
23	23/10/2021	Chopidi, Thoyaguda,goverguda	12	14	11	37
24	24/10/2021	SUNDAY	0	0	0	0
25	25/10/2021	Sonupur, Indiranagar & Keshlapur	19	14	8	41
26	26/10/2021	Ullipitta, Dorli , Dampur & Vuttivagu	20	14	10	44
27	27/10/2021	Danthupally, Jendugudu	14	12	10	36
28	28/10/2021	Saleguda,somajinagar,Ginnadhar	10	11	10	31
29	29/10/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	11	14	12	37
30	30/10/2021	Chopidi, Thoyaguda,goverguda	18	12	9	39
31	31/10/2021	SUNDAY	0	0	0	0
	24 Days	95 Villages	312	277	209	798

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	TOTAL
1	01/11/2021	Sonupur, Indiranagar & Keshlapur	5	19		0
2	02/11/2021	Ullipitta, Dorli , Dampur & Vuttivagu	6	7	9	22
3	03/11/2021	Danthupally, Jendugudu				22
4	04/11/2021	DIWALI	0	0	0	0
5	05/11/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	7	6	8	21
6	06/11/2021	Saleguda,somajinagar,Ginnadhar	7	12	7	26
7	07/11/2021	SUNDAY	0	0	0	0
8	08/11/2021	Danthupally, Jendugudu	10	7	5	22
9	09/11/2021	Ullipitta, Dorli , Dampur & Vuttivagu	10	5	3	18
10	10/11/2021	Danthupally, Jendugudu	11	8	9	28
11	11/11/2021	Saleguda,somajinagar,Ginnadhar	8	4	8	20
12	12/11/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	8	9	27
13	13/11/2021	Chopidi, Thoyaguda,goverguda	10	8	10	28
14	14/11/2021	SUNDAY	0	0	0	0
15	15/11/2021	Sonupur, Indiranagar & Keshlapur	11	8	7	26
16	16/11/2021	Ullipitta, Dorli , Dampur & Vuttivagu	7	8	5	20
17	17/11/2021	Danthupally, Jendugudu	10	8	7	25
18	18/11/2021	Saleguda,somajinagar,Ginnadhar	8	10	4	22
19	19/11/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	7	6	10	23
20	20/11/2021	Chopidi, Thoyaguda,goverguda	5	4	3	12
21	21/11/2021	SUNDAY	0	0	0	0
22	22/11/2021	Sonupur, Indiranagar & Keshlapur	4	8	3	15
23	23/11/2021	Ullipitta, Dorli , Dampur & Vuttivagu	10	5	3	18
24	24/11/2021	Danthupally, Jendugudu	8	4	4	16
25	25/11/2021	Saleguda,somajinagar,Ginnadhar	10	8	4	22
26	26/11/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	5	7	22
27	27/11/2021	Chopidi, Thoyaguda,goverguda	5	4	3	12
28	28/11/2021	SUNDAY	0	0	0	0
29	29/11/2021	Sonupur, Indiranagar & Keshlapur	8	4	7	19
30	30/11/2021	Ullipitta, Dorli , Dampur & Vuttivagu	9	4	5	18
	24 Days	95 Villages	204	180	144	528

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	TOTAL
1	01/12/2021	Danthupally, Kerlouddin & Jendugudu	14	3	7	24
2	02/12/2021	Saleguda,somajinagar,Ginnadhar	5	6	5	16
3	03/12/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	7	3	4	14
4	04/12/2021	Chopidi, Thoyaguda,goverguda	10	12	5	27
5	05/12/2021	SUNDAY	0	0	0	0
6	06/12/2021	Sonupur, Indiranagar & Keshlapur	11	10	10	31
7	07/12/2021	Ullipitta, Dorli , Dampur & Vuttivagu	12	10	15	37
8	08/12/2021	Danthupally, Kerlouddin & Jendugudu	11	10	8	29
9	09/12/2021	Saleguda,somajinagar,Ginnadhar	14	12	10	36
10	10/12/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	4	10	8	22
11	11/12/2021	Chopidi, Thoyaguda,goverguda	12	10	15	37
12	12/12/2021	SUNDAY	0	0	0	0
13	13/12/2021	Sonupur, Indiranagar & Keshlapur	15	10	10	35
14	14/12/2021	Ullipitta, Dorli , Dampur & Vuttivagu	10	7	4	21
15	15/12/2021	Danthupally, Kerlouddin & Jendugudu	11	10	12	33
16	16/12/2021	Saleguda,somajinagar,Ginnadhar	10	19	10	39
17	17/12/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	15	10	7	32
18	18/12/2021	Chopidi, Thoyaguda,goverguda	7	8	4	19
19	19/12/2021	SUNDAY	0	0	0	0
20	20/12/2021	Sonupur, Indiranagar & Keshlapur	18	12	10	40
21	21/12/2021	Ullipitta, Dorli , Dampur & Vuttivagu	12	10	7	29
22	22/12/2021	Danthupally, Kerlouddin & Jendugudu	10	10	8	28
23	23/12/2021	Saleguda,somajinagar,Ginnadhar	15	10	8	33
24	24/12/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	12	10	10	32
25	25/12/2021	Chopidi, Thoyaguda,goverguda	11	8	7	26
26	26/12/2021	SUNDAY	0	0	0	0
27	27/12/2021	Sonupur, Indiranagar & Keshlapur	10	11	6	27
28	28/12/2021	Ullipitta, Dorli , Dampur & Vuttivagu	15	10	7	32
29	29/12/2021	Danthupally, Kerlouddin & Jendugudu	10	7	5	22
30	30/12/2021	Saleguda,somajinagar,Ginnadhar	15	10	8	33
31	31/12/2021	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	7	3	20
	24 Days	95 Villages	306	255	213	774

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	TOTAL
1	01/01/2022	Chopidi, Thoyaguda,goverguda	10	8	3	21
2	02/01/2022	SUNDAY	-	-	-	-
3	03/01/2022	Sonupur, Indiranagar & Keshlapur	10	3	5	18
4	04/01/2022	Ullipitta, Dorli , Dampur & Vuttivagu	4	8	4	16
5	05/01/2022	Danthupally, Kerlouddin & Jendugudu	15	10	6	21
6	06/01/2022	Saleguda,somajinagar,Ginnadhar	10	15	4	29
7	07/01/2022	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	10	8	28
8	08/01/2022	Chopidi, Thoyaguda,goverguda	10	10	5	25
9	09/01/2022	SUNDAY	-	-	-	-
10	10/01/2022	Sonupur, Indiranagar & Keshlapur	13	6	2	21
11	11/01/2022	Ullipitta, Dorli , Dampur & Vuttivagu	9	7	7	23
12	12/01/2022	Danthupally, Kerlouddin & Jendugudu	16	4	4	24
13	13/01/2022	Saleguda,somajinagar,Ginnadhar	4	10	4	18
14	14/01/2022	-	-	-	-	-
15	15/01/2022		-	-	-	-
16	16/01/2022	SUNDAY	-	-	-	-
17	17/01/2022	Sonupur, Indiranagar & Keshlapur	10	12	9	31
18	18/01/2022	Ullipitta, Dorli , Dampur & Vuttivagu	10	14	8	32
19	19/01/2022	Danthupally, Kerlouddin & Jendugudu	10	8	7	25
20	20/01/2022	Saleguda,somajinagar,Ginnadhar	10	10	8	28
21	21/01/2022	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	18	9	37
22	22/01/2022	Chopidi, Thoyaguda,goverguda	10	12	10	3
23	23/01/2022	SUNDAY	-	-	-	-
24	24/01/2022	Sonupur, Indiranagar & Keshlapur	11	7	10	28
25	25/01/2022	Ullipitta, Dorli , Dampur & Vuttivagu	7	8	8	23
26	26/01/2022		-	-	-	-
27	27/01/2022	Saleguda,somajinagar,Ginnadhar	10	12	8	30
28	28/01/2022	Abbapur, Narsapur	7	10	4	21
29	29/01/2022	Danthupally, Kerlouddin & Jendugudu	8	14	8	30
30	30/01/2022	SUNDAY	-	-	-	-
31	31/01/2022	Sonupur, Indiranagar & Keshlapur	12	10	10	32
	24 Days	95 Villages	226	226	151	603

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	TOTAL
1	01/02/2022	Ullipitta, Dorli , Dampur & Vuttivagu	10	12	3	25
2	02/02/2022	Danthupally, Kerlouddin & Jendugudu	12	10	5	27
3	03/02/2022	Chopidi, Thoyaguda,goverguda	7	5	3	15
4	04/02/2022	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	12	8	4	24
5	05/02/2022	Saleguda,somajinagar,Ginnadhar	8	5	3	16
6	06/02/2022	SUNDAY	0	0	0	0
7	07/02/2022	Sonupur, Indiranagar & Keshlapur	4	8	5	17
8	08/02/2022	Ullipitta, Dorli , Dampur & Vuttivagu	10	12	10	32
9	09/02/2022	Danthupally, Kerlouddin & Jendugudu	12	4	1	17
10	10/02/2022	Saleguda,somajinagar,Ginnadhar	5	7	3	15
11	11/02/2022	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	12	10	8	30
12	12/02/2022	Chopidi, Thoyaguda,goverguda	5	2	2	9
13	13/02/2022	SUNDAY	0	0	0	0
14	14/02/2022	Sonupur, Indiranagar & Keshlapur	9	6	3	18
15	15/02/2022	Ullipitta, Dorli , Dampur & Vuttivagu	2	2	0	4
16	16/02/2022	Danthupally, Kerlouddin & Jendugudu	7	5	3	15
17	17/02/2022	Saleguda,somajinagar,Ginnadhar	11	4	0	15
18	18/02/2022	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	14	12	5	31
19	19/02/2022	Chopidi, Thoyaguda,goverguda	12	4	5	21
20	20/02/2022	SUNDAY	0	0	0	0
21	21/02/2022	Sonupur, Indiranagar & Keshlapur	10	6	5	21
22	22/02/2022	Ullipitta, Dorli , Dampur & Vuttivagu	9	9	2	20
23	23/02/2022	Danthupally, & Jendugudu	13	7	2	22
24	24/02/2022	Saleguda,somajinagar,Ginnadhar	20	9	4	33
25	25/02/2022	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	4	2	3	9
26	26/02/2022	Chopidi, Thoyaguda,goverguda	7	5	0	12
27	27/02/2022	SUNDAY	0	0	0	0
28	28/02/2022	Sonupur, Indiranagar & Keshlapur	10	3	2	15
29						
30						
31						
	24 Days	95 Villages	225	157	81	463

S.No	Date	Name of the Village	No.of Beneficiaries			
			Male	Female	Child	TOTAL
1	01/03/2022	Ullipitta, Dorli , Dampur & Vuttivagu	10	8	1	19
2	02/03/2022	Danthupally, & Jendugudu	10	11	3	24
3	03/03/2022	Saleguda,somajinagar,Ginnadhar	8	7	4	19
4	04/03/2022	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	9	4	2	15
5	05/03/2022	Chopidi, Thoyaguda,goverguda	5	10	1	16
6	06/03/2022	SUNDAY	0	0	0	0
7	07/03/2022	Sonupur, Indiranagar & Keshlapur	12	5	3	20
8	08/03/2022	Ullipitta, Dorli , Dampur & Vuttivagu	6	8	1	15
9	09/03/2022	Danthupally, Kerlouddin & Jendugudu	7	8	0	15
10	10/03/2022	Saleguda,somajinagar,Ginnadhar	3	9	1	13
11	11/03/2022	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	4	5	19
12	12/03/2022	Chopidi, Thoyaguda,goverguda	7	3	1	11
13	13/03/2022	SUNDAY	0	0	0	0
14	14/03/2022	Sonupur, Indiranagar & Keshlapur	12	9	5	26
15	15/03/2022	Ullipitta, Dorli , Dampur & Vuttivagu	9	3	5	17
16	16/03/2022	Danthupally, Kerlouddin & Jendugudu	6	8	2	16
17	17/03/2022	Saleguda,somajinagar,Ginnadhar	7	3	5	15
18	18/03/2022	HOLI	0	0	0	0
19	19/03/2022	Chopidi, Thoyaguda,goverguda	9	3	0	12
20	20/03/2022	SUNDAY	0	0	0	0
21	21/03/2022	Sonupur, Indiranagar & Keshlapur	12	10	5	27
22	22/03/2022	Ullipitta, Dorli , Dampur & Vuttivagu	10	4	2	16
23	23/03/2022	Danthupally, Kerlouddin & Jendugudu	10	4	3	17
24	24/03/2022	Saleguda,somajinagar,Ginnadhar	4	5	3	12
25	25/03/2022	Chopidi, Thoyaguda,goverguda	12	10	4	26
26	26/03/2022	Abbapur, Narsapur, MVK-5 Inc. & Lingaguda	10	10	3	23
27	27/03/2022	SUNDAY	0	0	0	0
28	28/03/2022	Sonupur, Indiranagar & Keshlapur	9	4	4	17
29	29/03/2022	Ullipitta, Dorli , Dampur & Vuttivagu	9	9	3	21
30	30/03/2022	Danthupally, Kerlouddin & Jendugudu	7	4	3	14
31	31/03/2022	Saleguda,somajinagar,Ginnadhar	10	4	3	17
	24 Days	95 Villages	223	167	72	462

Sanjeevani-Mobile medical Hospital with Doctor, Paramedical staff & Lab Facilities





Mega Medical camp conducted in surrounding villages details				
venue	Date of camp	No. of persons treated	Total expenditure in Rs.	Villages covered
Devaiguda	05.01.2003	2500	1,40,000.00	Ontimamidi,Dantanapalli(new) Old Ippaguda, New Dorli colony, Dorli, Janda guda, Ullipitta, Devaiguda, Borjam, SC colony, Chanduguda, Pedakunta, Areguda, Lingiguda, Dampur
Abbapur	18.05.2005	659	75,332.00	Abbapur, Sonapur, Bejjala, Aslamanda, Khairiguda, Goleti Village, Narsapur, MVK-3 & 5
Devaiguda	18.02.2007	854	97,583.50	Ontimamidi,Dantanapalli(new) Old Ippaguda, New Dorli colony, Dorli, Jandaguda, Ullipitta, Devaiguda, Borjam, SC colony, Chanduguda, Pedakunta, Areguda, Lingiguda, Dampur
R& R centres	2009-10	1513	185650.00	Conducted for all R&R villages & surrounding villages
Uttoor, Jailoor and Indravelli	06.09.2011 to 08.09.2011	2650	342840.00	Medical camp was organized at Uttoor, Jailoor and Indravelli Mandals of Adilabad District
ABBAPUR	29.07.2018	1000	51500.00	Conducted in abbapur village for all surrounding villages

Mega medical camp photograph at Abbapur village on 29.07.2018



Mega medical camp at R&R Centres & surrounding villages,schools



Mega medical camp at R&R Centres & surrounding villages,schools



No. J-11015/28/2013-IA-II(M)
 Government of India
 Ministry of Environment, Forests & Climate Change
 IA-II (Coal mining) Division

Indira Paryavaran Bhawan,
 Jorbagh Road,
 New Delhi-110003

Dated: 6th February, 2015

To,
 The Director (Planning & Project)
 M/s Singareni Collieries Company Ltd.,
 Kothagudem Collieries,
 Kothagudem,
 Andhra Pradesh

Subject: Khairagura Opencast Expansion Coal Mining Project (from 3.0 MTPA to 3.75 MTPA in an ML area of 1217.50 ha; Latitude 19° 14' 10" to 19° 15' 20" (North) and Longitude 79° 16' 00" to 79° 18' 15" (East)) of M/s The Singareni Collieries Co. Ltd., Dist. Adilabad, Telangana- Expansion under 7(ii) of EIA Notification 2006- Environmental Clearance-reg.

Sir:

This is with reference to letter no. CRP/ENV/A/493/43 dated 19.01.2013 and revised application reference to letter no. CRP/ENV/A/493/601 dated 28.08.2013 and subsequent letter no. dated 23.12.2013, 12.11.2014 and 16.12.2014 along with the application for expansion of the production under section 7(ii) of the EIA Notification, 2006. EC was granted to the project vide letter no J-11015/689/2007-IA-II(M) of dated 22.10.2007.

2. The Ministry of Environment, Forests & Climate Change has considered the application. It is noted that the proposal is for grant of Environmental Clearance for **Khairagura Opencast Expansion Coal Mining Project (from 3.0 MTPA to 3.75 MTPA in an ML area of 1217.50 ha; Latitude 19° 14' 10" to 19° 15' 20" (North) and Longitude 79° 16' 00" to 79° 18' 15" (East)) of M/s The Singareni Collieries co. Ltd., Dist. Adilabad, Telangana under 7(ii) of EIA Notification 2006.** The proposal was considered in 71st EAC meeting held during 8th - 9th April, 2013; 7th EAC meeting held during 12th - 13th December, 2013 and 27th EAC meeting held on 18th - 19th December, 2014. The proponent has informed that:

- i. It is the expansion project of M/s SCCL to which Ministry accorded EC vide letter no. J-11015/36/2003-IA-II(M) dated 16.09.2004 for at a rated capacity of 0.72 MTPA in a lease area of 338.78 ha, and the proposal was again granted environmental clearance vide MOEF letter No. J-11015/689/2007-IA-II(M) dated 22.10.2007 for expansion in rated capacity from 0.72 MTPA to 2.5 MTPA with a peak production of 3 MTPA and increase in lease area from 338.78

Khairagura Expansion_EC

Page 1 of 10

- ha to 1217.50 ha.
- ii. The proposal is for expansion in production from 3 MTPA to 3.75 MTPA with in the same mine lease area with 25 % expansion.
 - iii. The latitude and longitude of the project are $19^{\circ} 14' 10''$ to $19^{\circ} 15' 20''$ (North) and $79^{\circ} 16' 00''$ to $79^{\circ} 18' 15''$ (East) respectively.
 - iv. The land usage of the project:
Pre-mining: Total land area of the project is 1217.50 Ha out of which forest land is 296.86 ha and non-forest land is 920.64 ha.

Post Mining:

Sl. No	Description	LAND USE DETAILS (Ha.)				
		Plantation	Water body	Public Use	Other Uses	Total
1	Excavation Area					
2	(a) Backfilled area	261.93	--	--	--	261.93
3	(b) Void area left	--	280.98	--	--	280.98
4	External waste dump	388.57	---	---	---	388.57
5	Vattivagu Diversion		11.56			11.56
6	Approach road to Khairagura OCP			29.85		29.85
7	Road to Dorli OCP			12.82		12.82
8	Service Buildings & CHP	9.80				9.80
9	Protective bund around quarry	15.53				15.53
10	Protective bund around dump yard	16.93				16.93
11	Safety distance, bund, drains etc.	189.53				189.53
	TOTAL	882.29	292.54	42.67		1217.5

Core area:

S. No	Particulars	Forest Land	Non-forest Land	Total
1	Quarry, excavation area.	217.14	325.77	542.91
2	External OB dumps (including top soil storage)		388.57	388.57
3	Approach road to Khairagura OCP	29.85		29.85
4	Road to Dorli OCP	4.58	8.24	12.82
5	Vattivagu Diversion		11.56	11.56
6	Service Buildings & CHP	9.80		9.80
7	Protective bund around quarry	1.74	13.79	15.53
8	Protective bund around dump yard		16.93	16.93
9	Safety distance, bund, drains etc.	33.75	155.78	189.53
10	Total Land Requirement	296.86	920.64	1217.50

- v. The total geological reserve is 74.31 MT. The mineable reserve 66.87 MT, extractable reserve is 66.87MT. The per cent of extraction would be 90 %.
- vi. The coal grade is G-9/G-11. The stripping ratio is 9.86 Cum/ton (Average). The average Gradient is 1 in 6.5. There will be three composite seams with thickness ranging from 0.30 m to 8.00 m.
- vii. The total estimated water requirement is 2250 m³/day. The level of ground water ranges from 1.2 m to 15.4 m.
- viii. The Method of mining would be Opencast with Shovel – Dumper Combination.
- ix. There are three external OB Dumps covering an area 388.57 ha. With the height upto 120 m. The quantity will be 184.58 Mm³. There is one internal dumps covering an area 371.00 ha. with the height upto 90 agl. The quantity will be 395.91 Mm³. The final void area 292.54 ha with a depth of 222 m.
- x. The seasonal data for ambient air quality has been documented and all results at all stations are within prescribed limits.
- xi. The life of mine is 14 Years (From 1.4.2013).
- xii. **Transportation:** Coal transportation in pit Crusher to surface CHP through belt conveyor (1.5 Km length). Surface to Siding by trucks 14 Km and siding to loading by wagon.
- xiii. There is R & R involved. There are 538 PAFs for these production.
- xiv. **Cost:** Total capital cost of the project is Rs. 50.46 Crores. CSR Cost Rs. 5.00 per tonne. R&R Cost Rs 17.83 Crores. Environmental Management Cost (Additional environmental capital expenditure shall be Rs. 4.10 Lakhs, Revenue Expenditure shall be Rs. 18.72 per Tonne).
- xv. **Water body :** Vatti vagu (Diversion of Phase-I completed and Ph-II yet to be carried out)
- xvi. **Approvals:** Ground water clearance has been obtained on 02.07.2007. Revised Mine plan and mine closure plan approved by the MOC vide letter no. 13016/2/2006-CA-II dated 17th October, 2014.
- xvii. **Wildlife issues:** There are no national Parks, wildlife sanctuary, biosphere reserves found in the 10 km buffer zone.
- xviii. **Forestry issues:** Total forest area involved for mining is 296.86 ha. Forest Clearance details are below:

S. No.	Area in Ha	FC, vide letter no.& date
1	29.85	8-28/94-FC dated 20.09.2000
2	146.30	8-102/2000-FC dated 20.09.2003
3	126.71	8-28/94-FC dated 20.09.2011
Total	296.86	

- xix. Total afforestation plan shall be implemented covering an area of 882.29 ha at the end of mining. Green Belt over an area of 231.79 ha. Density of tree plantation 2500 trees/ ha of plants.
- xx. **Public hearing:** The Public Hearing was held on 09.03.2007.
- xxi. There are no court cases/violation pending with the project proponent.
- xxii. The proponent also mentioned that total 556 families were already displaced. 18 families were displaced as a part of Khairgura OC in of Rs 17.83 Crs has already paid under R&R package

2005 before R&R policy. Another 49 families who are near Vattivagu are also proposed for rehabilitation on their request. An amount of Rs. 365.21 Lakhs provided and R&R will be carried through State Government.

3. **EC Compliance report:** The Compliance Monitoring Report of the MoEF, Regional office, Bangalore vide letter no. EP/12.1/669 dated 06.08.2013 which was deliberated in the Committee which noted that the proponent has largely complied with the conditions of the earlier EC and other conditions are in the process of compliance which include the following:

- i. Crushers at the CHP be operated with system to check fugitive emissions; Drills should be wet operated; Controlled blasting should be practiced only during day time; Afforestation shall be done in a phased manner up to total area of 819.65 Ha; Progressive mine closure plan be implemented by reclaiming quarry area; Regular monitoring of ground water and quality shall be carried out; artificial ground water recharge measures; 10% of workmen should be subjected to occupational health checkup; Establishment of four ambient air quality monitoring stations; Control of fugitive dust emissions from all the sources; regular submission of data on ambient air quality; Adequate measures control noise levels
- ii. Proper collection and treatment of industrial waste water;
- iii. Regular monitoring and control of vehicular emissions; Provision of personal safety devices and occupational health surveillance

4. The proposal was considered and recommended in its 27th EAC meeting held on 18th - 19th December, 2014 for granting Environmental Clearance. The Ministry of Environment, Forests and Climate Change hereby accords environmental clearance for the above-mentioned **Khairagura Opencast Expansion Coal Mining Project (from 3.0 MTPA to 3.75 MTPA in an ML area of 1217.50 ha; Latitude 19° 14' 10" to 19° 15' 20" (North) and Longitude 79° 16' 00" to 79° 18' 15" (East)) of M/s The Singareni Collieries co. Ltd., Dist. Adilabad, Telangana under 7(ii) of EIA Notification 2006** under the provisions of the Environment Impact Assessment Notification, 2006 and subsequent amendments/circulars thereto subject to the compliance of the terms and conditions mentioned below:

A. Specific Conditions:

- i. The maximum production from the mine at any given time shall not exceed the limit as prescribed in the EC.
- ii. The validity of the EC is for the life of the Mine or as specified in the EIA Notification, 2006, whichever is earlier.
- iii. The Voids shall be filled upto the near ground level by the OB from the new Ullipetta Dorli mine. The coal transportation on road by mechanically covered trucks.
- iv. The coal loading at siding shall be by conveyer belt.
- v. The social audit report of the CSR be submitted to the MOEF for record and be uploaded on to the Company's website.
- vi. Instead of provision of bag filters, effective sensor operated water sprinkling system be provided for dust suppression at crusher house and transfer points at pit head coal handling arrangement.

- vii. The proponent shall utilize the final void for dumping of overburden generated from the proposed "Uthipetta Block" (Relay project) which is adjacent to the Khairagura OC project.
- viii. The final mine closure plan will be submitted to MOEF 5 year in advance of final mine closure for approval.
- ix. Coal transportation in pit Crusher to surface CHP through belt conveyor (1.5 Km length). Surface to Siding by trucks 14 Km and siding to loading by wagon.
- x. The production shall be within the same Mining Lease area.
- xi. The depth of the internal void shall be 40 m from the ground level and should be adequate for fishery purpose.
- xii. All safety measures shall be taken as per CMR, 1957 & related Circulars.
- xiii. The production shall be within the same Mining Lease area.
- xiv. The OB shall be completely re-handled at the end of the mining and will be back filled upto the ground level and covered with about a meter thick top soil and put to use. The land after mining shall be brought back for agriculture purpose.
- xv. Garland drains be provided.
- xvi. Appropriate embankment shall be provided along the side of the river/nallah flowing near or adjacent to the mine.
- xvii. The CSR cost should be Rs 5 per Tonnes of Coal produced which should be adjusted as per the annual inflation.
- xviii. Everybody in the core area should be provided with mask for protection against fugitive dust emissions.
- xix. Dust mask to be provided to everyone working in the mining area.
- xx. The supervisory staff should be held personally responsible for ensuring compulsory regarding wearing of dust mask in the core area.
- xxi. People working in the core area should be periodically tested for the lung diseases and the burden of cost on account of working in the coal mine area.
- xxii. The mining area should be surrounded by green belt having thick closed thick canopy of the tree cover.
- xxiii. The embankment constructed along the river boundary shall be of suitable dimensions and critical patches shall be strengthened by stone pitching on the river front side and stabilised with plantation so as to withstand the peak water flow and prevent mine inundation.
- xxiv. There shall be no overflow of OB into the river and into the agricultural fields and massive plantation of native species shall be taken up in the area between the river and the project.
- xxv. OB shall be stacked at four earmarked external OB dumpsite(s) only. The ultimate slope of the dump shall not exceed 28°. Monitoring and management of existing reclaimed dumpsites shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forests & Climate Change and its concerned Regional office on yearly basis.
- xxvi. Catch drains and siltation ponds of appropriate size shall be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected shall be utilised for watering the mine area, roads, green belt development, etc. The drains shall be regularly desilted and maintained properly. Garland drains (size, gradient and length) and sump capacity shall be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area



- adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material.
- xxvii. Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data.
 - xxviii. Crushers at the CHP of adequate capacity for the expansion project shall be operated with high efficiency bag filters, water sprinkling system shall be provided to check fugitive emissions from crushing operations, conveyor system, haulage roads, transfer points, etc.
 - xxix. Drills shall be wet operated. Roads shall be metal topped and mechanical sweepers shall be regularly deployed to clear the dust off the main approach and mineral transportation roads. Water sprinkling (fixed and mist type, mobile) shall be regularly done along the main haul roads.
 - xxx. The project authorities shall undertake regular repairing and tarring of roads used for mineral transportation. A 3-tier green belt comprising of a mix of native species shall be developed all along the major approach roads.
 - xxxi. Controlled blasting shall be practiced with use of delay detonators and only during daytime. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders shall be implemented.
 - xxxii. A Progressive afforestation plan shall be implemented covering an area of 882.29 ha at the end of mining, which includes reclaimed External OB dump area (388.57 ha), Internal OB dump area (261.93 ha), and Green belt (231.79 ha) in township located outside the lease by planting native species in consultation with the local DFO/Agriculture Department. The density of the trees shall be around 2500 plants per ha. Massive plantation shall be carried out in open spaces in and around the mine and a 3-tier avenue plantation along the main approach roads to the mine.
 - xxxiii. An estimated total 578.49 Mm³ of OB will be generated during the entire life of the mine. Out of which 184.58 Mm³ of OB will be dumped in three external OB Dumps in an earmarked area covering 331.75 ha of land. 393.91 Mm³ of OB will be dumped in one internal OB Dumps in an earmarked area covering 280.98 ha of land. The maximum height of external OB dump will not exceed 90 m. The maximum slope of the dump shall not exceed 28 degrees. Monitoring and management of reclaimed dump sites shall continue till the vegetation becomes self-sustaining and compliance status shall be submitted to MOEF and its Regional Office on yearly basis.
 - xxxiv. The proponent should prepare restoration and reclamation plan for the degraded area. The land be used in a productive and sustainable manner.
 - xxxv. Compensatory Ecological & Restoration of waste land, other degraded land and OB dumps in lieu of breaking open the land be carried out.
 - xxxvi. The mining should be phased out in sustainable manner. No extra over burden dumps are permitted.
 - xxxvii. No groundwater shall be used for mining operations.
 - xxxviii. Of the total quarry area of 542.91 ha, the backfilled quarry area of 261.93 ha shall be reclaimed with plantation and a void of 280.98 ha at a depth of 40 m which is proposed to be converted into a water body shall be gently sloped and the upper benches shall be terraced and stabilised with plantation/afforestation by planting native plant species in consultation with the local DFO/Agriculture Department. The density of the trees shall be around 2500 plants per ha.
 - xxxix. Regular monitoring of groundwater level and quality shall be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter

(January) seasons and for quality in May. Data thus collected shall be submitted to the Ministry of Environment, Forests & climate change and the Central Pollution Control Board quarterly within one month of monitoring.

- xi. The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource in case monitoring indicates a decline in water table. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.
- xii. Sewage treatment plant shall be installed in the existing colony. ETP shall also be provided for workshop and CHP wastewater.
- xiii. Besides carrying out regular periodic health check-up of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, through an specialised agency /institution within the District/State and the results reported to this Ministry and to DGMS.
- xliii. Land oostees shall be compensated as per the norms laid out R&R Policy of CIL or the National R&R Policy or R&R Policy of the State Government whichever is higher.
- xliv. For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1: 5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MOEF&CC and its concerned Regional office
- xlv. A detailed Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment, Forests & Climate Change within 6 months of grant of Environmental Clearance.
- xlvi. The project authorities shall in consultation with the Panchayats of the local villages and administration identify socio-economic and welfare measures under CSR to be carried out over the balance life of the mine.
- xlvi. Corporate Environment Responsibility:
 - a) The Company shall have a well laid down Environment Policy approved by the Board of Directors.
 - b) The Environment Policy shall prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.
 - c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions shall be furnished.
 - d) To have proper checks and balances, the company shall have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.

B. General Conditions

- i. No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment, Forests & Climate Change.

- ii. No change in the calendar plan of production for quantum of mineral coal shall be made.
- iii. Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM₁₀, PM_{2.5}, SO₂ and NO_x monitoring. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.
- iv. Data on ambient air quality (PM₁₀, PM_{2.5}, SO₂ and NO_x) and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly submitted to the Ministry including its concerned Regional Office and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognised under the EPA rules, 1986 shall be furnished as part of compliance report.
- v. Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with ear plugs/muffs.
- vi. Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.
- vii. Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.
- viii. Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analysed through a laboratory recognised under EPA Rules, 1986.
- ix. Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.
- x. Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed and records maintained thereof. The quality of environment due to outsourcing and the health and safety issues of the outsourced manpower should be addressed by the company while outsourcing.
- xi. A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company.
- xii. The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its concerned Regional Office.
- xiii. The Project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution control Board and may also be seen at the website of the Ministry of Environment, Forests & Climate Change at <http://envfor.nic.in>.
- xiv. A copy of the environmental clearance letter shall be marked to concern Panchayat/Zila Parishad, Municipal Corporation or Urban local body and local NGO, if any, from whom any



suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on company's website.

- xv. A copy of the environmental clearance letter shall be shall also be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, District Industry Sector and Collector's Office/Tehsildar's Office for 30 days.
- xvi. The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated environmental clearance conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain. The monitoring data of environmental quality parameter (air, water, noise and soil) and critical pollutant such as PM_{10} , $PM_{2.5}$, SO_2 and NO_2 (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.
- xvii. The project proponent shall submit six monthly compliance reports on status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the Ministry, respective Zonal Office s of CPCB and the SPCB.
- xviii. The Regional Office of this Ministry located in the Region shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/ information/monitoring reports.
- xix. The Environmental statement for each financial year ending 31 March in For -V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MoEF&CC by e-mail.

5. The proponent shall abide by all the commitments and recommendations made in the EIA/EMP report so also during their presentation to the EAC.

6. The commitment made by the Proponent to the issue raised during Public Hearing shall be implemented by the Proponent

7. The proponent is required to obtain all necessary clearances/approvals that may be required before the start of the project. The Ministry or any other competent authority may stipulate any further condition for environmental protection.

8. The Ministry or any other competent authority may stipulate any further condition for environmental protection.

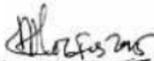
9. The Proponent shall setup an Environment Audit cell with responsibility and accountability to ensure implementation of all the EC Conditions.

10. Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.

11. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India/High Courts and any other Court of Law relating to the subject matter. The proponent shall ensure to undertake and provide for the costs incurred for taking up remedial measures in case of soil contamination, contamination of groundwater and surface water, and occupational and other diseases due to the mining operations.

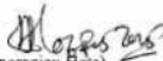
12. Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

13. This EC supersedes the earlier EC vide letter no.J-11015/36/2003-IA-II(M) dated 16.09.2004 for at a rated capacity of 0.72 MTPA in a lease area of 338.78 ha. and environmental clearance vide MOEF letter No. J-11015/689/2007-IA-II(M) dated 22.10.2007 for expansion in rated capacity from 0.72 MTPA to 2.5 MTPA with a peak production of 3 MTPA and increase in lease area from 338.78 ha to 1217.50 ha.


(Dr. Manoranjan Hota)
Director

Copy to:

1. Secretary, Ministry of Coal, Shastri Bhawan, New Delhi.
2. Secretary, Department of Environment, Forests & Climate Change, Government of Telangana, Secretariat, Hyderabad.
3. Chief Conservator of Forests, Regional office (SZ), Ministry of Environment, Forests & Climate Change, 4th Floor, F-Wing, Kenriya Sadan Block, Kormangala, Bangalore - 560034.
4. Member Secretary, Telangana State Pollution Control Board, Paryavaran Bhawan, A-3 Industrial Estate, Sanatnagar, Hyderabad - 500038.
5. Member Secretary, Central Pollution Control Board, CBD-cum-Office Complex, East Arjun Nagar, New Delhi -110032.
6. Member-Secretary, Central Ground Water Authority, Ministry of Water Resources, Curzon Road Barracks, A-2, W-3 Kasturba Gandhi Marg, New Delhi.
7. District Collector, Adilabad, Government of Telangana.
8. Monitoring File 9. Guard File 10. Record File 11. Notice Board.


(Dr. Manoranjan Hota)
Director

No. J-11015/28/2013-IA.II (M)
 Government of India
 Ministry of Environment, Forest & Climate Change
 IA-II (Coal Mining) Division

Indira Paryavaran Bhawan,
 Jorbagh Road,
 New Delhi-110 003

Dated: 20th January, 2016

To,

The Director (Planning & Project)
M/s Singareni Collieries Company Ltd.,
 Kothagudem Collieries,
 Kothagudem,
 (Telangana)- 507101
 Ph: 08744-242602 ; 08744-243724
 E-mail: dpp@scclmines.com

Sub. : Khairagura Opencast Expansion Coal Mining Project from 3.0 MTPA to 3.75 MTPA in ML area of 1217.50 ha of M/s The Singareni Collieries Co. Ltd., District Adilabad (Telangana) – Corrigendum to EC - reg.

Sir,

This is with reference to your letter No. CRP/ENV/A/431A/172 dated 4th April, 2015 requesting the Ministry for correction in EC granted vide letter No. J-11015/28/2013-IA.II (M) dated 6th February, 2015. Request received in the ministry on 04.11.2015 and subsequent letters dated 01.12.2015 and 08.12.2015 on the above-mentioned subject.

2. The Ministry of Environment, Forest & Climate Change has considered the application. It is noted that the proposal is for correction in EC granted vide letter No.J-11015/28/2013-IA-II(M) dated 06.02.2015 for Khairagura Opencast Expansion Coal Mining Project (from 3.0 MTPA to 3.75 MTPA in an ML area of 1217.50 ha of M/s The Singareni Collieries Co. Ltd., Dist. Adilabad (Telangana).

3. The proposal was considered by the Expert Appraisal Committee (EAC) in the Ministry for Thermal & Coal Mining Projects, in its 47th EAC meeting held on 30th November - 1st December, 2015. The details of the project, as per the documents submitted by the Project Proponent (PP), and also as informed during the above said EAC meeting are reported to be as under:

- i. Three external dump yards were planned in the project. Maximum height of Dumpyard-1 & 2 will be 90 m and Dumpyard-3 will be 120 m. The same was submitted in our application and mentioned in the EC letter also at 2 (ix) of page-3.
- ii. The dumping strategy, solid waste management programme, stage wise plans and land requirement for external OB dump was calculated by planning of external OB dumps with a height of 120 m above ground level. Any change or restriction of height of the dump to 90 m will change the dumping strategy and it requires additional land.

Correction to EC: Exptn_Khairagura OC 3-3.75 MTPA 28_2913

Page 1 of 2

4. The EAC, after verifying the documents of the proposal in its 47th EAC meeting held on 30th November - 1st December, 2015 recommended for correction in the EC (Specific Condition no. xxxiii) w.r.t height of external OB dump as under:-

i. The Para No. 4 A, Specific Condition No. (xxxiii)

"An estimated total 578.49 Mm³ of OB will be generated during the entire life of the mine. Out of which 184.58 Mm³ of OB will be dumped in three external OB in an earmarked area covering 331.75 Ha of land. 393.91 Mm³ of OB will be dumped in one internal OB dump in an earmarked area covering 280.98 Ha of land. **The maximum height of external OB dump will not exceed 90 m.** The maximum slope of the dump shall not exceed 28°. Monitoring and management of reclaimed dump sites shall continue till the vegetation becomes self-sustaining and compliance status shall be submitted to MoEF & CC and its regional Office on yearly basis".

may be read as

"An estimated total 578.49 Mm³ of OB will be generated during the entire life of the mine. Out of which 184.58 Mm³ of OB will be dumped in three external OB in an earmarked area covering 331.75 Ha of land. 393.91 Mm³ of OB will be dumped in one internal OB dump in an earmarked area covering 280.98 Ha of land. **The maximum height of external OB dump will not exceed 120 m.** The maximum slope of the dump shall not exceed 28°. Monitoring and management of reclaimed dump sites shall continue till the vegetation becomes self-sustaining and compliance status shall be submitted to MoEF & CC and its regional Office on yearly basis".

5. All other conditions mentioned in the EC letter No. J-11015/28/2013-IA.II (M) dated 06.02.2015 shall remain unchanged.

S.K.
20/11/2016
(S. K. Srivastava)
Scientist E

Copy to:

1. The Secretary, Ministry of Coal, Shastri Bhawan, New Delhi.
2. The Secretary, Department of Environment, Forests & Climate Change, Government of Telangana, Secretariat, Hyderabad.
3. The Chief Conservator of Forests, Regional office (SZ), Ministry of Environment, Forests & Climate Change, 4th Floor, F-Wing, Kenriya Sadan Block, Kormangala, Bangalore – 560034.
4. The Member Secretary, Telangana State Pollution Control Board, Paryavaran Bhawan, A-3 Industrial Estate, Sanatnagar, Hyderabad – 500038.
5. The Member Secretary, Central Pollution Control Board, CBD-cum-Office Complex, East Arjun Nagar, New Delhi - 110032.
6. The Member-Secretary, Central Ground Water Authority, Ministry of Water Resources, Curzon Road Barracks, A-2, W-3 Kasturba Gandhi Marg, New Delhi.
7. The District Collector, Adilabad, Government of Telangana.
8. Monitoring File 9. Guard File 10. Record File 11. Notice Board.

S.K.
20/11/2016
(S. K. Srivastava)
Scientist E



TELANGANA STATE POLLUTION CONTROL BOARD
ZONAL LABORATORY: R.C.PURAM
25-35/11, Tulasi Reddy Complex, R.C.Puram, Sangareddy District.

ANALYSIS REPORT
(AMBIENT AIR)

Sample Nos. 2021 – 10398

- 1) Name & Address of the Industry : Compliant received from the villagers of Vullipetta, Triyani (M), Komurambheem Asifabad District with regard to air pollution causing by M/s. SCCL, khairaguda Open Cast Project, Bellampally Area Mines.
- 2) Date of Sampling : 29/10/2021
- 3) Sample Received on : 30/10/2021
- 4) Report issued on : 06/11/2021
- 5) Sample Collected by : AS, RO-Nizamabad

S. No.	Sampling Location	Results		
		RSPM $\mu\text{g}/\text{m}^3$	SO ₂ $\mu\text{g}/\text{m}^3$	NO ₂ $\mu\text{g}/\text{m}^3$
1)	AAQ Monitoring – Near the Residence of Sri. Atram Jangtu, Vullipetta (V), Triyani (M), Komurambheem Asifabad District. (Down wind direction)	94	4.2	24
Ambient Air Quality Standards as per CFO		100	80	80

SENIOR ENVIRONMENTAL SCIENTIST

Annexure - B



TELANGANA STATE POLLUTION CONTROL BOARD
 ZONAL LABORATORY: R.C.PURAM
 25-35/11, Tulasi Reddy Complex, R.C.Puram, Sangareddy District.

ANALYSIS REPORT
(AMBIENT AIR)

Sample Nos. 2021 - 10397

- 1) Name & Address of the Industry : Compliant received from the villagers of Vullipetta, Triyani (M), Komurambhoom Asifabad District with regard to air pollution causing by M/s. SCCL, Khairaguda Open Cast Project, Bellampally Area Mines.
- 2) Date of Sampling : 29/10/2021
- 3) Sample Received on : 30/10/2021
- 4) Report issued on : 06/11/2021
- 5) Sample Collected by : AS, RO-Nizamabad

S. No.	Sampling Location	Results		
		RSPM $\mu\text{g}/\text{m}^3$	SO ₂ $\mu\text{g}/\text{m}^3$	NO ₂ $\mu\text{g}/\text{m}^3$
1)	AAQ Monitoring - Near the substation, Khairaguda Open Cast Project, Bellampally area Mines. (Down wind direction)	112	5.2	26
Ambient Air Quality Standards as per CFO		100	80	80

Observations of Sampling Incharge:

- 1) Water sprinkling system was provided at hauling roads & transfer points.


 SENIOR ENVIRONMENTAL SCIENTIST



TELANGANA STATE POLLUTION CONTROL BOARD
ZONAL LABORATORY: R.C.PURAM
25-35/11, Tulasi Reddy Complex, R.C.Puram, Sangareddy District.

Noise Level Monitoring Report

Sample No. 2021 - 10427

DATE OF MONITORING & TIME	29.10.2021 @ 3.15PM to 3.45PM
NAME AND ADDRESS OF THE SAMPLING SITE	Vullipeta (V), Tirumani (M), KB Ashifabad District.
SAMPLING LOCATION	Noise level monitoring was conducted near Anganwadi centre which is situated about 4Kms distance from the blasting site of M/s. SCCL, Khairaguda OCP, Bellampally area mines.

Sampling Location	Background Noise level before the blasting at Khairaguda OCP in dB(A)	Noise level during the blasting at Khairaguda OCP in dB(A)
Results	67.85	76.52

AMBIENT NOISE STANDARDS (Limits in dB (A) Leq*)			
Area Code	Category of Area / Zone	Day Time (6:00 AM to 10:00 PM)	
		Night Time (10:00 PM to 6:00 AM)	
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Remarks:

- Noise level monitoring was conducted near Anganwadi centre which is situated about 4Kms distance from the blasting site of M/s. SCCL, Khairaguda OCP, Bellampally area mines.
- During the monitoring, Sri. G. Dilip Kumar, the complainant, was present.

* ** Ambient air quality standards in respect of noise for Residential Area as per The Noise Pollution (Regulation and Control) Rules, 2000.

SENIOR ENVIRONMENTAL SCIENTIST



TELANGANA STATE POLLUTION CONTROL BOARD
ZONAL LABORATORY: R.C.PURAM
25-35/11, Tulasi Roddy Complex, R.C.Puram, Sangareddy District.

ANALYSIS REPORT

Sample Nos. 2021 - 10399 to 10401

- 1) Sample Description : Complainant received from the villagers of Vullipetta, Tiryani (M), Komurambheem Asifabad District with regard to air pollution causing by M/s. SCCL, khairaguda Open Cast Project, Bellampally Area Mines.
- 2) Sample Source :
- 2021 - 10399 : Borewell sample collected from Anganwadi Centre-I, Vullipetta (V), Tiryani (M), Komurambheem Asifabad District.
- 2021 - 10400 : Borewell sample collected near the residence of Sri. Gopal, S.C Colony, Vullipetta (V), Tiryani (M), Komurambheem Asifabad District.
- 2021 - 10401 : Borewell sample collected near the residence of Sri. Rajanikanth, S.C Colony, Vullipetta (V), Tiryani (M), Komurambheem Asifabad District.
- 3) Sample Collected on : 29/10/2021
- 4) Sample Received on : 30/10/2021
- 5) Report issued on : 06/11/2021
- 6) Sample Collected by : AS, RO-Nizamabad

S. No.	Parameter	Units	Method No*	Results		
				10399	10400	10401
1	pH		4500-H ⁺ -B	7.06	6.82	7.02
2	E. Conductivity	µmhos/cm	2510-B	1093	1887	1677
3	Total Suspended Solids (TSS)	mg/L	2540-D	4	8	6
4	Total Dissolved Solids (TDS)	mg/L	2540-C	659	1172	1028
5	Chemical Oxygen Demand (COD)	mg/L	5220-B	10	12	18
6	Total Alkalinity as CaCO ₃	mg/L	2320-B	280	328	340
7	Total Hardness as CaCO ₃	mg/L	2340-C	304	486	386
8	Calcium as Ca ²⁺	mg/L	3500-Ca B	72	102	88
9	Magnesium as Mg ²⁺	mg/L	3500-Mg B	30	56	40
10	Chlorides as Cl ⁻	mg/L	4500-Cl B	128	244	168
11	Sulphates as SO ₄ ²⁻	mg/L	4500-SO ₄ ²⁻	34	56	43
12	Nitrate as NO ₃ ⁻	mg/L	4500-B-NO ₃ ⁻	5	11	9
13	Sodium as Na ⁺	mg/L	3500-Na B	67	91	79
14	Potassium as K ⁺	mg/L	3500-K B	3	5	4
15	Percent Sodium (%Na)	%(Meq/L)	-	32.05	28.56	30.48
16	Sodium Absorption Ratio (SAR)	Meq/L	-	1.67	1.79	1.75

*Standard Methods for the examination of water & waste water APHA - 23rd edition.

Note:

- 1) Results are related to samples as received.


SENIOR ENVIRONMENTAL SCIENTIST



TELANGANA STATE POLLUTION CONTROL BOARD
ZONAL LABORATORY: R.C.PURAM
25-35/11, Telani Reddy Complex, R.C.Puram, Sangareddy District.

ANALYSIS REPORT

Sample Nos. 2021 - 10402

- 1) Sample Description : Compliant received from the villagers of Vullipeta, Tiryan (M), Komurambheem Asifabad District with regard to air pollution causing by M/s. SCCL, Khairaguda Open Cast Project, Bellampally Area Mines.
- 2) Sample Source : Water sample collected from Vativanga Reservoir, Vullipeta (V), Tiryan (M), Komurambheem Asifabad District.
- 3) Sample Collected on : 29/10/2021
- 4) Sample Received on : 30/10/2021
- 5) Report issued on : 06/11/2021
- 6) Sample Collected by : AS, RO-Nizamabad

S. No.	Parameter	Units	*Method No	Results
1.	pH		4500-H ⁺ -B	7.20
2.	Electrical Conductivity	µmhos/cm	2410-B	547
3.	Total Suspended Solids (TSS)	mg/L	2540-D	11
4.	Total Dissolved Solids (TDS)	mg/L	2540-C	340
5.	Chemical Oxygen Demand (COD)	mg/L	5220-B	8
6.	Biological Oxygen Demand (BOD)	mg/L	5210-B	1.2
7.	Dissolved Oxygen	mg/L	4500-O-C	5.4
8.	Total Alkalinity as CaCO ₃	mg/L	2320-B	180
9.	Total Hardness as CaCO ₃	mg/L	2340-C	228
10.	Calcium as Ca ²⁺	mg/L	3500-Ca-B	42
11.	Magnesium as Mg ²⁺	mg/L	3500-Mg-B	26
12.	Chlorides	mg/L	4500-Cl-B	74
13.	Sulphates	mg/L	4500-SO ₄ ²⁻	30
14.	Nitrates	mg/L	4500-N-NO ₃ ⁻	2
15.	Sodium	mg/L	3500-Na ⁺ -B	30
16.	Potassium	mg/L	3500-K ⁺ -B	2
17.	Percent Sodium (% Na)	%(meq/L)	-	23.20
18.	Sodium Absorption Ratio (SAR)	meq/L	-	0.89

* Standard methods for the examination of water & waste water APHA -23rd edition.

Note:

- 1) Results are related to samples as received.

SENIOR ENVIRONMENTAL SCIENTIST

190. STANDARDS FOR COAL MINES**1. AIR QUALITY STANDARDS**

The Suspended Particulate Matter (SPM), Respirable Particulate Matter (RPM), Sulphur dioxide (SO₂) and Oxides of Nitrogen (NO_x) concentration in downwind direction considering predominant wind direction, at a distance of 500 metres from the following dust generating sources shall not exceed the standards specified in the Tables I, II and III given below:

Dust Generating Sources

Loading or unloading, Haul road, coal transportation road, Coal handling plant (CHP), Railway siding, Blasting, Drilling, Overburden dumps, or any other dust generating external sources like coke ovens (hard as well as soft), briquette industry, nearby road etc.

Table-I

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	2	3	4	5
I New Coal Mines (Coal Mines commenced operation after the date of publication of this notification)	Suspended Particulate Matter (SPM)	Annual Average *	360 µg/m ³	- High Volume Sampling (Average flow rate not less than 1.1 m ³ /min)
		24 hours **	500 µg/m ³	
	Respirable Particulate Matter (size less than 10 µm) (RPM)	Annual Average *	180 µg/m ³	Respirable Particulate Matter sampling and analysis
		24 hours **	250 µg/m ³	
Sulphur Dioxide (SO ₂)	Annual Average *	80 µg/m ³	- Improved west and Gaeke method - Ultraviolet fluorescence	
	24 hours **	120 µg/m ³		
Oxide of Nitrogen as NO ₂	Annual Average *	80 µg/m ³	- Jacob & Hochheiser Modified (Na-Arsenic) Method - Gas phase Chemiluminescence	
	24 hours **	120 µg/m ³		

¹ Serial No 90 to 93 and entries relating thereto were inserted by Rule 2(1) of the Environment (Protection) Amendment Rules, 2000 notified vide notification G.S.R. 742(E), dated 25.9.2000.

Table-II

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	2	3	4	5
II Existing coal fields/mines given below: Karanpura, Ramgarh, Giridih, Rajhara, Wardha, Nagpur, Silewara, Pench Kanhan, Patharkhera, Unrer, Korba, Chirimiri, Central India Coalfields, (including Baikunthpur, Bisanpur), Singrauli, Ib Valley, Talcher, Godavary Valley and any other	Suspended Particulate Matter (SPM)	Annual Average * 24 hours **	430 $\mu\text{g}/\text{m}^3$ 600 $\mu\text{g}/\text{m}^3$	- High Volume Sampling (Average flow rate not less than 1.1 m^3/minute)
	Respirable Particulate Matter (size less than 10 μm) (RPM)	Annual Average * 24 hours **	215 $\mu\text{g}/\text{m}^3$ 300 $\mu\text{g}/\text{m}^3$	Respirable Particulate Matter sampling and analysis
	Sulphur Dioxide (SO_2)	Annual Average * 24 hours **	80 $\mu\text{g}/\text{m}^3$ 120 $\mu\text{g}/\text{m}^3$	1. Improved west and Gaeke method 2. Ultraviolet fluorescence
	Oxide of Nitrogen as NO_2	Annual Average * 24 hours **	80 $\mu\text{g}/\text{m}^3$ 120 $\mu\text{g}/\text{m}^3$	1. Jacob & Hochheiser Modified (Na-Arsenic) Method 2. Gas phase Chemiluminescence

Table III

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	2	3	4	5
III Coal mines located in the coal fields of <ul style="list-style-type: none"> • Jharia • Raniganj • Bokaro 	Suspended Particulate Matter (SPM)	Annual Average * 24 hours **	500 $\mu\text{g}/\text{m}^3$ 700 $\mu\text{g}/\text{m}^3$	- High Volume Sampling (Average flow rate not less than 1.1 m^3/minute)
	Respirable Particulate Matter (size less than 10 μm) (RPM)	Annual Average * 24 hours **	250 $\mu\text{g}/\text{m}^3$ 300 $\mu\text{g}/\text{m}^3$	Respirable Particulate Matter sampling and analysis
	Sulphur Dioxide (SO_2)	Annual Average * 24 hours **	80 $\mu\text{g}/\text{m}^3$ 120 $\mu\text{g}/\text{m}^3$	1.Improved west and Gaeke method 2.Ultraviolet fluorescense
	Oxide of Nitrogen as NO_2	Annual Average * 24 hours **	80 $\mu\text{g}/\text{m}^3$ 120 $\mu\text{g}/\text{m}^3$	1. Jacob & Hochheiser Modified (Na-Arsenic) Method 2. Gas phase Chemiluminescence

Note:

- * Annual Arithmetic mean for the measurements taken in a year, following the guidelines for frequency of sampling laid down in clause 2.
- ** 24 hourly / 8 hourly values shall be met 92% of the time in a year. However, 8% of the time it may exceed but not on two consecutive days.

Unauthorised construction shall not be taken as a reference of nearest residential or commercial place for monitoring.

In case any residential or commercial or industrial place falls within 500 metres of any dust generating sources, the National Ambient Air Quality Standards notified under schedule VII shall be applicable.

2. FREQUENCY OF SAMPLING

- Air quality monitoring at a frequency of once in a fortnight at the dust generating sources given in clause 1 shall be carried out.
- As a result of monthly monitoring, if it is found that the value of the pollutant is less than 50% of the specified standards for three consecutive months, then the sampling frequency may be shifted to two days in a quarter year (3 months).
- In case, the value has exceeded the specified standards, the air quality sampling shall be done twice a week. If the results of four consecutive weeks indicate that the concentration of pollutants is within the specified standards, then fortnight monitoring may be reverted to.

3. EFFLUENT STANDARDS

The standards for effluent discharge into sewer or stream or land, are given below:

pH	-	5.5 to 9.0
Chemical Oxygen Demand (COD)	-	250 mg/l
Total Suspended Solids (TSS)	-	100 mg/l
		200 mg/l (Land for irrigation)
Oil & Grease (O & G)	-	10 mg/l

(Monitoring frequency of these parameters shall be once in a fortnight)

Optional parameters : All other parameters indicated in the general standards for discharge of environment pollutants under Schedule VI, shall be in addition to the effluent standards specified under clause 3. (Monitoring frequency shall be once in a year for the optional parameters)

4. NOISE LEVEL STANDARDS

	6.00 AM – 10.00 PM	10.00 PM – 6.00 AM
Noise level	Leq 75 dB(A)	Leq 70 dB(A)

(Monitoring frequency for noise level shall be once in a fortnight)
Occupational exposure limit of noise specified by Director General of Mines Safety (DGMS) shall be complied with by the local mines.

Bio-Engineering works/Cribbs



Settling pond at internal dump



Settling pond at D-2 Dump



Settling pond at D-2 Dump



Settling pond at D-2 Dump



Settling pond at D-2 Dump



Earthen bund with CC toe wall along Vatti vagu reservoir



CHECK DAM at D-1 Dump



OVER BURDEN DUMP-D3



OVER BURDEN DUMP-D3



Garland drain of D-3 Dump



Deck drain at 30m Deck of D-3 Dump



Garland drain of D-3 Dump



Deck drain of 30m deck at D-3 Dump



Plantation at KHA OCP

YEAR	LOCATION	AREA Ha
2005	Vattivagu dump slopes pragathi vanam	12.50
	Along Goleti Road Arch to 5 Km length	3.50
2009	1 st Deck slopes at Dump – 1 (Aregudem)	16.60
	Bund cum Roads(Aregudem dump)	3.40
2010	2 nd Deck slopes Dump – 1 (Aregudem)	20.00
2011	3 rd Deck slopes Dump – 1 (Aregudem)	20.00
	1 st Deck slopes Dump-1(Aregudem)	12.50
	Open Area near dump -1 (Aregudem)	13.60
2012	D-3 Dump deck slopes (Sushee)	6.00
	Road cum bund adjacent to Vattivagu	7.00
	Road cum Bund adjacent to D-2 dump	8.00
	Between rise side road and drain	6.00
	1 st Deck of D-2 Dump	9.00
	Near Sushee Bridge	2.00
	Top soil dump near 2 seam Coal Yard	1.00
2013	Top soil dump near Sushee D-3 dump	4.00
	Pit office surroundings	3.00
2014	BC Soil dump near 2 seam coal yard	14.00
2015	D-2 Dump 1 st deck slopes and BGR D-3 1 st Deck	7.00
	Along east side and dip side boundary	4.00
	BC soil dump near 2 seam coal yard	1.00
	Between Lingiguda road and BGR dump yard	3.00
2016	Between Lingiguda Road and rise side of boundary	19.34
	BGR dump-3 Asifabad road side decks	13.68
	Sushee D-3 dump decks Asifabad road side	10.44
2017	Between Asifabad road and D-3 dump yard and dump deck slopes	14.00
2018	D-2 Dump 30 m and 60 m Deck West side	9.00
2018	D-3 Dump near 60 m Deck	12.00
2019	D-3 Dump near 60 m Deck	42.00
2020	D-3 Dump	10.00
2021	D-3 Dump	42.00
2021	Internal dump	20.00
2021	Between D-3 to D-2 dumps & proposed quarry edge to D-2 dump	23.67
	TOTAL	393.23

Plantation: during monsoon (June-2021 to Sept.2021)

1	No. of plants planted during monsoon 2021	3,45,332
2	Area covered in Ha. During monsoon 2021	85.67
3	Expenditure incurred in Rs. lakhs during monsoon	28.11
4	Total area brought under plantation so far in Ha. Since inception.	<ul style="list-style-type: none"> ➤ So far 14,78,294 nos. of plants were planted in an area of 393.23 Ha. up to 30.09.2021, dump area- 338.95Ha. (including 20 Ha internal dump) ➤ avenue & greenbelt area: 54.28Ha.
5	Total nos. of plants planted so far since inception.	14,78,294 nos
6	Species of plants planted.	Native species such as Bamboo, Hardwickia binata, Albezia odoratissima, Dolichidron crispa, F.bengalensis, F.religiosa, F.carica, Aegle marmelos, Emblica officinalis, Feronia llimoni, Ceiba pentandra, Terminalia bellarica, T.chebula, Writia tinctoria, Pterocarpus marsupium, Eucalyptus clones,etc., at a density of not less than 2500 nos.of plants per Ha.

Plantation Photos of KHA OCP



Plantation at D-3 Dump



Plantation beside D-2 Dump



Plantation plan of Khairagura OCP

Ph/Off : (91) (712) 2249896
 EPABX : (91) (712) 2249885-90
 Fax : (91) (712) 2249896
 E.Mail : eisd@neeri.res.in



सीएसआईआर- CSIR-National
 राष्ट्रीय Environmental
 पर्यावरण Engineering
 अभियांत्रिकी Research
 अनुसंधान Institute
 संस्थान
 नेहरू मार्ग Nehru Marg
 नागपुर 440 020 Nagpur 440 020
 (भारत) INDIA

Date: 21.05.2020

CERTIFICATE

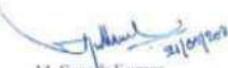
This is to certify that CSIR-NEERI, Nagpur team visited Khairagura Opencast Expansion coal mining Project, Bellampalli Area of M/s Singareni Collieries Company Limited and collected evidences of actual work carried out along with expenditure incurred for activities related to Progressive Mine Closure for the period 2013-14 to 2017-18.

Based on the verification of documents and collection of field evidence, it is certified that the activities related to Progressive Mine closure have been carried out in accordance with the Mine Closure Plan approved by Competent Authority. It is further certified that the Progressive mine closure activities claimed by the mining authority are not pertaining to coal production activities for the period 2013-14 to 2017-18.

Based on sample checks of all cost figures, it is also certified that the total expenditure incurred by SCCL till 2017-18, for Khairagura Opencast Expansion coal mining Project is Rs. **65,81,70,561.30/-** (Rupees sixty Five Crores Eighty One Lakhs Seventy Thousand Five Hundred sixty one Rupees and Thirty Paise only).

Total Amount deposited in the ESCROW account including interest up to 31.03.2018 is Rs. **43,28,87,650.51** and the net eligible amount recommended for reimbursement as per MoC guidelines, dated 16.12.2019 is Rs. **21,64,43,825.00** (Rupees Twenty One Crores Sixty Four Lakhs Forty Three Thousand Eight Hundred and Twenty Five only).


 P. V. Nidheesh
 Project Leader
 वैज्ञानिक/Scientist
 पर्यावरणीय प्रभाव परामर्शक प्रभाग
 Environmental Impact Assessment Division
 खैरागुरा ओपनकास्ट खनन परियोजना (ओपेनकास्ट खनन परियोजना)
 Khairagura Opencast Coal Mining Project (Opencast Coal Mining Project)
 नेहरू मार्ग, नागपुर-440 020/Neeru Marg, Nagpur-440 020


 M. Suresh Kumar
 Project Leader/ Sci. and Head
 वैज्ञानिक एवं संपूर्ण/Scientist & Head
 पर्यावरण प्रभाव परामर्शक प्रभाग
 Environmental Impact Assessment Division
 खैरागुरा ओपनकास्ट खनन परियोजना (ओपेनकास्ट खनन परियोजना)
 Khairagura Opencast Coal Mining Project (Opencast Coal Mining Project)
 नेहरू मार्ग, नागपुर-440 020/Neeru Marg, Nagpur-440 020

Annual coal production details of Khairagura OCP since inception

Sl. No	Year	Coal Production (in Million Tonnes Per Annum)	
		As per EC	Actual
1	2007-08	3.00 (as per earlier EC)	1.40
2	2008-09		1.85
3	2009-10		2.50
4	2010-11		2.62
5	2011-12		2.65
6	2012-13		2.26
7	2013-14		2.97
8	2014-15		2.714
9	2015-16	3.75 (as per revised EC)	3.371
10	2016-17		3.128
11	2017-18		3.414
12	2018-19		2.911
13	2019-20		2.606
14	2020-21		1.258
15	2021-22		2.35

CSR civil works taken up earlier under SHAPE from 2003 to 2014					
Status of works sanctioned under SHAPE programme at Bellampalli area, SCCL , Kumram Bheem (Dist.),T.S. (amount Rs .in lakhs).					
A -SHAPE PROGRAMME-I (2003-2004)					
Sl. No.	Description of work	Sanctioned amount (Rs.in lakhs)	Amount paid (Rs.in lakhs)	Status of work	Rem Arks
I	Public Health department works				
1	Rly.Stn. to Radagambala Basthi,Umesh Chandra Road.	10	10	completed	
2	Constn. of balance works of SC community hall, BPA.	5	4.84	completed	
3	Constn. of Sulabh complexes at BPA.	10	9.96	completed	
4	Providing extension of street lighting in various localities of BPA.	20	9.78	completed	
	Total	45	34.58		
II	Panchayat Raj dept. works				
1	R&B road to Bugga via. Kannala remetaling and BT .	40	40	completed	
2	Balance BT road from Ravindra nagar to Chinna Bhooda.	12	12	completed	
3	Balance works BT up to Chandruvalli (v), BPA Rural mandal.	10	8.29	completed	
4	Talla gurijala to Batwan palli BT at BPA rural mandal.	6	4.28	completed	
5	Construction of compound wall to SC boys hostel BPA.	3.3	3.3	completed	
	Total	71.3	67.87		
III	R.W.S dept. works.				
1	Construction of sulabh toilet complexes at Goleti Town ship, BPA.	8	8	completed	
	Total	8	8		
IV	R&B dept. works				
1	Road widening, dividers, Footpath from RTC bus stand to GM office BPA.	191.5	189.67	completed	
2	Construction of compound wall to Gurukula patasala building.	5	4.93	completed	
	Total	196.5	194.6		
V	Works taken up by SCCL	61.35	59.47		
	Grand total	382.15	364.52		
B	SHAPE Programme-II(2004-2005)				
I	Panchayat Raj department works				
1	Approach road including CD works to Gouriguda.	5	4.95	completed	
2	Approach road including CD works to Aregudem.	3	3	completed	
3	Approach road including CD works to Devaigudem	9	8.94	completed	
4	Approach road including CD works to Bejjala village from SCCL road near MVK 6 incline.	25	23.27	completed	
5	Approach road to Mattamarigudem.	2	1.98	completed	
6	Construction of slab culvert in between Kasipet(Tandur mandal) and Chakepalli.	8	7.92	completed	
7	Balance works of metalling and CC road from Kannala village to Bugga temple MP Bellampalli (for 3 KM length).	18	17.89	completed	
8	Providing bus shelter at Dampur village.	1	0.92	completed	
9	Singareni Community hall compound wall at Mohammad Khasim basthi.	3	2.95	completed	
	Total	74	71.82		
II	RWS department works				

1	Water supply arrangements to Chendugudem village	1	0	work was differed	
2	Water supply arrangements to Hasalmeda and bejjala.	2	0.8	completed	
	Total Shape-II	77	72.62		
C	SHAPE Programme-III(2005-2006)				
I	Panchayat Raj department works				
1	Metalling & laying of CC road from P.Natrayana House to Hanman temple at Pedda Dubba, Akenepalli.	7	6.907	completed	
2	Metalling CC road from Boge Pentaiah (H) to Deeraveni Shankar (H) at Rangapeta village	3	2.924	completed	
3	Construction of slab culvert at Aggonivagu, Akenapalli.	2	1.98	completed	
4	Laying of CC road from Ravindra nagar to Budhkurdha village.	4	3.911	completed	
5	Metalling of CC road from B.Sanjeev (H) to Devadanam (H) at Malagurijala village.	3	2.927	completed	
6	Laying of balance CC road to S.Ashagoud (H) at Tallagurijala village.	2.5	2.458	completed	
7	Laying of CC road from Indra nagar to Chekaplli X road via. Kasireddipalli , BPA(M).	4	3.913	completed	
8	Balance metalling & CC road from Chadravelly to Someshwara temple.	5	4.897	completed	
9	Laying of CC road from R&B road to M.Bheemaiah (H) at Boyapalli village ,Tandur.	2.5	2.499	completed	
10	Laying of CC road from Police Stn. to Kabrasthan ZP road at Tandur , Tandur (M).	4	3.907	completed	
11	CC road from S.Guptha (H) to Ch.Ramaiah (H) at Tangellapalli village, Tandur(M).	3	2.9	completed	
12	Laying of CC road form Singareni road to Bhemmana temple at Goleti , Rebbena (M).	3	2.955	completed	
13	Laying of CC road from Pochamma temple to Singareni road at Goleti, Rebbena (M).	3	2.961	completed	
14	Laying of CC road at Dubba Gudem at Goleti township ,MP Rebbana.	4	3.31	completed	
15	Laying of CC road at Bhagath singh nagar at Goleti township, MP Rebbana.	8.5	8.35	completed	
16	Providing dust bins at Bhagath singh nagar ,Dubbagudem at Goleti township.	1	0.3	Tenders to be recalled	
17	Providing open drains at Bhagath singh nagar ,Dubbagudem att Goleti township.	6.5	4.91	completed	
18	Laying of CC road at Goleti village, Rebbana(M).	5	4.14	completed	
19	Resurfacing of WBM road from Khairgura to Goleti village, Rebbana(M).	6.5	6.43	completed	
	Total -A	77.5	72.579		
II	Panchayat Raj department works				
1	Construction of side drain from Nageshwara Rao (H) to Satyanarayana (H) at telephone exchange line, Caltex ,ward -34 ,BPA.	3	3	completed	
2	Laying of CC approach road at under bridge, Asok nagar to NH, BPA.	2	2	completed	
3	CC road in ward nos.27 & 30 (Vadderwada) , BPA.	2	2	completed	
	Total	7	7		
III	RWS department works				
1	Providing Bore wells with hand pumps at Bhagath sing nagar ,Dubbagudem at Goleti township.	3.2	3.16	completed	
2	Water supply arrangements to Sulabh complex at Bhagat singh nagar and Dubba gudem at Goleti township.	2.3	1.72	completed	
	Total	5.5	4.88		

	Rs.0.10 lacs adjusted from Shape II	0	-0.1		
	Total	5.5	4.78		
	TOTAL SHAPE-III works	90	84.359		
D	Shape programme-IV (2008-2009)				
I	Panchayat Raj department works				
1	Laying of CC road from Ontimamadi village portion, Tiryani(M).	5	4.85	completed	
2	Laying of CC road and drains at Nambala village, Rebbena(M).	13	11.13	completed	
3	Laying of CC road from Jadimallaiah house to Singareni road at Goleti of Rebbena Mandal.	5	4.19	completed	
4	Laying of CC road from G.Krishna house to Gobini Nayak house at Goleti village, Rebbana(M).	5	4.08	completed	
5	Laying of CC road from school to Bheem patel house at ST colony,Narsapur village of Tandur(M).	5	4.95	completed	
6	Laying of CC roads from Laxmipur village Kannal Bellampalli Mandal.	5	3.41	completed	
7	Laying of CC road on the low lying area i.e. road leading from GM office to Bhooda Guest house at Bellampalli.	6	5.94	completed	
8	Construction of Bridge on the WBM road leading from MVK 6 inc. to Bejjala village (Rs.25.00 lakhs are spent in Shape- II).	15	14.79	completed	
9	Laying of CC Road at Takkalapalli village of Rebbana Mandal.	5	4.14	completed	
10	Providing CC roads and side drains at Goleti village ,Dubbagudem & Bhagath singh nagar including approaches to existing sulabh complexes including balance CC road at Bheemanna temple at Goleti township.	11	9.903	completed	
11	Laying of CC road from Singareni road to Durgapur road.	5	4.25	completed	
12	Laying of CC road from PWD road to Krishna rao house along Vattivagu canal.	5	3.91	completed	
	Total	85	75.543		
II	AP Transco works				
1	Providing street lights at various wards in Bellampalli municipality.	18	18	work in progress	
	Total	18	18		
III	RWS department works				
1	Providing Bore wells at Madaram and Goleti townships of Rebbana and Tandur mandals.	3.5	1.05	completed	
	Total	3.5	1.05		
	Total SHAPE-IV	106.5	94.593		
E	Works taken up from the balance funds of SHAPE-I&II				
I	Panchayat Raj dept. works				
1	Construction of community hall for Schedule tribes at Bellampalli.	10.13	8.55	completed	
2	Laying of CC approach road at Under bridge Ashok nagar to NH Bellampalli.	5.0	4.16	completed	
3	Repairs to asphalt road leading from GM office to Bhooda guest house at Bellampalli.	5.0	2.53	completed	
	Total balance funds of Shape I&II	20.13	15.24		
	Grand total SHAPE I,II,III,IV & balance funds from SHAPE I&II	675.78	631.332		

CSR Civil Works details from 2015-2022

S.No	Project Sanction Details & Date	Sanctioned Note No. & Date	Sanctioned Amount under CSR	MoU entered or Not	Present status of Project (Ongoing /completed)	Estimated Period of Completion	Remarks
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
FY 2015-16							
1)	Development works such as drilling bore wells and augmentation to Public water system scheme in surrounding habitations in Bellampalli Area under erstwhile SHAPE 2011-12 Programme	CRP/PER/WEL/CSR/766, Dt.07.05.2015 & 23.03.2015	15.00 Lakhs	MoU Entered	Ongoing	-	
2)	Infrastructure development works such as laying of roads and drilling borewells etc., in the near by villages of Goleti in Asifabad constituency.	CRP/PER/WEL/CSR/11/22, Dt.07.01.2016 & 14.01.2016 & 20.06.2017	50.00 Lakhs	MoU Entered	Completed	-	
3)	Infrastructure development works such as Roads and Drains in Tiriyani Mandal, Phase-I	CRP/PER/WEL/CSR/183, Dt.07.02.2016	316.00 Lakhs	MoU Entered	Completed	Utilization Certificate not received.	
FY 2016-17							
4)	Infrastructure development works pertaining to Bellampalli and Villages.,	CRP/PER/WEL/CSR/16/330, Dt.12.05.2016	23.00 akhs	MoU Entered	Completed	-	
5)	Laying of CC roads at Goleti and Pulikunta Villages in rebbena Mandal	CRP/PER/WEL/CSR/10, Dt.09.01.2017	50.00 Lakhs	MoU Entered	Completed	-	
6)	Infrastructure development works at Tiriyani Mandal, Phase-II.	CRP/PER/WEL/CSR/183, Dt.31.03.2017, Contd..	200.00 Lakhs	MoU Entered	Ongoing	-	

S.No	Project Sanction Details & Date	Sanctioned Note No. & Date	Sanctioned Amount under CSR	MoU entered or Not	Present status of Project (Ongoing /completed)	Estimated Period of Completion	Remarks
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Note No.CRP/PER/WEL/CSR/18 3/236, Dt.22.05.2017					
FY 2017-18							
7)	Tribal Traditional & Cultural Meet i.e., "Giri Utsav-2017" wef 15-09-2017 to 17-09-2017 at ITDA HQ,Utnoor, Adilabad Dist.,	CRP/PER/WEL/CSR/416, Dt.01.09.2017	10.00 Lakhs	-	Completed	-	
8)	Roads and other developmental works in certain villages of Tiryani Mandal under CSR.	CRP/PER/WEL/CSR/496, Dt.02.11.2017.	200.00 Lakhs	MoU entered	Ongoing	-	WIP
FY 2018-19							
9)	Drilling of 30 Nos Bore wells at Surrounding Villages of Bellampalli Area, Kumrambheem Asifabad Dist.,	CRP/PER/WEL/CSR/2018-19/680, Dt.04.05.2018.	29.45 Lakhs	-	Completed	-	
FY 2019-20							
10)	Infrastructure development works such as roads, borewells, toilets and wash rooms in the surrounding villages of Bellampalli Area under CSR Programme	BPA/CVL/CSR/1373, Dt.15.10.2019 & 30.11.2019	16.00 Lakhs	MoU Not entered	-	-	

S.No	Project Sanction Details & Date	Sanctioned Note No. & Date	Sanctioned Amount under CSR	MoU entered or Not	Present status of Project (Ongoing /completed)	Estimated Period of Completion	Remarks
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
11)	Development works such as laying CC roads, side drains, construction of bus shelters, community halls, providing compound walls and kitchen sheds to schools in Asifabad Assembly Constituency.	CRP/PER/WEL/CSR/723, Dt.17.12.2019	199.50 Lakhs	MoU entered	Ongoing	-	
FY 2020-21							
12)	Providing central oxygen pipe line system at Area Hospital, BPA Area. in view of Covid-19	BPA/PD/Covid-19/19-20/67/314, Dt.25.05.2020	15.00 Lakhs	-	Work completed	-	
13)	Drilling of 5 Nos. Hand Borewells in GLT Gram Panchayath	BPA/CVL/CSR/915/151, Dt.22.07.2020	5.00 Lakhs	-	Work awarded	2 months from Date of markout.	
14)	Drinking water facility, sanitation, toilets and laying of new pipe lines etc., in Bellampalli Constituency.,	CRP/PER/WEL/CSR/1417, Dt.08.04.2021	10.00 Lakhs	MoU Not entered	-	-	
FY 2021-22							

S.No	Project Sanction Details & Date	Sanctioned Note No. & Date	Sanctioned Amount under CSR	MoU entered or Not	Present status of Project (Ongoing /completed)	Estimated Period of Completion	Remarks
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
15)	Laying of CC roads, drains, construction of community Halls and a Sulabh toilet in Asifabad Assembly Constituency.,	CRP/PER/WEL/CSR/2717, Dt.24.07.2021 SIO C21103100035	200.00 Lakhs	MoU entered on 29.03.2022	-	-	30 % Advance to be paid to the District Collector - Kumrambheem Asifabad.
16)	Infrastructure development works such as laying of BT roads, construction of compound wall etc., Bellampalli Assembly Constituency.,	BPA/CVL/MLA/CSR/1389, Dt.31.08.2021SIO: C21103100052	200.00 Lakhs	MoU entered	Ongoing	-	
		Total	1538.95 Lakhs				

NAME OF THE WORK: Construction of Side drain from G. Bheemaiah(H) to Vengaji(H) at Tiryani GP: Tiryani of Tiryani Mandal

CSR 2017-18

Estt. Cost Rs. : 4.00 Lakhs



[Signature]
 Asst. Engineer
 MPP Tiryani

[Signature]
 Mandal Parishad Development Officer
 M.P.P. TIRYANI
 Dist: K.A. ASHABAD
 Mandal Parishad Development Officer
 MPP: Tiryani

Singareni Road to Sheela Gowd House
Madhasan - 3 Tandu



S.No	Name of the course	Details of Skill development programs SCCI, BELLAMPALLI area Since 2001-2022																					
		2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	Total
1.	Tailoring	50	154	141	64	-	20	45	-	132	30	60	80	121	124	127	23	70	56	65	-	-	1362
2.	Saree rolling	28	-	-	18	-	24	-	-	-	-	0	-	-	-	-	-	-	20	-	-	-	90
3.	Motor Driving	-	-	38	20	40	-	-	-	-	24	20	20	60	-	40	-	-	80	-	-	40	382
4.	Book Binding	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
5.	Chalk piece making	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
6.	Photography & Video	-	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
7.	Electrician work	-	-	-	23	21	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66
8.	Beautician	-	-	-	20	-	-	30	-	-	52	20	43	72	77	81	42	42	-	-	-	-	479
9.	Automobile mechanism	-	-	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
10.	Pre primary teacher	-	-	-	-	42	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	63
11.	Fashion designing	-	-	-	-	20	20	-	-	-	-	-	-	-	-	-	-	28	42	45	-	-	155
12.	Computer DTP	-	-	-	-	-	-	20	-	-	20	40	40	20	20	40	-	-	44	-	-	-	224
13.	Fast Food	-	-	-	-	-	-	-	-	-	29	20	20	-	-	-	-	-	-	-	-	-	69
14.	Rexine Bags making	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-	-	30
15.	Paper Carry bags& Envelops	-	-	-	-	-	-	-	-	-	-	40	60	-	-	-	-	-	-	-	-	-	100
16.	Spoken English	-	-	-	-	-	-	-	-	-	-	40	40	40	25	-	-	-	-	-	-	-	105
17.	Yoga	-	-	-	-	-	-	-	-	-	-	35	35	-	-	-	-	-	-	-	-	-	70
18.	Web design& Hardware by APITCO	-	-	-	-	-	-	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	130
19.	Army/police/paramilitary training	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20	122	-	50	42	-	234
20.	Maggam work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	54	45	-	-	99
21.	Cloth/ jute/banjara bags making	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	--	22	20	-	--	42
Total trained in year wise		78	154	179	189	123	107	225	0	132	135	150	318	448	221	313	85	262	318	225	42	40	3744

MOTOR DRIVING TRAINING under Skill development program (2021-22) For Ullipitta Village youth

SI No	NAME	FATHER NAME	DOB	Qualification	MOBILE NO	AADHAR NO
1	Thodasam Vireshkumar	Khammu	08.08.1998	7 th Class	9652587764	8444 3819 9417
2	Thallapalli Nithin Kumar	Moreshwar	02.08.1999	10th class	7013576138	7522 8703 3129
3	Gedam Dikshithananad	Athmaram	23.11.1998	10th class	9618501647	4704 0323 4241
4	G Manohar	Venkati	18.01.2002	10th class	9347373699	2838 1836 3266
5	Athram Haribabu	Bhim Rao	15.06.2002	10th class	7993145536	2186 4561 4255
6	Chindam Sai Kumar	Purushitham	17.08.2001	10th class	7670843271	5192 7481 1953
7	Dhagam Umakanth	Shankar	21.03.1988	10th class	9989263005	4789 1560 9944
8	Borkunta Goutham	Rajeshwar	30.01.1995	10th class	9030601086	9004 0669 8130
9	N.Rohith Kumar	Revaji	07.03.2003	10th class	9676922091	6931 8656 5403
10	D.Manohar	Keshav	14.06.1993	10th class	8790920507	9011 8974 0253
11	B.Sudhakar	Nanaiah	14.03.1989	10th class	7989920459	2246 7252 7444

Appointed eight(8) Vidya volunteers for the children of R&R centres

S.NO	Village Name	Name of Vidya volunteer
1)	Lingiguda (Rambai Guda)	J. SWAPNA
2)	Ginnadhari	M.MAMATHA
3)	Kaslapur	Y. SAILATHA
4)	Indhira Nagar	G. SOUNDARYA
5)	Salaguda	P.SINDUJA
6)	Dorli Dhampur	P.NAGAMANI
7)	Chopidi	D.RAMESH
8)	Ontimamidi	T.MADHU



Tailoring camp at R&R Centre in 2019



Motor driving camp for R&R Centres on 01.09.2021



Volley ball tournament for R&R youth on 01.03.2018



Volley ball tournament for R&R youth



Cricket kit given to Ullipitta Youth in the year 2021



Fruit bearing plants Distribution on 14.09.2017



Fruit bearing plants Distribution on 17.11.2021 at dantanpalli village



Fruit bearing plants Distribution at R&R village

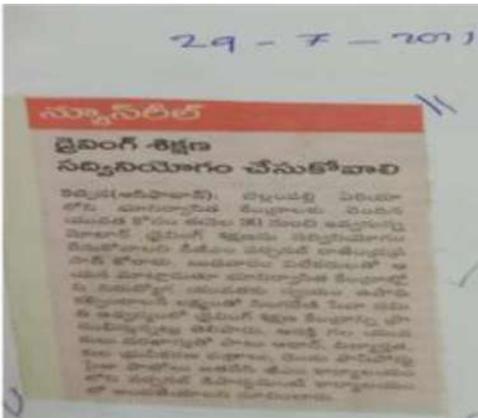


Fruit bearing plants Distribution on 17.11.2021 at Jendaguda village



Distribution of essential commodities worth Rs.68,110/- (Rice, groceries, vegetables, utensils and cloths) to flood victims of Ullipitta village habitants on 22.07.2021 (Heavy Rain fall 185mm) All the flood victims rehabilitated immediatly in Govt. school , provided food & needy commodities instantly as supportive measures on war futting basis

Press coverage



13-2-2021. ఈనాడు

అభివృద్ధి పనులను త్వరగా పూర్తి చేయాలి

విజ్ఞాన శ్యామ్‌కుమార్ :
విజ్ఞాన శ్యామ్‌కుమార్ పరిమాణ పరిశోధనా వ్యవస్థాపక అధ్యక్షులు. వ్యవసాయ శాస్త్ర విజ్ఞాన శ్యామ్‌కుమార్ పరిమాణ పరిశోధనా వ్యవస్థాపక అధ్యక్షులు. వ్యవసాయ శాస్త్ర విజ్ఞాన శ్యామ్‌కుమార్ పరిమాణ పరిశోధనా వ్యవస్థాపక అధ్యక్షులు.



పనులను పరిశీలిస్తున్న శీమం వింతవరప్రసాద్

విజ్ఞాన శ్యామ్‌కుమార్ పరిమాణ పరిశోధనా వ్యవస్థాపక అధ్యక్షులు. వ్యవసాయ శాస్త్ర విజ్ఞాన శ్యామ్‌కుమార్ పరిమాణ పరిశోధనా వ్యవస్థాపక అధ్యక్షులు.

సామాజిక సమాచారం



రేషు పునరావాస కేంద్రాల యువతకు మోటర్ డ్రైవింగ్ శిక్షణ

గోరేటి టాన్‌షిప్ (రెజిస్ట్రు), శ్యామ్‌కుమార్ : విజ్ఞాన శ్యామ్‌కుమార్ పరిమాణ పరిశోధనా వ్యవస్థాపక అధ్యక్షులు. వ్యవసాయ శాస్త్ర విజ్ఞాన శ్యామ్‌కుమార్ పరిమాణ పరిశోధనా వ్యవస్థాపక అధ్యక్షులు.

2-9-2021. సాక్షి

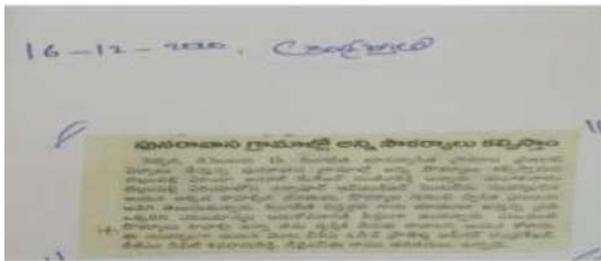
యువత స్వయం ఉపాధితో రాణించాలి

విజ్ఞాన శ్యామ్‌కుమార్ : విజ్ఞాన శ్యామ్‌కుమార్ పరిమాణ పరిశోధనా వ్యవస్థాపక అధ్యక్షులు. వ్యవసాయ శాస్త్ర విజ్ఞాన శ్యామ్‌కుమార్ పరిమాణ పరిశోధనా వ్యవస్థాపక అధ్యక్షులు.



శిక్షణను ప్రారంభించిన శీమం వింతవరప్రసాద్

విజ్ఞాన శ్యామ్‌కుమార్ పరిమాణ పరిశోధనా వ్యవస్థాపక అధ్యక్షులు. వ్యవసాయ శాస్త్ర విజ్ఞాన శ్యామ్‌కుమార్ పరిమాణ పరిశోధనా వ్యవస్థాపక అధ్యక్షులు.



పండ్ల మొక్కలు అందజేత

కోలేటి టాన్సివ్(రెవైవ), న్యూటెటే:

బెల్లంపల్లి ఏరియా అభివృద్ధి లోక్ల గ్రామండు ప్రజలకు సోపానం బెల్లంపల్లి ఏరియా టీపి సంతకరెడ్డి ఆధ్వర్యంలో అధికారులు పండ్ల మొక్కలు పంపిణీ చేశారు. ఈ సందర్భంగా అధికారులు మాట్లాడుతూ సింగరేణి యాజమాన్యం వుండి చేసిన పండ్ల మొక్కలను పంపిణీ చేశారు. వారు మాట్లాడుతూ పునరావాస కేంద్రాల అభివృద్ధికి సింగరేణి యాజమాన్యం ప్రత్యేక కృషి చేస్తుందన్నారు. సింగరేణి ఆధ్వర్యంలో వారం లోపాటుగా అన్ని గ్రామాల్లో పండ్ల మొక్కలు పంపిణీ చేస్తున్నట్లు తెలిపారు. ప్రతి ఒక్కరు మొక్కను నాటి వాటిని సంరక్షించాలన్నారు.

2021/12/9

నాటిన ప్రతి మొక్కను కాపాడుకోవాలి

రెవైవ: హరితహారంలో భాగంగా సింగరేణి యాజమాన్యం అందచేస్తున్న ప్రతి మొక్కను నాటి జాగ్రత్తగా సంరక్షించాలని ఎన్వైరాన్మెంట్ అధికారి హరీష్, ఏరియా ఫారెస్టు అధికారి నవీన్ అన్నారు. బెల్లంపల్లి ఏరియా జనరల్ మేనేజర్ బి. సంజీవరెడ్డి ఆధ్వర్యంలో మంగళవారం ఏరియాలోని ప్రాజెక్టు పరిసర ప్రాంతాల్లో పాటు ఆర్ అండ్ ఆర్ సెంటర్లలో పండ్ల మొక్కలు పంపిణీ చేశారు. తోయగూడెం, చంద్రుగూడలో మొక్కలు పంపిణీ చేసిన అనంతరం వారు మాట్లాడుతూ సింగరేణి యాజమాన్యం పర్యావరణానికి అధిక ప్రాధాన్యత ఇస్తోందన్నారు.

పండ్ల మొక్కలు పంపిణీ

కోలేటి టాన్సివ్(రెవైవ), న్యూటెటే:

బెల్లంపల్లి ఏరియాలోని సింగరేణి యాజమాన్యం వుండి చేసిన పండ్ల మొక్కలను పంపిణీ చేశారు. వారు మాట్లాడుతూ పునరావాస కేంద్రాల అభివృద్ధికి సింగరేణి యాజమాన్యం ప్రత్యేక కృషి చేస్తుందన్నారు. సింగరేణి ఆధ్వర్యంలో వారం లోపాటుగా అన్ని గ్రామాల్లో పండ్ల మొక్కలు పంపిణీ చేస్తున్నట్లు తెలిపారు. ప్రతి ఒక్కరు మొక్కను నాటి వాటిని సంరక్షించాలన్నారు.

పండ్ల మొక్కలు పంపిణీ

రెవైవ, నవంబరు 17, బెల్లంపల్లి ఏరియాలోని ఆర్ అండ్ సెంటర్లలో టీపి సంతకరెడ్డి హరితహారంలో భాగంగా పండ్ల మొక్కలను పంపిణీ చేశారు. ఏరియాలోని జెందాగూడ, చంద్రుగూడ, ఒంటిమామిడి గ్రామాల్లో పంపిణీ చేసిన వాటిని ప్రతి మొక్కనూ సంరక్షించాలన్నారు. ఎన్వైరాన్మెంట్ అధికారి హరీష్, ఏరియా ఫారెస్టు కార్యాలయ నిర్వాహి ఉన్నారు.

GOVERNMENT OF ANDHRA PRADESH
FOREST DEPARTMENT

**HABITAT AMELIORATION
SCHEME**

(2009-10 TO 2030-31)

FOR

**THE KHAIRIGUDA
OPENCAST MINE**

**BELLAMPALLY DIVISION
ADILABAD CIRCLE**

**HABITAT AMELIORATION SCHEME
FOR MITIGATING THE ADVERSE EFFECTS OF MINING AT
KHAIRIGUDA OPENCAST MINE**

I N D E X

Sl No	Contents	Page No	
		From	To
1	2	3	4
1	Introduction	1	1
2	Name of the Scheme	1	1
3	Legal Status	1	1
4	Distribution of the area	2	2
5	Configuration of the ground	3	3
6	Composition of the forest and Wildlife	3	3
	a) Flora	4	5
	b) Fauna	5	7
7	Villages and human population	7	8
8	Adverse Impacts of Mining on wildlife	8	10
9	Period of the Scheme	10	10
10	Goal and Objectives	10	11
11	Strategies to meet the objectives	11	11
	<i>Holistic Habitat Management</i>	11	11
	I. Management of Eco-system through Habitat restoration	12	12
	II. Water conservation/Rain water harvesting	12	13
	III. Fire Control Measures	16	19
	IV. Publicity and awareness	19	19
	V. Training and Exposure Visits to best Wild Life Management Areas	19	19
	VI. Bio Diversity & Monitoring and Evaluation & Research	20	22
	VII. Financial Outlay	22	23
12	Appendix-I (Details of Human Population)	24	25
13	Appendix-II (Annual Schedule of Operations)	26	29
14	Appendix-III (Lat-long Information of works)	30	31
15	Map	32	32

**HABITAT AMELIORATION SCHEME
FOR MITIGATING THE ADVERSE EFFECTS OF MINING AT
KHAIRIGUDA OPEN CAST IN BELLAMPALLY FOREST DIVISION**

1. **INTRODUCTION** : The total area of State of Andhra Pradesh is 2,75,068 Sq Kms and the total forest area is 63,814 Sq.Kms which constitute to 23%. The total land area of the Bellampally division is 3,35,244 ha. The forests in the division extend over and are distributed in four Forest Ranges. The forests in the division extend over an area of 151787 Ha constituting about 45%. The Bellampally division lies between 78° 0' 0" to 79° 55" East longitudes and 19° 0' 0" to 19° 35' 0" North latitude.

The Khairiguda Open cast mining project site is located in Chopidi RF Compt.No.357 (old) presently in Meddi Beat in Devalguda Section of Tiryani Range. A total area of 140.30 Ha of Reserve Forest is diverted for Opencast mine. The forest area from 10 Kms boundary from the Khairiguda Open cast mine falls in three ranges namely Tiryani, Asifabad and Bellampally.

As per the environment management plan of the mining said mining project, the changes in the environment are to be monitored with in 10 Kms radius from the mining site. The Government of India, MOEF, Lr.No.J-11015/36-2003-IA,II(M), Dt. 16-09-2004 while according environment clearance had laid down the condition that the proponent shall implement mitigative measures to be specified by the Chief wildlife warden taking into account the specific adverse impacts on schedule species of wildlife in the impact area due to the said project.

2. NAME OF THE SCHEME :Habitat Amelioration Scheme - Mitigation of the adverse effects of mining at Khairiguda open cast in Bellampally Forest Division,

3. LEGAL STATUS : The area under the Scheme is a Reserve Forest notified as Chopidi RF under section 19 of A.P.Forest Act, 1355. Act-II of 1355-F, Gt.No.47 Dated 19-11-64 G.O.Ms.No.2547 F & A (For.II) Dated 26-10-1964.

4. DISTRIBUTION OF THE AREA:- The forest area from 10 Kms boundary from the Khairiguda Open cast mine falls in three ranges namely Tiryani, Asifabad and Bellampally. The total area in 10 Kms radius is 31,297 Ha. Major portion of the area is coming in Tiryani Range.

The details of the Range, Section, Beat and Compartments are as follows:

Sl. No.	Range	Section	Beat	Compartment No.
1	Tiryani	Ginnedhary	Ginnedhary	148 to 151
	Tiryani	Ginnedhary	Gudipet	170 to 172
	Tiryani	Devaiguda	Meddi	274, 276, 277, 279
	Tiryani	Devaiguda	Devaiguda	284 to 286, 291 to 293
	Tiryani	Devaiguda	Kannepally	287 to 290, 294, 297 to 299
	Tiryani	Rompally	Irkepally	345
2	Bellampally	Rebbena	Efulawada	273, 275, 278, 280, 281
	Bellampally	Rebbena	Rebbena	282
	Bellampally	Rebbena	Abbapur	295, 296, 300, 301, 302
	Bellampally	Madaram	Murliguda	311 to 314
3	Asifabad	Chirrakunta	Chirrakunta	105
	Asifabad	Chirrakunta	Dectanpally	106, 117 to 120, 507

5. CONFIGURATION OF THE GROUNDS: The terrain is undulating with a fringe of low hills in different directions and exposing the forests to all aspects. The general elevation of these hill ranges varies from 125 mtrs to 570 mts above M.S.L. The general drainage is from north to southeast. All the streams finally drain into Godavari River, which flows from west to east beyond the jurisdiction of the area. In the eastern portion of the area the streams flow in southeast direction to drain into Pranahita River a tributary of Godavari River. Pranahita ultimately joins the river Godavari in the southeastern corner of the division.

6. COMPOSITION OF THE FOREST AND WILDLIFE: The forest area surrounding the diverted area is with very good dense miscellaneous forest. The main forest type is (S-A) Southern Tropical Dry Deciduous Forests. The upper canopy of these forests is closed, though rather uneven, composed of a mixture of few species practically all deciduous during the dry season, some for several months, though some for a short period only. The height of crop is generally up to 20.m and some species tend to predominate over selected areas but most are non-gregarious, so that more or less pure associations can usually be traced to soil peculiarities or human interference. The lower canopy is almost entirely deciduous. An under growth of shrubs is usually present but enough light gets in to promote more of grass growth. Bamboo is occasionally present. Climbers are generally large woody species but comparatively few. In the said area the forests type Southern Tropical Dry Deciduous Forest exist in further two classes according to the presence or absence of Teak. The characteristic trees of the teak bearing type (Dry teak forest) are *Tectona grandis* and *Terminalia* spp. In non-teak bearing or Dry Mixed Deciduous forests, teak is absent and in addition to the above two typical species, *Banvelia serrata*, *Diospyros melanoxylon* and *Sterculia urens* are other associates found in this type. The chief Bamboo found in both the types is *Dendrocalamus strictus*.



Forest View

The important Flora existing in 10 Kms radius of the mining area is as follows:

a) Flora :

Sl. No.	Botanical name	Local name
1	<i>Acacia ferruginea</i>	Vel sandra
2	<i>Anogeissus latifolia</i>	Tirman
3	<i>Bauhinia racemosa</i>	Ari
4	<i>Butea monosperma (Butea frondosa)</i>	Palas
5	<i>Cassia fistula</i>	Rehia
6	<i>Chloroxylon swietenia</i>	Satin
7	<i>Cleistanthus collinus</i>	Nalla Koddu
8	<i>Dalbergia paniculata</i>	Sopers
9	<i>Diospyros melanoxylon</i>	Abnus (Tumki)
10	<i>Feronea elephantum</i>	Kawest
11	<i>Garuga pinnata</i>	Garuga
12	<i>Givotia rotleriformis</i>	Punki
13	<i>Gmelina arborea</i>	Gummadi Teku

14	<i>Lamha coromandelica (L. Grandis)</i>	Gumpena
15	<i>Ligerstroemus parviflorus</i>	Channangi
16	<i>Madhuca indica (Bassia latifolia)</i>	Molwa
17	<i>Morinda tinctoria</i>	Togarmogli
18	<i>Pongamia pinnata</i>	Karanj (Kanuga)
19	<i>Prosopis spicigera</i>	Jammi
20	<i>Pterocarpus Marzipium</i>	Bijasal
21	<i>Strychnos nux-vomica</i>	Kuchala (Musti)
22	<i>Tectona grandis</i>	Teku (Sagwan)
23	<i>Terminalia tomentosa</i>	Nalla Maddi
24	<i>Terminalia belerica</i>	Tado
25	<i>Terminalia arjuna</i>	Yermaddi (Tellamaddi)
26	<i>Wrightia tinctoria</i>	Palakodtha
27	<i>Zizyphus xyloporous</i>	Gotti
28	<i>Sterculia urens</i>	Tapsi
29	<i>Hardwickia binata</i>	Narepa
30	<i>Adina cordifolia</i>	Bandaru

Bamboo: - 1. *Dendrocalamus strictus*.

Shrubs & Herbs: - *Bridelia hamiltonia*, *Calotropis gigantea*, *Cassia tora*, *Dodonaea viscosa*, *Gymnosporia spinosa*, *Ixora parviflora*, *Jasminum arborescens*, *Randia dumetorum*, *Vitex negundo*, *Cleome viscosa*, *Portulaca oleracea* and *Sida cordifolia*.

Climbers: *Zizyphus oenoplia*, *Acacia sena*, *Butea superba*, *Hemidesmus indicus*.

b) Fauna: The forest area in 10 Kms radius from the mine inhabits a variety of wildlife. As per the local enquiries conducted with the local people and also direct and indirect evidences, the area is rich in wildlife. The herbivores mainly spotted deer, Sambar, Four horned antelope are

commonly seen and there are evidence of existing of Panther. Besides this many species of Arthropods, Amphibians, Reptiles, and Avifauna also exist in the said area. The commonly seen wildlife in the said area are as follows:-

Sl. No.	Common Name	Zoological Name	Local Name
1	2	3	4
1	Rhesus Macaque	<i>Macaca mulatta</i>	Kothi
2	Common Langur	<i>Presbytis entellus</i>	Kondamuchu
3	Panther	<i>Panthera pardus</i>	Chiruthapuli
4	Jungle Cat	<i>Felis chaus</i>	Jungupilli
5	Common Mongoose	<i>Herpestes edwardsi</i>	Mungisa
6	Striped Hyena	<i>Hyena hyena</i>	Kondressu
7	Jackal	<i>Canis aureus</i>	Nakka
8	Indian Fox	<i>Vulpes bengalensis</i>	Gunta Nakka
9	Wild Dog	<i>Cuon alpinus</i>	Resukukka
10	Sloth Bear	<i>Melursus ursinus</i>	Yelugabanti
11	Hare	<i>Lepus nigricollis</i>	Chevilapilli
12	Black Buck	<i>Antelope cervicapra</i>	Krishna Jinka
13	Chowringha	<i>Tetracerus quadricornis</i>	Kondagorre
14	Nilgai	<i>Boselaphus tragocamelus</i>	Manubothu
15	Sambar	<i>Cervus unicolor</i>	Kanotu
16	Spotted Deer	<i>Axis axis</i>	Podala Duppi
17	Wild Boar	<i>Sus scrofa</i>	Ailavi Pandi
18	Chameleon	<i>Chameleon zeylanicus</i>	Usaravelli
19	Monitor Lizard	<i>Varanus bengalensis</i>	Udurnu
20	Python	<i>Python molurus</i>	Kondachiluva
21	Common Rat snake	<i>Ptyas mucosus</i>	Jeripothu

22	Cobra	<i>Naja naja</i>	Naguparnu
23	Viper	<i>Vipera russeli</i>	Katukarekula pada
24	Cattle egret	<i>Bubulcus ibis</i>	Tella kongu
25	Darter	<i>Ashina rufa</i>	Pamutala Neeti Kaki
26	Grey Heron	<i>Ardea cinera</i>	Nallakalla Kongu
27	Peacock	<i>Pavo cristatus</i>	Nemali
28	Common Moor hen	<i>Gallinula chloropus</i>	Tumba kodi
29	Blue Rock pigeon	<i>Columba livia</i>	Pavuram
30	Spotted Dove	<i>Streptopelia shreya surataensis</i>	Chukkala Guvva
31	Alexandrian Parakeet	<i>Pittacula eupatria</i>	Rama Chiluka
32	Common Koel	<i>Sadya scolopacea</i>	Kokila
33	Jungle owlet	<i>Glaucidium radiatum</i>	Adabvi Gudlaguba
34	Pied kingfisher	<i>Ceryle rudis</i>	Kokila(Hindi)
35	Maratha wood pecker	<i>Deadreces maharettensis</i>	Pasupu Netthi Vadrangipitta
36	Indian pitta	<i>Pitta brachyura</i>	Maruguru Vadla Pitta
37	Common wood shrike	<i>Tephrosiopsis paniceiventris</i>	Pitta
38	Red vented Bulbul	<i>Pycnonotus cafer</i>	Bulbul(Hindi)
39	Black drango	<i>Dicrurus adsimilis</i>	Burugu Pitta
40	Tree pie	<i>Dendrocitta vagabunda</i>	Treepie
41	Pied Robin	<i>Copsychus saularis</i>	Nalugu Telugu Robin Pitta
42	Common myna	<i>Acridotheres tristis</i>	Gorivanka
43	House sparrow	<i>Passer domesticus</i>	Pichuka

7. VILLAGES AND HUMAN POPULATION:- A total of (69) villages exist with in the 10 Kms radius of the said project area. The total population is 24,216. The mainly depend on the forests in the said area for fuel wood, grazing, small timber and also there is problem of encroachment.

timber smuggling and to some extent poaching. The details of the population is enclosed as

Annexure-I. The Range wise abstract details of the population are as follows:-

Sl No	Range	No. of village	No. of House holds	Total population	SC	ST	Others	Total
1	2	3	4	5	6	7	8	9
1	Tiryani	43	4817	16378	2730	11234	1994	15978
2	Asifabad	12	1470	5689	1037	1452	3200	5689
3	Bellampally	14	775	2550	450	1831	269	2550
	Total	69	7062	24617	4237	14517	5463	24217

8. ADVERSE IMPACTS OF MINING ON WILDLIFE:-

The adverse impacts due to the mining activity on the wildlife and surrounding forest areas are as follows:

1. **POLLUTION:-** The mining creates pollution in the area mainly by dust, movement of the vehicles and mining of coal and also dumping of waste. It also causes noise pollution due to operation of machines for mining and also movement of vehicles for transportation of coal. The road for transportation of the mined material also passes through the forest area. Thus the mining activity as well as the road will affect the wildlife of the mining area and also the surrounding area to a great extent. These types of pollutions disturb the wildlife and their habitat and drive away of the wildlife from their natural habitat.
2. Disturbance to the wildlife due to effect of lights by movement of the vehicles day and night transporting the coal and staff which drives away of the wildlife from their natural habitat.
3. **BIOTIC INTERFERENCE:-** The mining activity increases the biotic interference and increases the pressure on the forests due to limiting of the resources by diversion of the forest area for mining.

4. **Increase in man-animal conflict:-** Due to decrease in the area due to diversion and also increasing in the disturbances leads to man-animal conflict. There are many instances of grazing of agricultural by the wildlife.
5. **CARRYING CAPACITY:-** Due to diversion of the area there is likelihood of lowering of water table, drying of streams, increase in temperature and there by decreasing the habitat of wildlife which lowers the carrying capacity. There will be shortage of food, water and shelter to the wildlife.
6. **FRAGMENTATION AND EDGE EFFECT:-** Due to mining activity the habitat of the wildlife will be fragmented leading to changes in micro climatic conditions thereby causing imbalance in eco-system.
7. **GREEN HOUSE EFFECT:** The mining of coal releases CO₂, SO₂ and other gases and also increases the temperature during the mining period. This leads global warming and green house effect changing the local micro climatic temperature.
8. **GROWTH OF VEGETATION -** The pollution mainly the dust pollution due to deposition of waste on vegetation effects the photo-synthesis. This causes Reduction in growth of vegetation. Besides this the decrease in water table and the increase in temperature effect the growth of vegetation.
9. **EROSION:-** The mining activity also increase soil and water erosion leading to water scarcity to the wildlife and loss of top soil effecting the vegetation. This causes scarcity of water and food to the wildlife.
10. **FOREST FIRES:-** The mining activity and increase in biotic interference increasens forest fires and weed growth. The forest fires further have an adverse impact on vegetation, hardening of soil, increase in erosion, loss of wildlife habitat etc.



Forest Fire

11. **DISTURBANCE DUE TO ROAD:-** The Road used for transportation of coal runs through the middle of the forest area. There is vehicle movement during day & night causing lot of disturbance to the fauna and prone to accidental deaths.

12. **TRANSMISSION LINES:-** The transmission lines laid for mining which may create lot of problem of poaching. Taking the advantage of Electricity the poachers may run live wires from these transmission lines for hunting the fauna.

In view of the above adverse impacts and in order to mitigate the adverse effects of mining the habitat amelioration scheme is prepared. The Govt. of India and approved EMP has issued instructions that the mitigative measures shall be implemented taking into account specific adverse impacts on scheduled species of wildlife in the impact area due to this Project.

9. **PERIOD OF THE SCHEME :** The Habitat Amelioration Scheme for Khairguda Opencast mining is prepared for the period of the mine from 2009-10 to 2030-31 i.e., 22 years.

10. **GOAL AND OBJECTIVES :**

a) **GOAL:-** "Conservation of Forests Resources including Wildlife, sustenance of Bio-diversity, Forest eco-system and maintaining ecological balance".

b) Objectives :

1. Protection and improvement of the eco-system through mitigative measures.
2. Improvement of water resources through Soil & Moisture Conservation measures by catchment area treatment on watershed principles.
3. Habitat improvement through improvement of fodder availability and taking up gap planting of indigenous species and protection from fire.
4. Publicity and awareness - conservation education to the stakeholders and dependents on natural resources.
5. Development of research and database for improvement of ecological and biological values of mine area.
6. Improvement of management capability to ensure sustainable maintenance of wild life population duly protecting the surrounding area of the mine.

11. STRATEGIES TO MEET THE OBJECTIVES:-

Theme Plans:- For attaining the said objectives and for holistic treatment and management of the entire proposed area for mitigating the adverse impacts of mining, self contained theme plans are proposed based on the objectives. *The habitat amelioration Scheme activities shall be first commenced from the coal mining point and gradually the activities will radiate away from the coal mining point.* Further the beats of Gopera, Gundal and Mangi of Tiryani range are adjoining to the Kawal Wild Life Sanctuary of Tallapet Range in Jannaram Division. It is proposed to take up habitat improvement works as it forms the buffer area of Kawal Wild Life Sanctuary and corridor for wild life movement.

Holistic Habitat Management:

For holistic habitat management of the treatment area the following individual theme plans are proposed:

- I. Management of Eco-System through Habitat Restoration
- II. Water Conservation/ Rain water harvesting
- III. Fire management
- IV. Publicity And Awareness
- V. Bio-Diversity Monitoring & Evaluation & Research
- VI. Administration facilities

The management strategies are discussed under individual theme plans.

I. MANAGEMENT OF ECO-SYSTEM THROUGH HABITAT RESTORATION :

I. Management of vegetation :

The habitat, which supports wildlife should adequately possess the complement of welfare factors such as food, cover and water which are essential for sustenance of wildlife population. These attributes should be well dispersed, so that the habitat has a fair degree of interspersion. The habitat should be able to provide a variety of all indigenous species along with adequate cover. In areas of degradation compensatory development activities should be taken up and habitat shall be once again made viable.

RAISING OF INTENSIVE IRRIGATED PLANTATIONS:- During the scheme period it is proposed to raise Semi Mechanical Plantations by providing water facility either by tapping the water removed from the Open cast area or by erecting Bore well / supplying by carts from the near by water holds. It is proposed to raise these plantations with the indigenous species such as Neem, Babul, Kanuga, Neredu etc. It is also proposed to erect fencing around the plantation areas and also included watch and ward. These areas have been identified from the maps collected from G.I.S. Cell, Hyderabad which are suitable for raising of plantations and after physically verifying in the field.

Sl. No.	Range	Section	Beat	Compt.Nos	Area (in Ha.)
1	2	3	4	5	6
1	Bellampally	Rebbena	Abbapur	290	25.00
2		Rebbena	Rebbena	282	100.00

It is proposed to take up plantations in an area of 125.00 Ha. with an estimated outlay of Rs 110.460 Lakhs during the entire project period.

II. Water Conservation/ Rain water harvesting The proposed area forms catchment area for a number of streams, which drain finally into Pranahita river and adjoining ponds. Most of the areas are subjected to soil topsoil rich in nutrients is washed away and even in some places along hill

slopes trees are uprooted. In the proposed area there are old kuntas which are breached and some partly damaged in the RF and also in the villages. All the rainfall in treatment area shall be conserved in situ, improving the moisture regime and the vegetation will be lush green for longer periods providing ideal shelter and forage grounds for the wild animals. It also makes water available to the wild animals especially during the peen period. This also reduces movement of animals to villages in search of water whereby they are subjected to poaching. It is also proposed for repair of the old kuntas in the village sivar in order to prevent the cattle entering in to the RF in search of water.

OBJECTIVES: The main objectives of water conservation/rain water harvesting are as follows:-

- (i) To check soil erosion
- (ii) To conserve water in situ in the treatment area itself
- (iii) To improve moisture regime in treatment area and recharge ground water table.
- (iv) Improvement of vegetation of grassland and availability of sustainable food and cover to wildlife
- (v) Check siltation of ponds and waterholes in treatment area and maintain the water holding capacity.
- (vi) Increase in NWFP productivity availability to wild animals.

It is proposed to take up the following activities for harvesting the rain water and improving the availability of water to the wild animals, increasing the water table and improvement of the vegetation.

a) Repairs to the old and breached Percolation Tanks in the RF:- In the said treatment area there are a total of two (02) breached old Percolation Tanks in the RF and some of them are partly damaged. These are in the beam of Danikampally and Abhagar. It is proposed to repair these old breached Percolation Tanks to harvest the rain water and improve the water availability to the wild animals. It also improves the water table and the vegetation i.e., wildlife habitat. The details of the locations identified for repair of the old / breached percolation tanks in side the RF along with the type repair and approximate amount required are as follows.

Sl. No	Range	Beat	Type of repair	Approx. amount required
1.	Asifabad	Danthanpally	Repair to breached portion & increase in height	Rs.40,000/-
2.	Bellampally	Abbapur	Repairs to by wash and revetment	Rs.50,000/-

It is proposed to repair of two (02) breached old Percolation Tanks in the RF with an estimated outlay of Rs.0.90 Lakhs during the entire project period.

b) Construction of New Major Percolation Tank in the RF:- It is proposed to take up construction of Major Percolation Tanks with earthen bunds for water harvesting, impounding and storage of water at a distance of 10 Kms. away from the existing perennial water sources and also from each other. This helps in availability of water all over the treatment area especially during the pinch period. The percolation tanks are in situ water harvesting structures, which help in percolation and recharge of ground water whereby water is available to the wildlife and also improves the vegetation in the treatment area. The details of locations identified for construction of Major Percolation Tanks and the approximate cost is as follows:-

Sl. No	Range	Beat	Compt. No.	No. of PTs	Approx. cost (Rs. In lakhs)
1	Bellampally	Abbapur	295, 296	2	4.00
2	"	Muruguda	311, 313, 314	3	6.00
3	Tiryani	Gudipet	172	1	2.00
4	"	Devaiguda	285	1	2.00
5	"	Devaiguda	299	1	2.00
6	Asifabad	Danthanpally	106	2	4.00
				10 Nos	20.00

It is proposed to form (10 Nos) new Major Percolation Tanks with an estimated outlay of Rs.20.00 Lakhs during the entire project period.



Major Percolation Tank

C) Construction of Check Dams: It is proposed to construct check dams and other water harvesting structures of about 31 Nos during 1st five years with outlay of 45.00 lakhs.

Sl. No	Range	Beat	Compt. No.	No. of CDs	Approx. cost (Rs. In lakhs)
1	Bellampally	Abbapur	295	1	1.50
2	"	Edulawada	280	2	3.00
3		Murliguda	311	1	1.50
4			312	2	3.00
5			313	2	3.00
	Tiryani	Godipet	170	1	1.50
			171	1	1.50
			172	1	1.50
		Ginnodhary	150	1	1.50
			151	1	1.50
		Devaiguda	285	4	6.00
			299	1	1.50
	Asifabad	Danthanpally	106	3	3.00
			117	2	3.00
			118	2	3.00
			119	3	4.50
			120	2	3.00
			507	1	1.50
				31 Nos	45.00

III. FIRE CONTROL MEASURES:

1. Fire Tracing :

- a) As a preventive measure fire tracing to a width of 10 Mtrs on either side of the main road on which coal is transported and of 5 Mtrs width for the internal road such as cart tracks and forest roads will be taken up and these fire lines will be kept clean of any inflammable material. This will protect accidental fires due to throwing of lighted matchsticks by the traveler, shepherds etc. it is also proposed to take up fire line contour trenches where the inflammable material will be swept into the trench and control burning will be done.
- b) All the R.F. lines, Compartment lines and Beat boundary shall be fire traced and kept clean.
- c) The pasture areas around the waterholes will be given additional protection from fire for maintenance of succulent grass fodder to the wildlife.
- d) The bamboo areas, regeneration areas with more dry material need to be protected.
- e) A follow up action of maintenance of the fire lines every year before the onset of summer shall be taken up.
- f) The local people will be involved in protection from fires and awareness programs will be conducted on importance of fire control and hazards due to fire. Informers system will also be developed and maintained and it is also proposed to pay incentive of Rs.5000/- per year to the villagers where no fire occurs will be 10 Km radius. Publicity will also be made during the fire season by distributing brochures and pamphlets and boardings will be placed at important locations on fire control.

The details of the fire lines proposed to be maintained are as follows:-

Sl. No	Location	Length in KM.
1	Pekalagudem to Gangapuram	5 K.M
2	Nagapur to Gattupally	14 K.M
3	Perkapally to Gattupally	12 K.M
4	Dubbagudem to Irkepally	9 K.M
5	Dubbagudem to Gajumala	12 K.M
6	Andavelli to Jaggaahpet	12 K.M
7	Andavelli to Laxmipur to Pangrimadara	16 K.M
8	Ottimamidi to Nagapur	8 K.M

9	Pulikunta to Komugudem to Marliguda	14 K.M
10	Kanalpally to Lingal	6 K.M
11	Kanalpally to Pekalagudem	12 K.M
12	Goleti to Khairiguda	16 K.M
13	Amgaon to Vaddur	18 K.M
14	Dantanpally to Raapalli	6 K.M
15	Bodepally to Darba	6 K.M
16	Komugudem to Langrigudem	14 K.M
		180 K.M * 2 = 360 K.Ms

It is proposed to maintain 360 Kms fire lines with an estimated outlay of Rs.98.29 Lakhs during the entire project period. The details of the locations proposed for fire tracing are shown in the map enclosed.

g) The fire fighting equipment required are shovels, rakers, buckets, spades and beaters. In the forest areas counter firing technique is the best method of controlling the fire. During fire fighting a 5 Mtrs width line is to be quickly cleared at least 20 Mtrs from the spreading fire area towards wind ward side then soil to be collected with help of shovels and thrown on the fire and simultaneously using beaters to break the fire.

The Total Outlay is Rs.98.29 Lakhs during the project period.

4. Fire Watchers & Animal Trackers :-

Fire watchers by engaging local Tribal youth who have good knowledge of the fire prone areas will be employed and will be placed at vulnerable areas and routes for frequent patrolling to prevent, detect and extinguish fires. They shall also act as animal trackers. As soon as fire is noticed it will be controlled with the concerned staff available and local villagers by beating it out to branches are by counter firing. It is also proposed to construct watch towers at suitable locations for detection of fire. They shall also perform duties of animal trackers.

It is proposed to engage (2) fire watchers in Gimmedhary, Devaiguda, Kannepally, Edulawada and Dantanpally Beat areas & also one fire watcher in other (6) Beat areas which are falling in the 10 Kms. boundary from Khairiguda Open Cast Mine. The local Tribals shall be engaged as Animal trackers who will also act as Fire watchers since they have good knowledge about the area. It is

trackers who will also act as Fire watchers since they have good knowledge about the area. It is proposed to engage a total of (16) Fire watchers-cum-Animal trackers every year through out the project period. They will be engaged on contract hiring through service providers. The animal trackers shall be engaged sector wise. The duties and responsibilities of the Animal trackers shall be as follows:

- 1) The Animal Trackers employed should generate proforma information showing the movement and signs of the wild animals including tiger.
- 2) They should monitor the poaching activities.
- 3) They should monitor the fire hazards and take steps for control of the same.
- 3) They will be provided with Photo Identity Cards, E.P.F. deducted and each division should maintain the details of the person outsourced with name, age, address and qualification etc.
- 4) They should also monitor the grazing and control the same.
- 5) Death or injury of all wild animals should be immediately informed to the concerned Divisional Forest Officer.
- 6) They should assist the Research Scholars in Bio-Diversity mapping.
- 7) Any other duties assigned.

Financial projection of Rs.184.816 Lakhs is proposed towards Fire watchers/Animal trackers for the entire project period.

3.Fire Fighting Equipments:- It is proposed to purchase (10) Nos Fire Fighting Equipments to utilize them in the field, for controlling the fire incidence when ever occurs during the entire project period with an estimated out lay of Rs. 2.50 Lakhs.

4. Construction of Watch Towers:-

It is proposed to construction of watch towers, in fire zination areas i.e., highly fire incidence areas to identify and control. The areas have been identified from the maps collected from the G.I.S. Cell, Hyderabad. It is proposed to construct (4) Watch towers for the entire project period with an estimated out lay of Rs. 8.00 Lakhs.

Sl No	Name of the Range	Name of the Beat
1	2	3
1	Asifabad	Danthanpally
2	Tiryani	Gudipet
3	Tiryani	Kannepally
4	Tiryani	Devaiguda

IV. PUBLICITY AND AWARENESS: It is proposed to give wide publicity about the importance of bio diversity and the wildlife conservation. The publicity and awareness campaigns are proposed as follows:-

- a) Sensitize the community and create awareness about the need to conserve bio-diversity through awareness campaigns, nature camps, conducting workshops, trainings etc.
- b) Arranging prompt and quick payment of compensation cases involving wild animal attacks.
- c) Building mutual confidence between protected area management and local people by frequent interaction between the two and also being responsible to the gender issues.
- d) Taking up initiatives in mobilizing community for controlling totally stopping the grazing.
- e) Display of hoardings (signage and hoardings) and brochures/pamphlets with messages of bio-diversity conservation at prominent places.
- f) Training the people, departmental staff and NGO's to enhance their technical, social, professional skills for effective planning, implementation and monitoring of the eco-development programme.
- g) Conducting regular Gram sabhas in the surrounding villages and making the people aware of the conservation. It is also proposed to take up all the habitat development activities by peoples participation to develop the sense of ownership and responsibility.

An estimated outlay of Rs.22.828 lakhs is proposed for the project period from 2009-10 to 2030-31.

V. TRAINING & EXPOSURE VISITS TO BEST WILD LIFE AREAS: -

It is proposed to give trainings and exposure visits, to best wildlife management areas, in India or elsewhere. The total out lay is Rs. 36.90 Lakhs during the entire project period.

VI. BIO-DIVERSITY MONITORING & EVALUATION:

Two Junior Research fellows / Scholars shall be engaged on contract or consultancies for Bio-Diversity mapping for assessing the bio-logical wealth of the Forest and its improvement. They shall be provided with necessary infrastructure and equipments. The study shall be mainly conducted on the Impacts of different Management practices on wild life and its habitat, the types and extent of various ecosystems, and animal ranges, Impact and control of forest fire, Fragile ecosystems or habitats, Key species requiring attention, Connectivity with surrounding areas, Population relocation initiatives and Species distribution and population trends. The job chart shall be as follows:

RESEARCH PROJECTS: The research projects proposed include both pure (inventory) and applied aspects. The potential areas for research are as follows:

Short Term Projects:

1. **Eco-system level studies:** This study involves information on habitat and its surrounds, extent and status of eco-systems existing within. These studies are necessary for -

- a) Setting ecological boundaries of the treatment area
- b) Identifying degraded and fragile eco-systems.
- c) Identifying critical animal movement corridors especially of the panther and other carnivores and their prey base within the treatment area and adjacent areas.
- d) Research methods would include analysis of satellite imageries and aerial photographs with ground truthing and ground studies on vegetation composition and status.
- e) Outputs would include map showing topography, major land features, water bodies, classified vegetation, major disturbance habitats, trends in land use changes, important Animal Movement corridors etc.

2. Species/Population Level Studies:

The faunal and floral distribution and their abundance with reference to the eco-systems shall be studied as follows:

- a) Zonation and Rationalization of treatment area boundaries with reference to Animal distribution and movement
- b) Identification of habitat features (e.g., fodder distribution, water holes) or management measures (e.g., fire lines, roads) that are critical to animal distribution.
- c) Identifying seasonal movement pattern of animals, especially large mammals and its implications for management (e.g., crop damage, water hole management)
- d) Monitoring the status and management requirements of species or species assemblages or communities that need particular management attention.
- e) The species/population level research specifically includes studies on species composition in various eco-systems on a seasonal basis, population density or other abundance estimates, estimation of age/sex composition, natality and mortality rates, analysis of habitat features etc
- f) The out puts include an over lay of animal and plants distribution and eco-system maps, identification of habitat features critical to animal distribution, population projections of threatened species etc.

Long Term Projects: The long term projects include

- 1) Studies on critically endangered species
- 2) Grazing impacts
- 3) The role of fire in maintaining critical habitats of different species

RESEARCH FACILITIES: There are no existing research facilities. However to make a modest beginning it is proposed to provide a room in the office of the Divisional Forest Officer, Bellampally for the first year of the project. The necessary facilities such as a Desktop Computer, Digital Camera, Stationary and Data Entry Operator shall be provided. A small laboratory or Bio-Diversity monitoring and mapping centre shall be constructed in the premises of the office of the Divisional Forest Officer, Bellampally to store field collections such as skulls, jaw bones, antlers, scats of animal remains and also plant specimens for taking up further planned investigations. It is also proposed to provide the necessary equipments for collection of samples, a small refrigerator and oven and necessary glassware and other laboratory equipment for storing the samples before sending for analysis. Scientific literature in the form of books, journals shall be provided would be of much help in carrying out different studies with updated knowledge. A new vehicle specially for research programmes/projects is also proposed during the first year.

Financial projection of Rs.138.406 Lakhs is proposed for monitoring and evaluation and research for entire project period.

VII. FINANCIAL OUTLAY:-

The scheme is prepared for a period of (22) years with financial outlay of Rs.668.105 Lakhs at an average of Rs.20 to 40 Lakhs per annum for the period of mining. The total cost (abstract) of the project for the entire project period of (22) years is as follows. The annual outlay from 2009-10 to 2030-31 is enclosed in the **Annexure – II**.

Sl No	Component	Total Physical	Total financial cost for the project period (Rs. in lakhs)
1	Habitat Improvement & Maintenance – Raising of Intensive Irrigated Plantations	125 Ha	110.460
2)	Water harvesting SMC works		
i)	Repairs to old Percolation Tanks in the RF	2 Nos.	0.900
ii)	Cost of new Major Percolation Tanks	10 Nos	20.000
iii)	Construction of check dams & other water harvesting structures	31 Nos	45.000
3	Fire Control Measures		
i)	Fire Tracing	360 Kms	98.295
ii)	Fire watchers and Animal trackers	16 Nos for the Project period	104.810
iii)	Purchase Fire Fighting Equipments	10 Nos.	2.50
iv)	Construction of Watch Towers	4 Nos	6.00
4	Training & Exposure visits to best wild life management areas	220 Nos	36.900
5	Publicity, Education & Awareness	0	22.828
6	Bio-Diversity Monitoring & Evaluation		
i)	Engaging Research Scholars on contract	2 Nos for the Project period	50.640
ii)	Data entry operator	1 No for the Project period	16.080
iii)	Purchase of Computer (1 No), Digital Camera (1 No) & Stationary etc.	0	11.091
iv)	Construction of room for Bio-Diversity Mapping Centre, Purchase and supply of Laboratory equipments	0	21.095
v)	Purchase of Vehicle (1 No) for Research and Monitoring and running and Maintenance charges	1 No	37.500
	Total		668.105

Conclusion: The mitigative measures are proposed to prevent adverse effects of mining on the wildlife i.e., both flora and fauna and also at the same time improving the water resources and controlling soil and water erosion. There will be unaccountable loss due to mining activity if mitigative measures are not taken up. The projections are made for the life period of the mining activity i.e. (22) Years.

The year wise physical and financial details of the Scheme proposals are appended herewith. The works proposed are based upon the existing conditions and may be revised as per the need based requirement during the related period of execution duly proposing in the Annual Action Plan. The unit rates to be followed shall be as per the prevailing FSR/SSR rates of the related period of execution.


Conservator of Forests,
Adilabad Circle, Adilabad


Divisional Forest Officer,
Bellampally

APPENDIX-1

**DETAILS OF HUMAN POPULATION - KHAIRIGUDA OPEN CAST HABITAT
AMELIORATION SCHEME OF BELLAMPALLY DIVISION**

Sl No	Range	Name of village	No. of House holds	Total population	SC	ST	Others	Total
1	2	3	4	5	6	7	8	9
1	Asifabad	Ringanguda	50	150	0	150	0	150
2	Asifabad	Chirrakunta	1000	4000	800	0	3200	4000
3	Asifabad	Vepalpatti	30	92	0	92	0	92
4	Asifabad	Gummadiloddi	20	81	0	81	0	81
5	Asifabad	Dorfi	120	480	237	243	0	480
6	Asifabad	Dantampally	90	273	0	273	0	273
7	Asifabad	Aryagudem	30	121	0	121	0	121
8	Asifabad	Pahadibanda	20	60	0	60	0	60
9	Asifabad	Doddigudem	10	33	0	33	0	33
10	Asifabad	Ulipitta	30	120	0	120	0	120
11	Asifabad	Borjam	40	160	0	160	0	160
12	Asifabad	Balhanpuram	30	119	0	119	0	119
	Total of Asifabad		1470	5689	1037	1452	3200	5689
1	Bellampally	Bondagudem	20	60	0	60	0	60
2	Bellampally	Gollaguda	150	450	158	23	269	450
3	Bellampally	Buggagudem	50	211	0	211	0	211
4	Bellampally	Edulawada	50	150	60	90	0	150
5	Bellampally	Salpatabagudem	20	80	0	80	0	80
6	Bellampally	Parasanambal	100	300	120	180	0	300
7	Bellampally	Mengubaigudem	20	60	24	36	0	60
8	Bellampally	Dubbagudem	30	90	0	90	0	90
9	Bellampally	Addaghai	20	80	32	48	0	80
10	Bellampally	Bejjal	25	100	0	100	0	100
11	Bellampally	Gampalapally	70	280	56	224	0	280
12	Bellampally	Narsapur	180	540	0	540	0	540
13	Bellampally	Sonapur	30	118	0	118	0	118
14	Bellampally	Yerragutta	10	31	0	31	0	31
	Total of Bellampally		775	2550	450	1831	269	2550
1	Tiryani	Dampur	100	402	0	402	0	402
2	Tiryani	Dongargudem	50	158	0	158	0	158
3	Tiryani	Medi	30	90	0	90	0	90
4	Tiryani	Mandapalli	30	90	0	90	0	90
5	Tiryani	Mandamera	15	57	0	57	0	57
6	Tiryani	Rudrapur	22	64	15	49	0	64
7	Tiryani	Kothagudem	50	200	0	200	0	200
8	Tiryani	Keragudem	60	180	0	180	0	180

1	2	3	4	5	6	7	8	9
9	Tiryani	Lendigudem	25	86	27	59	0	86
10	Tiryani	Porekunta	32	95	32	63	0	95
11	Tiryani	Sungapuram	300	1200	238	242	720	1200
12	Tiryani	Khairiguda	100	300	28	272	0	300
13	Tiryani	Laxmipuram	200	600	78	122	0	200
14	Tiryani	Ginnedhary	400	1200	240	478	482	1200
15	Tiryani	Navegudem	100	300	60	210	30	300
16	Tiryani	Chaprigudem	20	82	0	82	0	82
17	Tiryani	Markagudam,	30	121	0	121	0	121
18	Tiryani	Merriguda	30	93	0	93	0	93
19	Tiryani	Moinda	200	800	157	643	0	800
20	Tiryani	Koretanka	150	573	0	573	0	573
21	Tiryani	Gudipet	200	600	122	478	0	600
22	Tiryani	Tumriguda	18	53	0	53	0	53
23	Tiryani	Salagudem	50	148	0	148	0	148
24	Tiryani	Kothaguda	100	402	41	361	0	402
25	Tiryani	Ralla Kannepally	150	450	92	358	0	450
26	Tiryani	Gadaipally	200	800	242	558	0	800
27	Tiryani	Talandi	250	1000	351	649	0	1000
28	Tiryani	Perkapally	150	450	135	270	45	450
29	Tiryani	Tiryani	500	1500	438	458	604	1500
30	Tiryani	Bhimaram	200	600	240	300	60	600
31	Tiryani	Chinthapally	150	450	0	450	0	450
32	Tiryani	Gangapuram	80	320	0	320	0	320
33	Tiryani	Irkepally	150	600	60	540	0	600
34	Tiryani	Chelimela	100	300	0	300	0	300
35	Tiryani	Singaraopet	15	58	0	58	0	58
36	Tiryani	Ashalamada	30	90	0	90	0	90
37	Tiryani	Kannepally	70	210	42	147	21	210
38	Tiryani	Chinnaretipally	80	318	0	318	0	318
39	Tiryani	Edulapadu	80	303	0	303	0	303
40	Tiryani	Gambhiraopet	150	450	88	352	10	450
41	Tiryani	Duggapuram	20	57	0	57	0	57
42	Tiryani	Goegaon	100	402	24	356	22	402
43	Tiryani	Koyatalandi	30	126	0	126	0	126
	Total of Tiryani		4817	16378	2750	11234	1994	15978
	Grand Total of Bellampally division		7062	24617	4237	14517	5463	24217


 Divisional Forest Officer
 Bellampally

Annual schedule of budget amendments/expense accounts by including the adverse effects of variously operated items in Membership Division (2009-10 to 2020-21)

Sl. No.	Name of Work	2009-10		2010-11		2011-12		2012-13		2013-14		2014-15		2015-16		2016-17		2017-18		2018-19		2019-20		2020-21	
		Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
1	1. Initial Investment & Maintenance	25	6,250	25	6,500	25	6,800	25	7,200	25	7,800	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	2. Running of plant/machinery	0	0	25	7,500	25	7,600	25	8,200	25	8,600	25	9,100	0	0	0	0	0	0	0	0	0	0	0	0
3	3. 2nd to Maintenance	0	0	0	0	25	2,500	25	2,600	25	2,700	25	2,800	25	3,040	0	0	0	0	0	0	0	0	0	0
4	4. 3rd to Maintenance	0	0	0	0	0	0	25	2,000	25	2,100	25	2,200	25	2,310	25	2,430	0	0	0	0	0	0	0	0
5	5. 4th to Maintenance	25	8,200	25	14,060	25	17,275	100	20,120	125	22,870	100	18,870	75	7,200	50	4,450	25	2,100	0	0	0	0	0	0
6	6. Repair in and purchase of plant/machinery	1	0.400	1	0.500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	7. Contribution of other items	3	4,000	3	4,000	2	4,000	2	4,000	2	4,000	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	8. Contribution of other items	5	9,500	5	9,500	5	9,500	5	9,500	5	9,500	5	9,500	5	9,500	5	9,500	5	9,500	5	9,500	5	9,500	5	9,500
9	9. Fire Choker/Breakers	13	1,400	13	1,400	13	1,400	13	1,400	13	1,400	0	0	0	0	0	0	0	0	0	0	0	0	0	
10	10. Purchase of other items	300	1,460	350	1,584	300	1,340	300	1,197	300	7,100	300	2,210	300	2,251	200	2,800	300	1,200	300	2,200	300	1,750	300	4,100
11	11. Purchase of other items	5	4,500	15	5,040	15	5,200	15	5,100	15	5,104	15	5,104	15	5,104	15	5,104	15	5,104	15	5,104	15	5,104	15	5,104
12	12. Purchase of other items	3	7,200	3	7,200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	13. Contribution of other items	2	4,000	2	4,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14	14. Contribution of other items	11	11,000	11	11,000	7,824	7,824	7,423	7,423	7,342	7,342	6,440	6,440	6,440	6,440	6,440	6,440	6,440	6,440	6,440	6,440	6,440	6,440	6,440	
Sub Total			11,400		11,874		7,824		7,423		7,342		6,440		6,440		6,440		6,440		6,440		6,440		6,440
Total			11,400		11,874		7,824		7,423		7,342		6,440		6,440		6,440		6,440		6,440		6,440		6,440

APPENDIX-III
LAT - LONG DETAILS OF THE WORKS PROPOSED
1. CHECK DAMS

Sl. No.	Name of the Beat	Compt No.	Lat	Long
1	2	3	4	5
1	Dantanpally	106	19.26698	79.21727
2	Dantanpally	106	19.26585	79.22141
3	Dantanpally	106	19.26767	79.22406
4	Dantanpally	507	19.27316	79.20901
5	Dantanpally	117	19.24935	79.20527
6	Dantanpally	117	19.26362	79.20616
7	Dantanpally	116	19.25023	79.21604
8	Dantanpally	116	19.25193	79.21289
9	Dantanpally	119	19.26243	79.23300
10	Dantanpally	119	19.26086	79.23675
11	Dantanpally	119	19.26050	79.24308
12	Dantanpally	119	19.26357	79.21506
13	Dantanpally	120	19.24472	79.25378
14	Ginnedhary	150	19.22993	79.23501
15	Ginnedhary	151	19.23119	79.25260
16	Edulewade	280	19.26370	79.33923
17	Edulewade	280	19.25863	79.34407
18	Devaiguda	285	19.25148	79.29703
19	Devaiguda	285	19.23657	79.28327
20	Devaiguda	285	19.24356	79.29042
21	Devaiguda	285	19.24003	79.28404
22	Abbapur	295	19.22092	79.34496
23	Devaiguda	299	19.17650	79.30614
24	Murliguda	311	19.17613	79.34475
25	Murliguda	312	19.17011	79.34039
26	Murliguda	312	19.16500	79.33719
27	Murliguda	313	19.16402	79.32453
28	Murliguda	313	19.15892	79.32581
29	Gudipet	170	19.18728	79.21865
30	Gudipet	171	19.18771	79.23472
31	Gudipet	171	19.17258	79.24517

2. PERCOLATION TANKS

Sl. No.	Name of the Beat	Compt No.	Lat	Long
1	2	3	4	5
1	Danthanpally	160	19.30287	79.23449
2	Danthanpally	106	19.29845	79.23552
3	Devaiguda	285	19.24180	79.28435
4	Devaiguda	295	19.22520	79.35278
5	Devaiguda	299	19.17281	79.31567
6	Abbapur	296	19.22151	79.36773
7	Muriliguda	311	19.17312	79.35564
8	Muriliguda	313	19.16193	79.31954
9	Muriliguda	314	19.15279	79.31773
10	Gudipet	172	19.17627	79.25741

3. PLANTATIONS

Sl. No.	Name of the Beat	Compt No.	Area in Ha.	Lat	Long
1	2	3		4	5
1	Rabbana	282	100 Ha.	19.27188	79.37138
				19.26252	79.37890
				19.26015	79.37145
				19.28611	79.36515
2	Abbapur	296	25 Ha.	19.21413	79.37024
				19.21753	79.36862
				19.22042	79.36975
				19.21678	79.37462

Payment details of mitigative measures on Habitat Amelioration Scheme at Khairagura OCP



SINGARENI COLLIERIES COMPANY LIMITED

(Regd. Office Kothagudem - 507 101 (A.P.))

BELAMPALLI AREA

(GOLETI - 504 292)

REF: BPA/ENV/HAB/Amo/2012/507

Date: 07.08.2012.

The Divisional Forest Officer,
Bellampalli Division,
Bellampalli.

Sir,

Sub: Payment of charges towards mitigative measures due to mining and Wild Life at Khairiguda OCP- Reg.

Ref: 1) Re.No. 482/99-S4, Dt 09.05.2011.
2) Re.No. 3188/2004/M6, Dt 24.06.2011.
3) Re.No. 19960/2004/WL-(A), Dt 05.06.2012.

With reference to the above and as advised by PrI. Chief Conservator of Forests (WL) & Chief Wild Life Warden wide letter 3rd cited, an amount of Rs. 41.92 lakhs has been remitted to the following A/C No. 62232223331, SBH, BPL, IFSC CODE SBHY 0020120, Branch code 20120 towards Implementation of mitigative measures on Habitat Amelioration scheme at Khairiguda Opencast Project up to October 2007.

This is for your information please.

Yours faithfully
[Signature]
General Manager,
Bellampalli Area.

CC: PrI. Chief Conservator of Forests (WL) &
Chief Wildlife Warden,
Conservator of Forests, Adilabad Circle, Adilabad,
GM (ENV),
GM (Estates),
Agent Kha & Glt-1A,
Estates Manager (BPA).

R & R Center	No. of Plots developed	Villages/ Hamlets affected	No. of PDFs	No. of PDFs shifted	R & R Package Paid in lakhs	Year of shifting	Facilities provided	Infrastructure Expenditure In lakhs	Remarks
1	2	3	4	5	6	7	8	9	10
Sale guda	25	Khairagura Tiryani (M)	34	34	92.83	2011/12	Roads, Drains, Hand bore wells, Electrical works completed, Water tank, Community hall completed and School Building work was not taken up due to existing of school building.	24.89	
Ginne dhari	43	Old Bordham Tiryani(M)	33	33	85.07	2011/12	Roads, Drains, Hand bore wells, Electrical works completed, School Building & Community hall completed.	26.20	
Kesla pur	53	New Bordham	98	98	231.79	2011/12	Roads, Drains, Hand bore wells, electrical works completed, Water tank, School, & community hall completed.	43.94	
		Nambaiah Colony Tiryani (M)	15	15	31.83				
Ram bai guda	30	Lingiguda	22	22	59.94	2011/12	Roads, Drains, Hand bore wells provided, electrical works completed, School, & community hall completed.	19.98	
		Arjuguda Tiryani (M)	04	04	11.11				
Chirra kunta	35	Chanduguda Tiryani (M)	78	78	174.39	2011/12	Roads, Drains work are in progress, Hand bore wells, electrical works completed, School & Community hall completed.	22.66	
Indira nagar	87	S.C.Colony Tiryani (M)	125	125	202.67	2011/12	Roads, Drains, Hand bore wells, Electrical works completed, Water tank, School, Community hall completed.	35.10	
		Areguda	65						
		Pedakunta	01						
Chopidi	90	Pedakunta villagers Special Exgratia	13	79	131.89	2009	Roads, Drains, Electricity, Water tank with motor facilities, community hall, hand bore wells provided, School building under progress by P.R dept.	143.05	
		TOTAL	363	488	488	1021.52			315.82
No. of Persons opted for Cash grant in lieu of House plot			(-)152						
Total			336						

R & R CENTERS OF BELLAMPALLI AREA : KHAIRAGURA EXPANSION PROJECT R & R Package paid to the PAFs/PDFs as on 24.06.2013 as per Govt. GOs.

Details of the PAFs & PDFs who lost their lands for the purpose of Khairaguda OCP

Sl.No	Village Name	Total No. of PAFs	Total No. of PDFs	Remarks
1	Bordam (Old Bordam and New Bordam)	225	131	
2	Ullipitta Dorli	475	-	
3	Aregudem	100	65	
4	Chopidi	07	-	
5	Pedakunta	51	14	
5	Chirrakunta	23	-	
6	Arjuguuda	-	04	
7	Nambaiah Colony	-	15	
8	Khairiguda	-	34	
9	Lingiguda	-	22	
10	Chanduguda	-	78	
11	S.C Colony (Devaiguda)	-	125	
	Total	881	488	

Piezometric wells monitoring data													
Block/mine: Khairagura Opencast Expansion Project										Area: Bellampalli			
Piezometric well No.	Location	Depth (m).	Dia. (m).	M.P. (m).	Period	DTW (m).							
						2015	2016	2017	2018	2019	2020	2021	2022
KRG_OCP_PW_6	About 150m. from Dip side quarry edge & road to Dump-1 i.e. Susi camp. 19°15'4.79"N, 79°16'52.05"E	50	0.1	0.3	Winter	3.52	6.13	4.23	7.58	7.51	7.31	7.22	4.63
					Pre-monsoon	7.05	8.22	7.14	9.45	7.86	7.88	7.96	
					Monsoon	6.75	3.91	5.97	6.73	6.53	5.64	2.84	
					Post-monsoon	6.87	4.18	7.55	6.79	7.28	7.15	23.32	
KRG_OCP_PW_8 (Newly Constructed)	Near check post at Khairagura OCP (East side strike Direction) 19°14'08.649"N, 79°17'59.958"E	50	0.1	0.2	Winter	-	22.37	23.26	23.58	23.44	23.24	23.32	22.77
					Pre-monsoon	23.10	23.21	23.55	23.69	23.97	23.72	23.88	
					Monsoon	23.04	23.02	23.14	19.71	19.62	21.56	20.78	
					Post-monsoon	23.25	23.14	23.41	23.28	23.00	23.12	22.07	
KRG_OCP_PW_9 (Newly Constructed)	Near Iron Bridge (Rise side of OCP) at Khairagura OC. 19°14'11.146"N, 79°16'00.684"E	50	0.1	0.2	Winter	-	11.30	8.44	10.08	9.47	9.1	9.08	7.62
					Pre-monsoon	11.26	11.47	8.47	9.98	9.57	9.63	9.58	
					Monsoon	11.04	8.23	8.73	5.74	5.56	8.14	5.22	
					Post-monsoon	11.18	8.37	8.76	5.83	8.28	8.56	7.57	
KRG_OCP_PW_10 (Newly Constructed)	Near to Coal haulage Road at BGR Camp Office. 19°15'02.264"N, 79°16'52.05"E	50	0.1	0.2	Winter	-	9.69	7.94	11.68	11.73	11.61	11.01	8.04
					Pre-monsoon	10.42	10.18	10.00	12.24	12.38	12.04	12.16	
					Monsoon	9.67	7.41	7.85	6.68	6.41	7.82	7.48	
					Post-monsoon	9.89	7.72	10.51	7.43	9.88	9.83	7.96	
KRG_OCP_PW_11 (Newly Constructed)	In the Premises of II-Seam Coal Yard. 19°15'03.785"N, 79°15'48.362"E	50	0.1	0.2	Winter	-	12.80	9.53	13.05	13.08	12.94	12.68	11.28
					Pre-monsoon	14.27	13.13	11.37	16.54	16.54	16.34	16.41	
					Monsoon	12.49	9.35	11.72	11.72	11.70	11.29	7.84	
					Post-monsoon	12.61	9.47	12.10	11.91	7.51	12.03	11.18	

Phreatic surface monitoring data of existing wells (depth of water in mts.) of Bellampalli Area, SCCL														
Well No	Name of village	Location	Depth (m)	Period	Year								Nearest mine/ dist. in Km)	Remarks
					2015	2016	2017	2018	2019	2020	2021	2022		
1	Sona pur	In the centre of the village 19°13'53"N, 79°21'06"E	8.5	Winter	4.98	4.82	2.47	3.11	AB	AB	AB	AB	Glt-1, 4Km	Domes- tic
				Pre-monsoon	7.11	4.98	3.77	Dr y	AB	AB	AB			
				Monsoon	6.85	2.15	2.85	AB	AB	AB	AB			
				Post-monsoon	6.95	2.22	2.97	AB	AB	AB	AB			
2	Goleti	Near bus stand 19°14'12"N, 79°23'41"E	9.0	Winter	6.92	6.83	6.65	8.87	6.71	6.66	6.74	6.86	Glt-1 2.5Km	
				Pre-monsoon	8.00	dry	dr y	Dr y	6.98	6.89	7.27			
				Monsoon	5.78	3.45	8.70	6.32	4.51	4.72	4.32			
				Post-monsoon	5.92	4.10	8.78	6.28	6.53	6.11	4.83			
3	Durgapur	On way toward s Goleti 19°14'11"N, 79°24'22"E	10.5	Winter	4.92	5.48	5.48	7.40	7.36	7.48	7.68	4.26	Glt-1 4.0 Km	Domes- tic
				Pre-monsoon	6.40	6.5	7.10	Dr y	7.49	7.57	7.76			
				Monsoon	5.72	3.40	7.28	4.74	4.28	4.52	3.20			
				Post-monsoon	5.97	3.65	7.37	4.88	7.41	9.61	3.64			
4	Mada ram	Opp. MVK-3 Inc. 19°10'36"N, 79°23'47"E	9.5	Winter	4.32	6.72	4.32	5.54	5.51	6.13	5.11	3.80	MVK-3	Domes- tic
				Pre-monsoon	6.88	8.23	7.04	7.14	6.23	7.04	6.83			
				Monsoon	5.32	3.27	4.98	5.00	4.83	3.86	2.10			
				Post-monsoon	5.47	3.31	5.00	5.54	6.11	4.02	3.42			
5	Mada ram	Near over head tank 19°09'54"N,	16.0	Winter	10.36	10.84	10.97	12.22	12.03	11.91	12.04	5.00	MVK-1 3.0 Km	Domes- tic
				Pre-monsoon	13.05	dry	dr y	Dr y	12.50	Dr y	12.23			
				Monsoon	12.28	10.68	12.10	8.50	7.97	10.56	3.28			

Phreatic surface monitoring data of existing wells (depth of water in mts.) of Bellampalli Area, SCCL														
Well No	Name of village	Location	Depth (m)	Period	Year								Nearest mine/ dist. in Km)	Remarks
					2015	2016	2017	2018	2019	2020	2021	2022		
6	Madararam	Temple compound 19°09'54"N, 79°24'54"E	6.7	Winter	3.46	4.81	3.96	4.65	4.58	5.28	4.42	3.15	MVK-1 3.25 Km	Domestic
				Pre-monsoon	5.55	5.65	4.50	4.77	5.73	5.41	5.67			
				Monsoon	4.09	2.28	4.16	2.54	2.03	2.66	1.10			
				Post-monsoon	4.16	2.33	4.21	3.00	5.24	3.52	2.35			
7	Tandur	Near Rly.Gate 19°09'21"N, 79°26'29"E	11.0	Winter	3.15	3.22	2.82	3.41	3.44	3.37	3.74	3.69	MVK-1 0.9 Km	Domestic
				Pre-monsoon	4.45	3.45	3.44	3.72	4.28	4.45	4.92			
				Monsoon	3.12	2.11	3.05	1.68	1.45	2.41	3.10			
				Post-monsoon	3.27	2.32	3.17	1.81	3.18	3.15	3.21			
8	Tandur	Beside main road 19°09'10"N, 79°26'35"E	10.5	Winter	4.28	T.W.	2.57	T.W	4.57	NA	NA	NA	MVK-1 1.5 Km	Domestic
				Pre-monsoon	dry	T.W	3.77	6.75	NA	NA	NA			
				Monsoon	NR	T.W	5.50	4.12	NA	NA	NA			
				Post-monsoon	3.78	T.W	T.W	4.35	T.W.	NA	NA			
9	Rechni	Village entrance 19°08'20"N, 79°27'06"E	7.5	Winter	NR	7.72	5.16	8.48	8.34	8.48	7.94	5.60	MVK-1 3.0 Km	Agriculture
				Pre-monsoon	PI	8.08	8.33	10.35	8.57	8.61	8.46			
				Monsoon	5.68	3.92	7.40	4.84	2.43	2.65	2.65			
				Post-monsoon	5.83	4.05	7.44	4.93	8.44	4.08	3.25			
10	Boypalli	In the centre of the village 19°07'1	10.0	Winter	7.88	AB	AB	AB	AB	AB	AB	68Dip	Domestic	
				Pre-monsoon	AB	AB	AB	AB	AB	AB	AB			

Phreatic surface monitoring data of existing wells (depth of water in mts.) of Bellampalli Area, SCCL														
Well No	Name of village	Location	Depth (m)	Period	Year								Nearest mine/ dist. in Km)	Remarks
					2015	2016	2017	2018	2019	2020	2021	2022		
		3°N, 79°27' 46"E		Mons oon	AB									
				Post-mons oon	AB									
				Winte r	4.48	4.30	2.60	4.11	4.18	3.21	4.28	2.53		
				Pre-mons oon	5.00	4.55	7.32	8.43	5.63	5.31	5.59			
11	Peda boodha	Sai Temple 19°05'06"N, 79°30' 28"E	8.0	Mons oon	2.61	1.83	3.76	1.90	1.55	2.65	1.27		68 Dip 4.0 Km	Domes tic
				Post-mons oon	2.84	1.96	4.07	2.71	3.21	2.79	2.01			
				Winte r	6.44	7.18	5.73	6.44	6.41	6.45	6.08	4.95		
				Pre-mons oon	7.52	Dry	7.30	7.45	7.57	7.26	7.48			
12	Bejjal	In the centre of the village 19°13'31"N, 79°20' 36"E	7.5	Mons oon	6.61	5.52	6.25	3.41	3.55	4.67	3.43		BPA OC 0.3 Km	Domes tic
				Post-mons oon	6.80	5.67	6.37	5.82	6.41	5.03	3.57			
				Winte r	3.81	3.81	2.52	5.12	4.98	5.34	6.11	2.50		
				Pre-mons oon	4.83	Dry	8.10	8.18	5.48	5.62	7.58			
13	Narsapur	Near X road in village 19°11'48"N, 79°21'31"E	8.0	Mons oon	3.33	1.21	5.00	6.54	6.12	2.28	1.10		BPA OC 0.6 Km	Agricul ture
				Post-mons oon	3.95	1.29	5.08	6.90	5.31	5.31	1.22			
				Winte r	2.71	2.99	3.45	2.48	AB	AB	AB	AB		
				Pre-mons oon	dry	Dry	Dry	Dry	AB	AB	AB			
14	Sonapur	Near pillar no. 86 to Khairagura OC 19°13'42"N, 79°21'16"E	5.0	Mons oon	2.56	1.20	2.23	1.53	AB	AB	AB			Agricul ture
				Post-mons oon	2.72	1.28	2.37	1.68	AB	AB	AB			
				Winte r	2.71	2.99	3.45	2.48	AB	AB	AB	AB		
				Pre-mons oon	dry	Dry	Dry	Dry	AB	AB	AB			

Vehicular emissions monitoring data of Khairagura OCP Bellampalli area

Sampling interval : Once in six months.

2017-18

Running Hrs.As on tested date

Sampling period: From April, 2017 to March 2018.

Sl. No	Eqpt. Type/capacity	Eqpt.Name	Make	D.O.C	Running Hrs.	Tested date	HSU % 65	K m-1 2.45	Test Status
1	Dumper – 35T	KGB-21	BEML	17.12.2014	11644	14.11.2017	43.5	1.76	PASS
2	Dumper – 35T	KGB-22	BEML	08.12.2014	8577	14.11.2017	34.6	0.98	PASS
3	Dumper – 35T	KGB-27	BEML	16.10.2015	7816	14.11.2017	39.3	1.16	PASS
4	Dumper – 35T	KGB-28	BEML	10.10.2015	6116	14.11.2017	26.3	0.71	PASS
5	Dumper – 35T	KGB-29	BEML	10.10.2015	7667	14.11.2017	....	....	BD
6	Dumper – 35T	KGB-38	BEML	20.11.2015	8123	14.11.2017	43.9	1.34	PASS
7	Dumper – 35T	KGB-39	BEML	27.02.2016	6253	14.11.2017	44.0	1.37	PASS
8	Dumper – 35T	C-5	BEML	20.11.2015	11898	14.11.2017	63.1	2.30	PASS
9	Dumper – 35T	C-6	BEML	08.04.2008	10907	14.11.2017	73.1	3.14	*FAIL
10	Dumper - 60T	KGcat-40	CAT	22.08.2016	5397	15.11.2017	34.7	0.99	PASS
11	Dumper - 60T	KGcat-41	CAT	22.08.2016	5020	15.11.2017	40.1	1.76	PASS
12	Dumper - 60T	KGcat-42	CAT	22.08.2016	5200	15.11.2017	30.8	0.85	PASS
13	Dumper - 60T	KGcat-43	CAT	22.08.2016	5410	15.11.2017	32.0	0.89	PASS
14	Dumper - 60T	KGcat-44	CAT	01.01.2017	3513	15.11.2017	22.5	0.48	PASS
15	Dumper - 60T	KGcat-45	CAT	01.01.2017	3669	15.11.2017	27.7	0.75	PASS
16	Dumper - 60T	KGcat-46	CAT	01.01.2017	3860	15.11.2017	30.8	0.85	PASS
17	Dumper - 60T	KGcat-47	CAT	01.01.2017	3858	15.11.2017	26.8	0.72	PASS
18	Dumper - 60T	KGB-48	BEML	18.02.2017	2936	15.11.2017	24.6	0.62	PASS
19	Dumper - 60T	KGB-49	BEML	18.02.2017	2669	15.11.2017	21.7	0.56	PASS
20	Shovel	KGS-6	L&T	16.10.2015	10714	18.11.2017	29.9	0.82	PASS
21	Shovel	KGS-4	L&T	04.12.2009	38131	18.11.2017	42.6	1.27	PASS
22	Shovel	KGS-7	L&T	31.1.2015	10558	18.11.2017	19.7	0.51	PASS
23	Shovel	KGS-8	TATA	01.04.2016	4102	18.11.2017	19.2	0.42	PASS
24	Motor Grader	KGG-4	BEML	12.01.2016	6018	16.11.2017	26.3	0.70	PASS
25	Motor Grader	KGG-3	BEML	14.02.2013	9157	16.11.2017	42.2	1.27	PASS
26	Water Sprinkler	KGT-1	H.M	12.03.2008	17681	16.11.2017	51.8	1.68	PASS
27	Water Sprinkler	KGT-2	H.M	12.03.2008	19035	16.11.2017	75.8	3.29	*FAIL
28	Water Sprinkler	KGT-3	BEML	05.07.2013	9998	16.11.2017	43.9	1.34	PASS
29	Loader	KGL-2	CAT	02.02.2012	20475	17.11.2017	32.8	0.92	PASS
30	Loader	KGL-1	TATA	15.02.2010	17143	17.11.2017	....	....	BD
31	Loader	KGL-3	L&T	10.02.2016	2429	17.11.2017	20.0	0.59	PASS

Sl. No.	Eqpt. Type/capacity	Eqpt.Name	Make	D.O.C	Running Hrs.	Tested Date	HSU % 65	K m-1 2.45	Test Status
1	DUMPER 35T	KGB-21	BEML	17.12.2014	12,229	19.03.2018	38.6	1.03	PASS
2	DUMPER 35T	KGB-22	BEML	08.12.2014	9,285	19.03.2018	73.0	3.14	*FAIL
3	DUMPER 35T	KGB-27	BEML	16.10.2015	8,759	19.03.2018	42.0	1.26	PASS
4	DUMPER 35T	KGB-28	BEML	10.10.2015	6,772	19.03.2018	54.9	1.84	PASS
5	DUMPER 35T	KGB-29	BEML	10.10.2015	7,992	20.03.2018	38.6	1.03	PASS
6	DUMPER35T	KGB-38	BEML	20.11.2015	8,883	20.03.2018	39.6	1.17	PASS
7	DUMPER 35T	KGB-39	BEML	27.02.2016	6,865	20.03.2018	42.0	1.26	PASS
8	DUMPER 35T	C-5	BEML	20.11.2015	12,091	20.03.2018	58.3	2.03	PASS
9	DUMPER 35T	C-6	BEML	08.04.2008	10,936	20.03.2018	62.9	2.30	PASS
10	DUMPER 60T	KGCAT-40	CAT	22.08.2016	6,805	20.03.2018	24.7	0.67	PASS
11	DUMPER 60T	KGCAT-41	CAT	22.08.2016	6,474	20.03.2018	34.7	0.99	PASS
12	DUMPER 60T	KGCAT-42	CAT	22.08.2016	6,475	20.03.2018	22.9	0.60	PASS
13	DUMPER 60T	KGCAT-43	CAT	22.08.2016	6,804	20.03.2018	27.3	0.74	PASS
14	DUMPER 60T	KGCAT-44	CAT	01.01.2017	4,882	20.03.2018	23.0	0.60	PASS
15	DUMPER 60T	KGCAT-45	CAT	01.01.2017	5,183	20.03.2018	18.4	0.47	PASS
16	DUMPER 60T	KGCAT-46	CAT	01.01.2017	5,376	20.03.2018	17.9	0.46	PASS

17	DUMPER 60T	KGCAT-47	CAT	01.01.2017	5,361	20.03.2018	26.6	0.57	PASS
18	DUMPER 60T	KGB-49	BEML	18.02.2017	3,804	21.03.2018	18.9	0.48	PASS
19	SHOVEL	KGS-6	L&T	16.10.2015	12,183	21.03.2018	30.0	0.82	PASS
20	SHOVEL	KGS-4	L&T	04.12.2009	39,301	21.03.2018	43.3	1.31	PASS
21	SHOVEL	KGS-7	L&T	31.1.2015	12,275	21.03.2018	19.2	0.42	PASS
22	SHOVEL	KGS-8	TATA	01.04.2016	4,754	21.03.2018	18.9	0.48	PASS
23	SHOVEL	KGS-9	TATA	07.02.2018	222	21.03.2018	12.9	0.30	PASS
24	MOTOR GRADER	KGG-4	BEML	12.01.2016	6,971	21.03.2018	27.2	0.73	PASS
25	MOTOR GRADER	KGG-3	BEML	14.02.2013	9,503	21.03.2018	44.1	1.34	PASS
26	WATER SPRINKLER	KGT-4	HM	01.12.2017	541	21.03.2018	11.3	0.27	PASS
27	WATER SPRINKLER	KGT-5	BEML	01.12.2017	531	21.03.2018	11.1	0.27	PASS
28	WATER SPRINKLER	KGT-3	BEML	05.07.2013	10,416	21.03.2018	68.7	2.7	*FAIL
29	LOADER	KGL-2	CAT	02.02.2012	21,795	21.03.2018	31.6	0.88	PASS
30	MOBILE S.VAN	M-1	ELGI	10.02.2016	13,043	22.03.2018	34.7	0.99	PASS
31	DOZER	KGD-4	BEML	05.07.2013	8,061	22.03.2018	22.5	0.59	PASS
32	DOZER	KGD-6	BEML	03.05.2014	5,499	22.03.2018	11.5	0.28	PASS
33	DOZER	KGD-7	L&T	26.10.2016	4,765	22.03.2018	12.4	0.30	PASS
34	DOZER	KGD-8	L&T	10.07.2017	2,253	22.03.2018	9.5	0.23	PASS
35	DOZER	KGD-9	KOMATSU	27.10.2017	1,103	22.03.2018	8.3	0.20	PASS
36	DRILL	KGDR-3	REL	07.01.2013	7,504	22.03.2018	33.2	0.93	PASS
37	DRILL	KGDR-4	REL	27.04.2017	1,415	22.03.2018	29.6	0.81	PASS
38	CRANE 40T	KGC-3	TIL	03.12.2008	5,281	22.03.2018	31.7	0.88	PASS
39	CRANE 40T	KGC-4	TIL	24.11.2016	750	22.03.2018	13.4	0.33	PASS
40	CRANE 40T	KGC-2	Rhino	18.04.2011	5,077	22.03.2018	23.7	0.62	PASS
41	CRANE 40T	KGC-1	REL		5,025	22.03.2018	21.3	0.55	PASS
42	TYRE HANDLERS	KGTH-1	BEML	18.04.2011	936	23.03.2018	10.3	0.25	PASS
43	FORK LIFTER	KGF-1	GODREJ	14.11.2007	14,578	23.03.2018	34.4	0.98	PASS
44	DIESEL BOWSER	KGDB-1	TATA	10.07.2009	16,188	23.03.2018	37.3	0.92	PASS
45	DIESEL BOWSER	KGDB-2	HITECH	16.09.2017	3,487	23.03.2018	24.2	0.64	PASS
Note:* Maintenance was done for failed equipments such as changing of lubricant oil, engine oil, filters, engine tuning, etc.									

2018-19

Vehicular emissions monitoring data

Sl. No.	Eqpt.Type/ capacity	Eqpt. Name	Make	D.O.C	Run ning Hrs. as on July- 2018	Tested Date	HSU % 65	K m-1 2.45	Test Status
1	DUMPER 35T	KGB-21	BEML	17.12.2014	14021	19.12.2018	53.5	1.79	PASS
2	SHOVEL	KGS-10	BEML	22.08.2018	710	29.12.2018	7.5	0.14	PASS
3	DUMPER 35T	KGB-27	BEML	16.10.2015	12011	19.12.2018	17.7	0.45	PASS
4	DUMPER 35T	KGB-28	BEML	10.10.2015	8558	22.12.2018	12.7	0.31	PASS
5	DUMPER 35T	KGB-29	BEML	10.10.2015	9387	20.12.2018	41.6	1.25	PASS
6	DUMPER35T	KGB-38	BEML	20.11.2015	10157	20.12.2018	38.3	1.12	PASS

7	DUMPER 35T	KGB-39	BEML	20.11.2015	7752	20.12.2018	38.4	1.12	PASS
8	DUMPER 35T	C-5	BEML	08.04.2013	12933	31.12.2018	-	-	BD
9	DUMPER 35T	C-6	BEML	08.04.2013	11173	23.12.2108	60.4	2.15	PASS
10	DUMPER 60T	KGcat-41	CAT	22.08.2016	9100	19.12.2018	16.7	0.41	PASS
11	DUMPER 60T	KGcat-42	CAT	22.08.2016	9790	19.12.2018	24.4	0.65	PASS
12	DUMPER 60T	KGcat-43	CAT	22.08.2016	9780	19.12.2018	12.7	0.31	PASS
13	DUMPER 60T	KGcat-44	CAT	01.01.2017	7995	19.12.2018	11.5	0.57	PASS
14	DUMPER 60T	KGcat-46	CAT	01.01.2017	8350	21.12.2018	37.4	1.10	PASS
15	DUMPER 60T	KGcat-47	CAT	01.01.2017	8750	20.12.2018	14.3	0.35	PASS
16	DUMPER 60T	KGB-48	BEML	18.02.2017	6567	22.12.2018	13.3	0.33	PASS
17	DUMPER 60T	KGB-49	BEML	18.02.2017	6457	22.12.2018	13.9	0.34	PASS
18	SHOVEL	KGS-6	L&T	16.10.2015	15396	19.12.2018	40.1	1.19	PASS
19	SHOVEL	KGS-7	L&T	31.10.2015	15724	21.12.2018	36.5	1.05	PASS
20	SHOVEL	KGS-8	TATA	01.04.2016	5830	15.12.2018	8.8	0.21	PASS
21	SHOVEL	KGS-9	TATA	07.02.2018	4116	19.12.2018	15.2	0.39	PASS
22	MOTOR GRADER	KGG-4	BEML	12.01.2016	9399	26.12.2018	32.6	0.91	PASS
23	MOTOR GRADER	KGG-3	BEML	14.02.2013	9795	25.12.2018	25.5	0.69	PASS
24	DUMPER	KGcat-40	CAT	22.08.2016	8095	19.12.2018	7.3	0.13	PASS
25	DUMPER	KGcat-45	CAT	01.01.2017	8200	21.12.2018	11.7	0.38	PASS
26	WATER SPRINKLER	KGT-4	HM	01.12.2017	2130	21.12.2018	63.1	2.31	PASS
27	WATER SPRINKLER	KGT-5	BEML	01.12.2017	2010	19.12.2018	17.6	0.45	PASS
28	WATER SPRINKLER	KGT-3	BEML	05.07.2013	10841	21.12.2018	...	...	BD
29	LOADER	KGL-2	CAT	02.02.2012	25310	27.12.2018	...	...	BD
30	LOADER	KGL-1	TATA	15.02.2010	7751	28.12.2018	19.3	0.49	PASS
31	DOZER	KGD-4	BEML	05.07.2013	8652	20.12.2018	31.4	0.87	PASS
32	DOZER	KGD-6	BEML	03.05.2014	6590	20.12.2018	48.0	1.52	PASS
33	DOZER	KGD-7	L&T	26.10.2016	7200	21.12.2018	32.4	0.85	PASS
34	DOZER	KGD-8	L&T	10.07.2017	4793	23.12.2018	18.4	0.47	PASS
35	DOZER	KGD-9	KOMAT SU	27.10.2017	3590	29.12.2018	20.9	0.54	PASS
36	DRILL	KGDR-3	REL	07.01.2013	8052	31.12.2018	10.6	0.29	PASS
37	DRILL	KGDR-4	REL	27.04.2017	2792	29.12.2018	17.5	0.44	PASS

38	CRANE 40T	KGC-3	TIL	03.12.2008	5418	18 15.12.20 18	17.3	0.42	PASS
39	CRANE 40T	KGC-4	TIL	24.11.2016	1189	27.12.20 18	26.5	0.69	PASS
40	TYRE HANDLER	KGTH-1	BEML	18.04.2011	977	27.12.20 18	82.0	3.98	*FAIL
41	CRANE	KGC-5	BEML	02.08.2018	271	28.12.20 18	4.7	0.11	PASS
Note:* Maintenance was done for failed equipments such as changing of lubricant oil, engine oil, filters, engine tuning, etc.									

2019-20

Vehicular emissions monitoring data
Sampling interval: Once in six months.

Sl.No	Eqpt. Type/capacity	Eqpt.Nam e	Make	D.O.C	Runnin g Hrs. As on August -2019	Tested Date	HSU % 65	K m-1 2.45	Test Status
1	DUMPER 35T	KGB-21	BEML	17.12.2014	14412	21.08.2019	43.8	0.35	PASS
2	SHOVELL	KGS-10	BEML	22.08.2018	2537	21.08.2019	18.5	0.45	PASS
3	DUMPER 35T	KGB-27	BEML	16.10.2015	13149	21.08.2019	60.5	2.10	PASS
4	DUMPER 35T	KGB-28	BEML	10.10.2015	9931	21.08.2019	41.3	1.24	PASS
5	DUMPER 35T	KGB-29	BEML	10.10.2015	10877	21.08.2019	23.3	0.57	PASS
6	DUMPER35T	KGB-38	BEML	20.11.2015	10825	21.08.2019	56.5	2.05	PASS
7	DUMPER 35T	KGB-39	BEML	20.11.2015	9186	21.08.2019	55.2	1.06	PASS
8	DUMPER 35T	C-5	BEML	08.04.2013	13309	21.08.2019	--	--	BD
9	DUMPER 35T	C-6	BEML	08.04.2013	11964	21.08.2109	62.3	2.13	PASS
10	DUMPER 60T	KGcat-41	CAT	22.08.2016	11965	21.08.2019	35.6	1.14	PASS
11	DUMPER 60T	KGcat-42	CAT	22.08.2016	12594	22.08.2019	32.2	0.92	PASS
12	DUMPER 60T	KGcat-43	CAT	22.08.2016	12146	22.08.2019	34.9	0.98	PASS
13	DUMPER 60T	KGcat-44	CAT	01.01.2017	10616	22.08.2019	29.4	0.75	PASS
14	DUMPER 60T	KGcat-46	CAT	01.01.2017	11182	22.08.2019	22.7	0.66	PASS
15	DUMPER 60T	KGcat-47	CAT	01.01.2017	11398	22.08.2019	20.0	0.54	PASS
16	DUMPER 60T	KGcat-45	CAT	01.01.2017	11221	22.08.2019	21.5	0.64	PASS
17	DUMPER 60T	KGcat-40	CAT	22.08.2016	10698	22.08.2019	29.7	0.75	PASS
18	SHOVEL	KGS-9	TATA	07.02.2018	7032	22.08.2019	20.5	0.53	PASS
19	SHOVEL	KGS-7	L&T	31.10.2015	18479	22.08.2019	55.2	1.92	PASS
20	SHOVEL	KGS-8	TATA	01.04.2016	6990	22.08.2019	22.5	0.58	PASS
21	SHOVEL	SRI DURGA	L&T	15.05.2015	17399	23.08.2019	46.1	1.43	PASS
22	MOTOR GRADER	KGG-4	BEML	12.01.2016	10555	23.08.2019	23.5	0.59	PASS
23	MOTOR GRADER	KGG-3	BEML	14.02.2013	10568	23.08.2019	24.3	0.64	PASS
24	DUMPER	KGB-50	BEML	17.05.2019	659	23.08.2019	37.0	1.04	PASS
25	DUMPER	KGB-51	BEML	17.05.2019	532	23.08.2019	5.2	1.01	PASS
26	WATER SPRINKLER	KGT-4	HM	01.12.2017	3782	23.08.2019	63.5	2.34	PASS
27	WATER SPRINKLER	KGT-5	BEML	01.12.2017	3527	23.08.2019	57.5	1.95	PASS
28	WATER SPRINKLER	KGT-3	BEML	05.07.2013	11547	23.08.2019	60.3	1.98	PASS
29	LOADER	KGL-2	CAT	02.02.2012	27080	23.08.2019	13.4	0.33	PASS
30	LODER	KGL-1	TATA	15.02.2010	7741	24.08.2019	5.8	0.52	PASS
31	DOZER	KGD-4	BEML	05.07.2013	9153	24.08.2019	25.6	0.68	PASS
32	DOZER	KGD-7	KOMAT	26.06.2016	9064	24.08.2019	24.3	0.64	PASS
33	DOZER	KGD-8	L&T	10.07.2017	6829	24.08.2019	16.8	0.42	PASS
34	DOZER	KGD-9	L&T	27.10.2017	5702	24.08.2019	16.6	0.40	PASS
35	DOZER	KGD-5	L&T	09.02.2017	5882	24.08.2019	16.4	0.35	PASS

36	DRILL	KGDR-3	REL	07.01.2013	8465	24.08.2019	23.0	0.60	PASS
37	DRILL	KGDR-4	REL	27.04.2017	4223	24.08.2019	15.2	0.39	PASS
38	CRANE 40T	KGC-3	TIL	03.12.2008	5415	26.08.2019	14.3	0.35	PASS
39	CRANE 40T	KGC-4	TIL	24.11.2016	1328	26.08.2019	13.3	0.32	PASS
40	TYRE HANDLERS	KGTH-1	BEML	18.04.2011	988	26.08.2019	50.8	1.64	PASS
41	CRANE	KGC-5	ESCORT	02.08.2018	435	26.08.2019	27.2	0.72	PASS
42	CRANE	KGC-6	ACE	13.09.2018	224	24.08.2019	14.0	0.34	PASS
43	CRANE	KGC-2	ACE	03.05.2011	5236	26.08.2019	12.5	0.29	PASS
44	MOTOR-GRADER	DMG-2	BEML	06.06.2008	11838	24.08.2019	15.1	0.38	PASS
45	WATER TANKER	KGT-6	BEML	10.10.2018	1385	24.08.2019	56.3	1.02	PASS

S.No	Eqpt. Type/capacity	Eqpt. Name	Make	D.O.C	Runnin g Hrs. As on March-2020	Tested Date	HSU % 65	K m-1 2.45	Test Status
1	DUMPER 35T	KGB-21	BEML	17.12.2014	14907	26.03.2020	48.5	0.25	PASS
2	SHOVELL	KGS-10	BEML	22.08.2018	4067	26.03.2020	29.4	0.40	PASS
3	DUMPER 35T	KGB-27	BEML	16.10.2015	13867	26.03.2020	54.2	0.25	PASS
4	DUMPER 35T	KGB-28	BEML	10.10.2015	10658	26.03.2020	34.2	0.18	PASS
5	DUMPER 35T	KGB-29	BEML	10.10.2015	10897	26.03.2020	27.2	0.55	PASS
6	DUMPER35T	KGB-38	BEML	20.11.2015	12038	26.03.2020	51.0	0.19	PASS
7	DUMPER 35T	KGB-39	BEML	20.11.2015	10273	26.03.2020	--	--	BD
8	DUMPER 35T	C-5	BEML	08.04.2013	13722	26.03.2020	63.4	2.12	PASS
9	DUMPER 35T	C-6	BEML	08.04.2013	12165	26.03.2020	60.2	2.13	PASS
10	DUMPER 60T	KGcat-41	CAT	22.08.2016	14473	26.03.2020	38.2	1.15	PASS
11	DUMPER 60T	KGcat-42	CAT	22.08.2016	14999	27.03.2020	34.0	0.90	PASS
12	DUMPER 60T	KGcat-43	CAT	22.08.2016	14281	27.03.2020	32.6	0.94	PASS
13	DUMPER 60T	KGcat-44	CAT	01.01.2017	13184	27.03.2020	38.4	0.72	PASS
14	DUMPER 60T	KGcat-46	CAT	01.01.2017	13652	27.03.2020	25.3	0.62	PASS
15	DUMPER 60T	KGcat-47	CAT	01.01.2017	13925	27.03.2020	24.2	0.51	PASS
16	DUMPER 60T	KGcat-45	CAT	01.01.2017	13745	27.03.2020	28.3	0.60	PASS
17	DUMPER 60T	KGcat-40	CAT	22.08.2016	13012	27.03.2020	25.7	0.72	PASS
18	SHOVEL	KGS-9	TATA	07.02.2018	9874	27.03.2020	24.2	0.50	PASS
19	SHOVEL	KGS-7	L&T	31.10.2015	21222	27.03.2020	53.2	1.85	PASS
20	SHOVEL	KGS-8	TATA	01.04.2016	8219	27.03.2020	25.3	0.52	PASS
21	SHOVEL	SRI DURGA	L&T KOMAT	23.10.2015	19893	27.03.2020	43.0	1.30	PASS
22	MOTOR GRADER	KGG-4	BEML	12.01.2016	11449	28.03.2020	25.8	0.38	PASS
23	MOTOR GRADER	KGG-3	BEML	14.02.2013	11608	28.03.2020	20.5	0.62	PASS
24	DUMPER	KGB-50	BEML	17.05.2019	2170	28.03.2020	39.2	1.04	PASS
25	DUMPER	KGB-51	BEML	17.05.2019	1899	28.03.2020	45.0	1.09	PASS
26	WATER SPRINKLER	KGT-4	HM	01.12.2017	4650	28.03.2020	61.2	2.32	PASS
27	WATER SPRINKLER	KGT-5	BEML	01.12.2017	4337	28.03.2020	54.5	1.92	PASS
28	WATER SPRINKLER	KGT-3	BEML	05.07.2013	11766	29.03.2020	64.2	1.93	PASS
29	LOADER	KGL-2	CAT	02.02.2012	28988	29.03.2020	18.4	0.38	PASS
30	LODER	KGL-1	TATA	15.02.2010	7761	29.03.2020	28.4	0.58	PASS
31	DOZER	KGD-4	BEML	05.07.2013	9153	29.03.2020	27.3	0.64	PASS
32	DOZER	KGD-7	KOMAT	26.10.2016	10906	29.03.2020	20.2	0.53	PASS
33	DOZER	KGD-8	L&T	10.07.2017	8606	28.03.2020	19.8	0.40	PASS
34	DOZER	KGD-9	L&T	28.06.2017	7380	29.03.2020	14.3	0.25	PASS
35	DOZER	KGD-5	L&T	09.02.2017	7805	29.03.2020	16.8	0.37	PASS
36	DOZER	DMG-2	BEML	07.01.2013	1542	29.03.2020	25.5	0.65	PASS
37	DRILL	KGDR-4	REL	27.04.2017	5161	29.03.2020	19.5	0.42	PASS
38	CRANE 40T	KGC-3	TIL	03.12.2008	5415	29.03.2020	54.2	0.45	PASS
39	CRANE 40T	KGC-4	TIL	24.11.2016	1328	29.03.2020	19.6	0.35	PASS

40	TYRE HANDLERS	KGTH-1	BEML	18.04.2011	988	28.03.2020	--	---	BD
41	CRANE	KGC-5	ESCORT	02.08.2018	495	29.03.2020	29.7	0.75	PASS
42	CRANE	KGC-6	ACE	13.09.2018	224	29.03.2020	17.4	0.32	PASS
43	CRANE	KGC-2	ACE	03.05.2011	5236	29.03.2020	19.5	0.26	PASS
44	MOTOR-GRADER	DMG-2	BEML	06.06.2008	11638	29.03.2020	19.4	0.32	PASS
45	WATER TANKER	KGT-6	BEML	09.04.2010	1548	29.03.2020	58.5	1.04	PASS

2021-22

Vehicular emissions monitoring data

Sampling interval: Once in six months. (April to September 2020)

Sl.No	Eqpt. Type/capacity	Eqpt. Name	Make	D.O.C	Running Hrs. As on August-2020	Tested Date	HSU % 65	K m-1 2.45	Test Status
1	DUMPER 35T	KGB-21	BEML	17.12.2014	15121	12.08.2020	45.2	0.23	PASS
2	SHOVELL	KGS-10	BEML	22.08.2018	5013	12.08.2020	25.2	0.43	PASS
3	DUMPER 35T	KGB-27	BEML	16.10.2015	13987	12.08.2020	52.3	0.27	PASS
4	DUMPER 35T	KGB-28	BEML	10.10.2015	10876	12.08.2020	30.4	0.14	PASS
5	DUMPER 35T	KGB-29	BEML	10.10.2015	10954	12.08.2020	29.4	0.51	PASS
6	DUMPER35T	KGB-38	BEML	20.11.2015	12038	12.08.2020	51.0	0.19	PASS
7	DUMPER 35T	KGB-39	BEML	20.11.2015	10765	12.08.2020	43.0	0.58	PASS
8	DUMPER 35T	C-5	BEML	08.04.2013	14132	13.08.2020	61.2	2.10	PASS
9	DUMPER 35T	C-6	BEML	08.04.2013	12432	13.08.2020	58.5	2.13	PASS
10	DUMPER 60T	KGcat-41	CAT	22.08.2016	14843	13.08.2020	34.4	1.18	PASS
11	DUMPER 60T	KGcat-42	CAT	22.08.2016	15123	13.08.2020	30.3	0.92	PASS
12	DUMPER 60T	KGcat-43	CAT	22.08.2016	14654	13.08.2020	34.1	0.90	PASS
13	DUMPER 60T	KGcat-44	CAT	01.01.2017	13184	13.08.2020	39.3	0.71	PASS
14	DUMPER 60T	KGcat-46	CAT	01.01.2017	13987	13.08.2020	28.4	0.42	PASS
15	DUMPER 60T	KGcat-47	CAT	01.01.2017	14342	13.08.2020	22.2	0.34	PASS
16	DUMPER 60T	KGcat-45	CAT	01.01.2017	13980	14.08.2020	32.2	0.43	PASS
17	DUMPER 60T	KGcat-40	CAT	22.08.2016	14021	14.08.2020	29.4	0.71	PASS
18	SHOVEL	KGS-9	TATA	07.02.2018	10432	14.08.2020	27.5	0.54	PASS
19	SHOVEL	KGS-7	L&T	31.10.2015	22543	14.08.2020	57.4	1.80	PASS
20	SHOVEL	KGS-8	TATA	01.04.2016	8921	14.08.2020	26.3	0.23	PASS
21	SHOVEL	SRI DURGA	L&T KOMAT	23.10.2015	20543	14.08.2020	48.2	1.24	PASS
22	MOTOR GRADER	KGG-4	BEML	12.01.2016	12345	14.08.2020	26.3	0.31	PASS
23	MOTOR GRADER	KGG-3	BEML	14.02.2013	12321	15.08.2020	24.2	0.22	PASS
24	DUMPER	KGB-50	BEML	17.05.2019	3240	15.08.2020	40.1	1.05	PASS
25	DUMPER	KGB-51	BEML	17.05.2019	2054	15.08.2020	48.3	1.02	PASS
26	WATER SPRINKLER	KGT-4	HM	01.12.2017	5345	15.08.2020	72.4	2.54	FAIL
27	WATER SPRINKLER	KGT-5	BEML	01.12.2017	5345	15.08.2020	50.2	1.45	PASS
28	WATER SPRINKLER	KGT-3	BEML	05.07.2013	12567	15.08.2020	60.5	1.02	PASS
29	LOADER	KGL-2	CAT	02.02.2012	2945	17.08.2020	13.4	0.28	PASS
30	LODER	KGL-1	TATA	15.02.2010	7980	17.08.2020	-	-	BD
31	MOTOR GRADER	BMG-2	BEML	05.07.2008	9876	17.08.2020	50.4	0.95	PASS
32	DOZER	KGD-7	KOMAT	26.10.2016	11543	22.08.2020	24.2	0.51	PASS
33	DOZER	KGD-8	L&T	10.07.2017	9054	22.08.2020	23.3	0.42	PASS
34	DOZER	KGD-9	L&T	28.06.2017	8541	18.08.2020	19.5	0.23	PASS
35	DOZER	KGD-5	L&T	09.02.2017	8764	18.08.2020	25.4	0.34	PASS
36	DOZER	DMG-2	BEML	07.01.2013	1542	18.08.2020			PASS
37	DRILL	KGDR-4	REL	27.04.2017	6542	18.08.2020	28.4	0.40	PASS
38	CRANE 40T	KGC-3	TIL	03.12.2008	6541	18.08.2020	58.0	0.48	PASS
39	CRANE 40T	KGC-4	TIL	24.11.2016	1654	19.08.2020	28.1	0.31	PASS

40	MOTOR GRADER	DMG-2	BEML	18.04.2009	12321	19.08.2020	34.2	0.84	PASS
41	CRANE	KGC-5	ESCORT	02.08.2018	875	20.08.2020	20.3	0.71	PASS
42	CRANE	KGC-6	ACE	13.09.2018	532	20.08.2020	23.4	0.30	PASS
43	CRANE		ACE	03.05.2011	5236	20.08.2020	19.5	0.26	PASS
44	MOTOR-GRADER	DMG-2	BEML	06.06.2008	12543	22.08.2020	35.4	0.30	PASS
45	DUMPER	KGB-38	BEML	09.04.2013	14349	20.08.2020	42.2	0.95	PASS

(October 2020 to March 2021)

Sl.No	Eqpt. Type/capacity	Eqpt.Name	Make	D.O.C	Running Hrs. As on March-2021	Tested Date	HSU % 65	Km-1 2.45	Test Status
1	DUMPER 35T	KGB-21	BEML	17.12.2014	15732	08.03.2021	27.8	0.74	PASS
2	SHOVELL	KGS-10	BEML	22.08.2018	5457	08.03.2021	45.2	1.64	PASS
3	DUMPER 35T	KGB-27	BEML	16.10.2015	14916	08.03.2021	25.5	0.65	PASS
4	DUMPER 35T	KGB-28	BEML	10.10.2015	11460	08.03.2021	32.8	0.91	PASS
5	DUMPER 35T	KGB-29	BEML	10.10.2015	11000	08.03.2021	-	-	BD
6	DUMPER35T	KGB-38	BEML	20.11.2015	13174	12.03.2021	26.5	0.72	PASS
7	DUMPER 35T	KGB-39	BEML	20.11.2015	11151	12.03.2021	29.4	0.82	PASS
8	DUMPER 35T	C-5	BEML	08.04.2013	14036	12.03.2021	43.8	1.32	PASS
9	DUMPER 35T	C-6	BEML	08.04.2013	12484	12.03.2021	-	-	BD
10	DUMPER 60T	KGcat-41	CAT	22.08.2016	17275	12.03.2021	42.4	1.25	PASS
11	DUMPER 60T	KGcat-42	CAT	22.08.2016	17661	13.03.2021	35.8	1.04	PASS
12	DUMPER 60T	KGcat-43	CAT	22.08.2016	16698	13.03.2021	22.5	0.54	PASS
13	DUMPER 60T	KGcat-44	CAT	01.01.2017	15683	13.03.2021	26.4	0.72	PASS
14	DUMPER 60T	KGcat-46	CAT	01.01.2017	16110	13.03.2021	28.0	0.74	PASS
15	DUMPER 60T	KGcat-47	CAT	01.01.2017	16162	13.03.2021	32.4	0.91	PASS
16	DUMPER 60T	KGcat-45	CAT	01.01.2017	15882	15.03.2021	33.7	0.94	PASS
17	DUMPER 60T	KGcat-40	CAT	22.08.2016	15280	15.03.2021	21.8	0.56	PASS
18	SHOVEL	KGS-9	TATA	07.02.2018	13016	15.03.2021	45.2	1.24	PASS
19	SHOVEL	KGS-7	L&T	31.10.2015	24045	15.03.2021	59.5	2.41	PASS
20	SHOVEL	KGS-8	TATA	01.04.2016	9252	15.03.2021	22.5	0.61	PASS
21	SHOVEL	SRI DURGA	L&T KOMAT	23.10.2015	22924	16.03.2021	55.2	1.84	PASS
22	MOTOR GRADER	KGG-4	BEML	12.01.2016	12192	16.03.2021	25.4	0.59	PASS
23	MOTOR GRADER	KGG-3	BEML	14.02.2013	12444	16.03.2021	-	-	BD
24	DUMPER	KGB-50	BEML	17.05.2019	3119	16.03.2021	24.2	0.64	PASS
25	DUMPER	KGB-51	BEML	17.05.2019	2712	16.03.2021	20.1	0.50	PASS
26	WATER SPRINKLER	KGT-4	HM	01.12.2017	5550	8.03.2021	80.3	2.52	FAIL
27	WATER SPRINKLER	KGT-5	BEML	01.12.2017	5681	5.03.2021	51.4	1.67	PASS
28	WATER SPRINKLER	KGT-3	BEML	05.07.2013	12120	5.03.2021	33.7	0.91	PASS
29	LOADER	KGL-2	CAT	02.02.2012	30544	4.03.2021	50.4	1.51	PASS
30	MOTOR GRADER	BMG-2	BEML	09.12.2015	8548	5.03.2021	43.4	1.32	PASS
31	DOZER	KGD-7	KOMAT	26.10.2016	13127	9.03.2021	48.4	1.50	PASS
32	DOZER	KGD-8	L&T	10.07.2017	10550	16.03.2021	43.4	1.29	PASS
33	DOZER	KGD-9	L&T	28.06.2017	9565	16.03.2021	39.4	0.81	PASS
34	DOZER	KGD-5	L&T	09.02.2017	9901	12.03.2021	28.4	0.52	PASS
35	TYRE HANDLER	TH-1	BEML	18.04.2011	988	13.03.2021	58.5	0.92	PASS
36	DRILL	KGDR-4	REL	27.04.2017	6364	15.03.2021	37.2	1.09	PASS
37	CRANE 40T	KGC-3	TIL	03.12.2008	5415	13.03.2021	13.9	0.34	PASS
38	CRANE 40T	KGC-4	TIL	24.11.2016	1328	4.03.2021	29.8	0.81	PASS

39	CRANE	KGC-5	ESCORT	02.08.2018	435	4.03.2021	13.8	0.25	PASS
40	CRANE	KGC-6	ACE	13.09.2018	224	4.03.2021	15.4	0.64	PASS

2021-22

Sl.No	Eqpt. Type/capacity	Eqpt.Name	Make	D.O.C	Running Hrs. As on AUGUST-2021	Tested Date	HSU % 65	K m-1 2.45	Test Status
1	DUMPER 35T	KGB-21	BEML	17.12.2014	16187	26.08.2021	28.3	0.78	PASS
2	SHOVELL	KGS-10	BEML	22.08.2018	6183	25.08.2021	49.4	1.02	PASS
3	DUMPER 35T	KGB-27	BEML	16.10.2015	15213	26.08.2021	28.2	0.13	PASS
4	DUMPER 35T	KGB-28	BEML	10.10.2015	11938	25.08.2021	41.4	0.83	PASS
5	DUMPER 35T	KGB-29	BEML	10.10.2015	11522	25.08.2021	42.0	1.12	PASS
6	DUMPER35T	KGB-38	BEML	20.11.2015	13699	26.08.2021	23.2	0.51	PASS
7	DUMPER 35T	KGB-39	BEML	20.11.2015	11663	25.08.2021	24.2	0.64	PASS
8	DUMPER 35T	C-5	BEML	08.04.2013	14770	26.08.2021	40.2	1.12	PASS
9	DUMPER 35T	C-6	BEML	08.04.2013	12615	26.08.2021	35.5	1.16	PASS
10	DUMPER 60T	KGcat-41	CAT	22.08.2016	22816	25.08.2021	48.2	1.20	PASS
11	DUMPER 60T	KGcat-42	CAT	22.08.2016	19608	26.08.2021	30.2	1.01	PASS
12	DUMPER 60T	KGcat-43	CAT	22.08.2016	18207	25.08.2021	20.1	0.14	PASS
13	DUMPER 60T	KGcat-44	CAT	01.01.2017	17459	26.08.2021	28.9	0.52	PASS
14	DUMPER 60T	KGcat-46	CAT	01.01.2017	17724	25.08.2021	23.3	0.32	PASS
15	DUMPER 60T	KGcat-47	CAT	01.01.2017	17782	26.08.2021	30.2	0.71	PASS
16	DUMPER 60T	KGcat-45	CAT	01.01.2017	17739	25.08.2021	34.3	0.61	PASS
17	DUMPER 60T	KGcat-40	CAT	22.08.2016	16872	25.08.2021	26.3	0.34	PASS
18	SHOVEL	KGS-9	TATA	07.02.2018	15011	26.08.2021	49.1	1.14	PASS
19	SHOVEL	KGS-7	L&T	31.10.2015	26014	25.08.2021	53.2	2.01	PASS
20	SHOVEL	KGS-8	TATA	01.04.2016	9807	27.08.2021	29.4	0.40	PASS
21	SHOVEL	SRI DURGA	L&T KOMAT	23.10.2015	24839	26.08.2021	50.9	1.41	PASS
22	MOTOR GRADER	KGG-4	BEML	12.01.2016	13031	27.08.2021	23.6	0.32	PASS
23	MOTOR GRADER	KGG-3	BEML	14.02.2013	12573	27.08.2021	42.0	0.32	PASS
24	DUMPER	KGB-50	BEML	17.05.2019	4461	27.08.2021	27.5	0.21	PASS
25	DUMPER	KGB-51	BEML	17.05.2019	3755	26.08.2021	24.2	0.30	PASS
26	WATER SPRINKLER	KGT-4	HM	01.12.2017	6192	28.08.2021	64.0	2.41	PASS
27	WATER SPRINKLER	KGT-5	BEML	01.12.2017	6506	25.08.2021	58.3	1.42	PASS
28	WATER SPRINKLER	KGT-3	BEML	05.07.2013	12427	28.08.2021	72.5	2.51	FAIL
29	LOADER	KGL-2	CAT	02.02.2012	31110	29.08.2021	55.4	1.01	PASS
30	MOTOR GRADER	BMG-2	BEML	09.12.2015	9599	29.08.2021	49.0	1.10	PASS
31	DOZER	KGD-7	KOMAT	26.10.2016	14123	29.08.2021	44.2	1.27	PASS
32	DOZER	KGD-8	L&T	10.07.2017	11701	29.08.2021	48.1	1.18	PASS
33	DOZER	KGD-9	L&T	28.06.2017	10757	29.08.2021	33.2	0.52	PASS
34	DOZER	D-5	L&T	09.02.2017	10959	29.08.2021	26.2	0.12	PASS
35	TYRE HANDLER	TH-1	BEML	18.04.2011	NA	29.08.2021	53.7	0.31	PASS
36	DRILL	KGDR-4	REL	27.04.2017	6802	30.08.2021	39.1	1.05	PASS
37	CRANE 40T	KGC-3	TIL	03.12.2008	5415	30.08.2021	-	-	BD
38	CRANE 40T	KGC-4	TIL	24.11.2016	1328	28.08.2021	26.3	0.42	PASS
39	CRANE	KGC-5	ESCORT	02.08.2018	435	28.08.2021	27.2	0.11	PASS
40	DUMPER-35-2	KGB-38	BEML	20.11.2015	13699	28.08.2021	48.5	0.31	PASS
41	CRANE	KGC-2	ACE	03.05.2011	5236	28.08.2021	41.0	0.37	PASS
42	CRANE	KGC-6	ACE	13.09.2018	224	27.08.2021	35.2	0.61	PASS

Sl.No	Eqpt. Type/capacity	Eqpt.Name	Make	D.O.C	Running Hrs. As on March-2022	Tested Date	HSU % 65	K m-1 2.45	Test Status
1	DUMPER 35T	KGB-21	BEML	17.12.2014	116393	19.03.2022	25.4	0.73	PASS
2	SHOVELL	KGS-10	BEML	22.08.2018	7232	"	44.5	1.21	PASS
3	DUMPER 35T	KGB-27	BEML	16.10.2015	15808	"	29.4	0.43	PASS
4	DUMPER 35T	KGB-28	BEML	10.10.2015	12036	"	37.4	0.84	PASS
5	DUMPER 35T	KGB-29	BEML	10.10.2015	12412	"	42.5	0.18	PASS
6	DUMPER35T	KGB-38	BEML	20.11.2015	14175	"	29.3	0.52	PASS
7	DUMPER 35T	KGB-39	BEML	20.11.2015	12315	26.03.2022	26.5	0.32	PASS
8	DUMPER 35T	C-5	BEML	08.04.2013	14915	"	49.3	1.04	PASS
9	DUMPER 35T	C-6	BEML	08.04.2013	12800	"	52.5	0.31	PASS
10	DUMPER 60T	KGcat-41	CAT	22.08.2016	20524	"	44.2	1.21	PASS
11	DUMPER 60T	KGcat-42	CAT	22.08.2016	21891	"	39.3	1.01	PASS
12	DUMPER 60T	KGcat-43	CAT	22.08.2016	19900	21.03.2022	25.4	0.41	PASS
13	DUMPER 60T	KGcat-44	CAT	01.01.2017	19730	"	28.2	0.47	PASS
14	DUMPER 60T	KGcat-46	CAT	01.01.2017	19889	"	26.0	0.24	PASS
15	DUMPER 60T	KGcat-47	CAT	01.01.2017	18989	"	36.2	0.85	PASS
16	DUMPER 60T	KGcat-45	CAT	01.01.2017	20050	"	35.3	0.53	PASS
17	DUMPER 60T	KGcat-40	CAT	22.08.2016	18214	"	28.5	0.51	PASS
18	SHOVEL	KGS-9	TATA	07.02.2018	17310	"	42.7	1.02	PASS
19	SHOVEL	KGS-7	L&T	31.10.2015	27978	"	53.4	2.31	PASS
20	SHOVEL	KGS-8	TATA	01.04.2016	10760	"	26.2	0.35	PASS
21	SHOVEL	SRI DURGA	L&T KOMAT	23.10.2015	27300	22.03.2022	55.1	1.05	PASS
22	MOTOR GRADER	KGG-4	BEML	12.01.2016	14133	"	28.2	0.54	PASS
23	MOTOR GRADER	KGG-3	BEML	14.02.2013	12857	"	41.0	0.73	PASS
24	DUMPER	KGB-50	BEML	17.05.2019	6203	25.03.2022	27.5	0.31	PASS
25	DUMPER	KGB-51	BEML	17.05.2019	5251	"	29.5	0.42	PASS
26	WATER SPRINKLER	KGT-4	HM	01.12.2017	6737	"	57.3	1.04	PASS
27	WATER SPRINKLER	KGT-5	BEML	01.12.2017	6927	"	56.4	1.42	PASS
28	WATER SPRINKLER	KGT-3	BEML	05.07.2013	12509	"	75.7	2.52	FAIL
29	LOADER	KGL-2	CAT	02.02.2012	31159	"	39.5	1.05	PASS
30	DUMPER	BEML-4	BEML	3.12.2014	15941	23.03.2022	43.2	0.96	PASS
31	DUMPER-35-2	BEML-5	BEML	21.11.2015	13550	"	34.7	1.05	PASS
32	LOADER	L-2	CAT	19.07.2021	12096	"	49.5	0.95	PASS
33	MOTOR GRADER	BMG-2	BEML	09.12.2015	10801	"	47.3	1.05	PASS
34	DOZER	KGD-7	KOMAT	26.10.2016	12483	"	45.7	1.30	PASS
35	DOZER	KGD-8	L&T	10.07.2017	11665	"	42.2	1.23	PASS
36	DOZER	KGD-9	L&T	28.06.2017	13049	24.03.2022	35.8	0.74	PASS
37	DOZER	KGD-5	L&T	09.02.2017	15459	"	43.4	0.15	PASS
38	TYRE HANDLER	TH-1	BEML	18.04.2011	988	"	74.5	2.51	FAIL
39	DRILL	KGDR-4	REL	27.04.2017	7436	"	35.7	1.03	PASS
40	CRANE 40T	KGC-3	TIL	03.12.2008	NA	29.03.2022	-	-	BD
41	CRANE 40T	KGC-4	TIL	24.11.2016	1328	"	27.4	0.52	PASS
42	CRANE	KGC-5	ESCORT	02.08.2018	435	"	19.6	0.13	PASS
43	CRANE	KGC-6	ACE	13.09.2018	224	"	19.9	0.85	PASS



CORPORATE ENVIRONMENTAL RESPONSIBILITY

1. ENVIRONMENTAL POLICY OF SCCL

The Environmental policy and its objectives have been approved by SCCL Board of Directors on 11.11.2011 and copy of Board minute is enclosed as Annexure.

Policy:

"To be a role model in protection of environment for sustainable development, SCCL is committed to implement the best global practices in all its operations through prevention / mitigation of pollution, proper disposal / recycling of wastes and bringing awareness among all the stakeholders for continual improvement in environmental performance"

Objectives:

- To take account of environment concerns in planning and decision-making.
- Compliance of conditions imposed in Environmental Clearance, Forestry Clearance, CFE, CFO and other statutory clearances issued by regulatory agencies.
- To prevent pollution of surrounding habitation by continuous monitoring and measurement of Environmental parameters.
- Identification of significant impacts and preparation of environment management systems for implementation at mines / units.
- To reclaim the mined out areas concurrent to mining operations and take suitable measures for conservation of adjacent forests, wildlife and bio-diversity.
- To reduce waste generation and promote recycling of materials, wherever possible.
- Optimum utilization of resources i.e. Electricity, Oil and Water.
- To take up developmental works in surrounding villages as a part of corporate social responsibility.
- To provide appropriate training and disseminate information to enable all the employees to accept individual responsibility for environment protection, implement best practices and work in partnership to create a culture of continual improvement.

Guidelines for implementation of environmental policy of SCCL

For effective implementation of environmental policy and its objectives, necessary guidelines and targets will be framed from time to time. Initially, certain guidelines have been framed in different facets of environmental management for bringing uniformity in planning, execution and monitoring systems thereby ensuring environmentally sustainable coal mining operations).

In order to fulfil the objectives of Environmental Policy, the following guidelines have been framed in different facets of environmental management for bringing uniformity in planning, execution and monitoring systems thereby ensuring environmentally sustainable coal mining operations.

The Environmental Policy, objectives and guidelines were circulated to all the mines, departments and other units for implementation. Also, necessary arrangements were made for display of the same at the conspicuous places for bringing awareness among the employees of SCCL.

Guidelines for implementation of Environmental Policy

Sources / Activities	Recommended control measures
A. Planning of New / Expansion Projects	
1. Planning	i. Due care shall be taken in addressing all the environmental issues while formulating a project proposal. ii. It shall be ensured at the planning stage itself that forest lands, high-

Sources / Activities	Recommended control measures
	<p>yielding agricultural lands, habitations, water bodies shall be avoided for location of dump sites.</p> <p>iii. Conservation of ecologically sensitive areas, if any, located near the project area shall be given due consideration.</p> <p>iv. EIA/EMP shall be prepared with proper environmental safeguards along with sufficient fund provision.</p>
B. Air Pollution Control	
1. Drilling	i. Wet drilling mechanism shall be adopted.
2. Blasting	<p>v. Blasting in Opencast Mines shall be conducted during favourable weather conditions using NONELs with proper design of blasthole geometry & optimum quantity of explosives.</p> <p>vi. Use of delay detonators shall be adopted in underground mines in order to reduce ground vibrations.</p> <p>vii. Blast site shall be wetted before and after blasting.</p>
3. HEMM	i. Regular Maintenance of all Diesel operated HEMMs shall be done as per the manufacturer's schedule for effective control of exhaust emissions.
4. Haul Roads	<p>i. All service roads shall be metalled and well maintained.</p> <p>ii. All haul roads and service roads shall be regularly sprayed with water.</p> <p>iii. Plantation shall be done alongside the haul and service roads.</p>
5. Over Burden	<p>i. Inoperative dumps shall be subjected to technical and biological reclamation.</p> <p>ii. Plantation shall be done over and around OB dumps to ensure stability of slopes and prevention of dust generation by wind action.</p>
6. Coal Handling	<p>i. Crusher house and belt conveyors shall be enclosed and mist spray arrangement installed at all receiving points, transfer points, Ground bunkers and loading points.</p> <p>ii. Plantation shall be done all around the Coal Handling Plant (CHP).</p>
7. Coal Transport	<p>i. Wherever feasible, transportation outside the ML area will be by rail / conveyor system</p> <p>ii. The width of transportation road shall be designed in such a way that no vehicle shall ply on the unpaved road.</p> <p>iii. Coal Transport trucks shall be optimally loaded and covered with tarpaulin for preventing spillage during transportation.</p>
C. Water Pollution Control	
1. Surface	<p>i. Garland drains shall be made around quarry and OB dumps to collect run off water and siltation points of sufficient size shall be provided for collection of silt.</p> <p>ii. OB dump run off to be desilted through settling tanks before discharge into natural streams. Contour drains to be constructed along the slopes of OB dumps.</p> <p>iii. Toe walls to be constructed around the OB dump with boulders collected</p>

Sources / Activities	Recommended control measures
	<p>from OB material.</p> <p>iv. A berm with dimensions of not less than two metres height and 2 metres width at the top shall be made in trapezium shape all along the edge of each deck to prevent erosion of dumps and gully formation.</p> <p>v. The terrace shall be kept free of obstructions (OB heaps), sloped in bye and maintained with uniform gradient for free flow of water in order to avoid accumulation of water leading to gully formation and dump slides.</p> <p>vi. The coal washery should adopt proven internationally accepted technology of continuous operating and with zero effluent discharge system.</p>
2. Mine Water	i. Mine water shall be treated in filter beds for domestic consumption. Excess mine water shall be treated in settling ponds before discharging in to natural streams.
3. Workshop and CHP	<p>i. Effluent coming out from workshops shall be treated in an Effluent Treatment Plant containing an oil / grease trap and sedimentation tank. The treated water is to be stored and reused in the workshop itself.</p> <p>ii. ETP shall be constructed for treating CHP effluents and adoption of closed water circuit in CHP shall be adopted thereby ensuring zero discharge.</p>
4. Domestic Effluent	<p>i. In isolated building or housing complexes septic tanks and soak pits to be provided.</p> <p>ii. In large townships, complete sewerage system including sewage treatment facilities shall be adopted.</p> <p>iii. Community and service building shall be provided with adequate sewage treatment facilities.</p>
5. Hazardous and Bio-medical wastes	<p>i. Hazardous wastes like used oil with barrels, waste oil with barrels, used transformer oil with barrels, scrapped batteries, iron scrap, copper cables, scrapped cap lamp accumulators, empty oil and grease drums shall be handled and disposed off in accordance with the procedure laid down in HWM Rules.</p> <p>ii. Used oil, spent oil, batteries and copper cables shall be disposed off to the recyclers having valid registration from CPCB/APPCB for recycling or recovery, whereas the empty oil and grease barrels shall be detoxified prior to their disposal to outside agencies.</p> <p>iii. Bio-medical wastes shall be handled and disposed off as per the latest guidelines issued by MoEF.</p>
D. Noise Pollution Control	
1. Drilling	<p>i. Controlled blasting methods with proper spacing, burden and stemming shall be adopted to get optimum results.</p> <p>ii. Blast holes should be judiciously charged to control noise and blast vibrations</p>

Sources / Activities	Recommended control measures
2. HEMM	<ul style="list-style-type: none"> i. Providing of sound proof cabins for the workers deployed on machines producing higher levels of noise like dozers, shovels, dumpers, drills and feeder breakers etc. ii. The engine exhausts of HEMM to be fitted with mufflers. iii. HEMM to be properly maintained and operators to be provided with ear mufflers / ear plug. iv. Reducing the exposure time of workers to the higher noise levels shall be practiced.
3. CHP	<ul style="list-style-type: none"> i. Belt drive or roller drive systems shall be used instead of gear train system which results in considerable noise reduction.
4. Exhaust Fan in UG mines	<ul style="list-style-type: none"> i. The main mechanical ventilator shall be installed in acoustically designed enclosed chambers with evasee. ii. Thick green belt shall be developed around the fan house for attenuation of noise.
E. Energy / Water Conservation Measures	
1. Electricity	<ul style="list-style-type: none"> i. CFLs and energy efficient appliances shall be used at mines, allied units and colonies. ii. Efforts shall be made for utilization of renewal sources of energy like solar and wind power.
2. Oil	<ul style="list-style-type: none"> i. Periodical maintenance of vehicles including fine tuning of engines shall be done to improve their fuel efficiency. ii. Leakage and spillage of oils during transport and usage shall be avoided.
3. Water	<ul style="list-style-type: none"> i. Wastage of water resulting from leakages through distribution pipelines and overflow from overhead tanks shall be arrested. ii. Summer storage tanks shall be constructed in all the mining areas for rain water harvesting and augmentation of ground water recharge.
F. Land Management	
1. Top soil	<ul style="list-style-type: none"> i. Top soil shall be stacked at earmarked place and shall be used only in reclamation of OB dumps. ii. Top soil shall invariably be removed from the site allocated for external dumping of OB material, to conserve precious natural resource and ensure better stability of dumps.
2. Reclamation	<ul style="list-style-type: none"> i. Reclamation of mined out areas including external OB dumps and back filled areas shall be taken up concurrent with progress of mining operations as per the EMP. ii. Native species shall be selected for dump plantation in order to achieve better survival rate. iii. The voids left over after cessation of mining operations shall be converted in to water bodies.
3. Subsidence Management	<ul style="list-style-type: none"> i. The cracks / pot holes formed on surface as a result of subsidence due to UG mining shall be filled with OB material and compacted.

Sources / Activities	Recommended control measures
	ii. Garland drains shall be provided around the subsidence areas to avoid inrush of water in to Underground workings.
4. Green Belt Development	i. Extensive plantation shall be taken up in colonies, vacant lands, degraded forest lands and surface area of UG mines. ii. Gap plantation shall be taken up wherever the survival rate is poor. iii. Avenue plantation shall be taken up alongside the roads.
G. Environmental Monitoring	
1. Environmental Monitoring for pollution mitigation	i. Monitoring of ambient air quality, ground & surface water quality, effluent discharge quality, noise & blast vibrations, phreatic surface levels, subsidence, HEMM exhaust emissions shall be carried out as per the stipulated norms and corrective measures shall be taken for mitigation of pollution.
2. Satellite surveillance	i. Satellite surveillance of all opencast mines shall be carried out once in three years for change detection analysis in land use / land cover in core and buffer zone of the project.
H. Environmental Awareness	
1. Environmental Awareness	i. Environmental awareness programmes shall be conducted in all mining areas to bring awareness among the employees regarding the environmental policy, its objectives and measures to be taken to safeguard the environment. ii. Awareness programmes shall be conducted on energy, oil and water conservation. iii. Awareness shall be created in the employees and general public on the ill-effects of plastics usage and educate them to use alternatives.

2. STANDARD OPERATING PROCEDURE TO BRING IN TO FOCUS DEVIATIONS/ VIOLATIONS OF ENVIRONMENTAL OR FOREST NORMS/CONDITIONS

At Project Level

An Environment Management Committee (EMC) is constituted at the project level consisting of following members to monitor the implementation of EMP and other environmental protection measures.

- i. Project Officer
- ii. Staff Officer to General Manager
- iii. Area Environmental Officer
- iv. Area Forestry Officer
- v. Area Civil Engineer
- vi. Regional Hydro-geologist
- vii. Area Survey Officer

Functions of Project level EMC:

- Monitoring of Environmental safeguards

- Compliance of conditions stipulated in Environmental Clearance, Forest Clearance (if Forestland involved in the project), Wildlife Clearance (if applicable), Consent for Establishment and Operation issued under Air (Prevention and Control of Pollution) Act 1981 and Water (prevention and Control of Pollution) Act 1974, Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008 , Ground water Clearance, No Objections Certificates (NoCs) from any other department, etc.
- Review of the compliance of above conditions during periodical review meetings
- Reporting of non-compliances and action plan for rectification to the Area General Manger and General Manager (Environment).

Corporate level

General Manager (Environment) and his team of officers from Corporate Environment Department will periodically inspect the projects for monitoring the implementation of EMP, EC conditions, CFE & CFO conditions and environmental status of the project surroundings and give necessary guidelines to the project authorities in case of any deviation in the compliance of clearance conditions. Corporate Environment Department will also appraise the higher authorities in case of major violation/ deviations in compliance of environmental norms/ conditions.

3. HIERARCHICAL SYSTEM OF THE COMPANY TO DEAL WITH ENVIRONMENTAL ISSUES AND FOR ENSURING COMPLIANCE WITH EC CONDITIONS

Project Officer /Agent, in-charge of the Opencast / Underground Mine is responsible for implementation of the approved EMP and various conditions of EC, FC and CFO. Area Environmental Officer will assist the Project Officer /Agent in ensuring the compliance of conditions. Area General Manager is responsible for compliance of norms in all the mines falling under his jurisdiction.

General Manager (Environment) will monitor the compliance of environmental norms in all the areas of SCCL. Chief General Manager (Corporate Planning & Projects) will be reviewing the environmental issues for ensuring compliance of norms/conditions. Director (Planning & Projects) and Director (Operations), who are the members of the SCCL Board of Directors, will review the overall compliance of statutory norms in the organization.

4. SYSTEM OF REPORTING NON-COMPLIANCES/VIOLATIONS OF ENVIRONMENTAL NORMS TO THE BOARD OF DIRECTORS AND/OR SHAREHOLDERS OR STAKEHOLDERS

Environmental Management Committee will monitor the implementation of environmental norms/conditions and reports any deviations to the concerned Project Officer. The Project Officer will take suitable corrective measures with the guidance of Area Environmental Officer. The non-compliances, if any, which require the intervention of higher authorities will be brought to the notice of Area General Manager. The Area General Managers will inform the deviations / non-compliances to Corporate Environment Department and concerned Functional Director.

Corporate Environment Department is headed by General Manager (Environment) who works directly under GM (CP&P) who in turn reports to Director (Planning & Projects). Regular review meetings will be conducted by Director (Planning & Projects) for reviewing the compliance of EC/FC/CFO conditions. In addition to the above, General Manager (Environment) will periodically appraise non-compliance of EC conditions to GM (CP&P). GM (CP&P) will appraise these issues to Director (Planning & Projects) and Director (Operations), the members of the SCCL Board of Directors, who in turn will appraise to Chairman & Managing Director of the company.

042032

No. F-2894-FC
GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT & FORESTS

PARYAVARAN-BHAWAN
C.O.O COMPLEX, LODHI ROAD
NEW DELHI-110003

Office of ...
27-10-2000
Dated 28.09.2000

To,
The Secretary (Forests)
Government of Andhra Pradesh,
Hyderabad.

Sub: Diversion of 39.65 hectare of forest land for mine entry and infrastructure for Khairguda underground mining project in favour of M/S SCCL in Adilabad district, Andhra Pradesh.

Sir,

I am directed to refer to your letter no. 1015/FC for 177-125 dated 12.12.97 on the above mentioned subject seeking prior approval of the Central Govt. in accordance with section-2 of Forest (Conservation) Act, 1980.

1) After careful consideration of the proposal of the State Govt. and as per the recommendation of the Forest Advisory Committee constituted under Section 3 of the aforesaid Act, Central Govt. conveys its approval under section-2 of Forest (Conservation) Act, 1980 for diversion of 29.85 hectare of forest land (9.85 hectare of surface land is for mine entry and 20 hectare is for approach road and power transmission line) as per details given below:

a) Mining (Stone etc.)	1.007 hectare
b) Storing of material etc.	2.04 hectare
c) Coal handling arrangement	0.45 hectare
d) Storing tools & machinery	0.650 hectare
e) Construction of building/power station etc.	1.500 hectare
f) Township housing colony construction of road, T/L	1.650 hectare
g) Indirectly affected area (used for plantation etc.)	2.543 hectare
Sub Total	9.850 hectare
h) For approach roads & power transmission line	20.000 hectare
Total	29.850 hectare

in favour of M/S SCCL for mine entry and infrastructure for Khairguda underground project in Adilabad district subject to following conditions:

- The legal status of forest land shall remain unchanged.
- The forest area being diverted shall be demarcated on ground by ROC pillars at the cost of user agency.

11/10/2000
M/S SCCL
28/9/2000

- 1. Complete area under permission will be raised over equivalent forest land in Tandur Kilsa and Tankirapally villages of Tandur Mandal at the cost of user agency within a period of 36 months, during which the permission will be valid. This area will be declared as protected/reserved forest under Indian Forest Act, 1927.
 - 2. Both sides of the road will be fenced and
 - 3. The user agency will ensure that no structure comes up along the proposed road and this road will be protected as private road.
 - 4. The road will be filled as and when required upto the forest minimum.
 - 5. Check posts will be created at both ends of the road equipped with proper communication facilities along with adequate staff at the cost of user agency.
 - 6. It shall be ensured that no damage and encroachment takes place on adjoining forest areas.
 - 7. The forest area will not be used for any purpose other than specified in the proposal.
 - 8. Any other conditions may be imposed by State Govt. or CCF(C), Regional Office, Lucknow, time to time in the interest of conservation and development of forest lands in this area.
- In case of non-compliance or non-fulfillment of any of the stipulated conditions the Central Government may revoke this permission.

Yours faithfully,
 (V.B. Kumar)
 A.I.G.(FC)

- 1. P.O.
- 2. C.P. Govt. of Andhra Pradesh, Hyderabad.
- 3. Additional Officer, O/O PCCF Govt. of Andhra Pradesh, Hyderabad.
- 4. CCF(C), Regional Office, Bangalore.
- 5. Guard file.
- 6. (2/11/00)
- 7. User Agency

V.B. Kumar
 (V.B. KUMAR)
 A.I.G.

Dt. 14.10.2000

Estates/Hy/2000

Copy forwarded for kind information:

- 1. Director (P&P)
- 2. E.O. P & T(I)
- 3. S.M.A. (C P&P)
- 4. S.M. (PP)
- 5. S.M. Sp. I
- 6. Chief of Estates I

Necessary follow-up action for issuance of G.O. by State Government is being taken up.

And
 AEO/HYD.

F.No. B-102/2000AFC
 Government of India
 Ministry of Environment and Forests
 (F. C. Division)

Paryavaran Bhawan,
 CGO Complex, Lodhi Road,
 New Delhi - 110003.
 Dated: 10 September, 2001

To,
 The Principal Secretary (Forests),
 Government of Andhra Pradesh,
 Hyderabad.

Sub. : Diversion of 140.30 ha. of forest land for Khairaguda Opencast Project in favour of M/s SCCL in Adilabad district, Andhra Pradesh.

Sir,

I am directed to refer to your letter No. 8560/For.I(1)/2000-1, dated 22-09-2000 and of even number dated 09-08-2001 on the above mentioned subject seeking prior approval of the Central Government in accordance with Section 2 of the Forest (Conservation) Act, 1980 and to say that the proposal has been examined by the Forest Advisory Committee constituted by the Central Government under Section 3 of the aforesaid Act.

After careful consideration of the proposal of the State Government, the Central Government hereby conveys its approval under Section 2 of the Forest (Conservation) Act, 1980 for diversion 140.30 ha. of forest land for Khairaguda Opencast Project in favour of M/s SCCL in Adilabad district, Andhra Pradesh, subject to fulfilment of the following conditions:

1. Legal status of the forests shall remain unchanged.
2. Compensatory afforestation shall be raised and maintained over equivalent non-forest land at the project cost by the State Forest Department.
3. The non-forest land shall be notified as Reserved Forest under Indian Forest Act, 1927 by the State Government immediately.
4. The mining lease area shall be demarcated on ground using four feet high RCC pillars, each written with the serial number, forward and backward bearings and distance from pillar to pillar.
5. Fencing, protection and regeneration of the safety zone area will be done at the project cost. Besides this, afforestation on degraded forest land, to be selected elsewhere, measuring about one and a half times the area under safety zone, will be done at the project cost.
6. Tree felling shall be done only when it becomes indispensable, under the supervision of the State Forest Department.
7. No damage to the flora and fauna of the area shall be caused.
8. No construction shall be allowed on the forest land.

- The forest land shall not be used for any purpose other than that specified in the proposal.
10. The approval under the Forest (Conservation) Act, 1980 is subject to clearance under the Environment (Protection) Act, 1986, if required.
 11. The Reclamation Plan and the Rehabilitation Plan shall be implemented in spirit, which shall be monitored regularly by the State Forest Department.
 12. It shall be ensured that no labour-camps are set up inside the forest area.
 13. The labourers shall be provided coal free of cost by the User Agency.
 14. Any other condition that the State Government and/or the CCF (Central), Regional Office, Bangalore, may like to impose from time to time for protection and improvement of flora and fauna in the forest area.

Yours faithfully,

(Sandeep Kumar)
Assistant Inspector General of Forests

Copy to:

1. The Principal Chief Conservator of Forests, Andhra Pradesh, Hyderabad.
2. Nodal Officer, O/o The PCCF, Andhra Pradesh, Hyderabad.
3. The CCF(Central), Regional Office, Bangalore.
4. The Executive Director (P&TM), E/s SCCL, Kothagudam Collieries, Bhadrachalam Road Railway-Station, Andhra Pradesh-507101.
5. Guard file.


(Sandeep Kumar)
Assistant Inspector General of Forests

F. No. 8-28/94-FC
Government of India
Ministry of Environment and Forests
(F.C. Division)

C.No 28429

Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi - 110 003.
Dated: 1st July, 2011

The Principal Secretary to the Government,
Environment, Forests, Science & Technology Department,
Andhra Pradesh Secretariat,
Hyderabad.

14/7/11 Sub. Diversion of 126.71 ha of forest land in Chopra R.F. of Bellampalli Division for
Khairaguda OCP (in addition to 29.85 ha of forest land already diverted in 2000) in
favour of S.C.C.L.

F-11
A-1
Sir, I am directed to refer to State Government of Andhra Pradesh's letter No. 9456/FOR.I(1)/2008-1 dated 24.12.2008 on the above mentioned subject on the above-mentioned subject seeking prior approval of the Central Government in accordance with Section 2 of the Forest (Conservation) Act, 1980. After careful consideration of the proposal by the Forest Advisory Committee constituted by the Central Government under Section-3 of the said Act, in-principle approval for the said diversion was granted vide this Ministry's letter of even number dated 13th November, 2009 subject to fulfillment of certain conditions. The State Government has furnished compliance report in respect of the conditions stipulated in the in-principle approval and has requested the Central Government to grant final approval.

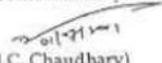
2. In this connection, I am directed to say that on the basis of the compliance report furnished by the State Government of Andhra Pradesh vide letter No. 9456/FOR.I(1)/2008 dated 22.10.2010 and No. 9456/FOR.I(1)/2008 dated 28.05.2011, approval of the Central Government is hereby granted under Section-2 of the Forest (Conservation) Act, 1980 for diversion of 126.71 ha of forest land in Chopra R.F. of Bellampalli Division for Khairaguda OCP (in addition to 29.85 ha of forest land already diverted in 2000) in favour of S.C.C.L., subject to fulfillment of the following conditions:

- (i) The legal status of the forest land shall remain unchanged;
- (ii) Compensatory Afforestation shall be raised and maintained by the State Forest Department on equivalent forest land from the funds realized from the user agency;
- (iii) The non-forest land transferred and mutated in the name of State Forest Department for raising compensatory afforestation shall be declared as Reserved Forest. The Nodal Officer, Forest (Conservation) Act, 1980, State Government of Andhra Pradesh shall report compliance within six months;

- (iv) Additional amount of the NPV of the diverted forest land, if any, becoming due after finalization of the same by the Hon'ble Supreme Court of India on receipt of the report from the Expert Committee, shall be charged by the State Government from the User Agency.
- (v) Fencing, protection and regeneration of the safety zone area (7.5 meters strip all along the outer boundary of the mining lease area as recommended by the State Government) shall be done at the project cost. Besides this, afforestation on degraded forest land, to be selected elsewhere, measuring one and a half times the area under safety zone i.e. 7.5 mt, shall also be done at the project cost;
- (vi) Wherever possible and technically feasible, the User Agency shall undertake afforestation measures in the blanks within the lease area, as well as along the roads outside the lease area diverted under this approval, in consultation with the State Forest Department at the project cost;
- (vii) The User Agency shall take up afforestation in the forest areas surrounding mining lease in 100 Meters radius from the lease boundary wherever density of growth is less than 0.4 and protect it till life of the Project in consultation with State Forest Department. As the nearby area is having good wildlife and good density of growth the User Agency shall take up habitation improvement programme as per Plan prepared and approved by the Chief Wildlife Warden and maintain the area till life of the Project. The cost for this habitat improvement plan shall be deposited with the concerned Divisional Forest Officer;
- (viii) De-silting of the village tanks falling within 5 Kms radius from the lease boundary shall be taken up by the user agency at regular intervals;
- (ix) Following activities shall be undertaken by the User Agency at the project cost:
- (a) Proper mitigative measures to minimize soil erosion and choking of streams shall be prepared and implemented;
 - (b) Planting of adequate drought hardy plant species and sowing of seeds to arrest soil erosion;
 - (c) Construction of check dams, retention / toe walls to arrest sliding down of the excavated material along the contour along all the decks of the overburdens.
 - (d) The areas shall be reclaimed keeping in view the international practice of stabilizing the dumps by grading / benching so that angles of repose (normally less than 28° at any given place) are maintained;
 - (e) The top soil management plan should be strictly adhered to; and
 - (f) Any tree felling shall be done only when it is absolutely necessary and unavoidable, and that too under strict supervision of the State Forest Department

- (x) Demarcation of mining lease area will be done on the ground at project cost using four feet high reinforced cement concrete pillars with serial numbers, forward and back bearings and distance from pillar to pillar;
- (xi) The forest land shall not be used for any purpose other than that specified in the proposal;
- (xii) The approval under the Forest (Conservation) Act, 1980 is subject to the clearance under the Environmental Protection Act, 1986;
- (xiii) The period of permission for lease under the Forest (Conservation) Act, 1980 shall be co-terminus with the existing mining lease or 20 years whichever is less, subject to possession of valid lease by user agency under the MMDR Act, 1957;
- (xiv) Mining/reclamation schedule shall be implemented by the user agency at their cost as per Environmental Management Plan / phased programme;
- (xv) The user agency shall also take up study on yearly basis on soil erosion / soil flow from the over-burden areas with the help of GIS in consultation with the forest department.
- (xvi) The user agency shall take up the de-silting of the village tanks within five km area from the mine lease boundary so as to mitigate the impact of siltation of such tanks whenever required.
- (xvii) Any other condition that the Chief Conservator of Forests (Central) Regional Office Bangalore may impose from time to time in the interest of conservation protection or development of forests.
- (xviii) All other conditions under different rules, regulations and guidelines including environmental clearance and forest rights of tribals and other forest dweller shall be complied with.

Yours faithfully,


(H.C. Chaudhary)

Assistant Inspector General of Forests

Copy to:-

1. The Principal Chief Conservator of Forests, Government of Andhra Pradesh, Hyderabad.
2. The Nodal Officer, Office of the PCCF, Govt. of Andhra Pradesh, Hyderabad.
3. The Chief Conservator of Forests (Central), Bangalore.
4. The User Agency
5. RO (HQ), MoEF, New Delhi
6. Monitoring cell of the FC Section
7. Guard file.


(H.C. Chaudhary)

Assistant Inspector General of Forests



TELANGANA STATE POLLUTION CONTROL BOARD
 PARYAYARAN BHAYAN, A-3, INDUSTRIAL ESTATE,
 SANATHNAGAR, HYDERABAD - 500 018

Phone: 23887500
 Fax: 040 - 23815631
 Website: www.appcb.ap.nic.in

REGD.POST WITH ACK.DUE

CONSENT ORDER FOR ESTABLISHMENT

Order No. 02/TSPCB/CFE/RO-NZM/HO/2015 1693

Dt. 04.11.2015

Sub: PCB - CFE - M/s. Singareni Collieries Co.Ltd., Khairagura Open Cast Expansion Project, Borjam (V), Tiryani (M), Adilabad Dist - Consent for Establishment of the Board for **expansion** under Sec.25 of Water (P & C of P) Act, 1974 and Under Sec.21 of Air (P&C of P) Act, 1981 - Issued - Reg.

Ref: 1) Environmental Clearance dt. 06.02.2015 issued by MOE&F, GOI.
 2) Industry's application dt. 28.05.2015.
 3) R.O's inspection report dt. 04.07.2015.
 4) CFE Committee meeting held on 05.10.2015

1. In the reference 2nd cited, an application was submitted to the Board seeking Consent for Establishment (CFE) for Establishment of the Board for **expansion** to produce the following with installed capacities as mentioned below, with a project cost of Rs. 133.56 Crores in the same existing ML Area of 1217.50 Ha.

S.No	Products / Activity	Capacity
1.	Coal Mining	Expansion from 3.0 MTPA to 3.75 MTPA

2. As per the application, the above activity is to be located at Borjam (V), Tiryani (M), Adilabad District in an area of 1217.50 Ha.
3. The above site was inspected by the Asst. Environmental Engineer, Regional office, Nizamabad, T.S Pollution Control Board on 04.07.2015 and observed that the site is surrounded by
- North** : Reserved forest followed by Vatti Vagu reservoir.
South : Reserved forest and hillocks.
East : Reserved forest and hillocks.
West : Reserved forest and hillocks
4. The Board, after careful scrutiny of the application and verification report of Regional Officer, hereby issues **CONSENT FOR ESTABLISHMENT for expansion** to your unit Under Section 25 of Water (Prevention & Control of Pollution) Act 1974 and Section 21 of Air (Prevention & Control of Pollution) Act, 1981 and the rules made there under. **This order is issued to manufacture the products as mentioned at para (1) only.**
5. This Consent Order now issued is subject to the conditions mentioned in Schedule 'A' and Schedule 'B'.

5. This order is issued from pollution control point of view only. Zoning and other regulations are not considered.

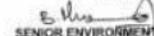
Encl: Schedule 'A'
Schedule 'B'

Sd/-
MEMBER SECRETARY

To,
M/s. Singareni Collieries Co.Ltd.,
Khairagura Open Cast Expansion Project,
Borjani (V), Tiriyani (M),
Adilabad District.

Copy to: 1. The JCEE, Z.O. R.C. Puram for information and necessary action.
2. The E.E., R.O. Nizamabad for information and necessary action.

/(T.C.F.B.O/)


SENIOR ENVIRONMENTAL ENGINEER

SCHEDULE - A

1. Progress on implementation of the project shall be reported to the Regional Office, Nizamabad, T.S. Pollution Control Board once in six months.
2. The proponent shall obtain Consents for operation from TSPCB, as required Under Sec.25/26 of the Water (P&C of P) Act, 1974 and under sec. 21/22 of the Air (P&C of P) Act, 1981, before commencement of the activity.
3. Notwithstanding anything contained in this conditional letter or consent, the Board hereby reserves its right and power Under Sec.27(2) of Water (Prevention and Control of Pollution) Act, 1974 and Under Sec.21(4) of Air (Prevention and Control of Pollution) Act, 1981 to review any or all the conditions imposed herein and to make such alternation as deemed fit and stipulate any additional conditions by the Board.
4. The Consent of the Board shall be exhibited in the factory premises at a conspicuous place for the information of the inspecting officers of different departments.
5. Compensation is to be paid for any environmental damage caused by it, as fixed by the Collector and District Magistrate as civil liability.
6. Rain Water Harvesting (RWH) structure (s) shall be established on the plant site. The proponent shall ensure that effluent shall not enter the Rain Water harvesting structure.
7. The rules and regulations notified by Ministry of Law and Justice, GOI, regarding the Public liability insurance Act, 1991 shall be followed.
8. This order is valid for period of 3 years from the date of issue.

SCHEDULE - B**Water:**

1. The source of water is from Mine discharge water. The maximum permitted water consumption is 2490 KLD.

Sl. No.	Description	Quantity (KLD)
	Mine seepage	11430 KLD
a)	Process & wash (Dust suppression, plantation and washing of HEMM)	2300 KLD
b)	Domestic	70 KLD
c)	Service water	60 KLD
	Total	2490 KLD

2. The maximum Waste Water Generation (KLD) shall not exceed the following:

Sl. No.	Description	Quantity (KLD)
a)	Mines excess water discharge	9780 KLD
b)	Process	
c)	Washings	96 KLD
d)	Domestic & others	56 KLD
	Total	9932 KLD

3. Treatment & disposal :			
S. No	Source of Effluent	Treatment proposed	Mode of final disposal
A)	Process & wash	Sedimentation tank, settling tank, oil and grease etc.,	Let out into the surface drainage from ground water recharging / Agriculture
B)	Sanitation	Septic tank followed by soak pit	Plantation

4. The Effluent Treatment Plant (ETP) shall be constructed and commissioned along with the commissioning of the activity. All the units of the ETP shall be impervious to prevent ground water pollution.
5. The effluents shall be treated to the on land for irrigation standards, stipulated under Environment (Protection) Rules, 1986, notified and published by Ministry of Environment and Forests, Government of India as specified in Schedule VI vide G.S.R.422 (E), dt.19.05.1993 and its amendments thereof, and additional standards / conditions stipulated by TSPCB.
6. Separate meters with necessary pipe-line shall be provided for assessing the quantity of water used for each of the purposes mentioned below.
 - a) Spraying in mine pits.
 - b) Domestic purposes.
 - c) Processing, whereby water gets polluted and pollutants are easily bio-degradable.
 - d) Processing, whereby water gets polluted and the pollutants are not easily bio-degradable.

Air:

7. The industry shall take following measures for control of air pollution:
 - i) To avoid the dust generation from the drilling operations, wet-drilling is to be adopted.
 - ii) Use of appropriate explosives for controlled blasting and avoiding overcharging the blast holes.
 - iii) Plantation over OB dumps.
 - iv) The volume of dust rising from dumps by the action of wind is to be controlled significantly by planting grasses on slopes and plants on dumps soon after their formation.
 - v) To overcome the problems of dust generation from mine haul roads the following steps are to be taken.
 - Black topping of permanent roads like routes to coal handling plant, permanent internal roads etc.
 - Water spraying on haul roads and permanent transport routes at required frequencies.
 - Avenue plantation along roads.
 - vi) Development of greenbelt along the roads, around the quarry and OB dump which will serve a barrier to prevent the dispersion of dust.

vii) Effective dust suppression measures are to be taken up at pit head coal handling plant (CHP). The crusher house shall be enclosed to the extent possible and dust suppression arrangement shall be provided at suitable locations in the CHP. All the conveyors, screens, crusher etc., shall be provided with covers to avoid fugitive dust during operation. The following measures are to be adopted at CHP in order to control dust emission:

- Height of fall to be minimized at all coal transfer points.
- Internal lining of chutes and bins shall be done to take care of abrasion & dust.
- Continuous water spraying arrangements shall be made for dust suppression.

8. The industry shall take following measures for control of noise pollution.

- i) Lining of chutes in coal handling plants for noise absorption.
- ii) Use of personal protective devices i.e. earmuffs and earplugs by workers, exposed to high noise levels.
- iii) Creation of wide greenbelts of dense foliage between mine areas and residential colonies.
- iv) Proper maintenance and turning of machinery.
- v) Proper maintenance of plant and machinery and improvement on design of machines.
- vi) Acoustically designing operator's cabin in HEMM.
- vii) Greenbelt with species of rich canopy around the lease area and along the roads.
- viii) Blasting operation to be carried out with proper hookup and optimum explosive charge.

Solid Waste:

9. The topsoil & Over burden (Coal extraction over lying strata) of 584.77 M.Cu.m. excavated from project shall be stored separately at pre-determined place and shall be utilized for spreading over external dumps and internal dumps as a part of reclamation
10. The proponent shall follow the relevant provisions of the Municipal Solid Waste (Management and Handling) Rules, 2000, for collection, segregation, storage, processing of Municipal Solid Waste.
11. The Hazardous Waste (Management, Handling and Transboundary Movement), Rules, 2008 and regulations notified by the MOE&F, GOI shall be implemented.

Other Conditions:

12. Thick green belt shall be developed along the boundary of the Mine. Green belt development shall be started along with the expansion activity.
13. Mining operations shall not be undertaken in the forest land which forestry clearance has not been obtained under the provisions of FC Act, 1980.
14. Approval of the Flood and Irrigation Dept., shall be obtained for construction of the Flood Protection Bund with minimal disturbance to the downstream users.
15. The industry shall comply with all the conditions stipulated in the Environmental Clearance dt. 06.02.2015 issued by MOE&F, GOI.

Sd/-
MEMBER SECRETARY

To,
M/s. Singareni Collieries Co.Ltd.,
Khairagura Open Cast Expansion Project,
Borjam (V), Tiryani (M),
Adilabad District.

//T.C.F.B.O//

SENIOR ENVIRONMENTAL ENGINEER

	TELANGANA STATE POLLUTION CONTROL BOARD Paryavaran Bhavan, A-3, Industrial Estate, Sanathnagar, Hyderabad - 500018	Ph: 040-23887500 Fax: 040-23815631 Website: tspcb.cgg.gov.in
	RENEWAL OF CONSENT ORDER <i>//By Registered Post with Acknowledgement Due//</i>	

Consent Order No: TSPCB/RCP/NZB/HO/W&A/2017 - 854 Date: 01.06.2017.

Consent Order for Existing/New or altered discharge of sewage and/or trade effluents/outlet under Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and amendments thereof, Operation of the plant under section 21 of Air (Prevention & Control of Pollution) Act 1981 and amendments thereof.

CONSENT is hereby granted under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974, under section 21 of Air (Prevention & Control of Pollution) Act 1981 (hereinafter referred to as 'the Acts') and the rules and orders made there under to:

M/s. Singareni Collieries Co. Ltd.,
 Khairagura Open Cast Expansion Project,
 Borjam (V), Tiryan Mandal,
 Komaram Bheem (Asifabad) District - 504292.
 E-mail: env_bpa@sccimines.com

(hereinafter referred to as 'the Applicant') authorized to operate the industrial plant to discharge the effluents from the outlets and the quantity of Emissions per hour from the chimneys as detailed below.

i) Out lets for discharge of effluents:

Outlet No.	Outlet Description	Max Daily Discharge In KLD	Point of Disposal
1.	Mines excess water discharge - 9780 KLD + Washings - 96 KLD	9876 KLD	The treated water partly to be reused for dust suppression and cleaning purpose and balance treated water let out into the surface drainage for ground water recharging / Agriculture.
2.	Domestic & Others	56 KLD	Septic tank followed by soak pit.
TOTAL		9932 KLD	

This consent order is valid for Mining of Coal to the following capacity in Mine Lease area of 1217.50 hectares only as per the E.C order dated 06.02.2015. The industry shall not exceed the capacity limit as prescribed in IBM approval.

S.No	Product	Quantity
1	Coal Mining	3.75 MTPA

This order is subject to the provisions of 'the Acts' and the Rules' and amendments made thereunder and further subject to the terms and conditions incorporated in the schedule A & B enclosed to this order.

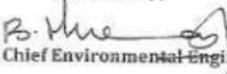
This consent is valid for a period ending with the 30th day of September, 2022.

Sd/-
MEMBER SECRETARY

To
M/s. Singareni Collieries Co. Ltd.,
Khalragura Open Cast Expansion Project,
Borjani (V), Tiryanai Mandal,
Komaram Bheem (Asifabad) District - 504292.

Copy to:

1. The JCEE, Zonal Office, R C Puram for information and necessary action.
2. The EG, Regional Office, Nizamabad for information and necessary action.
3. To SEB (Cess), TSPCB, Hyderabad for information.

//T.C.F.B.O//

Joint Chief Environmental Engineer
vc

SCHEDULE - A

1. The applicant shall make applications through online for renewal of Consent (under Water and Air Acts) and Authorization under HWM Rules at least 120 days before the date of expiry of this order, along with prescribed fee under Water and Air Acts for obtaining Consent & HW Authorization of the Board. The applicant can also apply for Auto Renewal of the CFO atleast 30 days before the expiry of the Order as per the procedure and eligibility stipulated in the Board Circular dt:19.11.2015 (available in Board's Website: <http://tspcb.cgg.gov.in/Pages/circulars.aspx>).
2. Concealing the factual data or submission of false information/ fabricated data and failure to comply with any of the conditions mentioned in this order may result in withdrawal of this order and attract action under the provisions of relevant pollution control Acts.
3. Any person aggrieved by an order made by the State Board under Section 25, Section 26, Section 27 of Water Act, 1974 or Section 21 of Air Act, 1981 may within thirty days from the date on which the order is communicated to him, prefer an appeal as per Water Rules, 1976 and Air Rules 1982, to such authority (hereinafter referred to as the Appellate Authority) constituted under Section 28 of the Water(Prevention and Control of Pollution) Act, 1974 and Section 31 of the Air(Prevention and Control of Pollution) Act, 1981.
4. The industry may explore the possibility of tapping the solar energy for their energy requirements.
5. All the conditions stipulated in the Schedule - A of the earlier combined CFO & HWA order **TSPCB/PTN/NZB/HO/W&A/2016-695 Date:10.06.2016** remains same. The industry should ensure consistence compliance of each condition of Schedule-A.
6. The Board reserves its right to modify above conditions or stipulate any further conditions and to take action including revoke of this order in the interest of protection of public health and environment.

SCHEDULE - B**Special Conditions**

1. The industry shall scrupulously comply with all the terms & conditions stipulated in the E.C. obtained from MoE&F, GOI on 06.02.2015.
2. The effluent discharged shall not contain constituents in excess of the tolerance limits prescribed below.

Outlet	Parameter No.	Limiting Standards
1.	pH	5.50 - 9.00
	Total Suspended Solids (TSS)	100 mg/l
	Oil and Grease	10 mg/l
	COD	250 mg/l

3. The industry shall file the water cess returns in Form-I as required under section (5) of Water (Prevention and Control of Pollution) Cess Act, 1977 on or before the 5th of every calendar month, showing the quantity of water consumed in the previous month along with water meter readings. The industry shall remit water cess as per the assessment orders as and when issued by Board.
4. The industry shall take steps to reduce water consumption to the extent possible and consumption shall NOT exceed the quantities prescribed below:

S.No	Purpose	Quantity in KLD
1	Process & wash (Dust suppression, Plantation and washing of HEMM)	2300
2	Domestic	70
3	Service water	60
	Total :	2430 KLD
4	Mine Seepage	11430 KLD

5. The industry shall comply with Ambient Air Quality Standards for the Suspended Particulate Matter (SPM), Respirable Particulate Matter (RPM), Sulphur Di-oxide (SO₂) & Oxides of Nitrogen (NO_x) concentration in downwind direction considering pre-dominant wind direction, at a distance of 500 mts from the following dust generating sources, as prescribed below:

Dust Generating Sources:

Loading or unloading haul road, Coal Transportation Road, Coal Handling Plant (CHP), Railway Sliding, Blasting, Drilling, Overburden dumps or any other dust generating external sources, nearby road etc.

S. No	Parameters	Time weighted Average	Standards in ug/m ³
1.	SPM	Annual Average	360
		24 Hrs	500
2.	RPM(Size <10 um)	Annual Average	180
		24 Hrs	250
3.	SO ₂	Annual Average	80
		24 Hrs	120
4.	Oxides of Nitrogen as NO ₂	Annual Average	80
		24 Hrs	120

Noise Levels: Day time (6 AM to 10 PM) - 75 dB (A)
Night time (10 PM to 6 AM) - 70 dB (A).

6. The Company shall not increase the capacity beyond the permitted capacity, without obtaining CFE & CFO of the Board.
7. The Company shall comply with the Notification No. GSR 02 (E) dt: 02.01.2014, issued by the Ministry of Environment & Forests, Govt. of India regarding supply of Raw or blended or beneficiated Coal to the Thermal Power Plants with stipulated Ash content.
8. The Company shall provide water sprinkling system at Coal yards.
9. The Company shall ensure continuous water sprinkling on haul roads, at the coal handling facility and at other sources of dust emissions.
10. The company shall provide the fixed water sprinkling arrangements for the complete Haul Road.
11. The Company shall provide water sprinklers and dust collection system at all transfer points and dust collection system to the Coal crusher.
12. The industry shall take up black topping of permanent roads like routes to Coal Handling Plant, permanent internal roads etc., in a time bound manner.
13. The company shall provide necessary treatment system for treatment of waste water generated from workshops, washing of HEMM & excess mine water to be discharged from the mine, before commissioning of the Mine.
14. The Company shall ensure covering of coal trucks with tarpaulin to avoid spillages of coal and fugitive emissions due to transportation of coal.
15. The Company shall adopt eco-friendly mining practices.
16. The Company shall undertake only wet drilling & shall ensure maintenance of adequate measures to mitigate dust generation from drilling operations.
17. The Company shall adopt blasting technique using shock tube and delay detonators.
18. The Company shall develop and maintain greenbelt all along haul roads and CHP.
19. The Company shall take all measures for control of Coal dust nuisance and Air Pollution at Rechini & Rebbena Railway slidings. The Company shall erect a permanent sheeting all along the Rechini & Rebbena railway slidings, instead of net cloth. The Company shall adopt continuous water sprinkling at these Railway slidings. The Coal shall be wetted before loading into wagons and water spraying shall be done while unloading of Coal by operating mobile Sprinklers. The Company shall maintain records of water sprinkling at these Railway slidings.

20. The Company shall commission the CHP at Goleti by September, 2017 as committed by the industry during the meeting and vide letter dt. 26.05.2017.
21. The Company shall take up extensive plantation under the Haritha Haram program of the State Government.
22. The Company shall provide and maintain Electro-magnetic water meters for recording water consumption for Dust suppression and domestic purposes.
23. The natural drainage of water shall be maintained. Dump sites shall not cross any streams, water flow from the Mining Lease Area, even during the monsoon, shall be free of suspended matter and conform to prescribed water quality standards.
24. Dumping of overburden, if done, shall use the retreating pyramid bench formation with concurrent, physical and biological reclamation. Dumps shall be contoured and provided with relief control and stabilized. Dump tops shall be compacted, leveled and be properly drained.
25. Soil binding and nitrogen fixing plants shall be planted in the Mining Lease Area. Biological reclamation shall be done in two phases, the first phase shall be plant appropriate quick growing grass & shrubs and the second phase shall grow slower growing native shrubs & trees.
26. The Company shall take all possible measures for artificial recharge of ground water by implementing corrective measures.
27. The Company shall comply with all the relevant provisions of the Utilization of the Fly Ash Notification issued by MoEF & CC, Govt. of India.
28. The industry shall comply with the conditions stipulated in the EC Order issued by MoEF & CFE Order issued by the Board.
29. All waste material shall be accommodated within the Mining Lease Area.
30. The industry shall fix sensor activated water spraying plungers at unloading points to conserve the water and to make the system full proof mechanism.
31. The industry shall minimize the height of fall of coal at all coal transfer points.
32. The industry shall construct garland drains along the dumps and within the lease area to restrict the suspended solids entering into the natural water regime as well as to prevent the storm water entering the lease area.
33. The industry shall provide impact rollers at transfer points to dampen the noise levels at Coal Handling Plant (CHP).
34. The industry shall reuse the treated workshop effluents for dust separation and for raising plantation within the workshop premises.
35. Check dams and filter beds shall be constructed to protect from stream runoffs.
36. Ground water table levels shall be monitored every season. Any lowering of the ground water table in comparison to the previous season shall be reported to the Board immediately. Discarded pits shall be allowed to fill with water.
37. Vehicles shall be well maintained and engine idling shall be minimized. Vehicle cabs shall be made dust-proof and air-conditioned.
38. All the dumped over burden shall be covered with top soil and also the refilled are of the mine. After covering with topsoil, afforestation shall be done on the dumps and refilled mining area with local species of trees.
39. Crushers at CHP shall be operated with high efficiency bag filters, water sprinkling system shall be provided to check fugitive emissions from crushing operations, hauling roads, transfer points etc.
40. The industry shall adhere to the following techniques proposed in EIA / EMP report.
 - a. Control Blast Technique shall be strictly implemented.

- b. They shall have a 50 meter wide green belt around the mine and beyond that they shall provide a fencing as a measure to prevent accidents.
 - c. The proponent shall conserve the top soil for use in re-forestation programme and for covering the over burden dumps and retiled mine for regeneration of forest and for developing green belt. The topsoil shall be reserved for further refilling.
41. The applicant shall submit Environment Statement in Form V before 30th September of every year as per Rule No.14 of E(P) Rules, 1986 & amendments thereof.
42. The conditions are without prejudice to the rights and contentions of this Board in any Hon'ble Court of Law.

MEMBER SECRETARY

To
M/s. Singareni Collieries Co. Ltd.,
Khairagura Open Cast Expansion Project,
Borjani (V), Tiryan Mandal,
Komaram Bheem (Asifabad) District - 504292.

//T.C.F.B.O//


Joint Chief Environmental Engineer

The Singareni Collieries Company Limited													
(A Government Company)													
Khairagura Opencast (P) BPA Area													
Day wise Rain Fall Data 2006 in mm													
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
1	-	-	-	-	-	-	-	-	-	17.0	1	-	
2	-	-	-	-	-	6.0	-	15.0	-	-	-	-	
3	-	-	-	-	5.0	-	140.0	30.0	-	-	-	-	
4	-	-	-	-	-	-	14.0	134.0	7.0	-	17	-	
5	-	-	-	-	-	-	-	38.5	8.0	-	-	-	
6	-	-	-	-	-	-	-	-	-	-	-	-	
7	-	-	-	-	-	-	-	-	-	-	-	-	
8	-	-	-	-	-	-	-	-	-	-	-	-	
9	-	-	-	-	-	5.0	-	-	-	-	-	-	
10	-	-	-	-	-	-	-	-	-	-	-	-	
11	-	-	-	-	-	-	-	-	-	-	-	-	
12	-	-	-	-	-	-	-	13.0	-	-	-	-	
13	-	-	-	-	-	-	16.0	-	-	-	-	-	
14	-	-	-	-	-	-	-	-	5.0	-	-	-	
15	-	-	-	-	-	-	-	2.0	11.0	-	-	-	
16	-	-	-	80.0	-	-	-	13.0	-	-	-	-	
17	-	-	-	-	-	-	-	1.5	80.0	-	-	-	
18	-	-	-	-	9	-	-	-	45.0	-	-	-	
19	-	-	-	-	13	-	-	-	8.0	-	-	-	
20	-	-	-	-	-	44.8	-	-	6.0	-	-	-	
21	-	-	-	-	-	15.0	-	-	5.0	-	-	-	
22	-	-	-	-	1	5.0	-	-	-	-	-	-	
23	-	-	-	-	29.7	2.0	19.0	-	6.0	-	-	-	
24	-	-	-	-	10	-	-	-	-	-	-	-	
25	-	-	-	-	-	-	5.0	-	-	-	-	-	
26	-	-	-	-	-	-	10.0	-	2.0	-	-	-	
27	-	-	-	-	-	1.0	5.0	-	-	-	-	-	
28	-	-	-	-	-	20.0	7.5	-	-	-	-	-	
29	-	-	-	-	-	11.0	-	-	23.0	-	-	-	
30	-	-	-	-	-	-	25.0	4.0	-	-	-	-	
31	-	-	-	-	-	-	-	-	-	12	-	-	
Total	0	0	0	80	67.7	109.8	241.5	251.0	206.00	29.0	18	0	1003.0
Day wise Rain Fall Data 2007 in mm													
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1	-	-	-	-	-	-	-	3.5	-	8	-	-	
2	-	-	-	-	-	-	-	6	7	-	-	-	
3	-	-	-	-	-	6.2	-	13	1	-	-	-	
4	-	-	-	-	-	10	-	-	-	-	-	-	
5	-	-	-	-	10	-	-	4	23	3	-	-	
6	-	-	-	-	-	-	-	42	7	30	-	-	
7	-	-	-	-	-	2.3	7	11	-	-	-	-	
8	-	-	-	-	-	-	-	-	-	-	-	-	
9	-	-	-	14	-	26.5	-	-	6	-	-	-	
10	-	-	-	-	-	-	3	-	-	-	-	-	
11	-	-	-	-	-	2	-	1	1	-	-	-	
12	-	-	-	-	-	10.6	10	11	-	-	-	-	
13	-	-	-	-	-	3	36	-	-	-	-	-	

The Singareni Collieries Company Limited													
(A Government Company)													
Khairagura Opencast (P) BPA Area													
14	-	-	-	-	2.5	3.5	-	-	18	-	-	-	-
15	-	-	-	-	-	-	35	-	-	-	-	-	-
16	-	-	-	-	-	-	8	-	25	-	-	-	-
17	-	-	-	-	-	-	0.5	-	51	-	-	-	-
18	-	-	-	-	-	11	-	-	-	-	-	-	-
19	-	-	-	-	-	-	0.5	-	7	-	-	-	-
20	-	-	-	22	-	-	35	-	-	-	-	-	-
21	-	-	-	-	-	-	21	16	-	-	-	-	-
22	-	-	-	-	-	21	6	-	-	-	-	-	-
23	-	-	-	-	5	11	6	9	3	-	-	-	-
24	-	-	-	-	-	1.5	-	40	-	-	-	-	-
25	-	-	-	-	-	2.1	-	30	-	-	-	-	-
26	-	-	-	-	-	5.4	-	3	-	-	-	-	-
27	-	-	-	-	-	8	-	1	-	-	-	-	-
28	-	-	-	-	-	25	1	-	-	-	-	-	-
29	-	-	-	-	-	11	15	-	43	-	-	-	-
30	-	-	-	-	0.5	1	-	-	3	-	-	-	-
31	-	-	-	-	-	-	-	2	-	-	-	-	-
Total	0	0	0	36	18	161.1	184	192.5	195	41	0	0	827.6

Day wise Rain Fall Data 2008													
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
1	-	-	-	1	-	-	17	2	-	-	-	-	
2	-	-	-	-	-	-	45	4	-	-	-	-	
3	-	-	-	-	-	-	-	105	-	-	-	-	
4	-	-	-	-	-	-	-	54	2	-	-	-	
5	-	-	-	14	-	9	-	-	-	-	-	-	
6	-	-	-	-	-	7	8	-	-	34	-	-	
7	-	-	-	-	-	-	13	-	8	-	-	-	
8	-	-	-	-	-	-	-	21	7	14	-	-	
9	-	-	-	-	-	-	10	8	20	-	-	-	
10	-	-	-	-	-	12	3	9	5	-	-	-	
11	-	16	-	-	-	48	-	11	28	-	-	-	
12	-	-	-	-	-	-	-	-	12	-	-	-	
13	-	-	-	-	-	-	-	8	2	-	-	-	
14	-	-	-	-	-	-	-	-	-	-	-	-	
15	-	-	-	-	-	-	-	3	-	-	-	-	
16	-	-	-	-	-	-	-	-	-	-	-	-	
17	-	-	-	-	-	-	-	-	-	-	-	-	
18	-	-	-	-	-	-	5	-	-	-	-	-	
19	-	-	-	-	-	-	1	-	-	-	-	-	
20	-	-	-	-	-	-	-	-	-	-	-	-	
21	-	-	-	-	-	-	7	-	37	-	-	-	
22	-	-	-	-	-	-	8	-	1	-	-	-	
23	-	-	19	-	-	-	13	-	-	-	-	-	
24	-	-	-	-	-	27	-	-	-	-	-	-	
25	-	-	-	-	-	-	13	8	-	-	-	-	
26	7	-	10	-	-	48	-	-	-	-	-	-	
27	-	-	-	-	-	5	36	-	-	-	-	-	
28	-	-	9	-	-	-	11	36	-	-	-	-	
29	-	-	94	-	-	-	2	11	-	-	-	-	
30	-	-	-	-	-	19	38	1	-	-	-	-	
31	-	-	-	-	-	-	-	-	-	-	-	-	
Total	7	16	132	18	0	175	230	281	122	48	0	0	1029.0

Day wise Rain Fall Data 2009													
DATE	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
1	-	-	-	-	-	-	-	-	16	4	-	-	
2	-	-	-	-	-	15	-	-	32	11	-	-	
3							46			12			
4	-	-	-	-	-	-	-	-	-	2	-	-	
5	-	-	-	-	-	11	-	-	-	9	-	-	
6	-	-	-	-	-	-	-	-	-	-	-	-	
7	-	-	-	-	-	-	-	-	-	-	-	-	
8	-	-	-	-	-	-	8	-	-	9	-	-	
9	-	-	-	-	-	-	10	-	-	-	-	-	
10	-	-	-	-	-	-	9	21	-	-	6	-	
11	-	-	-	-	-	11	-	5	-	-	-	-	
12	-	-	-	-	-	-	-	73	-	-	-	-	
13	-	-	-	-	-	-	14	6	-	-	-	-	
14	-	-	-	-	-	10	8	-	-	-	-	-	
15	-	-	-	-	-	-	-	2	-	-	-	-	
16	-	-	-	-	-	-	-	-	-	-	-	-	
17	-	-	-	-	-	-	-	-	-	-	-	-	
18	-	-	-	-	-	-	-	-	-	-	-	-	
19	-	-	-	-	-	9	15	25	-	-	-	-	
20	-	-	-	-	-	-	3	1	-	-	-	-	
21	-	-	-	-	14	-	-	-	-	-	-	-	
22	-	-	15	-	-	-	-	-	-	-	-	-	
23	-	-	-	-	-	-	-	10	-	-	-	-	
24	-	-	-	-	-	-	-	8	-	-	-	-	
25	-	-	-	-	-	12	-	10	-	-	-	-	
26	-	-	-	-	-	16	-	12	-	-	-	-	
27	-	-	-	-	-	70	12	1	-	-	-	-	
28	-	-	-	-	-	-	-	-	-	-	-	-	
29	-	-	-	-	3	-	-	-	-	-	-	-	
30	-	-	-	-	-	-	-	-	-	-	-	-	
31	-	-	-	-	16	-	-	7	42	-	-	-	
Total	0	0	15	0	33	154	125	181	90	47	6	0	651

Day wise Rain Fall Data of 2010													
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
1	-	-	-	-	-	-	14	-	2	-	3	-	
2	-	-	-	-	-	-	11	-	-	2	-	-	
3	-	-	-	-	-	-	17	3	38	-	-	-	
4	-	-	-	-	-	-	-	8.5	33	-	2	-	
5	-	-	-	-	-	-	2	64	3	-	-	-	
6	-	-	-	-	-	-	26	74	-	-	-	-	
7	-	-	-	-	-	-	10	2	68	-	-	2	
8	-	-	-	-	-	-	-	3	13	-	-	2	
9	-	-	-	-	-	-	4	-	-	-	-	-	
10	-	-	-	-	-	-	14	-	-	-	3	-	
11	-	-	-	-	-	-	20	72	18	-	-	-	
12	-	-	-	-	-	4	13	16	-	-	-	-	
13	55	-	16	-	-	-	-	1	-	-	-	-	
14	-	-	-	-	-	17	-	-	-	-	-	-	
15	-	-	-	-	-	-	-	11	20	27	-	-	
16	-	-	-	-	-	6	-	7	5	35	-	-	
17	-	-	-	-	-	9	21	9	-	-	-	-	
18	-	-	-	-	-	6	-	30	1	1	-	-	
19	-	-	-	-	-	-	-	47	-	1	-	-	
20	-	-	-	-	-	-	29	-	2	-	-	-	
21	-	-	2	-	-	-	51	-	-	24	-	-	
22	10	-	-	-	-	-	6	-	-	4	-	-	
23	-	-	-	-	-	7	-	-	-	1	-	-	
24	-	-	-	-	-	-	46	11	-	-	-	-	
25	-	-	-	-	-	8	11	-	-	-	-	-	
26	-	-	-	-	-	15	3	-	15	-	-	-	
27	-	-	-	-	-	9	25	8.5	-	-	-	-	
28	-	-	-	-	-	14	4	-	-	-	-	-	
29	-	-	-	-	-	-	136	18	-	-	-	-	
30	-	-	-	-	-	-	3	64	-	-	-	-	
31	-	-	-	-	-	-	3	-	-	-	-	-	
Total	65	0	18	0	0	95	469	449	218	95	8	4	1421.0

Day wise Rain Fall Data of 2011													
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
1	-	-	-	-	-	-	-	36	2	-	-	-	
2	-	-	-	-	-	-	2	2	9	-	-	-	
3	-	-	-	-	-	-	6	24	1	-	-	-	
4	-	-	-	-	-	-	-	-	-	-	-	-	
5	-	-	-	-	-	-	25	2	-	-	-	-	
6	-	-	-	-	-	-	75	-	-	-	-	-	
7	-	-	-	3	-	15	2	12	15	-	-	-	
8	-	-	-	-	-	-	5	13	16	-	-	-	
9	-	-	-	-	-	-	3	5	-	-	-	-	
10	-	-	-	-	-	-	-	-	-	-	-	-	
11	-	-	-	-	-	-	-	-	-	-	-	-	
12	-	-	-	-	-	-	22	9	-	-	-	-	
13	-	-	-	-	-	2	20	2	-	-	-	-	
14	-	-	-	-	-	1	7	-	-	-	-	-	
15	-	-	-	-	-	-	-	-	30	-	-	-	
16	-	-	-	-	-	-	-	-	4	-	-	-	
17	-	-	-	-	-	-	-	2	-	-	-	-	
18	-	-	-	-	-	-	2	24	20	-	-	-	
19	-	2	-	-	-	-	5	5	19	-	-	-	
20	-	15	-	6	-	11	-	-	-	-	-	-	
21	-	50	-	-	-	-	-	-	-	-	-	-	
22	-	11	-	-	-	-	-	-	-	-	-	-	
23	-	-	-	-	11	-	4	11	-	-	-	-	
24	-	-	-	-	3	-	-	6	-	-	-	-	
25	-	-	-	-	-	11	-	-	-	-	-	-	
26	-	-	-	2	-	39	-	46	-	-	-	-	
27	-	-	-	-	-	21	6	71	-	-	-	-	
28	-	-	-	-	-	-	45	-	-	-	-	-	
29	-	-	-	-	-	-	65	-	-	-	-	-	
30	-	-	-	-	-	-	4	2	-	-	-	-	
31	-	-	-	-	5	-	17	19	-	-	-	-	
Total	0	78	0	11	19	100	315	291	116	0	0	0	930.0

Day wise Rain Fall Data of 2012													
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
1	3	-	-	-	-	-	-	-	-	-	2	-	
2	4	-	-	-	-	-	6	-	50	44	4	-	
3	-	-	-	-	-	-	-	8	32	8	8	-	
4	-	-	-	-	-	-	-	6	3	5	-	-	
5	-	-	-	-	-	-	22	2	13	-	-	-	
6	-	-	-	-	-	-	2	3	-	-	-	-	
7	-	-	-	-	-	-	1	-	-	-	-	-	
8	-	-	-	-	-	-	10	4	9	-	-	-	
9	-	-	-	-	-	10	2	18	15	-	-	-	
10	-	-	-	-	-	1	-	-	-	-	-	-	
11	-	-	-	-	-	-	-	7	-	-	-	-	
12	-	-	-	-	-	-	1	3	3	-	-	-	
13	-	-	-	-	-	-	30	-	-	-	-	-	
14	-	-	-	-	-	-	3	-	4	-	-	-	
15	-	-	-	-	-	22	25	4	15	-	-	-	
16	-	-	-	-	-	18	54	-	-	-	-	-	
17	-	-	-	-	-	-	-	2	11	-	-	-	
18	-	-	-	-	-	25	3	32	-	-	-	-	
19	-	-	-	-	-	30	2	13	7	-	-	-	
20	-	-	-	-	-	-	4	-	15	-	-	-	
21	-	-	-	-	-	-	7	4	-	-	-	-	
22	-	-	-	-	-	-	33	121	5	-	-	-	
23	-	-	-	2	-	-	8	-	-	-	-	-	
24	-	-	-	-	-	-	12	126	-	-	-	-	
25	-	-	-	-	-	-	56	3	-	-	-	-	
26	-	-	-	-	-	3	41	25	-	-	-	-	
27	-	-	-	-	-	-	-	2	-	-	-	-	
28	-	-	-	-	-	17	-	-	-	-	-	-	
29	-	-	-	-	-	-	2	6	2	-	-	-	
30	-	-	4	-	-	-	20	13	30	-	-	-	
31	-	-	-	-	-	-	7	-	-	-	-	-	
Total	7	-	4	2	0	126	351	175	214	57	14	0	950.0

Day wise Rain Fall Data 2014													
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
1	-	-	-	-	5	-	-	-	1	-	-	-	
2	-	-	2	-	-	6	-	-	-	-	-	-	
3	-	-	7	-	3	-	-	-	-	-	-	-	
4	-	-	3	-	-	-	5	12	-	-	-	-	
5	-	-	-	-	-	-	5	3	-	-	-	-	
6	-	-	28	-	-	-	-	6	127	-	-	-	
7	-	-	-	-	-	-	15	-	59	-	-	-	
8	-	-	55	1	44	-	12	-	-	-	-	-	
9	-	-	15	1	1	-	-	-	-	-	-	-	
10	-	-	5	-	-	13	-	-	-	-	-	-	
11	-	-	-	-	-	7	1	-	-	-	-	-	
12	-	-	-	-	-	-	-	-	-	-	-	-	
13	-	-	-	-	-	23	5	1	-	1	-	-	
14	-	-	-	-	-	-	5	8	2	-	-	-	
15	-	1	-	-	-	2	3	9	-	-	-	-	
16	-	-	-	5	-	-	-	3	-	-	-	-	
17	-	-	-	14	-	58	-	8	-	-	-	-	
18	-	-	-	-	-	-	-	-	-	-	-	-	
19	-	-	-	2	-	-	7	-	-	-	-	-	
20	-	-	-	-	-	-	20	2	-	-	-	-	
21	-	-	-	-	-	-	10	46	-	-	-	-	
22	-	-	-	-	-	-	4	2	-	-	-	-	
23	-	-	-	-	-	-	-	-	-	-	-	-	
24	-	-	-	-	-	-	-	-	-	-	-	-	
25	-	-	-	-	-	-	-	30	-	1	-	-	
26	-	-	-	-	12	-	15	-	-	3	-	-	
27	-	4	-	-	-	-	5	32	-	-	-	-	
28	-	6	-	-	-	-	5	16	-	-	-	-	
29	-	-	-	-	-	-	-	10	-	-	-	-	
30	-	-	-	-	2	-	-	30	-	-	-	-	
31	-	-	-	-	-	-	-	6	-	-	-	-	
Total	0	11	115	23	67	109	117	224	189	5	0	0	860.0

Day wise Rain Fall Data 2015													
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
1	-	-	-	-	-	-	8	-	-	-	-	-	-
2	13	-	47	-	-	7	12	-	-	-	-	-	-
3	25	-	-	-	-	-	-	2	26	-	-	-	-
4	-	-	-	-	1	14	-	2	-	-	-	-	-
5	-	-	-	-	-	-	-	6	-	-	-	-	-
6	-	-	-	-	-	-	-	2	-	-	-	-	-
7	-	-	-	-	-	-	-	6	3	-	-	-	-
8	-	-	3	-	-	-	-	1	1	-	-	-	-
9	-	-	-	-	-	-	-	53	-	-	-	-	-
10	-	-	9	-	-	-	-	3	-	-	-	-	-
11	-	-	-	13	-	5	-	17	-	-	-	-	-
12	-	-	-	8	-	2	-	28	2	-	-	-	-
13	-	-	-	2	-	2	-	1	9	-	-	-	-
14	-	-	-	-	-	16	-	-	-	-	-	-	-
15	-	-	-	-	8	22	-	-	3	-	-	-	-
16	-	-	-	16	-	6	-	16	82	-	-	-	-
17	-	-	-	-	-	-	-	15	45	-	-	-	-
18	-	-	-	-	-	45	2	3	21	-	-	-	-
19	-	-	-	-	-	15	11	9	-	-	-	-	-
20	-	-	-	-	-	72	-	-	-	-	-	-	-
21	-	-	-	-	-	36	29	6	-	-	-	-	-
22	-	-	-	-	-	9	31	-	-	-	-	-	-
23	-	-	-	-	-	-	30	-	-	-	-	-	-
24	-	-	-	-	-	4	14	-	-	-	-	-	-
25	-	-	-	-	-	6	-	-	-	-	-	-	-
26	-	-	-	2	-	1	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	12	-	-	-	-	-
28	-	-	-	-	-	-	-	9	-	-	-	-	-
29	-	-	18	-	-	-	-	-	-	-	-	-	-
30	-	-	20	-	-	8	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	38	0	97	41	9	270	137	191	192	0	0	0	975.0

Day wise Rain Fall Data 2016													
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
1	-	-	-	-	-	-	5	-	-	-	-	-	-
2	-	-	-	-	-	-	11	-	-	-	-	-	-
3	-	-	-	-	-	5	-	-	-	-	-	-	-
4	-	-	4	-	-	-	5	-	-	-	-	-	-
5	-	-	-	-	-	5	8	-	-	-	-	-	-
6	-	-	-	-	20	6	-	-	-	-	-	-	-
7	-	-	-	-	-	1	-	-	-	-	-	-	-
8	-	-	-	-	-	-	35	-	-	-	-	-	-
9	-	-	-	-	-	-	110	-	-	-	-	-	-
10	-	-	-	-	-	-	28	-	-	-	-	-	-
11	-	-	-	-	-	30	45	-	-	-	-	-	-
12	-	-	-	-	-	6	-	-	-	-	-	-	-
13	-	-	-	-	-	4	-	-	-	-	-	-	-
14	-	-	-	-	-	1	-	-	-	-	-	-	-
15	-	-	23	-	-	-	3	-	-	-	-	-	-
16	-	-	7	-	-	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	44	-	-	-	-	-	-
19	3	-	-	-	-	-	6	-	-	-	-	-	-
20	-	-	-	-	-	-	25	-	-	-	-	-	-
21	-	-	-	-	-	-	78	-	-	-	-	-	-
22	-	-	-	-	-	-	85	-	-	-	-	-	-
23	-	-	-	-	-	7	-	-	-	-	-	-	-
24	-	-	-	-	-	-	-	-	-	-	-	-	-
25	-	-	-	-	-	3	6	-	-	-	-	-	-
26	-	-	-	-	-	4	95	-	-	-	-	-	-
27	-	-	-	-	-	8	-	-	-	-	-	-	-
28	-	1	-	-	-	45	-	-	-	-	-	-	-
29	-	71	-	-	-	50	-	-	-	-	-	-	-
30	-	-	-	-	5	3	-	-	-	-	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	3	72	34	0	25	178	589	0	0	0	0	0	901.0

Day wise Rain Fall Data 2017													
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
1	-	-	-	-	-	-	-	12	-	-	-	-	
2	-	-	-	-	-	-	10	-	5	-	-	-	
3	-	-	-	-	-	-	11	-	47	-	-	-	
4	-	-	-	-	-	-	12	2	-	-	-	-	
5	-	-	-	-	2	4	15	-	-	-	-	-	
6	-	-	-	-	-	-	-	-	-	4	-	-	
7	-	-	-	-	-	-	-	-	15	2	-	-	
8	-	-	-	-	-	22	-	1	-	-	-	-	
9	-	-	-	-	-	11	-	47	-	-	-	-	
10	-	-	-	-	-	5	8	-	-	-	-	-	
11	-	-	-	-	-	-	-	5	-	11	-	-	
12	-	-	-	-	-	20	7	-	-	10	-	-	
13	-	-	-	-	-	-	-	16	18	-	-	-	
14	-	-	-	-	-	-	28	6	4	-	-	-	
15	-	-	1	-	-	16	2	13	8	-	-	-	
16	-	-	12	-	-	-	3	-	4	-	-	-	
17	-	-	-	-	-	10	3	-	2	-	-	-	
18	-	-	-	-	-	12	30	29	20	-	-	-	
19	-	-	-	-	-	-	-	24	-	13	-	-	
20	-	-	-	-	-	-	3	2	3	2	-	-	
21	-	-	-	-	-	-	-	-	6	-	-	-	
22	-	-	-	-	-	22	-	-	10	-	25	-	
23	-	-	-	-	-	-	-	-	-	-	-	-	
24	-	-	-	-	-	-	-	13	-	-	-	-	
25	-	-	-	-	-	15	-	5	-	-	-	-	
26	-	-	-	-	-	12	-	20	-	-	-	-	
27	-	-	-	-	15	8	-	1	1	-	-	-	
28	-	-	-	-	8	-	-	20	18	-	-	-	
29	-	-	-	-	-	-	-	5	-	-	-	-	
30	-	-	-	-	-	4	-	-	-	-	-	-	
31	-	-	-	-	-	-	-	-	-	-	-	-	
Total	0	0	13	0	25	161	132	221	161	42	25	0	780.0

Day wise Rain Fall Data 2019													
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
1	-	-	-	-	-	-	12	35	-	-	-	-	
2	-	-	-	-	-	-	15	55	7	-	1	-	
3	-	-	-	-	-	20	13	32	16	-	-	-	
4	-	-	-	-	-	-	6	-	1	1	-	-	
5	-	-	-	-	-	-	20	-	6	-	-	-	
6	-	-	-	-	-	-	13	18	24	-	-	-	
7	-	-	-	-	-	11	2	20	18	-	-	-	
8	-	-	-	10	-	-	33	28	13	-	-	-	
9	-	-	-	-	-	-	7	12	-	-	-	-	
10	-	-	-	-	-	-	2	2	-	-	-	-	
11	-	-	-	-	5	-	-	-	3	-	-	-	
12	-	-	-	-	-	-	-	14	3	-	-	-	
13	-	-	-	-	-	-	-	10	5	-	-	-	
14	-	-	-	-	6	-	-	12	3	-	-	-	
15	-	5	-	-	-	-	-	-	1	-	-	-	
16	-	-	-	-	-	2	-	-	2	-	-	-	
17	-	-	-	-	-	-	-	1	12	19	-	-	
18	-	-	-	-	-	-	18	-	9	7	-	-	
19	-	-	-	-	-	-	3	-	35	35	-	-	
20	-	-	5	-	-	9	12	5	-	4	-	-	
21	-	-	-	5	7	-	-	2	2	2	-	-	
22	-	-	2	-	-	37	-	85	-	-	-	-	
23	-	-	-	-	-	2	-	54	11	-	-	-	
24	-	-	-	-	-	10	-	16	12	33	-	-	
25	16	-	-	-	-	-	12	4	6	2	-	-	
26	11	-	-	-	-	-	8	3	20	9	-	2	
27	-	-	-	-	-	-	10	-	12	-	-	-	
28	-	-	-	-	-	22	51	-	-	-	-	-	
29	-	-	-	-	-	-	110	6	-	-	-	-	
30	-	-	-	-	-	3	3	44	-	8	-	-	
31	-	-	-	-	5	-	-	-	-	1	-	-	
Total	27	5	7	15	23	116	350	458	221	121	1	2	1346.0

Day wise Rain Fall Data 2020													
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
1	-	-	-	-	-	-	5	26	-	-	-	-	
2	6	-	-	4	-	1	5	6	-	-	-	-	
3	4	-	-	-	-	-	10	25	-	-	-	-	
4	-	-	-	-	1	-	6	-	-	-	-	-	
5	-	-	-	-	-	-	54	16	-	-	-	-	
6	-	-	-	-	10	6	-	12	-	-	-	-	
7	-	4	-	-	-	-	6	-	28	33	-	-	
8	-	7	-	-	7	2	-	-	18	-	-	-	
9	2	-	-	-	5	4	8	11	-	2	-	-	
10	-	-	-	2	-	23	24	6	2	5	-	-	
11	-	-	-	-	-	2	5	-	-	-	-	-	
12	-	-	-	-	-	15	-	7	6	9	-	-	
13	-	-	-	-	-	2	-	6	39	-	-	-	
14	-	-	3	2	-	2	91	6	-	9	-	-	
15	-	-	-	-	-	42	20	11	32	-	-	-	
16	-	-	-	-	4	43	3	36	35	-	-	-	
17	-	-	-	-	-	-	12	41	33	6	-	-	
18	-	-	-	-	-	-	-	33	6	22	-	-	
19	7	-	-	-	-	-	72	8	4	-	-	-	
20	-	-	-	6	-	5	5	12	11	-	1	-	
21	-	-	-	-	-	6	-	6	33	-	-	-	
22	-	-	-	-	-	5	22	-	3	-	-	-	
23	-	-	-	-	-	-	15	2	-	-	-	-	
24	-	-	-	-	-	-	21	-	-	-	-	-	
25	-	-	-	-	-	-	5	-	63	-	-	-	
26	-	-	-	-	-	-	-	2	-	-	-	-	
27	-	-	-	10	-	20	2	2	-	-	-	-	
28	-	-	-	-	-	-	172	17	-	-	-	-	
29	-	-	-	-	10	-	-	-	-	-	-	-	
30	-	-	-	-	-	11	-	-	-	-	-	-	
31	-	-	-	-	4	-	-	-	-	-	-	-	
Total RF	19	11	3	24	41	189	563	291	313	86	1	0	1541.0
Rainy Days	4	2	1	5	7	16	21	21	14	7	1	0	99

Day wise Rain Fall Data 2021													
Date	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
1	-	-	-	-	-	1	54	-	10	-	-	-	
2	-	-	-	-	-	2	1	-	2	-	-	-	
3	-	-	-	-	11	-	-	-	26	-	-	-	
4	-	-	-	-	-	18	-	-	1	-	-	-	
5	-	-	-	-	6	4	-	2	6	-	-	-	
6	-	-	-	-	1	-	8	-	25	-	-	-	
7	-	-	-	-	-	11	7	2	4	-	-	-	
8	-	-	-	2	-	28	2	1	2	-	-	-	
9	-	-	-	-	-	6	2	-	-	3	-	-	
10	-	-	-	-	-	21	64	-	48	-	-	-	
11	-	-	-	-	1	8	2	-	2	-	-	-	
12	-	-	-	-	-	1	18	-	5	-	-	-	
13	-	-	-	-	-	28	17	15	8	-	1	-	
14	-	-	-	-	-	105	16	-	2	-	1	-	
15	-	-	-	-	-	8	1	30	10	-	1	-	
16	-	-	-	-	12	1	1	41	-	34	1	-	
17	-	-	-	-	-	8	-	1	-	-	-	-	
18	-	13	-	-	-	-	-	18	-	-	-	-	
19	-	-	-	2	7	6	-	15	-	-	1	-	
20	-	-	-	-	-	1	62	1	17	-	-	-	
21	-	-	-	-	-	-	11	-	4	-	-	-	
22	-	-	-	-	-	5	185	-	-	-	1	-	
23	-	-	-	-	-	-	5	-	-	-	-	-	
24	-	-	-	-	-	-	14	4	-	-	-	-	
25	-	-	-	-	-	11	-	13	-	-	-	-	
26	-	-	-	5	-	11	-	8	4	-	-	-	
27	-	-	-	-	-	113	2	34	56	-	-	-	
28	-	-	-	-	-	-	2	6	28	-	-	-	
29	-	-	-	-	2	-	-	32	-	-	-	-	
30	-	-	-	-	-	18	-	8	-	-	-	-	
31	-	-	-	-	-	-	-	7	-	-	-	-	
Total RF	0	13	0	9	40	415	474	238	260	37	6	0	1492.0
Rainy Days	0	1	0	3	7	22	20	18	19	2	6	0	98

**IN THE HON'BLE NATIONAL
GREEN TRIBUNAL
SOUTHERN ZONE BENCH
AT: CHENNAI**

Original Application No. 39 of 2022

IN THE MATTER OF:

**Gedam Dilip Kumar
... Appellant**

VERSUS

**The Singareni Collieries Company
Limited
rep. by its Chiarman and Managing
Director**

... Respondents

**Counter Affidavit on behalf of
Respondent No.1 & 9**

**(Singareni Collieries Company
Limited)**

Filed On:

2



**Sri. A. Sanjeev Kumar,
Advocate. Hyderabad
Counsel for Singareni Collieries
Company Limited**