SAFETY MANAGEMENT PLAN

I N D E X

SAFETY MANAGEMENT PLAN

ABBREVIATIONS

TUML	Topworth Urja & Metals Ltd.
MM - I	Marki Mangli – I Coal Mine
DGC	DGMS Circulars
MG	Management Guidelines
OB	Over Burden
EOP	Emergency Organisation Plan
Res	Responsibility
Med	Medium
Reg	Coal Mines Regulations, 2017
CONS	Consequence
EXPO	Exposure
PROB	Probability
ERCI	Existing Risk Control Index
MM	Mine Manager
SO	Safety Officer
BO	Blasting Officer
Surv.	Surveyor
AM	Asst. Manager
WI	Workman Inspector
Col. Engr	Colliery Engineer
VTO	Vocational Training Officer
OM	Overman
MS	Mining Sirdar
PSC	Pit Safety Committee
PHMP	Principal Hazard Management Plan
TARP	Trigger Action Response Plan
FTA	Fault Tree Analysis
ERP	Emergency Response Plan

SAFETY MANAGEMENT PLAN

Safety Policy of the Company

1. Operations and systems will be planned and designed to eliminate or materially reduce mining hazards.
2. Implement statutory Acts, Rules, Regulations or orders made thereunder and make strenuous efforts for achieving superior standards of safety.
3. To bring about improvement in working conditions by suitable changes in Technology/ introduction of new technology.
4. Provide all materials and financial resources needed.
5. Deploy safety personnel wholly for reduction of hazards and prevention of accidents.
6. Organize appropriate forums with employees representatives for joint consultation on safety matters and secure their motivation and commitment in safety management.
7. Prepare Annual Safety Plan and Long term safety plan at the beginning of each calendar year for the unit and for the company to effect improved safety in operations as per respective geo-mining needs, to prepare the unit for onset of monsoon, to fulfil implementation of decisions by committee on safety in mines and 7^{th},8^{th}, 9^{th} & 10^{th} safety conference and to take measures for overcoming accident proneness, as may be reflected through study of accident analysis in sensitive areas of operation of HEMM, use of explosives, movement of transportation equipment etc.
8. Set up a frame work for execution of the safety policy and plans through Head of Mining, Agent, Manager & Safety Officer and other safety personnel of the unit.
9. Multi level monitoring of the implementation of the safety plans through internal safety organization at the company HQ.
10. All senior executives at all levels of management will continue to inculcate a safety consciousness and develop involvement in practicing towards accident prevention in their functioning.
11. Institute continuous education, training and retraining of all employees with the development of safety oriented skills.
12. Continue efforts to better the living conditions & health of all employees in and outside the mines.

SAFETY MANAGEMENT PLAN

ORGANIZATIONAL STRUCTURE OF SAFETY OF THE COMPANY

FOR MARKI MANGLI – I COAL MINE

NOMINATED OWNER

CHIEF MINING

AGENT

MANAGER

SAFETY OFFICER

SAFETY MANAGEMENT PLAN

HISTORY OF THE MINE

1. General Information of Marki Mangli-I Coal Mine: Owner- Topworth Urja & Metals Ltd.			
1	Name of the Mine	Marki Mangli-I Coal Mine	
2.	Coalfield	Wardha Valley Coalfields	
3	Details of opening of the unit	19.04.2017	
4	Mode of Entry	Haul road through access trnch, width 20 m and gradient 1 in 16.	
5	History of change of ownership	Previous owner before the vesting was M/s B S Ispat. Present owner is M/s Topworth Urja & Metals Ltd.	
6	Name of present owner/ Agent/ manager/ safety Officer	**Owner**	S C Lodha
		Agent	Amitabh Singh
		Manager	Arun Vaidya
		Safety Officer	A Mondal
7	Whether the mine is inundation prone, accident prone, fiery prone or fiery and its degree of gassiness.	The workings are below HFL of Bhanduk Nalla but there is adequate embankment against the Nalla and hence there is no danger of inundation from Bhanduk Nalla. Seams are not fiery/ fire prone. There is no history of accidents.	
8	Location of the Mine (Give a sketch showing the leasehold with names of adjoining mines, approximate position of pits/ inclines, faults/ dykes and approach road, outcrop of seams, if any.) (Attach information on separate sheets.)	Marki Mangli - I Coal Mine is about 35 KM south of Wani Township in district of Yavatmal in state of Maharashtra and is connected by an all weather road to Wani via Mukutban. It is 10 KM NNW of Mukutban and situated in village Pardi, Teh. Jhari Jamni, PO-Mukutban Dist Yavatmal (Maharashtra). Nearest railway station is Kayar on Broad Gauge Line of Central railway.	
9	Total area of Leasehold	682.78 Ha	
10	Nature of seams occurring within the area of leasehold.	Top seam-2.45 M, Bottom seam-2.17 M, parting-1.13 M	
11	Presence of important surface features, such as railway, roads, river, dwellings, power line, aerial ropeways, water bodies etc.	Ardhawan road passing near the mine area. The mine is connected to **MSEB power** from rural feeder of 11.0 KV.	
12	Details of working below the important surface features.	NA	

<table>
<tr><td colspan="6"><u>2.</u> Geological and Mining Conditions:</td></tr>
<tr><td rowspan="5">2.1</td><td colspan="2">Name/ No. of seams being worked (With state of working)</td><td colspan="3"></td></tr>
<tr><td colspan="2">Name/ No. of seam</td><td colspan="3">Top & Bottom Section</td></tr>
<tr><td colspan="2" rowspan="3">Seam Thickness (in Mtr) Direction and average dip of the seam.</td><td colspan="3">2.5 to 4.5 m, composite seam, parting of 1.13 to 4.6 m of shale, carb shale & coal bands. Dip – 1 In 9 (western part) to 1 in 11. Strike: NW-SE to WNW-ESE (western part) dip direction N 20^0 E</td></tr>
<tr><td colspan="2">Depth of working</td><td colspan="3">Stage of working</td></tr>
<tr><td>Max</td><td>Min</td><td>Dev.</td><td>Dep</td><td>OC</td></tr>
<tr><td>2.2</td><td colspan="2">Section of the strata (Attach a Bore Hole Section)</td><td colspan="3">Attached</td></tr>
<tr><td>2.3</td><td colspan="2">Details of outlets and its status</td><td colspan="3">3.61 MTe coal as per approved Mining Plan for OC and 6.88 MTe for future UG mining.</td></tr>
<tr><td>(a)</td><td colspan="2">Incline (Give name & seams connected)</td><td colspan="3">N A</td></tr>
<tr><td>(b)</td><td colspan="2">Shafts</td><td colspan="3">N A</td></tr>
<tr><td>2.4</td><td colspan="2">Geological Disturbances</td><td colspan="3">Block has been affected by 9 faults dividing it into 11 sectors (F1 to F11).</td></tr>
<tr><td>(a)</td><td colspan="2">Dyke-Thickness Location</td><td colspan="3">NIL</td></tr>
<tr><td rowspan="3">(b)</td><td rowspan="3">Fault-position with respect to mine opening</td><td>Throw</td><td colspan="3" rowspan="3">Block has been affected by 9 faults dividing it into 11 sectors (F1 to F11) – throw of the faults ranging between 10 m to as high as 65 M.</td></tr>
<tr><td>Hide</td></tr>
<tr><td>Seam affected by</td></tr>
<tr><td rowspan="4">2.5</td><td colspan="2">Method of Working & its status in detail</td><td colspan="3">Shovel – Dumper Combination</td></tr>
<tr><td colspan="2">a. Development– Manual / Mechanised</td><td colspan="3">N.A.</td></tr>
<tr><td colspan="2">b. Depillaring – Caving / Stowing</td><td colspan="3">N.A.</td></tr>
<tr><td colspan="2">c. Longwall any other method</td><td colspan="3">N.A.</td></tr>
<tr><td rowspan="3">2.6</td><td rowspan="3">Man Power</td><td>Under Ground</td><td colspan="3">--</td></tr>
<tr><td>Surface</td><td colspan="3">26 on Departmental & 117 Contractual Manpower</td></tr>
<tr><td>Total</td><td colspan="3">143</td></tr>
<tr><td rowspan="4">2.7</td><td colspan="2" rowspan="4">Production in last three years</td><td colspan="2">Year</td><td>Production (in Te)</td></tr>
<tr><td colspan="2">2015-16</td><td>0.00</td></tr>
<tr><td colspan="2">2016-17</td><td>0.00</td></tr>
<tr><td colspan="2">2017-18</td><td>1,74,960</td></tr>
<tr><td>2.8</td><td colspan="2">Whether any Restriction (imposed by DGMS due to Any reason)</td><td colspan="3">NIL</td></tr>
<tr><td colspan="6"><u>3.</u> INFLAMMABLE GAS</td></tr>
<tr><td></td><td colspan="2">INFLAMMABLE GAS</td><td colspan="3">N.A.</td></tr>
</table>

4. FIRE

	History of Surface, if any	N.A.				
	Proximate Analysis	**Name of Seam**	**Percentage**			
			Moisture	**Volatile Matter**	**Ash**	**Fixed Carbon**
		Composite Seam	6-8	22-30	22-28	30-42
	Ultimate Analysis		**Top Sec.**		**Bot. Sec.**	
		Carbon %	41.07 - 50.32		39.20 - 43.57	
		Hydrogen %	2.65 - 3.11		2.17 - 2.42	
		Nitrogen %	0.83 - 0.97		0.79 - 0.88	
		Sulphur %	1.49 - 3.06		2.18 - 3.96	
		CO_2	0.15 - 0.52		0.09 - 0.33	
		Total Sulphur %	1.49 - 5.74		2.18 - 4.88	
	Crossing Point Temp (C°)	Not Available				
	Ignition Point Temp (C°)	Not Available				
	History of Underground Fire (Date, time of detection, seam, district, short description of how fire was controlled, date of final sealing)	N.A.				
	Danger of Fire from the same mine or through adjoining Mine (Mention thickness of parting or barrier)	N.A.				
	Status of fire stopping if mine fiery/ fire prone	N.A.				
	Condition of atmosphere behind sealed off area and use of sealants	N.A.				
	Position of	N.A.				
	a. Cap Lamp - On roll/ Working/ Requirement	N.A.				
	b. Self Rescuer - On roll/ Working/ Requirement	N.A.				
	Sectionalisation/ Isolation of District/ Seam details	N.A.				
	i. Status	N.A.				
	ii. If uncomplete, No. of required	N.A.				
	iii. Time bound programme for completion to be monitored	N.A.				
	iv. Incubation Period.	N.A.				

5.	**INUNDATION**	
	History of Inundation (Date, time, nature of seam, Source of water, in inundation prone, whether warning level imposed by DGMS)	N.A.
	Danger of Inundation from surface water	Adequate embankment against danger due to HFL of Bhanduk Nalla is provided
	River Jore indicate HFL	**HFL** recorded in 2010 is 230.0 m
	Reduce level of mine opening	233.0 M
	Distance of mine opening and source of water	2.5 km Bhendla Talab towards North Side of Block
	Specify minimum cover between source of water and also indicate whether there is any danger due to thin cover.	There is no source of water nearby although there is a water source 700m horizontal distance towards north side.
	History of pot holes and position of 15M hard cover	N.A.
	Danger of indundation, if any from underground water (including danger from the same mine and through out adjoining mines from thin barrier)	N.A.
	Specify precautionary measures against inundation, if any (Ref. Copy is to be attached)	Attached
	Is the Mine stopped during rainy season	No
	Standing order for precaution against inundation, if any (Ref. Copy is to be attached)	Model standing order are prepared and implemented.
	Implementation of Ghosh and Paul committee recomendation	Implemented
	Reference of any stipulation made by DGMS under CMR 126(12)	As mine is below HFL of Bhanduk Nallah adequate Earthern embankment all around the mine with minimum RL of 233.0 M is provided.
6.	**STRATA CONTROL**	N.A.
7.	**VENTILATION**	N.A.
8.	**ACCIDENT & DANGEROUS OCCURRENCES**	NIL Since inception of Mine
9.	**PROHIBITORY ORDER**	N.A.

10. PERMISSION EXEMPTION AND RELAXATIONS OBTAIND FROM D.G.M.S.

Sl.	Permission Granted For	Reference Letter No.
1.	Permission under regulation 98(1) & (3) and permission under regulation 126(2) of Coal Mine Regulations, 1957 for removal of Over Burden and extraction of Coal by mechanized Open Cast method with deep hole drilling and blasting at Marki Mangli – I Coal Mine of TUML	NR-II/764-65 Dated 22.07.2017.
2.	Permission under regulation 122 (1) of Coal Mine Regulations, 2017 to change Mine Boundary of Marki Mangli – I Coal Mine of TUML	NR-II/72018/240-241 Dated 16.04.2018.

11. OTHER DETAILS

	YEAR	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
	Coal Production in MT	--	--	--	--	--	--	--	0.175
	OBR in MM^3	--	--	--	--	--	--	--	0.412
	Grade of Dispatch of Coal	--	--	--	--	--	--	--	G-12
	Manpower as on last date	--	--	--	--	--	--	--	117
	Fatality	--	--	--	--	--	--	--	--
	Serious	--	--	--	--	--	--	--	--
	Reportable	--	--	--	--	--	--	--	--

	The mine was previously under operation by the B. S. Ispat Ltd. (Prior Allottee) from 2010-11 to 2014-15. After cancellation of the Mine by Hon'ble Supreme Court, it was vested to Topworth Urja & Metals Ltd. on 30.09.2015, which came in to operation from 19.04.2017 by getting all the statutory permissions, clearances, NOCs, consents etc.				
	Departmental Manpower	**No. of Workers**		**Workers Trained**	**IME/PME**
	Contractual Manpower	**Name of Contractor**	**No. of Workers**	**Workers Trained**	**IME/PME**

SAFETY MANAGEMENT PLAN

12. DETAILS OF MACHINERY

Sl.	Type & Make	Digging Ht. of Excavator & other Specifications	Capacity (M^3)	No. of Machines	Places where HEMM deployed	Remarks
1.	Hyd. Excavator, ZX650H	10.77M	3.3 – 3.8	01	OB & COAL	
2.	Hyd. Excavator, ZX470H	10.53	1.9-3.1 M3	01	OB & COAL	
3.	Hyd. Excavator, pc300lc-7	9.58	1.4 M3	01	OB & COAL	Used in miscellany-eous works
4.	Motor Grader 120 H	Caterpillar	93 Kw	01	Haul road	
5.	Dozer	Komatsu	5.61 m^3	01	Face, Dump & Road	
6.	Dozer	Shantui	4.3 m^3	01	Face, Dump & Road	
7.	Volvo Tippers	FMX440	18.7 m^3	08	OB & Coal	
8.	Diesel Pump	--	94 HP	01	Sump	
9.	Diesel Pump		88HP	01	Sump	
10.	Electric Pump	--	20 HP	02	Sump	
11.	Payloader JCB 432ZX	--	112 KW	01	Coal Stock Yard	
12.	Tata 1613 - Water Tanker	--	136 BHP	01	OB Dump, Coal Stock Yard, Haul Roads	
13.	KG1 62.5WS - DG Set	--	62.5 KVA	01	Office Premises	

SAFETY MANAGEMENT PLAN

ACCIDENT STATISTICS FROM 2010 TO 2017 AT MARKI MANGLI – I COAL MINE

YEAR	Fatal	Serious	Reportable
2010	--	--	--
2011	--	--	--
2012	--	--	--
2013	--	--	--
2014	--	--	--
2015	--	--	--
2016	--	--	--
2017	NIL	NIL	NIL

SAFETY MANAGEMENT PLAN

DGMS Cir 05 on.05 DGMS Cir 05 on.05 of 2016

DGMS CIRCULAR DELETED TO CONSTRAINT FILE SIZE

Safety Management Plan

- Safety Management plan (SMP) is a strategy for management of occupational health and safety of people who work at mine.
- SMP comprises of work programs to manage health and safety risks and detailed methods to tackle hazards at the mine in a systematic way.
- SMP shall also include an Emergency management plan (EMP).

HAZARD

Key Definitions

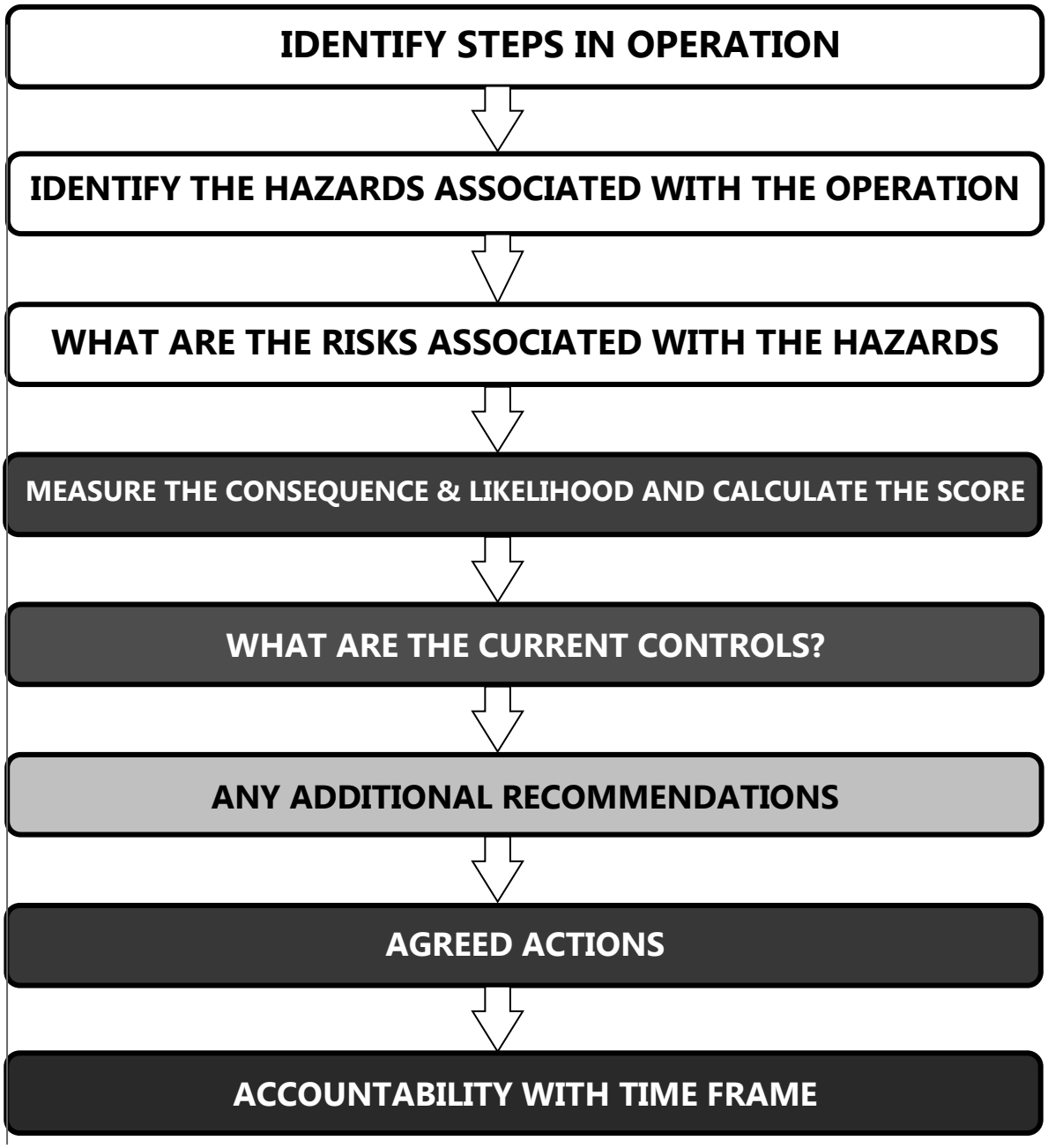
- **Hazard** is Source of potential harm, injury or loss
- **Risk** is combination of the likelihood of a specific unwanted event and the potential consequence should it occur.
- **Risk Assessment** is process that involves measurement of risk to determine priorities and to enable identification of appropriate level of resk treatment.
- **Risk Rating** is the category or level of risk assigned following risk assessment.
- **Risk Management** is the overall description of the steps taken to manage risk, by identifying hazards and implementing controls in the work place.

RISK

SAFETY MANAGEMENT PLAN

PROCESS OF RISK ASSESSMENT

The Process of risk assessment and management is illustrated in the flowchart given below. As shown it consists of eight sequential steps that enable systematic identification of hazards to implementation of risk controls, communication and monitoring for control effectiveness.



SAFETY MANAGEMENT PLAN

Tools of Risk Assessment

- Legislation, supporting bye –laws and approved code of practices which gives practical guidance and specify basic minimum requirements.
- Minutes of safety committee meeting .
- Workman's Inspectors report .
- Report (s) on accidents and near misses from mine .
- Consultation with managers, supervisors and employees to share experience on specific issues.
- Safety officer's inspection report.

SAFETY MANAGEMENT PLAN

Step 1 - Identify Steps in Operation

Identify Steps in Operation means clearly defining the particular task, issues or situation and underlying hazard one is trying to resolve as port of the risk management activities.

Step 2 - Risk Identification

This is perhaps the most critical step of risk management as real issue i.e. potential source of harm, danger or loss is identified in this step

Step 3 - Risk Analysis

"Analyzing the risk is the process of adding meaning to the identified resk i.e. what loss events (or maximum reasonable consequences) could be associated with the identified risk.

Step 4 - Risk Evaluation

The next step in the risk management cycle is to provide an estimate of resultant risk, in term of risk score. The risk score is the product of consequences, exposure and its probability.

Risk Score = Consequences x Exposure x Probability

Risk Ranking

The risk is ranked according to its risk score as arrived by product of consequences, exposure and its probability. The risk is categorized in 3 (three) classes according to its score as hereunder;

High Risk - If the risk score is more than 200

Medium Risk - If the risk score is from 20 to 200

Low Risk - If the risk score is less than 20.

SAFETY MANAGEMENT PLAN

Consequence Criteria	**SCALE FOR CONSEQUENCE**	
	Several Dead	5
	One Dead	1
	Significant change of fatality	0.3
	One permanent disability/less chance of fatality	0.1
	Many lost time injuries	0.01
	One lost time injury	0.001
	Small Injury	0.0001

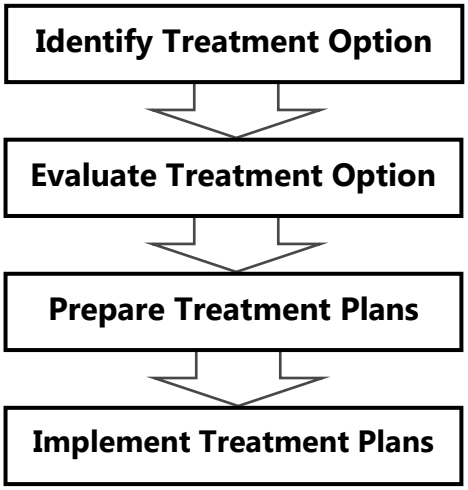
EXPOSURE CRITERIA	**SCALE FOR EXPOSURE**	
	Continuous	10
	Frequent (Daily)	5
	Seldom (Weekly)	3
	Unusual (Monthly)	2.5
	Occasional (Yearly)	2
	Once in Five Year	1.5
	Once in Ten Year	0.5
	Once in Hundred (100) Year	0.02

PROBABILITY CRITERIA	**SCALE FOR EXPOSURE**	
	May well be expected	10
	Quite Possible	7
	Unusual but possible	3
	Only remotely possible	2
	Conceivable but unlikely	1
	Practically impossible	0.5
	Virtually impossible	0.1

SAFETY MANAGEMENT PLAN

Step 5 - Risk Treatment (Controlling the Risk)

This step involves the actual attack on the issue and we are expected to get the result. The schematic rist treatment process model is produced below.



Step 6 - Communication and Consultation on the Risk

Effective communication is the key to ensuring that the risk identification and risk management process is fully effective. It is important that everyone who may be exposed to and aware of the risk.

Step 7 - Monitoring & Review

Once the control measures have been implemented it is important to review them as soon as they have been implemented and periodically afterwards to verify their effectiveness. The ongoing review of control measures is a way to ensure that the control measures remain effective.

SAFETY MANAGEMENT PLAN

Hazard Identification (Mining, Electrical & Machinery)

Dozer Maintenance at Work shop

S.N	CATEGORY	HAZARD
1	Under Carriage Maintenance of Dozer	Fall of object form height /slippery ground /Lack of adequate knowledge
2	Final Drive maintenance of Dozer	Fall of object form height / Slippery ground /Lack of adequate knowledge
3	Transmission & Engine Maintenance of Dozer	Fall of object form height / Slippery ground /Lack of adequate knowledge
4	Blade changing & Repairing	Fall of object form height/ Slippery ground/ Lack of adequate knowledge
5	Welding operation	Electricity/ Fire/ Dust

Dumper Maintenance at Work Shop

S.N	CATEGORY	HAZARD
1	Washing of Dumpers	Slippery Floor
2	Inflation of Tyre	Compressed Air/ Bursting of Tyre
3	Schedule Maintenance	Fall of object/ Fall of person/ Roll over/ Moving part of Machine/ Lack of Knowledge
4	B/D Maintenance	Fall of object/ Fall of person/ Roll over/ Moving part of Machine/ Lack of Knowledge

Operation of Dumper

S.N	CATEGORY	HAZARD
1	Pre shift checking & diesel filling	Unsafe vehicle
2	Checking before starting	Unsafe vehicle
3	Reversing dumper from parking Yard	Persons at ground, other parked dumpers
4	Dumper out workshop near excavator w/shop	Presence of persons at ground
5	Driving dumper out of MTK	Presence of persons at ground, Incoming/outgoing light vehicle
6	Frequent Crossing the area near coal depot munshi office	Presence of road sale trucks, drivers, tippers etc.

S.N	CATEGORY	HAZARD
7	Frequent Crossing of area near coal depot office	Presence of private feeding tippers drivers, payloder, drivers, tippers etc.
8	Going downhill at haul road	Over race/ Steep Gradient/ Weak Berm /Light vehicle/ pedestrian.
9	Going uphill towards the dumpyard	Negotiating steep ramp to approach the dump yard, falling boulders from rear bucket, crossing out going vehicle
10	Dumper hauling in haul road besides coal depot in eastern side	Frequent movement of Feeding tipper/ roadsale trucks from inder
11	Reversing for dumper placement for loading	Placement positioning of dumpers on the other side of the operators/ visibility of operator/ presence of boulders at loading point/ sufficient place for reversing/ presence of pedestrian, presence of light vehicle near the face/ competence of operators, alertness of shovel operator/effective indication by shovel operator for perfect placement/ presence of dozer at face/presence of other dumper at face.
12	Going to respective faces from dump yard	Crossing loaded dumpers/ crossing mixed traffic near the exit point of dump yard.
13	Entering dumper section for parking	Space for parking, reversing beside the another parked dumper, presence of pedestrian, maintenance gang.

Pre Shift Operation of Dumper

S.N	OPERATIONS	HAZARD
1	Pre shift checking	Unsafe vehicle
2	Checking before starting	Unsafe vehicle
3	Reversing dumper from parking bay	Persons at ground, other parked dumpers
4	Dumper out workshop near excavator w/shop	Presence of persons at ground
5	Driving dumper out of workshop	Presence of persons at ground, Incoming or out going light vehicle
6	Placement of tanker near coal depot office	Presence of road sale trucks, drivers, tippers etc/ Presence of private feeding truck /tipper refueling station/ Crossing the coal depot office
7	Parking tanker for opening spray pipe valve	Roll back/ forward of the tanker.
8	Tanker negotiating uphill & downhill	Failure of service brake

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Human Attributes

S.N	OPERATIONS	HAZARD
1	Driving in drunken state	Unsafe driving, diverted attention
2	Using PPE	Body parts exposed to hazards, unwillingness towards its use.
3	Using cell phone while driving/ Listening songs while driving	Unsafe/ Inattentive driving
4	Speed that thrills	Uncontrolled movement of vehicle/ raising dust behind the speeding vehicle causing poor visibility condition for other vehicle/ overtaking

Safety of person engaged for work on Electric Pole

S.N	OPERATIONS	HAZARD
1	Climbing on pole by Ladder/ Working at height	Pole /Ladder/ Height/ Electricity/ Tools
2	Descending from pole	Pole/ Ladder
3	Working in proximity to another live line	Two different voltage lines
4	Working on poles during rain	Slippary pole /Slippery shoes & hand/ Lightening/ Wind

Safety of person engaged in Excavator Operation

S.N	OPERATIONS	HAZARD
1	Transportation of Excavator operators to the face	Unauthorized driving
2	Pre start checking	Unsafe loading machine,
3	Climbing of operator	Improper ladder, uncomfortable climbing posture/ Ladder with grease & oil
4	Swing brakes	Uncontrolled swing, roll down
5	Placement of Excavators w.r.t dumpers at face	Visibility, collision, undulated face due to boulders/ spillage, unstable/ wet/ muddy face
6	Height of bench	Rolling down of boulders on to the machine
7	Swing	Poor swing brake, uncontrolled movement
8	Backing up before blasting	Boulder hitting the machine, damage to the machine

SAFETY MANAGEMENT PLAN

Safety of Optr. & other persons in Dozer Operation

S.N	OPERATIONS	HAZARD
1	Pre start checking	Unsafe machine
2	Pushing of dump material through the edges	Unstable ground
3	Reversing of dozer	Presence of supervisor, security guard, dumpers
4	Preparation of dump edges for edge dumping	Compactness of ground, suitability of berms at the edges, dozing methodology
5	Position of dozing wrt to dumper/tipper material	Proximity of dozer to the wheeled trackless transport vehicle
6	Dozing of faces	Persons at ground, visibility, proximity to other vehicle
7	Leveling of benches for deployment of excavators	Space for dozer deployment, presence of boulders
8	Dozing & Chaining of coal stock yard under fire	Fire, presence of fire
9	Dozing near watery & old u/g gallaries	Toppling of dozer, sinked in
10	Dozing near active fire zone	Fire in dozer

Safety of person engaged in Pump Installation, Operation & Maintenance

S.N	OPERATIONS	HAZARD
1	Transportation of Pumps & motor	Fall of object /Fall of person /Ceiling failure /Transporting Machine /Undulating ground, water charged strata
2	Installation	Fall of object /Fall of person/ Electricity/ Use of improper tools/ Non use/ improper quality of non return valve /Operation of pumps
3	Priming	Slippery ground /Fall of person
4	Opening of sluice valve	Slippery ground/ High pressure (damaging due to bursting of sluice valve, improper material)
5	Power connection	Electrocution
6	Staring of motor & pump	Moving parts/ Water on high Pressure
7	Maintenance	Fall of object /Fall of person/ High pressure water/ Use of improper tools

SAFETY MANAGEMENT PLAN

Safety of Persons & Equipments during Dumping in old Quarry

S.N	OPERATIONS	HAZARD
1	Pushing of dump material through the edges	Unstable ground
2	Reversing of dozer	Presence of supervisor, security guard,unauthorized persons, dumpers
3	Preparation of dump edges for edge dumping	Compactness of ground, suitability of berms at the edges, dozing methodology
4	Dumping of black cotton & other OB material at same place	Unpredicted & accelerated displacement & bench failure

Safety of person while Drilling & Blasting Operation

S.N	OPERATIONS	HAZARD
1	Drill face preparation	Narrow Bench
2	Drilling	Noise /Dust/ Narrow bench & under cut
	Blasting	
3	Transportation of explosive/ accessories from magazine	Detonator along with explosives
4	Transportation of blasting crew to the site	Using same vehicle for explosive and men
5	Charging	Position of detonator wrt explosives/ Presence of watery holes/ Presence of hot holes
6	Blast hole parameters	Insufficient burden, air blast, ground induced vibration, fly rock
7	Stemming	Insufficient stemming length
8	Connection	Improper cable length
9	Placement of guard w.r.t. the blast site	Vulnerability of inadvertent entry within the danger zone
10	Warning	Insufficient guard/ persons using peripheral road
11	Giving final warning and asking for clearance	Absence of two way communication
12	Blast	Fly rock, ground induced vibration, poor fragmentation, air blast, sound, closeness of house.
13	Checking after blast	Misfire, exposure to nitrous fumes, dust
14	Giving clearance after blast for re-deployment	Overlooking misfires, Shovels digging the misfired explosive causing accidental blast

SAFETY MANAGEMENT PLAN

Name of company	**Topworth Urja & Metals Ltd.**
Risk Assessment	**Risk control mining & Electrical**
Conducted	**15.02.2018**
Location	**Safety office, Marki Mangli –I Coal Mine**

Assessment team			**Facilitators**	
S.N.	**Name**	**Designation**	**NAME**	**Designation**
1	SHRI ARUN VAIDYA	MANAGER (TEAM LEADER)	SHRI HARISHARAN KHARE	CHIEF MINING
2	SHRI AMALENDU MONDAL	SAFETY OFFICER		
3	SHRI AKHILESH KUMAR	COLLY.ENGINEER		
4	SHRI NARENDRA PAWADE	PRODUCTION I/C & BLASTING INCHARGE		
5	----------Do----------	BLASTING OFFICER		
6	SHRI MORESWAR KOSTURE	ASSITANT MANAGER		
7	SHRI RAJU MESHRAM	ASSITANT MANAGER		
8	SHRI SWAPAN KR. SARKAR	WI (MIN)		
9	SHRI SADASHIV PETKAR	ELECTRICIAN		
10	SHRI DEEPAK SAKARKAR	ELECTRICIAN		
11	SHRI MANOJ THAKUR	Blasting OVERMAN		
12	SHRI MAROTI BHURKUNDE	ASSITANT MANAGER		
13	SHRI RANJIT JOGI	OVERMAN		
14	SHRI PROMOD BHOSKAR	OVERMAN		
15	SHRI MOHAN PRASAD MANDAL	MINING SIRDAR		
16	SHRI AYODHIYA KUMAR	MINING SIRDAR		
17	SHRI RAJU DONGE	MINING SIRDAR		
18	SHRI RAJAIYA CHITTLAH	MINING SIRDAR		
19	SHRI J P VERMA	MINING SIRDAR		
20	SHRI SANJAY MANDOKAR	PUMP KHALASI		
21	SHRI MANOJ GEDEKAR	PUMP KHALASI		

SAFETY MANAGEMENT PLAN

Table – 1

Sl. No.	Percentage of work person employed	Impact assessment of exposure
1.	> 40	Maximum
2.	20 – 40	High
3.	10 – 20	Medium
4.	5 – 10	Low
5.	< 5	Very Low

Table – 2 & 3 Very Low Risk (Risk < 5)

Sl. No.	Description of Hazards	Percentage of workers exposed	Cons	Expo	Prob	Total
1	Slope Stability/ Failure and Strata control	10	0.1	5	0.5	0.25
2	Using unskilled persons in Skilled jobs	5	0.3	5	3	4.5
3.	Blasting and Vibration	2	0.1	5	7	3.5
5.	Unauthorized Entry to mine Working	5 – 10	0.3	10	7	21
6.	Lack of Illumination	10-20	0.3	5	7	10.5
8.	Use of Electricity in Mines	1-5	0.3	5	7	10.5

Table – 4 Major Hazard Identification

Sl. No.	Major Hazard Identification
1.	Using unskilled persons in Skilled jobs
2.	Slope Stability/ Failure and Strata control
3.	Blasting and Vibration
4.	Airborne respirable dust and mine occupational health in opencast coalmine

Table – 5 Categorization of Identified Risk

Sl. No.	Major Hazard	Sub Category of Hazard
1.	Using unskilled persons in Skilled jobs	➢ Lack of knowledge on Dumper operation & Traffic rule. ➢ Lack of knowledge on work procedure at Coal/OB Face. ➢ Lack of knowledge on work procedure at Dump yard.
2.	Slope Stability/ Failure and Strata control	➢ Principal Hazard
3.	Blasting and Vibration	➢ Explosive, ➢ Lack Of Knowledge in Handling of Explosives ➢ Transport of Explosive and Detonator in same vehicle ➢ Fly rock ➢ vibration ➢ Contrabands
4.	Unauthorized Entry to mine Working	➢ Lack of Knowledge on procedure ➢ Health Hazard.
5.	Airborne respirable dust and mine occupational health in opencast coalmine	➢ Water spraying arrangement non functional ➢ Dust suppression system non functional ➢ Health Hazard

SAFETY MANAGEMENT PLAN

Risk Assessment/Major Hazard Identification

Mine Details	Name of Mine	Marki Mangli – I Coal Mine
	Location	At. Pardi, Tah – Jhari Jamni, Dist. Yavatmal
	Type of Mining	Opencast

	Name	**DESIGNATION**
FACILITATORS	Shri Amitabh Singh	Agent
	Shri Arun Vaidya	Manager

Sl No.	**JOB TITLE**	**NAME**	**DESIGNATION**
1.	**1. Using Un-skilled worker in skilled Job (USW)** **Date Conducted 10.03.2018**	Shri Arun Baidya	Mine Manager
2		Shri Amalendu Mondal	Safety Officer (SO)
3		Shri Moreswar Kosture	Asst Manager(Exc)
4		Shri Swapan Kr. Sarkar	Workman inspector (Mining)
5		Shri Santosh Bhopre	PSC member
6		Shri Manoj Gedekar	PSC Member

Sl No.	**JOB TITLE**	**NAME**	**DESIGNATION**
1.	**2. Slope Stability/ Failure and Strata control** **Date Conducted 10.03.2018**	Shri Arun Baidya	Mine Manager
2		Shri Amalendu Mondal	Safety Officer (SO)
3		Shri Moreswar Kosture	Asst Manager(Exc)
4		Shri Swapan Kr. Sarkar	Workman inspector (Mining)
5		Shri Santosh Bhopre	PSC member
6		Shri Manoj Gedekar	PSC Member

SAFETY MANAGEMENT PLAN

Sl No.	JOB TITLE	NAME	DESIGNATION
1.	**3. Blasting Operation Audit of Hazard Identification and Control Plan** **Date Conducted 15.03.2018**	Shri Arun Baidya	Mine Manager
2		Shri Amalendu Mondal	Safety Officer (SO)
3		Shri Narendra Pawade	Blasting Officer
4		Shri Swapan Kr. Sarkar	Workman inspector (Mining)
5		Shri Manoj Thakur	Sr. Overman (Blasting)
6		Shri Mohan Prasad Mandal	Mining Sirdar
7		Shri Santosh Bhopre	PSC Member

Sl No.	JOB TITLE	NAME	DESIGNATION
1.	**4. Airborne respirable dust and mine occupational health in opencast** **Date Conducted 15.03.2018**	Shri Arun Baidya	Mine Manager
2		Shri Amalendu Mondal	Safety Officer (SO)
3		Shri Akhilesh Kumar	Colliery Engineer (E&M)
4		Shri Swapan Kr. Sarkar	Workman inspector (Mining.)
5		Shri Mohan Prasad Mandal	Mining Sirdar
6		Shri Santosh Bhopre	PSC Member

Table – 6

1. Using Un-skilled worker in skilled Job (USW)

Marki Mangli –I Coal Mine			*At. Pardi, Tahsil – Jhari Jamni, Dist. Yavatmal*							**Date Conducted –** *10.03.2018*					
HAZARD No. 1	**HAZARD**	**MECHANISMS**	**CALCULATED RISK**				**COMMENTS**	**CONTROL**	**Reg / DGMS CIRCULARS / ISO GUIDELINES**	**PROCEDURE**	**EXISTING RISK CONTROL INDEX**	**RESPON-SIBILITY**	**COMMENTS**	**ACTION PLAN**	**OBSERVATION AND COMMENT**
			CONS	**EXPO**	**PROB**	**RISK RATING**									
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Using Unskilled worker in skilled Job	Lack of knowledge on Dumper operation and Traffic rule	• Documents are not made available on traffic rule and operation. • Training on the dumper operation not provided.	0.3	5	3	4.5	• On the job Training • Very low Risk • Workshop on awareness in working area required.	Ensure to provide job related salient points applicable on the mine premises, SOP, Traffic rule.	Recommendation of 7th National Safety Conference	• Daily Public Address at the beginning of the shift. • Job related briefing at the Spot. • Distribute copy of the SOP.	Very low	M M, SO, AM, WI, All Supervisors	Immediate Action by Manager, Safety Officer and shift In- Charge	• Consist a team for public addressing at the beginning of the shift. • Safety officer and supervisory staff visit at the work places and explain them job related briefing & precaution. • Distribution of SOP copy in Hindi and recording.	Control measure implemented and status is Satisfactory.
	Lack of knowledge on work procedure at Coal/ OB Face	Hit to person, hit to machine at the coal or OB face	0.1	5	7	3.5	• Very low Risk • On the Job Training and skill program.	• Ensure proper illumination. provision of Rear mirror. • one-way traffic, SOP proper supervision.	• DGMS Cir. 07 of 2016 Dated-08.04.2016 • Recommendation of NSC 7th.	• Illumination survey • One-way Traffic arrangement at Coal and OB Face.	Very low	MM, SO, Engineer, Asst. Manager, Workman Inspector, All Supervisors	Immediate Action	• Illumination survey done by Engineer, electrician and Take step for improvement. • Provide adequate working space. • Distribution of the SOP's Copy	Satisfactory
	Lack of knowledge on work procedure at Dump yard	Hit to Person/ Machine, Toppling of dumper at edge of dump yard	0.01	3	3	0.09	• very low Risk • On the Job Training for skill improve-ment	• Ensure VT, Refresher training, • Competent supervision	First Schedule of Rule 6 of MVTR 1966	• Training Imparted at VT Center • Consult with specialized training provider institution. • On the Job training feedback	Very low	Mine Manager, Safety Officer, VTO, Agent, TSC Members, Workman Inspector, All supervisors	Immediate Action	• Consult VT Center for appropriate training • Provide special training in regular interval in outside training institute. • Safety talk and safety oath at the beginning of the shift by Safety officer, Shift in-charge and supervisor.	Satisfactory

TABLE - 7

2. Slope Stability/ Failure and Strata control

Marki Mangli –I Coal Mine			*At. Pardi, Tahsil – Jhari Jamni, Dist. Yavatmal*							**Date Conducted –** *10.03.2018*					
HAZ. No.2	**HAZARD**	**MECHANISM**	**CALCULATED RISK**				**COM-MENTS**	**CONTROL**	**REG/DGMS CIRCULARS / ISO GUIDELINES**	**PROCEDURE**	**EXISTING RISK CONTROL INDEX**	**RESPONSIBILITY**	**COMMENTS**	**ACTION TAKEN**	**OBSERVATIONS & COMMENTS**
			CONS	**EXPS**	**PROB**	**RISK RATING**									
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Slope Stability/ Failure and Strata control	Side fall in open cast working	Creation of high vertical sides due to poor supervision of mining operation.	0.3	05	03	4.5		Ensure efficient supervision to restrict the height of sides as stipulated in statute and prevent side fall	Reg.106 (1) & reg. 131 (6)	Implement an integrated system of supervision by MS/OM/AM	Med	MM	Regular supervision is done	A system of supervision has been devised and being implemented	Monitoring of the process to be done in on-going manner by MM
	Side fall in open cast working	Weak and incompetent strata due to presence of geological disturbances/ Discontinuities.	0.01	05	03	10.5		Identified weak planes and water bearing zones to ascertain competence of strata and ensure compliance of preventive measures.	Reg. 106 (1)	No major fault plane have been found present in the workings.	Med	MM	Regular monitoring is done	Discussion is in progress to engage a research institute for conducting geotechnical study	MM & Agent may expedite the issue to complete the job.
		Creation of overhangs and under hangs in opencast workings due to weathering leading to collapse of strata.	0.1	05	02	1.0		Periodic inspection by AM	Reg. 106 (6)	Formulate a scheme of periodic inspection by AM	Low	MM	Inspection at done regular interval	A scheme has been prepared	Scheme implemented
	Side fall of localized nature in open cast working	Weak and incompetence strata due to presence of geological disturbance/ discontinuity/ Weathering and time induced strain leading to collapse of strata. Collapse of strata resulting from overhangs & under hangs.	0.1	05	02	1.0		• Periodic inspection of mine workings by geotechnical engineer/geologist and AM. • Ensure timely measures to prevent collapse of strata. • Ensure dressing of sides by trained personnel under competent person. • Training of support personnel	Reg.106 Reg.106 Reg.131 (6) Reg.131 (6)	• Formulate a scheme of periodic inspection by MM • Develop & implement a procedure to prevent uncontrolled collapse of strata. • Establish a system of supervision for timely dressing of sides as and when required	Low Low Med	MM AM & MM AM & MM	• Scheme prepared and inspection Is being done at regular interval • Satisfactorily implemented	• A system of periodic inspection has been devised and put to use. • A system of supervision for dressing of sides has been formulated and put in place. • Training of support personnel is yet to be conducted	• MM to monitor the system in on-going manner. • AM & MM to monitor the system in an on-going manner. • MM & Agent may organize training within one month.
	Failure of the dump	Accumulation of water at the base of the dump due to poor drainage.	0.01	05	01	0.05		Periodic inspection of mine by AM	Reg. 108 MG	Formulate a scheme of periodic inspection by MM	Med	AM & MM	Scheme prepared & implemented	A system of periodic inspection has been devised and put to use.	MM to monitor the system in on-going manner.

HAZ. No.2	HAZARD	MECHANISM	CALCULATED RISK				COMMENTS	CONTROL	REG/DGMS CIRCULARS / ISO GUIDELINES	PROCEDURE	EXISTING RISK CONTROL INDEX	RESPONSIBILITY	COMMENTS	ACTION TAKEN	OBSERVATIONS & COMMENTS
			CONS	EXPS	PROB	RISK RATING									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Slope Stability/ Failure and Strata control	Side fall in open cast working	Formation of dump without adhering to prescribed height and permissible slope.	0.3	05	02	3.0		• Ensure timely measure to prevent collapse of strata by competent person.	Reg.131 (6)	Devise a system and implement monitoring of dump height and slope stability by surveyor, and AM/MM	Med	AM & MM	System implemented	A system of monitoring to check the dump height and slope has been devised and put to use. Further Scientific Study is being carried out to assess and suggest Measures.	MM to keep continuous watch over implement-tation of the system.
		Formation of dump due to extra height and steep slope						• Ensure maintenance of designed height and slope of the dump.	Reg. 108	Monitoring of dump height & slope by Surveyor & AM.	Low	Sur & MM	Monitoring at Regular interval	Sytem has been introduced	Am & MM keep watch of the System.
		Accumulation of water at the base of the dump due to poor drainage.	0.01	05	01	0.05		Ensure proper drainage at the base of the dump.	MG under Reg. 108	Construction of Garland drains and maintained thereof at the base of the dump.	Low	MM & Agent	Drainage system is satisfactory	A Scheme of construct the garland drains has been finalized.	AM & MM may initiate action to complete construction of garlands.
	Falling of loose boulder(s) from the upper bench.	Formation of loose boulder(s) and improper dressing of sides.	0.3	03	02	1.8		• Ensure timely dressing of sides by trained personnel, under competent supervision. • Training of dressing personal.	Reg. 131 (6) Rule (T)-09 DGC – Cir 4/1975	• System of dressing sides as and when required • Refresher training of dressing personnel	Low Low	AM & MM MM & AM	• Dressing operation is an ongoing process • Training is conducted at regular interval	A scheme has been prepared for dressing of sides.	Am & MM to keep watch of the system.
	Failure of sides in the worked out area of opencast works.	Non maintenance of ultimate pit slope in the worked out area.	0.3	03	02	1.8		Determination of optimum pit slope.	MG under Reg.106	Ultimate pit slope has been designed.	Low	SO & MM	Ultimate pit has been determined	Ultimate pit slope has been prepared	MM & Agent to keep watch and review of the same.
		Non monitoring of of pit slope stability in the worked out area	0.3	03	02	1.8									
	Failure of dump	Non monitoring of dump stability	0.1	03	02	0.6		Formulate a scheme of side support/ strata reinforcement on the basis of scientific study.		To prepare scheme of side support/ strata reinforcement by consultancy of experts of research institute.	Low	Agent & MM	Scientific study is under process	Preliminary discussion with the research institute is held.	Prompt action to be initiated in this regard by MM & Agent.

TABLE - 8

3. Blasting Operation / Audit of Hazard Identification and Control Plan in Blasting Operation

HAZ. No.3	HAZARD	MECHANISM	CALCULATED RISK				COMMENTS	CONTROL	REG/DGMS CIRCULARS / ISO GUIDELINES	PROCEDURE	EXISTING RISK CONTROL INDEX	RESPONSIBILITY	COMMENTS	ACTION TAKEN	OBSERVATIONS & COMMENTS
			CONS	EXPS	PROB	RISK RATING									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Blasting Operation / Audit of Hazard Identification & Control Plan in Blasting Operation	**Explosive** • Lack of Knowledge in Handling of Explosives	Unskilled person deployed and proper training not provided.	0.3	5	7	10.5	• Medium Risk • Training needs for improvement	• Only trained person as per VT Rule, • Authorized Skilled Persons Having Police Verification & Providing Identity Card For Handling Of Explosives.	• Mine Vocational Training Rules-1966 & • DGMS Cir. 13/1956	• The training of Explosive crew as per VT Rule. • Deployed them with expe-rience work-men under competent supervisor in the handling of the explosive.	Very Low	BO, SO, B.OM.	---	Deployed continuously in job of explosive handling and shot firing operation to get efficiency of desire level.	Blasting officer personally monitor the activity
	Pilferage of Explosive during transport	Unauthorized worker deployed For transportation. Not registered in Form 'A'	5	0.5	2	5	• Very Low Risk • Police verification is Essential	Deployment of trustworthy workers in handling of explosive and ensure police verification.	DGMS Cir. 33/1964	• Training at VTC and on the job training at mine. • Police verification.	Very Low	MM, BO, SO, B. OM.	---	Physical verification of explosive at the site of use and at the end of shift.	Blasting officer personally monitor the activity
	Transport of Explosive and Detonator in same vehicle.	Separate vehicle not provided for explosive and detonator transportation	5	5	3	0.75	Very Low Risk	Ensure the separate transport of Detonator &Explosive	Reg.188(3b)	Make arrange-ment for separate vehicles for the explosive & detonator & monitoring at frequent interval	Very Low	MM, BO, SO, B. Om	Satisfactory	Entry the time of vehicles at the check post and mines premises, record the time of vehicle at the magazine and check post.	Ensure time record of explosive van at the check post
	Fly rock Vibration	• Improper Drill pattern in relation to strata. • Over charging. • Improper delay interval • Improper stemming	0.3	5	7	10.5	Medium Risk	• System of Marking Area Before Charging By Red Flag • Placing Portable Boards at Charging Site. • Use Proper Drill Pattern, stemming and charging	DGMS Cir No. Cir Gen.2/2003	Devise blasting pattern with the consultation of explosive supplier, field trial with the representative of explosive supplier to arrest fly rock and vibration	Very Low	MM, BO, SO, B.OM	Satisfactory	Record the vibration by Vibrometer and analyze for the further improvement.	Ensure proper charging of explosive and drill pattern by over man.

TABLE - 9

4. Airborne Repairable Dust & Mine Occupational Health in Opencast

HAZ. No.4	HAZARD	MECHANISM	CALCULATED RISK				COMMENTS	CONTROL	REG/DGMS CIRCULARS / ISO GUIDELINES	PROCEDURE	EXISTING RISK CONTROL INDEX	RESPONSIBILITY	COMMENTS	ACTION TAKEN	OBSERVATIONS & COMMENTS
			CONS	EXPS	PROB	RISK RATING									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Airborne Repairable Dust & Mine Occupational Health in Opencast	Presence of airborne repairable dust in mine work faces	• Dry drilling operation. • Water injection system not working in drilling machine. • Dust concentration in excess of permissible limit	0.001	0.5	1	0.0005	Very Low Risk	• Water spraying of coal face before drilling. • Availability of water while conducting drilling and ensure functioning of water injection system in drilling machine • Use of personal protective equipment(PPE)	1.Reg 144; DGC 1/2004; Rec Xth conference.	1. Prepare & implement Code of Practice for drilling in work faces. 2. Ensure periodic maintenance of drilling machine & keep interlock of drilling machine with water jet functional. 3. Ensure supply of PPE and use by work persons.	Very low Risk	CE & MM CE & MM	Job mentioned at sr. no. 1, 2 & 3 to be completed with-in one month	• Code of Practice' for drilling has been prepared & implemented. • Maintenance of drill machines is being done. Interlocking of drilling operation with functioning of water jet not yet completed. PPE supplied & used by work persons.	MM to stop the operation of drilling machine till the interlocking system is made functional.
	Presence of airborne repairable dust in haul road	Dust suppression system non functional.	0.01	0.5	0.5	0.0025	Very Low Risk	• Water spraying with dust suppressant in haul road. • Water spraying arrangement non functional	• Reg 144; Dgc 1/2004; Rec Xth conference. • Implementation of SOP.	Frame and implement Code of practice for dust suppression in haul road Frame and implement Code of practice for dust suppression in coal loading point	Very low Risk	AM & MM	Job to be completed within one month time	• "Code of Practice" for dust sup-ression in haul roads has been prepared & implemented. • "Code of Practice' for dust sup-ression in coal loading point has been prepared & implemented	Monitoring by Mine Manager and safety Officer
	Presence of airborne repairable dust at coal loading point at coal stock yard.	Water spraying arrangement non functional	0.0001	0.5	0.5	0.000025									
	Noise induced hearing loss of opencast drill machine operating personnel.	Noise level in machine in excess of threshold limit. Maintenance of machines deficient. Mine workers not using ear muffs.	0.0001	0.5	0.5	0.000025	Very Low Risk	Noise level in machine in excess of threshold limit. Maintenance of machines deficient. Mine workers not using ear muffs.	DGC no. Tech 5/1990	A system of conducting noise survey at prescribed interval & implementation of remedial measures thereof may be put in place.	Very low Risk	Am & MM	Immediate implementation	Noise survey is conducted in every month	
	Risk of pneumo-coniosis to mine worker.	Initial & periodical medical examination not conducted in prescribed manner	0.0001	0.5	0.5	0.000025	Very Low Risk	Initial & periodical medical examination not conducted in prescribed manner	Rule 29B of MR 1955 REC X conference	Medical Officer doing PME should keep standard X-Ray machine	Very low Risk	MM, & Medi-cal Off.	Immediate implementation	PME are being done from outside medical Practioner.	Monitoring by Mine Manager

CODE OF PRACTICES/ SAFE OPERATING PROCEDURE

CODE OF PRACTICE PAGES DELETED TO CONSTRAINT FILE SIZE

Principal Hazard Management Plans (PHMPs)

1. Identification of Principal hazards of the mine.
2. Formulation of Principal Hazard Management Plans (PHMPs) by application of techniques of Trigger Action Response Plan (TARP), Fault Tree Analysis (FTA) etc.
3. Formulation of Emergency Response Plan (ERP) Evacuation System for dealing with emergency.
4. Testing the effectiveness of ERP by mock rehearsal.
5. Ensuring the effectiveness of rescue services for dealing with emergency.

EMERGENCY ORGANISATION PLAN

1.1 The organization required to deal with an emergency will function under the overall charge of the Agent Manager shall keep themselves fully aware of emergency response men, equipments and materials available in the Mine and neighbouring Mines.

1.2.1. STANDING CONSULATATIVE COMMITTEE

The Committee have following members :-

1. Sri Harisharan Khare : Chief Mining, TUML
2. Sri Krishna Kumar Mondal : DDMS, Nagpur Region-1

This Committee will meet in case of severe emergency and advice and help the Mine/Project to deal with situation.

1.2.2. ACTION COMMITTEE

This Committee has been constituted with following members

1.	Shri Amitabh Singh	Agent
2.	Shri Arun Vaidya	Mine Manager
3.	Shri Amalendu Mondal	Safety Officer
4.	Shri Narendra Pawade	Production Incharge
5.	Shri Narendra Pawade	Blasting Officer
6.	Shri Avinash Darekar	Colliery Engineer (E&M)
7.	Shri Moreswar Kosture	Shift Incharge
8.	Shri Raju meshram	Shift Incharge
9.	Shri Maroti Bhurkunde	Shift Incharge
10.	Shri Ashutosh Shukla	Surveyor

This Committee working under the guidance of the Sub Area Manager/Agent will share the work of emergency response.

1.2.3 EMERGENCY RESPONSE PLAN (ERP) SUPERVISOR:

The following persons will be ERP supervisors and will be responsible for notification of the emergency and for taking steps to control the situation till the action committee or other senior officer's take- over. Name, Location, Shift, Phone Nos. of Shift In-charge, Shift Engr(X)/Foreman,Sub Station I/C/Electrical Supervisor, Contractor Workshop ,Contractor Supervisors & any other important contact nos. This list shall be displayed prominently at the respective location and updated without delay.

MINING STAFF		
1.	Shri Manoj Thakur	Sr.Overman
2.	Shri Swapan Kr Sarkar	Sr.Overman
3.	Shri Ranjit Jogi	Sr.Overman
4.	Shri Suryabhan Singh	Sr.Overman
5.	Shri Mohan Prasad Mandal	Mining Sirdar
6.	Shri Raju Donge	Mining Sirdar
7.	Shri Rajaiya Chitala	Mining Sirdar
8.	Shri J P verma	Mining Sirdar
9.	Shri Durgesh Yadav	Mining Sirdar

E & M Staff

1.	Shri Avinash Darekar	W.(Elec),
2.	Shri Sadashiv Petkar	Electrician
3.	Shri Deepak Sakarkar	Electrician

1.2.4 FIRE FIGHTING PERSONS:-

All work persons are imparted training at our Vocational Training Centre.

1.2.7 FIRST AID PERSONNEL:-

No. of first aid trained persons are available in all working sites, their names are displayed at site offices. First Aid Station are located at –

A. R.K. Office B. CONTAINER C. VT ROOM

SAFETY MANAGEMENT PLAN

FIRST AID MEMBERS

1.	Shri Arun Vaidya	Mine Manager
2.	Shri Amalendu Mondal	Safety Officer
3.	Shri Narendra Pawade	Production Incharge/ Blasting Officer
4.	Shri Moreswar Kosture	Shift Incharge
5.	Shri Raju meshram	Shift Incharge
6.	Shri Maroti Bhurkunde	Shift Incharge
7.	Shri Manoj Thakur	Sr.Overman
8.	Shri Swapan Kr Sarkar	Sr.Overman
9.	Shri Ranjit Jogi	Sr.Overman
10.	Shri Suryabhan Singh	Sr.Overman
11.	Shri Mohan Prasad Mandal	Mining Sirdar
12.	Shri Raju Donge	Mining Sirdar
13.	Shri Rajaiya Chitala	Mining Sirdar
14.	Shri J P verma	Mining Sirdar
15.	Shri Durgesh Yadav	Mining Sirdar

SAFETY MANAGEMENT PLAN

1. PRECAUTION AGAINST FIRE:

a. All HEMMs are provided with Fire extinguisher of appropriate model viz. ABC type , CO2 type, D.C.P type and they are kept in readiness with proper operational training to operators.

b. Fire sensors are fitted in all Dumpers&excavators which activate automatically fire suppression system.

c. In case of emergency two nos of water sprinkler of 12000 Liters and 5000lt capacity(used for water sprinkling for dust suppression) may be utilized for fire suppression.

d. Water filling arrangements is provided at two different places.

e. Fire extinguishers are provided at different places to arrest the spreading of fire.

f. A plan showing the deployment of fire extinguishers is kept ready in the office of the Manager.

g. At working Site, walki-talkiare provided to supervisors / officers in each shift. In attendance room Landline Telephones is provided.

2.1.1 STANDING ORDER FOR IMMEDIATE ACTION TO BE TAKEN ON OCCURANCE OF FIRE IN THE MINE PREMISES

A. Giving of warning :- Duty of Person :-

a. Any person who notices a fire in a mine shall take immediate steps to extinguish it using whatever / suitable material or appliances are available at / or near the site. Where more than one person is present, one of them shall proceed for getting further assistance and to give warning.

b. Any person who notices a fire in a Mine , which is too extensive to be tackled by him or when he fails to control the fire by taking action as described in clause –a, above shall proceed to give warning.

c. Any person who notices the appearance in any part of the Mine of smoke or other signs indicating a fire or heating has or may've broken out, shall take action to give warning.

d. The person detecting the fire shall take steps to give warning by the fastest means to the nearest available Mining Sirdar, Overman , or any other Mine official.

2.1.2. DUTY OF MINE OFFICIAL

The Mining Sirdar, Overman or other Mine official whom warning of fire is given, shall send warning by faster possible means to ;

a) Manager or in his absence, the principal official present at the Mine premises.
b) Attendance clerk for sounding siren.
c) Engineer
d) Security Inspector /In charge.

2.1.3. DUTY OF ATTENDANCE CLERK

On receiving information about the fire the attendance clerk shall give a siren 10 Hoots repeated at 30 sec. intervals. In the absence of a Colliery siren or the attendance clerk shall take steps to warn the members of Colliery Fire Fighting and rescue teams and ringing over telephone / mobile to area control for fire tender facility.

2.1.4. DUTY OF FIRE FIGHTING & RESCUE PERSONNEL

On hearing the fire signal or on being informed through any other means, the Colliery fire fighting & rescue teams shall immediately collect at Operation Control Room.

2.1.5. DUTY OF MANAGER

On getting information about a fire or heating at the Mine, the Manager or in his absence, the principal official present at the Mine shall either himself inform or take suitable to inform the Agent and other senior officers of the Company, the Rescue Station and the Dir. General of Mines Safety.

2.2 RESTRICTION ON EMPLOYENT OF PERSONS

No persons other than those permitted by the Manager or in his absence by the principal official present at the Mine, shall be allowed to remain in or to enter the mine for the purpose of dealing with the fire. Explanation :- Every such authorization shall, as far as possible be in writing.

3. PRECAUTION AGAINST DANGER OF INUNDATION:-

a. A careful assessment of the danger of inundation from surface water is made before the onset of rainy season and Monsoon preparation. Action Plan has been prepared and circulated to all concerned.

b. Proper pumping arrangements are made well before the rainy season.

c. All the garland drains are repaired before Monsoon and are being cleared through-out the year.

d. During heavy rains , the Manager or senior most Mine officials present goes round the surface area of the Mine to check vulnerable points and effectiveness of safety Measures. In case of any doubt, he shall withdraw men and machineries to Safety from threatened working.

e. Water Danger Plant is being maintained a made up-to-date.

3.1. STANDING ORDERS FOR IMMEDIATE ACTION TO BE TAKEN IN CASE OF INUNDATION IN MINE:-

A. Giving of warning

3.1.1. DUTY OF A PERSON:-

a. Any person who notices the danger of inundation of inflow of water to Mine shall take immediate action to give warning.

b. The person detecting the danger of inundation or in rush of water in Mine shall take steps to give warning by the fastest means to nearest available Mining Sirdar , Overman or any other Mine Officials.

3.1.2. DUTY OF MINE OFFICIALS:

a. The Mining Sirdar, Overman or other Mine Official to whom warning of inundation is given shall send warning by fastest possible means to The Manager or in his absence, the principal official present in mine.

b. Attendance Clerk.

c. Person responsible for sounding Colly. Siren.

d. Colly. Engr.

e. The Safety Officer.

3.1.3. DUTY OF ATTENDANCE CLERK

On receiving information about the danger of inundation or in rush of water in Mine , the attendance clerk or the person in-charge of sounding Colliery Siren shall given siren of 10 Hoots at an interval of 30 sec. and in absence of a Colliery Siren, he shall take steps to warn the concerned persons on phone.

3.1.4 DUTY OF THE MANAGER

On getting information about the danger of inundation or in rush of water in mine, the Manager or in his absence, the principal officer at the Mine, shall either himself inform or take suitable action to inform the Sub Area Manager and other Senior officers of the Area, the Rescue Station and the DGMS.

3.2. RESUMPTION OF WORK:-

Normal work shall not be resumed in the Mine / section of Mine except with prior permission of Manager.

4. PRECAUTION AGAINST FALL OF THE HIGH WALL AND SPOIL

a. Height / width and slope of the benches are kept as per permission of DGMS.

b. When persons are employed within 5 mtr. of the working face, precaution are taken to ensure their safety by dressing the side of the benches.

c. All the spoil dumps are being biologically reclaimed by afforestation to avoid any slide of spoil.

d. All the workers working near the highwall, spoil, etc. are clearly instructed to not sit/ take rest within the vicinity of high wall.

5. GENERAL PROCEDURES IN CASE OF ANY EMERGENCY

a. On event of emergency, the emergency siren should be switched on and all concerned should be alert to meet with the situations.

b. The register keeper is provided with telephone / Mobiles & fixed wireless set if available. He shall inform the Manager, Engr. on phone or mobile

c. The Supervisor , worker , officers whosoever have been given training to deal with the situation should be summoned or if they are already on duty should reach to emergency site without delay.

d. The Mine Manager along with other competent persons should reach the site and take charge of the Register Keeper.

e. If life of person or person(s) is involved, attempt should be made to rescue them with proper care. If injured, should be rendered first-aid and shifted to hospital immediately.

f. Attempts should be made to remove the cause of emergency with care taking into consideration that no more lives are put into danger.

g. Efforts should be made to avoid panic among the workers. The Manager or other higher official should address the workers about the rescue operations the damage caused & appeal to co-operate in rescue work. The Personnel Deptt should be instructed to deal with Local Police Authorities & press etc. Avoidance of any rumour should be taken into consideration.

h. Emergency Telephone Call Register should be maintained by Register Keeper. He will record all incoming and out- going calls which deal with the emergency. EMERGENCY TELEPHONE CALL REGISTER Date, Time, Person called or calling, Telephone no. for outgoing call Sig. of Register Keeper.

6. LIST OF EMERGENCY TELEPHONE NOS.

Sl.No.	Name	Designation	Mobile No.
1	Sri Arun Kumar Vaidya	Mines Manager	9552550098
2	Sri Amalendu Mondal	Safety Officer	9422501653
3	Sri Narendra G Pawade	Blasting/Production I/C	9552556678
4	Sri Raju Meshram	Assistant Manager	9112247315
5	Sri Moreswar Kosture	Assistant Manager	9112247314
6	Sri Maruti Bhurkunde	Assistant Manager	8668366461
7	Sri Ashutosh Shukla	Surveyor	7869615792
8	Sri Swapan Kr. Sarkar	Overman/Instructor	9371476487
9	Sri Suryavan Singh	Overman	9763813632
10	Sri Promod Bhoskar	Overman	9028168577
11	Sri Ranjit Jogi	Overman	9511719076
12	Sri Manoj Thakur	Overman	9611719076
13	Sri M. P. Mondal	Mining Sirdar	9890464802
14	Sri Avinash Darekar	Colliery Engineer	9850598262
15	Sri Ranjit Jogi	Workman Inspector	9372394540
16	Sri Anand Naygaonkar	HR Asst./ Accounts	7720026250

7. STANDING ORDER IN CASE OF EMERGENCY

a. On receiving information about serious disaster at Mine and having obtained authorisation from the Manager or Sr. Official present at this site the attendance clerk or person in charge of sounding the Siren, shall sound the siren of 10 Hoots, thereby declaring a state of emergency in Mine.

b. After hearing the warning siren every official shall post himself at his appointed place and shall discharge his duties as assigned to them.

c. The Colliery shall observe the mock drill twice a year for prompt action in case of emergency and for familiarising the supervisors and officials with their duties.

8. OPERATION CONTROL ROOM

The Manager's Room situated at View Point will be utilised as Operation Control Room in case of emergency. In order to provide adequate supervision and control at all times, duty roster covering 24 hrs will be prepared to ensure continuity of control room reference. The duty roster will be maintained as per the following DUTY ROSTER FOR SUPERVISION AND CONTROL: Sr.No., Name of job ,Name of official on Roster: Ist shift, IInd Shift, IIIrd shift . In a serious emergency the key officials of the Area will assist the Manager in planning rescue and recovery operations the consultative body will be limited to following members. Area General Manager, Sub Area Manager/Agent, Area Safety Officer, Safety Officer of the Mine and Manager of the Colliery, Dir / Dy. Dir of Mines Safety, Workmen's representative(s), Representative(s) of overman/mining sirdars.

9. FIRE FIGHTING PLAN

Fire Stations, pump Installations, deployment of Fire Extinguishers, sand buckets and water reservoir etc. kept at Manager's office.

10. UPDATING OF INFORMATION

Mine Manager will notify Safety Officer for relevant changes of residential address phone nos., transfer of person in the project and transfer of key persons in the Area etc. It will be the responsibility of safety officer to keep the information's constantly updated.

11. PERIODIC INSPECTION

Safety Officer, alongwith Sr. Overman) will inspect all fire stations / installations atleast once in 6 months. However Sr. Overman will inspect as per requirement.