

DESCRIPTION OF MINE AND PREVIOUS ACTIVITY

Main activity of Burloaia Central Gura Baii Superior is: Extraction of copper, lead and zinc ore by underground methods. It extends on a surface of 30 Hectares including mine curtilages, waste tips, tailings dams and other ancillary activities. The activity will be cease in 2000 for Gura Baii Superior and 2005 for Burloaia.

Associated with former mining operations there is 9 waste tips with total surface 5 ha, containing 30000 cubic meters of mine waste.

The nearest community is Baia Borsa Town situated at 14 km from mine, having 5000 inhabitants and local water course is River Cislă situated at 100 m from mine boundary.

Mine water with flow rate of 3 l/sec, and pH of 3.12 flowing from Fe 5.62 mg/l, Cu 5.14 mg/l, Pb 0,63 mg/l and Zn 7.64 mg/l.

The mine site has three separate areas: Mining site, Preparation plant and Tailing Storage Facilities Area.

CULTURAL PROPERTY

It is not anticipated to be applicable. However, if there is an accidental find of something valuable, the Engineer of the Contract will stop any physical operations until competent authority (County Commission for Historical Monuments or Ministry of Culture and Religious Affairs) provides permission to continue.

PROPOSED WORKS

The mine closure and environmental remediation proposals:

- General site clearance, removal of scrap metal and demolition of 11 buildings and structures, having a total volume of 332 cubic meters of demolition materials (concrete and bricks) which will be decontaminated, processed and used for filling of underground workings
- Collection of contaminants and contaminated materials and disposal to a special constructed landfill. The location and size of landfill should be decided by the Engineer of the Contract based on quantity of unaccepted material identified on site. Three isolation layers shall be placed onto the compacted surface: a bentonite mattress 2.5 cm depth, a geomembrane layer of 2.5 mm and a geotextile layer of 5 mm. On completion of the final layer of unacceptable material the surface shall be domed to assist water run off. A gas ventilation pipe shall be placed at the highest point.
- Filling and capping of 6 drifts, 3 collector gallery. Filling and sealing of 9 adits. Closing of raises, boreholes or other minor mine workings connected to the surface.
- Excavation and removal of 3000 mc. of material from waste tips, curtilages, benches and slopes.
- Reshape of all mine waste dumps to slope angles below 1/3. Construction of erosion fences and gabion walling to ensure long term stability and erosion control.
- Top soiling, cultivation and grassing of 17 Ha, and planting of 13 Ha with local species of trees or shrubs.
- Protection of rehabilitated surfaces and affluent river by guard ditches and drainage systems in total length of 900 m.
- Construction of adequate water treatment facilities to comply with 3 l/sec, having pH of 3.12 Fe 5.62 mg/l, Cu 5.14 mg/l, Pb 0.63 mg/l and Zn 7,64 mg/l

KEY ENVIRONMENTAL ISSUES DURING THE CONSTRUCTION WORKS

Based on works, equipment and methods used for execution of works the following environmental issues might occur:

- Noise, dust and mud generated by earthmoving equipment;
- Noise, dust, smoke and vibrations generated by blasting operations;
- Potential land pollution by fuel, oil or lubricants because spillage from earthmoving equipment or lorries;
- Potential water pollution by fuel and oil because spillage from equipment while working above, adjacent or in watercourses;
- Potential soil or water pollution by used waters generated by site activities in offices, workshops and messes;
- Potential underground water pollution by contaminated material used for filling of underground workings;
- Damage of existing vegetation from or adjacent of site because of negligent driving of equipment or site operations;
- Damage of public roads because of traffic, equipment or site operations;

COMMUNITY CONSULTATION (See annex "Consultarea comunitatilor – Obiective scanate")

**ANNEX 1 – MITIGATION PLAN
BURLOAIA CENTRAL MINE**

Phase/Operation	Issue Mitigation Measure	Cost	Institutional Responsibility / Approval and inspection
1 CONSTRUCTION			
A Demolition Works			Contractor
(a) Blasting of buildings and structures	i. Noise: - Restriction of blasting program to 8:00 – 18:00 o'clock, Monday to Saturday; - Informing of the affected community BAIA BORSA town about blasting program; ii. Vibration: - Restriction of the explosive quantity for each charge – 0.5Kg/blasting hole, minimum 1 second delay each other; iii. Dust and smoke: - Dust suppression measures (wet blasting)	Contract	Engineer of Contract
(b) Processing of demolition materials	i. Dust: - Dust suppressors (wet processing) ii. Noise: - Location of the processing facilities not less than 1Km far from BAIA BORSA town; - Noise screens around of processing equipment if necessary; iii. Pollutants on or in demolition materials: - Selection of the contaminants from demolition materials before being processed. Contaminated materials will be disposed off separately at landfill;		Engineer of Contract
(c) Haulage/deposition of demolition materials	i. Mud - Keeping the lorries clean while working on or outside of the site area; - Establish cleaning pad and tyre washing area at construction zone boundaries; ii. Dust - Sprinkling of demolition materials on lorries and at dumping location;	Contract	Engineer of Contract

Phase/Operation	Issue Mitigation Measure	Cost	Institutional Responsibility / Approval and inspection
	- Cover of lorries if the haulage is through inhabited area BAIA BORSA town;		
B Earth Works			Contractor
<p>(a) Excavation and loading of materials</p> <p>(b) Haulage/deposition spread/level/place</p>	<p>i. Lubricant and/or fuel spillage:</p> <ul style="list-style-type: none"> - The equipment should be inspected¹ for technical compliance with safety and environmental regulations, by the Engineer monthly. Equipment which will not pass the inspection will be removed from the site according with contractual clauses; <p>ii. Failure of benches or slopes during of works</p> <ul style="list-style-type: none"> - Each work bench for excavators and access roads on excavation place will be constructed to comply with Technical Prescriptions appended (TP-C**), 1997 edition; - Fencing and barriers around of unstable areas; <p>i. Noise during the transport on site or public roads;</p> <ul style="list-style-type: none"> - Restriction on haulage program to 8 o'clock 18 o'clock, Monday to Saturday; - Restriction of lorries speed to 30Km/h, or less as agreed with community; <p>ii. Mud and dust on public roads:</p> <ul style="list-style-type: none"> - Cleaning of lorries wheel before emerging from loading/unloading location; - Suppress of any spillage from lorries during the transport by sealing off; <p>iii. Noise:</p> <ul style="list-style-type: none"> - Noise suppressors at the exhaust pipes; 		<p>Engineer of Contract</p> <p>Engineer of Contract</p>
C Concrete works			Contractor
(a) preparing and placing of concrete in situ	<p>i. Concrete outside of construction areas:</p> <ul style="list-style-type: none"> - Using only mechanical batching equipment for preparing of concrete; 		Engineer of Contract

^{1 1} Inspection is referred to visual to identify possible oil or fuel spillage, level of noise and level of smoke produced by the equipment's engine (fummeter), status of tires and legal status related to periodic Technical Inspection as law asks for. (Note: according with Romanian Law for Public Road Circulation each vehicle should to pass periodic technical inspection. The inspection refers to: brakes efficiency, steering efficiency, emissions in exhaust system, lighting system, horns and noise. The vehicles, which pass the inspection, receive a licence). For other equipments used on site like Bulldozers, tractors, excavators this is not compulsory.

Phase/Operation	Issue Mitigation Measure	Cost	Institutional Responsibility / Approval and inspection
(b) haulage of concrete	<ul style="list-style-type: none"> - Location of batching facilities for concrete to be approved by the site Engineer i. Pollution of public roads because of concrete spillage during the transport - Using only specialised concrete transport trucks for haulage of concrete; - Cleaning of site at the end of each day; 		
D General Works			Contractor
(a) Working adjacent over or in water courses or any body of water (CISLA STREAM)	<ul style="list-style-type: none"> i. Surface waters pollution - Working with equipment free of any pollutant in vicinity of water courses; - Fencing or erecting of barriers near the river banks; ii. Rainfall control - Construction of guard ditches to control runoff and to protect water courses; 	Contract	Engineer of Contract
(b) Cultivating re-vegetation and curing of existing vegetation	<ul style="list-style-type: none"> i. Pollution with unacceptable pesticides - Using only approved fertilizers by the engineer of contract (standard); - topsoil, subsoil or natural fertilizer will be tested by laboratory analyses to be free of pesticides heavy metals or any other unaccepted materials; ii. Damage of existing vegetation - The Engineer will keep the necessary records of number of trees and existing natural grassed areas. The contractor will restore on his own cost any damage on vegetation. 	Contract	Engineer of Contract
(c) Operation of site offices, workshops	<ul style="list-style-type: none"> i. Pollution of the area adjacent of offices, workshops and storage facilities - construction of site facilities on approved by the engineer of contract areas, having all necessary facilities to deal with domestic and industrial waste; - industrial and domestic waste should be disposed of daily at site landfill; 	Contract	Engineer of Contract
E Hazardous materials			Contractor
(a) Storage, handling/ using of explosives	<ul style="list-style-type: none"> i. Accidents involving explosives - Using of proper storage facilities (existing explosive storage facilities); - Using containers and lorries approved by the Engineer of the Contract 		Engineer of Contract

Phase/Operation	Issue Mitigation Measure	Cost	Institutional Responsibility / Approval and inspection
(b) Storage using distributing of fuel and lubricants	<ul style="list-style-type: none"> i. Spill of lubricants and/or fuel <ul style="list-style-type: none"> - Using of spillage collection vessels in storage facilities. Cleaning of the storage area every day disposing off any contaminated material. i. Fuel/oil spillage during refilling operations <ul style="list-style-type: none"> - construction and operate of fuel/oil repository - using only filling pump installed on refilling tank to refill equipment on site iii. Fire on storage facilities <ul style="list-style-type: none"> - construction of fuel storage facilities on location and according an approved by the engineer method of construction; - fire extinguishing equipment as regulation for fire fighting and control asks²; 		Engineer of Contract

² Depend on size of storage facilities the fire extinguish equipment and means must be supplied. Fire extinguishers (water, CO₂, foam etc). and hand shovels, picks, hook and 1 cubic meter of sand. For large fuel storage facilities is compulsory a permanent water source and necessary hoses etc.

**ANNEX 2 – MONITORING PLAN
BURLOAIA CENTRAL MINE**

Issue	Where is parameter to be monitored	How is parameter to be monitored	Frequency of measurement	Responsible for the measurement
A. CONSTRUCTION				
i. Noise generated by: <ul style="list-style-type: none"> • Blasting; • heavy machinery • lorries 	On site and inhabited area	Noise measurement equipment (dB-meter)	Daily	The Engineer of the Contract
ii. Dust generated by: <ul style="list-style-type: none"> • blasting • traffic and equipment and lorry's 	On site and inhabited area	Visual	Daily	The Engineer of the Contract
iii. Smoke generated by: <ul style="list-style-type: none"> • blasting • equipment and lorry's engines 	On site and inhabited area	Visual for blasting; Specialised equipment for engines	Monthly and when a new equipment is bring on site	The Engineer of the Contract
iv. Mud generated by <ul style="list-style-type: none"> • traffic on site and public roads 	On site and inhabited area	Visual	Daily	The Engineer of the Contract
v. Soil pollution by fuel oil <ul style="list-style-type: none"> • Fuel and lubricants (tank leaks, engines leaks, other operations involving fuel and lubricants) • Cement or concrete 	<ul style="list-style-type: none"> • Where fuel and lubricants are stored; • Where equipment is refilled; • Where equipment is maintained • Where fuel/lubricants are used; • Where concrete is prepared, transported, used 	Visual	Daily	The Engineer of the Contract
vi. Water pollution <ul style="list-style-type: none"> • Fuel and lubricants • pH • Heavy metals • Suspensions carried out by rain fall 	Where working near or in water course Effluent waters; Monitoring points on receptor stream CISLA STREAM	Laboratory analysis	Monthly during the works or as specified in monitoring program	The Engineer of the Contract
B. POST CLOSURE				
i. water	Water treatment plant	Laboratory analysis		

Issue	Where is parameter to be monitored	How is parameter to be monitored	Frequency of measurement	Responsible for the measurement
pH, heavy metals, suspension				
ii. vegetation - vegetation density - vegetation	Cultivated and planted surfaces on curtilage, waste tips	Visual	Yearly	Conversmin
iii. stability of waste tips or impoundments - settlement - erosion	Stabilised or deposition areas	Visual and topographic survey	Yearly	Conversmin