

**DESCRIPTION OF MINE AND PREVIOUS ACTIVITY**

Main activity of Fagu Cetatii Mine (Balan) is: Extraction of copper ore by underground methods. It extends on a surface of 4 Hectares including mine curtilages, waste tips and other ancillary activities. The activity ceased in 1999.

Associated with former mining operations there are 3 waste tips, containing 1500000 cubic meters of mine waste.

There are not tailing storage facilities.

The nearest community is Sandominic Village situated at 4000 m from mine, having 5000 inhabitants and local water course is Vasaroaia Stream situated at 50 m from mine boundary.

Mine water with flow rate of 12 l/sec, and neutral pH of 7 flowing from mine workings.

**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 5 buildings and structures, having a total volume of 560 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 1 shafts. Filling and sealing of 3 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 2 Ha, and planting of 1.48 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 100 m.
- Construction of adequate water treatment facilities to comply with 12 l/sec, having pH of 7 Heavy metals

**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  
FAGU CETATII**

Phase/Operation	Issue Mitigation Measure	Cost	Institutional Responsibility / Approval and inspection
<b>1 CONSTRUCTION</b>			
<b>A Demolition Works</b>			<b>Contractor</b>
<b>(a) Blasting of buildings and structures</b>	<ul style="list-style-type: none"> <li><b>i. Noise:</b> <ul style="list-style-type: none"> <li>- Restriction of blasting program to 8:00 – 18:00 o'clock, Monday to Saturday;</li> <li>- Informing of the affected community SANDOMINIC town about blasting program;</li> </ul> </li> <li><b>ii. Vibration:</b> <ul style="list-style-type: none"> <li>- There are no vibration risk., next inhabited area is locate at 5 Km away;</li> </ul> </li> <li><b>iii. Dust and smoke:</b> <ul style="list-style-type: none"> <li>- Dust suppression measures (wet blasting)</li> </ul> </li> </ul>	Contract	Engineer of Contract
<b>(b) Processing of demolition materials</b>	<ul style="list-style-type: none"> <li><b>i. Dust:</b> <ul style="list-style-type: none"> <li>- Dust suppressors (wet processing)</li> </ul> </li> <li><b>ii. Noise:</b> <ul style="list-style-type: none"> <li>- Location of the processing facilities not less than 1Km far from Sandominic;</li> <li>- Noise screens around of processing equipment if necessary;</li> </ul> </li> <li><b>iii. Pollutants on or in demolition materials:</b> <ul style="list-style-type: none"> <li>- Selection of the contaminants from demolition materials before being processed</li> <li>- Contaminated materials will be disposed off separately at landfill;</li> </ul> </li> </ul>		Engineer of Contract
<b>(c) Haulage/deposition of demolition materials</b>	<ul style="list-style-type: none"> <li><b>i. Mud</b> <ul style="list-style-type: none"> <li>- Keeping the lorries clean while working on or outside of the site area;</li> </ul> </li> <li><b>ii. Dust</b> <ul style="list-style-type: none"> <li>- Sprinkling of demolition materials on lorries and at dumping location;</li> <li>- Cover of lorries if the haulage is through inhabited area SANDOMINIC;</li> </ul> </li> </ul>	Contract	Engineer of Contract
<b>B Earth Works</b>			<b>Contractor</b>

Phase/Operation	Issue Mitigation Measure	Cost	Institutional Responsibility / Approval and inspection
<p><b>(a) Excavation and loading of materials</b></p> <p><b>(b) Haulage/deposition spread/level/place</b></p>	<p><b>i. Lubricant and/or fuel spillage:</b></p> <ul style="list-style-type: none"> <li>- The equipment should be inspected<sup>1</sup> 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;</li> </ul> <p><b>ii. Failure of benches or slopes during of works:</b></p> <ul style="list-style-type: none"> <li>- Fencing and barriers around of unstable areas;</li> </ul> <p><b>i. Noise during the transport on site or public roads;</b></p> <ul style="list-style-type: none"> <li>- Restriction on haulage program to 8 o'clock 18 o'clock, Monday to Saturday;</li> </ul> <p><b>ii. Mud and dust on public roads:</b></p> <ul style="list-style-type: none"> <li>- Cleaning of lorries wheel before emerging from loading/unloading location;</li> <li>- Suppress of any spillage from lorries during the transport by sealing off;</li> </ul> <p><b>iii. Noise:</b></p> <ul style="list-style-type: none"> <li>- Noise suppressors at the exhaust pipes;</li> </ul>		<p>Engineer of Contract</p> <p>Engineer of Contract</p>
<b>C Concrete works</b>			<b>Contractor</b>
<p><b>(a) preparing and placing of concrete in situ</b></p> <p><b>(b) haulage of concrete</b></p>	<p><b>i. Concrete outside of construction areas:</b></p> <ul style="list-style-type: none"> <li>- Using only mechanical batching equipment for preparing of concrete;</li> <li>- Location of batching facilities for concrete to be approved by the site Engineer;</li> </ul> <p><b>i. Pollution of public roads because of concrete spillage during the transport</b></p> <ul style="list-style-type: none"> <li>- Using only specialised concrete transport trucks for haulage of concrete;</li> <li>- Cleaning of site at the end of each day;</li> </ul>		<p>Engineer of Contract</p>
<b>D General Works</b>			<b>Contractor</b>
<b>(a) Working adjacent over or in water courses or any</b>	<p><b>i. Surface waters pollution</b></p> <ul style="list-style-type: none"> <li>- Working with equipment free of any pollutant in vicinity of water courses;</li> </ul>	Contract	Engineer of Contract

<sup>1</sup> 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 equipment used on site like Bulldozers, tractors, excavators this is not compulsory.

Phase/Operation	Issue Mitigation Measure	Cost	Institutional Responsibility / Approval and inspection
<p><b>body of water (VASAROAIA STREAM)</b></p> <p><b>(b) Cultivating re-vegetation and curing of existing vegetation</b></p> <p><b>(c) Operation of site offices, workshops</b></p>	<ul style="list-style-type: none"> <li>- Fencing or erecting of barriers near river;</li> <li><b>ii. Rainfall control</b></li> <li>- Construction of guard ditches to control runoff and to protect water courses;</li> <li>- Interdiction to use filling material for underground workings which contains deleterious materials</li> <li><b>i. Pollution with unacceptable pesticides</b></li> <li>- Using only approved fertilizers by the engineer of contract (standard);</li> <li>- topsoil, subsoil or natural fertilizer will be tested by laboratory analyses to be free of pesticides heavy metals or any other unaccepted materials;</li> <li><b>ii. Damage of existing vegetation</b></li> <li>- 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.</li> <li><b>i. Pollution of the area adjacent of offices, workshops and storage facilities</b></li> <li>- construction of site facilities on approved by the engineer of contract areas, having all necessary facilities to deal with domestic and industrial waste;</li> <li>- industrial and domestic waste should be disposed of daily at site landfill;</li> </ul>	<p>Contract</p> <p>Contract</p>	<p>Engineer of Contract</p> <p>Engineer of Contract</p>
<b>E Hazardous materials</b>			<b>Contractor</b>
<p><b>(a) Storage, handling/ using of explosives</b></p> <p><b>(b) Storage using distributing of fuel and lubricants</b></p>	<ul style="list-style-type: none"> <li><b>i. Accidents involving explosives</b></li> <li>- Using of proper storage facilities (existing explosive storage facilities);</li> <li>- Using containers and lorries approved by the Engineer of the Contract</li> <li><b>i. Spill of lubricants and/or fuel</b></li> <li>- Using of spillage collection tanks in storage facilities. Cleaning of the storage area every day disposing off any contaminated material.</li> <li><b>ii. Fuel/oil spillage during refilling operations</b></li> <li>- construction and operate of fuel/oil repository</li> </ul>		<p>Engineer of Contract</p> <p>Engineer of Contract</p>

<sup>2</sup> Depend on size of storage facilities the fire extinguish equipment and means must be supplied. Fire extinguishers (water, CO<sub>2</sub>, 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.

Phase/Operation	Issue Mitigation Measure	Cost	Institutional Responsibility / Approval and inspection
	<ul style="list-style-type: none"> <li>- using only filling pump installed on refilling tank to refill equipment on site</li> <li><b>iii. Fire on storage facilities</b></li> <li>- construction of fuel storage facilities on location and according an approved by the engineer method of construction;</li> <li>- fire extinguishing equipment as regulation for fire fighting and control asks<sup>2</sup></li> </ul>		

**ANNEX 2 – MONITORING PLAN  
FAGU CETATII MINE**

Issue	Where is parameter to be monitored	How is parameter to be monitored	Frequency of measurement	Responsible for the measurement
<b>A. CONSTRUCTION</b>				
i. <b>Noise</b> generated by: <ul style="list-style-type: none"> <li>• Blasting;</li> <li>• heavy machinery</li> <li>• lorries</li> </ul>	On site and inhabited area	Noise measurement equipment (dB-meter <sup>2</sup> )	Daily	The Engineer of the Contract
ii. <b>Vibration</b> generated by: <ul style="list-style-type: none"> <li>• Blasting;</li> <li>• heavy machinery</li> <li>• lorries</li> </ul>	near sensitive buildings	Vibrometer	During the blasting and transport along the inhabited area	The Engineer of the Contract
iii. <b>Dust</b> generated by: <ul style="list-style-type: none"> <li>• blasting</li> <li>• traffic and equipment and lorry's</li> </ul>	On site and inhabited area	Visual	Daily	The Engineer of the Contract
iv. <b>Smoke</b> generated by: <ul style="list-style-type: none"> <li>• blasting</li> <li>• equipment and lorry's engines</li> </ul>	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
v. <b>Mud</b> generated by <ul style="list-style-type: none"> <li>• traffic on site and public roads</li> </ul>	On site and inhabited area	Visual	Daily	The Engineer of the Contract
vi. <b>Soil pollution</b> by fuel oil <ul style="list-style-type: none"> <li>• Fuel and lubricants (tank leaks, engines leaks, other operations involving fuel and lubricants)</li> <li>• Cement or concrete</li> </ul>	<ul style="list-style-type: none"> <li>• Where fuel and lubricants are stored;</li> <li>• Where equipment is refilled;</li> <li>• Where equipment is maintained</li> <li>• Where fuel/lubricants are used;</li> <li>• Where concrete is prepared, transported, used</li> </ul>	Visual	Daily	The Engineer of the Contract
<b>vii. Water pollution</b>	Where working near or in water course	Laboratory analysis for	Monthly during	The Engineer of the

Issue	Where is parameter to be monitored	How is parameter to be monitored	Frequency of measurement	Responsible for the measurement
<ul style="list-style-type: none"> <li>• Fuel and lubricants</li> <li>• Mine water</li> <li>• Suspensions carried out by rain fall</li> </ul>	Effluent waters; Monitoring points on receptor stream VASAROAIA STREAM	pH, heavy metals	the works or as specified in monitoring program	Contract
<b>B. POST CLOSURE</b>				
<b>i. vegetation</b> - vegetation density - vegetation growth	Cultivated and planted surfaces on curtilage, waste tips	Visual	Yearly	Conversmin
<b>ii. stability of waste tips or impoundments</b> - settlement - erosion	Stabilised or deposition areas	Visual and topographic survey	Yearly	Conversmin