

Budoï Sat - Open Pit, Bihor County, Design: SANTEDIL Ploiesti

DESCRIPTION OF MINE AND PREVIOUS ACTIVITY

Main activity of Budoï Sat - Open Pit, Briquetting Plant and Sorting Station and Railway Yard is: Extraction of Lignite by Open Pit, and Briquetting of lignite. It is extended on a surface of 22 Hectares including mine curtilages, waste tips and ancillary activities. The activity was ceased in 2003

Associated with former mining operations there is 2 Waste tips, containing 3,000,000 cubic meters of mine waste, there are not tailing storage facilities.

The nearest community is Budoï Village situated at 1000 m from mine, having 1000 inhabitants and local water course is Bistra River situated at 1000 m from mine boundary.

The Mine Water does not reach the surface.

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, removing of scrap metal and demolition of 22 buildings and structures, having a total volume of 5600 cubic meters of demolition materials (mainly concrete and bricks) which will be decontaminated and disposed off at waste tips
- Collection of contaminants and contaminated materials and disposed off at 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.
- Closing of boreholes or minor mine workings connected with surface.
- Excavating and moving of 310,000 mc. of material from waste tips, curtilages, benches and slopes.
- Reshaping 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.
- Seeding of 18 Ha, and planting of 4 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 500 m.

KEY ENVIRONMENTAL ISSUES DURING THE CONSTRUCTION

Based on works, equipment and methods used for execution of works 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
BUDOI OPEN PIT**

| 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 Budoï 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: - Dust suppression measures (wet blasting) | Contract | Engineer of Contract |
| (b) Processing of demolition materials | i. Dust: - Dust suppressors (wet processing) ii. Noise: - Noise screens around of processing equipment if necessary; - Location of the processing facilities not less than 1Km far from Budoï village 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; | Contract | Engineer of Contract |
| (c) Haulage/deposition of demolition materials | i. Mud - Keeping the lorries clean while working on or outside of the site area; ii. Dust - Sprinkling of demolition materials on lorries and at dumping location; - Cover of lorries if the haulage is through inhabited area | Contract | Engineer of Contract |
| B Earth Works | | | Contractor |

| Phase/Operation | Issue - Mitigation Measure | Cost | Institutional Responsibility / Approval and inspection |
|--|--|----------|--|
| (a) Excavation and loading of materials | i. Lubricant and/or fuel spillage; - Each equipment should be inspected ¹ by the Engineer monthly. Equipment which will not pass the inspection will be removed from the site; - 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; i. Noise during the transport on site or public roads; - 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 BUDOI community; ii. Mud and dust on public roads - Cleaning of lorries wheel before emerging from loading/unloading location; - Suppress of any spillage from lorries during the transport by sealing off; iii. Noise - Noise suppressors at the exhaust pipes; | Contract | Engineer of Contract |
| (b) Haulage/deposition spread/level/place | | Contract | Engineer of Contract |
| C Concrete works | | | Contractor |
| (a) preparing and placing of concrete in situ | i. Concrete outside of construction areas: - Using only mechanical batching equipment for preparing of concrete; - 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 lorries for haulage of concrete; - Cleaning of site at the end of each day; | Contract | Engineer of Contract |
| (b) haulage of concrete | | Contract | Engineer of Contract |
| D General Works | | | Contractor |

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 equipment used on site like Bulldozers, tractors, excavators this is not compulsory.

| Phase/Operation | Issue - Mitigation Measure | Cost | Institutional Responsibility / Approval and inspection |
|---|--|---|---|
| <p>(a) Working adjacent over or in water courses or any body of water</p> <p>(b) Cultivating re-vegetation and curing of existing vegetation</p> <p>(c) Operation of site offices, workshops</p> | <p>i. Surface waters pollution - Working with equipment free of any pollutant in vicinity of water - Fencing or erecting of barriers near river Bistra River;</p> <p>ii. Rainfall control - Construction of guard ditches to control runoff and to protect lakes or rivers</p> <p>iii. Underground water pollution - Interdiction to use filling material for underground workings which contains deleterious materials</p> <p>i. Pollution with unacceptable pesticides - Using only approved fertilizers (standard); - topsoil, subsoil or natural fertilizer will be tested by laboratory analyses to be free of pesticides heavy metals or any other unaccepted materials;</p> <p>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.</p> <p>i. Pollution of the area adjacent of offices, workshops and storage facilities - construction of site facilities on approved areas, having all necessary facilities to deal with domestic and industrial waste; - industrial and domestic waste should be disposed off daily at site landfill</p> | <p>Contract</p> <p>Contract</p> <p>Contract</p> | <p>Engineer of Contract</p> <p>Engineer of Contract</p> <p>Engineer of Contract</p> |
| E Hazardous materials | | | Contractor |
| <p>(a) Storage, handling/ using of explosives</p> <p>(b) Storage using</p> | <p>i. Accidents involving explosives - Using of proper storage facilities; - Using containers and lorries approved by the Engineer of the Contract; - Security of storage, authorized access only</p> <p>i Spill of lubricants and/or fuel</p> | <p>Contract</p> <p>Contract</p> | <p>Engineer of Contract</p> <p>Engineer of</p> |

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.

| Phase/Operation | <p style="text-align: center;">Issue - Mitigation Measure</p> | Cost | Institutional Responsibility / Approval and inspection |
|--|--|------|---|
| distributing of fuel and lubricants | <ul style="list-style-type: none"> - Using of spillage collection vessel in storage facilities. Cleaning of the storage area every day disposing off any contaminated material. ii. 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 | | Contract |

**ANNEX 2 – MONITORING PLAN
BUDOI SAT OPEN PIT**

| 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 BUDOI SAT | Noise measurement equipment (dB-meter) | Daily | The Engineer of the Contract |
| ii. Vibration generated by: <ul style="list-style-type: none"> • Blasting; • heavy machinery • lorries | near sensitive buildings within BUDOI SAT | Visual | A measurement should be performed to establish level of blasting and transport along the inhabited area | The Engineer of the Contract |
| iii. 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 |
| iv. 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 |
| v. 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 |
| vi. 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 |

| Issue | Where is parameter to be monitored | How is parameter to be monitored | Frequency of measurement | Responsible for the measurement |
|---|---|---|--|---------------------------------|
| vii. Water pollution <ul style="list-style-type: none"> • Fuel and lubricants • Suspensions carried out by rain fall • pH | Where working near or in water course Monitoring points on receptor stream Bistra | Laboratory analysis for | Monthly during the works | The Engineer of the Contract |
| | | | | |
| B. POST CLOSURE | | | | |
| i. Water <ul style="list-style-type: none"> - suspensions - pH | Affluent rivers – Bistra | Collection of samples and laboratory analysis | Monthly until the parameters become compliant with approved limits | Conversmin |
| ii. soil <ul style="list-style-type: none"> - heavy metals - pH | Rehabilitated surfaces | Laboratory analysis | Yearly until the parameters become compliant with approved limits | Conversmin |
| iii. vegetation <ul style="list-style-type: none"> - vegetation density - vegetation | Cultivated and planted surfaces on curtilage, waste tips | Visual | Yearly | Conversmin |
| iv. stability of waste tips or impoundments <ul style="list-style-type: none"> - settlement - erosion | Stabilised or deposition areas | Visual and topographic survey | Yearly | Conversmin |