



## ACTION PLAN FOR MITIGATION AND MONITORING OF ENVIRONMENTAL IMPACT DURING IMPLEMENTATION OF THE PROJECT OF PUMPING OUT WATER AND SILT AT THE OPEN PIT MINE TAMNAVA – WEST FIELD, MB KOLUBARA

### INTRODUCTION

This attachment 1 is amendment to Environmental Management Emergency Plan entitled "EMERGENCY PLAN FOR ENVIRONMENTAL MONITORING DURING PUMPING OUT OF WATERS AT OPEN PIT MINE TAMNAVA WEST, MB KOLUBARA D.O.O." during implementation of the project of pumping out water and silted overburden at mine Tamnava west field, MB Kolubara, Lazarevac, which was hit by the large flood wave in May 2014 whereby the mine was filled with water and technical systems which were located and operating at surface exploitation of overburden and coal was flooded with all their accompanying infrastructure logistics. The attachment describes the conditions for implementation of subject project according to the contractual obligations in connection with and in the context of mitigating negative impact to the environment. This attachment binds the Responsible Party to fully apply and implement it during the execution of the activities for pumping out of water and silt at open pit mine. MB Kolubara is responsible for its own pumping operations and the Contractor will be responsible for its activities, which will be performed under the oversight of MB Kolubara. Costs of implementation of the stated environmental mitigation measures the contractor is obliged to fully implement are included in the estimation of total costs for the implementation of the subject contract.

Item	Location where applied	Subject	Mitigation Action	Responsible Person
<b>Hazardous materials and spills</b>				
1	At the pumping stations and wherever diesel and other oil products are used	Protection of soils and water against contamination	Storage of fuel and oil/lubricants will be at the maximum distance from water as is feasible, and there will be an embankment or other barrier between any tank or storage container and the water so that any leaks cannot reach water. The Contractor must remove any tanks or other storage vessels as soon as they are no longer needed. Contractor's obligation is to replace all fuel generators with electrical generators within 3 weeks.	Contractor
2	At the pumping stations and wherever diesel and oil products are	Cleanup of contaminated soil	In case of spills or other releases, all contaminated soil and other materials must be excavated as soon as possible. Contaminated material will be removed from the site by a qualified operator and disposed	MB Kolubara and Contractor



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	used, including storage areas and places where vehicles and equipment are operated, maintained, or stored		according to the Law on Waste Management of the Republic of Serbia.	
3	At the pumping stations and wherever diesel and oil products are used, including storage areas and places where vehicles and equipment are operated, maintained, or stored.	Spill prevention and reaction	Drivers of fuel trucks and other workers who handle fuel or other oil products will be trained to prevent and clean up spills. Locations where fuel and oil products are stored or used will be equipped with absorbents and other materials and equipment suitable for absorption and cleanup of spilled materials.	Contractor (vehicles/equipment and fuel storage)
<b>Water</b>				
4	At point of discharge into Kolubara River and Kladnica River	Protection of water quality	Compare effluent standards under Serbian law, European Union law and Directives, and World Bank Group EHS Guidelines for Mining and use the most stringent concentration as the applicable discharge standard. Collect and analyze samples of water at locations, at frequencies, and for parameters as required by the Program- Emergency Monitoring of Water Quality from Tamnava pit (Environmental Protection Agency, July, 2014), which is constituent part of this EMP. Undertake actions as required by the Ministry in case concentrations of any contaminant exceeds the applicable standard, as required by the Emergency Monitoring Program.	MB Kolubara
5	In pit and at point of discharge into Kolubara River and Kladnica River	Protection of water quality	On at least daily basis, analyze discharges into receiving waters for undissolved oxygen, total suspended solids, and temperature using instrument(s) calibrated according to manufacturer's instructions. (Emergency Monitoring of Water Quality from Tamnava pit Program, July 2014). (If possible, install instruments for continuous monitoring.) Based on the results, take action as follows: <ul style="list-style-type: none"><li>• TSS: If concentrations are higher than 50mg/L or above the applicable standard as prescribed for water quality in recipient water body, in line with the national water quality classification (2nd or 3rd class respectively), whichever is more stringent stop discharging until turbidity in pit lake decreases to a concentration below the level in the</li></ul>	MB Kolubara and Contractor (monitoring), MB Kolubara and Contractor (pumping)



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			<p>receiving water.</p> <ul style="list-style-type: none"><li>• Temperature: If the temperature of water being discharged is more than 3°C higher or lower than the receiving water, stop discharge until temperature differential is less than 3°C.</li><li>• Dissolved oxygen: If concentrations are less than the applicable standard, stop discharge until concentrations are equal or undertake measures (spraying or aeration) to increase the concentration of oxygen in the water up to the limit when the discharge into recipient is allowed.</li></ul>	
6	In pit and at point of discharge into Kolubara River and Kladnica River	Protection of water quality	During and after precipitation that increases turbidity in the pit, as determined by visual observation, measure TSS in water in the pit and in receiving water. If TSS is higher in pit water than in the receiving water, stop pumping until TSS in the river is equal to or higher than TSS in the pit. Calibrate instrument according to manufacturer's instruction.	MB Kolubara (monitoring) Environmental Protection Agency
7	12 measuring points from the mine to Sava River, defined by the Emergency Monitoring Program	Protection of water quality	Sampling and measuring quality according to parameters defined by Emergency Monitoring Program. Measurement should be done on seven-day-level. In the event of exceeding MAQ, act in accordance with definitions from emergency Monitoring Plan.	Environmental Protection Agency (monitoring), MB Kolubara (implementation)
8	All pumping stations	Prevent contamination of river	Maintain dispersants, booms, and other containment and cleanup materials designed for controlling spills in water. Train pump-station workers and equipment operators in their use.  If oil or fuel is spilled into water, stop all pumps that are taking water from within about 50 meters of the spill. Do not start pumping again until the oil has been removed..	MB Kolubara and/or Contractor
9	All locations where water is discharged into the Kolubara and Kladnica rivers	Protection of river banks and bed	Design the points where pumped water will be discharged to the rivers so the discharge will not erode or otherwise damage or erode the riverbanks or riverbeds. If modifications are needed to aerate water before or during discharge, these modifications must be designed so discharges do not	Contractor (selection of place and technical



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			cause damage or erosion to banks or riverbeds.	solution, and MB approval.
10	All disturbed areas where run-off flows away from the pit	Protection of water quality and land	Use good international practices (straw bales, settling basins flow retarding devices, etc.) to reduce sediment load in run-off that flows from disturbed areas to undisturbed areas or to the river areas.	MB Kolubara
11	Any location where there are trees or other vegetation	Protection of flora and fauna	Workers and equipment must stay within disturbed areas and not move into and disturb any areas with trees or other vegetation. Workers must not cut trees or other vegetation except as authorized by MBKolubara, may not build fires at any time, and may not hunt wild animals.	Contractor MB Kolubara (control)
12	At any location where new ground is to be disturbed, for the needs of excavation	Topsoil and subsoil salvage and storage	If any new ground is to be disturbed, including the pipeline route from the second pumping station, topsoil (humus) and subsoil must be salvaged and stored separately. Storage piles should be protected against erosion until they are used for land rehabilitation.	Contractor
13	Pipeline corridors between the service road and the Kolubara River, and within 15 meters of the Kladnica River.	Restore land and protect water quality	During pumping operations, use good international practice (straw bales, settling basins flow retarding devices, etc.) to control run-off to the rivers from the cleared pipeline corridor and other project-disturbed areas.  Upon completion of pumping, remove pipeline and other infrastructure and continue to control run-off to the rivers until self-sustaining vegetative cover of native grass and plant species is established and effectively prevents sediment-laden run-off from flowing into the river(s).	Contractor
14	All disturbed areas except as otherwise addressed	Restore land and protect water quality	Upon completion of pumping, remove pipelines, transmission lines, pump stations, and other temporary infrastructure. For areas where vegetation is disturbed, establish self-sustaining vegetative cover of native grass and other plant species.	Contractor MB Kolubara
<b>Noise and vibration</b>				
15	At the workers' camp/accommodation	Noise protection	Noise at work camp/accommodations must not exceed levels for residential areas under Serbian law, or 45dB during nighttime hours (2200-0700) and 55dB during the day. This can be accomplished by	Contractor



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			locating accommodations away from pumps and generators, or by insulating accommodations against noise.	(for its service providers)  MB Kolubara  (for its service providers)
<b>Air</b>				
16	At location of generators	Equipment emissions	Maintain generators so there are no visible emissions at any time except during cold startup, and if such emissions are observed, shut down generators and adjust the engines until there are no visible emissions. Take vehicles and equipment out of service for maintenance if they generate visible emissions at any time other than initial cold startup.	Contractor (generators and vehicles/equipment);  MB Kolubara (vehicles/equipment)
17	Unpaved roads and other work locations	Dust control	Minimize dust generation during dry periods when dust can be generated due to usage of roads. Undertake measures by limiting the speed of vehicles and equipment and by spraying the roads with water.	Contractor MB Kolubara
<b>Riverbanks and riverbeds</b>				
18	Kolubara River at discharge locations	Protection of Kolubara river channel and embankments	Limit pumping to the Kolubara River so that total flow in the river, including both discharge and natural river flow, does not exceed the maximum amount recommended by Beograd vode (50 m <sup>3</sup> /sec), as defined in accordance with letter number 3676 dated 23.07.2014, which is constituent part of this EMP. MB Kolubara will monitor upstream flow in the Kolubara River on at least daily basis and will take weather conditions (upstream and at the site) into account to ensure flow rates are maintained below the maximum rate at all times. This applies at the farthest downstream discharge location.	Contractor MB Kolubara



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19	Kladnica River at discharge location	Protection of Kladnica River channel and embankments	Limit pumping to the Kladnica River so that total flow in the river, including both discharge and natural river flow, does not exceed the maximum amount of 3m <sup>3</sup> /s, as recommended by the Jaroslav Černi Institute, Belgrade ( Letter No. 2496 dated 29.08.2014, which is constituent part of this EMP.). MB Kolubara will monitor upstream flow in the Kladnica River on at least a daily basis and will take weather conditions (upstream and at the site) into account to ensure flow rates are maintained below the maximum rate at all times.	MB Kolubara
<b>Waste</b>				
20	All work areas and worker accommodations	Waste management	All wastes will be collected, separated by type (sanitary, household and kitchen, hazardous, paper, scrap metal, reusable/recyclable, etc.) and removed from the site by licensed or authorized haulers. EPS/MB Kolubara will control implementation of these activities as well as providing documents for them.	Contractor and MB Kolubara (control)
21	In the pit and at possible future disposal locations	Silt management	Silt material (as defined by the national Law on Water and related by-laws), pumped from the Tamnava West pit will be placed in a location of depleted mine Tamnava East and managed in accordance with Law on Waste Management of the Republic of Serbia. Detailed instructions shall be given by the Ministry of Agriculture and Environment and Environmental Protection Agency of the Republic of Serbia. First results of silt quality analysis – zero state were finalized on 24 – 25 August, 2014 by Environmental Protection Agency. Program of sampling and silt analysis is continued in accordance with defined dynamics and the law	Environmental Protection Agency (sampling and analysis) and MB Kolubara (implementation)
<b>Stakeholder engagement</b>				
22	In downstream villages	Open communications	A fact sheet will be prepared, advertised, and placed in the town halls of all villages along the Kladnica River between the discharge point and the Kolubara River, and along the Kolubara River between the mine and the Sava River. The fact sheet will describe the pumping program, including the length of time it will take, the impacts (if any) on the river(s), and risks (if any) to downstream villages and people. These are to be available	MB Kolubara



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			from the time the Contractor first arrives on the site until all pumping is complete and all workers are gone from the site.	
23	In downstream villages	Grievance mechanism	A telephone line will be maintained to receive comments and complaints from stakeholders, including potentially affected people. All complaints will be registered and dealt with in accordance with a defined procedure that requires quick resolution and communication back to the person as to how the complaint has been resolved. The telephone number is to be placed on the fact sheet of local communities.	MB Kolubara
24	In downstream villages and local residences	Drinking water quality	MB Kolubara will consult with the Ministry of Health to develop and implement a system to monitor water taken from the Kolubara River. The system must provide for sampling of water as soon as practicable (wherever possible within 24 hours, with laboratory analysis performed on an emergency basis if the problem cannot be resolved by sight, smell, or taste). If the monitoring identifies contamination due to water from the pit, pumping will be stopped until the problem can be overcome.	MB Kolubara
<b>Workers</b>				
25	At all work locations	Worker health and safety	<p>MB Kolubara must ensure that an occupational health and safety plan is in place from the time Contractor workers come on the site until the pumping project is complete and all workers are gone. The plan and operational practices must ensure:</p> <ul style="list-style-type: none"><li>• A trained and qualified safety professional („responsible person“) is on site at all times, with authority to monitor and enforce safety rules.</li><li>• A responsible person from MB Kolubara communicates with the Contractor’s safety professional on a daily basis.</li><li>• All workers are trained on the hazards of their jobs, including measures to avoid or reduce risks.</li><li>• Personal protective equipment is provided by workers’ employer or MB Kolubara, and use of PPE is monitored and enforced by the responsible person(s).</li><li>• Flotation devices and lifesaving equipment is available and accessible at all work locations near the pit lake and the riverbanks.</li><li>• Equipment operators working near the pit lake have special training to respond to emergencies.</li><li>• Equipment operation near the pit lake is under constant observation by</li></ul>	MB Kolubara, Contractor, Ministry of Interior of the Republic of Serbia, Army of the Republic of Serbia, Mining Inspection



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			<p>a trained responsible person</p> <ul style="list-style-type: none"><li>• Responsible person visits every work location at least daily.</li><li>• Proper records are kept (person-days, lost time incidents, lost time, serious injuries/fatalities, etc.).</li><li>• Serious injuries or fatalities are reported to World Bank immediately.</li><li>• Requirements of the Ministry of Health and Ministry of Labor are met (helicopter or other evacuation available, rescue/transport vehicle available, etc.)</li></ul>	
26	Workers' camp	Worker health and safety	Design, construction, and operate worker accommodations so they meet the requirements of Serbian law and international good practice (such as the IFC/EBRD guidance note on worker accommodation).	Contractor For its workers MB Kolubara