Attachment 16

16.1 Draft of the Environmental and Social Action Plan (ESAP) and Draft Environmental Management Plan (EMP)

16.2. Draft Environmental Management Plan

A. Mitigation Plan

B. Monitoring Plan

16.1 Draft of an Environmental and Social Action Plan (ESAP)

No	Action	Environmental Risks Liability/Benefits	Legislative Requirement/Best practice	Investment Needs/Resources/Costs	Timetable Action to be Completed by End of Year	Target and Evaluation Criteria for Successful Implementation	Comment
1	**Environmental protection and health management**						
1.1	Appointment of a qualified Environmental Manager	Improved corporate environmental performance and reporting, reducing risk and improving compliance	Best practice	Internal resources	July 2012	EIAR elaboration on a high quality level; Implementation of the EMP	
1.2	Environmental Impact Assessment for PMF - EIA - is a process of identifying, predicting and evaluating the environmental, social and other relevant effects of the proposed PMF and physical activities and mitigating the adverse risks and consequences, taking into consideration public opinion, prior to a decision being made.	Poor implementation of EIA requirements or lack of these can result in objections and possible annulment of planning or building permits and to high emission values during operation.	Best practice, EU EIA Directive and EBRD Environmental Policy	Consultants/Internal resources of KNPP.	Ongoing	EIA undertaken in accordance to National and EU requirements for PMF.	

No	Action	Environmental Risks Liability/Benefits	Legislative Requirement/Best practice	Investment Needs/Resources/Costs	Timetable Action to be Completed by End of Year	Target and Evaluation Criteria for Successful Implementation	Comment
1.3	An environmental, health and safety compliance audit of the PMF to be undertaken by independent environmental consultants to assess liabilities. Implementation of the recommendations stemming from the compliance audit to bring operations into compliance with national and EU standards for environment, health and safety	Improved awareness of compliance status and areas to be address. Improved compliance.	Best practice, but also required under the EBRD Environmental Policy	Internal resources of KNPP/consultants.	12 months after PMF operation start	Provide summary of audit report and recommended actions to EBRD. Timetable to implement recommended actions to be agreed with EBRD.	
1.4	Implementation of an Environmental Management System (EMS).	Optimisation of environmental management though a formalised system. Provide resources for training and monitoring of emissions.	Best practice, but also required under the EBRD Environmental Policy	Internal resources of KNPP and external consultants. Costs must be planned in advance.	At least 1 year after PMF operation start	Development of an EMS regarding ISO 14001 or equivalent. Annual EHS Report to the Bank	

No	Action	Environmental Risks Liability/Benefits	Legislative Requirement/Best practice	Investment Needs/Resources/Costs	Timetable Action to be Completed by End of Year	Target and Evaluation Criteria for Successful Implementation	Comment
1.5	Implement an Occupational Health and Safety Management System.	Improved health and safety performance, risk reduction, enhanced stakeholder reputation.	Best practice, but also required under the EBRD Environmental Policy	Internal resources of KNPP.	At least 1 year after PMF operation start.	Certification	
2	**Personnel management and training**						
2.1	Appointment of personnel for the PMF operation	Evaluation and improvement of all personnel necessary measures	Best practice	Internal resources of KNPP	12 months before PMF commissioning	Early PMF staff availability for further operation improvement of the PMF	
2.2	Early start of training of the operation personnel for the PMF	Not well trained personnel can result in a not optimal PMF operation and lead to not minimised emission values	Best practice	Internal resources of KNPP	Start 6 months before PMS commissioning and then in continuation parallel to the operation	Minimisation of the emission values and avoidance of risks	

16.2 Draft Environmental Management Plan

A. Mitigation Plan

Phase **D**esign **C**onstruction **O**peration **Dec**ommissioning	**Environmental Issue**	**Mitigation Measure**	**Responsibility**		**Comments**
			IBERDROLA	**KNPP**	
D, O, Dec	**Reduction, prevention or avoidance of the adverse effects** (1) by **radiation exposure of the personnel**, (2) related to **RAW management** and (3) related to **radioactive contamination of soils and adjacent areas** (4) related **to the environmental protection** (5) related to the **occupational and public health**	Efficient performance of the programs required by the standards in force in relation to Radiological Protection	x	x	
		Maintain and update of the above mentioned documents, which are directly related with the provision of radiation protection at the respective facility.	x	x	
D, C, O		Implementation of the first barrier in the PMF to prevent the release of radioactive contamination into the room air, where the new treatment facility will be located, is the installation itself (feeder, plasma furnace, secondary combustion chamber and flue gas system). The physical boundary of the process flow will be confined within different enclosures, mechanical equipment, confinements and vessels.	x		
		Implementation of the second barrier consisting in the equipment that houses radioactive waste is under a controlled under-pressure by means of the extraction fans. Under-pressure conditions will be imposed in all operating conditions. Furthermore, all the existing gases will be routed to the KNPP ventilation stack - 2 (VS-2) of AB-2 through different filtering and cleaning stages (existing and new).	x		
		Implementation of the third barrier to an unlikely hypothetical radioactive release of the PMF - the building itself where sub-atmospheric conditions are required during operating conditions.	x		

	Reduction, prevention or avoidance of the adverse effects (1) by **radiation exposure of the personnel**, (2) related to **RAW management** and (3) related to **radioactive contamination of soils and adjacent areas** (4) related **to the environmental protection** (5) related to the **occupational and public health**	Even though the building is not a leak tight confinement building, the existing ventilation system guarantees sub-atmospheric conditions from the external area and the suctioning of possible indoor contamination through HEPA filters before being released through the ventilation stack - 2 to the environment.			
		Technological measure, consisting in a stable matrix of the cold slag constitutes an inherent barrier to radionuclide dispersion from RAW. Once cooled down in the Slag Collection Chamber (SCC), the RAW material becomes a solid metallic-like matrix. This solid material serves as an intrinsic physical barrier against dispersion of radionuclide from the RAW.	x	x	
		Establishing of Instruction for periodical cleaning where maintenance activities are carried out, preventing the accumulation of contamination along all the operation stage.	x	x	
		Establishment, maintenance and regular update of Internal regulations and/or procedures for receiving, storage, return and accounting of sources of ionizing radiation at the facility;		x	
		Establishment, maintenance and regular update of Internal rules and procedures for collection, sorting, processing, handing over, storage and accounting of the generated radioactive waste at the facility		x	
		Establishment, maintenance and regular update of Internal regulations and/or procedures for using individual means of radiation protection of the personnel and for maintaining of personal hygiene from the point of view of radiation safety		x	

	Reduction, prevention or avoidance of the adverse effects (1) by **radiation exposure of the personnel**, (2) related to **RAW management** and (3) related to **radioactive contamination of soils and adjacent areas** (4) related **to the environmental protection** (5) related to the **occupational and public health**	Establishment, maintenance and regular update of Internal regulations and/or procedures for radiation control at the facility and for individual occupational dose control of the personnel and program for radiation control in the radiation protected area and the monitored area around the facility;		x	
C, O		The periodical cleaning of the respective components inside the PMF to be carried out by special adapted vacuum cleaner aiming to minimize the spread of contamination. It will be used to clean the refractory concrete of the PTC when repaired, the insides of the STC, the boiler, the bag house, the HEPA-filters, confinement of ash collection chamber, etc. and also the surroundings during and after maintenance activities.	x		
		In any case, for manholes or covers, which have to be opened for maintenance or inspection and are considered critical in terms of potential spread of contamination, temporary confinements consisting of aluminum frames and plastic foils to be installed (e.g. on top of PTC for refractory replacement).		x	
O		Maintenance or inspection at confinements is normally executed with extra protective clothing and wearing of masks in order to protect operators or maintenance people from contamination. The suspected contaminated plastic foils from maintenance activities can be treated in the PMF.		x	
		The operators and the radiation protection agent to perform regularly control on the contamination around the plant equipment to detect occurring contamination at an early stage. Thoroughly cleaning prevents the spread of contamination due to immediate decontamination work.		x	
		Establishment, maintenance and regular update of Orders, appointing the persons responsible for the radiation protection at the facility; the persons responsible for receiving, handling, storing, accounting and controlling the sources of ionizing		x	

O, Dec	**Reduction, prevention or avoidance of the adverse effects** (1) by **radiation exposure of the personnel**, (2) related to **RAW management** and (3) related to **radioactive contamination of soils and adjacent areas** (4) related **to the environmental protection** (5) related to the **occupational and public health**	radiation at the facility; the persons responsible for notification in case of incidents and accidents with sources of ionizing radiation; the executives and the radiation protection operators at the facility, as well as the persons, authorized to work with sources of ionizing radiation at the facility			
		Establishment, maintenance and regular update of Internal regulations and procedures for the way of giving the right for individual work with sources of ionizing radiation, holding of initial, routine current and periodical training and checks of the knowledge and skills of the personnel;		x	
		Establishment, maintenance and regular update of Job descriptions of the personnel in their sections, related to activities with sources of ionizing radiation;		x	
O, Dec		Establishment, maintenance and regular update of Rules for authorization and provision of radiation protection of outside teams summoned for the liquidation and limitation of the consequences of an accident that has occurred at the facility		x	
		Classification of the work places and of the radiological areas in the PMF, strict control on the personnel access in there		x	
		Performance of regular dosimetric controls of the PMF operational staff and of the maintenance staff in compliance with Regulation 32/7.11.2005		x	
		Performance of regular radiation control of the ambient air in the PMF premises and facilities.		x	
		To wear protective clothes and gloves in the PMF controlled areas.		x	
		When work is performed in areas with probability of air active contamination or not captured surface contamination		x	

	Reduction, prevention or avoidance of the adverse effects (1) by **radiation exposure of the personnel**, (2) related to **RAW management** and (3) related to **radioactive contamination of soils and adjacent areas** (4) related **to the environmental protection** (5) related to the **occupational and public health**	the use of protective means for the respiratory system is imperative			
		During the outages for cleaning, prophylactic, calibration, decontamination or repair of the PMF – to wear protective clothes and breathing mask		x	
		Monitoring of the occupational health of the operation and maintenance staff in accordance with the national statutory requirements and KNPP rules		x	
		Execution of all medical prophylactic measures, prescribed by KNPP for the staff working in area class A.		x	
		Prevention activities related to the public disclosure for the occurrence of incidents and accidents		x	
		Maintain and continues update of all operational documentation – instruction, ordinances, reports etc.		x	
Dec		The dismantling activities to be carried out under strict preliminary control on the already realized dose exposure and under periodic control during the dismantling activities.		x	
D, C, O	by **radioactive and non radioactive releases to the atmosphere air regarding the population**	The flue gas cleaning system to meet the emission limit values stipulated in EC directive 2000/76/EC and the Ordinance No 6 on the conditions and requirements for construction and operation of incineration and co-incineration plants (prom SG78/2004, last amended SG 98/2004	x	x	
		Optimization of the facility operation and respective observation of the NOx releases with a special attention and implementation of operational instruction for NOx monitoring. It is proposed to consider 100mg/m^3 as limit value, on the basis of the BAT		x	Mitigation of the NOx emissions on a value of less

O		requirements (BREF values).			than 100 mg/m^3
D, O	by **radioactive and non radioactive releases to the atmosphere air**	The function of the Continuous Emissions Monitoring (CEM) equipment regarding the outlet of the off-gas cleaning system has to be supervised in a high attention	X	X	
D,C,O		All chamber interfaces to be flanged sealing surfaces to prevent leaks in or out of the furnace. The system to operate under negative pressure to prevent leakage into the cell	x		
		In order to prevent the spillage of hazardous liquids spillway trays (containments) to be placed below the tanks. In case of spillage the liquid to be maintained in the spillway tray until the disposal by the proper means		x	
D, C	by **radioactive and non radioactive releases to the surface and ground water**	Reconstruction or construction of drainage. All the drains will be collected in a vessel to be processed properly afterwards in dependence of their radioactivity.	x	x	
		The wastewater discharge system of the facility to be insulated in order to prevent potential interaction with the groundwater	x	x	
O, Dec		Prior released waste water shall be collected and necessary parameters will be measured. The waste water shall be released into existing KNPP liquid collection system in a controlled manner and in accordance with the licensed conditions		x	
		Introduction of special operation instructions aiming the strict observation of the PMF process mode		x	
		Regular control and appropriate maintenance of the active drainage pipeline in order to prevent potential leakages and radioactive contamination			
		Establishment of soils monitoring plan – 6 and 12 months upon commissioning of the PMF. Definition of the radionuclide content in the layer 0-2 cm, 2-5 cm and 5-10 cm		x	
		Regular monitoring in accordance with KNPP plan for soil monitoring in the 36 monitoring stations		x	

O, Dec	on **the biodiversity** flora, fauna, protected territories and protected areas (Natura 2000), the landscape, the human health, and the cultural and historical heritage	Observance of the best practices in the technological process and maintenance in normal operational conditions of the PMF		x	
		Update of the Emergency Preparedness Plan with the incorporation of the PMF facility		x	
Dec		Observance of the best practices in decommissioning of such facilities	x	x	
		Continue with the established at KNPP practice for management of the hazardous chemical substances in incorporating the substances necessary for the PMF operation.		x	

16.2. Draft Environmental Management Plan

B. Monitoring Plan

Phase Construction **O**peration **Dec**ommissioning	**What** *parameter is to be monitored?*	**Where** *is the parameter to be monitored?*	**How** *is the parameter to be monitored?/type of monitoring equipment*	**When** *is the parameter to be monitored? (frequency of measurement or continuous)*	**Why** *is the parameter to be monitored? (optional)*	**Responsibility**	
						Organisational KNPP Structure (**Department**)	**Person** (name)
						Organisational KNPP Structure (**Department**)	**Person** (name)

To supervise the effectiveness of the mitigation measures as described in the "EMP - A. Mitigation Plan" in avoiding or minimizing the harmful impacts, it will be necessary to define respective measurement points and the frequency and methodology used for such measurements.

The mentioned measurement features "What, Where, How, Why" have to be defined by the KNPP Environmental Manager as appointed regarding the ESAP. The responsible organizational entity and the respective person for the parameters to be monitored has to be nominated and fixed by the Environmental Manager.