OMK Investment

Final Environmental and Social Action Plan (ESAP)

Version 9
January 31, 2006

Key to priorities:

AAA: Immediate attention required
AA: Very high priority – Yielding substantial environmental improvements
A: Significant environmental issues
B: Less urgent issues or those dependent on higher priorities
C: To be achieved over the medium term

Note: This ESAP is based on the Ecoline final audit report dated October 27, 2005. A detailed list of actions for supporting the ESAP implementation has been produced by Ecoline EA Center.

Table 1 - Cost and Implementation Schedule for OMK Corporate ESAP

Item No.	Priority	Description of Action	Issue and Detailed Plan	Completion Target Date	Estimated Costs US$ x 1,000 Capex	Opex /y
0-1	AAA	**Environmental Management Improvement Program** : Commit to ESAP and implement corporate structure and develop key Heath, Safety and Environmental Corporate (HSEC) policies	OMK to set new effective Health, Safety and Environmental (HSE) corporate organization to address HSE management and adequately resource the supervision and implementation of plant EAPs • Prepare and submit effective staffing and reporting corporate structure for HSE	March 2006		100

Item No.	Priority	Description of Action	Issue and Detailed Plan	Completion Target Date	Estimated Costs US$ x 1,000 Capex	Opex /y
			• Develop a plan to direct and support each plant in implementation of HSE management systems including the provision of milestone targets • Design training plan and provide incentives to support EAP implementation			
0-2	AA	**HSE Management System** : Develop and implement an HSE management system in line with ISO EMS 14001 and OHSAS 18001 - Strategic issue to be supported and driven by OMK Senior Management	Corporate Environmental Management System should be developed to support plant HSE management and implement procedures to address key issues such as air emissions, effluents and waste, as well as permitting and compliance matters • Existing occupational; health and safety management system should be developed corporate wide • Design and implement a system for evaluating performance against milestones and targets	End 2007		200
0-3	B	**Local Economic Development :** OMK to develop strategic plan to support community development and keep stakeholders informed	OMK to develop a plan to include existing programs in order to strengthen cooperation strategy with local communities around plants	End 2006		50

Table 2 - Cost and Implementation Schedule for Vyksunsky Plant (VMZ) ESAP

Item No.	Priority	Description of Action	Issue and Detailed Plan	Completion Target Date	Estimated Costs US$ x 1,000 Capex	Opex /y
V-1	AAA	**Environmental Management Improvement Program** : Need to commit to ESAP and implement each project, and an independent consultant to monitor the projects	To implement EAP existing HSE departments at VMZ shall • Prepare and submit effective management, staffing and reporting structure for HSE departments • Develop a plan for the timing, cost and outline technical solution for the OHF dust and NOx control, foundry, landfill and water treatment environmental schemes • Prepare Gantt Chart for 2008 identifying key stages in design, environmental approval, construction, erection and commissioning	Mid 2006		50
V-2	AAA	**OHF : Pollution abatement program** Design and construction of emission control plant to remove NOx and particulate matter, including dust briquetting	Carry out a study, which should determine details of performance, of existing OHF furnaces and main reasons of difference of NOx emissions from the two operational furnaces. On the basis of the study and using ChMZ's experience determine Either Reduce NOx emissions to the required level by technical and technological methods Or construct: (a) electrofilter or bag filter plant to	End 2006 For(a)Mid 2007	50 11,000	 50

Item No.	Priority	Description of Action	Issue and Detailed Plan	Completion Target Date	Estimated Costs US$ x 1,000 Capex	Opex /y
			capture particulates and (b) emission control plant (potentially a catalytic converter) to minimize NOx emissions[1]. o NOx emissions should comply with IFC requirements of <750mg/m3 and PM emissions should comply with IFC requirements of <50 mg/m3	For (b) – Mid 2008 (technology to be determined on the basis of the study by December 2006).		
V-3	AAA	**OHF Closure**	OHF replacement by an alternative technology to improve environmental performance and meet fully IFC requirements. The Company will ensure that appropriate actions are taken (plan, feasibility, tender for new equipment, etc.) to meet the target date of closure.	OHF closure date: December 2012.	TBD	

[1] Ecoline and McLellan believe that an electrofilter may not enable to comply either MPE limits or IFC requirements and that bag filters may be a better option.

Item No.	Priority	Description of Action	Issue and Detailed Plan	Completion Target Date	Estimated Costs US$ x 1,000 Capex	Opex /y

V-4	AA	**Reconstruction of existing water supply and wastewater discharge system, incl.:**
		• Study on local sources of pollution and local wastewater treatment facilities
		• Waste water purification plant (end-of-pipe)
		• Water recirculation system
		• Modernization of production water purification system in the Shop 5
			The existing system should be reconstructed to meet higher standards after appropriate study.
			• (a) Analysis of pollutant generating sources is required in order to reduce discharge of pollutants into the waste water system. A thorough study of other enterprises' experience in this area is required to determine the possible efficiency of alternative methods, such as local purification units, or biological purification methods
			• (b) The existing one-through system in the Shop 5 will be included into the plant's general water recirculating system, if other methods do not prove to be more efficient. Zinc and phosphate concentration will be reduced
			• (c) Waste water purification plant to be constructed to treat the combined flow at present discharged through Outlets Nos. 2,5 and 6, if other methods do not prove to be more efficient.
			  • MPD of suspended solids, ammonium nitrogen, iron and oil are exceeded in Outlets Nos. 2, 5 and 6.
			  • Concentration of suspended solids and oil of 30 mg/m3 and 2 mg/m3 respectively are already below the IFC requirements of <50 mg/m3 and<10 mg/m3
				For (a)
				End 2006
				
				For (b)
				End 2007
				
				For (c)
				End 2009
					TBD
					
					600
					
					2200
						
						600
						
						150

Item No.	Priority	Description of Action	Issue and Detailed Plan	Completion Target Date	Estimated Costs US$ x 1,000 Capex	Opex /y
V-5	AA	**Hazardous Materials Management** : Develop and implement detailed plan for VMZ to address storage, handling and disposal of hazardous materials and installation of necessary facilities.	(a) Plan to include: o Procedures for hazardous substances management o Storage and handling systems should include provision for containing leakage and recovering spills o Site contamination, particularly by spillage of oil, should be investigated (b) Necessary containment facilities (such as adequate bunds) to be installed	For (a): Mid 2006 For (b): End 2006	50	10
V-6	AA	**Waste Management**: Develop and implement detailed plan for handling production and consumption wastes generated at VMZ.	VMZ to develop and implement a plan to include procedures for : (a). Assessment of the quantity and types of wastes generated at the enterprise. In addition, use material balance charts developed by the Department of Industrial Ecology prior to approval and Disposal Limits by competent authorities (b) Removal of waste dumps – firstly in protected areas along water courses .	For (a): End 2006 For (b): Mid 2007	270	270
V-7	A	**Treatment of Lubricating Fluids in Shops** :	Treatment of Lubricating Fluids includes two projects: (a) Alfa Laval separator in Pipe Welding Shop No. 5 (b) Waste incineration unit for the Plant. Oil content in Outlet No. 5 is substantially in excess of the MPD	For (a): End 2006 For (b): End 2008	For (a): 185 For (b): 1,500	
V-8	B	**Foundry** : Design and construction of emission control plant for EAF, including Fume Collection System	Effective emission control plant with fume collection equipment to be installed	End 2009	1,000	
V-9	B	**Construction of Landfill Site 2** : Project under development	VMZ is currently constructing a new landfill site which should comply with Russian environmental legislation	Mid 2007	1,400	

Item No.	Priority	Description of Action	Issue and Detailed Plan	Completion Target Date	Estimated Costs US$ x 1,000 Capex	Opex /y
V-10	B	**VMZ Public Consultation and Disclosure Plan** : Develop and implement PCDP	Develop a plan to consult and disclose environmental and social aspects of current and proposed activities based on consultations with all stakeholders	End 2006		20
V-11	C	**VMZ Health, Safety and Environmental (HSE) Management System** : Develop an HSE Management System in line with ISO 14001 and OHSAS 18001.	• Environmental Management System should be developed and implemented , initially to address priority issues outlined above (air emissions, effluents and waste) • Existing occupational; health and safety management system should be further developed	End 2007	280	200

Table 3 - Cost and Implementation Schedule for Ghubakhinskiy Koks (GK) ESAP

Item No.	Priority	Description of Action	Issue and Detailed Plan	Completion Target Date	Estimated Costs US$ x 1,000 Capex	Opex/y
G-1	AAA	**Environmental Management Improvement Program** : Need to commit to ESAP and implement each project, and an independent consultant to monitor the projects	OMK to set new organization for HSE departments at GK to implement EAP • Prepare and submit professional and effective staffing and reporting structure for HSE departments • Develop a plan for the timing, cost and outline technical solution for the completion of Ammonia distilling, increased export of COG, coke pushing, pitch processing, landfill and water treatment environmental schemes • Prepare Gantt Chart to 2008 identifying each key stage in design, environmental approval, construction, erection and commissioning	Mid 2006	5	20
G-2	AAA	**Ammonia removal and destruction from Coke Oven Gas (COG)** : Substantial exceedance of Maximum Permissible Emissions of *NOx*	Construction is ongoing with installation of several cleaning units for ammonia removal from COG (pitch gas purifier in Venturi Scrubber and electrofilter, thermal treatment unit, circular phosphate treatment unit) • Ammonia removal from COG will reduce NOx emissions from the batteries and other combustion plant and will make the gas more acceptable to the power station (by reducing its NOx emissions). • NOx emissions from the batteries will be reduced from 781 to 192 mg/m3 and will comply with IFC requirements of <750mg/m3. Coke dust emissions will be reduced from 942 mg/m^3 to 189 mg/m^3	Mid 2006	4350	1756

Item No.	Priority	Description of Action	Issue and Detailed Plan	Completion Target Date	Estimated Costs US$ x 1,000 Capex	Opex/y
			• It will also have the effect of reducing the ammonia and phenol content of the wastewater, improving the performance of the wastewater treatment plant, in turn reducing emissions of phenol (to 0,44 tpy) and ammonia (to 26 tpy) from coke quenching.			

G-3	AAA	**Eliminating flaring of coke oven gas**
		
		Delivery of more gas to the Kizil power plant or possible in-house use of gas for production of electricity :
			(a) Utilizing the additional gas supplies at the Kizil power plant will reduce emissions of NOx by 757 tpy, carbon dioxide by 254 tpy and carbon monoxide from flares. A priority action is to reach agreement with the power station to increase supply from 12000 m^3py to 35000 m^3py. OMK/GK to provide IFC with a copy of the agreement with power plant.
			
			(b) In-house use of coke oven gas to produce electricity could be considered as an alternative option
				For (a): Mid 2009
				
				Copy of the agreement to be provided by Mid 2006
				
				For (b) Implementation End 2008
				
				Feasibility study to be completed by Mid 2006
					6896 (including power plant cost)
					
					TBD	

G-4	AAA	**De-dusting during coke pushing** : Construction of a plant to reduce particulate emissions to less than MPE	The control plant is expected to comply with the IFC requirement for dust emissions of <150g/t of coke. • Project submitted for State Environmental Review (SER)	Mid 2007 SER: Dec 2005	250	1035
G-5	AAA	**State Environmental Review (SER):** : Need to obtain a positive SER conclusions for projects in the operation and construction phases as well as for	Actions needed: • (a) Compile an inventory of production units that are operating, under construction or are planned to be installed and require SER positive	For (a): Mid 2006		

Item No.	Priority	Description of Action	Issue and Detailed Plan	Completion Target Date	Estimated Costs US$ x 1,000 Capex	Opex/y
		proposed developments	conclusion; and • Arrange development of project documentation and submit project documentation to SER for approval • (b) Get approval (including Environmental Protection section) passing though SER and initiate construction and commissioning of facilities to ensure pollution abatement to MPE level	For (b): End of 2006		

G-6	AA	**Waste Management**: Develop and implement a detailed plan for handling production and consumption wastes generated at GK.	GK to develop and implement a plan to address the following issues:
			(a) An inner procedure for managing industrial and household wastes of all types generated at the GK should be developed.
			(b)The scrap metal stockpile located within the area allocated to disposal of waste of Hazardous Class II (acid pitch) should be phased out.
			(c)The waste dump for coal enrichment waste in the area of 8 hectares should be reclaimed
				For (a): End 2006
				For (b): 2009-2010
				For (c): 2008-2010
					800
					200
						30
						15

G-7	AA	**Treat heavily contaminated run-off in wastewater treatment plant** : Reduce Phenol concentration in wastewater	Construction is ongoing to be completed in the near future with collection and pumping system • Concentration of phenol should be substantially reduced (from 250 mg/l to 5 mg/l)	End 2006	14	142,5
G-8	A	**Former Acid Pitch Landfill**: Stop leaching since acid leachate enters watercourse	Survey to be conducted to establish the significance of the problem. If the problem is severe, corrective action should be undertaken: either recycling (preferable) or sealing safe disposal	End of 2008		20
G-9	A	**Hazardous Materials Management** :	(a) Plan to include • Procedures for hazardous substances	For (a):	120	10

Item No.	Priority	Description of Action	Issue and Detailed Plan	Completion Target Date	Estimated Costs US$ x 1,000 Capex	Opex/y
		Develop and implement a detailed plan for GK to include storage, handling and disposal of hazardous materials and monitoring and installation of necessary facilities	management • Storage and handling systems including provision for containing leakage and recovering spills • Site contamination should be investigated • Procedures for regular monitoring of soil and groundwater should be prepared (b)Necessary containment facilities (such as adequate bunds) to be installed	End 2006 For (b): End 2008	344	8,6
G-10	B	**Storm Water Run-off Collection** : Reduction of load from less contaminated areas of the site	Requires settling pond and oil interceptor is required so as to provide basic treatment	2008-2009	150	50
G-11	B	**GK Public Consultation and Disclosure Plan** : Develop and implement PCDP	Develop a plan to consult and disclose environmental and social aspects of current and proposed activities based on consultations with all stakeholders	End 2006		10
G-12	C	**Pitch Processing Shop** : Need to complete an investigation/study to assess HSE risks	Dust emissions exceed IFC requirements of 50mg/m3 and may be heavily loaded with aromatic hydrocarbons. Exhaust ventilation of working areas and emission control plant may be required	Mid 2006		25
G-13	C	**GK Health, Safety and Environmental (HSE) Management System** : Develop and implement an HSE Management System in line with ISO 14001 and OHSAS 18001	• Environmental Management System should be developed, initially to address priority issues outlined above (air emissions, effluents and waste) • Existing occupational; health and safety management system should be further developed • One should ensure availability of Personal Protection Equipment (PPE) and its utilization by workers	End 2008	120	1

Table 4 - Cost and Implementation Schedule for Chuzovskoy Plant (ChMZ) ESAP

Item No.	Priority	Description of Action	Issue and Detailed Plan	Completion Target Date	Estimated Costs US$ x 1,000 Capex	Opex/y
C-1	AAA	**Environmental Management Improvement Program** : Need to commit to EAP and implement each project, and an independent consultant to monitor the projects	OMK to set new organization for HSE departments at ChMZ to implement EAP • Prepare and submit detailed staffing and reporting structure for HSE departments • Develop a plan for the timing, cost and outline technical solution for the Duplex Shop, Sinter Plant and BF environmental schemes • Construct a Gantt Chart to 2008 identifying each key stage in design, environmental approval, construction, erection and commissioning	Mid 2006		50
C-2	AAA	**Bessemer Converters** : Emission control at Duplex Shop as the major source of dust emissions from the works (generates 70% of dust emissions)	Design and construct emission control system with new bag house to substantially reduce emissions of dust (predominantly iron oxide) • Dust emissions of <20mg/m3 will comply with IFC requirements of <50mg/m3, but will exceed Russian MPE limits • NOx emissions will be unchanged but already comply with IFC requirements of 750mg/m3 and only marginally exceed MPE limits	Mid 2007	5900	10
C-3	AAA	**OHF** : Design and install emission control plant (may be suitable for use on future replacement steelmaking plant, depending upon locations and specifications)	Emission control system will significantly reduce emissions of iron oxide dust. • Dust emissions of <10mg/m3 will comply with IFC requirements <50mg/m3 and with MPE limits. • NOx emissions comply with IFC requirements of 750mg/m3 but will exceed MPE regulations	Mid 2007	3,500	

Item No.	Priority	Description of Action	Issue and Detailed Plan	Completion Target Date	Estimated Costs US$ x 1,000 Capex	Opex/y
C-4	AAA	**Waste Management**: Develop and implement a detailed procedure (plan) for handling hazardous wastes[2] generated at ChMZ.	ChMZ to produce and implement a plan to include • Cease hazardous (1-4th classes) of toxicity waste dumping at the 'fork' on the left bank of the Usva River, at its confluence with the Chusovaya River. • Remove hazardous industrial (1-4th classes) and domestic wastes from the Usva River riverside. • Reinforce control over waste dumping at the 'fork' When processing the generated slag deposited in piles, begin with processing the slag located within the Usva River riverside and protection zone.	Mid 2009	2,800	
C-5	AA	**Ferroalloy Chemical Division MnO2 Recovery** : Reduction of load on existing secondary treatment plant	Wastewater will be treated with ozone to precipitate Mn as MnO2. The process is not expected to significantly reduce vanadium concentration • Final effluent discharge will comply with IFC requirements for heavy metals of 10 mg/m3 • ChMZ to develop a plan to reduce Vanadium discharges	End 2008	2000	
C-6	AA	**Hazardous Materials Management** : Develop and implement a detailed plan for ChMZ to include storage, handling and disposal of hazardous materials.	ChMZ to produce and implement a plan to include • Procedures for hazardous substances management • Storage and handling systems should include provision for containing leakage and recovering spills • Site contamination, particularly by spillage of oil, should be investigated	Plan beginning of 2007. implementation by end 2007	140	10

[2] I class of hazard – luminescent lamps, II class – car batteries with electrolyte and used sulphuric acid, III class – 14 types of waste, including used oils and oil contaminated materials.

Item No.	Priority	Description of Action	Issue and Detailed Plan	Completion Target	Estimated Costs US$ x 1,000	
				Date	Capex	Opex/y
C-7	A	**Sinter Plant** : Reconstruction to modern standards to improve energy efficiency, and to reduce the generation of PAH and other pollutants at source	Improvement of effectiveness of emission control plant to be included in strategic technical review of plant reconstruction. • Dust emissions of <20mg/m3 will comply with IFC requirements of <50mg/m3 • MPE for dust emission appears to be unrealistically low for compliance by commercially available techniques • NOx emissions of 65mg/m3 comply with IFC requirements of 750mg/m3 and with MPE limits	End 2010	3500	10
C-8	A	**Blast Furnace:** Install water recirculation system for purification of blast-furnace gas	Existing "once through" system will be replaced by a water recirculation system	End 2010	1,800	
C-9	B	**Blast Furnace (BF) Area** : Installation of dust control plant (plans require firming up)	Equipment is standard and used widely in other BF Shops ; best undertaken at the same time as a blast furnace reline. • Dust emissions after the control plant instillation will comply with IFC requirements of <50mg/m3	End 2010	3,000	
C-10	B	**ChMZ Public Consultation and Disclosure Plan** : Develop and implement PCDP	Develop a plan to consult and disclose environmental and social aspects of current and proposed activities based on consultations with all stakeholders	Mid 2006		10
C-11	C	**ChMZ Health, Safety and Environmental (HSE) Management System** : Develop and implement an HSE Management System in line with ISO 14001 and OHSAS 18001	• Environmental Management System should be developed, initially to address priority issues outline above (air emissions, effluents and waste) • Existing occupational; health and safety management system should be further developed • ChMZ should measure performance and improvement and benchmark against equivalent Russian plants	End 2008	150	5