ESAP for VTGRES CCGT: 2013 - 2016

No	Action	Environmental Risks / Liabilities / Benefits	Legislative Requirements / Best Practice	Investment Needs / Resources (Euros, 000s)	Timetable To be completed by the End of Year	Target and Evaluation Criteria for Successful Completion	Comment
1	Inter RAO will continue to implement the requirements of the existing corporate ESAP agreed in 2012 as part of a corporate loan.	The corporate ESAP has been agreed between the Bank and Inter RAO , which outlines a road map for attain best international standards. This corporate requirements should be maintained.	EBRD Loan agreement		Ongoing	Annual report under corporate loan	The corporate ESAP will be maintained under the current project.
Verkhnetagilskaya - Corporate Wide (EHS Management for the existing plant and new CCGT project)							
2	Implement Environmental and OHS Management systems.	Ensure that best practice is adopted across the organization. It is recommended that ISO 14001 and OHSAS 18001 standards are used as a reference.	Best Practice and EBRD requirement	Internal resources & external verification	Develop program in 2014 and maintain certification post 2015	ISO 14001 and OHSAS 18001 certification by 2015.	Current environmental and occupational health and safety systems should be further developed on the basis of ISO 14001 and OHSAS 18001 standards.
3	SEP. Maintain a Stakeholder Engagement Plan for the project and update this as required. The Plan should take account of any new investment at the plant	SEP is required to include a grievance plan (complaints procedures) to allow staff and external stakeholders (public, etc) to voice concerns, opinions etc. Good stakeholder engagement reduces the risk of civil unrest and public concern.	EBRD requirement	Internal and external resources	Ongoing	SEP in place to be updated on a annual basis with summary & list of SEPs implemented provided to the Bank in Annual Report	SEP should be developed for other associated investments (like gas pipeline) as well (if they are not part of the power generation investment).
4	Grievance Mechanism. Maintain and improve a Grievance Mechanism	People can express their opinions and the complaints are effectively processed and	Good practice, EBRD guidelines	Internal resources	Q3 2013 As soon as possible,	Grievance procedures put in place and	Current grievance mechanism does not fully meet EBRD requirements. Information on possibilities for

	for both internal (workers, subsidiaries) as well as external (local community, contractors) stakeholders.	result in proper mitigation measures. Tasks and responsibilities are clearly identified.			continuous	publicized. Provide information in annual report	submitting grievance is not very clear, the Company does not keep register of submitted complaints and requests. Setting up of local community contacts for construction and operational stages is needed.
5	Develop an Environmental Impact Assessment according to the requirements of Russian Law (OVOS) and EU EIA Directive The EIA/OVOS should be done as part of the EPC contract once the final design details are available. A Non Technical Summary should be published locally of the final OVOS.	Fulfil requirements of Russian Law. The OVOS should be extended to cover international best practice and cumulative issues, once the detailed designs are in place. Implement SEP and publish an NTS.	EBRD requirement Russian Law	Internal project costs	EIA should be developed as part of the project programme	EIA prepared and a NTS published.	EIA should cover associated activities like construction of new as pipeline, electrical substation. EIA should include demolition works as well as if required cleanup of contaminated soil, waste utilization. Impact on water reservoirs. If necessary cover additional requirements from Environmental and Social Statement in an Appendix to the main text written in compliance with Russian Law.
6	Ensure that all new projects, extensions, and associated infrastructure in Verkhnetagilskaya are to be designed to meet both Russian and EU environmental standards as well as requirements set out in the corporate ESAP agreed with the Bank in 2012.	To ensure that future projects minimize environmental impacts. The assessment at design stage will ensure that any project will comply as far as practical with European BAT, stakeholder requirements and Russian legislation.	Best Practice and EBRD requirement	Will vary according to each project.	February 2014		Any new coal fired boilers for Verkhnetagilskaya for which a building permit is to be attained post 1st January 2014, will be constructed in accordance with the EBRD InterRao Corporate ESAP. Any significant dismounting and demolition works should be a subject to EIA. Any new coal-fired CHPs will reach energy efficiency at least 84 % in cogeneration mode (table 4.66 of LCP BREF July 2006). The thermal efficiency of cogeneration process should be calculated in accordance to the Annex III of Directive 2004/8/EC of 11 February 2004.

Verkhnetagilskaya – CCGT project							
7	Ensure that CCGT project as well as extensions, and associated infrastructure in Verkhnetagilskaya is designed to meet both Russian and EU environmental standards. Undertake an audit and BAT Assessment after commissioning to confirm that the EIA and IED requirements have been met	To ensure that the CCGT project will comply as far as practical with European BAT, stakeholder requirements and Russian legislation. Ensure that the CCGT project is aligned to European BAT standards (as far as is practicable) including ensuring that NOx emissions do not exceed 50 mg/Nm^3.	Best Practice and EBRD requirement	Internal Project Cost	Within 1 year of commissioning.		The new unit should comply with ELV emission standards as defined in the Industrial Emission Directive (IED) Annex V.
8	Install continuous emission monitoring for NOx on each stack prior to commissioning. Install continuous temperature and water flow meters on the cooling water discharge and abstraction points	Ensure adequate monitoring of emission and cooling water use. The continuous measuring data should be available in the main control unit.	Best Practice and EBRD requirement	Internal Project Cost	Prior to commissioning		Continues water monitoring is require to ensure that thermal pollution is not a problem in hot summers, with temperature not above 30oC in the lakes and no increase in temperature above 3 ° Celsius in comparison with natural temperature in each period.
9	Ensure that NOx emissions of the CCGT are in compliance with the requirements of the IED, including during partial load operation.	CCGT may operate 1000 - 2000 or more hours per year at partial load as a reserve unit for stability of the grid. NOx emission should be in compliance with IED Directive in such case as well.	Best Practice and IED Directive requirement	Internal Project Cost	Q1 2016		The results of the tests should prove the proper design of CCGT unit. At present the contract with the supplier guarantee NOx emission levels at nominal power output only
10	InterRao will ensure that all contractors involved with the project have appropriate Environmental Occupational Health and	Definition of clear responsibilities for constructors. Ensure that all personnel are aware of the environmental requirements (on surface and ground water	Best practice. Environmental protection and OHS regulations.	Management time or external Expert fees.	Before the start of construction, and then continuously review.	Procedures are prepared. Trainings are performed and reports are submitted to	Company has already implemented a number of occupational safety standards however they concern mainly day-to –day operation, not investment activities with significant involvement of external workers of

	Safety Procedures for Construction Works and suitably qualified personnel undertake the supervision of all construction activities.	protection, solid waste handling etc.) and clear operational procedures set. Prevention of construction injuries, forced labour etc.				project manager.	subcontractors.
11	Develop an action plan for the management of waste throughout the CCGT project.	To ensure that waste is properly stored	Best Practice		February 2014	Agreement for disposal of construction waste	Procedures for waste hazard assessment should be implemented. Inert waste should be stored separately for future reuse. Other ways of construction debris disposal may be sought.
12	Develop social program for co-financing of the relocation of the workers not required by 2015 in VT location..	Part of the workers will need to be relocated for a limited time , if there are no further investments at the plant	Best Practice	Circa 0,6 million Euro per year in the period 2015 - 2019	Report programme details to EBRD Q3 2014 Programme in place January 2015	Report to EBRD	There is a need for keeping the experienced staff within the company. Such program proves company's awareness on personnel value.
13	Within 2 years of operation of the CCGT undertake a BAT Assessment to assess the impacts of the plant, cumulative impacts and whether cooling systems are adequate, or additional cooling is required.	Need to review operations to ensure compliance with National regulation, ESAP and good industry practice.	ESAP	Independent consultant	2 years after commissioning	Report to EBRD	Need to assess impact of thermal pollution and whether additional cooling is required.
Verkhnetagilskaya – Existing plant, technical and environmental individual issues							
14	Prepare a common hydrogeological and geotechnical assessment for new CCGT investment, underwater gas high pressure line and associated investment. Prepare the	The location of the new unit and the construction activities may have the impact on the stability of the old 1950-s – 1960s edifices and existing boilers and turbines.	Best practice	Own resources	2014	Copy of the reports and data on the necessary precautionary activities delivered to EBRD	The Verkhnetagilskaya plant area has a complex hydrogeological situation. There is a system of drainage from around the site and the complex hydrogeological situation due to the location between three lakes/ponds. Such site needs the high quality expertise in order to

	modeling of the impact on the existing edifices.						avoid the typical risks..
15	Develop the full detailed water balance of three Verkhnetagilskaya reservoirs including the groundwater drainage or supply. Analyze the potential changes to this balance due to the climate change	This data is required for development of a proper water reservoir protection plan. The actual status is not obvious as parts the water reservoirs were constructed even on the XIX century.	Best practice	Own resources	As part of the EIA		Three reservoirs are the most important operation conditions and currently almost no reliable data on water balance in these lakes is available. The lakes can have a major impact on the quality of water downstream in other towns. The developed balance should cover the balance of the major pollutants as well and their flow through this system of the lakes (see next line)
16	Reduce the risk of contamination of the three lake system with phosphates, nitrogen and oily water transported by waters feeding the reservoir. Develop a protection program of the lakes against the accidental pollution from InterRao activities. Develop procedure for sampling of all main rivers inside the catchment area of Verkhnetagilskaya reservoirs.	Quality of the lakes {reservoirs} is crucial for smooth and profitable operations of new CCGT unit. The existing situation has generated various risks in the past. Inside reservoir catchment area (more than 3000 km2) may exist unchecked sources of contamination that should be stopped.	Best practice	Own resources	January 2015	Copy of the programs and data on river water and waste water quality delivered to EBRD	he Company has a problem with reduction of contamination in rivers in the catchment area of these reservoirs. Regular occurrence of algae and other plants in the reservoir are caused by this contamination. Allowable limits of substances may be exceeded and some substances may impact new CCGT operations. Usage of chlorine is prohibited so the company should develop the indirect program of the protection of these lakes.
17	Install automatic continuous monitoring for temperature and flow rate, on all discharge points to the reservoirs. Undertake periodic monitoring of water use and emission/discharge	Improved management of environmental and health and safety issues	Best practice	Own resources	2014	Address of the web link delivered to EBRD	Company should present to the public what is the scale of usage of the natural resource (water) for industrial purposes.

	quality. Make the data available to the pubic via the internet.						
18	Prepare a program for analysis of the asbestos, oil, heavy metals in soil in and around the planned investment site for new CCGT unit	Risk reduction related to investment delay and contamination extension prevention during the construction process.	Best practice	Own resources	2014 – program developed 2015 analysis performed	Final report delivered to EBRD	It is a typical process for new investment site in order to avoid the risk of stoppage of the construction.
19	Publish Company policy on the implementation of Order No. 430 dated the 7th of September 2010. After the introduction of the new CCGT, in 2015, turbines 1-6 will be put out of service and boilers 1-13 will be dismantled. In 2016, a decommissioning plan for coal-fired power boilers 7 and 8 will be produced for the purpose of redevelopment.	Ensure that best practice is adopted across the organization and that there is transparency in technical and environmental performance. Reporting of technical and environmental performance to stakeholders. If any of the coal fired units are to be retained post 2018, an environmental improvement program needs to be develop in line with the corporate ESAP, this should include ensuring dust emissions are below 50 mg/Nm^3.	Best Practice and EBRD requirement	Internal resources	Q3 2014	Address of web link delivered to EBRD	Order No. 430 is the main decree developed as a toll for decommissioning of old type energy production units. However it has a significant social and business impact on the whole Inter RAO and Verkhnetahgiolskjsya plant and staff.
20	Install and operate a certified CEMS (continuous emission monitoring systems) for all emission points at Verkhnetagilskaya units (gas fired and coal-fired) planned for operation after January 2016. The system should allow for on-line control and electronic data storage	Ensure that data collected is reliable and collected by standard and provable method.	Best Practice and EBRD requirement Corporate ESAP Russian law		Decision by 2016 for plant and implementation of plan by 2018	Project completed by end of 2018	No CEMS devices installed at Verkhnetagilskaya plant. As a result all units need such installation..

21	Perform new assessment of the regional heating needs for the period post 2017	Assessment should take into account the possibility of energy efficiency measures and decrease of the losses in these systems.	Best practice		September 2014		It is unclear what type of heating needs will be really needed in this region post 2017 period. New industrial entities should guarantee the heat purchase through proper long-term contracts. The proper design of future heating systems should maximize the energy efficiency goals
22	For any reconstruction or new construction of the Verkhnetagilskaya mazout storage area or for the construction of any new bulk fuel storage for new CCGT unit, implement proper BAT rules for protection of soil and groundwater against spillage and contamination. Install permanent monitoring systems and classify the site in accordance with the risk of soil pollution	Proper risk procedure for avoiding soil contamination should be implemented as a next step (it should be part of the whole ISO procedures as well).	Best Practice and EBRD requirement	Internal & external resources	To be in place for the new planned fuel storage in 2015	Presentation of new policy in accordance with ISO certificates, and agreed action plan to clean up site	Proper procedure for prevention of future soil contamination should be implemented at all Verkhnetagilskaya investment processes. There shall be remediation plans for sites identified as with highest contamination of soil. New light fuel oil storage area for CCGT unit will be probably located in separate location near the existing power plant. Its design should protect the reservoirs against the contamination and against similar risks.
23	Develop a program of soil and groundwater contamination assessment for the mazout storage area	Procedure for prevention of soil and groundwater contamination	Best Practice and EBRD requirement	Internal & external resources	2014		
24	Fire protection and explosion prevention for new investment and related facilities. Emergency action plan.	To ensure that accumulation of the various types of units and the change to another types of coal (with higher risks of explosion) and the new associated risks are properly managed			To be in place prior to commissioning of the new facility.		

25	Determine through analysis whether transformer oils contain PCBs.	Continued use of PCB-containing transformer oil until the end of its useful life is acceptable. However, long term plans for its phase out should be developed.	Best Practice and EBRD requirement	Consultancy costs	2015	Results of analysis	No data
26	Provide calculation of provision for future closure and remediation of the ash ponds No 2 taking into account proportion of volume used and planned for usage.	Company should possess clear information on its future obligations on environmental protection.	Best Practice	Internal & external consultancy	Q2 2014	Report with calculations presented to EBRD	For the pond the estimated costs of the closure and rehabilitation (including soil transport and planting, long term drainage and reforestation) should be calculated in respect to planned pond operation schedule.
27	Estimate the impact on environment from coal fired units – perform the additional coal quality analysis.	New European Directives on emission of Ni, Hg, As and other heavy metals indicate the way in which this topic should be treated.	Best Practice EBRD Requirements		2015		A comprehensive analysis of mercury, arsenic, fluoride and heavy metals content in coal from various sources should be done. The analyses of environmental influence should be done with regard to this issue.
28	Improve signage of hazardous areas (noise, dust, chemicals, type of PPE to wear) as a tool for more efficient use of PPE and raising the awareness of personnel.	Improved management of health and safety issues.	Legal compliance and reduced risk of accidents and occupational diseases	Internal cost	Q2 2014	List of signed places. Internal review records.	