

**Resource requirement and pollution potential of Alumina Refinery from 1 MMTPA to 6 MMTPA Capacity of Vedanta Aluminium Limited, Lanjigarh, Kalahandi, Orissa**

	<b>1 MTPA</b>	<b>6 MTPA</b>	<b>Remarks</b>
Bauxite	2.6 million tonnes per annum	15.48 million tonnes per annum	The MoEF gave the final clearance to the mining project in April end 2009. This clearance however is for only 3 MT. If the proposed expansion project is cleared, the refinery would require atleast 15 MT of bauxite every year. This means that the total bauxite deposits of 75 MT will be used up only in 5 years instead of 25 years as earlier proposed
Raw water	14859 m <sup>3</sup> /day	56250 m <sup>3</sup> /day (this include mine water requirement also)	<p>The existing project (1 MTPA) itself has created a lot of stress due to its water demand.</p> <p>The refinery itself was struggling to meet its water requirements and therefore it started sourcing its water from Tel River at Kesinga through a 65 km pipeline. In early 2008, Vedanta had installed several deep bore wells along the pipeline because it was not able to meet its water requirements. The Orissa's water resources department sent a team to Lanjigarh and shut most of the wells down.</p> <p>The six fold increase in production is likely to significantly increase the water consumption at the refinery. It is doubtful if the Tel river has enough flow to sustain this expansion as well as the requirement of people and users dependent on the river.</p> <p>The EIA report of the expansion project has completely missed out on addressing the issue of cumulative impact on the Tel River and its resultant impact on people and habitat dependent on this river. There is no analysis on the reduction in flow of Tel River due to disappearance of streams originating in Niyamgiri hills or the loss of catchment area for setting the plant.</p>
Power	75 MW (3 X 25 MW)	Total power requirement for 6.0 MMTPA capacity alumina plant is 250 MW.  To increase electrical energy production and efficiency of generation, the existing 3 X 25 MW will be augmented with additional 3 X 50 MW & 2 X 30 MW	Total capacity = 75 MW (1MTPA)+ 210 (6 MTPA) = 285 MW
Red mud generation	1.28 million tonnes per annum	7.5 million tonnes per annum	High risk of groundwater contamination: Another big threat from the project is the possibility of groundwater and surface water contamination from the red mud and flyash disposal site. The EIA report of 1 MTA refinery mentioned that a HDPE lining would be provided in the red mud disposal site. In contrast, in the expansion project no HDPE lining would be provided in the red mud pond, instead a natural liner would be used, which is a mixture soil and bentonite. The area around the plant and waste disposal site has moderate ground depth, which varies from 3 to 4 meter (EIA
Land diverted for red mud disposal	182.94 Ha	890.34 Ha	

<p>Fly generation</p> <p>Land diverted for red mud disposal</p>	<p>0.23 million tonnes per annum</p> <p>235.79 Ha</p>	<p>0.86 million tonnes per annum</p> <p>218.94 Ha</p>	<p>report refer figure 3.1, page 39). Another statement mentioned in the EIA report indicates that “from the field permeability tests, permeability data and the nature of the soil (clayey sandy clay), it is apparent that the seepage will be higher’. This clearly shows the risk of groundwater contamination from the red mud disposal site is high.</p> <p>The expansion project would generate around 7.5 million tonnes of red mud every year. This would require 890 ha of additional land for disposal. This means that altogether 1073 ha of land is under the red mud disposal site, which is more than 50 per cent of the total land required for the project (i.e. 2007 ha). The red mud ponds are located in the catchments area of Vamsadhara and Nagavali River. Therefore, any leakages from the pond could significantly affect the water quality as well as reduce the water flow due to reduction in catchment area.</p>
<p>Pollution load from refinery and power plant</p>	<p><b>Air pollution</b></p> <p><b>(a)</b> Point source emission - Increasing the production at the refinery from 1 Mt to 6 MT, will add 2327 tonnes of dust, 6159 tonnes of SO<sub>2</sub> and around 2709 tonnes of NO<sub>x</sub> every year. Even though, the project will contribute significantly to SO<sub>2</sub> and NO<sub>x</sub>, no pollution control equipment has been suggested for these in the EIA report.</p> <p><b>(b)</b> Non-point source emissions - In addition to point source emissions, fugitive dust from storage of bauxite, coal, and lime (around 20 million tones of these materials are proposed to be stored in open) would be significant. Assuming an emission factor of 0.6 kg/tonne of bauxite<sup>1</sup>, the total fugitive dust from the bauxite storage yard would be around 9288 tonne every year. Similarly, if emissions from the coal and lime storage yard were also added, then annual fugitive emission would be significant. This can have severe impact on the health of the workers and community if not properly controlled. The EIA report has failed to suggest sound mitigation option for controlling the fugitive dust.</p> <p><b>Wastewater</b></p> <p>The proposed expansion EIA report as well as the original EIA report indicates that the refinery is zero discharge plant. The EIA report however does mention that 30 per cent of the total water consumed is generated as wastewater (which includes wastewater from plant, cooling tower blowdown, DM plant etc). If we assume the same ratio of wastewater generation, around 16875 m<sup>3</sup> of wastewater would generated every day from a 6 MT refinery. The EIA further states that the “entire treated wastewater will be reused in the process”. This means that the company would have to consume 16875 m<sup>3</sup>/day of wastewater in addition to 56250 m<sup>3</sup> of water, which it sources from Tel river every day. It is unlikely that the plant would be able to consume all the wastewater even if they use it for dust suppression, gardening or some other activities. Therefore, there is a high possibility that some amount of wastewater may find its way into the river. There are already complaints from the local community that this is already happening in the existing 1 MT plant.</p>		

<sup>1</sup> 0.6 kg/tonne bauxite is the emission factor :[http://www.npi.gov.au/handbooks/approved\\_handbooks/pubs/mining.pdf](http://www.npi.gov.au/handbooks/approved_handbooks/pubs/mining.pdf)