

Project Dossier



PROJECT DOSSIER

BELGAUM ALUMINIUM PLANT RED MUD DUMP-SLOPE MONITORING

PROJECT OVERVIEW

In the Alumina refinery plant at Belgaum, part of red mud (bauxite residue) generated from the plant is sent to cement industries for utilization and remaining is stored in red mud ponds. The red mud pond at Belgaum plant is quite large, lined with impervious clay to prevent leakage. The Project Authorities are making a lot of effort in forestation of the red mud ponds by planting special type and trees and grass.

The pond was designed for wet ponding. However, with time it is now being used for the dry mud stacking. An embankment is built around the red mud pond. The embankment is quite huge and old; thus required slope stabilization. The red mud pond area required monitoring for slope stabilization of embankment as well for the groundwater in the vicinity. Encardio-rite was entrusted the monitoring works.

Project	Red Mud Pond of Belgaum Alumina Refinery - Hindalco Aluminium Plant
Location	Belgaum, Karnataka, India
Client	Hindalco Industries Limited
Duration	2021





Monitoring solution

The real-time safety monitoring of red mud pond as well as the embankment involved instrumentation to provide immediate warning for slope stability and ground water pressures.

Turnkey services

Encardio-rite was awarded the sub-contract for monitoring works of the project. Scope of works included:

- Supply and installation of geotechnical instruments as per approved drawings & methodology, specifications for work and instructions of Hindalco's Project Manager
- Supply and commissioning of wireless (GSM/GPRS) data logger
- Monitoring and reporting in initial phase
- Real time database management system



IPI being installed in red mud embankment area



Piezometer being installed in red mud pond area

INSTRUMENT USED

- In-place Incliner for monitoring sub-surface lateral movement/deformation surrounding slope of dyke
- Piezometer for monitoring sub-surface water pressures at different depths, for slope stability evaluation
- Datalogger to collect data from all of the above instruments and transfer to central server



IPI installed



Red mud pond and embankment area

A typical layout of IPI and Piezometer locations is shown in adjacent Google map view. All the instruments were installed successfully and are giving reliable data at pre-set frequency.

Monitored data is available online through Encardio-rite's in-house developed DRISHTI, a web based data management system. The data is available in near real time to the stakeholders on their laptops and mobile phones.



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