
LAND REHABILITATION & EROSION CONTROL PROGRAM

The Ramu Nickel Project is situated in the Kurumbukari Plateau which has several down stream drainage systems that eventually drains to the main Ramu River system. Soil erosion is one of the major environmental criticisms and the Ramu floodplains including Banap Oxbow and Nape Swamp are very sensitive areas of concern during the mining operation.



However, Ramu NiCo Management (MCC) Ltd as the major developer of the project is very committed to the Best Environmental Management Practices that are highly recommended and will apply the modern mining erosion control practices and land rehabilitation practices to minimize the effects of mining operation.

Land Rehabilitation and Erosion Control Program is one part of the Environment Management Plan which is to manage surface water run-off and control soil erosion and to mitigate the impacts of the mining operation on the receiving down stream water ways, streams, rivers, swamps, conservation areas, cultural significant areas and other areas that are community property and of public usage.

Definitions:

Rehabilitation- to bring back into good conditions of the land as before and enable it to sustain its usefulness

Erosion- gradual wear away of ground surface, especially soil and sand particles by the actions of water, rain, wind etc.

The program aims to:

- Stabilize soil surface with vegetation growth
- Manage surface runoff and storm waters entering adjoining drainages and water channels
- Restore affected site to a condition in which it is visually acceptable to the community.

While working towards achieving its aims and objectives, the Project Developer strongly believes that it can protect the land, forest and water resources by:

1. Displaying scientifically proven environmental protection & soil erosion control management practices
2. Pay equal attention to resource exploitation & environmental protection
3. Striving for a positive sustainable land use for socio-economic development

Last July 2007, a temporary nursery was constructed to cater for planting materials for the construction phase. In and around this structure we constructed several standout beds for growing the grasses and trees necessary for all of the proposed soil erosion control trials, restoration areas and for general site development.

So far we have raised about 30,000 mixed tree seedlings of both shade tolerant and light demanding species and 16,000 Vetiver grasses. One of the plants that were recommended in the Environmental Plan is Vetiver grass.



Figure 1 Seedlings growing in 50% shade standout bed.



Figure 2 Mixed tree seedlings in an open (100% sunlight) stand-out bed

Common name: Khus khus

Scientific name: *Vetiveria zizanioides*

Family: Gramineae

Vetiver is a dense, clumping perennial grass, to 1.5 m in height, native in India and Ceylon. The grass is highly recommended for soil erosion control because it is non-seed producing variety specially selected not to become weedy and can grow well in all environmental conditions. Vetiver roots cover 20-30 mm of soil and compact the soil firmly.

Their hedges are found to be very effective in soil and moisture conservation. The stiff stems of the thick hedge slow the movement of runoff water and spread it out, trapping silt behind the hedge. This allows more water to be absorbed into the soil, thus reducing runoff and erosion. Vetiver is non-invasive, has no runners or rhizomes, and only spreads by tillering.

Therefore, Vetiver will mainly be used for steep slope stabilization and rehabilitation of degraded and disturbed land.

Areas of concentration will be along the Butua access road, Kinimati water source, and Butua Project site as well as along Ramu River next to the main bridge.



Figure 3 Vetiver (*Vetiveria zizanioides*) in open stand-out bed ready for planting.