

The residue from the heap leaching processes will be left in-situ. Other types of waste will be disposed of to a permitted dumpsite.

#### **1.6.4 Location of Plant Sites**

In order to take full advantage of facilities like water supply, electricity, traffic, etc, utilize the resources available efficiently, save investment and production cost; the plants will be built in different location as follows:

- The oxide ore and vat leach residue heap leach plant will be located in the space which lies between north of No.4 stockpile and south of the main ore conveyor belt (CV2 mining).
- The solvent-extraction and electro-winning plant offices and the other auxiliary facilities, etc, will be built on the land, which lies to the east of the backfilling plant north of the open-pit and south of the main conveyor belt.

#### **1.7 Project Expenditure**

It is estimated that US\$12,001,400.00 will be required to bring the Leach Plant into operation.

It is estimated that the total annual expenditure at full production will be US\$4,887,300.00/annum.

#### **1.8 Project Alternatives**

The following project alternatives were considered:

##### Transportation

Transportation of the imported equipment and reagents will either be by road or rail or both. Indications are that rail transport will be the most convenient and cost effective transport mode.

Transportation of sulphuric acid from the Acid Plant to the Leach Plant, a distance of about 500m, will be by pipeline and / or road tankers. Transportation of the acid sold out will be by road tankers.

##### Power and water supply

No alternatives were pursued, since the power and water required can readily be supplied from the existing infrastructure without the need for any expansion to the existing systems.

##### Industrial waste disposal

No new land will be disturbed for the disposal of tailings from the agitation leaching as the proposed site for a new dam is already inundated and has been already assigned for industrial purposes. The empty spaces created by reclamation of the tailings will be backfilled with successive tailings from new reclamations.

Heap leach residue will remain in-situ in already inundated land in the low-grade ore stockpiles. No new land will be expected to be disturbed.

#### Solid waste disposal

The only solid wastes that will arise are the foreign objects such as steel scrap and timber that have been dumped on some of the dumps. The available alternatives are:

- Disposal of the timber at a permitted dumpsite.
- Selling the steel scrap for reuse at the foundry or other steel recycling companies within Zambia.

#### Land use options after rehabilitation

No alternatives were considered for the proposed Plant in isolation, since the Plant area will be rehabilitated as part of the overall NFCA PLC operations, to be produced by the consultants contracted to produce the Environmental Assessment.

### **1.9 The “no project” option**

If the construction of the Leach Plant were not to proceed then the socio-economic benefits associated multiplier effects on the local suppliers and contractors with the proposed Plant will then not materialise

### **1.10 Environmental Aspects**

#### **1.10.1 Negative environmental aspects**

If a project involves a completely self-contained “black box”, then adverse impacts will only result from the fact that the “black box” will occupy space. Additional impacts would only result if there were inputs to or outputs from the “black box”. Therefore, the identification of environmental aspects<sup>1</sup> associated with a project’s activities involves:

- establishing the manner in which it will occupy the site; and
- identifying the inputs and outputs.

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<sup>1</sup> In the International Organisation for Standardisation (ISO) Environmental Management System standards (ISO14001 and ISO14004) the mechanisms that can cause environmental impacts are referred to as environmental aspects and are defined as: “Environmental aspects refer to an element of an organisation’s activity product or service which can have a beneficial or adverse impact on the environment. For example, it could involve a discharge, an emission, consumption or reuse of a material, or noise.”