**METHODOLOGY – SITE 1**

The proposed works is to be done at site 1, near the existing flood gate toward the Site 2. The size of the excavated area to be filled is approx. between chainage 1864 and Chainage 1876.

Upon successful filing of the levee excavated area, the contractor in collaboration with the Ministry of Waterways in Labasa, need to remove the red clay and bulker bags blocking the two barrel outlets on the river side of the four barrel flood gates. After successful removing of the red clay and bulker bags from the mouth of the outlets, the contractor needs to open the closed two barrel doors of four barrel flood gate to allow the water to flow out to the river. The contractor need to ensure that the existing flood gate is function normally (water flowing out from the four barrels) before considering the job completed for site 1

**FILLING SEQUENCE OF THE EXCAVATED AREA**

1. Filling red clay materials for the excavated area shall be approved prior transporting to construction site.
2. Due to urgent nature of work, fill volume may be determined by truck tray volume rather than by survey. Material loaded on truck trays will have to be levelled flat for determination of volume by Engineer's field staff. This applies to red clay.
3. Laying and filling of red clay shall be spread and compacted in every layer of 150mm thick to finish crest level.
4. Compaction shall be done by appropriate compactor equipment or ‘Sheep foot roller’ as per approved by Engineer.
5. **FILLING OF THE EXCAVATED AREA IN DETAILED**

The procedure of compaction shall follow strictly as specified to produce a soil mass uniformly compacted to not less than 95% of the maximum dry density when tested in accordance with AS 1289.

Filling of the excavated area shall include all procedures in technical term and as specified. All unnecessary existing materials, rubbish, plants, trees, shrubs, mangrove, water etc. shall be removed prior filling of the excavated area and as per approved by the Engineer to start filling/ construction works.

Contractor shall first remove the base surface of the unwanted soil approx. 200mm thick or more and any obstructed unnecessary materials along the proposed work area. The surface shall be cleared, grade and compact and established the sub-base prior of clay soil. Every thickness of the soil fill layers shall not exceed 150mm after compaction. The moisture content of the materials at the start of compaction shall be at or near the optimum moisture as determined by the standard laboratory compaction test on soil.

At least twice field compaction test shall be undertaken as per Engineer’s decision at the Contractor’s cost for those testing.

Filling of the excavated area shall be filled with approved red clay. Contractor shall provide the sample and source of earth fill materials to be approved by the Engineer “prior of construction” for laboratory test. In the failure of soil test result, the contractor must find another suitable source of soil fill to get the satisfactory result.

**Compaction Equipment**

Compaction of filled area to be done by the use of sheep foot roller, pneumatic rollers, vibratory compactors or other type of compaction equipment at the Contractor’s option as approved by the Engineer. The Engineer shall have the right to require the contractor to change compaction equipment if such equipment is deemed unsuitable in achieving the specified degree of compaction within a reasonable period of time.

#### MATERIALS SPECIFICATION

**Fill Material – (Material Type B)**

 1. Filling material Type B shall consist of uniform, readily compactable material, free from vegetable matter and building rubbish and having a Liquid Limited between 60% and 85% and a Plasticity Index between 25 and 65 when tested in accordance with AS 1289. Clay lumps and stones shall be retained on 75mm and 37.5mm sieves respectively and between 40% and 70% of the material shall pass a 200mm standard sieve.