

Water Security for Liro and Liro Nessa Water

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Location

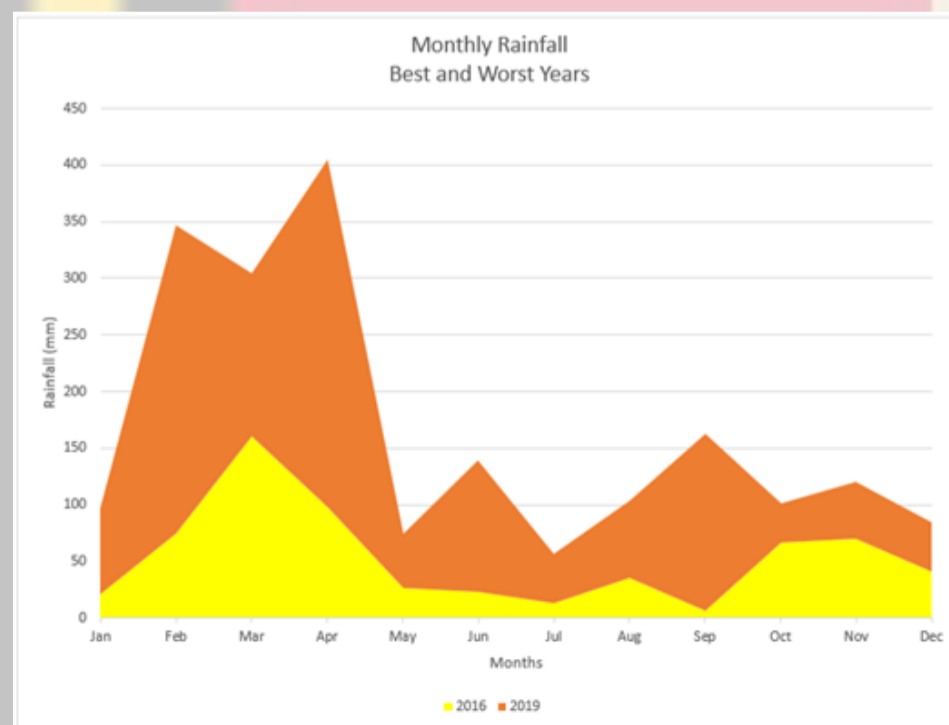
Liro and Liro Nessa are located on the island of Paama in Vanuatu, within the western part of the Pacific Ocean. This area is on the ring of fire, which tend to be affected by earthquakes and volcanic tremors.



Figure 1: Paama and Vanuatu in the South Pacific

Rainfall

Essential means of drinking water, to filling the tanks. From 2009 until 2019, the highest rainfall was in 2019 with 1 359mm, and the lowest in 2016 with 636mm



Problem

It has medically proven that contaminated drinking water can cause diseases such as diarrhea, cholera, dysentery, typhoid, and polio. The two villagers, Liro and Liro Nessa are at such risks from these diseases. Planning to establish water security within their current water tanks. To meet the UN goals to contain non polluted potable water for consumption.



Figure 2: Tank cleaned out

Rain Catchments

The rain shall be collected from surrounding roofs, and fed into the tanks.

To calculate the amount of rain filling the tanks: $Q = ciA$

A = Area of the roof (mm^2),

c = coefficient (0.95), i = rainfall (mm)

$Q = \text{mm}^3$

Bibliography

Sutton, D. (2020). *Water Security for Liro and Liro Nessa Water Tanks, Paama, Vanuatu.*

World Weather Online (2020). *Liro, Paama*

Fabric Solutions Australia

Solution

Conceived possible concepts to make sure that the water stays within the tanks, without leaking through fractures or absorbing contaminates from the soil.

- Using liquid Bitumen
- Tank Liners, using Polyvinyl Chloride (PVC) or Polypropylene (PP)
- Water bladders
- Cofferdam concept

Implantation

Implementing of tank liners in the Liro and Liro Nessa current water tanks would be a great advantage for keeping the potable water within the tanks and to prevent any contaminates being absorbed into the potable water.

The liners be cheaper than building another tank, and also more practical, since they could be installed and filled within that day, and are easy to keep clean if need be.

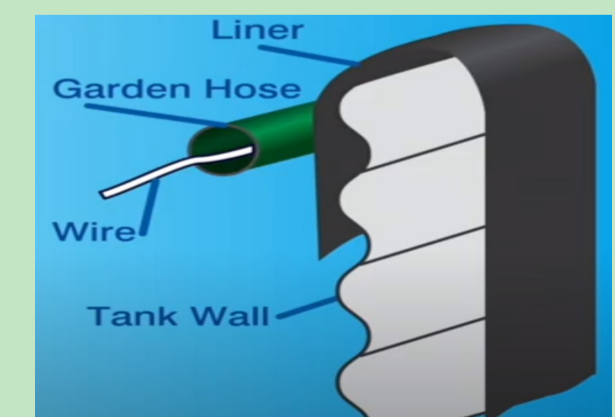


Figure 3: Solutions Australia, lining

