# TECHNICAL NOTE

RIDGE

| PROJECT | DATE | BY | REFERENCE |
|---|---|---|---|
| 5016599 The Mannings | 10/10/2022 | TC | 5016599- TN-0001 |

| TITLE | REV |
|---|---|
| Tank Floatation Calculation | A |

## 1. FLOATATION CALCULATION FOR ATTENUATION TANKS

Invert level of tank = 3.7
Tot = 4.7
Cover level = 5.42

Design against floatation
Uplift pressure equals weight of water displaced by tank.
Ground water level monitoring has suggested groundwater level is at 2.2m BGL.
If we add an additional 1.35m in case of further winter groundwater level rise ground water level is at 0.85mbgl.
Tank base is 1.45mbgl.
Tank base is 1.72mbgl.
Maximum height of tank below water level = 0.8m
Partial factor safety on uplift force = 1.5.
Uplift pressure = 0.8 x 10 x 1.5 = 12kN/m².

Weight of soil resisting uplift
Partial factor of safety = 0.95.
Depth of soil = 0.72
Weight = 0.72 x 20 x 0.95 = 13.68kN/m².

**Uplift < Weight therefore ok.**
12 < 13.68

The weight of soil is sufficient to prevent uplift. We have incorporated a 300mm concrete slab over the tank which will increase the weight resisting the uplift compared to the assumed soil cover.