

SITE NAME: Sefter Road, Bognor – Catchment 3 -
Rev1
JOB No. _4775
DATE: _22/06/2020

Buoyancy calculation check for potential uplift forces for Pond liner in Attenuation Basin 1 – during construction

The following calculations provide a check on the potential impact or risk of flotation of the Impermeable liner the attenuation basin to the east of the access road and south of the anti-tank ditch.

Based on the ground investigations and winter ground water monitoring carried out by RSK, the Maximum groundwater level is deemed at 697mm bgl in the area of the basin. Assuming that the existing ground level is 5.87m AOD, groundwater level is approximately 5.17mm AOD.

Base level of basin specified at 4.034m AOD.

Liner level under basin specified at 2.634m AOD.

Specific weight of water = 1000 kg/m³

Specific weight of wet Sand and Gravel = 2020kg/m³ (based on SPONS 30th Edition)

Potential uplift buoyancy forces per metre: $F_{\text{uplift}} = V \times W_g = 1.0 \times (5.17\text{m} - 2.634) \times 1000 = 2536\text{kg/m}$

Weight of wet sand and gravel on top of liner: $W_s = V \times W = 1.4\text{m} \times 2020 = 2828\text{kg/m}$

Therefore, resultant downforce per meter = $2828 / 2536 =$ (FOS of 1.11 which is deemed Acceptable.