Process Tank and Separator Area

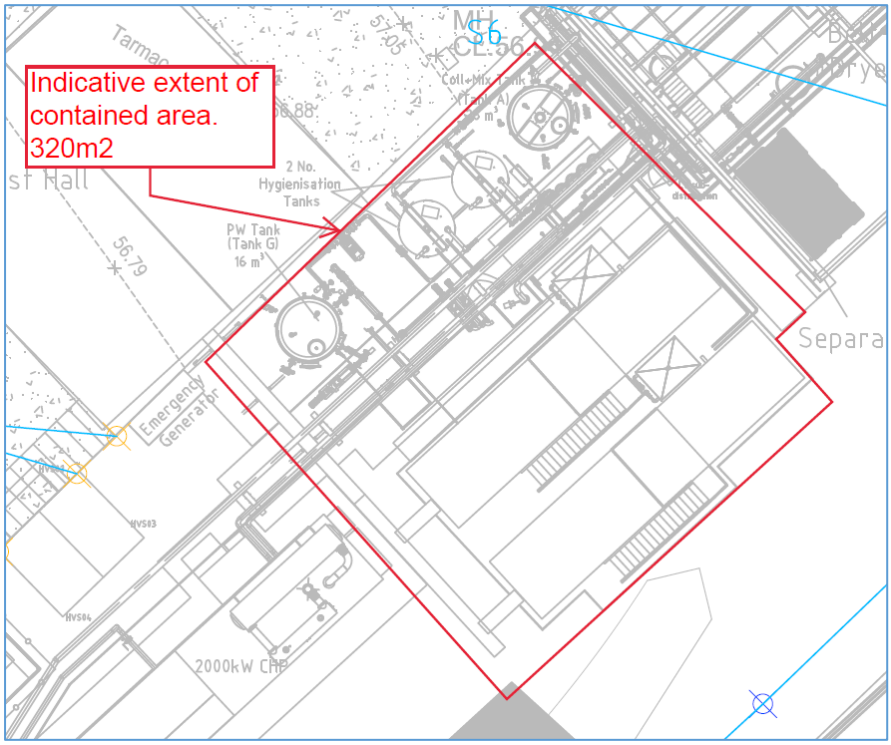
Design Note Rev C 22/12/2016

Tank Volumes are:

	tank volume m3	no	total vol m3
7m3 (pasteurization)	7	2	14
16m3 (PW tank)	16	1	16
26 m3 (coll+mix tank)	26	1	26
3m3 (tanks of separation)	3	2	6
			62

25% total (m3)	15.5
110% largest (m3)	28.6

Required Containment volume is 29m3



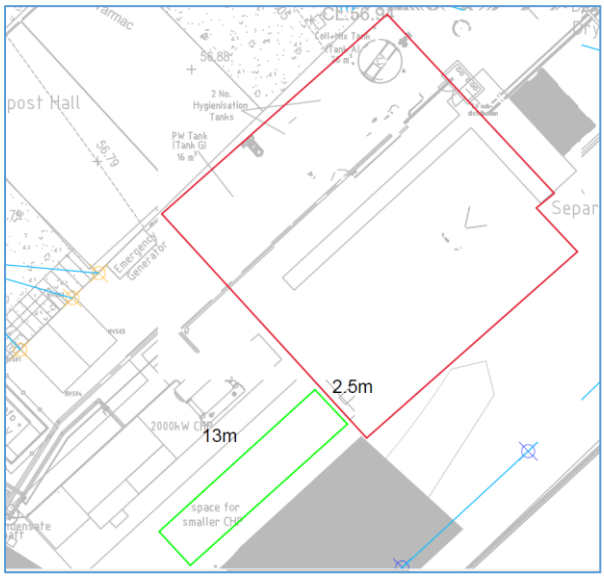
It is proposed the contained area drains by gravity to a below ground open topped holding tank to allow the sampling of the contents prior to appropriate pumped discharge. In addition to the tank volume, consideration is required for accumulated rainfall. To determine the "likely" rainfall, refer to the guidance in CIRIA Guidance "containment systems for the prevention of pollution", the allowance for accumulated rainfall should be based on a 1 in 10 year storm event.

It is proposed that 3 days temporary storage is provided. This is based on a worst case of 2 days without tank emptying, plus 50%. Assessing the 1 in 10 Annual Event Probability (10% AEP) 3 day duration depth of rainfall using the Flood Estimate Handbook, a depth of 84.9mm mm has been determined.

	10% AEP	5% AEP
1 Day	60.3 mm	69.7 mm
2 Days	75.5 mm	86.0 mm
3 Days	84.9 mm	95.9 mm
8 days	112.7mm	124.6mm

Rainfall volume on contained area is 320m2 x 0.085m = 27.2m3

To reduce the risk of plant and equipment in the containment area standing in water it is proposed to allow the area to drain into the below ground holding tank. There is a presently un-used area adjacent to the containment area and CHP unit which has been identified. The approximate dimensions of the space are below in green:



The plan area of the space is approximately 32m2. To contain 29m3 the stored depth would be approximately 1m. A sump in the tank base will be formed and used to pump from. The open tank could be covered with open mesh flooring or it could be protected with a pedestrian guardrail.

Containment of the area would be provided by a steel upstand fixed to the concrete base and sealed. The height of the upstand would be 300mm locally to the tanks, and 100mm elsewhere.

The open tank would have a 250mm freeboard above the required 29m3 containment volume.

The gaps between the separator slab and process tanks slab will be sealed with a connecting concrete slab. Services penetrate the separator slab, and an upstand will be formed around these to prevent liquid ingress. All joints in the slab would be sealed against liquid ingress.

The below ground concrete tank would be designed as a liquid retaining structure designed to BS 8007.

An indicative layout is shown on drawing 2341-PH2-6011