

## HyNet Hydrogen Production Plant 1 – Technical Note

### EPR Response 12c - Drainage System: Potentially Contaminated System

#### Summary

Explain how the maximum flow rate to the corrugated plate interceptor has been determined and advise the diversion route upstream of the corrugated plate interceptor, in case of storm surge (reference 2.3.7 of the Permit Application Supporting Document).

#### Response

The CPI will take inputs from the following sources:

1. Open drains: Open drains will collect water as site water run-off from -
  - 1.1. Paved process area leaks
  - 1.2. Rainwater
2. Sludge from:
  - 2.1. Membrane Bioreactor (MBR)
  - 2.2. Clarification Plant
  - 2.3. Backwash Settlement Tanks
3. Polymer
4. Filtered Water from Water Tanks

The input flow rates from above sources are detailed in sections below.

#### 1. Open Drains

- 1.1. Paved process area leaks: Paved process area leaks are unusual events and the high run-off quantities are not expected.
- 1.2. Rainwater: The run-off rainwater will be major water input source for the CPI. The rainfall flow rate used is based on an average rainfall in NW England for October (the wettest month): ~100 mm/month spread over 15 days, 6.2 mm/day or 0.26 mm/h. The surface area that will receive this rainfall has also been determined. Process units and Phase 2 ASU surface areas were totalled for this. Total 19,300 m<sup>2</sup> surface area receiving rainfall water will drain to the CPI. These result in a flow rate of 5 m<sup>3</sup>/hr flow rate to CPI. The design flow rate to CPI is the double of this flow rate i.e., 10m<sup>3</sup>/hr.

2. Sludge and Polymer: The inlet flow rates from these sources are relatively less and does not drive the design flow rate.

#### 3. Filtered Water from Water Tanks

The CPI will accommodate a 20-minute slug of liquid overflow from any of the water tanks. Accommodating 20 minutes of overflow provides time for operator intervention for corrective action. The largest quantity for this is expected from the Filtered Water Tank (10-BAF-T-001). The design inlet flow rate to filtered water tank is 341 m<sup>3</sup>/hr. The water quantity flowing into CPI for a 20-minute slug = 341 m<sup>3</sup>/hr x 20/60 hr = 114m<sup>3</sup>.

Maximum flow rate to CPI: The governing source for CPI input flow rate is site run-off from rainwater. The maximum (design) flow rate for CPI is 10m<sup>3</sup>/hr.

The storm surge will not be accommodated in the CPI. Civils design will add an upstream open drain diversion re-routing storm surge away from CPI. These civil design details will be developed further in the next phase of engineering.

#### References:

1. Process Description - U300 Water Systems (5194812-300-49EL-4-0003, Rev. 03)
2. Water Balance (5194812-300-49EL-4-0002, Rev. 03)
3. Utility Flow Diagram - Corrugated Plate Interceptor and Sludge Dewatering (5194812-000-49DG02-4-0012-01, Rev. 03)
4. Equipment Datasheet - Water Treatment Packages (5194812-000-45ED-4-0001, Rev. 03)