surface water management plan for waterbeach MBT Facility

**Overview**

The purpose of this document is to detail what provisions have been taken into account during the design phase of the project to manage the surface water run off from the site. Further details giving the calculations used in the design can be found in the Drainage Design Philosophy (Revision B) produced by the scheme’s designers RPS Burks Green if required. Attached to this document as Appendix 1 are the following drawings which provided as-built information on the drainage installed as part of the facility;

* 14942/A1/0300 rev Q Surface Water Drainage
* 14942/A1/0301 rev C Foul Water Drainage Layout

**Introduction**

The design of the surface water drainage has been based on the philosophy to attenuate flows and retain surface water on site using a combination of swales and basins. The discharge of site will be attenuated to a flow rate of 1.1 litres per second per hectare of catchment area as stated on the Flood Risk Assessment. All flow from the site will be discharged into the existing Beach Ditch along the west boundary via a Hydrobrake which limits the discharged rate to a maximum of 6 litres per second. Foul water drainage is only required for the offices and not the composting and this is processed by a Klargester Biodisc Sewer Treatment Tank before the treated water is discharged into the surface water system.

**Surface Water System**

The surface water discharges via a system of 4No swales, a balancing pond and a re-profiled swale along the southern boundary. All the swales and the basin are designed to remain dry during periods of low rainfall, but under periods of extreme rainfall provide sufficient capacity to compensate for the limited discharge through the Hydrobrake. The capacity of the drainage system has been designed so that no flooding detrimental to buildings shall be permitted in the worst case 1 in 100 year storm. Within the calculations a 20% increase in rainfall has been allowed for due to climate change.

Run off from the one half of the composting hall roof is diverted to an underground 560m3 rainwater harvesting tank for use in the process, which when full overflows into the balancing pond adjacent to Ely Road. A proportion of the flow from the other half of the composting hall roof flows to a second 200m3 tank which feeds greywater to the Education Centre and overflows into the adjacent swale. The remaining run off from the buildings and the external hard standing areas is all collected via gullies, Q-max channels and permeable paving before being discharged into the surface water system. No matter where surface water is collected on the site it will be directed through the clay lines basin and along the swale to the Hydrobrake to ensure the discharge rate into Beach ditch is not exceeded.

**Provisions at Bio-Filter (Sulphuric Acid / Ammonium Sulphate Storage)**

Within the Bio-filter are two 30m3 double bunded storage tanks which contain 76% concentrated sulphuric acid and ammonium sulphate. For added protection despite the fact that these tanks are double bunded with a vacuum between the layers to trigger an alarm if the internal skin is breached, both tanks sit within a concrete bund with a capacity of 33m3. All pipework between the tanks and the acid scrubber used to remove ammonia from the compost hall exhaust is also double skinned for protection against an un-controlled discharge. In the unlikely event that there is an uncontrolled discharge at the bio-filter, for example during an acid delivery, then any spillage will have to travel the entire surface water system before reaching Beach ditch. To prevent this from happening a penstock has been installed at headwall 19 (adjacent to the turning head) which will be closed prior to any delivery of sulphuric acid or any removal of ammonium sulphate. The penstock will only be opened once the delivery/collection vehicle has left site and the area is inspected and found to be clean. During period of low rainfall as the swales are mainly dry the spill can be intercepted at one of these and absorbed. During periods of high rainfall the discharge will be diluted and a test carried out on the trapped water in the system to determine the risk to the environment and allow a plan to be developed for treatment.

**Areas of Contaminated Run Off**

In both the Reception and Preparation Halls a Q-max channel has been installed to intercept any surface water which may have been transported by vehicles into the building running back out and entering the system. As the water may have been contaminated by the waste in both areas this water is channelled to a dedicated Cess Pit which will be required to emptied on a regular basis. The channels have been installed inside the doors of the buildings to limit the amount of water entering the Cess Pit and requiring special disposal. A gulley has also been provided in the product output area linked to this Cess Pit in case items need washing down where the compost is deposited.

