

## 32. STORMWATER FIRST FLUSH COLLECTION & BYPASS

### Preface

Liquid waste generated by industry, small business and commercial enterprises is referred to as trade waste. The Water Supply (Safety & Reliability) Act 2008 prohibits the unauthorised discharge of wastes, other than domestic sewage, into the sewerage system.

1. The definition of trade waste is;
  - *The waterborne waste from business, trade or manufacturing property, other than:*
    - *Waste that is a prohibited substance; or*
    - *Human waste; or*
    - *Stormwater.*
2. The definition of Domestic waste is;
  - *Faecal matter and urine of human origin and liquid household wastes from water closet pans, sinks, baths, basins and similar fixtures designed for use in private dwellings*

### Roofing of liquid trade waste generating areas

An area must be roofed where trade waste activities are carried out or pre-treatment equipment is installed to prevent the ingress of rainwater to the sewerage system. 10 degrees from the vertical of overhang of the roofing is the minimum acceptable cover for structures where one or more sides are open to the weather.

To ensure that no surface stormwater can flow onto the liquid trade waste generating process area a bund at least 100 mm high or speed hump 75 mm high around the area is necessary. On the upper side of the area a stormwater drain alone is not adequate as stormwater may be susceptible in flowing over the grate and entering the area. The overall surface water flow across the site has to be considered and the height of the bund/speed hump may have to be increased to prevent stormwater flow onto the process area.

### Methods of exclusion of stormwater

From a waste management point of view, the prevention of storm water contamination is the preferred solution. Areas that are likely to be contaminated should be bunded and roofed over. Spillage of chemicals, products, etc. should be recovered or cleaned by dry methods, so either system, sewerage or stormwater drainage, is not contaminated.

### Separation

Segregation of dirty and clean areas is imperative for good waste management. Areas that are likely to become contaminated are those areas where activities such as storage,



handling or transferring of liquid or solid materials occurs. It is essential that 'dirty' areas be separated from 'clean' areas to minimise pollution and the volume of wastes to be treated. Segregating clean and contaminated areas can be achieved by selective changes in surface gradients, the use of 'speed humps' or by the use of diversion and collection drains.

### **Bunding**

The bund is designed to contain spillages and leaks from liquids used, stored or processed above-ground, and to facilitate clean-up operations. As well as being used to prevent pollution of the receiving environment, bunds are also often used for fire protection, product recovery and process isolation.

### **Collection drains**

Collection drains should be constructed to ensure ease of inspection and cleaning. The gates should be easily removed and the pit should be wide enough, so that accumulated solids can be easily removed.

### **Diversion drains**

Diversion drains such as 'spoon drains' can be successfully used to divert stormwater away from contaminated areas, minimising the volume of water over the contaminated area.

### **Speed humps**

Speed humps can be used to segregate potentially contaminated area from clean areas and as a form of containment where relatively small spills are likely to occur or a more substantial structure is not practicable.

### **Open areas**

Generally Council are reluctant to approve first flush systems which divert a portion of the contaminated storm water into the sewerage system due to long term system management regime break down.

Acceptance of limited quantities of first flush water from liquid trade waste areas may be considered only if roofing cannot be provided because of safety or other important considerations. This could only be accepted in special circumstances and would be considered on a case by case basis.

In cases where first flush from large open areas is accepted by Council the proposed surface area must be sealed, discharge from the unsealed area is not allowed. The first flush water must be collected in a holding tank, and discharged at a controlled rate to an oil/water separator. The area must be kept clean and should be hosed down after each use.

The following information needs to be provided to consider the acceptance of first flush stormwater runoff to the sewerage system:

- reasons why the area cannot be roofed

- the size of the open area requested for consideration of first flush to the sewerage system
- whether the area is sealed
- the estimated volume of the first flush in m<sup>3</sup>
- information on rain gauging and stormwater diversion to the drainage system after the first flush is accepted.

### **Pre-treatment**

#### **Installation requirements**

It is generally required that all open areas must be raised or contained by a bund. Also, it must have controls incorporated into the design to ensure that only the predetermined volume of stormwater is discharged into the sewerage system.

The capacity of pit should be equal to the volume of stormwater collected in a catchment of the open area (in m<sup>2</sup>) covered to a depth of 10mm. The contents of pit should be pumped to the sewer via the pre-treatment facility. The pump from pit should be electronically interlocked to an external control device to ensure that the pumped discharge ceases during wet weather.

#### **Examples of external control devices:**

- A flow switch fitted on a dedicated water supply to the washing system that will allow the pump to operate only whilst the washing system is in use. The washing system must not be used during wet weather.
- A rainfall gauging device set to isolate the power supply to the sewer discharge pump after a predetermined level of rainfall has been registered. Alternatively, a manual activation of the pump would be acceptable for small installations. Washing shall not be carried out and the pump shall not be activated when it is raining.

#### **How first-flush system works**

When it rains, run-off generated in the contaminated area should be directed to the first-flush collection pit via a silt arrestor. Once the pit is full, any excess stormwater run-off will then be diverted to the stormwater system via the bypass drain.

When the rain has stopped, the pit should be cleaned out and made ready to collect any spillages that may occur in the 'dirty' catchment area. It is important that the pit be maintained at the minimum designed capacity during periods of dry weather.

Stormwater collected in the pit should be directed to trade waste treatment facilities. The first flush run-off must not be pumped to the sewerage system sooner than one (1) hour after the cessation of rain.

Any wastes collected in the system such as sediments or oil should be disposed of in the same manner as wastes from pre-treatment facilities.

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