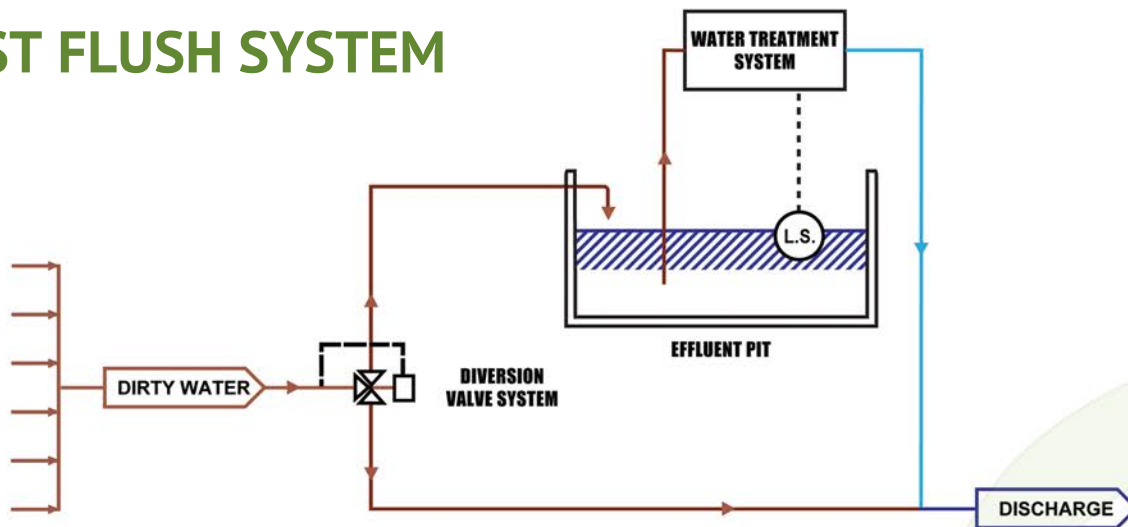


# STORMWATER TREATMENT SYSTEMS



The most common and typical method used to treat high water flows during 'storm' conditions is a 'first flush' system. In fact, many consultants and engineers only know of the 'first flush' system. However, Ultraspin does not recommend first flush systems due to very high risk clients face of oil being discharged untreated during heavy rain events. Ultraspin has developed a more reliable, simple system that is better able to protect clients during storm discharge.

## FIRST FLUSH SYSTEM



Under 'normal' water flows the dirty water flows to the effluent pit. From the effluent pit, an oily water treatment system treats and discharges the water.

During a large rain event, the 'first' X mm of rain is sent to the treatment system. Thereafter, any additional water is bypassed direct to discharge without treatment. Some systems attempt to 'detect' oil in the water during untreated discharge, but these systems are extremely unreliable.

## PROBLEMS WITH A FIRST FLUSH SYSTEM:

- Clients who use first flush systems run a very high risk of oil being discharged untreated during storms.
- Mechanically complicated and unreliable
  - How is the rain volume detected?
  - The water diversion valves must handle large flows. These large valves require regular and constant maintenance and can be costly.
  - If the valves fail they could divert dirty water to discharge, or storm flow to the effluent pit causing flooding.
- The assumption that the water is clean after the first flush is incorrect and not borne out by objective analysis:
  - It is more likely that accident and oil spill will occur during rain events: employees are in a hurry to get out of the rain, they leave valves open, slippery conditions, limited visibility etc.
  - As small bunds and pits in a catchment area fill, slugs of oil will flow down with the storm water.

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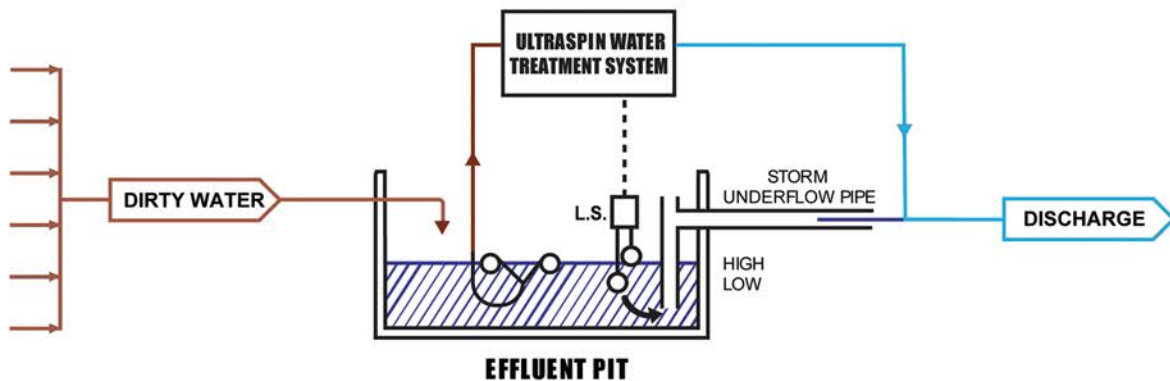
46 Wadhurst Drive  
Boronia, VIC, 3155  
Australia

+61 3 8841 7200 / 1800 467 266 ( After Hours )  
 +61 3 8841 7299  
 sales@ultraspin.com.au

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[www.ultraspin.com.au](http://www.ultraspin.com.au)

## ULTRASPIN STORM WATER SYSTEM



The Ultraspin oily water treatment system treats and discharges the water. Under 'normal' water flows, the dirty water flows to one single large effluent pit. When the pit reaches high level, the level switch will activate the system. High level is usually set at about 50% of the full volume of the pit.

During a large rain event:




- All dirty water flows to the same pit. There is no diversion valve.
- The effluent pit fills up to the (say) 50% mark and the Ultraspin system starts treating and discharging the water
- If the inflow into the effluent pit is more than the Ultraspin treatment flow capacity, then the level in the effluent pit will rise.
- If the rain continues at this higher level for some time, the effluent pit level may eventually reach the height of the stormwater underflow pipe.
- If there is an additional flow into the effluent pit, water will discharge via two streams:
  - The Ultraspin treated water
  - Storm **UNDERFLOW**; in other words the cleanest of the water in the effluent pit.

### ADVANTAGES OF THE ULTRASPIN SYSTEM:

- ✓ Simple to install and operate
- ✓ All the water is treated all the time – there is NO untreated discharge
- ✓ If there is a spill or loss of product during a storm event, it will be trapped and treated by the system
- ✓ In many 'medium' rain events, the buffer volume in the effluent pit will mean all water is treated by the Ultraspin system
- ✓ More reliable: Ultraspin system does not rely on mechanical detection or diversion valves or systems
- ✓ Low maintenance and less costly

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