

## STAFF REPORT

**TO:** Chairman and Members, Engineering Services Committee

**FROM:** Jeff Cuthbertson, Utilities Asset Manager

**REFERENCE:** S750

**SUBJECT:** **Stormwater Infiltration from Private Wastewater Laterals – RESC10-08-09**  
Report prepared for meeting of 19 August 2010

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### PURPOSE

The purpose of this report is to provide information to the Engineering Services Committee as to how infiltration from private wastewater laterals is going to be remedied.

### BACKGROUND

Council operates all of its wastewater plants under resource consent. All of these resource consents provide for maximum discharge flow limits. Wastewater flows into the wastewater treatment plants can come generally from two sources only:

- Effluent from households and businesses, and
- Infiltration, ie stormwater entering the reticulation in some form.

### Resource Consents

Council has individual resource consents for all of its wastewater treatment plants. These resource consents have limits associated with maximum discharge flow.

Two issues generally arise if Council exceeds the maximum consented flow limits:

- a) Generally the maximum consent flow limits are the maximum flow limits of the treatment facility. Increased flow limits can result in lesser quality treatment of the sewerage effluent and/or overflows from the facilities themselves on to the land surface. Discharges of this kind have the potential to enter waterways and the environment.
- b) Council is liable for penalties under the Resource Management Act for both exceedance of the consented limits and resulting overflows.

It should also be noted that not all overflows will occur at the treatment plant; some overflows exceed the capacity of the pumping station and some flows just will not move down the pipework and exit the reticulation network at manholes and at “gully traps” located within private property.

Regardless of the overflow, Council’s maintenance contractor is required to clean up any spill.

In the worst cases, overflows that enter waterways can affect other businesses, eg commercial shellfish harvesting or even require beaches and waterways to be closed to the public.

In the case of the effluent spill affecting commercial shellfish harvesting, Council could be found liable for the commercial losses sustained by the industry.

### **Infiltration**

Infiltration of stormwater/groundwater can occur when pipework has been damaged or from illegal connections, eg soakage systems, downpipes have been connected to the wastewater reticulation. Infiltration is not limited to Council-owned reticulation; it can occur in private connections.

### **Council-owned Reticulation**

Council has been undertaking extensive closed circuit television (CCTV) filming of its wastewater reticulation network. Council has budgeted funding in the Ten Year Plan over a number of years to remedy any sections of its reticulation network so as to eliminate infiltration. We have also stopped private individuals and unauthorised businesses making connections to Council's reticulation. All connections are now made to a prescribed standard by Council's maintenance contractor.

Remember, in many cases clean stormwater entering the wastewater reticulation network needs to be pumped and then treated. Eliminating the clean water inflow will reduce the pumping and treatment costs.

### **Private Reticulation**

The other source of infiltration is from private wastewater drains. Council has defined private wastewater drains (private sanitary sewer) in the 2008 Engineering Standards (Drawing no. 800 attached) as the section of drain from the boundary to the premises.

Bringing a private drain up to standard requires authorisation from a Building Inspector as the repair is private and falls under the jurisdiction of the Building Act.

### **Identification of Faulty Drainage**

As part of Council's reticulation upgrade works and renewals and repairs, it is intended to install an inspection unit at the boundary of all sewer laterals to private properties. All new sewer laterals are installed with these inspection units in accordance with the Engineering Standards (Drawing no. 807 attached).

At the time of installation a water test or similar type of test will be carried out on the private wastewater drain. If the installation is satisfactory a report will be placed on the property file indicating the test, date etc. If the test fails, again the results will be placed on the property file and reported to Council's Building Control Department.

### **Influence of Stormwater on Council's Resource Consent**

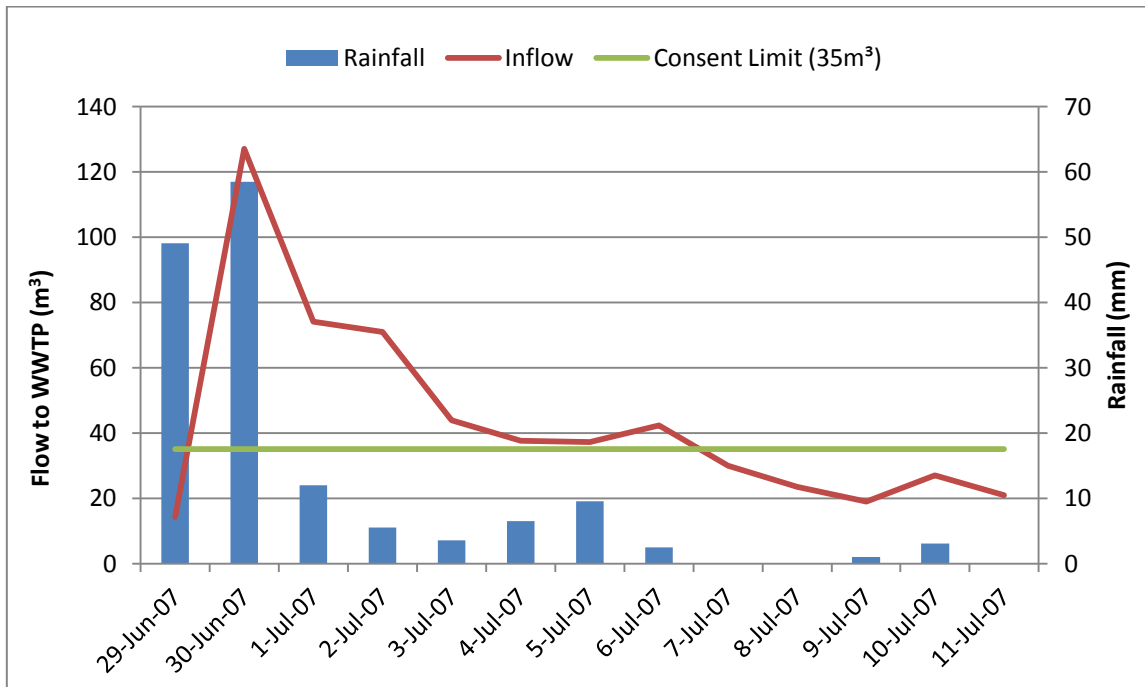
Council has undertaken a lot of wastewater renewal works on a number of township reticulation systems.

One of the worst reticulation networks is at Upper Takaka. Under normal dry weather conditions wastewater flows are generally 4-6 m<sup>3</sup>/day. Council started infiltration investigation work in 2008-2009 and a large number of repairs and renewals have been undertaken to the public wastewater reticulation to stop infiltration.

Figure 1 below indicates a rain event on 29-30 June 2007 of approximately 50-60 mm of rain and the resultant peak in infiltration inflows. It should be noted that the maximum

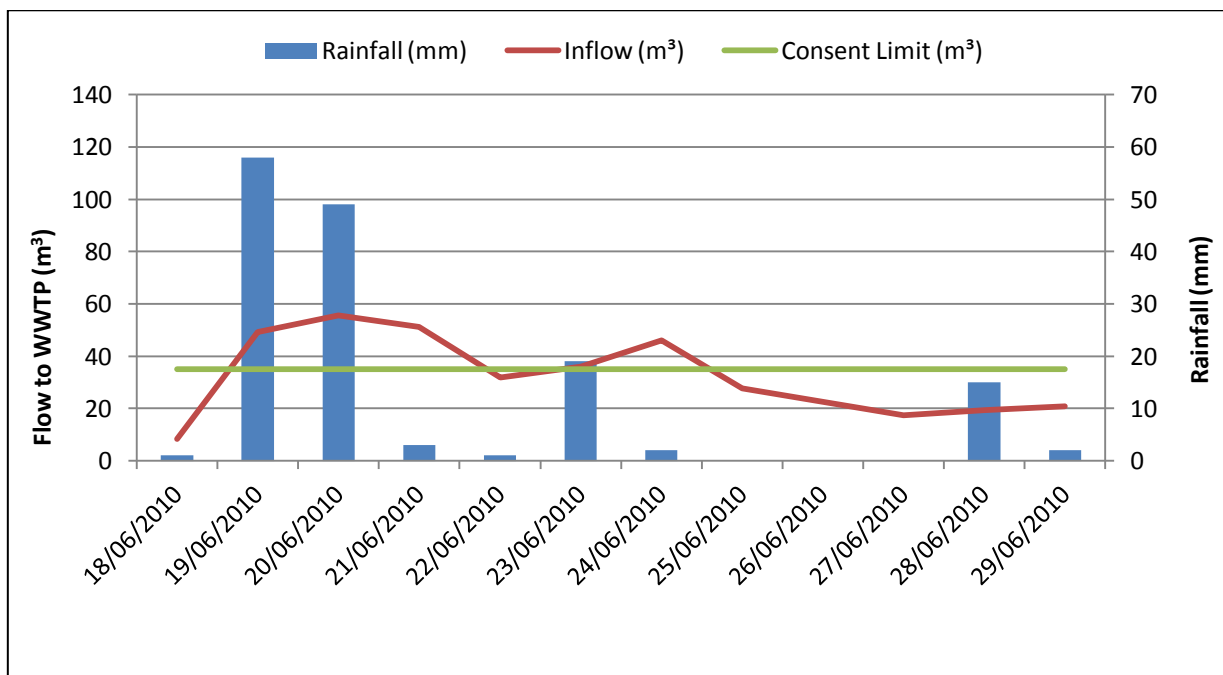
infiltration flow achieved during this event was about 130m<sup>3</sup> against a consented maximum flow of 35 m<sup>3</sup>.

Figure 1: Flows to Upper Takaka WWTP during and following rainfall event - June 2007



As previously indicated, Council carried out a large number of repairs and renewals in 2008-2009 with the following results. Figure 2 below indicates a rain event on 19-20 June 2010 of approximately 50-60 mm of rain and the resulting peak infiltration inflow. It should be noted that the maximum infiltration inflow achieved during this event was about 55m<sup>3</sup>. This is a reduction infiltration inflow of approximately 75m<sup>3</sup> over a similar rain event.

Figure 2: Flows to Upper Takaka WWTP during and following rainfall event - June 2010



It is now believed that the majority of the infiltration inflow entering the Upper Takaka wastewater reticulation network is from the 13 private wastewater drains.

### **Infiltration Solution**

Council intends to remedy the problem of stormwater/groundwater infiltration flowing into Council's public wastewater reticulation by:

- a) Hydraulic modelling of the reticulation, the normal flow can be determined.
- b) Undertaking flow monitoring so that staff can identify the areas where flows during rain events exceed normal flows.
- c) Identifying problems with Council's own reticulation network.
- d) Using CCTV data, repair the identified problem areas.
- e) When undertaking repairs, the maintenance contractor will install inspection units on all sewer laterals in accordance with the Engineering Standards. Testing of the private wastewater drains will also be carried out at this time.
- f) Continue to monitor flows following repairs to gauge flow reductions.
- g) Instigate repairs to private wastewater drainage if required.
- h) Continue to monitor flows following repairs to gauge flow reductions.

It is intended to start this infiltration solution method immediately as part of the remedial capital works.

### **RECOMMENDATION**

**THAT the Stormwater Infiltration from Private Laterals Report (RESC10-08-02) be received by the Engineering Services Committee.**

Jeff Cuthbertson  
**Utilities Asset Manager**