

STAFF REPORT

TO: Chairperson, Engineering Services Committee

FROM: Utilities Asset Manager, Jeff Cuthbertson

REFERENCE:

DATE: 25 January 2006

SUBJECT: Failure of Reticulation Systems Over The Christmas Period

PURPOSE/REASON FOR REPORT

The purpose of this report is to inform the Engineering Services Committee of the issues that arose during the 2005 Christmas/New Year period.

COMMENT/DISCUSSION

Three separate issues occurred during this period, these being the failure of the Sewerage Pumping System at Tapu Bay, watermain failure at Oxford Street/ Wensley Road intersection, and Sewerage pumpstation overflow at Tata Beach Sewer pumpstation.

Tapu Bay

The attached report details the two separate events that occurred on 31 December 2005 and 01 January 2006. The report follows a meeting attended by the residents, the Mayor, Councillor Inglis, Council staff and Council consultants. It states the failures that occurred, the remedial measures put in place, and suggested future actions to resolve any outstanding issues. Also included is a copy of the correspondence received on behalf of the residents.

Oxford Street Watermain

The Oxford St mains break on 30 December 2005 was near the Wensley Rd valves on a section of existing 100mm diameter high Pressure AC main. The break caused some damage to the road surface which was repaired as soon as practicable after the incident. The water loss from the break caused a drop in levels in the reservoir and the associated reduction in pressure caused some temporary problems in supply to some higher level properties. The section of pipe where the break occurred is to be replaced as part of the Wensley Road Watermain replacement project.

Tata Beach Wastewater Pumpstation (WWPS)

Tata Beach WWPS overflowed twice during the New Year long weekend. In both instances, one pump was blocked by items that should not be in the system ie., underwear etc.

The load created faults which then stopped both pumps.

Flashing lights on the station indicate faults, however neighbours adjacent to the pumpstation do not necessarily always respond promptly to flashing light alarms, the alternative audible alarms are a less popular system. There were also some issues with the after hours response from the TDC "Callcare" phone system during this period when work was being carried out on the phone links between existing and new Richmond offices.

Electrics have been upgraded and an audible alarm installed (the nearest neighbour has also been shown how to turn it off once notification has been provided).

Timely notification to residents and notices in public toilets that the system cannot cope with underwear and sanitary aids etc, may be appropriate.

Jeff Cuthbertson
Utilities Asset Manager



Tasman District Council Tapu Bay Pump Station - Wastewater Overflow 31 Dec 2005

1 Introduction

A combination of related incidents occurred on the 31st December 2005 that culminated in a significant overflow into the Tapu Bay estuary from the pump station located in the Tapu Bay reserve. Another fault on the 1st January 2006 also resulted in an overflow at the pump station that did not flow to the sea.

A letter was received by TDC, from Allan Sims, on behalf of Tapu Bay residents, on 4 January 2006, requesting a public meeting (letter attached).

His Worship the Mayor, Councillor Inglis, Kim Arnold, and Ian Smith from MWH, attended a meeting at Tapu Bay on Friday 6 January 2006.

2 Background

Sewage from Kaiteriteri, Stephens Bay and Tapu Bay is pumped across Tapu Bay, through Riwaka to the Motueka Wastewater Treatment Plant. The main pressure pipeline from Kaiteriteri runs past the Tapu Bay pump station and across the Tapu Bay mudflats. Tapu Bay pump station pumps into the pressurised main.

There have been performance problems with Kaiteriteri pressure main since installation. These problems are associated with the pipeline material and joint integrity and have resulted in the decision to replace the entire line from Kaiteriteri to Motueka WWTP. To date, three stages of this replacement have been completed from Kaiteriteri to Riwaka. There remains the section from Riwaka to the Motueka WWTP. This process has taken a long time because of resource consent issues and land access issues, both made more difficult because of the past performance.

To date, the focus of the replacement effort has been around the high risk pipeline where a number of failures over the years have occurred. To date, there have been no failures internal to the pump stations other than pump mechanical / electrical faults. Thus there has been no investigation of components inside the pump stations.

3 History of Events

3.1 Event 1 – 31 December 2005

The Kaiteriteri wastewater pump stations were all constructed circa 1989. The pump riser pipes are Class B PVC and valves are located near the top of the risers inside the pump chamber.

On 31st December part of the PVC assembly in the Tapu Bay pump station failed, disabling the effective operation of the pumps.

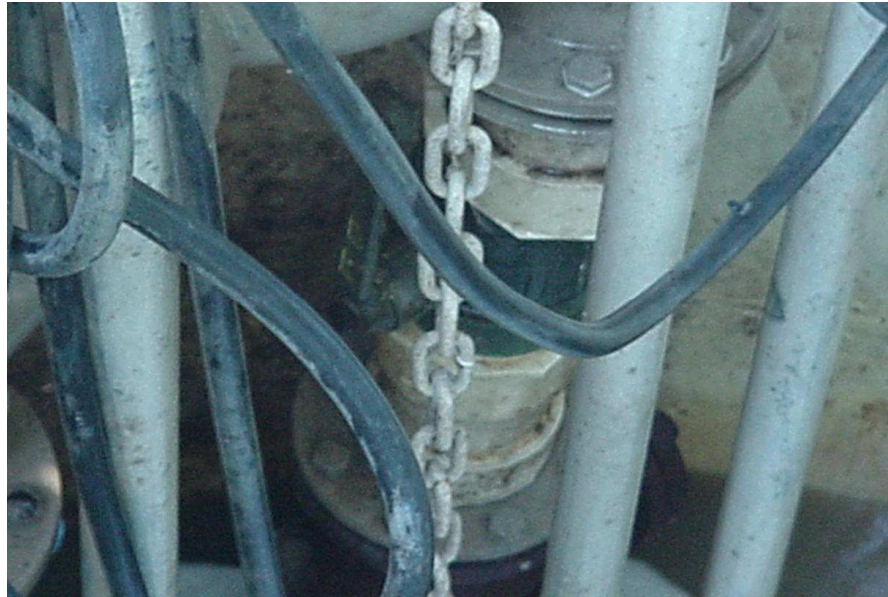


Fig 1 - Repaired Riser Pipe

The Tapu Bay pump station normally discharges through a valved manifold in the adjacent chamber. This valve chamber also houses the motorised valve and associated pipe work that controls the discharge from Kaiteriteri into the main crossing Tapu Bay. The failure of the pump riser in the Tapu Bay pump station allowed some of this Kaiteriteri flow to discharge back into the pump wet well, exacerbating the problem.

High well level telemetry alarms were received at 9:21am but returned soon after, indicating to maintenance staff that the fault had cleared. No further alarms were received due to an electrical junction box being shorted out by the discharge from the flushing vessel.

Public telephone calls to the TDC after hours number were not acknowledged due to a fault in the switch over from the TDC switchboard to Callcare.

When TDC operations staff were alerted, the sewage overflow response procedures were followed including appropriate notifications, disinfection of affected areas, signage and beach closure.

3.2 Event 2 – 1 January 2006

At 2:03 pm, the 200mm motorised valve to the main discharge line across the estuary closed. The reason for this has not been determined but a power surge or fault is suspected. The closure of this valve resulted in the Tapu Bay pumps pumping against a closed head causing a pipe rupture between the valve chamber and the pump station.

Members of the public again notified this, but the maintenance contractor was en route to site to re-disinfect the previous days incident and thus prevented further discharge to the bay.

4 Proposed Actions

The use of Class B pipe materials in a pumping situation is no longer industry standard practice. Currently, TDC Engineering Standards and Policies detail galvanised steel pump risers.

Immediate steps have been taken to review all pump risers in all coastal wastewater pump stations. The Tapu Bay pump risers will be replaced with current industry standard materials before 31 January 2006. PVC material in other Kaiteriteri – Riwaka pump stations will also be upgraded. TDC pump stations at other locations will also be reviewed and upgraded as required.

A proposal to raise the access track levels, and effectively create a bund around the Tapu Bay site that will prevent immediate overland flows to the bay is being investigated. Construction of this bund, as indicated schematically in Fig 2, is anticipated to be complete by 31 January 2006.

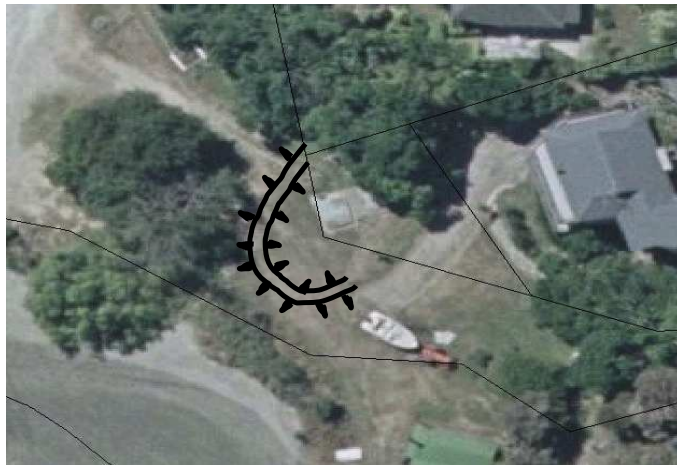


Fig 1 – Proposed Low Bund

A review of the telemetry alarm system to ensure better reliability and confidence is underway. Reliance on only one alarm type will be reviewed and where possible, high-level float alarm junction boxes will be removed from the wet wells.

Callcare have been instructed to do a daily test of the TDC after hours number to ensure that calls will actually revert to their operators.

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