Leakage Investigation Survey

08 December 2016

Client

Leisure Park, Northumberland

Mains water meter information

Size (mm)	15-28		32-50	✓	75-100		125-200		Above 200mm	
Serial number	08UF123456									
Reading	227539.700				Time:	09:50 07 December 2016				
Location	Main meter located in large chamber in edge of road at junction of The Peth and A123 South Road – accessed with pair of small lifting keys.									

Leakage Activities

Acoustic sounding	✓	Correlation	✓	Ground microphone	✓	Environmental Inspection	✓
Other	Tracing of pipework with leak finder tracing wire						
Pipe traced		CAT & Genny			Distance		
Pipe correlated	Accelerometer	✓	Hydrophones		Distance	60m approx	

Background Information

The minimum night flow to the park is currently around 2.0m³/hour at the time of our visit. A number of leaks have recently been repaired as a result of freezing conditions.

This survey follows on from a number of previous visits during 2014/5/6 which included leakage surveys, pipe tracing and valve installation work.

Summary of Survey

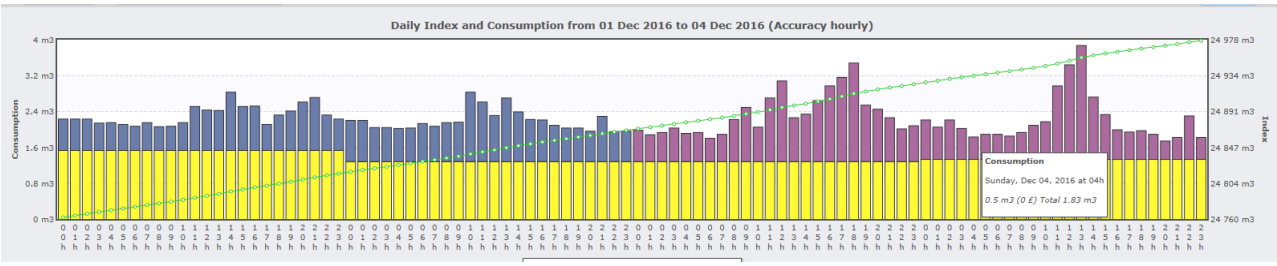
Leak Investigation Work

To assess the approximate area of where the additional leakage was occurring, a step test was carried out on the known valves on park before acoustic sounding work.

With the tank inlet closed, the meter was checked and found to be recording a rate of around **30 litres per minute (1.8 cubic metres/hour)**, this equates to an **unaccounted cost to park of approx. £3.98 per hour**, **£95.47 per day**, **£2,959.57 per month (based on 31 days)** and **£34,846.55 per annum**. The following flow rates were obtained when valves were shut off:

1. Pump Fed area (Chariot View/Wool Park/Bambi Court): approx. 8 litres per minute
2. Woodside: 2.5 litres per minute (likely to be usage);
3. Wool Park/Morton Mews: 26 litres per minute

There were some fluctuations in flow rates due to water use on the park.



The pump set located between Bambi Court and Woodside was inspected and noted to be operating at regular intervals between the pumps starting, indicating a minor but constant amount of water consumption/leakage in these areas.

The new stoptap supplying Woodside was checked following the previous leak in June 2015. No leak noise could be heard on it. Also the leak repaired in June 2016 by plot 191 Bambi Court was checked and found to be quiet.

All plots in Morton Mews and River View were then acoustically sounded and visually inspected for leaks. A number of above ground issues were identified together with faint leak noise below ground on the **pipework to plot 35 Morton Mews**. A leak was confirmed on the supply pipe to this plot after using the tracing wire to identify the route of the 20mm MDPE pipework from the rising main, and the excavation of small a trial hole by park maintenance staff.

Due to the number of small leaks found in hard to reach areas underneath some mobile homes, all plots in Wool Park and Bambi Court were also checked.

A reasonable volume of water was heard flowing down the drain at plot 445. The drainage pipework was separated for a short time to assess the volume of water running to waste.

Trial excavation to pinpoint leak by 35 Morton Mews

Leak on brass stoptap – plot 186 Bambi Court

Leak coming from floor underneath mobile home

Measuring leak at plot 428 Wool Park

2x taps left on inside plot 445 Wool Park for frost prevention?

A full list of water issues are shown below, together with any remedial action taken:

Park Area	Plot	Fault	Flow Rate	Rectified?
Gravity fed section				
River View	96	Dribble on drain valve		**No**
	104	Drip on stoptap		**No-hard to reach**
	159	Drip on stoptap		**No**
	163	Dribble on drain valve		**YES**
	167	Dribble on drain valve		**YES**

Morton Mews	14	Dribble on drain valve		YES
	15	Drain valves running	2.0 L/min	No
	21	Dribble on drain valve		YES
	35	Below ground leak on supply pipe		No
	45	Dribble on drain valve		YES
Pump fed section				
Bambi Court	186	Dribble on connection to brass stoptap		No
	197	Pushfit pipework not holding		No
Wool Park	352	Blown fitting inside van?	2.2 L/min	No
	428	Dribble on drain valve	0.5 L/min	YES
	438	Dribble on drain valve		YES
	442	Dribble on drain valve		YES
	445	2x taps running inside occupied van	3.5 L/min	No

The clubhouse was checked to identify the cause of the constant night flow through the meter. Two issues were identified in this building:

1. WC in ladies toilets (function room area) constantly running. Approximately 6 litres per minute - measured from main water meter in footpath. Maintenance aware of problem – new siphon assembly required; site advise this has now been repaired.
   This is an immediate saving of 8.64m³ per day & a financial saving of £19.09 per day & £6,969.46 per annum.
2. Minor drip on WC in men's toilet in pool area.

The meter read on 08 December was: 05103.554

Overflowing WC cistern in ladies toilets

Summary & Recommendations

Once all areas of leakage are addressed, it is expected that the minimum flow rate to site will reduce down to the previous minimum level of around 0.7m³/hour.

A reduction from 1.8m³ per hour to 0.7m³ per hour is a saving of 1.1m³ per hour, £58.34 per day, £408.41 per week, £1,633.63 every 4 weeks and £21,294.10 per annum.

Summary:

1. Underground leak identified on connection to plot 35 Morton Mews;
2. Number of minor leaks (listed in table above);
3. Overflowing WC in clubhouse.

Recommendations:

1. Repair all identified leakage issues;
2. Continue to monitor flow logger for any further leakage issues that may arise;
3. Advise residents of the need to conserve water and protect pipework from frosts using lagging pipework rather than running taps continually.

Annual Saving: £28,263.56
(Annual Saving calculated on the basis of all repairs being completed)

Survey carried out by

Engineer	H2O Building Services	Date	07 & 08 December 2016