



Water Leak Detection Investigation Survey

20 May 2015

Client

Holiday Village, Lancashire

Mains water meter information

Size (mm)	15-28		32-50		75-100	✓	125-200		Above 200mm	
Serial number (Meter 2)	07CB02594									
Readings (1)	430364.000				Time:	09:45 20 May 2015				
Readings (2)	430388.000				Time:	13:15 20 May 2015				
Location	Meter located in large sized chamber in footpath at end of Lawnswood Crescent (outside no. 25). Accessed with pair of small lifting keys.									

Leakage Activities

Acoustic sounding	✓	Correlation	✓	Ground microphone		Environmental Inspection	✓
Other	Isolation of valves around the site, inspection of all pipework connections						
Pipe traced	n/a	CAT & Genny				Distance	
Pipe correlated	Accelerometer		✓	Hydrophones		Distance	52m

Background Survey Information

Water consumption through both meters supplying the Holiday Village is consistently higher than expected, suggesting leakage or other unidentified water consumption on the network around the park.

Previous survey work confirmed that the leak on the eastern side of the park was not in the area suspected (St James/Clarence area).

An A0 sized site plan showing potable water mains layout is approximate only, and there has been a number of additional changes since this was drawn up.

Summary of Survey

Pipework & Metering

The water meters supplying the park are located as follows:

1. Mythop Road (supplies east side of park near main entrance)
2. West Crescent (supplies west side of park)

Visible pipework around the areas of the park is typically MDPE (Medium Density PolyEthylene or more commonly known as blue poly) of varying age or black poly laid in the older areas. Some areas of the park have completely redesigned layouts and all pipework has been replaced too. Newer areas are St James, High Court, Norton Court, Westerton, Regency (2 years old), Westminster, New Kensington and Grosvenor.

Main isolation valves are very limited in number which means isolating sections of the network is not possible. Although a few fire hydrants were located around the park, very few were in serviceable condition.



Meter location at end of Lawnswood Crescent



Meter chamber and loggers



Meter

Leakage Survey Activities

All water connections on the eastern side of the park that were not checked during the first survey day (approximately 300) were acoustically sounded for leak noise. This included all plots in the following areas: Regency, Sandringham, Buckingham, Hampton Court, Highgrove, and Sandringham Court. On the western side of the park, all water connections were sounded in Windsor, Kensington, New Kensington, Westminster, Balmoral, Grosvenor, and Lake Mere View.

All pipework connections acoustically sounded for leak noise were also inspected for any visible leaks on connections and fittings.

A number of potential areas of leakage were found whilst carrying out the acoustic sounding on the park. Other areas of acoustic noise could be attributed to water use or boilers running – these plots were revisited to check the noise being generated by other means had subsided.

The three main areas for leakage investigation are:

1. Regency – plot 17 – Large leak
2. Regency – plot 19 – indications of a reasonable leak but this could be as a result of noise transferring from leak at plot 17
3. Windsor – plot 101 – reasonable leak

Detailed acoustic sounding and leak noise correlation was then carried out to pinpoint the exact area of leakage in all locations. All areas of suspected leakage were marked with blue spray paint.



Leak location 1 – Regency plot 17



Leak location 2 – Regency plot 19



Windsor plot 101



Insert missing from above ground pipework

A sub-meter was located at top of embankment at rear of Regency 2 (thought to be out of use):



Sub-meter on embankment at rear of Regency 2



Sub-meter details (does not appear to be in use)

A number of smaller visible leaks were identified throughout the survey as follows:

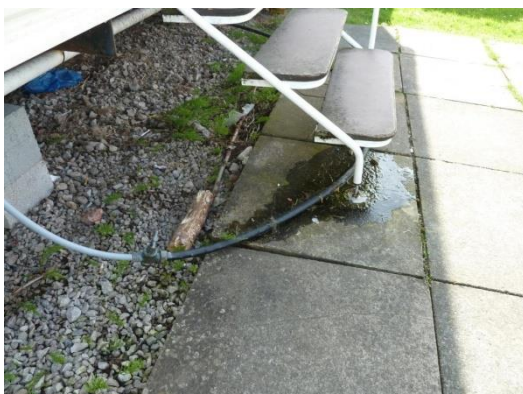
Park Area	Plot	Fault
Sandringham	32	Leak on tap
	36	Leak on tap
	9	Leak on tap
Windsor	74	Leak on hose connection
	74	Leak on stoptap
	61	Leak on connection
	85	Leak on stoptap
	131	Leak on stoptap
	104	Leak on stoptap
Balmoral	118	Empty plot, tap dripping (isolated during survey)
	113	Empty plot, tap dripping (isolated during survey)
	127	Leak on stoptap
Kensington	1	Overflow running
	16	Leak on stoptap
	40	Leak on stoptap
	23	Leak on stoptap
	35	Leak on stoptap



Leak on hose connection at Windsor plot 74



Leak on second stoptap to Windsor plot 74



Leak on stoptap

Summary & Recommendations

Summary:

1. All water connections and underground fittings (valves and fire hydrants) were acoustically sounded for leak noise and checked for visible leaks;
2. Three potential below ground leaks identified:
 - a) Regency plot 17 – possibly poor connection/missing insert on tee piece;
 - b) Regency plot 19 – possibly poor connection/missing insert on tee piece;
 - c) Windsor plot 101 – leak on brass compression tee or other fitting?
3. Pipework insulation missing from above ground pipework to a high number of plots;
4. Few available isolation valves to confirm leak volumes or to isolate sections of the park.

Recommendations:

1. Excavate, locate and repair all leaks with appropriate fittings;
2. Repair all minor above ground leaks;
3. Re-check flow of water during early hours to assess volume of any remaining leakage.
4. Long term, the lack of isolation valves will require almost a full leakage survey to be carried out each time the flow rate rises unexpectedly. It also means that each metered supply must be shut off to carry out any remedial work, unless carried out with the network under full pressure.

Survey carried out by

Engineer	H ² O Building Services	Date	20 & 21 May 2015
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