Leakage Investigation Survey

26 January 2017

Client

Holiday Park, West Wales,

Mains water meter information

Size (mm)	15-28		32-50	✓	75-100		125-200		Above 200mm	
Meter Serial Number	12345678 (Main Meter)									
Readings (1)	91799.02				Time:	14:55 24 January 2017				
Readings (2)	91959.81				Time:	13:55 26 January 2017				
Location	Meter located in large chamber in footpath, near entrance to service access to park. Accessed with one large lifting key (slide out).									

Leakage Activities

Acoustic sounding	✓	Correlation	✓	Ground microphone	✓	Environmental Inspection	✓
Other	Inspection of all pipework connections, internal pipework in pool area and kitchens, bar area and toilets.						
Pipe traced	n/a	CAT & Genny			Distance		
Pipe correlated	Accelerometer		Hydrophones		Distance		

Background Information

The minimum combined night flow through the meters supplying the Holiday Park has been consistently over 5 cubic metres per hour, suggesting leakage or other unidentified water consumption on the network around the park.

This equates to an unaccounted cost to site of approximately £13.30 per hour, £319.20 per day, £2,234.40 per week and over the course of one year, an unaccounted excess cost of £116,508.

The park contains approximately 600 accommodation units, together with leisure amenities including swimming pool, bar/restaurant and owners area. There are also several other accommodation areas including flats and cottages on the park.

Summary of Survey

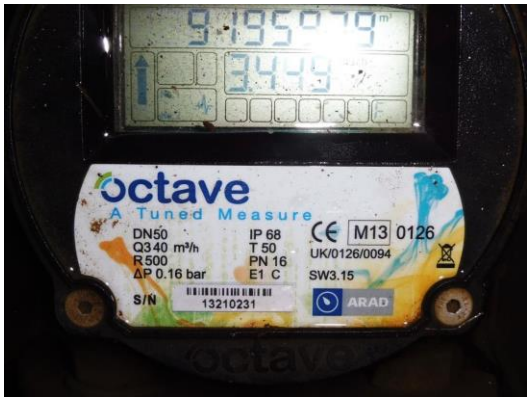
Pipework & Metering

There are several water meters supplying the park. Upon checking the meters, the two meters identified with high water consumption are:

1. 12345678 – Located in footpath under large chamber lid;
2. 98765432 – Located in embankment in brambles

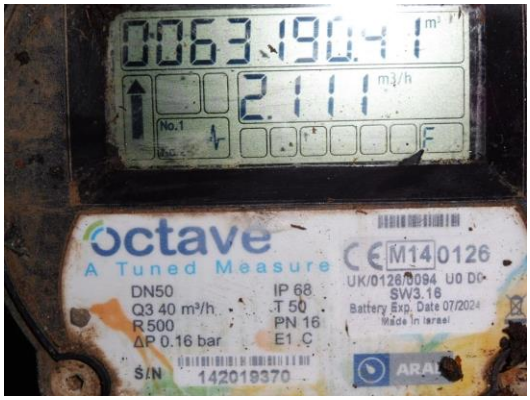
Visible pipework around the areas of the park is typically MDPE (Medium Density PolyEthylene or more commonly known as blue poly) or black poly laid in the older areas. Some areas of the park have completely redesigned layouts with new sections of pipework. Main isolation valves are located around the park on the larger sections of pipework.

Most areas of the park are supplied with water from several storage tanks and pumps located around the park.



Main Meter – MSN: 12345678

Main Meter location



Water Meter – MSN: 98765432

Meter 98765432 location - in brambles

Leakage Survey Activities

All water connections on the park were acoustically sounded for leak noise (approximately 600 accommodation plots) together with all stoptaps and isolation valves. All connections were also inspected for any visible leaks on stoptaps 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 created by other means had subsided.

Detailed acoustic sounding was then carried out to pinpoint the exact area of leakage in all locations and where possible, the leakage volumes.

Summary of all water issues identified on the park:

Priority	Park Area	Plot	Fault	Comments
1	Cardigan	19	Leak on tee	
1	Clwyd	25	Leak on below ground pipe	
1	Traethgwyn Cottages		Leak on service pipe	Underneath bathroom window
2	Hengell	28	Leak under caravan	
2	Cardigan	9	Leak on below ground pipe	Need to confirm once leak
				at 19 Cardigan is repaired
2	Powys	10	Leak on below ground pipe	In driveway to no. 8
				Not much top noise - excavate
				after further investigations
2	Laundry Room		Tank filling constantly 4.5L/min	Further investigation required
2	Amusement WC's		Urinals fill/flush 5 min cycle	
2	Teifi	42	Split on pipe or fitting	
3	Powys	15	Leak on fitting	
3		37	Drip on stoptap	
3		61	Drip on stoptap	
3	Pembroke	15	Leak on stoptap gland	
3		25	Leak on fitting	0.4 Litres per minute
n/a	Brecon	35	Drip on stoptap	Resolved during survey
3	Teifi	2	Small hole in pipe	
3		24	Leak on stoptap	
3	Swimming pool		Overflow at rear	0.3 Litres per minute
3	Glamorgan	6	Drip on stoptap	
3	Gwent	24	Overflow underneath plot	
3	Staff caravan		Leak on pipework	

Leak location at Cardigan 19

Leak location at Clwyd 25

Leak location at Traethgwyn Cottages

Potential leak location at Cardigan 9 (need to confirm when leak at Cardigan 19 has been repaired)

Potential leak at Powys 10 – isolate mains in this area if possible, to check water flow in drain has subsided, or trace out pipework

Leak on fitting Pembroke 25

Minor leak at Hengell 28

Minor leak at Teifi 42

All internal water using fittings (WC's, Hand Wash Basins, Urinal controls, etc) within the entertainment and leisure complexes were also checked for correct operation. Any fitting found to be operating inefficiently is listed in the table above.

Summary & Recommendations

Summary:

1. All pipework connections and underground fittings (stoptaps and isolation valves) were acoustically sounded for leak noise and checked for visible leaks;
2. Three significant leaks identified on the below ground network;
3. Several minor visible leaks identified (refer to table above).

Recommendations:

1. Excavate, locate and repair all below ground leaks identified;
2. Repair all minor above ground leaks; take photographs of leaks & repairs. Upon completion of all repairs, notify H2O Building Services.
3. Review minimum night flow and confirm new leakage volume. Quantify savings and assess viability and costs of further work if required.

Potential Annual Saving: £116,508

Survey carried out by

Engineer	H2O Building Services	Date	24-26 January 2017