Leakage Investigation Survey

Client: Leisure Park, Kent

Mains water meter information

Size (mm)	15-28		32-50		75-100	✓	125-200		Above 200mm	
Meter Serial Number	12-302915									
Readings (1)	186813.150				Time:	09:49 8th March 2019				
Readings (2)	187144.220				Time:	14:05 8th March 2019				
Location	Meter located in large sized chamber in grass field on left after security hut. Accessed with pair of lifting keys.									

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	200m

Background Information

Water consumption through the meter supplying The Park is consistently higher than expected, suggesting water leaks or other unidentified water consumption on the network around the park.

The park contains approximately 1,000 accommodation units, together with leisure amenities including indoor and outdoor pool, bar/restaurant and laundry area.

Summary of Survey

Pipework & Metering

The water meter supplying the park is located in the grass field after security. The large meter chamber is near the hedge and accessible using a set of lifting keys.

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 with new sections of pipework. The older parts of the park are thought to be constructed using asbestos cement pipework.

Main isolation valves are located around the park on the larger sections of pipework together with several fire hydrants.

Meter location in field on left after security

Meter chamber and water flow data logger

Water meter

Leakage Survey Activities

The central amenity area was checked first, including the swimming pool top up and filtration system, restaurant area (kitchens and toilets) and drainage chambers in the play area. The launderette, sailing club and golf club were also checked and no issues were noted in either location.

All water connections on the park were then acoustically sounded for leak noise (approximately 1,000 accommodation plots) together with all stoptaps, isolation valves and hydrants found. 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 and leak noise correlation was then carried out to pinpoint the exact area of leakage in all locations. All confirmed areas of leakage were marked with blue spray paint and communicated to park staff throughout the survey.

Summary of leaks located on the park and estimation of leakage volume:

Leak	Location	Description	Volume (Estimated) L/min	Volume (Estimated) m^3/day	Pinpointed?	% of leakage
1	15 Sidings	Stoptap	16	23.0	Yes	25%
2	Rear of 31 Thames Bank	63mm tee?	32	46.1	Yes	50%
3	Fire Hydrant by Beacon Close	Valve passing	3	4.3	Yes	4%
4	Rear of Launderette	25mm pipe?	4	5.8	No	6%
5	Hose Reel by 24 Hillside	32mm pipe?	3	4.3	No	4%
6	50 Beacon Close	25mm pipe?	3	4.3	No	4%
	All above ground leaks	various	4	5.8	Yes	6%
Total	[Taken from current nightline of 3.9m^3/hour]		**65**	**93.6**		**100%**

Leak location 1 – leaking stoptap by 15 Sidings

Leak location 2 – leak rear of 31 Thames Bank

Leak location 3 – Fire Hydrant valve passing

Leak location 4 – leak on pipework by new atplas box

Leak location 5 – leak on below ground pipe
[Unable to pinpoint without tracing pipework out]

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

Park Area	Plot	Fault
Meadowside	42	Leak on stoptap
Hillside Drive	77	Drain cock open
	158	Leak on stoptap
Thames Side	2	Leak on stoptap
	17	Leak on stoptap
Thames Bank	6	Drip on bib tap, front of plot
Thames View	48	Drip on stoptap
Beacon Rise	25	Leak on stoptap
Central Park	12 (rear of)	Leak on Fire Point pipework
Yanlet Drive	24	Drip on stoptap

Leak on stoptap - 42 Meadowside

Leak on drain cock – 77 Hillside Drive

Summary & Recommendations

Summary:

1. All water connections and underground fittings (stoptaps, isolation valves and fire hydrants) were acoustically sounded for leak noise and checked for visible leaks;

2. Two significant leaks identified on the below ground network:
   a) Fortside – leak on stoptap;
   b) Thames Reach – leak on below ground pipework.

3. Several other minor leaks identified (refer to table above) but unable to confirm exact location without plans or tracing out pipework (requires isolation of pipework to remove fitting and insert trace wire);

4. 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;

3. Once all repairs are complete advise H20 and we will heck minimum night flow via the water flow data logger (AMR) and confirm new leakage volume. We will then assess viability and costs of further work to identify any remaining leakage but the **initial leaks found must be repaired** before we can move onto this stage.

Survey carried out by

Engineer	H20 Building Services	Date	8th March 2019.