Leaks and water monitoring

EarthCheck

All operations will inevitably experience water leaks ranging from large leaks or faults that can lose large amounts of water but are usually identified and repaired quickly through to sub-surface or smaller leaks that can silently lose equally, or in some cases larger quantities, of water over long periods.

Leaks can also affect building structures and services, be a health and safety concern or detract from guest amenity. A proactive Leaks Maintenance and Detection Program will usually pay for itself in reduced water production costs, additional pumping costs because of pressure drops in the pipe work and reduced future repair costs.

Identify and prevent leaks and faults

Develop preventative maintenance schedules for water using equipment, fixtures, hoses, pipe work and replace worn joints, valves and washers. This might include; taps, toilets, showers, cooling towers, hoses, pools and spas, compressors, dishwashers, washing machines, sprinklers and irrigation systems.

Incorporate visual leak inspections into existing maintenance, security or cleaning routines. Inspections should be undertaken at least weekly and should include any overflow pipes (which should be made visible), water holding tanks, exposed pipe work, pumps and valves and water using fixtures and appliances.

Understand your water accounts. Knowing how much water your operation typically consumes in a week will help you identify any unexplained fluctuations that may be caused by leaks. If your operation is seasonal, divide your water account by a unit such as number of guest nights rather than the number of days on the account to get a more accurate measure of water consumption.

Regularly read and record your water meters and consider installing sub-meters on high water consuming items such as cooling towers and pools and segregating areas such as kitchens and guest rooms. This will alert you to any unexplained spikes in water consumption or drops in pressure from water leaking from pipe work. Larger operations could consider attaching a data logger to their meters that will record continuous water consumption electronically and feed this into a Building Management System (BMS).

Carry out a night flow test by reading the meter when water using activities have ceased for the day and then again the following morning before water consuming activities commence again. If water use is limited to daytime operations there should be nearly no consumption during the night. If the meter readings are not the same this may be an indication of a sub-surface leak or some other sort of uncontrolled water use which should be investigated further. Operations who operate 24 hours a day or those that suspect they have a sub-surface leak should consider using sonic leak detection equipment (listening device) to identify the source of the leak. Consult a licensed plumber or water efficiency expert.

Recording leaks and faults

Once identified, leaks should be immediately flagged with a red ribbon and the date and location recorded for immediate repair.

Educate staff and cleaners to report leaks directly to maintenance or management. Where suitable (e.g. rental holiday accommodation) contact phones numbers should be displayed so guests can report any leaks or faults.

Over time these records will help identify (and help support funding applications for) problem areas that may require items to be replaced rather than continuously repaired. Recording leaks will also help when reviewing water use benchmarking for certification requirements.

Did You Know?

A leak losing 3 drips a second equates to a loss of 100 litres every day if it is left unrepaired![1]

Case Study:

Sydney Convention and Exhibition Centre (SCEC), Australia.

In 2004, SCEC launched their sustainability program after a group of staff members formed a committee to see how they could reduce the Centre's environmental footprint.

Actions taken:

A series of water-saving initiatives were introduced as part of the program, including the installation of eighteen water sub-meters to monitor water consumption and leaks. The centre also installed waterless urinals, sensor taps, water efficient shower heads and over 165 low flush toilets.

Outcome:

Water consumption has reduced 47% with total savings of 8.69 ML over three years.

Repair leaks and faults

Toilets

In a properly functioning toilet no water should move from the cistern tank into the bowl, unless the toilet is being flushed.

Test toilets you suspect are leaking by placing a drop of food colouring in the cistern and seeing if the water is clear in the bowl without flushing after half an hour. The water will be leaking into the bowl through either the overflow pipe (leaking valves) or the seating washer (rubber ring at bottom of the tank) and should be repaired immediately. Also, check water and wastewater pipes connected to the toilets.

Pipes and equipment

While carrying out inspections listen out for leaks and look for dampness, rust marks or swelling, particularly on pipes, joins or equipment that is poorly maintained, worn or old.

Did You Know?

A dripping tap or shower can lose over two litres per hour, that's about 5 buckets a day![2]

Taps

Taps leaking from the spouts is usually an indication of a worn valve washer (located under the handle) that needs to be replaced. If the leak continues the valve seating may also need to be repaired.

Taps leaking from the neck shaft is usually an indication that the o-ring and body washer needs to be replaced.

Some taps will have ceramic discs instead of valve washers which if scratched can leak indicating the cartridge may need to be replaced.

Showers

Showers leaking from the arm or neck are an indication that the sealing washers need to be replaced. In some cases the arm may just need to be tightened. Use pipe tape and then tighten with a wrench.

Pools

If you suspect a leak, place a bucket with a weight in it in the pool and fill the bucket to the same level as the pool. If the water loss is due to evaporation the level should drop at the same rate in the bucket and the pool.

If the pool level drops more than the bucket there is a leak. Increased chemical usage, excessive algae growth or air or dirt pulled into the pump and blown into the pool may also be indications of a water loss problem.

Check for cracking in the pool structure or tile work and leaks from surface pipe work, the filter or backwash valve. If the leak cannot be found it is possible to undertake a pipe pressure test to confirm whether there is a leak in the pipe work. Leaks can then be located using different techniques depending on where the problem is. Sonic detection is often used for sub-surface leaks or helium detectors if the soil conditions are such that noises can't be made at the leak location. Other techniques used for leaks in visual areas include dyes, scuba diving and underwater headphones for concrete pools or electronic devices for leaks in vinyl liners.

Cooling towers

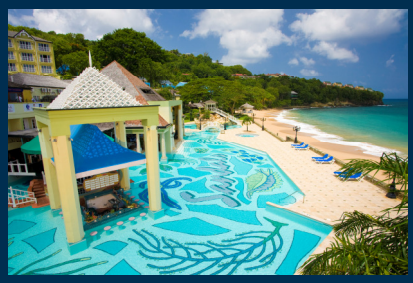
If water is being lost from the overflow pipe check the valve on the make-up line is able to close and seal.

Make sure the ball float has not been set too high or that the overflow pipe is not leaking. If there are multiple towers make sure the water levels are even or the water will flow to the lowest basins when the pump is turned off causing it to overflow. This is simply fixed by adjusting the ball floats so the water levels are equal.

If water is overflowing out of the basin, check that the overflow pipe is not blocked or that the inlet pipe has not been accidentally left on after cleaning.

Did You Know?

A small trickle of water from the cistern can waste 25 000 litres a year![3]



Case Study:

Sandals Regency La Toc Golf Resort and Spa, St Lucia, West Indies

The Sandals property is located on an island with limited water resources. The Resort has three pools and nine whirl pools; 200 acres of gardens/ golf course and a need to reduce water consumption by guests without compromising the quality of their experience.

Action Taken:

Monitoring of pool levels is carried out, in order to identify any abnormalities in consumption. Should the level of any pool level fall by more than 1.25 cm in a day, it is closely monitored and investigated, so as to identify the location of any leaks.

Sections of the pipeline are also sealed at two ends and pressured tested with air using a compressor at 20-30psi for 5-10 minutes. If the pressure drops after the time has elapsed then the leak's location has been identified.

Other water-saving initiatives undertaken by the resort include the Irrigating the resort's expansive grounds after dark or early morning, using recycled water from the resort's secondary aerobic wastewater treatment system.

Guest rooms are fitted with low flow taps and showers, along with low flush toilets.

Outcome:

Sandals has been using the EarthCheck tool to monitor its water consumption since 2004. This has resulted in a **reduction in water use by 20%.**

References

[1] North Carolina Department of Environment and Natural Resources, 2009, Water Efficiency Manual for Commercial, Industrial and Institutional Facilities, Accessed Dec 2009: ***http://www.p2pays.org/ref/01/00692.pdf***

[2] Savewater Alliance, 2008, Savewater, ***http://www.turningwaterwise.com.au/pdfs/tourism/Motel_Presentation_Savewater.pdf***

[3] Fix-a-loo Water Saving Initiatives, Accessed Jan 2010: ***http://www.fixatap.com.au/store.jsp?item_number=FIX-A-LOO 20 Water 20Saving 20 Initiatives &action =view _product***