

# INDEPTH LEAK DETECTION

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[www.indepth.ie](http://www.indepth.ie)



# CONTENT

- The company policy
- Unaccounted for water
- Effects of leaks
- Water auditing
- Leak Detection and repair strategy
- Benefits of leak detection
- Repair of Leak detection/ other activities
- Case study
- Company brochure

# COMPANY STATEMENT

- Detect underground leaks
- Liaise with businesses and water providers

# UNACCOUNTED FOR WATER

- Primary cause
- Types of leaks
- Causes of leaks
- Water conditions



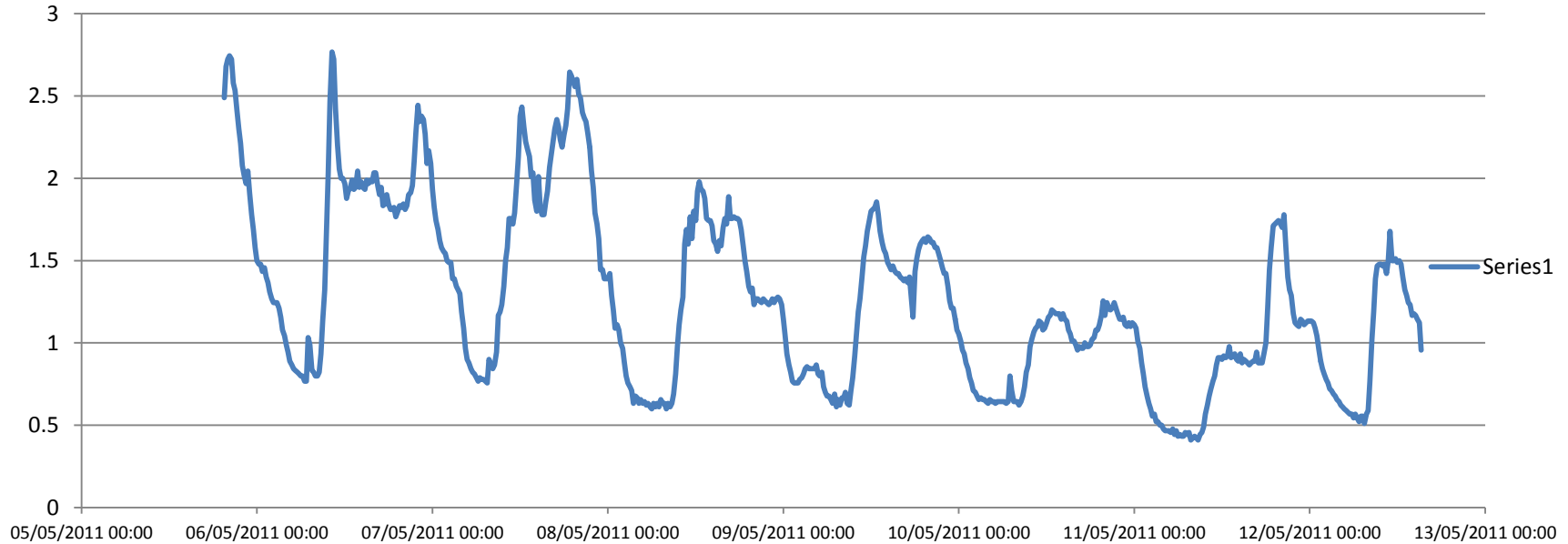
# WATER AUDITING

- Involves calculating costs, leakage and quantity of “unaccounted for water”
- Fitting of a logger device
- Leakage recorded over (**night line periods**) low demand
- A cost annalist



**Water auditing**  
**Water auditing**  
**SURVEY RESULTS:**

7-day data logging of the bulk meter supplying the site.



## COMMENTARY / CONCLUSION

That the minimum Night Flow Reading is 0.411L/S.

This is a loss or "Unaccounted for Water" of approx 1479L/Hr. or 35.5m<sup>3</sup>/day

DATE	DAILY RECORDED FLOW	MINIMUM NIGHT FLOW	
06/05/2011	143M3	0.767	L/S
07/05/2011	146M3	0.767	L/S
08/05/2011	107M3	0.600	L/S
09/05/2011	102M3	0.611	L/S
10/05/2011	82M3	0.644	L/S

# LEAK DETECTION



# LEAK DETECTION AND REPAIR STRATEGY

- Sonic leak detection equipment
  - Pinpoint listening devices
  - Geophones
- Correlate devices
- Infra red camera system
- Tracer gas and locator equipment



*Avoid the extensive cost, digging and damage to property that using conventional methods of exposing and tracing leaks can lead to, as pictured above*



*By using tracer gas, leaks can be sourced with minimal disruption, minimal digging and minimal cost to the property owner by comparison*



# BENEFITS OF LEAK DETECTION & REPAIR

- Increase knowledge about the water supply system.
- To ensure fire hydrants comply with statutory water safety and pressure standards.
- To identify the need for replacement of pipe work.

## BENEFITS

- Reduce property damage, reduce legal liability, and reduce insurance
- Reduce risk of contamination
- Improve environmental quality

# COORDINATING LEAK DETECTION REPAIR & OTHER ACTIVITIES

- Other water utility activities include:
  - Inspect hydrants and valves in a distribution system
  - Update distribution system maps
  - Using remote sensor and telemetry technologies
  - Inspecting pipes, cleaning, lining and maintenance

# GREATEST EXPECTED PROBLEMS

## AREA'S ;

- with a history of **excessive leak** and breakage rates;
- where leaks and breaks can result in the **heaviest property damage**;
- where system pressure is high;
- exposed to stray **electric current & traffic vibration**;
- where loads on pipe **exceeds design loads**.

# BENEFITS OF LEAK DETECTION



# BENEFITS OF LEAK DETECTION MONITORING

- Economic benefits of leak detection
  - Reduced property damage
  - Advanced metering technology- early warning alerts & 24 hour monitoring
  - Meter technology send daily flow reports to laptop and leak alerts to designated phone numbers.



# CASE STUDY: SHOPPING CENTRE



# SHOPPING CENTER

- Leakage rate 4600l/hr
- Over 110,400l/day
- Cost of leak €250/day
- Yearly €92,680
- Leaking for 6 months. ( first notified by increased water utility bill)
- Structural damage was imminent
- Monitoring system would notify within hours.
- Priceless



## Leak Detection - Commercial

### Leak Detection - Commercial

Water leaks cost thousands of euros per year. It is estimated that 40% of treated water is lost due to leaks and deterioration of water mains. The InDepth team of experts detect underground leaks. Our technicians are trained to liaise with water providers, businesses & local authorities to efficiently detect leaks, advise on treatment, and conduct repairs.

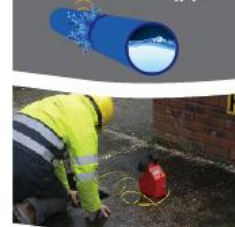
All vans are equipped with:

- Ground Microphones & Correlators
- Pressure loggers
- Flow meters / loggers
- Acoustic Loggers
- PWG (Pulse Wave Generators)
- Leakfinder
- Hydrogen Gas Injection
- Pipe Locators (Plastic & Metallic)
- Ultra sonic flow meter
- Mast II Step testing unit
- Pipe Locators (Plastic & Metallic)

We are equipped to survey water networks and detect areas of unaccounted water. We can pin-point water leaks to a specific area therefore eliminating the need for unnecessary exploration, excavation or damage to property, which could save thousands in property repair costs.



Underground leaks detected by sound before digging



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Registered Office: Caran, Co. of Ireland. Directors: Damien McBroom. Company Registration No: 1234567







## Leak Detection Domestic

### Do you have a leak in your home or office?

#### WE CAN FIND LEAKS ON WATER MAINS AND HEATING SYSTEMS WITH MINIMAL DISRUPTION

Conventional methods of exposing and tracing of water leaks can lead to excessive damage and cost, as pictured across. We at InDepth find leaks which minimises the damage and expense incurred through this method.

Using infrared camera systems we can locate the position of the pipes underground and identify areas of leakage. In addition to a wide range of listening devices, a special mix of tracer gas and locator equipment is used to find leaks in underground pipe work. This reduces the amount of damage to flooring and property.

This method can be carried out on both hot and cold water pipe systems. The gas is injected into the pipe work and allowed to flow to the area of the leak. It then permeates up to the surface through soil, tarmac, concrete and most type of floor finishes. The tracer gas (hydrogen) used in leak detecting has been approved for use in public water supply.

InDepth Leak Detection carry out leak detection audits quickly and efficiently to assess if there is in fact an undetected leak, minimising the potential cost in property damage.



*Avoid the extensive cost, digging and damage to property that using conventional methods of exposing and tracing leaks can lead to as pictured above*



*By using tracer gas, leaks can be sourced with minimal disruption, minimal digging and minimal cost to the property owner by comparison*



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## Water Audits



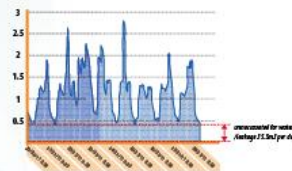
### Water Auditing

The objective of the survey is to:

- Confirm the minimum night flow readings on the site;
- Establish if there is any leak or unaccounted for water (LFW) on the network;
- Complete a 7 day survey of the bulk meter to site.

#### Case Study:

Survey Results from 7-day data logging of the bulk meter supplying the site:



#### COMMENTARY / CONCLUSION

This graph shows the minimum Night Flow Reading of 0.411 L/S and the trends for water use.

DATE	DAILY RECORDED FLOW	MINIMUM NIGHT FLOW
30/06/2011	75m3	0.411 L/S

This is a loss or "Unaccounted for Water" of approx 1479L/hr, or 35.5m3/day

From this graph it is clear that there is substantial water leakage in the mains. The Night Flow Reader (NFR) counts pulses from a variety of water meters, and monitors the accumulated total flow, daily total flow and windowed flow (night flow), storing the historical data for the survey period. A graph of the finding indicating the minimum night flow and is displayed in the report. From this the average daily use can be calculated and minimum night flows recorded showing the "unaccounted for water" or leakage to any given site.



Night Flow Unit connects to meter & reads during night time

Accurate digital readings are obtained for accurate results



Noise loggers attached to valves or hydrants record water activity and send this information via remote signal to hand held device

- H = No Leak
- H = Possible Leak
- H = Leak Detected

Hand held device records information that can be uploaded to software to locate leaks, or possible leaks from one location, in real time



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## Pressure Testing Fire Hydrant Testing

### Pressure Testing

Pressurisation is completed using a variety of hydrostatic test pumps sized specifically for the type and size of pipe to be tested. All pumps are pressure variable and are fitted with pressure relief valves which are set on site to the required test pressure. All our technicians utilise laptop computers enabling the downloading and interpretation of logger results to be carried out on site immediately after the test procedure has been completed.

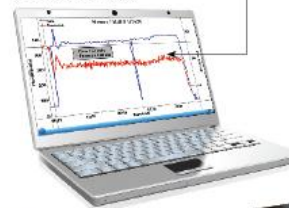
### Fire Hydrant Testing

We also offer a fire hydrant test service which measures the pressure and maximum flow rate from the hydrant. We operate a team who can test and inspect your water hydrants as part of your annual maintenance programme. It is required that all fire hydrants are tested on an annual basis. The hydrant test shall be conducted by fitting a standpipe to the outlet and then attaching a flow-tester to measure pressure and flow rates.

A detailed report from the findings of the examination will be compiled as part of the survey.

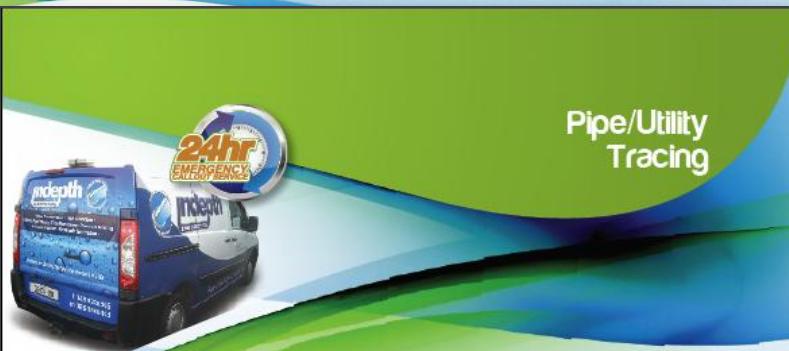


*All our technicians utilise laptop computers enabling the downloading and interpretation of logger results to be carried out on site immediately after the test procedure has been completed.*



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## Pipe/Utility Tracing

### Pipe Tracing

We can find water connections using pipe tracing equipment for the installation or tracing of water meters. We trace all pipe materials such as PVC, PE, AZ, cast iron, steel etc. The pipe locating system consists of a receiver and an electronic pulse generator which is screwed on a water pipeline or on a hydrant. This system allows location of non-metal pipes running up to 2 metres below the surface. The pipe section does not need to be shut down during the location process.

The Pulse Wave Generator system can help to draft, amend, or check network plans, and it can be used both inside and outside residential areas. Also unknown pipes can be located quickly and reliably with this system.

In addition to the PWG we also have a tracer unit which allows the operator to accurately trace and locate services and with a built in depth finder can accurately survey the depth of the service.

### Utility Tracing

To often the location of underground services are not accurately recorded on service location maps and in some cases not at all. Accidental damage in striking or unearthing underground services can result in serious damage to services and may result in injury to employees or to the public.

InDepth carry out utility tracing using cutting edge technology to accurately trace and map the location of underground services.

Our Ground Penetration Radar as well as various service location equipment can identify underground services to draw a clear picture of service networks eliminating the potential risk of causing damage to property or others.



**InDepth**  
Leak Detection



- Foul Sewer rain
- Trunk Main Water
- Surface Water Drains
- High Pressure Gas
- Gas Distribution
- Cable TV
- Portable Water
- Telecoms
- HV & LV Electricity

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**InDepth**  
Leak Detection

## Reservoir Restoration Concrete Injection ROV Camera Surveys



### Reservoir Restoration

The primary objective of potable water management is the provision of high-quality water. To do this, water storage tanks, pipes, treatment plants and associated structures all need to meet the very highest standards of hygiene and durability. Regular inspection and safeguards are necessary in order to protect the integrity of the structure and, most importantly, to prevent surfaces in contact with water from deteriorating or breaking down because of physical stresses and chemical attack.

Using our new ROV UNDERWATER CAMERA with its powerful lighting and video we are capable of inspecting Reservoirs while they remain in service. Our detailed survey allows you to identify cleaning and maintenance priorities and allocate resources and budgets with confidence. The survey will identify any structural problems such as cracks or fractures in the concrete or corrosion on deteriorating pipe work & fittings.

### Concrete Injection Repair

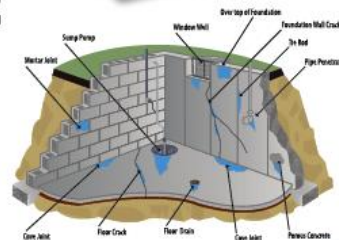
Crack or resin injection is a means of waterproofing and repairing cracks in concrete structures. Our highly trained teams with specialist equipment are trained to carry out crack repairs. The repair service we offer can be used on any size project, from reservoirs, underground car parks and tanks. It can be applied in dry, water-bearing and high-pressure water-bearing conditions.

Our specialist teams have been trained in:

- CONFINED SPACE
- SAFE PASS



Using our new ROV UNDERWATER CAMERA with its powerful lighting and video we are capable of inspecting Reservoirs while they remain in service



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**Thank You for Your  
Attention**

