

## Network cleaning



### Description

Ice Pigging is a breakthrough technique for cleaning the inside of pipes using slush ice. The technology of Ice Pigging is based on harnessing the complex properties and unparalleled benefits of ice slurries.

Semisolid ice slurry can be applied uniquely because it is both pumpable like a liquid, but also takes on properties of a solid when a 'pig' of ice slurry is formed within a pipe.

Ice Pigging is a highly effective and exceptionally low risk method of removing sediment, biofilm and other objects from pressurised water and waste water pipes, thus producing a cleaning effect a thousand times superior to conventional flushing methods.

### How it works

#### STEP ONE: Isolate the main

The main is isolated by closing valves upstream and downstream of the section to be cleaned.

#### STEP TWO: Insert the ice

The ice slurry is pumped into the pipe via a fire hydrant or similar fitting. The downstream pressure in the pipe is monitored and managed at the outlet point via a fire hydrant. A 'pig' of ice is formed.

#### STEP THREE: Open upstream valve

The ice is pushed along the pipe using the natural pressure in the network. To do this the upstream valve is opened, and flow at the outlet hydrant is used to control the speed of the ice. As the ice flows through the pipe it passes over every surface and collects sediment or wipes biofilm as it passes.

#### STEP FOUR: Collect ice pig

Water in front of the pig is discharged normally. Temperature at the outlet point warns of the arrival of the ice, which allows the sediment laden ice to be collected separately in a tanker if desired.

#### STEP FIVE: Flush and return to service

The pipe is then flushed to the appropriate standard and promptly returned to service. The process is efficient, rapid and exceptionally low risk.



## Advantages

- Significantly reduces customer disruption.
- Uses 50% less water than flushing/ swabbing/standard pigging.
- Reduces pumping costs and chlorine consumption.
- Exceptionally low risk – if ice were to get stuck it will simply melt.
- Flows through all diameters, fittings and bends of pipes.
- Ice is harmless to public health.
- Generally requires no excavations: a genuine 'no-dig' technique.
- Takes half the time that is normally required by other techniques, with the pipe typically isolated for only 60 to 180 minutes (depending on length of run and pipe hydraulics).
- The ice pigging process produces quantifiable results – proof of the volume of sediment removed.
- Does not affect current services.
- Minimum disruption to services is up to 1000 times more effective at removing sediment and biofilm than traditional flushing.
- Lowest cost option when considering volume of sediment removed.

## Feature type

- Sublicenses.
- Operation / Service.
- Partnerships.

## Area scope

- **Supply.** Drinking Water Networks.
- **Sewerage.** Sewerage Networks.  
Pumped sewer pipes.
- **Irrigation.** Distribution Networks.

## References

YARRA VALLEY WATER, Melbourne, Australia (2011) - Cement lined Cast Iron and PVC drinking water pipes of up to 300mm diameter.

GOSFORD CITY COUNCIL, Gosford, Australia (2011) – Cement lined Cast Iron and Asbestos Cement drinking water pipes of up to 450mm diameter.

OASEN DRINKWATER, Zwijndrecht, Holland (2011) – PVC and HPE drinking water pipes of up to 200mm diameter.

ENERGIS, Saarbrücken, Germany (2012) – Cement Lined Steel drinking water pipes of 500mm diameter.

DWR CYMRU WELSH WATER, Wales UK (2012 - 2017) - PVC, Asbestos Cement, Ductile Iron Cement lined drinking water pipes diameter up to 600mm.

WESSEX WATER, Westbury, UK (2012) - Medium Density Polyethylene sewerage pipes of up to 250mm diameter.

NORTHUMBRIAN WATER, Northumbria, UK (2013) – Lined Cast Iron water pipes of up to 400mm diameter.

AFFINITY WATER, London, UK (2013 - 2017) Ductile Iron Cement Lined, cast iron, MDPE, PVC drinking water pipes up to 18”.



### Contact:

**Matthew Stephenson**

matthew.stephenson@suez.com

