



## **Melt In Place Pipe “MIPP”**

*“The global solution for renewing aged drinking water pipes”*

*Commercial Presentation*

*Website*

*Winner of the International Society of Trenchless Technology  
Innovative Technology Award for Pipe Rehabilitation*

## Introduction - Commercial

- **Patented technology** for drinking water pipe renewal
- Cheaper than replacement (*up to 50%*)
- Quicker (*up to 10 times*)
- Unique **Regulatory Approval** for drinking water in UK



## Process for Pipe Renewal/Replacement

- Fully structural stand alone pipe capable of taking both internal pressure/vacuum or external load
- Similar cost and thickness of many semi-structural methods
- Not a coating/repair/rehabilitation process where the original host pipe condition is critical to its performance

# **AQUALINER**

**Patented technology developed in  
conjunction with**

**Severn Trent Water (STW)**

**Yorkshire Water (YW)**

**Anglian Water (AW)**

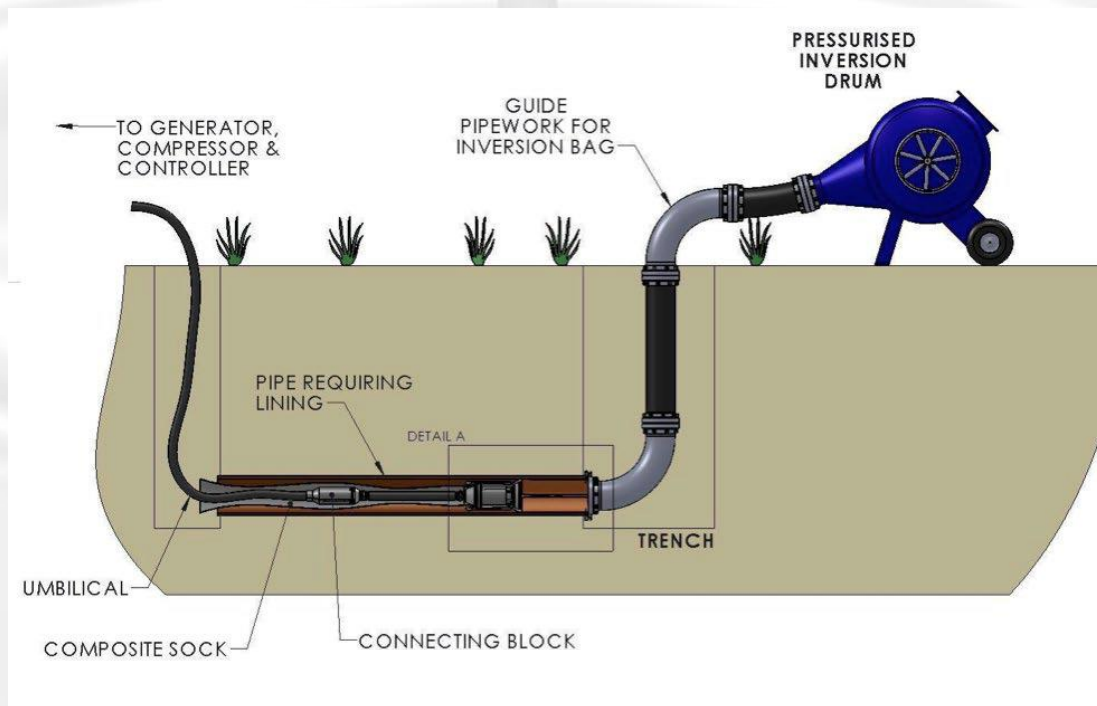
**Wessex Water (WW)**



***Patented method to line corroded water mains and sewers  
with a structural thermoplastic composite material***

## “MIPP” PROCESS—How does it work?

*A glass fibre-reinforced polypropylene sock is inserted into a deteriorated pipe. After sock insertion, a silicone rubber inflation tube pushes a heated “pig” through the composite, melting the sock against the pipe, which then cools to form a solid glass-reinforced thermoplastic pipe*





## Key Regulatory Approvals Granted

- UK Drinking Water Contact Approval (*DWI Reg 31*) - *currently the only approved structured liner (renewed until Nov 2021)*
- Received WRc Approved Products and Services for Sewers (Cert no:PT/396/1114 – AS)
- NSF 61 - Drinking Water Installation Certification for North America

## Standard End Seals, Couplings and Ferrules



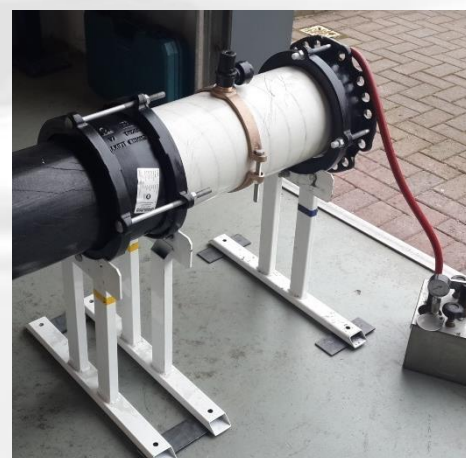
*Flange adaptor/End seal*



*Liner coupler*



*Ferrule/House Connection*



## Drinking Water Pipe Replacement Methods

- **Open Cut** - *Dig up and replace*
- **HDD** - *Horizontally Directional Drilling a new hole and pull in a new pipe*
- **Close fit lining** - *Insert a new pipe under tension through the existing pipe and release it to expand to the diameter of the existing pipe*
- **Slip Lining** - *Insert a smaller diameter new pipe and grout in place*
- **Fold and form** - *Insert a new folded pipe or pipe pulled through a die into the existing pipe and expand it to the diameter of the existing pipe*
- **Pipe Burst** - *Mechanically expand the existing pipe until it bursts while pulling through a new replacement*
- **Spray Lining** - *Spray-on linings are a non-structural coating and have been one of the most widely used methods for providing corrosion protection and water quality improvement*





## Key Benefits

- **Regulatory Approved**
- **Trenchless**
- **Thin-walled (3mm)** – *to maintain the pipe's hydraulic capacity*
- **Structural** – *standalone integrity with 60 year life*
- **Cost-effective**
- **Uses stock items - end seals, couplings and ferrules**
- **Environmentally friendly** – *low carbon footprint*



## Commercial Model

- **Territorial licenses for contractors**
- **Equipment sales** - each capable of 25-30km per annum
- **Material sales** – the lining material



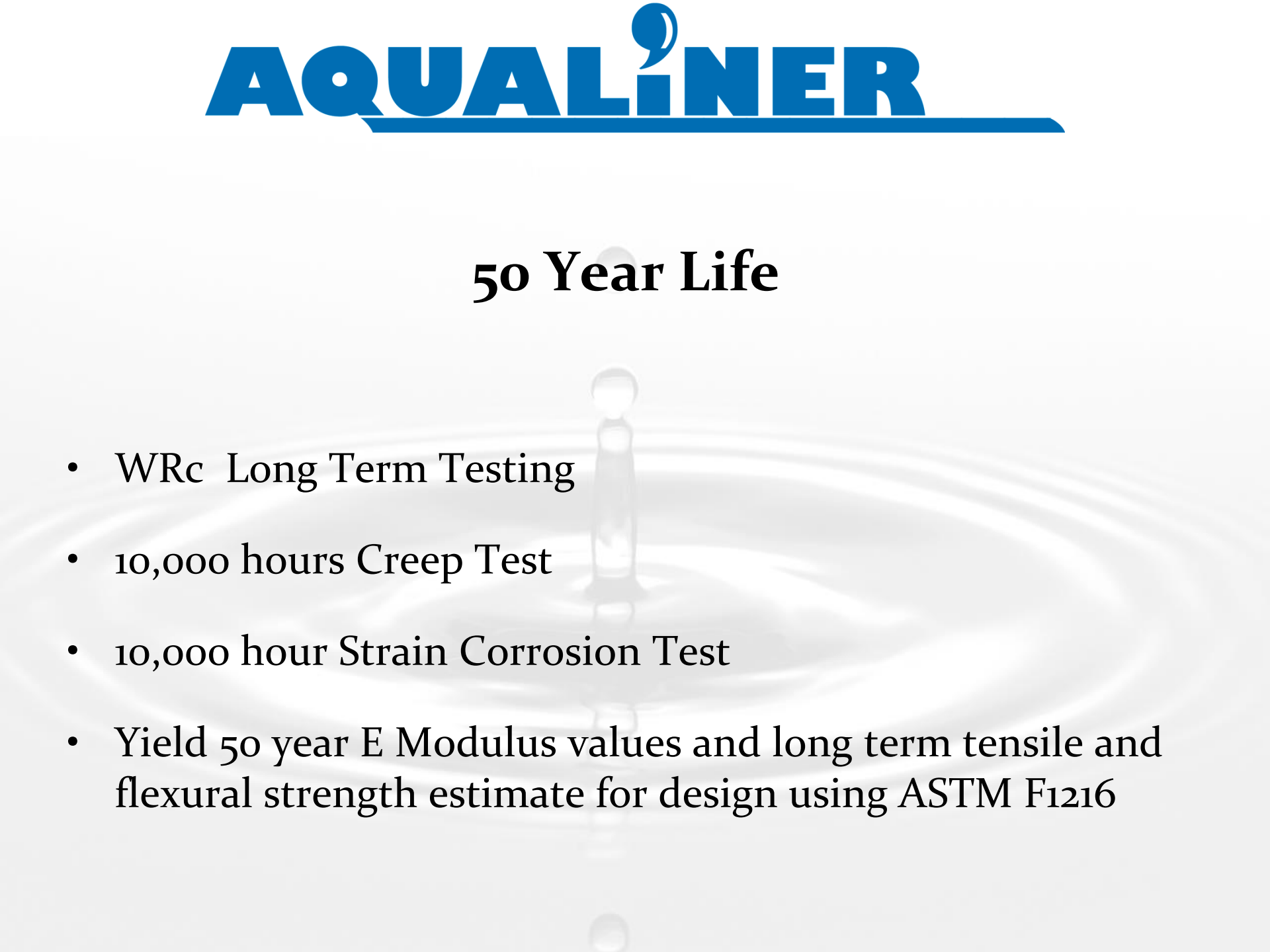
## Target 'Market' - Global

- 4"-12" (100-300mm) potable water pipes
- Suitable host pipes - include cast/ductile iron, bitumen coated cast iron, asbestos, reinforced concrete, clay and PVC
- Single shot target length 120+m
- Same day return to service (*a few hours disconnection*)
- Market penetration through existing mainframe and/or sub contractors globally

# AQUALINER



## 50 Year Life

- WRc Long Term Testing
  - 10,000 hours Creep Test
  - 10,000 hour Strain Corrosion Test
  - Yield 50 year E Modulus values and long term tensile and flexural strength estimate for design using ASTM F1216
- 



## Summary

- ✓ Trenchless pipe replacement process
- ✓ Thin-walled (3mm), Fully Structural & Cost-effective pipe
- ✓ Standard end seals, couplings and ferrules
- ✓ Environmentally friendly *with* Minimal maintenance
- ✓ Regulatory approved in UK & US
- ✓ Ready for initial live installations in UK drinking water