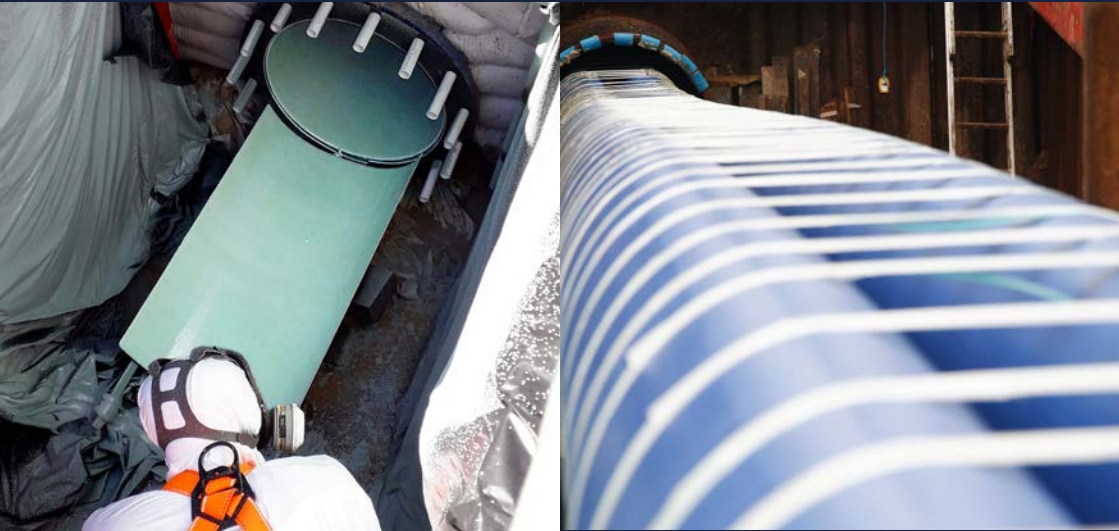


RESTORING PIPELINE INTEGRITY AND REMOVING LEAKAGE

PIPELINE REHABILITATION



JAN 2022



WE RESTORE INTEGRITY TO YOUR PROBLEMATIC MAINS, ERADICATE LEAKAGE AND FIX WATER QUALITY.

Radius Subterra

Solvent-free polyurethane coating, restoring drinking water quality

The corrosion and degradation of ageing metallic pipes can cause a loss of pressure, leakage and the pipe contents to become contaminated. Subcote™ FLP is an innovative solvent-free lining solution for the protection and renovation of metallic structures and pipeline networks.

SUPPLIED BY



PIPELINE REHABILITATION

Our range of innovative polyethylene (PE) lining and coating technologies are designed to fix your problematic mains, by removing leakage, repairing structural damage and treating corrosion.

Our lining technologies are designed to rehabilitate your existing pressure pipeline infrastructure, where access is difficult and reinstatement of maximum flow capacity is needed. They focus on the reduction of operational expenditure by protecting your pipeline against future corrosion and damage and reduce the need for extensive maintenance and repair.

Structural and semi-structural close-fit PE lining systems

Corrosion resistant and able to retain your pipeline's capacity, our semi-structural (or interactive) and structural Rolldown® and Subline™ PE pipe lining systems can be used in existing water, wastewater and utility gas networks, as well as onshore and offshore oil and gas systems, to restore integrity, retain capacity, prevent corrosion, maintain water quality and protect against future deterioration. Our solutions can be adapted to suit the bespoke needs of your project, with PE liners manufactured to specific SDRs, whilst our expert team are available to provide comprehensive support at every stage of your project.

ROLLODOWN®

Thick walled and fully pressure rated, this close-fit pipe lining system is ideal for the renovation of structurally weakened mains.

Our lining technology uses standard PE pipe that is butt-fusion welded into appropriate lengths, and pushed through roller sets to reduce its diameter concentrically by approximately 10%.

This reduced diameter pipe liner is stable without the application of tension and can be inserted into the host pipeline using conventional sliplining techniques. Once installed, the pipe is pressurised using cold water to revert it back towards its original diameter, retaining capacity and forming a close-fit within the host pipe.

- Polyethylene pipe sizes from 100mm to 500mm
- Retains pipe flow capacity
- Approved for public drinking water and gas applications
- Fully pressure rated stand-alone pipe
- Close-fit smooth bore polyethylene liner for maximum flow capacity
- Installation cost and environmental benefits over open cut pipe replacement
- Pipe liner can be butt-fusion welded before or after the diameter reduction process



SUBLINE™

Our Subline™ thin-walled, close-fit polyethylene lining technologies offer an interactive, semi structural solution for the renovation of pipelines.

The thin-walled polyethylene pipe is welded on site into long lengths and pushed through a former that folds the pipe liner into a compact cross section. The folded pipe is then strapped with temporary bands and inserted into the host pipeline using standard sliplining techniques.

Once installed, the folded pipe is pressurised, allowing it to revert back to its original shape. This retains the pipe capacity and forms a continuous, pressure-tight close-fit lining within the host pipe.

- Bespoke sizes from 75mm to 1600mm
- Retains pipe flow capacity
- Standard polyethylene pipe resins with relevant approvals for public drinking water
- Close-fit smooth bore polyethylene liner for maximum flow capacity
- Corrosion-resistant barrier prevents further internal deterioration of host pipeline
- Material cost savings from using thin-walled pipe
- Can negotiate bends up to 45°
- Full installation service or equipment rental available

The facts

The first PE gas pipe was installed in the UK over 50 years ago, and at the time PE pipes had a guaranteed lifetime of only 50 years. Today, the pipeline is structurally sound and still in service, running at a medium pressure of 2 bar.

- PE pipes now have a minimum lifetime of 100+ years.
- All new pipes are approved to both EN1555 or GIS PL2 for gas & EN 12201 for water.
- We have rehabilitated over 5,000km of pipelines in the last 35 years, using Rolldown[®] and Subline[™].
- We are not only the installer of the lining system, but we are also the pipe supplier, so we can offer you a cradle to grave approach.



- Rolldown[®] and Subline[™] use standard PE pipe in the host main.
- Our close-fit lining techniques use no-dig installation to insert the pipe liner.
- The installation site uses a small footprint area.
- Butt-fusion welding is used and as is normal practice, the pipe has to be debanded.
- Rolldown[®] cannot negotiate sharp bends. These need to be removed before installation of the pipe.
- We recommend that CCTV inspection of the main is carried out before using Rolldown[®] or Subline[™] to check bends and service connections location.
- PE pipes are butt-welded together into a long string to facilitate installation. The string length will depend on site restrictions.
- We have a full range of services and branch saddle connections available, that are sized to fit rolled down pipe. Standard fittings that are stocked at your stores are used to carry out connections to the pipe liner.

Why use Rolldown[®] and Subline[™]

Features	Benefits
Alternative to open-cut pipe replacement	<ul style="list-style-type: none"> Utilises existing pipeline asset as a conduit
Minimum dig process	<ul style="list-style-type: none"> Minimum disturbance of adjacent services and structures. Minimises the requirement for imported natural fill materials to reinstate excavations. Reduces disposal of excavated material to landfill. Small site footprint. Less environmental and social disruption compared with open-cut pipe replacement.
Pipe liner made from standard PE resins	<ul style="list-style-type: none"> Uses materials already approved for potable water or gas applications. Standard PE pipe liner generally already well characterised and manufactured under a formal QA scheme.
Structural or semi-structural PE liner	<ul style="list-style-type: none"> The structural liner is effectively a new pipeline installation. Semi-structural applications minimise liner materials usage, costs and maximise free bore of relined pipeline.
Close-fit liner	<ul style="list-style-type: none"> Maximises flow capacity. Grouting not required.
Smooth liner bore	<ul style="list-style-type: none"> Maximises flow capacity
Ambient temperature process	<ul style="list-style-type: none"> No heating process.
Low installation winching loads	<ul style="list-style-type: none"> Maximises insertion lengths. Single pulls of up to 800m have readily been achieved with Rolldown[®]. Minimises liner elongation/ residual tensile stresses after installation.
Installation stop/start capability	<ul style="list-style-type: none"> On-site operational flexibility and convenience.
Reversion to close-fit with host pipe using water at ambient temperature.	<ul style="list-style-type: none"> Simple reversion procedure. No process heating / pipe shape re-forming requirements.
PE liners can be butt-fusion joined without detriment to PE material / reversion characteristics.	<ul style="list-style-type: none"> Flexibility in operation.
PE liners can utilise standard fusion or mechanical fitting technologies (subject to size availability)	<ul style="list-style-type: none"> Using the same pipeline fittings or ancillaries as for standard PE pressure pipe systems.

Features and benefits of Rolldown[®]

Features	Benefits
Rolled-down and reverted pipe meets the specification requirements for standard PE pipes	<ul style="list-style-type: none"> 'Rolled-down' and reverted PE pipe is effectively a new pipe installation.
Pipe liner pushed through Rolldown [®] machine	<ul style="list-style-type: none"> Very small liner elongation during processing ($\leq 3\%$)
Diametrical reductions of ~10% (dependent on process details)	<ul style="list-style-type: none"> Easy insertion into host pipe May negotiate bends up to 11.25°
Reduced diameter normally held indefinitely until reversion is carried out.	<ul style="list-style-type: none"> No external mechanical restraint needed to maintain reduced size. Insertion is effectively a sliplining operation Insertion winching loads required only to overcome friction between liner and host pipe. Process can be stopped / started without detriment.
Fully structural pipe	<ul style="list-style-type: none"> Once installed the 'rolled-down' pipe operates as a fully structural standalone pipe and does not rely on the strength of the host main when in service.

Features and benefits of Subline[™]

Features	Benefits
Deformation process reduces the liner pipe cross sectional area by about 40%.	<ul style="list-style-type: none"> Easy insertion into host pipe May negotiate bends up to 45° depending on size
Long length installation possible	<ul style="list-style-type: none"> >1000m possible in a single insertion
Semi-structural or interactive liner	<ul style="list-style-type: none"> The PE liner works with the host main to restore structural integrity to the pressurised pipeline



Rolldown®

Water, wastewater and gas



Host pipe Nominal bore mm / inch	SDR11	SDR17	SDR21	SDR26	SDR33
104mm/4"	✓	✓	✗	✗	✗
110mm/4"	✓	✓	✗	✗	✗
125mm/5"	✓	✓	✗	✗	✗
155mm/6"	✓	✓	✓	✓	✗
160mm/6"	✓	✓	✓	✓	✗
180mm/7"	✓	✓	✓	✓	✗
200mm/8"	✓	✓	✓	✓	✗
205mm/8"	✓	✓	✓	✓	✗
213mm/8"	✓	✓	✓	✓	✗
225mm/9"	✓	✓	✓	✓	✗
250mm/10"	✓	✓	✓	✓	✗
260mm/10"	✓	✓	✓	✓	✗
268mm/10"	✓	✓	✓	✓	✗
302mm/12"	✓	✓	✓	✓	✓
315mm/12"	✓	✓	✓	✓	✓
355mm/14"	✓	✓	✓	✓	✓
400mm/16"	✓	✓	✓	✓	✓
450mm/18"	✓	✓	✓	✓	✓
469mm/18"	✓	✓	✓	✓	✓
500mm/20"	✓	✓	✓	✓	✓

Host pipe Nominal bore inch	SDR21	SDR26	SDR33	SDR42	SDR51	SDR61
3"	✓	✓	✗	✗	✗	✗
4"	✓	✓	✓	✗	✗	✗
5"	✓	✓	✓	✓	✗	✗
6"	✓	✓	✓	✓	✓	✗
7"	✓	✓	✓	✓	✓	✓
8"	✓	✓	✓	✓	✓	✓
9"	✓	✓	✓	✓	✓	✓
10"	✓	✓	✓	✓	✓	✓
12"	✓	✓	✓	✓	✓	✓
14"	✓	✓	✓	✓	✓	✓
16"	✓	✓	✓	✓	✓	✓
18"	✓	✓	✓	✓	✓	✓
20"	✓	✓	✓	✓	✓	✓
24"	✗	✓	✓	✓	✓	✓
30"	✗	✗	✓	✓	✓	✓
32"	✗	✗	✓	✓	✓	✓
36"	✗	✗	✗	✓	✓	✓
39"	✗	✗	✗	✓	✓	✓
48"	✗	✗	✗	✗	✓	✓

Subline™

Water, wastewater and gas



- Gas pipe is only suitable for low and medium pressure

SUBCOTE™ FLPII SPRAY LINING

Subcote™ FLP II is an innovative solvent-free solution for In-Situ lining of drinking water pipelines.

A fast-setting polyurethane resin, Subcote™ FLP II has been specifically developed for the rehabilitation of existing pipeline networks. Approved to the most stringent and recognised national and international standards, Subcote™ FLP II is the cost-effective solution for the protection of your potable water.

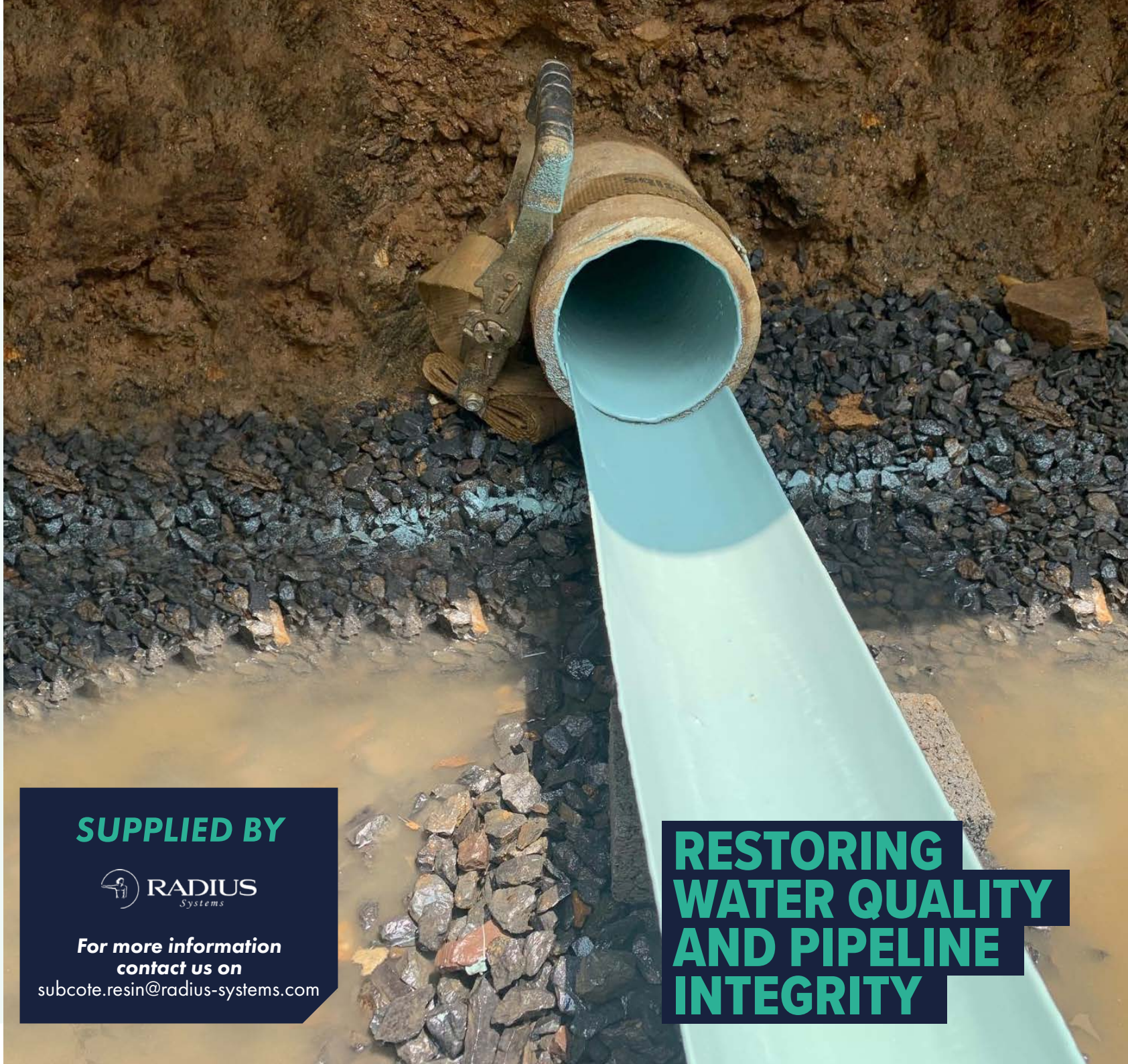
- Pipe diameters from 75mm to 1500mm
- Spray thickness of 1mm to 7mm
- Approved for use in contact with public drinking water
- Suitable for all metallic and cement mortar lined iron pipes
- Corrosion resistant barrier layer - protects drinking water
- Suitable for new and existing pipelines
- Applied using centrifugal spray application process
- True polyurethane, epoxy-free, amine-free formulation
- Smooth coating for increased hydraulic properties
- Fast-setting - the pipeline can be re-commissioned after 1 hour cure
- Excellent strength and stiffness with no shrinkage
- Approved for use in drinking water pipelines worldwide, including: UK, USA, Canada and Australia.
- Hand spraying for chambers

SUPPLIED BY



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**RESTORING
WATER QUALITY
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INTEGRITY**





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