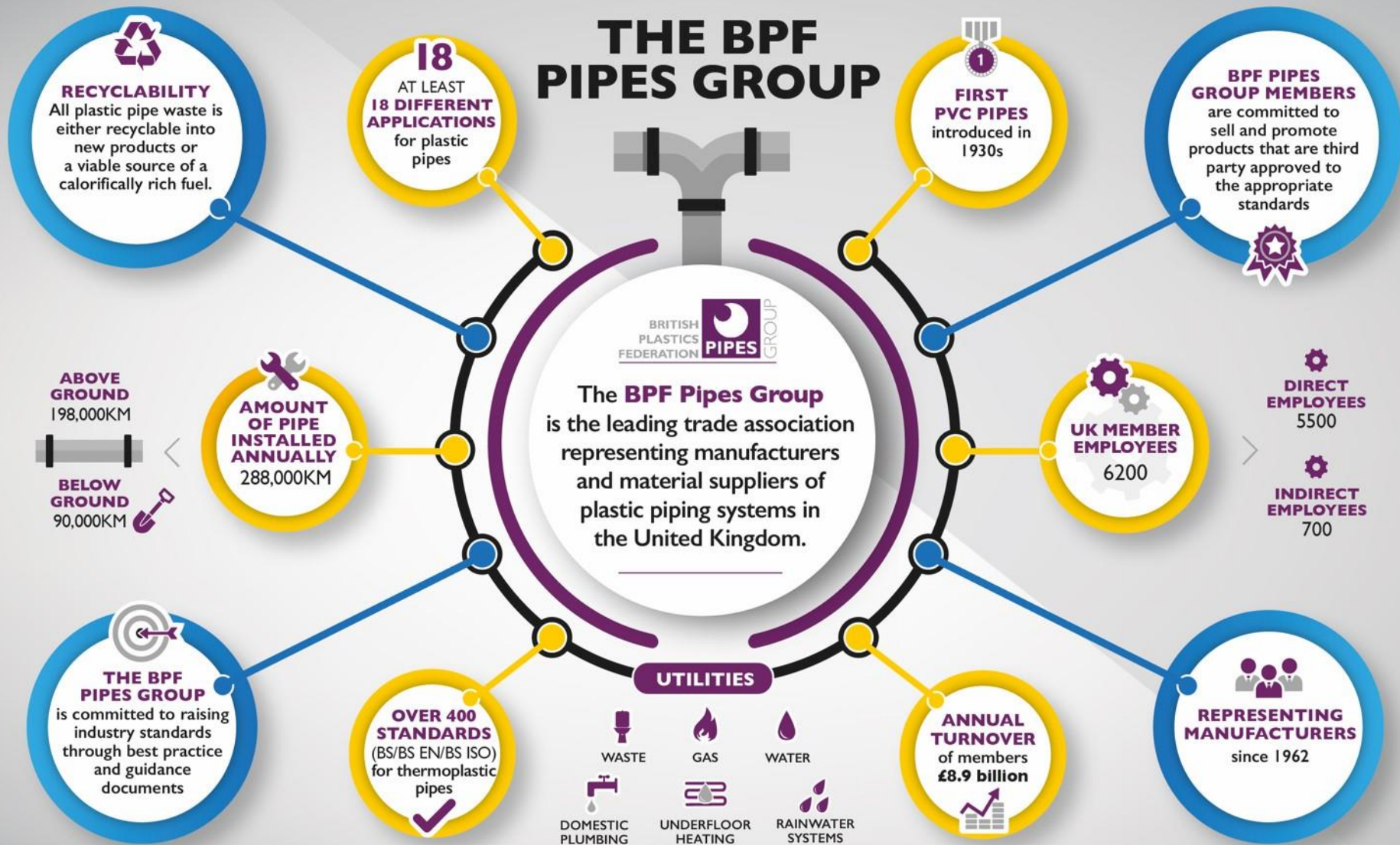


Making Connections To Polyethylene Water Pipes

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THE BPF PIPES GROUP

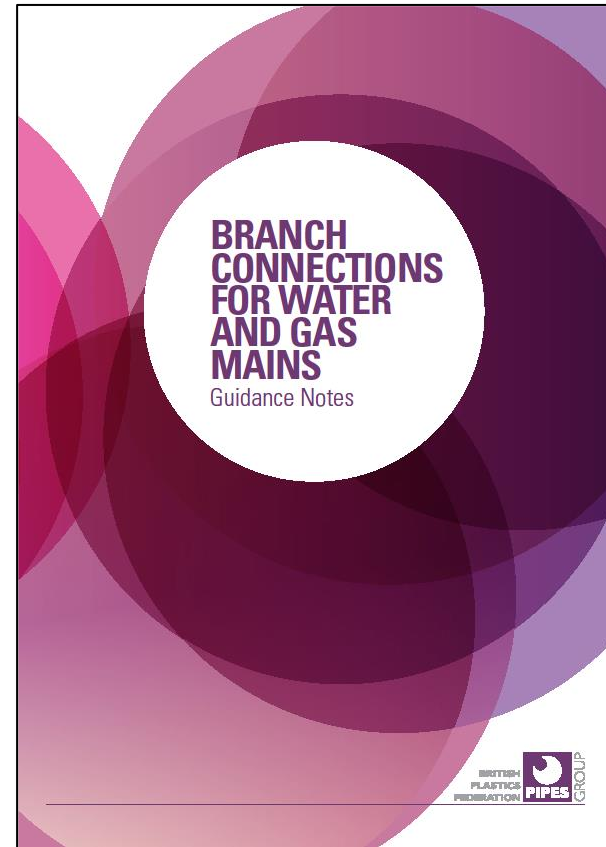


TODAY'S UNDERGROUND PLASTIC PIPES HAVE A LIFE EXPECTANCY OF OVER 100 YEARS

June 2021

Publications

- Technical Guidance
- Specification Guidance
- News Articles



[Plastic Pipes Group | PPG - Support & Downloads - Overview \(bpfpipesgroup.com\)](http://bpfpipesgroup.com)

Learning objectives

- Practical issues which if addressed promote right first time outcomes
- Solutions for making connections to different types of polyethylene pipe
- Specifications and options to promote quality, traceability and reliability



Viscoelastic

- Pipe has a dynamic response to an applied load (mechanical or thermal)
- The rate of response (time) is a function of temperature



Chain Principles



Chains are loosely entangled



Taking the strain

Viscoelastic

- Pipe has a dynamic response to an applied load (mechanical or thermal)
- The rate of response (time) is a function of temperature



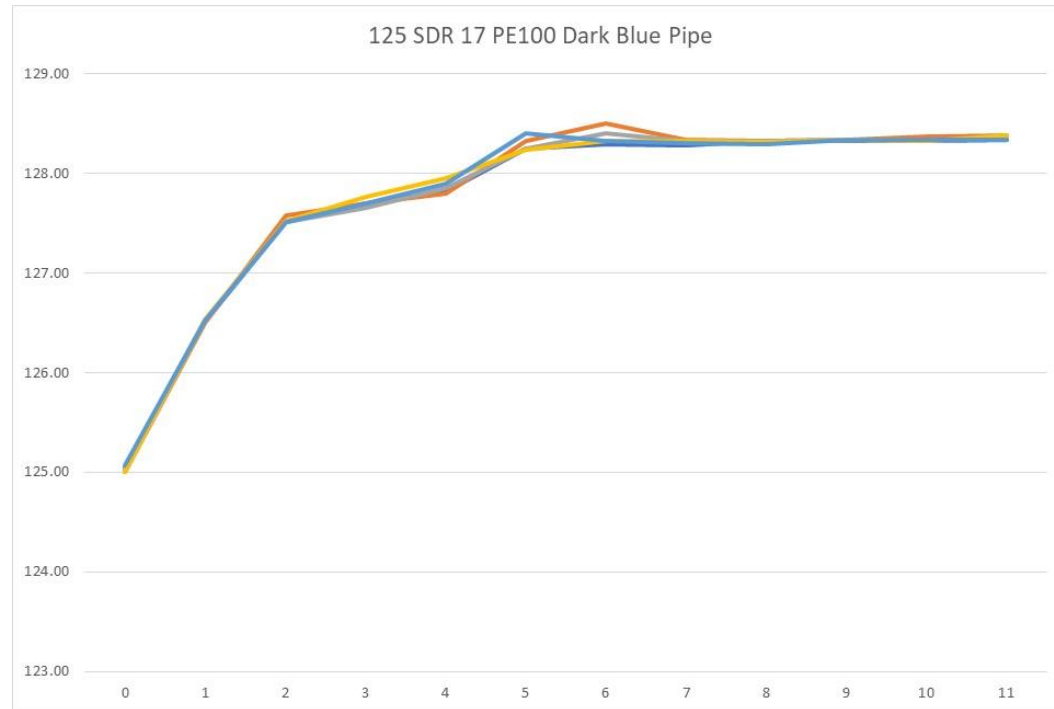
Pipe Stretch & Contraction

- Pipe is anchored to a steel frame at each end to create end load
- Pipe is subject to internal pressure
- Diameter is measured as a function of time & temperature



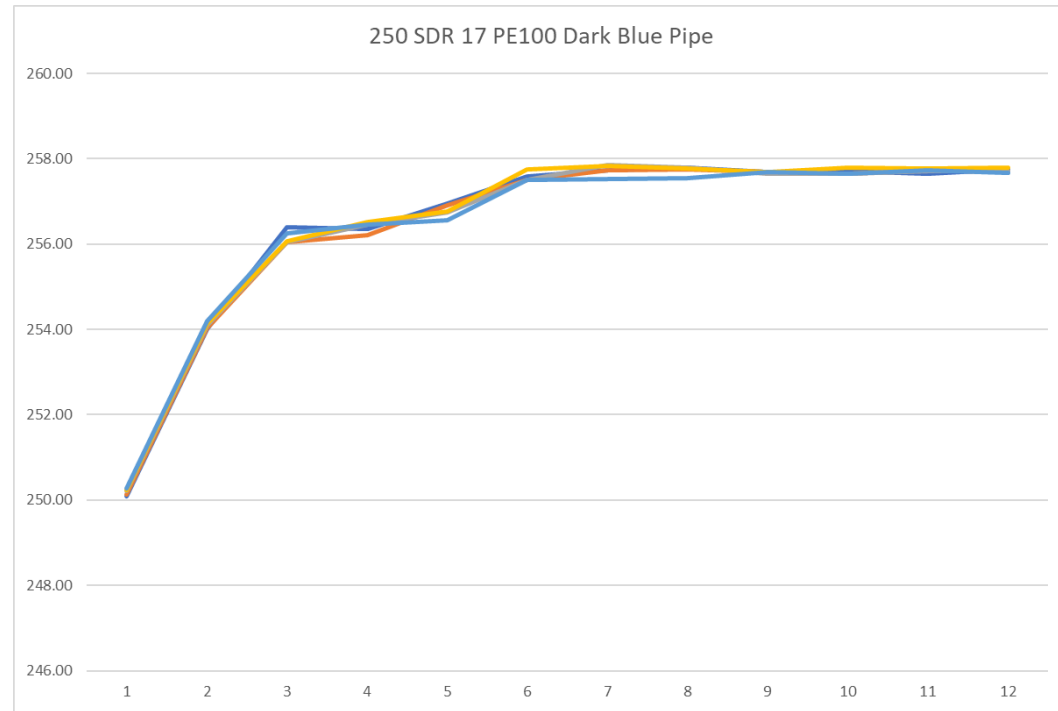
Pipe Stretch & Contraction

- Supplied 125.0 - 125.8mm
- 10bar, 20°C, 30 days
- In service uti 128.5mm



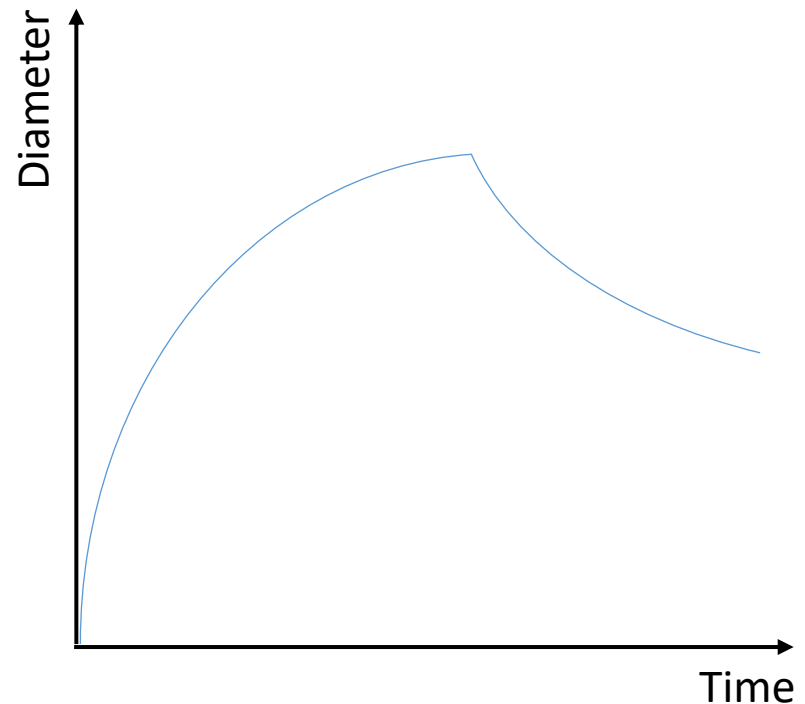
Pipe Stretch & Contraction

- Supplied 250.0 - 251.5mm
- 10bar, 20°C, 30 days
- In service uti 257.9mm



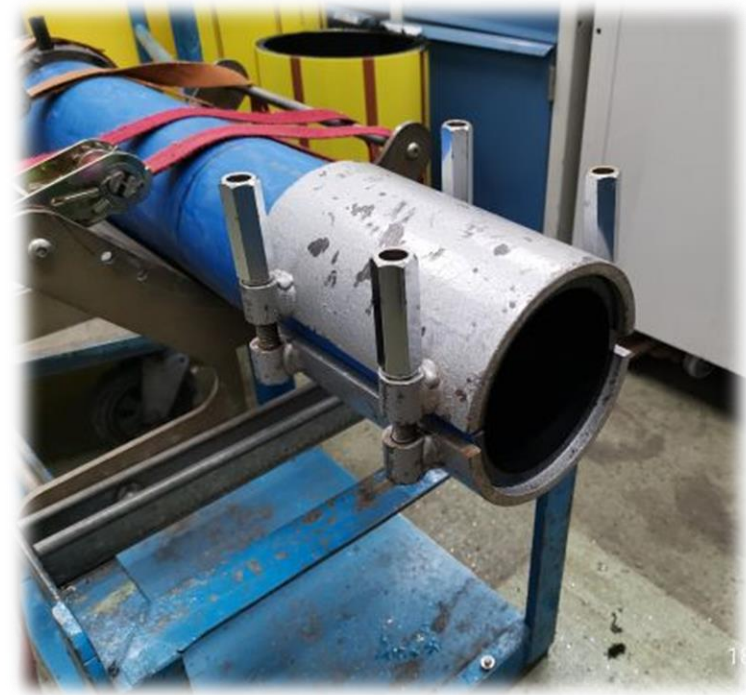
Effect is reversible

- Removal of the load changes the applied stress
- Rate of dimensional change will be function of time & temperature
- Think about interaction in water networks with active pressure controls



Reversion in practice

- We want to cut into a pipeline to fit a flange stub or fit a tee fitting
- We use a tooling solution to correct the diameter of the pipe
- Slow rate adjustment will be easier and it is better for the pipe material



Tips for making connections

- We can fix water leaking into the weld with basic foresight
- A tapping tee commonly used for house connections
- Insert inflatable stopper if valves are passing during isolation works



Forming branch connections

- Small scale self tapping tee, electrofusion or bolted fittings
- Branch saddles, electrofusion is recommended



Long term thinking needed

- Works on the day it was installed, we are all happy?
- The pipe is viscoelastic and has a thermal coefficient of 'contraction'
- Sometime later, dissimilar materials and simple seals part, it leaks



Electrofusion is the long-term solution



Sizes for all assets

- PE pipes to 3m diameter exist, branch reducing outlet available all diameters
- Fittings with equal branch size exist, this range is growing today
- Certain fitting sizes and outlet types are range rated over several pipe sizes



Liner or new build, air valves



Equal as well as unequal, ranged

- Saddles are available with branch size matching main pipe, e.g. 250x250x250
- Saddles commonly available with reduced outlet, optimal valve sizing
- Range rating capability is normal, e.g. 250-400x90, 200-213x180



Contaminated land options

- Barrier gasket system for flange connection
- Field applied wrapping method provides protection
- Fully approved to BS8588, more on specifications to come



Core hole techniques

- No requirement to dig behind or beneath the pipe
- Vacuum loading techniques, tools or in saddle design
- Self holding while welding operation takes place



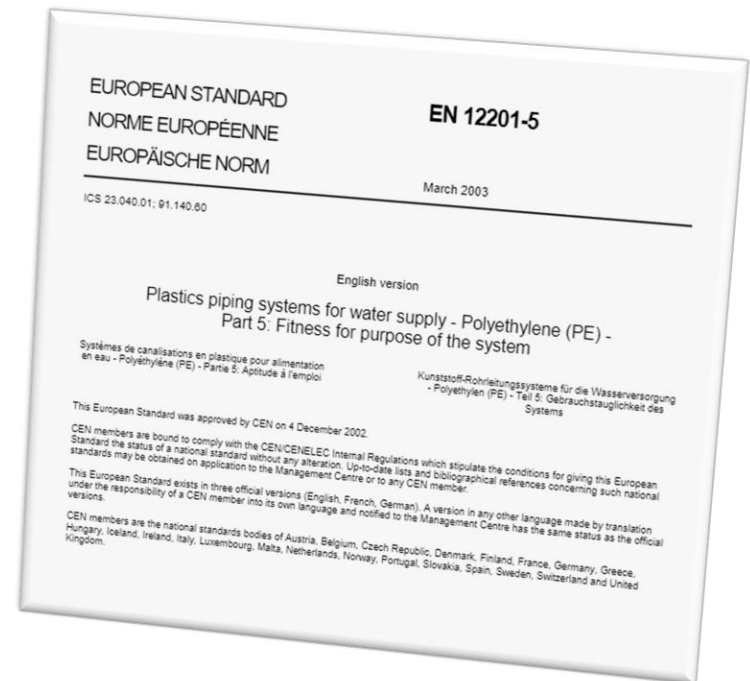
Live launch usage

- Making connections for new network extension is a core purpose
- Making connections for air valves, hydrants and washouts
- Making connections for live launch maintenance & inspection systems



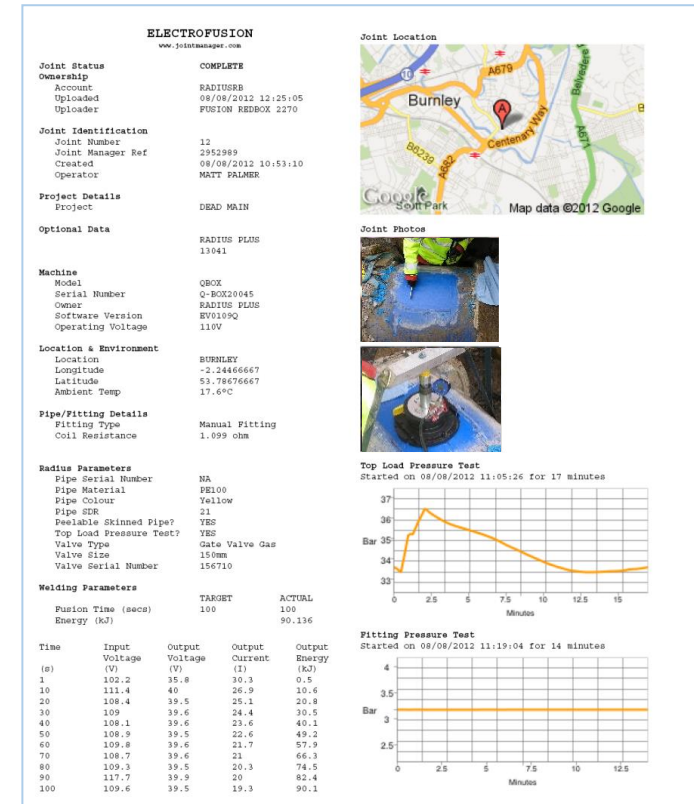
Contract Specifications

- Electrofusion & mechanical
 - EN12201-3; fitting design
 - EN12201-5; fitness for purpose testing
- Barrier specific fittings
 - BS8588
- Installation code of practice
 - WIS 4-32-08; (specific to welding)



Quality approach

- Risk assessed method statements, access to commissioned asset
- Pressure testing is a given before drilling, integrity proof
- Full onsite data capture is now routine across quality installers



Specifying tips

- Ask to see the fitness for purpose testing plan for the fittings
- Are installers GIRS/WIRS accredited for competency and quality control
- Think about the fittings but also the integrity test and the drilling machine




Learning objectives

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Any questions?



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The British Plastics Federation (BPF) Pipes Group is the leading trade federation of the UK plastic piping systems industry and a member of the European Plastic Pipes and Fittings Association (TEPPFA).

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Applications



Under the directive of the BPF Pipes Group Council the group is split into Application Groups encompassing the wide range of applications covered by plastic piping systems.

- > Civils/Utilities
- > Building Services


Support and Downloads



Access information resources in the form of News Articles, Guidance Notes and Position Statements which cover areas of interest to specifiers, manufacturers and installers of plastic piping systems.

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Webinars



Schedule of upcoming BPF Pipes Group webinars. These free webinars cover a range of topics and are delivered by our members who are experts in their application areas.

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www.bfpipesgroup.com

June 2021

Future webinars

- Air Admittance Valves – An Introduction – 13th July
- The Right Choice – The Role Of EPDs In The Selection Of Pipe Systems – 2nd September
- The Role Plastic Pipes Will Play In The Delivery Of Net Zero – 20th October
- Designing Drains And Sewers – 24th November

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