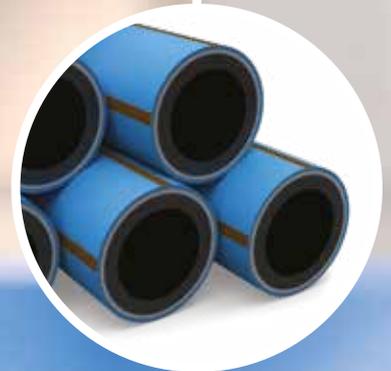


# **PROTECTA-LINE**

**THE TRIED & TRUSTED BARRIER SYSTEM**



# WHY RISK IT?

## THE ORIGINAL, TRIED AND TRUSTED BARRIER PIPE SYSTEM

Protecta-Line is the original barrier pipe system that you can trust to transport drinking water through contaminated land. It has been tried and tested by water companies and housebuilders for more than 20 years.

It has been proven over that time to maintain long term safety of supply and keep water safe from surrounding contaminants.

It is the most widely installed barrier pipe system in the UK.

There is no other system that has been developed hand-in-hand with contractors and installers over such a long term. The present day system has attained the highest standards of quality approval and represents a comprehensive barrier pipe solution, incorporating a full range of dedicated, approved fittings.

**Put simply, why would you risk using anything else?**

### BENEFITS



Protection against all known contaminants



No expensive soil samples



Excellent lifetime cost savings



Cost savings during installation



Kitemarked system

Flexible material properties



Save on landfill costs



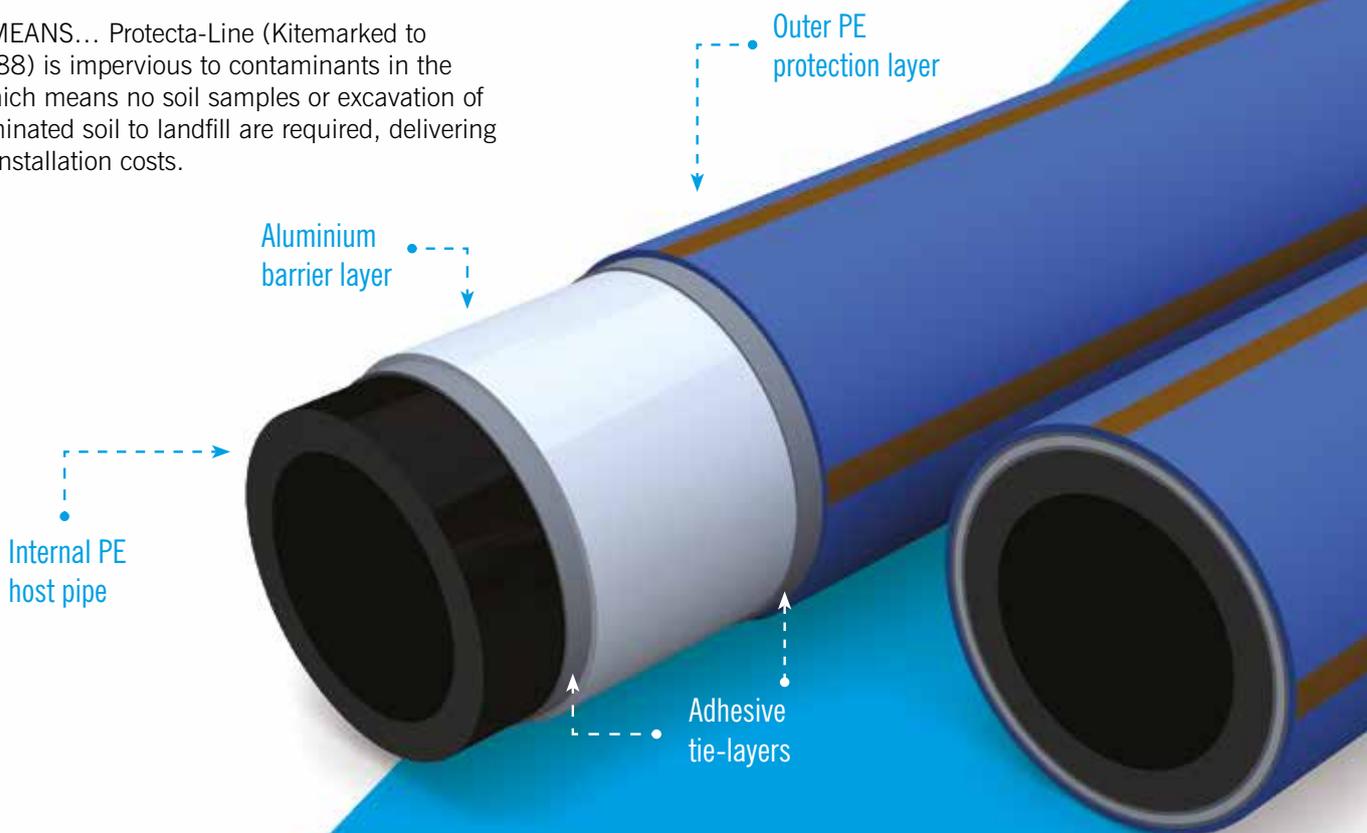
## PROTECTA-LINE...

- ▶ provides proven protection against all recognised brownfield contaminants, both organic and inorganic, even in their maximum reported concentrations.
- ▶ is suitable for corrosive conditions.
- ▶ ensures peace of mind. As a proven solution for more than 20 years, water companies and other installers can be confident in its performance.
- ▶ includes a fully integrated range of pipe and approved dedicated fittings.
- ▶ may be used for trenchless installations or subjected to cold bending.

## SAFE, EFFECTIVE AND PROVEN TO PROTECT

Protecta-Line's double bonded five-layer construction consists of an internal standard PE host pipe (PE80 or PE100 conforming to BS EN 12201) for carrying water, an impermeable aluminium barrier layer to stop the ingress of contaminants, an outer polyethylene protection layer and two adhesive tie-layers.

THIS MEANS... Protecta-Line (Kitemarked to BS 8588) is impervious to contaminants in the soil which means no soil samples or excavation of contaminated soil to landfill are required, delivering lower installation costs.



# PRODUCT RANGE OVERVIEW

Protecta-Line Pipe is designed to safely transport drinking water in contaminated land. The approved pipe range is from 25mm to 630mm diameter with working pressures up to 16 bar.

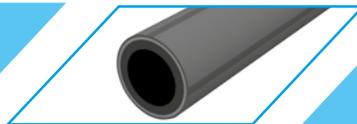
It is a complete, approved system, used with confidence by installers for more than 20 years.

Over the following pages you can see the full range of pipe and fittings available.



## DESCRIPTION

### PROTECTA-LINE PIPE



PE barrier pipe for water distribution through contaminated land

### PROTECTA-LINE 3<sup>C</sup> & 3<sup>CTH</sup> COILS



Clean, capped and coiled PE barrier pipe for installation without pre-chlorination

### MECHANICAL COMPRESSION FITTINGS



Mechanical compression fittings for service connections

### FERRULE OFF-TAKES



Ferrules for live off-takes with minimal flow restrictions

### MECHANICAL FITTINGS



Mechanical compression fittings for mechanical jointing without the need for pipe preparation or welding

### ELECTROFUSION FITTINGS



Electrofusion fittings with a bar coding system for rapid and convenient jointing

### PUPPED FITTINGS



Extended spigots suitable for electrofusion and butt-fusion jointing



## STANDARDS/APPROVAL

## MATERIAL

## SIZE RANGE

BS 8588  
WRAS

WIS 4-32-19 Regulation 31/33  
BS EN 12201 (core pipes)

Polyethylene  
Aluminium

25mm – 630mm (SDR11)  
90mm – 630mm (SDR17)

BS 8588  
WRAS

WIS 4-32-19 Regulation 31/33  
BS EN 12201 (core pipes)

Polyethylene  
Aluminium

90mm – 180mm

BS 8588  
WRAS

WIS 4-32-19

Acetal

25mm – 63mm

BS 8588  
WRAS

WIS 4-32-19

Gunmetal  
Acetal  
Stainless steel

25mm & 32mm  
(for 63mm – 355mm mains)  
63mm (for 90mm - 355mm mains)

BS 8588  
WRAS

WIS 4-32-19

Stainless steel  
Rilsan coated steel

63mm – 180mm

BS 8588\*  
WRAS

WIS 4-32-19\*

Polyethylene

90mm – 630mm

WRAS (pipes and spigots)

Polyethylene

90mm – 630mm

\*90mm - 355mm electrofusion fittings are Kitemarked

# FITTINGS

## MECHANICAL COMPRESSION FITTINGS

For 25mm to 63mm Protecta-Line



### BENEFITS

- Proven barrier protection against contamination
- No contact between the pipe's protective aluminium layer and drinking water
- No risk of joint corrosion
- Easy and rapid all weather installation

## FERRULE OFF-TAKES

For 63mm to 355mm Protecta-Line



### BENEFITS

- No disruption to water supply
- Secure isolation of drinking water from ground contaminants
- Simple, all-weather installation with no scrapping or pipe preparation required
- Excellent headloss and flow characteristics
- Proven mechanical compression connections
- Innovative self-locking thimble design



## MECHANICAL FITTINGS

For 63mm to 180mm Protecta-Line



### BENEFITS

- Fast and easy all-weather jointing by a single installer
- No need for elastomeric seals, pipe-end preparation or welding.
- Only a torque wrench with an Allen (hex) bit socket is required
- No need for specialist tooling (eg. hydraulic pump) or external power supply – reduced health & safety risk
- Can be installed in the tightest of spaces

## ELECTROFUSION FITTINGS

Electrofusion fittings for Protecta-Line



### BENEFITS

- Easy and rapid installation
- Can be carried out in a trench, especially useful for repairs or tie-ins
- Proven barrier protection against contamination
- No risk of joint corrosion
- No contact between the pipe's protective aluminium layer and drinking water

## PUPPED FITTINGS

Prefabricated fittings for Protecta-Line



### BENEFITS

- Bespoke fabrications can be made
- Full barrier performance
- Flexibility to construct a pipeline to individual project needs
- Fully homogeneous pipeline (with fused joints)

# CASE STUDIES



## WIXAMS DEVELOPMENT

### CHALLENGE

One of the largest developments created in the UK since World War 2 will house 4,500 families and include homes, amenities and educational facilities. The site was previously used as a munitions works and Anglian Water identified elevated levels of ground contamination.

Due to potential risks of water contamination, Anglian Water stipulated that barrier pipe must be installed for the water mains.

### SOLUTION

Anglian Water has turned to us for help. As a result, more than 4km of Protecta-Line barrier pipe is being installed by Anglian Water's approved contractors, Achiva Limited, to cater for all of the water distribution needs for the development.

More than 3km of a mix of larger diameter 450mm and 355mm Protecta-Line has been installed through the spine of the development, with smaller spurs of 225mm and 180mm coming off into the housing estates, before dropping down to 90mm as it goes into the cul-de-sacs to supply each individual property.

Currently all open field land, there was no space or logistic restrictions with the installation, which has allowed the pipeline to be installed using an open cut installation and butt fusion jointing technique, which offered a quick and simple installation process.

Commenting on the scheme, Simon Pink, Project Engineer at Anglian Water, said: "We have used Protecta-Line successfully on other schemes, so we knew that it would provide a reliable and safe solution for Wixams. **The pipe system was much easier to handle on site, compared with ductile iron, and offered us a much quicker and simpler installation process.**"



## PEMBROKE REFINERY

### CHALLENGE

As with all industrial chemical sites, Valero's Pembroke Refinery faced the risk of soil contamination, which had health and safety implications for the supply of drinking water to the facility. In addition, many of the original metallic pipes had deteriorated and become prone to leaks and bursts. The refinery needed to implement a water network renewal programme.

### SOLUTION

The refinery selected Protecta-Line barrier pipe system to replace existing metallic pipes. In some areas of the site, putting a bypass in place was simply not viable, therefore, the project team opted to slipline some of the existing metallic pipes with Protecta-Line which proved to be an efficient and cost-effective solution that minimised operational disruption.

On these sections, 110mm Protecta-Line pipe was inserted into the existing, corroded six inch carbon steel pipe using a cable to pull the new pipe into position. A range of Protecta-Line fluid compression fittings were also installed to ensure the integrity of the contamination barrier, without the need for any special procedures, including couplers, elbows, tees and stub flanges.

Protecta-Line stop cocks and self-tapping ferrule off-takes were also used, which enabled live off-takes of Protecta-Line service connections without any flow restrictions. **Alongside the need to renew the infrastructure, there was a clear focus on upgrading the pipeline to ensure it met the current regulatory requirements; fully WRAS and Regulation 31 approved for supply of drinking water, Protecta-Line was the ideal solution.**

## MORRISONS BRIDGEWATER

### CHALLENGE

This 75,000 square metre distribution centre serves the supermarket chain's network of stores in the South West and forms part of an £11 million regeneration scheme, including up to 2,000 new homes. The development is located on a mixed brownfield and greenfield site, which combines redundant industrial land with farmland.

The mains connection for the scheme is at the front of the site where there is a railway line and a chemical factory. Bob Wood from Wessex Water explained: "While stringent controls limit the contaminants from the factory now, historically they have been varied and significant. Trial holes across the site were tested for contamination and, while contaminants were not found over a large proportion of the site, the high water table did present the risk of migration of contaminants across a wider area."

### SOLUTION

It was these concerns over the potential for contaminants to be carried to 'safe' soil areas by tidal waters on the flood plain site that prompted Wessex Water to specify 355mm Protecta-Line pipe system for a new main running across the distribution centre site, including the footprint of the building and access roads.

Around 1,200m of Protecta-Line was used in SDR17, providing up to 10 bar pressure capability which allows for additional capacity to be factored into the installation.

Wessex Water installed the pipe into open trenches, incorporating T-joints to allow take-offs of supply to be added at a future date. All joints were made by butt-fusion and the installation team prepared the pipes using the Protecta-Line Surprep tool to scrape away the outer layers. Wessex Water continued its practice of wrapping the joints using aluminium foil and Denso tape throughout the Protecta-Line installation.

Away from the Protecta-Line spine main, the site is not at risk of contamination so ordinary PE pipe was used with steel mechanical fittings to create the joints between the two materials. Bob adds: **"Even a small risk of contaminant migration makes it prudent to specify an effective barrier pipe. Protecta-Line safeguards against ingress of all known contaminants and is our preferred barrier pipe solution so this specification means that we can be confident of a safe water supply."**

# ADDED VALUE SERVICES



## SPECIFICATION & DESIGN ADVICE



Our experienced pipeline engineers offer specification guidance and material estimates, and provide advice and recommendations during the design stage of a new pipeline scheme to ensure the most appropriate system is designed for each individual application.



## CUSTOMER SERVICES

We pride ourselves on the high level of customer service we provide to each and every customer. Our Customer Service team offers support at every stage of a project, advising on lead-times, logistics and delivery requirements, managing the supply chain process from the point of order through to installation.



## TECHNICAL SUPPORT



Providing assistance to the entire customer supply chain, our experienced technical support team offer product training, jointing demonstrations and installation advice to support the successful completion of every project.

# ALL YOU NEED TO KNOW ABOUT HEALTH, SAFETY, QUALITY & ENVIRONMENT

STANDARD/APPROVAL	TITLE	APPLICABLE TO GPS PRODUCTS
Regulation 31/33	The Water Supply (Water Quality) Regulations (England/Wales/Scotland/NI)	All drinking water pipes
The (Water) Regulators Specification & The Water Supply (Water Fittings) Regulations 1999	The (Water) Regulators Specification & The Water Supply (Water Fittings) Regulations 1999	All pipe materials. All fitting materials. All PE100 fittings and matching pipes. All Protecta-Line fittings and matching Protecta-Line pipes
BS EN 12201	Plastics piping systems water supply, and for drainage and sewerage under pressure – Polyethylene (PE)	Blue and black PE80 and PE100 pipes and fittings in sizes up to 1200mm
WIS 4-32-19	Polyethylene pressure pipe systems with an aluminium barrier layer for potable water supply in contaminated land sizes	25mm to 630mm – Protecta-Line pipe and fittings
BS 8588	Polyethylene pressure pipe with an aluminium barrier layer and associated fittings for potable water supply in contaminated land	25mm to 630mm - Protecta-Line pipe and fittings
WIS 4-32-08	Specification for the fusion jointing of polyethylene pressure pipeline systems using PE80 and PE100 materials	Butt fusion and electrofusion jointing of blue and black PE80 and PE100 pipes and fittings
BS 6920 Part 1	Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on water – Part 1: Specification	All pipe materials. All fitting materials. All PE100 fittings and matching pipes. All Protecta-Line fittings and matching Protecta-Line pipes All pipe materials. All fitting materials.
BS 6920 Part 2	Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on water – Part 2: Methods of test	All PE100 fittings and matching pipes. All Protecta-Line fittings and matching Protecta-Line pipes. All pipes
BS 6920 Part 4	Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on water – Part 4: Method for the GCMS identification of water leachable organic substances	All pipes
ISO 4427	PE pipes for water supply	Blue and black PE80 and PE100 pipes and fittings
BS EN 15494	Specifications for polyethylene components and systems	Blue and black PE80 and PE100 pipes and fittings up to 1200mm
BS EN 805	Water supply – requirements for systems and components outside buildings	External water supply installations
BS 5306 – Part 2	Fire extinguishing installations and equipment on premises	Blue and black PE80 and PE100 for external buried fire mains
WIS 4-22-02	Specification for ferrules and ferrule straps for underground use	Protecta-Line ferrules
WIS 4-24-01	Specification for mechanical fittings and joints including flanges for polyethylene pipes for the conveyance of cold potable water for the size range 90 to 1000mm including those made of metal or plastics or a combination of both	Stub flanges, SlimFlange and Protecta-Line Mechanical Fittings

## ENVIRONMENT

GPS operates an environmental management system in accordance with the requirements of BS EN ISO 14001. The system is audited twice a year by the BSI.

GPS continually monitors its business activities with the aim of minimising their impact on the environment. A number of on-going waste minimisation projects have been implemented in areas such as energy usage, product packaging and landfill waste.

A continual improvement culture is promoted within the company by setting environmental targets and objectives that are regularly monitored and reviewed.



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