

TERRAIN

REACH NEW HEIGHTS

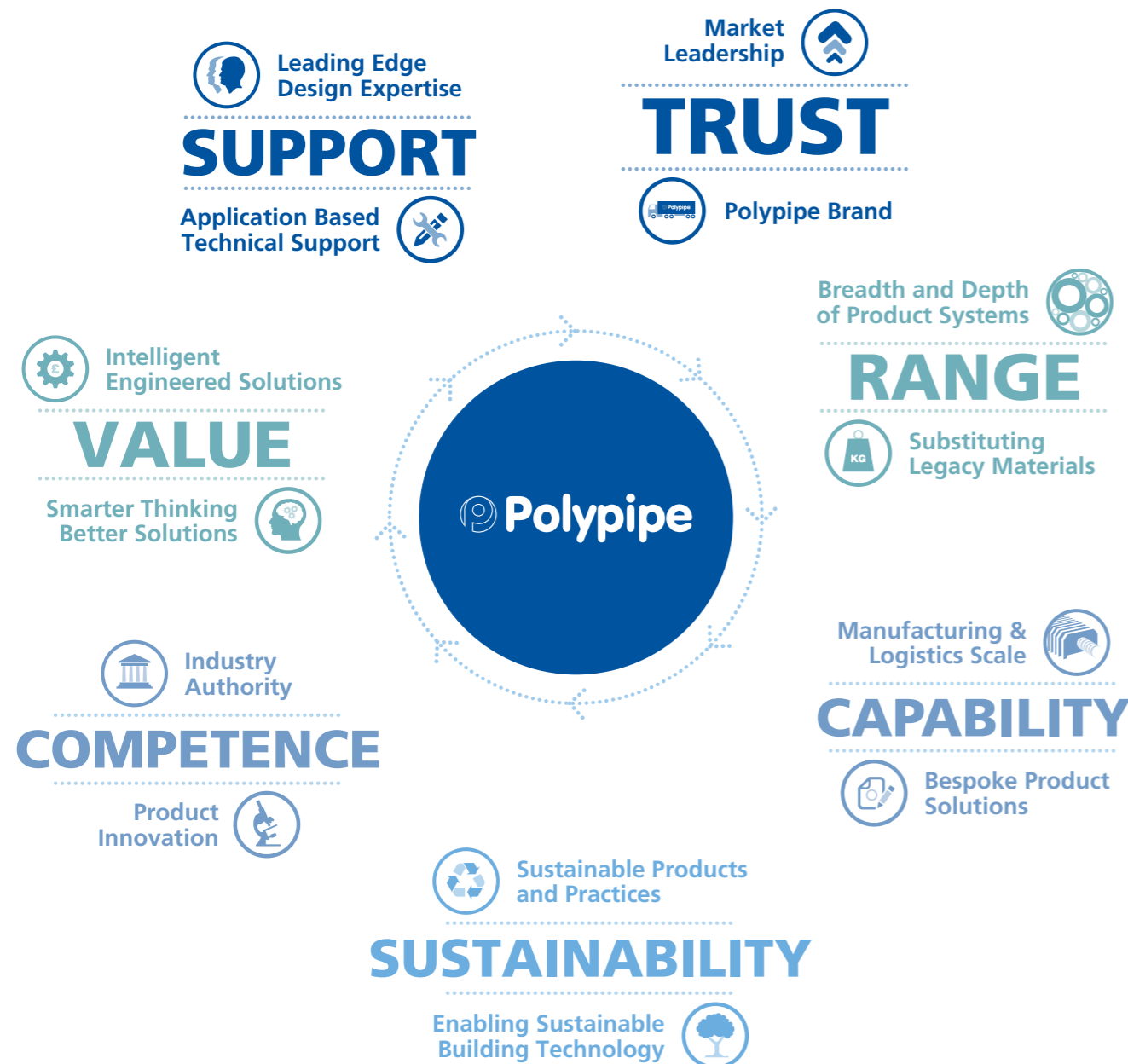
Polypipe Terrain
The experts
in tall buildings

Welcome to Polypipe

Polypipe is the UK's largest plastic pipe systems manufacturer. With over 20,000 product lines, a fleet of more than 400 vehicles and in excess of 3,000 employees, we have an enviable reputation among installers, contractors, stockists and specifiers.

Intelligent Engineering

The earlier you can get us involved in your project, the more you can make the most of our expertise and technical knowledge. We can then work with the project team to deliver the most appropriate and cost-effective solutions, supporting them at every stage from design to installation.



The expertise to help you think big

With over 50 years' experience, Polypipe Terrain understands the challenges of designing, constructing and maintaining tall buildings. We are experts at dealing with the added complexities of building big, such as the need to manage large volumes of water.

Our dedicated design team is waiting to create bespoke solutions for your next high-rise project, while our Fabrication Service can create bespoke stacks and fittings unique to your scheme.

We can also offer specifiers peace of mind by helping high-rise projects meet the relevant regulations and standards with our accreditations, including BES 6001 for responsible sourcing. We also offer specialist products such as Acoustic dB12 drainage, which dampens both airborne noise and transmitted sound, plus acoustically and thermally efficient underfloor heating.

The result will be a comprehensive solution, with technical support and expertise from the initial design stage through to installation. Having the right products and the right support will help to keep your projects running smoothly, with no need to compromise on design and aesthetics.



1 Penthouse Bathroom

- Terrain Acoustic dB12
- Terrain PVC Soil & Waste
- Terrain Fire Sleeves



2 High Rise Residential Kitchen

- Acoustic Underfloor Heating
- Polyplumb
- Surestop



3 Commercial Bathroom

- Terrain FUZE HDPE
- Terrain Firetraps
- Terrain Pleura
- Terrain P.A.P.A.



4 Blue/Green Roof

- Permavoid
- Geotextile
- Capillary Irrigation



5 Roof Drainage, Rainwater Harvesting and Supply

- Siphonic Roof Drainage
- Rainstream
- Terrain FUZE HDPE
- Effast ABS



6 Car Park and Podium

- Permavoid
- Permaceptor
- Terrain Variable Flow Control Outlet



The Terrain Fabrication Service

The Polypipe Terrain Fabrication Service has the expertise and resources required to produce fabricated drainage stacks and bespoke fittings to exact requirements.

With our team of design engineers, we can fabricate completely bespoke fittings unique to your specific project which means you don't have to compromise on your designs. Our state-of-the-art facility achieves levels of precision and engineering quality not possible on-site, helping to reduce installation time and prevent waste, saving time and money.

 <p>SIMPLE ON-SITE CONNECTIONS Straightforward installation saves on labour costs</p>	 <p>PRE-AIR TESTING AVAILABLE Removes the time and skills required for on-site testing</p>
 <p>REDUCES ON-SITE LABOUR COSTS Reduced installation time keeps overall project costs down</p>	 <p>WIDEST PORTFOLIO OF BESPOKE SOLUTIONS Providing customised solutions for tricky one-off projects</p>
 <p>REDUCES ON-SITE INSTALLATION TIME Installation is simple and quicker than assembling loose fittings</p>	<p>40 YEARS</p> <p>TERRAIN HAS OVER 40 YEARS EXPERIENCE OF FABRICATING You can expect quality from a brand you can trust</p>
 <p>REDUCE ON-SITE WASTE Made to measure, engineered solutions means there is a reduction in wasted materials</p>	 <p>BES 6001 ACCREDITATION Our material has been responsibly sourced with full traceability throughout the supply chain</p>

Live Stack Replacement Service

When old soil stacks made from traditional materials have deteriorated, our fabricated Terrain FUZE HDPE or Acoustic dB12 stacks provide the ideal replacement – a bespoke solution from our Fabrication Service. Our Live Stack Replacement Service makes the process remarkably quick and simple, with minimal disruption for residents, who can remain in their homes throughout the refurbishment.



Terrain Firetrap

The Terrain Firetrap range features a selection of sleeves and collars usable with any Polypipe Terrain Soil and Waste System. Offering up to 4 hours of fire protection, Firetrap provides passive protection systems to meet Building Regulations Part B, in line with BS 476:20 and BS EN 1366.

- Provides fire protection for drainage stacks
- Crushes and seals the plastic pipe, closing the penetration
- Ideal partner for Terrain drainage systems
- Quick and easy to install



Terrain Firetrap – the best rating available for the drainage stack, all products comply with BS 476 Part 20 and BS EN 1366-3



Drainage Solutions

Terrain FUZE HDPE

Manufactured from high density polyethylene, FUZE HDPE is a high performance drainage system delivering many advantages over cast iron and other traditional materials. It is light in weight and easy to install, with strong resistance to abrasion, chemicals and extreme temperatures, plus its impact strength makes it almost unbreakable. Terrain FUZE HDPE is installed using a fully welded joint, providing a lifetime seal. The system is available in twelve diameters, from 40 to 315mm.



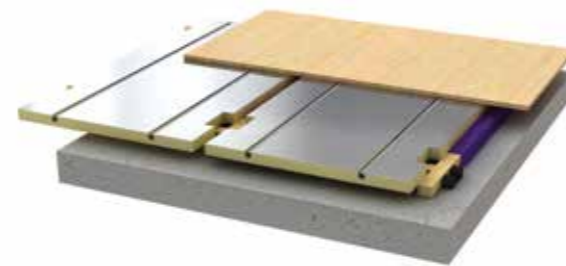
Terrain PVC Drainage Systems

Terrain PVC Soil and Waste is a comprehensive range of solvent-weld and push-fit PVC drainage solutions, leading the market in terms of quality and reliability in use. The Solvent-Weld System is fully engineered to take account of flow direction, connection and expansion – proven to create a neat, permanent joint. Systems are available in eight sizes from 32 to 250mm.



Acoustic Solutions

Acoustic management is a key issue in multi-occupancy buildings. Polypipe provide innovative solutions for the prevention of noise nuisance in both drainage and underfloor heating.



Terrain Acoustic dB12 Drainage System

Acoustic drainage solutions are increasingly in demand and Acoustic dB12 provides a simple method to reduce sound emissions from soil and waste systems. Acoustic dB12 is a triple-layer pipe system with specially developed co-polymer polypropylene layers. Acoustically engineered fittings reduce the levels of sound passing into the structure – perfect for big multi-occupancy buildings. The system is push-fit and remarkably easy to install.



Acoustic Underfloor Heating

Polypipe is one of Europe's largest manufacturers of underfloor heating. Our range of systems can provide the right solutions for even the biggest buildings, whether incorporated into a new build or retro-fitted during a refurbishment.

Our systems are particularly advantageous in tall buildings where it's essential to have acoustic performance that meets regulations and prevents noise spreading between living or work units. The Polypipe Acoustic System combines these qualities with underfloor heating for excellent thermal performance as well.

Light in weight, the system also reduces installation time by eliminating the need for the curing and drying period associated with screed floors.

Other advantages of Polypipe Underfloor Heating include:

- Energy efficiency, through working at much lower temperatures than radiator-based systems
- Evenly distributed heat, with no cold spots and fewer draughts
- Design freedom – having no radiators frees up walls

Terrain Positive Air Pressure Attenuator (P.A.P.A.) and Pleura System

The P.A.P.A. and Pleura system avoids the need for a secondary ventilation stack in larger buildings. This maximises commercial space as fewer service ducts are required. Installation time is therefore reduced as are the materials needed and labour costs.

The Pleura valves quickly respond to any negative pressure, allowing air to enter the system at the point of need, to prevent traps being evacuated under siphon. The P.A.P.A. valve activates under positive pressure conditions and attenuates the pressure wave before it can act on the trap seals, restoring the system to balance.

With fewer roof penetrations required, the system is ideal for projects incorporating a roof garden or a green roof and where roof space is required for mechanical plant.



Terrain Pleura 50

- Provides ventilation to branch pipework
- Installed on pipe behind the appliance trap
- Opens and admits fresh air under condition of reduced pressure in the waste pipes
- Protects the trap seal
- Closes by gravity and prevents foul air leaving the drainage system



Terrain Pleura 100

- Can be fitted to the top of a foul or waste stack
- Suitable for the end of long low gradient branch drains
- Opens and admits fresh air under condition of reduced pressure in the discharge pipes
- Prevents trapped water seals being drawn
- Closes by gravity and prevents foul air leaving the drainage system



Terrain P.A.P.A.

- Positive air pressure attenuator that mitigates effects of air fluctuation in the drainage stacks
- For use in tall buildings or buildings with complicated drainage systems
- Slows the progress of positive air pressure
- As pressure is restored the P.A.P.A. releases air back slowly

Permavoid

Polypipe's Permavoid system is a geocellular water attenuation system made from high-strength modular cells. This interlocking system offers effective water storage and flow control for impermeable and permeable surfaces such as podium roofs and car parks, collecting up to three times more water than aggregate. What's more, it eliminates the need for pipework to the underside of the deck making it the perfect solution when space is limited.

Variable Flow Control Outlet

The Variable Flow Control Outlet allows rainwater to be released at a controlled, designated flow rate into the main drain or diverted into a storage facility for re-use. When used with our Permavoid system it can be used to create a full rainwater interception system on blue or green roofs.



Permavoid Applications



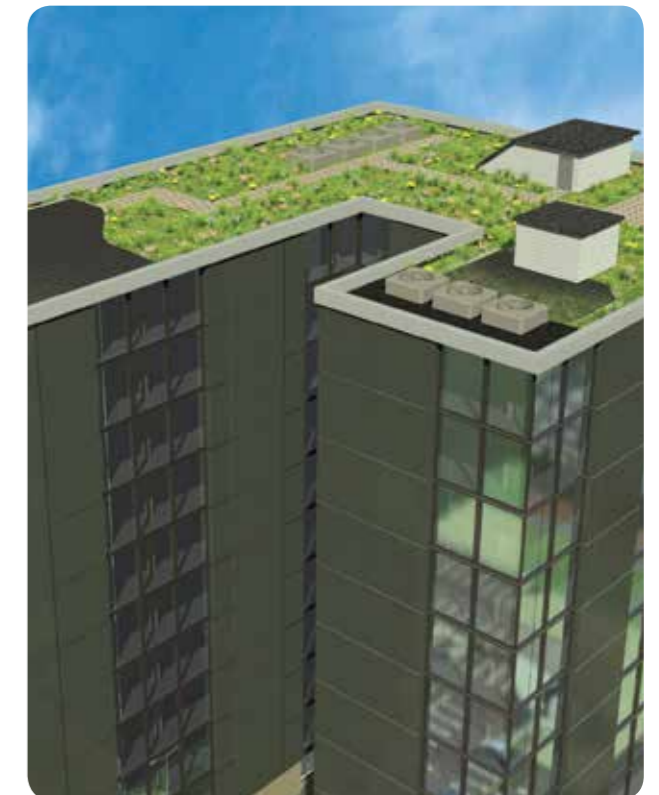
How Blue and Green Roofs could benefit your build

Blue roofs effectively allow for water management and storage in urban design where space is at a premium. Water is collected and reused at source, mitigating the need for basement water tanks and pumps and maximising the amount of profitable commercial space.

Green roofs not only manage and store rainwater at source but can also provide amenity and green space, maximising commercial space. Through Permavoid's capillary irrigation system, landscaped areas can be sustained with minimal maintenance.

Podium decks and car parks

Our Permavoid Podium and Roof Interception Systems can be incorporated into a range of applications, including podium decks and car parks. As well as providing an effective water capture, storage and flow control solution, they can be used with both impermeable and permeable surfaces. What's more, they comply with the latest CIRIA guidance on water sensitive design.



Pressure Supply Systems

Polypipe Pressure Systems are a comprehensive range of thermoplastic pipework systems for use in industrial and building services' applications, transporting chemicals, industrial fluids, water and waste safely and effectively.

Polypipe pressure supply systems are suited to a wide range of commercial and industrial applications, with an extensive range of pipes, fittings and valves, easily and permanently assembled using solvent cement, electro-fusion weld or mechanical installation.

- Available in PVCu, ABS, PPH or PE
- WRAS approved for use with potable water
- Valves available electrically or pneumatically actuated if required
- Extensive range of Clamp Saddles available



Effast PVCu key benefits

- Excellent chemical resistance – well suited for use in industrial processing and for water treatment and chemical dosing
- Available in imperial sizes from 3/8" to 8" diameters
- Available in metric sizes from 16 to 315mm diameters
- Operating temperature 0°C to 60°C
- Comprehensive range of ball, diaphragm, butterfly and check valves available installed with solvent cement or mechanical installation

Effast ABS key benefits

- Available in imperial sizes from 3/8" to 8" diameters
- Operating temperature -40°C to +60°C – ideal for chilled water and plant room
- Non-toxic properties ensure it's suitable for food and beverage processing
- Range of ball and check valves available
- Installed with solvent cement or mechanical installation



Effast PPH key benefits

- Light in weight, high impact strength and good abrasion resistance
- Available in metric sizes from 20 to 110mm diameters
- Operating temperature -10°C to +90°C (short term to 110°C)
- Range of ball, check and butterfly valves available
- Installed with socket fusion welding

Polypipe Pressure Systems PE100 key benefits

- Available in SDR 17 (10 bar) from 32 to 1200mm diameters
- Available in SDR 11 (16 bar) from 20 to 630mm diameters
- Operating temperature -40°C to +60°C
- Best suited for use in boosted cold water, chilled water and pressurised waste systems
- Installed with electro-fusion or butt-fusion welding

Polypipe Pressure Systems Clamp Saddle key benefits

- Easy to install
- Maximum pressure rating of 6 bar
- Available in sizes from 20 to 315mm
- BSP female threads available from 1/2" to 4"
- Reinforced clamp saddles available

Siphonic Rainwater Systems

This advanced siphonic drainage system provides rapid and highly efficient removal of water from large roof areas.

Using naturally induced siphonics process, Terrain HydroMax literally 'sucks' water away, creating a flow capacity up to ten times greater than an equivalent gravity-fed system.

Unlike conventional downpipes, the HDPE pipes in a HydroMax system require no air core at their centre, allowing much larger volumes of water to be dispersed through a smaller pipe diameter. What's more, far fewer outlets and downpipes are required in comparison to traditional systems making them ideal for tall buildings.

Key benefits

- Pipes require no fall or slope, increasing design flexibility
- Self-cleaning system
- Fully complies to BS 8490:2007
- Ideal for large roof areas and complex roofing structures
- Reduces underground drainage requirements
- Smaller pipe sizes in comparison to a conventional gravity drainage system
- Easy routing of rainwater from roof to desired discharge location, making system an ideal partner for rainwater harvesting

Rainstream Water Storage Tanks



Rainstream

Polypipe Rainstream offers a range of highly effective solutions for the storage, filtration and re-use of rainwater in commercial applications. These systems have been designed to help conserve one of our most precious resources and also help clients, architects, public health engineers, main contractors, mechanical contractors and end-users conform to numerous environmental and legislative standards. On average a non-domestic building uses approximately 2,600 litres a day, with up to 80% of the water delivered for non-potable applications such as toilet flushing. Much of this could be provided by harvested rainwater.

Rainstream Tanks

Rainstream RXL is a high volume rainwater storage tank which offers specifiers and contractors enormous flexibility in the planning and provision of water storage projects from 10,000 litres. It provides all the functionality of large-scale, GRP subsurface tanking while minimising costs and complications.

Rainstorm RXL is a bespoke, fully engineered product, based on the same proven technology as our Ridgistorm-XL large diameter pipe range – supplied with filters, pumps, valves, component set and factory fitted inlet, calmed inlet and outlet connections. It's a tank with exceptional stiffness and integrity that can be transported quickly and easily in modular units, assembled on-site, filters water to 110 microns and has manifold systems available for multiple dwellings.

Polypipe Rainstream key benefits

- Various tank sizes available for commercial applications from 10,000 litres
- Integral leaf filter within storage tank for below ground applications
- Complete range of additional items such as duty standby and booster systems
- Mains water back-up
- Helps reduce your carbon footprint by lowering the volume of water from local treatment works
- Tank system supplied with filters, pumps, valves, component set and factory fitted inlet, calmed inlet and outlet connections
- Offers bespoke design solutions for difficult geometries
- Manifold system available for multiple dwellings
- Filtration and disinfection system available



Surestop



Surestop

Surestop allows mains water to be turned off with the flick of a switch. The switch can be located in a convenient location which allows residents to turn off water quickly and easily in an emergency, whilst also encouraging them to turn off their water supply if they plan on leaving the property vacant for an extended period of time.



Surestop Stopcock

Surestop Stopcock is a simple and resident-friendly solution for controlling mains water supply. If the existing pipework is in an accessible location the Surestop Stopcock provides a direct replacement to the brass stopcock, using a simple lockdown button to effortlessly turn off the water supply.



Surestop Remote Stopcock

Brass stopcocks tend to be in the most inaccessible places. The Surestop Remote Stopcock provides each unit with a method of controlling mains water up to 2m away from the pipework. As it is powered by water pressure it works without the need for electricity.

Key benefits

- Manufactured in the UK
- WRAS approved to 10 Bar
- Available in sizes 15 and 22mm
- Connects to plastic and copper pipe
- Option to extend remote switch up to 6m
- Unaffected by limescale

Millbrook Tower stands tall following replacement of rainwater drainage stacks

One of the tallest buildings in Southampton has had a complete drainage solution designed and installed without the temporary re-homing of any residents.



Using Terrain Fabrication Service, the installation of the system was 40% faster than the average for such works.



Formerly the tallest building in Southampton, the Millbrook Tower stands at 240 feet. Built over 50 years ago, the building had a cast iron drainage system installed that had started to rust and fail, causing excessive leaking in the 144 flats in the development.

Southampton City Council (SCC) who wanted a complete holistic approach to the design, manufacture and installation of the replacement drainage system, approached Polypipe Terrain. In January 2016, eight members of the Direct Labour Organisation (DLO) department of SCC came to Polypipe Terrain's Professional Development Centre in Aylesford for training to gain a better understanding of the specification, assembly and installation of plastic fabricated drainage stacks.

Working with SCC, as experts in providing intelligently engineered solutions for the movement of water and air around tall buildings, Polypipe Terrain assessed the failing drainage stacks in Millbrook Tower, and designed a new high-density polyethylene system. Terrain FUZE HDPE was installed due to a number of its key benefits over other more traditional materials.

Lighter in weight than cast iron, Terrain FUZE HDPE can feature longer pipe runs, so less jointing is required. As the system is jointed using electro-fusion welding, where the weld area is as strong as the host material, the system integrity is increased and consequently the risk of leaks in the development is dramatically reduced.

Due to the inherent material characteristics, Terrain FUZE HDPE lends itself to fabrication. Utilising Polypipe Terrain's unique Fabrication Service, the system was fabricated to exact specification and delivered to the site, where Southampton's DLO were able to complete the installation work across the 144 properties 40% faster than the average for such works. This meant that the residents of Millbrook Tower were able to remain in their properties, a key consideration when designing the drainage stacks of the building.

CASE STUDY

Project
Millbrook Tower, Southampton

Client
Southampton City Council

Application
Live Stack Replacement

Products
Terrain FUZE HDPE

Polypipe Terrain has a ball on O2 Project

Europe's largest pillar free ballroom can now welcome dancers from around the globe thanks to the installation of an innovative drainage system.



Polypipe Terrain FUZE HDPE



The 4,800 metre² ballroom, situated in the InterContinental London O2 Hotel, is located close to its iconic namesake, the O2 Arena. The hotel also boasts several restaurants, a spa and a panoramic Sky Bar, offering views of Canary Wharf and the River Thames.

Standing at 19 storeys high and containing 453 bedrooms and suites, it was of paramount importance that the drainage system installed could be trusted not to leak, and so M&E Contractor, H.E. Simm & Son Ltd., approached Polypipe to manufacture a suitable solution.

At 19 storeys tall, the luxury hotel needed intelligently designed drainage.

As experts in providing intelligently designed solutions for the movement of water and air around tall buildings, Polypipe Terrain provided an appropriate system using Terrain FUZE HDPE. Made of high-density polyethylene, Terrain FUZE HDPE is lighter in weight than cast iron equivalent systems and can therefore feature longer pipe runs, meaning less jointing is required.

This in turn, provides less opportunities for the system to leak, making it ideal for the project. As the system is jointed using electro-fusion welding, where the weld area is as strong as the host material, system integrity is increased and consequently the risk of leaks in the development is further reduced.

"The drainage system installed at the O2 Hotel needed to be considered and intelligently designed. The innovation displayed by Polypipe's Terrain system, including FUZE HDPE made best use of the available space"

Martin Thompson, Senior Project Manager at H.E. Simm & Son Ltd.

CASE STUDY

Project
O2 Hotel

Client
H.E. Simm & Son Ltd.

Application
Soil & Waste

Products
Terrain FUZE HDPE

Unite Stratford student accommodation

Permavoid Podium Deck has been specified for use within a large scale East London student accommodation project with a challenging restricted external ground area.



**Bespoke
rainwater
management
systems**



Working alongside main contractor Westfield Construction and M&E contractor Dimension Data Advanced Infrastructure, Polypipe Terrain helped to develop a rainwater attenuation system capable of managing the site's drainage requirements in the event of a '1 in 100' year + 30% storm event.

Although a large buried attenuation structure may have met the drainage needs of the site, a lack of external ground area made this impractical. As such Polypipe Terrain worked closely with the Environmental Protection Group (EPG) to provide a practical two-tiered attenuation system at podium level to collect water run-off.

Discharge from the selected Permavoid Podium Deck system was conveyed using flow control outlets leading into a small 30m³ buried attenuation tank, which was formed of Polystorm geocellular units. Using Polystorm in this way ensured that a discharge rate of 42 l/s could be maintained.

Permavoid Podium Deck provides ideal first stage rainwater interception and source control that can be easily integrated into an overall SUDS solution.

Having a 95% void ratio, Permavoid can collect and retain three times more water than aggregate sub-bases, making it ideal for projects where depths and loadings are a major consideration such as at Unite Stratford.

Glen Loftus from Dimension Data Advanced Infrastructure said: "Having to reconsider the drainage needs of the project during the build stage could have been an issue, however working with Polypipe Terrain and EPG on an appropriate podium level solution minimised disruption and went some way to making the project the success it was."

Work on the Unite Stratford ONE project completed in August 2014, allowing the building to open for its first intake of students in September. The accommodation houses more than 1,000 students across 28 floors.

CASE STUDY

Project

Unite Stratford student accommodation

Client

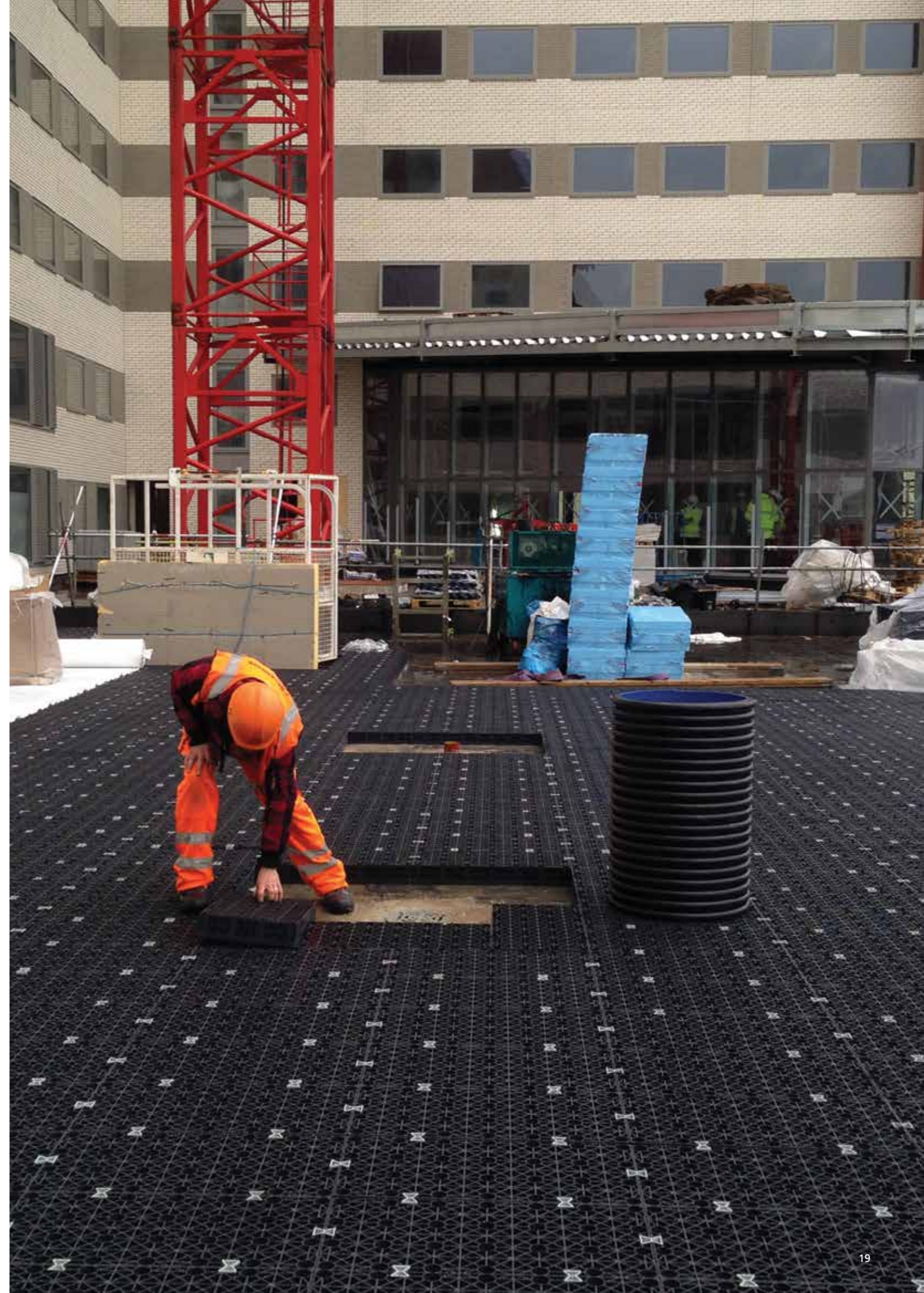
Westfield Construction

Application

First stage source control

Products

Permavoid Podium Deck



The experts in
tall buildings



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