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**Below Ground Drainage  
& Civil Systems**

**Product Range  
Summary**



FOR RESIDENTIAL,  
 COMMERCIAL AND  
 INDUSTRIAL APPLICATIONS

**Intelligent Solutions for Below Ground Projects**

## European Offices

- ① The Netherlands
- ② Belgium
- ③ Czech Republic
- ④ Denmark
- ⑤ Estonia
- ⑥ Finland
- ⑦ France
- ⑧ Germany
- ⑨ Great Britain
- ⑩ Hungary
- ⑪ Ireland
- ⑫ Italy
- ⑬ Latvia
- ⑭ Lithuania
- ⑮ Norway
- ⑯ Poland
- ⑰ Portugal
- ⑱ Romania
- ⑲ Russia
- ⑳ Slovak Republic
- ㉑ Spain
- ㉒ Sweden
- ㉓ Switzerland
- ㉔ Ukraine



## **Wavin** **Pioneers In Plastic**

Wavin consists of a group of operating companies with over 40 manufacturing and distribution sites in 26 countries across Europe and South East Asia. In addition, outside of Europe, Wavin works closely with 40 licensees world-wide - from Japan to the USA and South America.

Credited with inventing and pioneering the use of plastic pipe for water distribution, the company has grown spectacularly since its formation in 1955. Wavin has also led the way in the development and production of unplasticised Polyvinyl Chloride (PVC-U) underground drainage and sewerage systems, under the Osma brand name and has long been one of the market leaders in this sector of Britain's construction industry.

Wavin prides itself on the quality of the products and services it provides, and has achieved BS EN ISO 9002 Registered Firm Status. All Wavin products are manufactured to comply with the requirements of the relevant British and European standards; where no suitable standard exists, the company seeks certification for the products from independent testing authorities, i.e. the WRC or the BBA. Wavin was also the first in the plastic pipe industry to be accredited with BS EN ISO 14001, the new British Standard for environmental management.

Wavin has now expanded its range of underground drainage and sewerage systems, and provides the industry with one of the most comprehensive packages available. The range includes



Wavin extrusion line



Osma UltraRib during manufacture

### **The range includes**

- OsmaDrain foul and surface water drainage system
- Osma UltraRib foul and surface water adoptable and non-adoptable sewer system
- Wavin TwinWall surface and storm water drainage system
- WavinCoil surface water, subsoil and agricultural drainage system
- Wavin PolyChannel polymer concrete surface water channel drainage system
- Wavin AquaCell surface and storm water management system



## Wavin

### The Service Behind The Products

Customers expect the highest standards of service and support from Wavin - and they get it!

Technical sales staff are on-hand to answer queries and give direct assistance to engineers. The salesmen are trained to understand the products they sell, and the ways in which they will be used: they are equipped with laptop computers giving full on-line access to information held on the technical and customer database at the Chippenham headquarters.

The sales team is supported by a Technical Design Department with full CAD facilities, able to provide design and engineering drawings, schedules of components, and detailed technical advice. Data and drawings can be transferred to customers electronically, saving time and ensuring absolute accuracy.



The latest CAD technology

Order fulfilment is also taken very seriously indeed. The sales office handles over 300 orders every day. All orders are processed within 24 hours, and increasingly, orders and invoices are processed by electronic data interchange (EDI) ensuring fast, accurate communication.



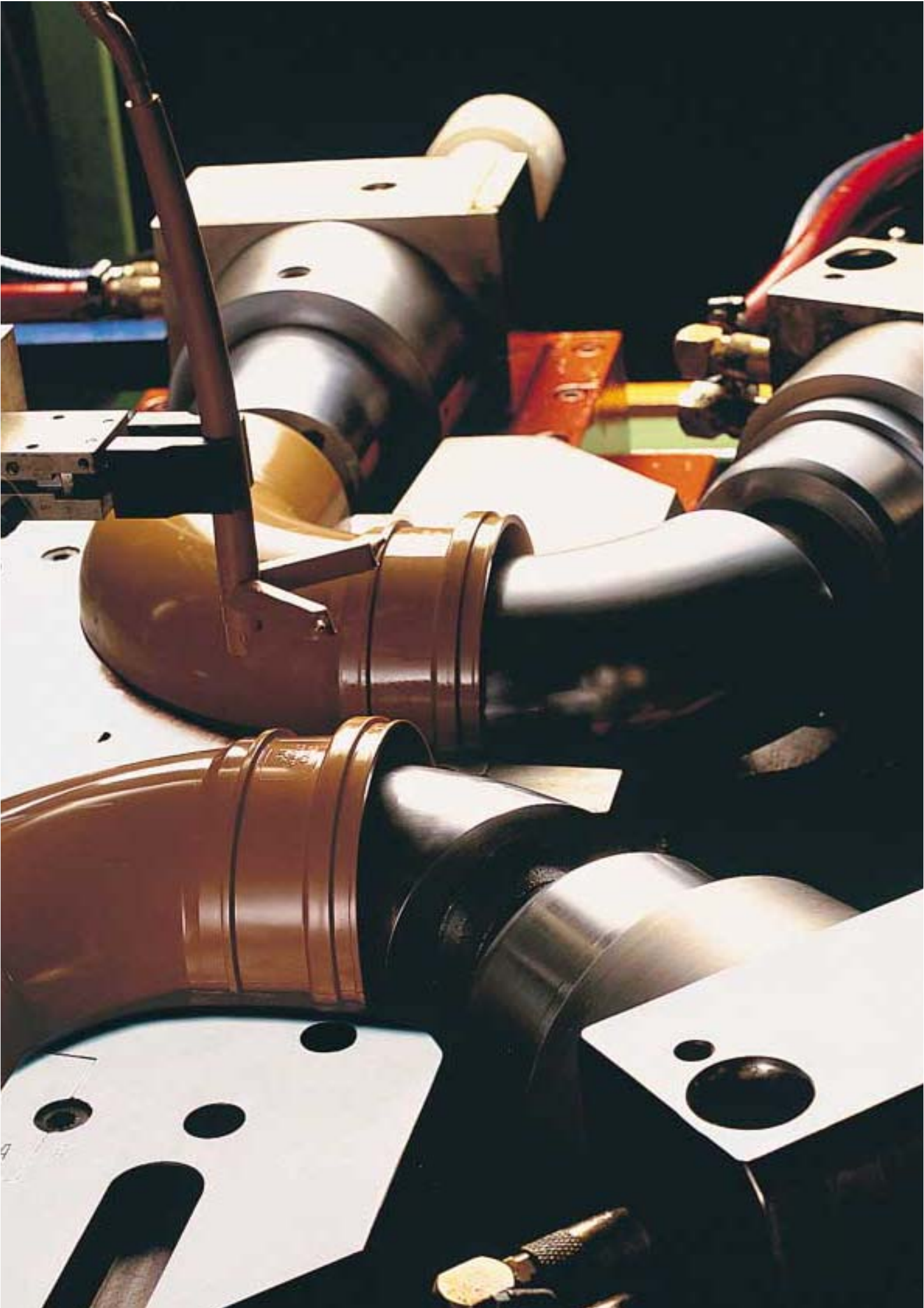
Chippenham Head Office



Warehouse and distribution

A computerised distribution system controls the despatch and routing of the transport fleet to calculate the most efficient load and journey plan, and deliveries are made within three to five days of the date the order was placed, either directly to site or to the merchant yard.

No site is too distant and the company's distribution network covers the length and breadth of the country.



## **Wavin** **Manufacturing The Products And Systems**

The Wavin manufacturing sites at Chippenham, Wiltshire and Brandon, County Durham, can produce over 30 miles of pipes and gutters and 100,000 specialist fittings in a single day.

This production capacity is possible due to a continuing programme of investment in state-of-the-art injection moulding machines and extrusion lines. Both of the manufacturing plants are highly automated, and are equipped with the most up-to-date microprocessor controlled machines.

Strict quality control systems are in place at every stage of the manufacturing process. Ultrasound scanners are used to ensure that every pipe conforms to the most exacting standards particularly with regard to consistent wall thickness. Injection moulded fittings are manufactured to fine tolerances enabling precision design features to be incorporated.

The 'raw' moulded fittings are inspected by hand and carefully hand assembled and finished to ensure consistent performance under the most demanding conditions.

All products carry the Wavin assurance of quality and reliability.



Osma UltraRib pipe production



Wavin TwinWall pipe production



## OsmaDrain, Osma UltraRib and Wavin TwinWall Foul & Surface Water Drainage Systems

The following systems are available for foul and surface water drainage applications:

### OsmaDrain underground drainage system

The OsmaDrain system is designed for use in gravity drainage installations at depths of up to 10m, with outfalls into Local Authority sewers, private treatment plants, and cesspools, and for surface water drainage into soakaways or watercourses.

OsmaDrain is manufactured from unplasticised Polyvinyl Chloride (PVC-U), and complies with BS EN 1401-1:1998 and with BS 4660:1989.

Available in diameters of 82, 110 and 160mm, and in lengths of 3 and 6m, the OsmaDrain system includes a wide range of bends, junctions, and other fittings, including inspection chambers, and adaptors allowing connection to traditional cast iron and clayware drains.

PVC-U provides superior self-cleansing properties at low velocities and this can often help to reduce excavation depths and permit the use of smaller diameter pipes, as well as possibly obviating the need for a pumped system.

The range also includes slotted OsmaDrain pipes in 110 and 160mm diameters in 6m lengths. These pipes are normally used in french drain applications, for example draining rainwater or run-off from paved or hard surfaced areas such as roads, car parks and airfields. Slotted pipes can also be used to dispose of the effluent from septic tanks by subsurface irrigation.

### Dimensions and availability

Product	Nominal diameter (mm)									Pipe Length
	82*	110*	150/160*	225	300	375	450	500	600	
OsmaDrain										
Solid	yes	yes	yes	no	no	no	no	no	no	3, 6m
Slotted	no	yes	yes	no	no	no	no	no	no	6m
Osma UltraRib										
	no	no	yes	yes	yes	no	no	no	no	3, 6m
Wavin TwinWall										
Solid	no	no	yes	yes	yes	yes	yes	yes	yes	6m
Perforated	no	no	yes	yes	yes	yes	yes	yes	yes	6m
Half perforated	no	no	yes	yes	yes	yes	yes	yes	yes	6m

\* 82, 110 and 160mm OsmaDrain pipes are described by the outside diameter; all other pipes are described by the inside diameter.

### Osma UltraRib foul and surface water sewer system

Osma UltraRib is a Solid Wall Concentric External Rib-Reinforced Unplasticized - PVC sewer pipe designed for adoptable sewer installations. The pipe has a smooth inner surface and is reinforced externally with a pattern of integral, concentric ribs which provide exceptional axial rigidity and enhanced radial strength without a significant increase in weight.

The system employs fully socketed joints for security and ease of installation. The design of the socket prevents accidental displacement of the O ring during installation, and the resulting joint provides a flush fit between the internal bore of the pipe and the fitting. The assembled joint provides built-in accommodation for differential movement without damage.

Osma UltraRib is manufactured to comply with the requirements of Water Industry Standard WIS 4-35-01 and is Kitemarked under the BSI Product Certification Scheme. The system has been awarded Agrément Certificates number 98/3472 and 89/RO46 covering all foul and surface water applications.

The pipe is available socketed and plain ended in a choice of lengths. There is a full range of bends, junctions, and other fittings, including adaptors allowing connection to, for example, cast iron and clayware drains.

### Wavin TwinWall surface and storm water drainage system

Wavin TwinWall is a cost effective pipe system intended for use as a direct alternative to all non-pressurised gravity drain systems other than where Local Authority adoption is necessary. Smaller diameters are manufactured from high density polyethylene and larger diameters manufactured from polypropylene. Typical applications include highway filter and carrier drains, rail track drainage, and unadoptable surface water drains, for example, on industrial or commercial developments.

The pipe is available in nominal diameters of 150, 225, 300, 375, 450, 500 and 600mm and in standard 6m lengths. It may be supplied either plain for use as a carrier drain, and either half or fully perforated for use as filter drains.

The twin wall construction helps to maintain flexibility and reduce the possibility of impact damage on site.



## WavinCoil PVC-U Pipe & Fittings For Land Drainage and Infrastructure

WavinCoil is a corrugated PVC-U pipe system which has been designed to provide a cost effective land drainage system. It is quickly and easily installed using either open cut or trenchless methods.

WavinCoil can be used in a variety of civil engineering and agricultural situations where its use will improve the condition, trafficability and workability of soils. Typical applications include draining ground water from agricultural areas, small sites, parks and gardens; and preventing a build-up of ground water in embankments and verges, or behind retaining walls; it can also be used as a french drain in conjunction with a surface water drainage scheme. In agricultural applications, a proper land drainage scheme using WavinCoil can alleviate crop damage due to waterlogged and flooded conditions, and will often allow planting on land previously unfit for agriculture.

The pipe is available plain or perforated in a range of six diameters, from 60 to 200mm. There is a matching range of junctions, reducers, and connectors. WavinCoil can be used to make gully connections to Osma UltraRib and Wavin TwinWall surface water drainage systems.

The corrugated wall structure enhances the strength of the pipe, resisting damage which might occur during handling and installation, and helping to resist deformation due to imposed loadings from the soil.

WavinCoil complies with the requirements of BS 4962 and carries the BSI Kitemark; its use is approved by the Ministry of Agriculture Fisheries and Food (MAFF).

### Dimensions and availability

Product	Diameter:		Cut away area (mm <sup>2</sup> /m)	Length
	nominal	internal		
WavinCoil	60mm*	53.0mm	2707mm <sup>2</sup> /m	150m
	80mm	71.5mm	3000mm <sup>2</sup> /m	25, 100m
	100mm	91.0mm	3000mm <sup>2</sup> /m	25, 100m
	125mm	115.0mm	2400mm <sup>2</sup> /m	75m
	160mm	146.5mm	2400mm <sup>2</sup> /m	25, 50m
	200mm	184.0mm	1286mm <sup>2</sup> /m	45m

\* Not available with large perforations.



Trenching



WavinCoil provides cost effective land drainage



## Wavin PolyChannel Polymer Concrete Surface Water Channel Drainage

The Wavin PolyChannel range of polymer concrete channel drainage products offer a complete and integrated surface water drainage system for all applications. PolyChannel is suitable for any application where surface water requires transportation for disposal or recycling from supermarkets to sports stadia, bridges to bus depots, footways to food processing, airports, hospitals, car parks as well as domestic driveways and cycle paths.

Available in widths of 100, 150 and 200mm (300mm will be available December 2002), the Wavin PolyChannel system offers a range of flats and slopes for medium and heavy duty applications. With a wide range of gratings and a full range of accessories PolyChannel will satisfy the requirements of any channel drainage application.

All PolyChannel products are manufactured from Polydyn® polyester concrete, which offers excellent chemical resistance, ageing resistance and water absorption of less than 0.5%. It is strong, lightweight and easy to machine, cut and drill on site.

The Wavin PolyChannel SK range provides a good general purpose solution for all drainage situations in the class A15 – E600 range. The channel incorporates full length anchoring ribs and the Red Dot vibration damping securing system to enable secure anchorage of the grating against vehicular override. For enhanced strength the PolyChannel SK system is supplied with galvanised steel edges bonded into the channel along their full length, and includes a wide range of grating options for all aesthetic and performance requirements. Gratings manufactured from galvanised steel, ductile iron, composite plastic and stainless steel accommodate applications such as footpaths, car parks,

System	Nominal Width (mm)			
	100	150	200	300
SK	B, C, E	C, E *	C, E *	E *
SKCR	C, E	no	no	no
SK Piccolo	B, C, E	no	no	no
SKCR Piccolo	C, E	no	no	no
SKS	F	F	F	F
ST	no	no	C, E	no
SPQ	F	no	F	no

\* Ranges available from December 2002. 200SK will replace 200ST range.



Finished installation

playgrounds, shower areas, swimming pools and garage driveways. The NW100 SK channel is available with stainless steel edges (SKCR) for use with stainless gratings and as a shallow unit (SK Piccolo) for restricted depth construction, such as multi-storey car parks or flat roof constructions.

The Wavin PolyChannel SKS range is a heavy duty channel system for applications up to F900 loading classifications. Supplied as a one piece monolithic unit the enormous strength of the bond between frame and channel and the armour coated Class F ductile grating, secured by the unique PolyLock® boltless locking device, guarantees system performance for applications such as airport and runway use, and heavy duty industrial applications. The NW100 SKS system is also available in a shallow Piccolo unit for restricted depth.



Channel installation

The Wavin PolyChannel SPQ range has been specifically designed for applications where exceptional dynamic traffic loadings of a compressive or vibrative nature occur. Available in NW100 and NW200 the one piece monolithic polymer concrete construction provides exceptional strength, which is ideal for applications such as motorway crossovers.



## Wavin AquaCell Surface Stormwater Management System

Rapid growth of urban and industrial areas has resulted in an increase in impermeable surfaces such as roofs, highways and paved surfaces, placing a huge burden on existing drainage networks and urban watercourses. Surface water run-off increases up to 80% and during periods of heavy rain run-off may exceed the capacity of sewered systems, resulting in risks of flooding to property and to human health.

Regulators (such as the Environment Agency, Scottish Environment Protection Agency, local authorities) are promoting the use of Sustainable urban Drainage Systems (SuDS) that control run-off to that of a greenfield site (20%). Combined with an increase in rainfall levels and an increasing demand for water, a new approach to surface water management is required in many situations.

The Wavin AquaCell system is designed to offer an integrated surface and stormwater run-off management system. AquaCell can be used for soakaway and storage applications in areas remote from a public sewer or water course, and within urban, fully sewered areas to limit the impact of development run-off. This is particularly beneficial in areas that are liable to flooding. Modular in shape (1.0m x 0.5m x 0.4m) with a capacity of 190 litres, AquaCell is designed to complement conventional drainage systems and control excess stormwater until it can either be released into the surrounding ground or discharged back into the conventional drainage system at a controlled rate. Typical applications include, domestic, industrial, commercial and highway for use as soakaways and storage systems, shallow soakaways where the water table is high, drainage mounds, surface water protection in contaminated ground and foul effluent soakaways.

### Product Range

Product	Catalogue Code	Dimensions
AquaCell Unit	6LB100	1.0m x 0.5m x 0.4m
AquaCell Clip	6LB105	
AquaCell Shear Connector	6LB102	
Adaptors	6UR141	S/S 150 UltraRib x 160 OsmaDrain
	6TW141	S/S 160 OsmaDrain x 150 TwinWall
	6D099	S/S 160 x 110 OsmaDrain Reducer
	4D916	P/E 160 OsmaDrain
	6LB104	150 UltraRib Flange Adaptor

In a soakaway situation the modular AquaCell system is constructed to the required size and shape and wrapped in a permeable geotextile. This allows temporary storage in the units and a controlled release of water into the surrounding ground, therefore returning the surface water run-off to that of a greenfield site. Recent changes to Part H of the Building Regulations incorporate this principle with a request that priority be given to a soakaway option for roof and surface water drainage within an urban fully sewered area. AquaCell is NHBC approved for use as a soakaway.

If ground conditions are unsuitable for a soakaway (e.g. clay soils, contaminated land, or very high water table), Part H requests that an attenuation system be used. The versatile AquaCell system is constructed to form an underground storage tank which is wrapped in an impermeable geomembrane. This can be installed on-line or off-line to the main drainage system. Stormwater is attenuated by the AquaCell structure and released back into the drainage system or watercourse at the agreed rate for the site by means of a flow control device, again controlling run-off to that of a greenfield site.

At only 9kg per unit, AquaCell is lightweight and easy to handle on site. It's modular construction results in ease and speed of installation, and allows both linear or deep installations to suit the site conditions. Unlike some SuDS methods, AquaCell does not use

valuable developable land, and leaves the surface above available for gardens, landscaping, driveways or car parks. With a 95% void ratio and a surface area, which is 43% perforated, AquaCell constructions can often be smaller than alternative traditional methods, resulting in a versatile, effective solution to stormwater management.



Clipping the AquaCell units together



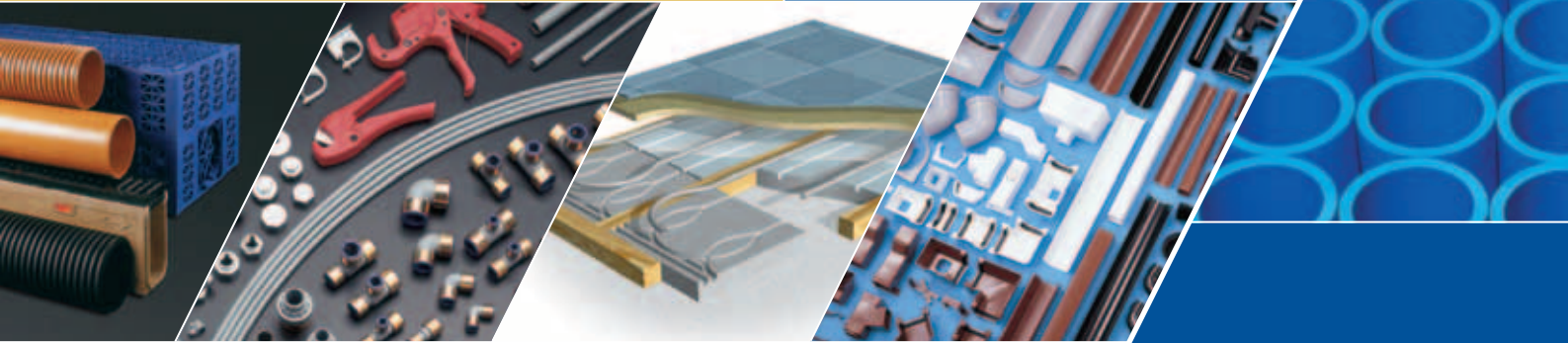
Wrapping the AquaCell structure

# WAVIN

# OSMA

## Below Ground Drainage & Civil Systems

## Product Range Summary



### Meeting your needs

Below Ground Drainage and Civil systems, developed by Wavin Plastics Limited, form part of a comprehensive range of systems to provide intelligent solutions for all building, construction and utilities projects.

These include:

#### Above Ground Projects

- OSMA Rainwater systems
- OSMA Soil & Waste systems

#### Plumbing & Heating Projects

- OSMA Flexible Plumbing systems
- OSMA Underfloor Heating systems

#### Below Ground Projects

- OSMA Below Ground Drainage systems
- OSMA Water Management systems
- OSMA Ducting systems

#### Pressure Pipe Projects

- OSMA Pressure Pipes for Water
- OSMA Pressure Pipes for Gas

All OSMA systems are backed by full technical literature and project support.



ISO 9001:2000

Wavin Plastics Limited operates a programme of continuous product development, and therefore reserves the right to modify or amend the specification of their products without notice. All information in this publication is given in good faith, and believed to be correct at the time of going to press. However, no responsibility can be accepted for any errors, omissions or incorrect assumptions. Users should satisfy themselves that products are suitable for the purpose and application intended.

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