BRANCH NETWORK

Inverness	01463 717818	Norwich	01603 931318
Inverurie	01467 633332	Colchester	01206 795555
Broxburn	01506 854626	Cambridge	01223 654310
East Kilbride	01355 235581	Havant	02392 473437
Longtown	01228 792391	Ashford	01233 618323
Birtley	0191 410 9522	Berkhamsted	01442 874692
Skipton	01756 796180	Isle of Wight	01983 537250
Knottingley	01977 677000	Carmarthen	01267 220656
Manchester	0161 724 2300	Hereford	01432 376752
Bolton	01204 396052	Yate	01454 323000
Alfreton	01773 835104	Avonmouth	01179 380138
Wednesbury	0121 558 6076	Dorchester	01305 853887
Northampton	01604 754025	Launceston	01566 777081

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With JDP manufacturing partners:

DYKA PLASTIC PIPE SYSTEMS GRAF

RAINBOX® Core is also known as GRAF EcoBloc Maxx
RAINBOX® Cube is also known as GRAF Ecobloc Inspect Flex

JDP is more than just a merchant. As part of Tessenderlo Group, a worldwide organisation operating across 21 countries, our manufacturing capabilities, technical knowledge and extensive product knowledge makes us one of the leading experts in your industry.

By continuing to invest in extensive stock levels to ensure local availability of our product range, and combining expertly trained staff, our own specially designed vehicle fleet, a dedicated in-house Technical Support team and a growing nationwide network of branches, JDP is always close to the project and ready to serve.

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JDP Nature's Network

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Locate your local JDP branch at
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JDP Nature's **Network**

RAINBOX

GEOCELLULAR CRATE SYSTEMS

rainbox®
geocellular crate system

RAINBOX
Solutions & Services

Millions of homes and businesses are at risk from flooding driven by climate change, increased rainfall and increased urban development.

The challenge for planners and contractors demands a fully integrated approach that combines multiple products to create a water management system to protect property and the environment from the harmful effects of flooding.

As experts in drainage and water management, JDP uses cutting edge technology, topography and ground condition reports, accurate rainfall data, and the research and development of high-performance products, to provide specialist design and support for projects involving surface water drainage and stormwater management.

A holistic approach to these systems ensures operational efficiency, effectiveness, legislative compliance and the ability to manage increased volumes of rainfall.

Legislation

Legislation has seen more pressure on local planning authorities and specifiers to implement systems to prevent flooding, and as this builds, it becomes imperative to specify the correct sustainable solution.

The objective is to design a system to deal with the flow at its source, rather than transferring the problem further down the watercourse.

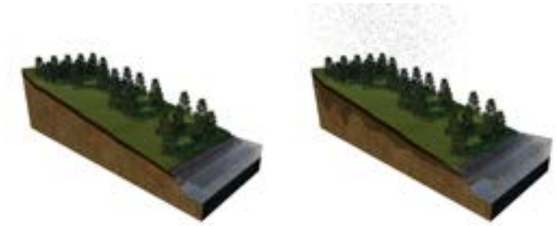
JDP's knowledge and understanding of a wide variety of techniques and products for solutions to flood prevention provides a unique service to planners, contractors and project managers.

Flood & Water Management Legislation

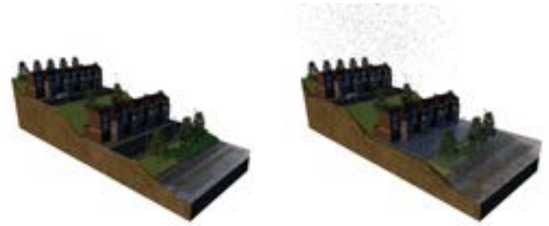
Local authorities require new developments to install an effective water management system that displaces the same amount of water as the pre-development rate of evapotranspiration, under the Flood & Water Management Act (England & Wales) 2010 and the Flood Risk Management Act (Scotland) 2009.

JDP can assist with system design, legislative compliance, calculations and reports for your project with its experienced in-house Technical Support team.

Pre Development Flooding



Post Development Flooding



How does urbanisation cause flooding?

As our towns and cities continue to grow construction on undeveloped land increases the likelihood of flooding.

The ground's natural ability to soak in water from storms and persistent rain (as well as vegetation in the area and atmospheric evaporation) is a process named evapotranspiration.

Replacing soft, permeable ground with impermeable construction materials reduces the efficiency of this process, leaving water to pool on the surface and cause localised flooding as it can't soak into the ground.

This type of flooding can also have a dramatic impact on river levels and cause greater downstream flooding as it creates faster, high volume run-off towards sewer networks and open watercourses.

Drainage systems, silt traps & filters, interceptors, storage systems, flow controls and headwalls can be combined to create a Sustainable Drainage System (SuDS) that collects and slowly releases stormwater back into the environment at a rate in line with the pre-development run-off expectance.

How does RAINBOX® help?

As geocellular crates, RAINBOX® systems act as an underground reservoir to collect water through drainage systems, from storms and persistent rain, to prevent flooding.

In areas of development, this function helps to counteract the loss of permeable ground that would have originally soaked up the rainwater naturally. The collected water is then dispersed in one of two ways, depending on whether the crates are installed in an attenuation system or a soakaway system.

Attenuation

In an attenuation scheme, water is stored within the system and,s with flow controls, is slowly released back into a watercourse or sewer system.

Soakaway

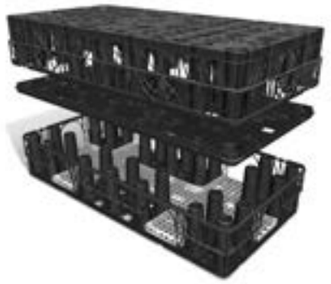
In soakaway schemes, the system is wrapped with a permeable membrane. Water is collected and slowly soaks back in to the ground through an infiltration process.

Flexibility

RAINBOX® systems offer developers and contractors full flexibility with a range of products that provide non-trafficked, traffic and heavy trafficked grades and includes bespoke hybrid systems to suit almost any application.

Technical

JDP's experienced Technical Support team can assist with planning and design, through to supply and installation, with in-depth product and application expertise to ensure you have the right solution for your project.



RAINBOX®
3SR

100% Recycled

Features & Benefits

- Storage capacity of 287 litres
- Maximum installation depth of 4m
- Complete crate weighs 13.5kg
- Manufactured from 100% recycled polypropylene
- Inspectable & jettable
- Stacked on pallets to save space during transport reducing costs and CO_2 emissions

Applications

Gardens & Landscaped Areas

Driveways

Caravan Parks & Recreation Parks

Car Parks

Specifications

Crate

Dimensions	1200 x 600 x 420 (mm)
Gross Volume	302 L
Storage Volume	287 L
Void Ratio	95%
Weight	13.5kg

	Available Connections (DN)						
	100	**150**	**200**	**225**	**250**	**300**	**400**
Native	•	•	-	-	-	-	-
Adaptor	-	-	•	•	•	•	•

Available connections to EN 1401-1/EN 13476-2 pipework. Adaptors for twinwall and other pipe types are also available from JDP.

Installation

Installation minimums and maximums are determined by vertical loading (backfill and loads linked to operations) and horizontal loading (determined by the pressure exerted by the earth).

This varies due to application and ground conditions. Please contact JDP Technical Support for more information and detailed calculations for your project.

	Loading Class (GVW)		
	Non-Traffic	**≤ 3t**	**≤ 12t**
Min. earth covering (m)	0.20	0.50	0.60
Max. earth covering (m)	2.50	2.50	2.30
Max. installation depth (m)	4.0	4.0	4.0

GVW - Gross Vehicle Weight
Table for guidance only. A structural design check of the system should be performed in line with CIRIA C680 prior to installation.

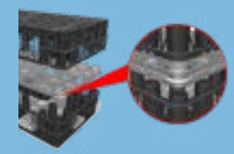
Assembly

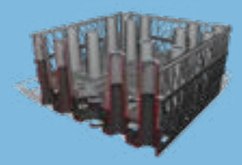
RAINBOX® 3SR crates should be assembled in accordance to the installation guide available from JDP Technical Support, and wrapped in a suitable membrane and protective fleece if required.

RAINBOX® 3SR crates are assembled quickly. Crates arrive on-site flat packed on pallets consisting of two half boxes and an intermediary plate. Boxes and plates simply snap together. Pallets are stacked so that construction is an efficient process.

Interlocking crates are joined together using a minimum of two clips per contact side (double clips between layers).

Pipework is connected to the system with cut-outs in the side faces of a crate. Adaptors are required for DN200, 225, 250, 300 & 400 pipework.





Maintenance

RAINBOX® 3SR systems are suitable for water jetting with a pressure setting of 120 bar.

An inspection access point can be cut into the side face of a RAINBOX® 3SR crate. Channels are then cut into further crates as required (see Fig. 1) to create an inspectable system.

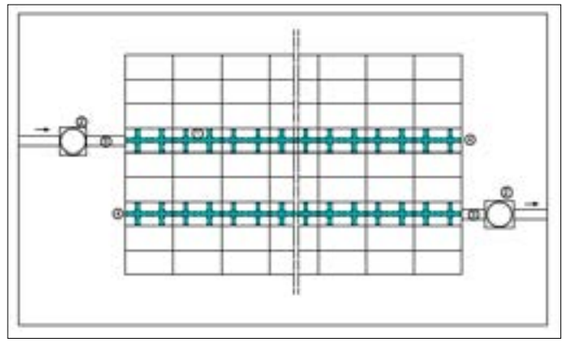


Fig. 1 - a typical inspection system within a crate structure

RAINBOX
CORE

Features & Benefits

- Crate storage capacity of 217 litres
- Maximum installation depth of 5m
- Lightweight crates at just 9kg
- Inspectable & jettable with a configuration of RAINBOX® Cube within the system
- Simple and quick installation method
- Stacked on pallets to save space during transport reducing costs and CO_2 emissions

Applications

Car Parks

Estate & Access Roads

Supermarkets & Retail Parks

Industrial Yards

Specifications

Base Plate

Dimensions	800 x 800 x 40 (mm)
Gross Volume	25 L
Storage Volume	20 L
Void Ratio	95%
Weight	4kg

Crate

Dimensions	800 x 800 x 350 (mm)
Gross Volume	225 L
Storage Volume	217 L
Void Ratio	96%
Weight	9kg

	Available Connections (DN)						
	100	**150**	**200**	**225**	**250**	**300**	**400**
Native	•	•	•	•	•	-	-
Adaptor	-	-	-	-	-	•	•

Available connections to EN 1401-1/EN 13476-2 pipework. Adaptors for twinwall and other pipe types are also available from JDP.

Installation

Installation minimums and maximums are determined by vertical loading (backfill and loads linked to operations) and horizontal loading (determined by the pressure exerted by the earth).

This varies due to application and ground conditions. Please contact JDP Technical Support for more information and detailed calculations for your project.

	Loading Class (GVW)		
	≤ 12t	**≤ 30t**	**≤ 40t**
Min. earth covering (m)	0.50	0.50	0.80
Max. earth covering (m)	2.75	2.50	2.25
Max. installation depth (m)	5.0	5.0	5.0

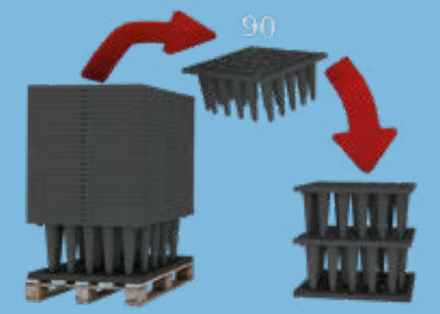
GVW - Gross Vehicle Weight
Table for guidance only. A structural design check of the system should be performed in line with CIRIA C680 prior to installation.

Assembly

RAINBOX® Core crates should be assembled in accordance to the installation guide available from JDP Technical Support, and wrapped in a suitable membrane and protective fleece if required.

After laying a grey RAINBOX® Core base plate, crates are stacked on top of one another to the required height. Simple clip connectors are used to hold crates alongside each other.

Side faces are sealed with RAINBOX® Core end plates which can be adapted to multiple connection sizes.



Maintenance

Water jetting is not possible with a standalone RAINBOX® Core system.

For inspection and water jetting RAINBOX® Cube must be used (see Fig. 1). RAINBOX® Cube crates can be layered and configured to create a network of inspectable maintenance channels.

Fig. 1 - a typical inspection system within a crate structure

RAINBOX
CUBE

Features & Benefits

- Crate storage capacity of 195 litres
- Maximum installation depth of 5m
- Lightweight crates at just 8kg
- Inspectable & jettable
- Simple and quick installation method
- Stacked on pallets to save space during transport reducing costs and CO_2 emissions
- Suitable for high load applications

Applications

Estate & Access Roads

Lorry Parks

Industrial Yards

Warehouse Areas

Specifications

Base Plate

Dimensions	800 x 800 x 40 (mm)
Gross Volume	25 L
Storage Volume	20 L
Void Ratio	95%
Weight	4kg

Crate

Dimensions	800 x 800 x 320 (mm)
Gross Volume	205 L
Storage Volume	195 L
Void Ratio	96%
Weight	8kg

	Available Connections (DN)						
	100	**150**	**200**	**225**	**250**	**300**	**400**
Native	•	•	•	-	-	-	-
Adaptor	-	-	-	•	-	•	•

Available connections to EN 1401-1/EN 13476-2 pipework. Adaptors for twinwall and other pipe types are also available from JDP.

Installation

Installation minimums and maximums are determined by vertical loading (backfill and loads linked to operations) and horizontal loading (determined by the pressure exerted by the earth).

This varies due to application and ground conditions. Please contact JDP Technical Support for more information and detailed calculations for your project.

	Loading Class (GVW)		
	≤ 30t	**≤ 40t**	**≤ 60t**
Min. earth covering (m)	0.50	0.50	0.80
Max. earth covering (m)	2.50	2.25	2.0
Max. installation depth (m)	5.0	5.0	5.0

GVW - Gross Vehicle Weight
Table for guidance only. A structural design check of the system should be performed in line with CIRIA C680 prior to installation.

Assembly

RAINBOX® Cube crates should be assembled in accordance to the installation guide available from JDP Technical Support, and wrapped in a suitable membrane and protective fleece if required.

After laying a red RAINBOX® Cube base plate, crates are stacked on top of one another to the required height. Simple clip connectors are used to hold crates alongside each other.

Side faces are sealed with RAINBOX® Cube end plates which can be adapted to multiple connection sizes.

Maintenance

RAINBOX® Cube systems are suitable for water jetting with a pressure rating of 120 bar.

An inspection access point can be cut into the side face of a RAINBOX® Cube crate. The profile of the system allows for full inspection without the need of further cut outs to crates.

INSTALLATION

Groundworks

Excavation should be performed according to current best practice relating to open-cut earthworks.

The installation bed is a 100mm layer of filler materials (sand, gravel or any other material satisfying the criteria for soil) adjusted as per the parameters for the formation level. Sharp objects, large stone and other foreign objects should be removed.

300g/m²

For attenuation applications, a sloping formation level is required between 0.5% and 1%. The crate structure should be surrounded by an impermeable membrane (at least 1mm thick) with joints welded or taped to manufacturer's specifications. A non-woven geotextile protection fleece should also be used with a mass of at least 300g/m².

100g/m²

For soakaway applications, a horizontal formation level, with a flatness tolerance of 0.1% of the structure length (in a range of 2cm and 5cm), is required. The crate structure should be surrounded by a woven geotextile with a mass of at least 100g/m² to allow the collected stormwater to infiltrate back into the ground.




System Construction

Offload the RAINBOX® crates using a crane, forklift or manually if unpacked and store on a flat and clean surface. For storage periods spanning several months store crates away from direct sunlight.

1. Follow the installation guides for each RAINBOX® crate, available from JDP Technical Support, to install them into the excavated area.
2. Assemble the crate structure, as specified in the construction drawings, using clips to secure the crates together and layer by layer.
3. Use a sabre saw, jigsaw or similar tool to make openings in the side faces of crates for pipework and inspection channels if required.
4. Vents must be installed to regulate the pressure within the structure and provide ventilation. Follow the construction drawings to install vents either as ports connected to the structure, which will have to be ventilated, or via specific shafts.
5. Once all crates have been installed, wrap the top of the structure with the geotextile and/or membrane being used.
6. Backfilling must be performed in accordance with each RAINBOX® crate's installation guide to ensure structural integrity.






SUPPORT & GUIDANCE

DESIGNED

A specialist in-house Technical Support team at JDP assists with the specification of the cellular system.

If required, assistance is provided on the wider SuDS project including geotextiles, pipework, flow controls, silt traps and inspection chambers.

SUPPLIED

JDP's nationwide branch network can supply all materials direct to site and on time with the company's own FORS-accredited vehicle fleet.

Delivery is fast, reliable and safe, and with stock in-depth, guaranteed to meet your project schedules.

INSTALLED

JDP offers a complete RAINBOX® service and can arrange for installation by trained experts.

Full construction drawings, installation guides and calculations are provided as standard when the system is designed by JDP.

PERSONAL SUPPORT

JDP offers site visits and uses supplied topography and ground reports, state of the art software and rainfall data to help choose the right RAINBOX® system for your project.

VALUE ENGINEERING

If you have an existing SuDS design, JDP offers value engineering to discover alternative methods or products to offer savings and ensure you have the right solution.

LEGISLATIVE GUIDANCE

JDP can help guide you through the legislative and environmental processes for SuDS projects, and provides full calculations and specifications required by local authorities.

FULL SYSTEM DESIGNS

With over 45 years of expertise in drainage and water management, JDP can design your foul and surface water drainage systems, and produce schedules and on-site take-offs free of charge.

Product Variety

JDP provides a wide variety of products to create an effective water management system:

- Flow controls & orifice plates
- Pump stations
- Permeable membranes
- Non-permeable membranes
- Protection fleeces
- Silt traps and filters
- Geocellular crates
- Large diameter HDPE
- Pipework & inspection chambers
- Kerb drainage & gratings
- Aggregates