

FLOOD & FLUVIAL PROTECTION



INTRODUCTION TO AGGREGATE INDUSTRIES

Aggregate Industries is at the frontline of the construction industry with a strong focus on the Infrastructure sector, producing and supplying an array of construction materials. With over 330 sites and more than 4,100 dedicated employees, we're home to everything from aggregates, asphalt, ready-mixed concrete and precast concrete products.

In addition to producing, importing, exporting and supplying construction materials we also offer national road surfacing and contracting services. Our complete range of products will help you work sustainably, safely, professionally and profitably. It's all of this that puts us at the heart of construction.

We are a proud member of LafargeHolcim Ltd, which is the leading global building materials and solutions company with around 80,000 employees in over 80 countries. It holds leading positions in all regions with a balanced portfolio of developing and mature markets.

Our Sustainable Drainage System (SuDS) solutions range offers a comprehensive choice of options to both reduce flood risk and to control and minimise pollution before it enters our watercourses, enabling us to use water in a more sustainable and environmentally beneficial way.

CONTENTS

- Introduction to Aggregate Industries 2
- Introduction to Flood and Fluvial Protection 3
- Key Sector Solutions
- Sustainable Drainage System Solutions 4
- Product and Application Selection 6
- Hydromedia® Concrete 8
- SuperFlow Aggregates 9
- Charcon Hard Landscaping 10
- SuperDrainasphalt 11
- Armourstone 12
- Gabion Stone and Baskets 14
- Rock Rolls and Socks 14
- Betomat and Basalton 15
- Charcon Surface Water Drainage 16
- Logistics 18

INTRODUCTION TO FLOOD AND FLUVIAL PROTECTION KEY SECTOR SOLUTIONS

There are around 5 million UK homes identified as being at risk of flooding as a result of climate change and increasing urbanisation. At Aggregate Industries, we have developed an extensive range of water management products suitable for flood resilience, prevention, alleviation and defence in emergency rapid response situations.

FLOOD PROTECTION & RESILIENCE

Solutions that offer strong and robust defence measures against rising tides and the increasing volume and severity of storms.

RAINWATER MANAGEMENT

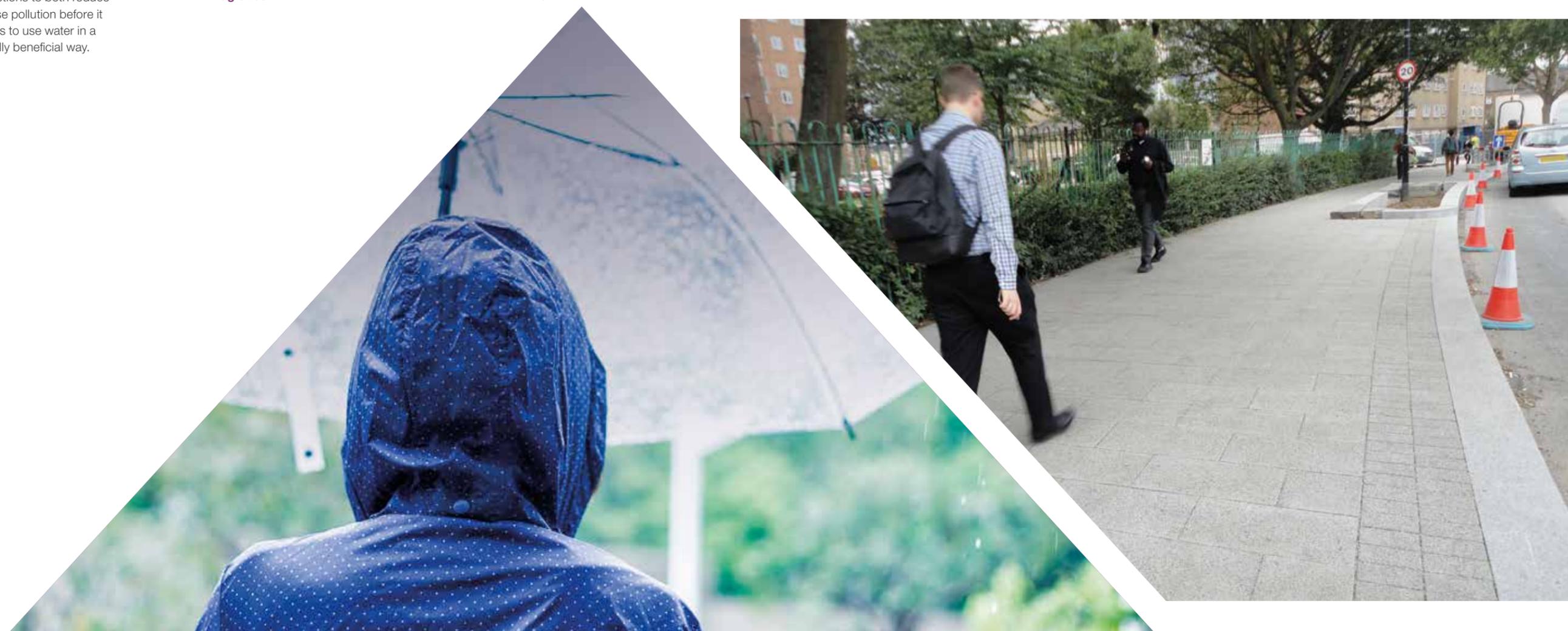
We have developed a comprehensive range of products to manage rainfall at the point of impact and therefore control the water at its source and minimise pollution. This collective solution is known as SuDS (Sustainable Drainage Systems). We have an extensive range of surfacing solutions and as well as surface course, laying course, subbase and infill materials.

COASTAL & FLUVIAL DEFENCE

A range of products to reduce, alleviate or prevent the detrimental effects of flood waters and the erosion of our coast lines and river banks.

EMERGENCY RESPONSE/RECOVERY

Materials and solutions to reduce and minimise the impact in the event of an actual flood occurrence.



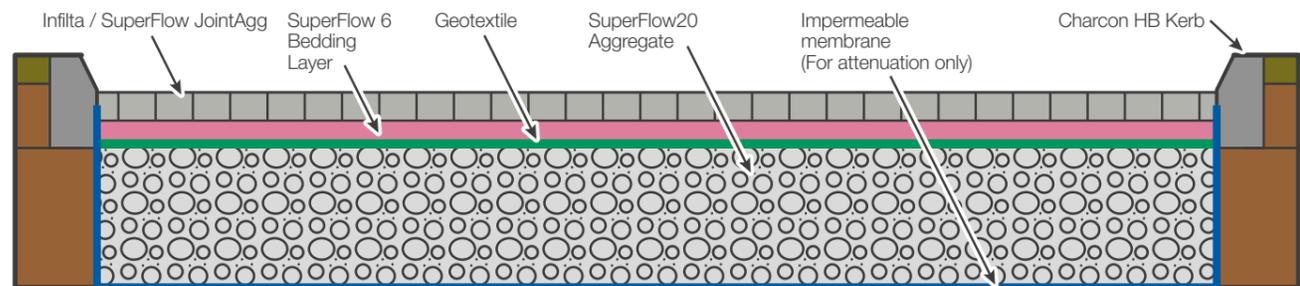
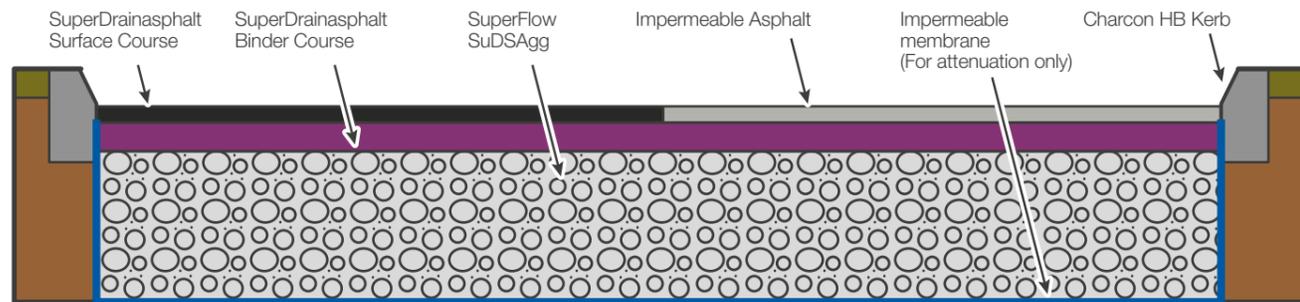
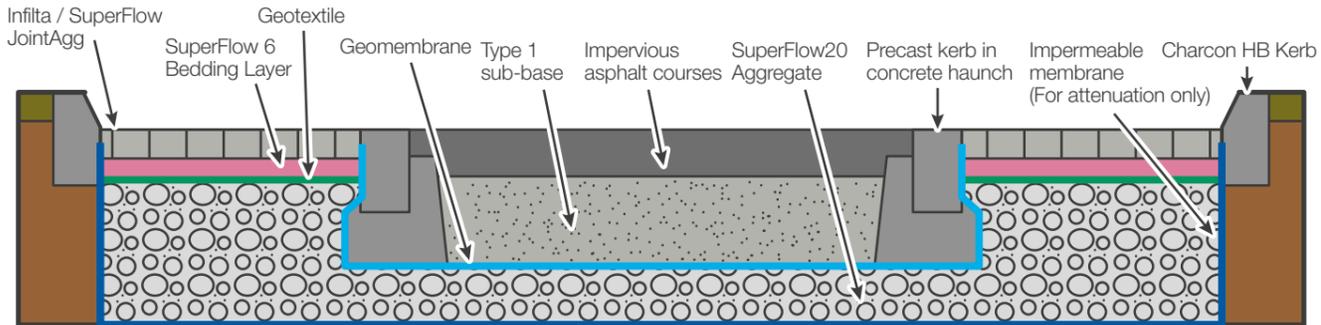
SUSTAINABLE DRAINAGE SYSTEM SOLUTIONS

Sustainable Drainage System solutions (SuDS) provide an alternative approach to traditional drainage systems. They mitigate many of the adverse impacts of stormwater run-off on the environment, in terms of both volume and pollutants.

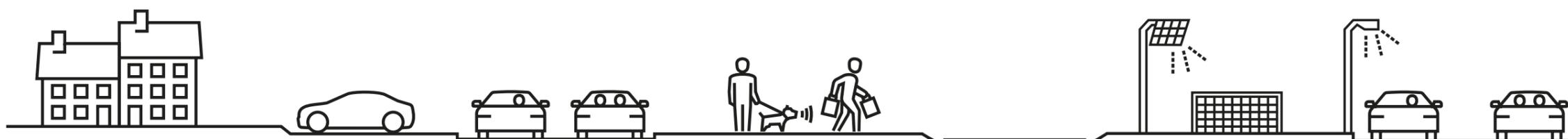
SuDS solutions work by temporarily retaining and slowly releasing rainfall back into the waterways in a controlled manner. This helps prevent floods, while allowing natural processes to break down pollutants which would otherwise impact further downstream.

SuDS became a legal consideration for all new developments per the Flood & Water Management Act 2010 and was integrated into Building Regulations in 2015.

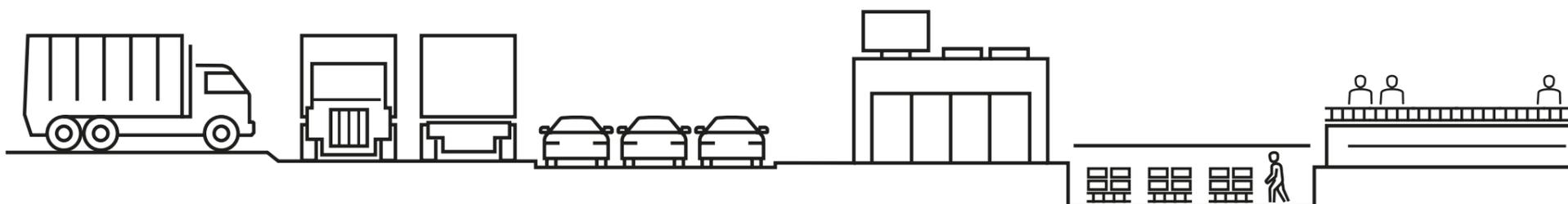
AGGREGATE INDUSTRIES SUDS SOLUTIONS



PRODUCT AND APPLICATION SELECTION



LOCATION	SHARED SURFACE, MEWS COURTS, CUL-DE-SACS AND HOME ZONES	DRIVEWAYS	RESIDENTIAL ESTATE AND ACCESS ROADS (MAX. 20MPH)	PEDESTRIAN AREAS, FOOTPATHS	SWALES	SPORT PITCHES	RESIDENTIAL DISTRIBUTOR AND COLLECTOR ROADS, (MAX. 30MPH)
Water entry	SuperDrainasphalt Infilta Grassgrid	Hydromedia® Infilta Grassgrid SuperDrainasphalt	SuperDrainasphalt Infilta Grassgrid	Hydromedia® Infilta SuperDrainasphalt Grassgrid	Grassgrid	SuperSport Hydromedia®	SuperDrainasphalt Infilta Grassgrid
Water storage	SuperFlow aggregates	SuperFlow aggregates	SuperFlow aggregates	SuperFlow aggregates	SuperFlow aggregates	SuperFlow aggregates	SuperFlow aggregates



LOCATION	LORRY PARKS	INDUSTRIAL ESTATE ROADS	CAR PARKS	ROOFS	BASEMENTS	PODIUM DECKS
Water entry	Infilta	Infilta	Hydromedia® Infilta SuperDrainasphalt Grassgrid	Infilta Hydromedia®	Hydromedia® Infilta	Hydromedia® Infilta
Water storage	SuperFlow aggregates	SuperFlow aggregates	SuperFlow aggregates	Lytag	SuperFlow aggregates	SuperDrainasphalt, Lytag

HYDROMEDIA® CONCRETE

Hydromedia® is an ideal solution for surface and stormwater management. It is a fast draining concrete pavement solution that rapidly directs stormwater off streets, parking surfaces, driveways and walkways. It minimises costs and long-term maintenance for local authorities and developers of stormwater management. A range of strengths are available.

Hydromedia® contains typically 15-35% voids and when designed with a suitable sub-base water will flow freely through the concrete at rates in excess of 100 litres per minute per square metre.

KEY BENEFITS

- ▶ Stormwater management - high permeability and drainage capacity
- ▶ Environmental management - minimises urban impact on natural water cycle
- ▶ Reduces costs as part of a SuDS (Sustainable Drainage System)
- ▶ Available with integral colour to offer decorative and functional hard landscaping opportunities
- ▶ Eliminates the needs for retention ponds
- ▶ Offers potential space-saving for efficient land development
- ▶ Mitigates surface pollutants
- ▶ Reduces glare from wet pavement
- ▶ No standing water, lessens risk of hydroplaning

APPLICATIONS

- ▶ Car parks (light traffic - maximum load 3.5mt) and parking areas
- ▶ Leisure (e.g. tennis courts, swimming pool decks, cycleways)
- ▶ Driveways and alleyways
- ▶ Pavement edge drains and gutters
- ▶ Can be used as a structural underlayer
- ▶ Residential roads



SUPERFLOW AGGREGATES

The SuperFlow product range is Aggregate Industries' line of high performance aggregates specifically designed to provide controlled water management within Sustainable Drainage Systems (SuDS).

- ▶ **Super Sustainability:** Working with the environment to help prevent flooding and water pollution
- ▶ **Super Production:** Expert production techniques ensures the highest levels of quality and consistency are achieved
- ▶ **Super Performance:** Carefully graded crushed rock offering lasting stability and optimal water management
- ▶ **Super Support:** Dedicated technical and specification teams to assist with any SuDS design criteria

PRODUCTS

SUPERFLOW SUDSAGG

Aggregate Type: 0/40mm crushed rock
Application: Sub-base reservoir layer
Drainage Solution: SuperDrainasphalt & Hydromedia® Concrete

SUPERFLOW 20

Aggregate Type: 4/20mm crushed angular rock
Application: Upper sub-base reservoir layer
Drainage Solution: Hand laid Drainasphalt, Infilta Block Paving & Hydromedia®

SUPERFLOW 63

Aggregate Type: Coarse crushed angular rock
Application: Lower sub-base reservoir/capping layer
Drainage Solution: Infilta Block Paving

SUPERFLOW 6

Aggregate Type: 2/6.3mm crushed angular rock
Application: Laying course aggregate
Drainage Solution: Infilta Block Paving

SUPERFLOW JOINTAGG

Aggregate Type: Crushed rock
Application: Jointing grit
Drainage Solution: Infilta Block Paving



CHARCON HARD LANDSCAPING

The Charcon Infilta range of permeable paving is available in a range of sizes and finishes to suit all applications. The invisible nib profile creates joints that allow fast and efficient water entry into the sub-base SuDS solution below. The combination of hidden nibs, range of surface colours and finishes of the Infilta paving range creates an aesthetically pleasing surface finish for all applications.

PRODUCTS

- ▶ Andover Textured Infilta
- ▶ StoneMaster Infilta (washed and cast finish)
- ▶ Woburn Infilta (rumbled and original)
- ▶ EcoPave Textured Infilta
- ▶ Europa Infilta
- ▶ Infilta is available in a range of sizes, colours and finishes:



INFILTA 60mm and 80mm

Standard rectangular block paving. This product is most commonly used on SuDS schemes and offers the best value/low cost option.



WOBURN ORIGINAL INFILTA 60mm and 80mm

Woburn Original comes in 3 sizes for design flexibility, and has sharp edges to give the appearance of sawn natural setts.



WOBURN RUMBLED INFILTA 60mm and 80mm

Woburn Rumbled comes in 3 sizes for design flexibility, and has distressed edges to give the appearance of old cobbled setts.



ECOPAWE TEXTURED INFILTA

Finely textured block paving with a minimum of 50% non primary materials.



ANDOVER INFILTA

Finely textured block or flag paving, available in a wide range of colours and sizes for complete design flexibility.



STONEMASTER INFILTA

Highest quality, washed finish block paving, available in a wide range of colours and sizes for complete design flexibility.

SUPERDRAIN ASPHALT

A specifically designed porous asphalt for vehicular traffic which provides:

- ▶ High levels of hydraulic conductivity
- ▶ An even running surface
- ▶ Aesthetic appeal

FEATURES AND BENEFITS

Produced with specialised **PMB (Polymer Modified Bitumen)**, which offers enhanced performance attributes when compared to straight run bitumens. Suitable for a range of applications such as:

- ▶ Driveways
- ▶ Car parks
- ▶ Sports areas
- ▶ Carriageways (with restrictions)



ARMOURSTONE

Armourstone is natural quarry stone, chosen for its durability and resistance to wear and erosion. The sizes range from 45mm to 10+ Tonne rock and can be used for various applications.

Our full range of Armourstone Rock Products meets current industry standard specification. We also offer various supply sources which means there are different pigmentations for you to choose from, due to composition and petrographic makeup of the various quarry supply options.

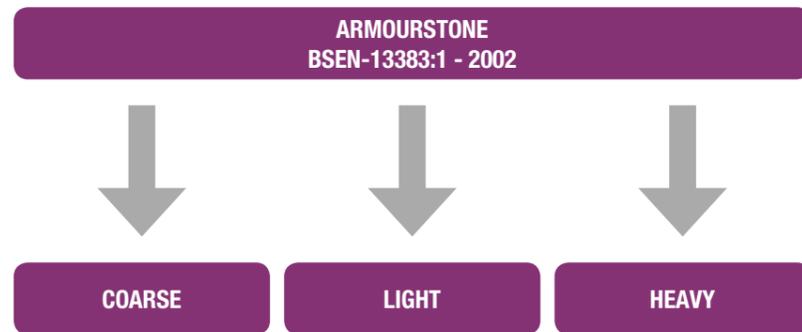
We have an extensive logistic services that allow us to deliver Armourstone by sea, road or rail direct to your project.

SPECIFICATION BSEN-13383:1 - 2002

COARSE GRADING (mm)				
45 - 125 mm	63 - 180 mm	90 - 250 mm	45 - 180 mm	90 - 180 mm

LIGHT GRADINGS (Kg)				
5 - 40 Kg	10 - 60 Kg	40 - 200 Kg	60 - 300 Kg	15 - 300 Kg

HEAVY GRADING (Kg)				
300 - 1000 Kg	1000 - 3000 Kg	3000 - 6000 Kg	6000 - 10,000 Kg	10,000 - 15,000 Kg



GABION STONE AND BASKETS

Gabion stone provides an attractive, cost effective retaining wall solution ideal for embankment stabilization.

Designed to fit in most standardised Gabion baskets and Gabion mattresses, our stone is highly adaptable. As virgin quarried it will be an angular finish but we can also provide cobbles from our sand quarries for a more aesthetically pleasing product.

We have aggregate bases in all parts of the UK and have the ability to deliver anywhere in the country.

- ▶ Highly adaptable
- ▶ Attractive, cost effective solution for embankment stabilization
- ▶ Available across the country



ROCK ROLLS AND SOCKS

Rock rolls or socks provide a solid yet cost effective method of protecting weak river banks.

Consisting of durable nets filled with rocks which, when used below a low water level provide a solid but flexible foundation. Rock rolls can form part of a complete bioengineering solution when used in conjunction with other environmentally conscious preservation solutions. The roots of aquatic plants quickly grow and establish in the voids between the rocks, providing long term erosion control, bank support and habitat enhancement.

We can provide the rock material to fill the bags to the required weight and size, ensuring that the product specified would not have any detrimental effect on plant or marine life once submerged in water.

- ▶ Competitive solution for erosion control applications
- ▶ Available across the country



BETOMAT AND BASALTON

Betomat concrete block mats provide a solution for the protection of banks and slopes, that may also contain outlets and barrages against erosion by minor wave action and currents. They can be applied above as well as below water and provide stability for the construction. The geotextile forms a unity together with the concrete blocks and prevents bottom washout. It's also available in several variations.

The application of Betomat in hydraulic engineering enables quick and simple bank reinforcement. The mat can be installed below water and drawn to the slope above water without interruption. Due to its flexibility, Betomat can help balance out minor subsidence of the bottom.

In modern embankment construction, flat sloping is preferred in the interests of flora and fauna protection. As there is not always sufficient space, banks are implemented with inclined slopes or berms.

- ▶ Covering of watertight foil
- ▶ Water-retention basin
- ▶ Ground protection
- ▶ Dyke reinforcement
- ▶ Embankment protection
- ▶ Economising basin
- ▶ Outlet opening
- ▶ Pipeline covering
- ▶ Slipways
- ▶ Surfing banks



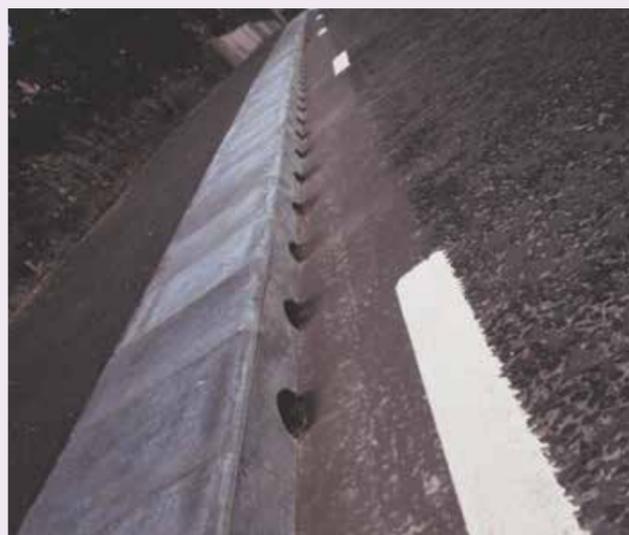
CHARCON SURFACE WATER DRAINAGE

We have a broad range of linear drainage products that can minimise the impact of rainwater run-off and flooding in hard landscaped areas.

Our product ranges can be used in a variety of settings including; city and urban areas, car parks and landscaped areas, as well as heavier duty applications such as industrial sites.

HIGHWAY

AN ECONOMICAL ALTERNATIVE TO CONVENTIONAL KERB, GULLEY AND DRAIN NETWORKS, HIGHWAY IS A HIGH CAPACITY KERB AND DRAINAGE SYSTEM.



With its two-part high capacity channel base unit and soffit channel top unit, Highway dramatically reduces the need for expensive underground pipework along with the cost of excavation. Featuring inlet holes along the kerb line for fast and efficient water removal from the road surface, the channel stores and removes water to an outlet, eliminating the need for frequently placed outlet points.

Tested to D400 to EN1433 and available in both half batter and splay profiles, Highway comes in pallet packs for easy manoeuvrability onsite. And it's packed to avoid manual handling.



MINI HIGHWAY

MINI HIGHWAY IS A ROBUST TWO-PART INTEGRATED KERB DRAINAGE SYSTEM OFFERING FAST, EFFECTIVE DRAINAGE.



Blending practicality with aesthetic appeal, Mini Highway is a two-part integrated kerb profile and linear drainage system offering efficient drainage capability. Comprising a base unit and kerb profile top unit with two elliptical holes, the kerb incorporates multiple inlet holes along its length for fast water take off.

Ideal for city centres with its aesthetically pleasing kerb profile, the compact design of Mini Highway minimises installation cost without compromising on strength. The system has also been tested to D400 to EN1433 and is available in both half batter and splay profiles. It is supplied on pallets for easy manoeuvrability.



HYDROKERB®

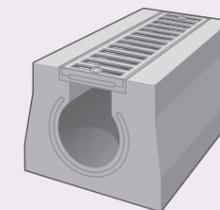
A UNIQUE DRAINAGE SYSTEM WITH AN ATTRACTIVE TEXTURED APPEARANCE, HYDROKERB® IS THE IDEAL SOLUTION IN CONSERVATION AREAS WHERE AESTHETIC APPEAL IS A KEY REQUIREMENT.



With its natural textured finish, Hydrokerb® offers outstanding aesthetic appeal as well as excellent draining characteristics thanks to three discrete draining holes. Suitable for city roads, car parks and urban areas, the system also allows the maintenance of the existing kerb line. Hydrokerb® is quick to lay and tested to meet the requirements of D400 to EN1433.

CLEARWAY

AN ECONOMICAL ALTERNATIVE TO CONVENTIONAL KERB, GULLEY AND DRAIN NETWORKS, HIGHWAY IS A HIGH CAPACITY KERB AND DRAINAGE SYSTEM.

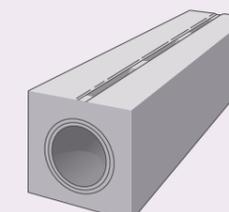


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SAFETICURB

LONG ESTABLISHED WITH A PROVEN PERFORMANCE RECORD, SAFETICURB IS A LINEAR DRAINAGE SYSTEM THAT INCORPORATES DISCRETE CROSS-FALL.



Substantially reducing the need for expensive underground pipework, Safeticurb is suitable for all hard landscaped surfaces and also for heavier duty options such as industrial sites. Available in slot or grid options, Safeticurb features a subtle cross-fall to direct surface water towards the inlet on each unit.

LOGISTICS

We have extensive logistics services, which ensures we can deliver our products throughout the UK and Northern Europe by road, rail and sea. Where possible, we aim to minimise the environmental impact associated with the transport of products.

Logistical flexibility means that individual projects in often remote locations can be supplied directly with tailored packages for a variety of products.

VESSELS

Aggregate Industries operates a dedicated fleet of gravity-led self unloaders in order to service its customers' needs throughout Europe and the world. Yeoman Bridge and Yeoman Bontrup are 250m in length and capable of carrying 96,000mts of cargo. They are the two largest self-unloaders in the world. Utilising a system of conveyor belts running through tunnels beneath the cargo holds and a vertical lift belt feeding an 80m boom conveyor mounted on the deck, cargo can be discharged directly to shore, hopper or other vessels at rates of up to 6,000mts per hour. This capability means that typically a full cargo of up to 96,000mts is typically discharged within 24 hours.

In addition to operating large self-unloaders, Aggregate Industries charts a range of conventional and excavator equipped vessels. This is to meet customers needs, whether directly to remote and underdeveloped ports as part of infrastructure and offshore construction projects, or supplying coastal and inland customers through virtual quarries.

SEAROCK - DIRECT TO BEACH

- ▶ Full Supply Package
- ▶ Excavator or crane equipped vessel supply
- ▶ Dedicated 5,000 tonne barge for transfer/ placement operation
- ▶ Loaded at seas - board > board transfer



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