SuDS planters, often referred to as 'rain garden planters', offer a sustainable and affordable option to meet the "four pillars" of SuDS design, where roof surface water runoff is managed for water quantity, water quality, amenity and biodiversity benefits.

Many flash flooding incidents are due to unprecedented heavy rainfall, combined with failing defences or drainage systems that are insufficient or blocked and cannot absorb the surface area flows. This is when SuDS Planters are at their most effective, and with

these incidents becoming more frequent, offer a more affordable solution when retro groundworks options are inappropriate or too expensive.

East of Eden SuDS planters offer a number of advantages

- Suds Planters are designed on the principles of Sustainable Drainage System (SuDS*).

- Manage rainwater run-off from domestic and commercial roofs, reducing the impact of heavy rainfall flash flood situations by slowing surface water flows. Thus significantly reducing surface water flood risk, particularly in urban areas with extensive sloping roof areas.

- Sustainably manage storm overflows that carry both rainwater and foul sewage and they prevent properties from flooding following intense rainfall.

- Provides a cost effective, low maintenance, aesthetic living purification, water storage and slow release system, as an alternative to expensive and higher maintenance SuDS groundwork options.

- Suitable for retro fitting as well as for new housing developments, tackling SuDS solutions when space is at a premium.

- With the internal rainfall capture, storage and slow release drainage system, SuDS planters are designed to be connected into the building roof drainage system, preventing run off into the road and pavements, reducing the volume engorging road drains.

- The SuDS slow release and overflow pipes are fed directly to the building drains, which prevents overwhelming the drainage grates and grids of the building and adjacent road, and consequent surface water flows.

- By management of runoff and capture stormwater, plus filtration of pollutants, SuDS planters improve the quality of surface water entering streams and rivers.

- Being based on a living ecological system, SuDS planters additionally provide amenity and biodiversity to new and existing spaces**.**

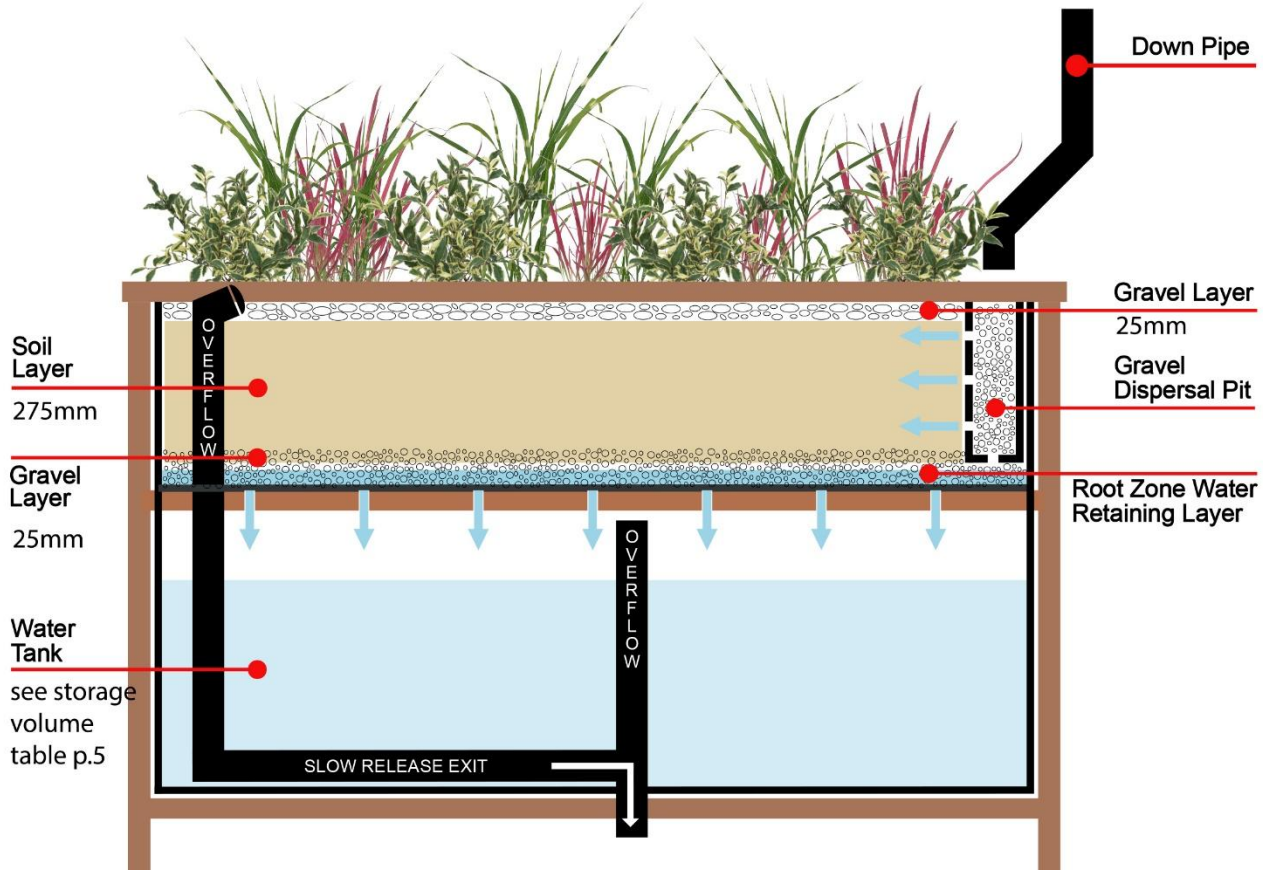
- Main body constructed from UK sustainably grown Grade A Larch or GRP.

NOTE: SuDS planters are not designed to deal with the less frequent groundwater flooding, which occurs when water levels underneath the ground rise above normal levels approaching the surface caused by prolonged periods of rainfall, which can last for weeks and months.

* SuDS**:** Sustainable drainage systems include a range of techniques for holistically managing water run-off to reduce the quantity, of surface water that drains into sewers from a development. The SuDS also increase the quality of the water release slowly by a natural filtering and purification processes. In general SuDS mimic natural systems, and manage rain close to where it falls. SuDS not only reduce the burden on our sewerage system, they can also help wildlife to thrive in urban areas, with many of the drainage systems being intrinsically wildlife friendly.

Principles of the East of Eden SuDS Planter

SuDS planters collect rooftop runoff and work like a rain garden in a planter allowing for sustainably manage flash flood and stormwater. They effectively enhance the capacity of the surface water piped drainage network by capturing and storing rainfall, allowing it to soak into the ground, or release it slowly back into the main piped network.



Section through a Larch SuDS Planter showing each component of the system

East of Eden Larch SuDS Planter in situ

A SuDS planter makes use of the water that lands on the roof. Water from the downpipe is directed into the planter. The soil / compost mix absorbs and stores the rainwater for the plants to use. Excess rainwater filters through a separating Geotextile membrane, supported by a raised free draining raised floor, into the water storage cavity at the bottom of the SuDS planter, where it is stored and released from the base drainage pipe at a controlled rate.

The SuDS Planter is an attractive adaptation of the SuDS principle, which slows surface water flows and reduces surface water flood risk. With both bioretention and additional internal storage, the SuDS Planter is an innovative solution to property level retro-fit SuDS, and can work out very much less expensive than most groundworks intervention.

East of Eden GRP SuDS Planter

Internal controlled drainage system

The standard East of Eden SuDS Planter outflow rate is controlled by the combined effect of the geotextile layer and perforated base drainage pipe. To enhance the water storage we have created a pure water storage layer rather than gravel or clay pebbles, which are usually used. This significantly increases the water storage area, which combined with an internal slow release drainage system acts as an Attenuation Tank, which essentially performs as a large container/detention tank, functioning as a buffer to store excess rainwater and remove the risk of flooding a residential area in a controlled way. Excess rainwater detained in the storage area/tank is then released at a controlled rate by the internal hydrocontrol drainage system.

Attenuation SuDS planters allow surface water to be stored and gradually released back to the ground or sewer network slowly. Attenuation and infiltration can help to control the level of surface water.

SuDS Planter Attenuation Water Storage and Flow Rates

A simple, but helpful fact for calculating the volume of rain coming from a roof is based on the method of measuring rainfall rates using a rain gauge, i.e. the precipitation (rainfall) in millimetres in height during a certain period.

This is equivalent to litres per square metre that is falling on the surface.

Hence, if you know the area of the roof, and the rainfall rate (from slight to storm rainfall periods), you can calculate the volume of rain in litres that will come from the roof under the different conditions of rainfall. Obviously, the main value of a SuDS planter is during storm rainfall periods when the drain and sewer systems are in danger of becoming overwhelmed.

The storage volume and retention and subsequent outflow rates will vary with the dimension of the planter.

The SuDS Manual states that typically the surface area of a bioretention feature would be 2-4% of the overall site area being drained, to prevent rapid clogging of the bioretention surface. Based on this guidance, the surface area of any planter (or combination of planters) should not be less than 2-4% of the roof area it is draining.

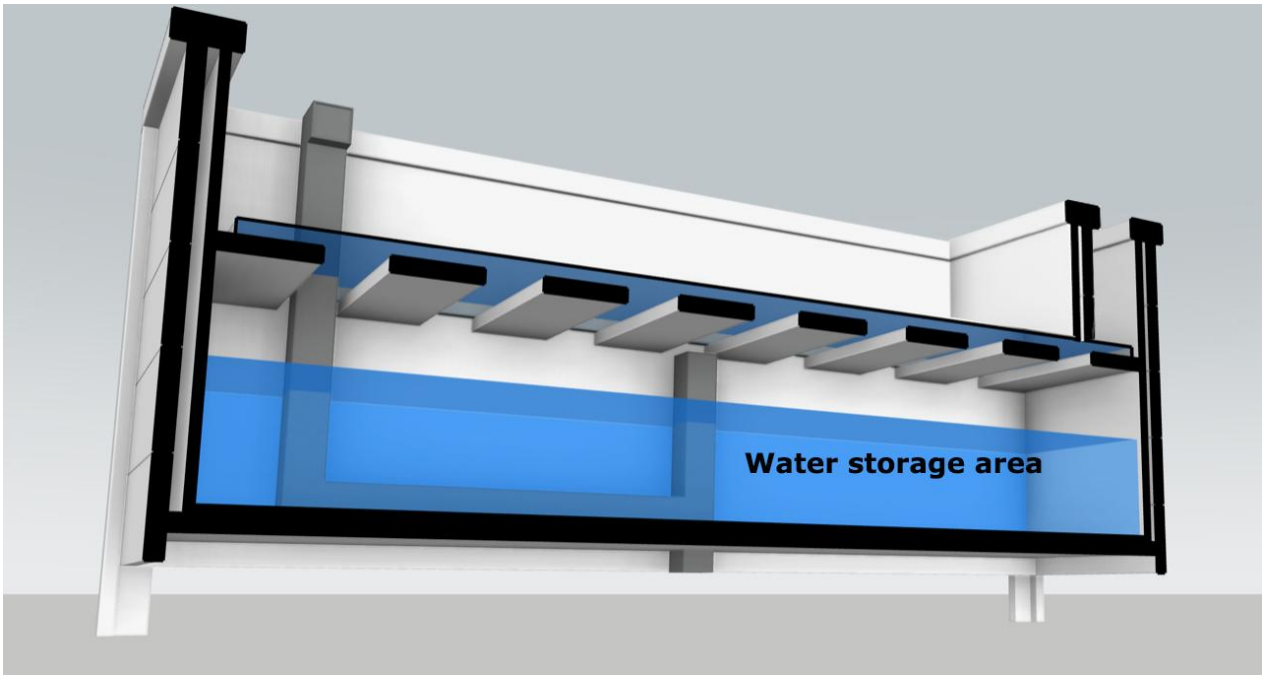
The recommended surface area of the planter is based on the height being our standard 900mm. Where possible, the size of the planter should reflect this recommendation.

We offer a range of standard planter sizes to use in projects to attenuate rainfall from roof systems connected via the roof drain downpipes, (see page 11 for standard sizes).

These sizes are based on large, but manageable and movable sized units using a fork lift. This offers practical sized unit options to be used in combination to achieve the recommendation catchment areas stated above.

As well as the standard sizes, we can also construct the SuDS planter to bespoke requirements, but recommend a maximum length of 2500mm. For greater catchment we advise to install multiple planters fed by the same drain downpipe connected via the top of the planters.

Attenuation Water Storage Layer



A major advantage of East of Eden SuDS planters is that they have a suspended permeable **Draintex** geotextile lined floor.

Importantly, this means that the sub base layer is completely dedicated to water storage, providing a maximum water storage volume, in contrast to most other designs where the water stored is part of the substrate layers, significantly reducing their water storage capacity. With a dedicated water only storage area, our SuDS planters are able to hold almost twice as much water, which is critical during a deluge, this will then be released slowly.

Storage Volume and Outflow rate

The storage volume will depend on the dimensions of the planters specified. By reducing the planting layer to 200mm, which is more than adequate for most plants, the remaining internal volume is dedicated to water attenuation, which is the main function of a SuDS planter. Our unique internal design maximises the volume of storm water that can be stored and slowly released.

See water storage values of our standard SuDS planters in the table below.

Attenuation Storage Volume for Standard SuDS Planters Larch and GRP Options

Larch Option Size (mm)	Attenuation Storage Volume (Litres)	GRP Option Size (mm)	Attenuation Storage Volume (Litres)
1000 x 650 x 900	247.19	1000 x 600 x 900	341.55
1200 x 650 x 900	303.37	1200 x 600 x 900	413.14
1500 x 650 x 900	387.64	1500 x 600 x 900	519.99
1800 x 650 x 900	471.91	1800 x 600 x 900	626.84
2000 x 650 x 900	528.09	2000 x 600 x 900	698.07

NOTE: Storage volumes are based on planting depth of 200mm.
We recommend use plants in 2 to 5 litre sized pots.

Outflow and Infiltration rates

The standard SuDS Planter is drained via a perforated drainage pipe running along the bottom of the planter. A number of factors influence the drainage rate including the drainage pipe diameter, soil mix and therefore infiltration rate. The impact of plants and soil conditions prior to any particular rainfall event will also be important.

Outflow Rate – Larch and GRP Options
15 to 20 litres/hour **Depending on head of water in storage**

To optimize infiltration we recommended using an open, free draining peat free soil mix of 15% loam soil or John Inness No 3 with 85% Peat free Multipurpose compost. If planted with shallow, light rooting plants, the outflow rate ranges from 15 to 20 litres per hour depending on height of head of water. We recommend light rooting planting, as the infiltration rate will be mostly impaired by the formation of a dense root network from more mature shrub-like plants. Annual planting that can significantly enhance the BNG value of your SuDS planters can be replenished each year. Hence they are ideal for creating wildflower pollinators and long summer flowering plants with a minimum rooting system that can be cultivated annually to retain a free draining soil/compost mix.

(RHS plants for Pollinators. Click HERE)

Drainage Outlet.

The drainage outlet from the internal slow release system can be located to suit your specific site requirements. In most situations the outlet is required to feed into the downpipe drain that already exists, which will therefore located directly below the planter. For these projects the outlet feeds through the base of the rain garden SuDS planter, as shown in the figure below.

We can also provide an outlet from the lowest point from a side wall which is helpful if the outflow is to be directed away from the immediate drain below the SuDS planter, including to be directed to a rain garden. During the construction of the planters, our workshop manager will contact you to discuss the location of the outlet.

SuDS Planter in situ ready for connection

SuDS Planter Sizes and Prices

We produce five standard sizes of SuDS Planters.

Please refer to table page6 for storage volumes

Larch Option Size (mm)	All inclusive Price ex VAT (£)	GRP Option Size (mm)	All inclusive Price ex VAT (£)
1000 x 650 x 900	1050.00	1000 x 650 x 900	1200.00
1200 x 650 x 900	1175.00	1200 x 650 x 900	1350.00
1500 x 650 x 900	1350.00	1500 x 650 x 900	1555.00
1800 x 650 x 900	1550.00	1800 x 650 x 900	1785.00
2000 x 650 x 900	1675.00	2000 x 650 x 900	1935.00

Based on our extensive experience with commercial and private projects, we have found that many require bespoke sizes of our commercial quality SuDS. So we now offer a made to order bespoke service to suit the specific needs of each site and location.

PLEASE NOTE : Bespoke prices are usually close to the nearest standard price and do not necessarily incur additional costs. This enables us to offer a wider range of sizes and shapes, including square and circular SuDS planters, rather than the typical rectangular profile. This provides flexibility for clients to meet the restrictions of the site.

For a quote, including delivery, plus bespoke options, please contact us at:-

sales@eastofedenplants.co.uk

Linked Modular SuDS Planters for Large Roof Catchment areas

For larger catchment areas we advise multiples of our standard or bespoke sizes, with each one fed from a separate downpipe. Separate downpipes can usually be specified for new builds and extensions.

For situations where separate downpipes cannot be supplied, such as old buildings with cast iron downpipes, we have developed the SuDS planters so that can be interlinked so that multiple planters can be fed by the same drain downpipe connected via an overflow link between the planters.

This linked modular solution will significantly increase the roof surface catchment area for your project

East of Eden SuDS planters and Biodiversity Net Gain (BNG)

The latest design of our SuDS planters includes an additional internal overflow flow system. This means that in the event of a severe storm water occasion the water storage area fills to the top, but will not inundate the top soil/compost area. With this enhanced design feature, it enables the SuDS planter to be used to grow any type of plants specific to the needs of the client, soil type and local climatic conditions. Importantly they can be used to grow a much greater diversity of plant species, including pollinators, which will in turn support a greater range of invertebrates, and subsequently mammals and birds. The new design can therefore significantly contribute to a development's BNG.

To further enhance the BNG value of our SuDS Planters, they can be combined with East of Eden Living Walls and Living Screens to provide even more plants, as well as more plant species to support further Biodiversity.

In addition, by attaching homes and habitats to the external Larch cladding, they can lead to an increase in biodiversity following installation. These include homes for invertebrates, including bee hotels, plus shelters for reptiles, amphibians and mammals, such as hedgehogs.

East of Eden SuDS Planters are supplied ready for planting

Once constructed in our specialist workshop our SuDS planters are delivered to site ready for installation. They are supplied lined, with the complete internal drainage system fitted, including screened overflow and drainage pipe outlet ready to fit into your site drainage system.

Most of our SuDS planters are made to order. They are supplied complete and ready to install into your drainage system via the 68mm outlet that can be located in the base or sided panels to suit the site location.

The concept is flexible, scalable and each unit provides a convenient solution that any subcontractor can work with and install. Installation is fast, simple and offers significant cost savings to alternative methods.

The East of Eden SuDS planter is supplied ready to be filled with layers of drainage clay pebbles, specialist compost soils and surface mulch, which is isolated from the water management system by a geotextile layer. The planter is lined to form a waterproof seal to retain the stormwater for regulated slow release.

Why we chose UK grown Larch as our option for wooden SuDS planters.

Larch is our preferred wood to construct commercial quality SuDS Planters, as in the examples throughout this guide and they are produced by UK specialist craftsmen using Larch from sustainably grow UK Larch woodlands. One special property of larch is that it produces its own internal preservative, providing a very long planter life without the use of toxic preservatives. Alternative materials are linked to non-sustainable production issues.

East of Eden Planters have an expected life up to 20 years, and carry a 5 year warranty against manufacturing defects

Benefits of using larch for our SuDS planters include:

- Natural resistance to decay. Larch produces its own internal natural preservative, hence no need to impregnate the wood with toxic preservatives, as used for other soft woods.
- Aesthetically beautiful timber, which permits high manufacturing standards.
- Impressive stability, with no time distortion.
- Low maintenance.
- Constructed from hand selected Larch from sustainably managed UK woodlands.

The following properties are responsible for the durability of larch:

- High Density and Large Content of Heartwood – Heartwood is denser, less permeable, and more durable than the surrounding sapwood.

- The structural properties of Larch are far superior to treated pine and really are better than any softwood out there. Larch is the hardest softwood around.
- Unlike Cedar, Pine and Redwood, Larch does not need the application of a wood preservative or paint layer to survive the outdoor elements, which with other woods, requires re-applying yearly. None of this tiresome task is required for Larch planters.

- If you want to change the appearance, we suggest staining the wood. Larch takes a stain very well and with its grain features it can be amazingly beautiful when stained.

UK Craftsmanship quality underpins the construction of our SuDS Planters

Low 'Embodied Carbon'

Embodied carbon refers to the emissions associated with materials and construction processes throughout the whole lifecycle of a product. In the case of our SuDS Planters, Larch offers a low environmental impact Embodied Carbon option for the following reasons:

- Made from FSC sourced UK grown Larch – Carbon Neutral.
- Internal graduated perforated drainage pipe system for controlled release with sealed storage area to reduce plastic (recycled) components.
- Installation above ground to reduce installation energy impact.
- Linked directly to drainage system to reduce flash flood impact without being inundated with oil residues, wastes, pesticides etc often released into waterways following storm surges.
- Supports permanent aerial plant growth, which in turn:-
    - Promotes carbon sequestration.
    - Provides BNG (Biodiversity Net Gain) value of development.
    - Enhances aesthetic value of the site – promotes wellbeing.
    - Supports biodiversity, including nectar feeders.
    - Constructed in the United Kingdom by UK based craftsmen.

Why we chose GRP as an alternative to Larch

- For a more contemporary setting many clients request alternative modern outer materials, such as powder coated metal and various polymers. We have carefully considered the practical, installation, longevity, and other environmental impacts of alternative materials. GRP (Glass Reinforced Plastic) planters offer a compelling combination of durability, lightweight construction, and design flexibility, making them a popular choice for landscaping and interior design. They are resistant to weathering, corrosion, and UV degradation, ensuring a long lifespan and requiring minimal maintenance compared to other materials like metal or concrete.

- **Larger volume attenuation storage volume** for the same footprint.

  (Please refer to the volumes table page 6.)

- **Lightweight and Lower Carbon Footprint**:
  Being much lighter than concrete or ceramic, GRP planters require less fuel for transport, reducing carbon emissions. Additionally, installation is easier and requires minimal labour or machinery.

- **Strength-to-Weight Ratio:**
  GRP is incredibly strong yet significantly lighter than materials like concrete, making large planters easier to move and install, especially in rooftop gardens or areas with limited access.
- **Longevity and Durability:**
  GRP is resistant to corrosion, rust, and cracking, particularly in freezing conditions, and can last for decades with proper care, unlike many other materials.
- **Low Maintenance:**
  GRP planters do not require painting or staining and are not susceptible to pests like termites, leading to lower ongoing maintenance costs and effort.

- **Design Flexibility:**
  GRP can be moulded into a wide variety of shapes, sizes, and custom designs, and is available in a range of RAL colours* and finishes, allowing for tailored aesthetics.

  *https://www.ralcolorchart.com/

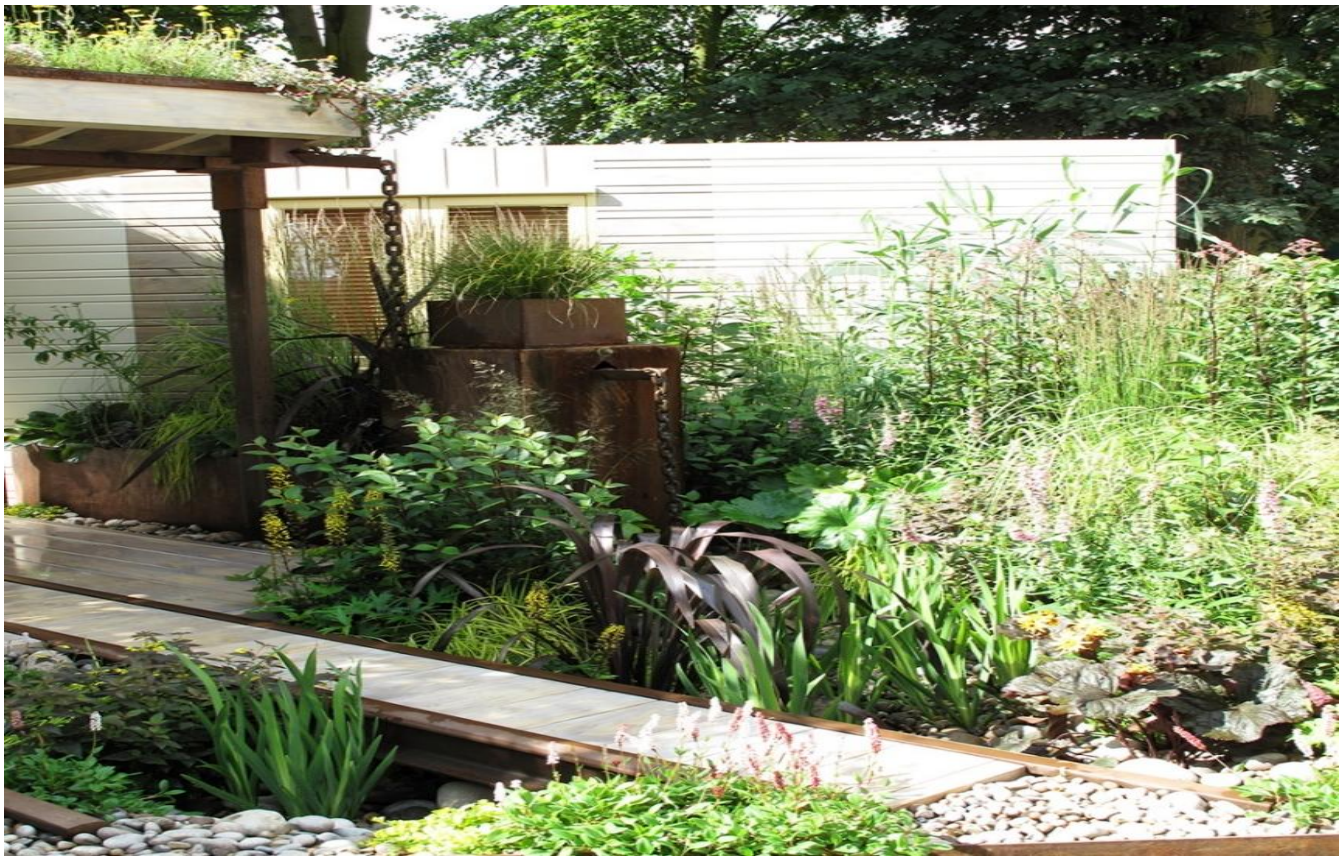
- **Weather Resistance:**
  They are designed to withstand harsh weather conditions, including frost and prolonged UV exposure, preventing fading and surface deterioration.

- **Repairability:**
  GRP is often easier and more cost-effective to repair if minor damage occurs compared to other materials.

- **Eco-friendliness:**
  GRP fabrication process is a low energy demanding process, can be made from recycled materials and is recyclable at the end of its life, making it a sustainable option.

Combination of SuDS Rain Garden planters with Rain Gardens

Water may discharge from a planter into the normal drains or it could be diverted further into a Rain Garden. For an enhanced biophilic and aesthetic effect, we like to encourage the construction of landscaped features that the water can travel along and slowly percolate into the soil, such as an attractively constructed rill, gulley or channel into a garden bed, as in the example below:



Combined with SuDs Rain Garden Planters, rain gardens further enhance the effectiveness of SuDS planters to provide an inexpensive and instant way to create an attractive attenuating Sustainable Drainage System (SuDS) that will significantly enhance the amenity and biodiversity value of an area.

SuDS planters are containerized versions of a rain garden, designed for urban settings where direct ground infiltration isn't possible, offering a flexible solution for managing rainwater in confined spaces like rooftops or terraces. A rain garden is a broader, ground-based concept within the larger field of Sustainable Drainage Systems (SuDS), requiring suitable soil and space for water to infiltrate naturally into the ground.

One important advantage of East of Eden SuDS planters, as part of a sustainable drainage strategy is that we have designed the internal slow drainage system to prevent the soil/compost layer becoming flooded. Hence clients can plant species in our SuDS planters across the UK that are suited to local climatic conditions, rather than be limited to wetland plants. In reality, most of the time, the planters will be dry, and wetland species do not thrive well. Clients can therefore plant for aesthetic and practical reasons, as well as to enhance Biodiversity Net Gain.

For a SuDS planters quote, please complete our Contact form