Dŵr Cymru
Welsh Water

ARUP

Gelli Road

GELLI ROAD | **RAINSCAPE LLANELLI**

RainScape Llanelli

Help us to create a cleaner, greener community for you to live in!

We want to invite you to be part of our latest RainScape opportunity to help reduce sewer flooding in Llanelli.

RainScape catches rain water and slows down the speed at which it goes into our sewer network and in some cases, removes it completely. It's a better way of doing things.

The next phase will look at how we can reduce the amount of rain water that runs off roofs entering our sewers in the area. But to do this, we need your help.

We need you to help us change the way the rain water from your roof drains away, but the good news is it won't cost you a penny.

There are many ways you can do this, and this booklet will give you an idea of the options available to you. There are suggestions to inspire you to come up with the best design for your home.

If you would like further information you can call 0800 085 3968 and ask for Rebecca Jones or email rainscape@dwrcymru.com

RainScape Llanelli

What is RainScape?

At Welsh Water, we're leading the way in developing and using new, innovative solutions to manage the amount of surface water entering our sewers. We've called this approach RainScape.

What's the problem?

In Llanelli our sewers are mostly combined meaning one pipe has to cope with both rain water and waste water from our homes. The combined sewers take this water to sewage pumping stations and sewage treatment works for it to be treated and cleaned.

Most of the rain water falling on roofs and patios on Gelli Road is entering the combined sewer and during periods of heavy rainfall more water is getting into our network than it can cope with. When there is too much rain water and waste water in the combined sewer it can overflow into the Afon Dafen at the combined sewer overflow. There is also an increased risk of sewage flooding as the pipes are too full.

We need to create more capacity in our sewer system to reduce these risks.

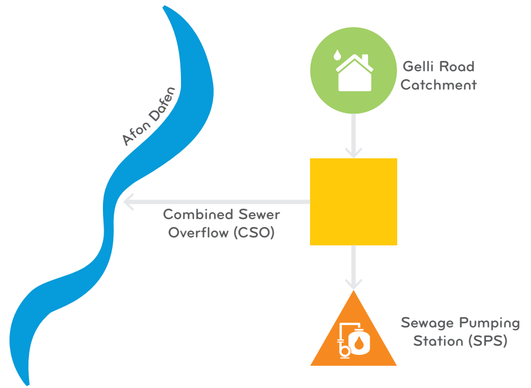
What's the solution?

Resolving this problem using traditional methods such as building additional storage tanks and pipes is expensive and unsustainable, and it doesn't tackle the root cause of too much water getting into the sewers.

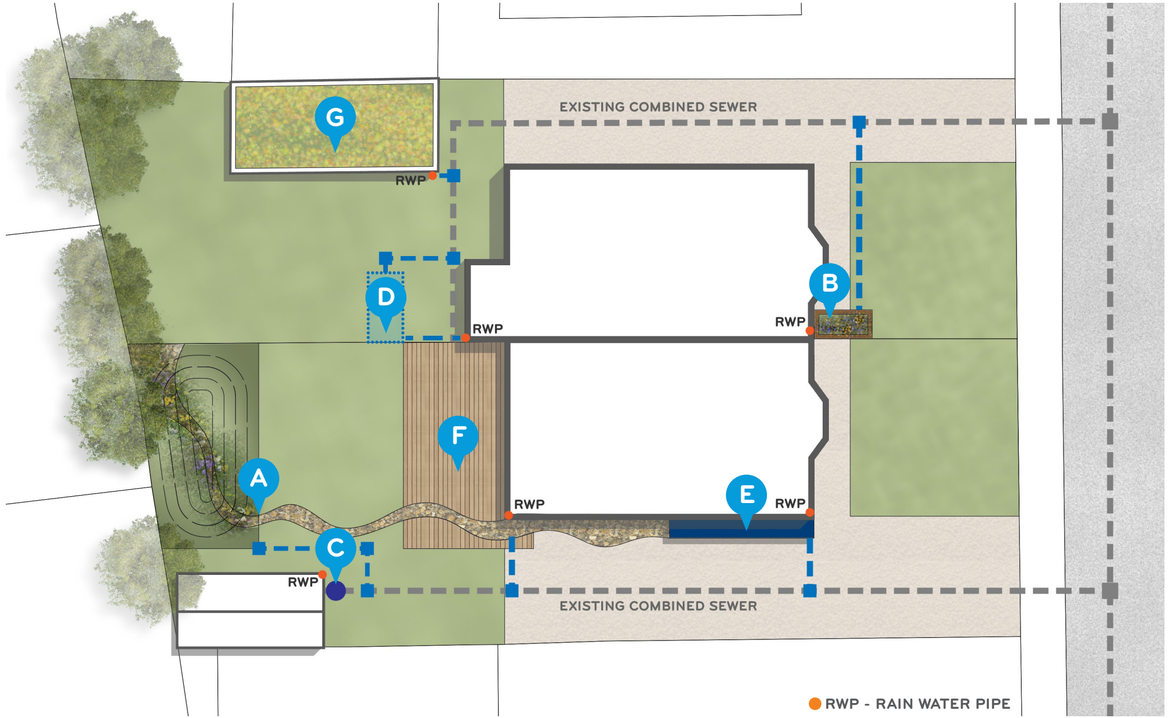
For our latest RainScape scheme on Gelli Road we would like your help to catch, redirect and slow down all the surface water from your roof, outbuildings and patios before it enters the combined sewer. This will create more space in the combined sewer and reduce the risk of sewer flooding and combined sewer overflows.

Each house on Gelli Road has a different roof, outbuilding and patio area draining to the combined sewer. We will let you know how much water you need to store from your roof, specific to your property. Using the data sheet at the back of this booklet you can pick and choose from the design elements to achieve your storage volume.

As part of this work, the cost of your new sustainable garden will be covered by us, and we've given you an idea of costs at the back of this booklet.



Design elements example design



Design elements

Example design in rear garden

Reduce the risk of sewer flooding by slowing down the rain water from your roof, outbuildings and patios.

Become more resilient to climate change by slowing your rain water and freeing up more capacity in the existing sewers.

Reduce the amount of flow in the sewers through your rain garden transferring rain water into the atmosphere by evaporation from the soil and transpiration by plants.

More capacity in the existing sewers will help to prevent 1.5 million litres of pollution from entering the environment each year.

Example design in front garden

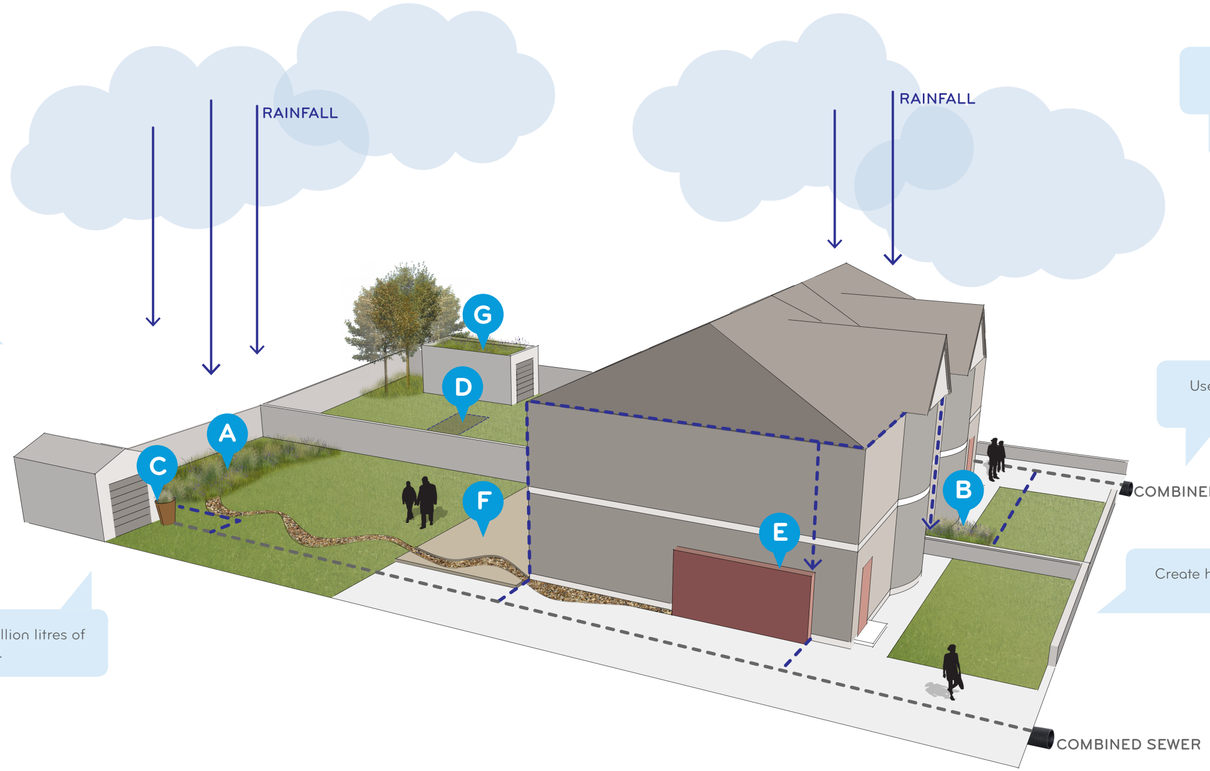
Save up to 22,000 litres of water every year by using your rain water re-use tank to flush your toilet.

During heavy rainfall an average house on Gelli Road will need to slow down the equivalent of 25 bath tubs of water

Use the rain water in your water butt for your plants instead of paying for water.

Create habitats and increase biodiversity with your rain garden or planter.

Enjoy the look of your new rain garden!



Rain garden and drainage channel

What is a rain garden?

Rain gardens are small dipped planted areas that store rain water from your roof, outbuilding and/or patio when it rains. They can include basins, channels, planters and ponds. They can include a mixture of planting but the type of soil in Gelli Road means all rain gardens must be lined. The rain water from your roof could be taken to the rain garden through a buried pipe or an above ground channel. Some of the plants you could use on your rain garden are shown to the right.

How does it work?

Rain gardens help to slow down the rain water by releasing it very slowly into the combined sewer. The overflow pipe will control the level of the water held in the rain garden during heavy rainfall and take the rain water directly into the combined sewer.

What maintenance is required?

Maintenance is relatively simple, all you need to do is regularly check that the overflows are not blocked. This only takes a couple of minutes and is easy to do.

Quarterly:
- Remove and replace diseased or dead plants as needed.
- Inspect rain garden for weeds and remove.
- If plants show signs of drought stress during dry spells, water deeply for 15 minutes when required.

Annually:
- Ensure inlets, outlets and overflow pipes are clear of sediments, debris and dead plants.
- Check for sedimentation. Occasionally use a flat shovel to remove any excess.
- When new growth begins in the spring, cut back dead plant material 50mm above the ground. Remove and replace dead or diseased plants. (Leave some dead stems and seed heads for wildlife).
- Regular mowing or fertilising is not required.


Blechnum spicant (Bs) - Hard Fern


Carex pendula (C pe) - Pendulous Sedge


Crocosmia x crocosmiiflora (C r) - Montbretia


Deschampsia cespitosa (D ce) - Tufted Hair Grass


Festuca rubra (F r) - Red Fescue


Iris pseudacorus (I ps) - Yellow Flag Iris


Iris sibirica (I sy) - Siberian Iris

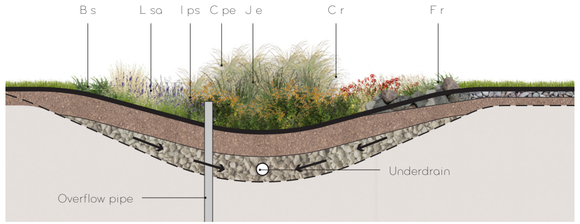

Juncus effusus (J ef) - Soft Rush


Luzula nivea (L niv) - Snowy Woodrush

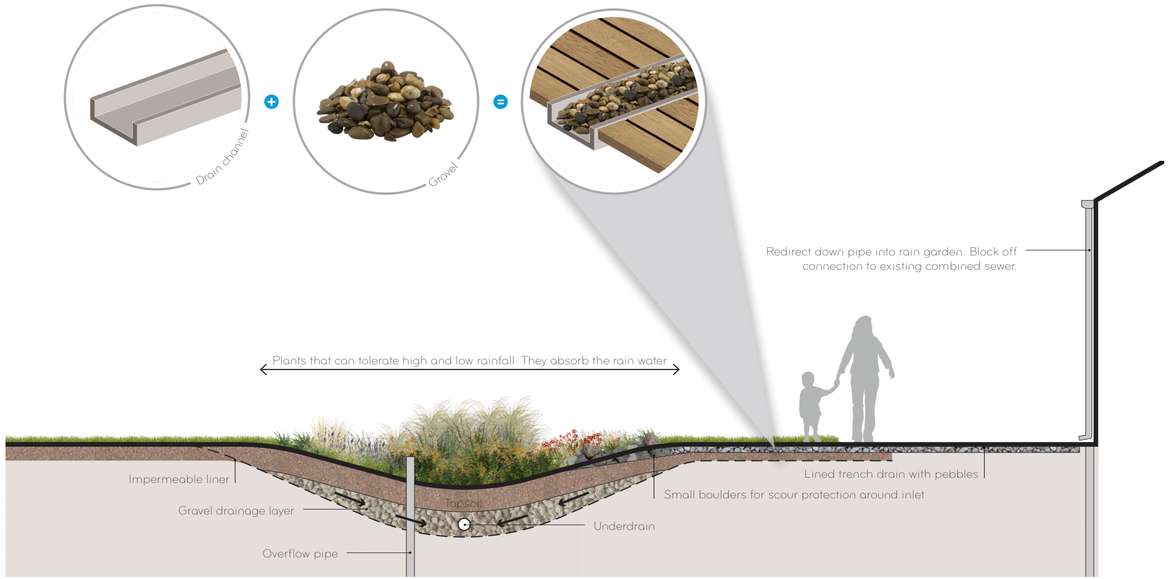

Luzula sylvatica (L sy) - Greater Woodrush


Lythrum salicaria (L sa) - Purple Loosestrife


Stipa tenuifolia (S ten) - Feather Grass



Rain garden and drainage channel



B Raised planter

What is a raised planter?

A raised planter is a flowerbed that stores and filters the rain water from your downpipe. They come in many sizes, shapes and materials to suit your garden.

How does it work?

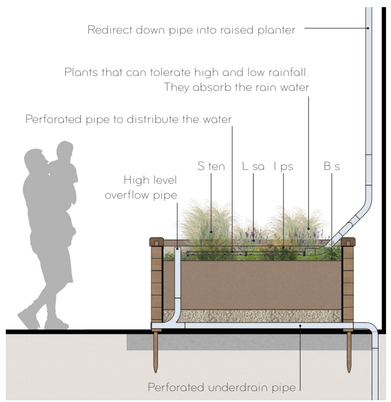
The rain water will travel through the soil and be released slowly into the combined sewer by the underdrain. Some of the water will be absorbed by the plants or evaporated. If there is heavy rainfall, the high level overflow pipe will take the rain water directly into the combined sewer. Some of the species you could use on your rain garden are shown to the right.

What maintenance is required?

Maintenance is relatively simple, all you need to do is regularly check that the overflows are not blocked. This only takes a couple of minutes and is easy to do.

Quarterly:
- Remove and replace diseased or dead plants as needed.
- Inspect planters for weeds and remove.
- If plants show signs of drought stress during dry spells, water deeply for 15 minutes when required.

Annually:
- Ensure inlets, outlets and overflow pipes are clear of sediments, debris and dead plants.
- Check for sedimentation. Occasionally use a flat shovel to remove any excess.
- When new growth begins in the spring, cut back dead plant material 50mm above the ground. Remove and replace dead or diseased plants. (Leave some dead stems and seed heads for wildlife).
- Regular mowing or fertilising is not required.



C Water butt

What is a water butt?

A water butt is connected to your rain water downpipe and collects the water from your roof. There are a variety of sizes, shapes, colours and materials to choose from.

How does it work?

The rain water will fill the water butt and it will be released slowly into the combined sewer via the drain down pipe. Some water can be kept in the butt for it to be used in your garden to save on your water bills. During heavy rain when the water butt is full, all excess rain water will bypass the water butt and go directly into the combined sewer.

What maintenance is required?

Remove any leaves from the filter and clean the water butt once a year.

D Undergound storage tank

What is an undeground storage tank?

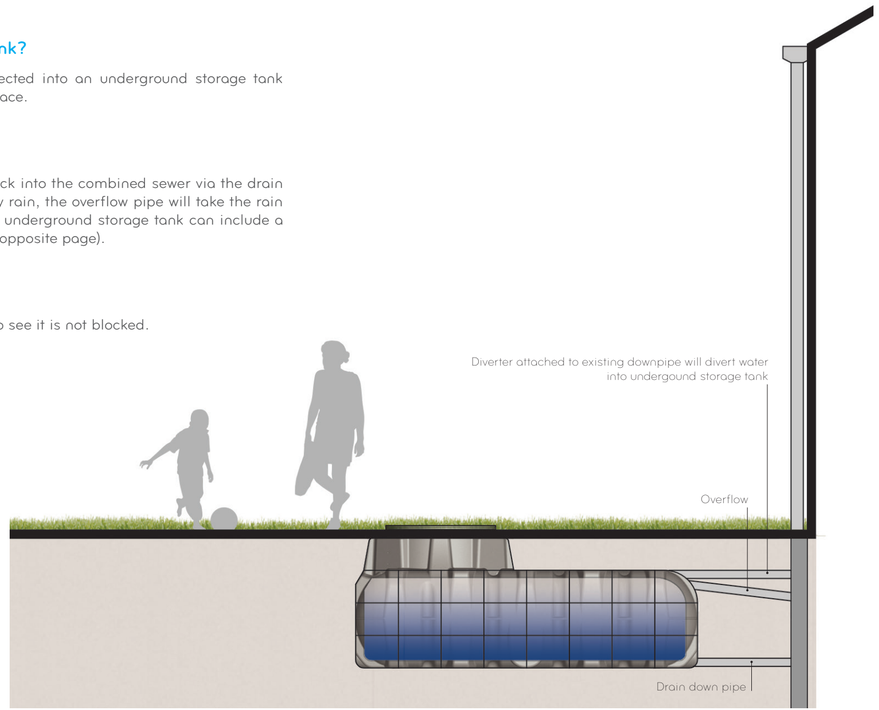
Your rain water downpipes will be connected into an underground storage tank which will not be noticeable from the surface.

How does it work?

The tank will slowly release rain water back into the combined sewer via the drain down pipe. If the tank is full during heavy rain, the overflow pipe will take the rain water directly to the combined sewer. An underground storage tank can include a water re-use system (as explained on the opposite page).

What maintenance is required?

An annual visual check of the tank filter to see it is not blocked.



E Water re-use system

What is a water re-use system?

A water re-use system can be fitted to some types of water butts, above ground and underground storage tanks. A pump will refill your toilets from the butt or tank.

How does it work?

The water butt or underground storage tank will fill as usual. The water that is re-used to flush your toilets will reduce the amount of water that enters the combined sewer and save on your water bills.

What maintenance is required?

Every few months check the filter is clear and pumps are working. Every 10 years clean the tank of sediment.

F Permeable surface

What is a Permeable Surface?

A permeable surface is any surface that will allow rain water to pass through it into the soil e.g. ground reinforced pavers, permeable paving and decking.

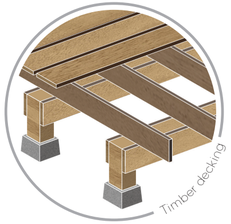
How does it work?

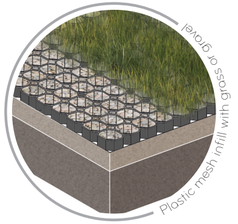
The rain water from any existing hard standing area that is connected to the combined sewer will either have to be stored or soaked into the ground.

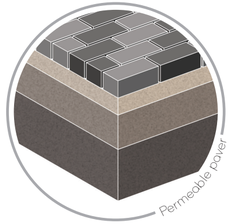
It can be soaked into the ground by replacing the hard standing with a permeable or porous material.

What maintenance is required?

- Standard maintenance of grass or decking.
- Brush sweep paving surface and joints.







G Green roof for outbuilding

What is a green roof?

Green roofs have grass and plants growing on them and these can be placed on the flat roof of an outbuilding. Suitability of the existing roof would need to be reviewed by the supplier and structural engineer.

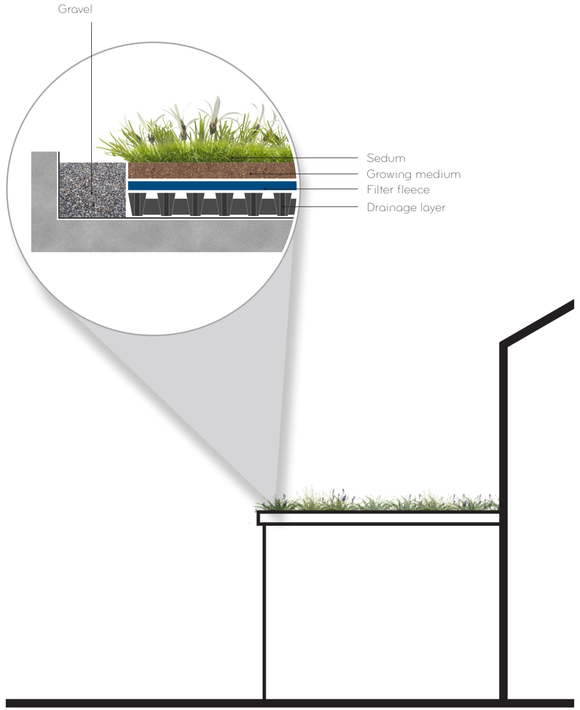
How does it work?

The rain water from any existing outbuildings that are connected to the combined sewer will either have to be stored or slowed down using a green roof. The grass and plants will soak up the water and slow it down and some excess water will be evaporated.

What maintenance is required?

Annually (Winter)

- Ensure drainage outlets and inspection chambers are clear of vegetation, as well as gutters and shingle perimeters (as with any other roof).



Plant list

You can choose a mix of plants from this suggested list depending on the colours you would like to see throughout the seasons of the year.

FALL
WINTER
SPRING
SUMMER

FALL
WINTER
SPRING
SUMMER

FALL
WINTER
SPRING
SUMMER

FALL
WINTER
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SUMMER

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SUMMER

FALL
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SUMMER

FALL
WINTER
SPRING
SUMMER

FALL
WINTER
SPRING
SUMMER

Design elements data sheet

Select from this list the design elements to store and slow down the rainwater from your home.

	Storage Volume (m3)	Approximate Size	Maintenance
	1.0 m3	9.0 - 24.0 m2	High
	2.0 m3	15.0 - 38.0 m2	High
	3.0 m3	22.0 - 52.0 m2	High

	Storage Volume (m3)	Approximate Size	Maintenance
	0.5 m3	1.2(H)x1.2(W)x1.0(L)m	High
	1.0 m3	1.2(H)x1.2(W)x2.0(L)m	High
	1.5 m3	1.2(H)x1.2(W)x3.0(L)m	High
	2.0 m3	1.2(H)x1.2(W)x4.0(L)m	High

	Storage Volume (m3)	Approximate Size	Maintenance
	0.10 m3	0.9(H)x0.4(W)x0.4(L)m	Low
	0.15 m3	0.9(H)x0.5(W)x0.5(L)m	Low
	0.25 m3	1.0(H)x0.5(W)x0.5(L)m	Low

	Storage Volume (m3)	Approximate Size	Maintenance
	1.5 m3	0.65(H)x1.2(W)x2.4(L)m	Medium
	3.0 m3	0.65(H)x2.4(W)x2.4(L)m	Medium
	5.0 m3	0.90(H)x2.2(W)x2.9(L)m	Medium
	7.0 m3	1.10(H)x2.3(W)x3.3(L)m	Medium

	Storage Volume (m3)	Approximate Size	Maintenance
	0.235 m3	1.8(H)x0.2(W)x0.8(L)m	Medium
	0.470 m3	1.8(H)x0.2(W)x1.6(L)m	Medium
	0.705 m3	1.8(H)x0.2(W)x2.4(L)m	Medium

	Storage Volume (m3)	Approximate Size	Maintenance
	0.2 m3	5.0 m2	Low
	0.4 m3	10.0 m2	Low
	0.8 m3	20.0 m2	Low
	1.0 m3	25.0 m2	Low

	Storage Volume (m3)	Approximate Size	Maintenance
	0.2 m3	5.0 m2	High
	0.4 m3	10.0 m2	High
	0.8 m3	20.0 m2	High
	1.0 m3	25.0 m2	High

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Drainage channel
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Dŵr Cymru
Welsh Water

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May 2017