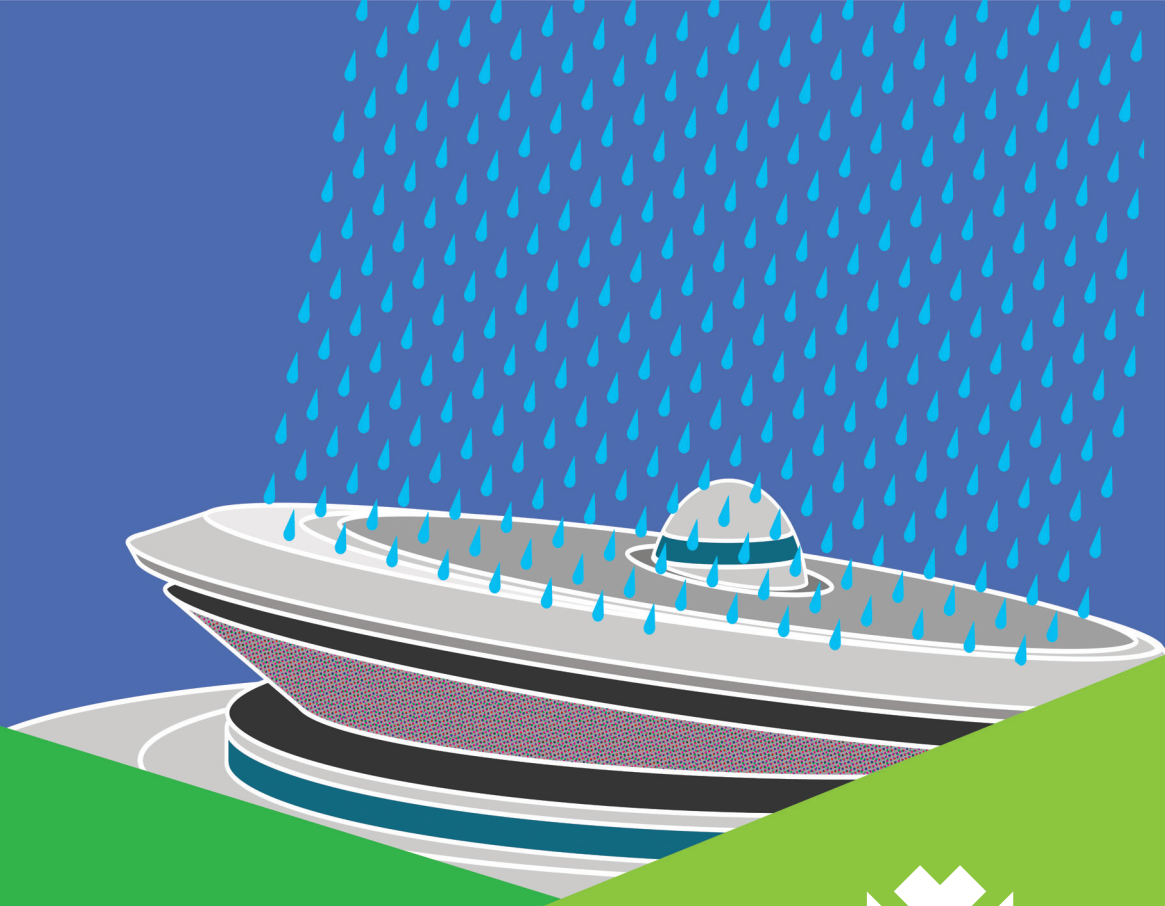


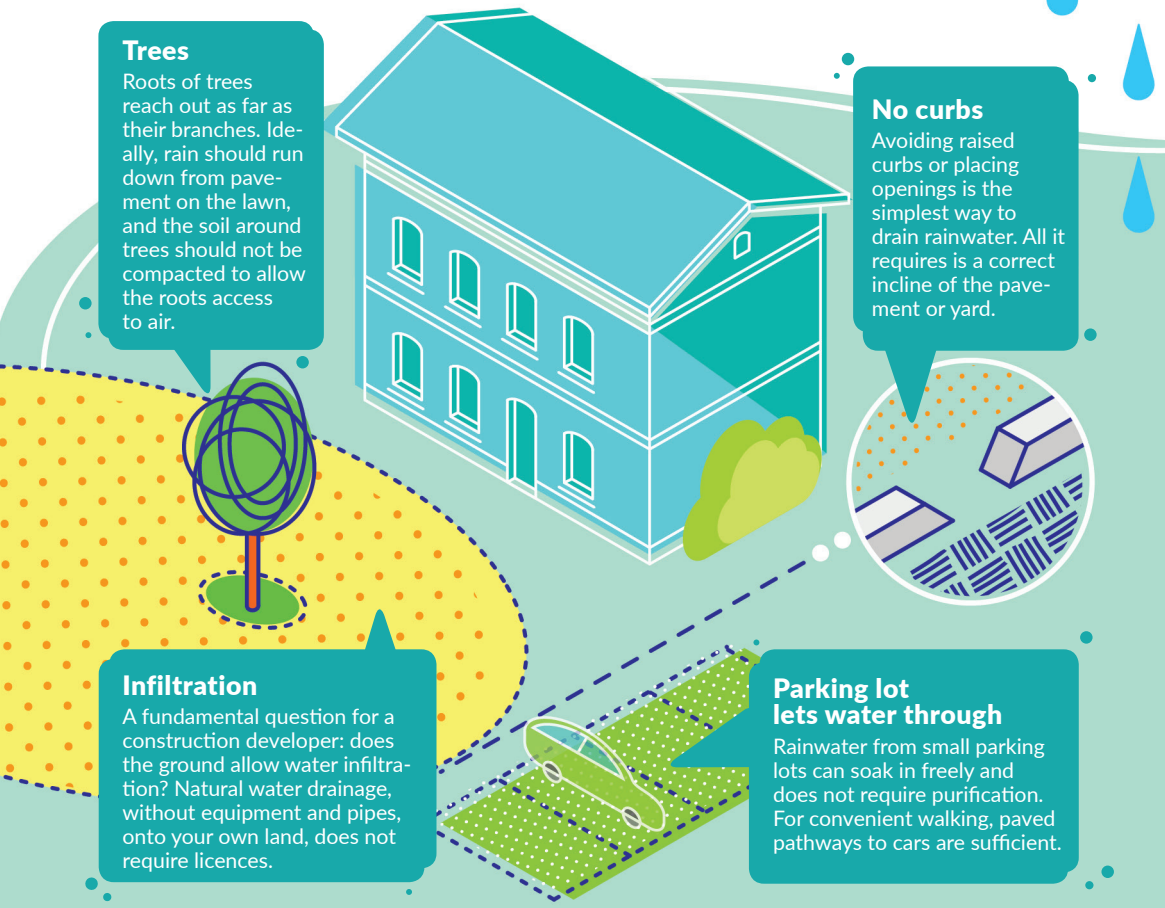
Metropolia GZM

IT'S RAINING, COLLECT THE WATER!

EVERY YEAR, THREE TIMES AS MUCH WATER RAINS ON OUR CITY THAN IS SUPPLIED THROUGH THE WATERWORKS

Do not seal off!

Sealing surfaces causes increase in and acceleration of rainwater drainage. Sewage system does not have sufficient capacity for such large amounts of water during downpours. On the other hand, during droughts, yellowing lawns, drying trees and a low water level in wells indicate that there is not enough water in the ground - it is gone. What's the solution? Let us avoid paving or hardening the ground in our neighbourhoods and yards. Let's try and keep the water where it falls, allowing it to soak in. It's the cheapest and best solution.*



Trees
Roots of trees reach out as far as their branches. Ideally, rain should run down from pavement on the lawn, and the soil around trees should not be compacted to allow the roots access to air.

No curbs
Avoiding raised curbs or placing openings is the simplest way to drain rainwater. All it requires is a correct incline of the pavement or yard.

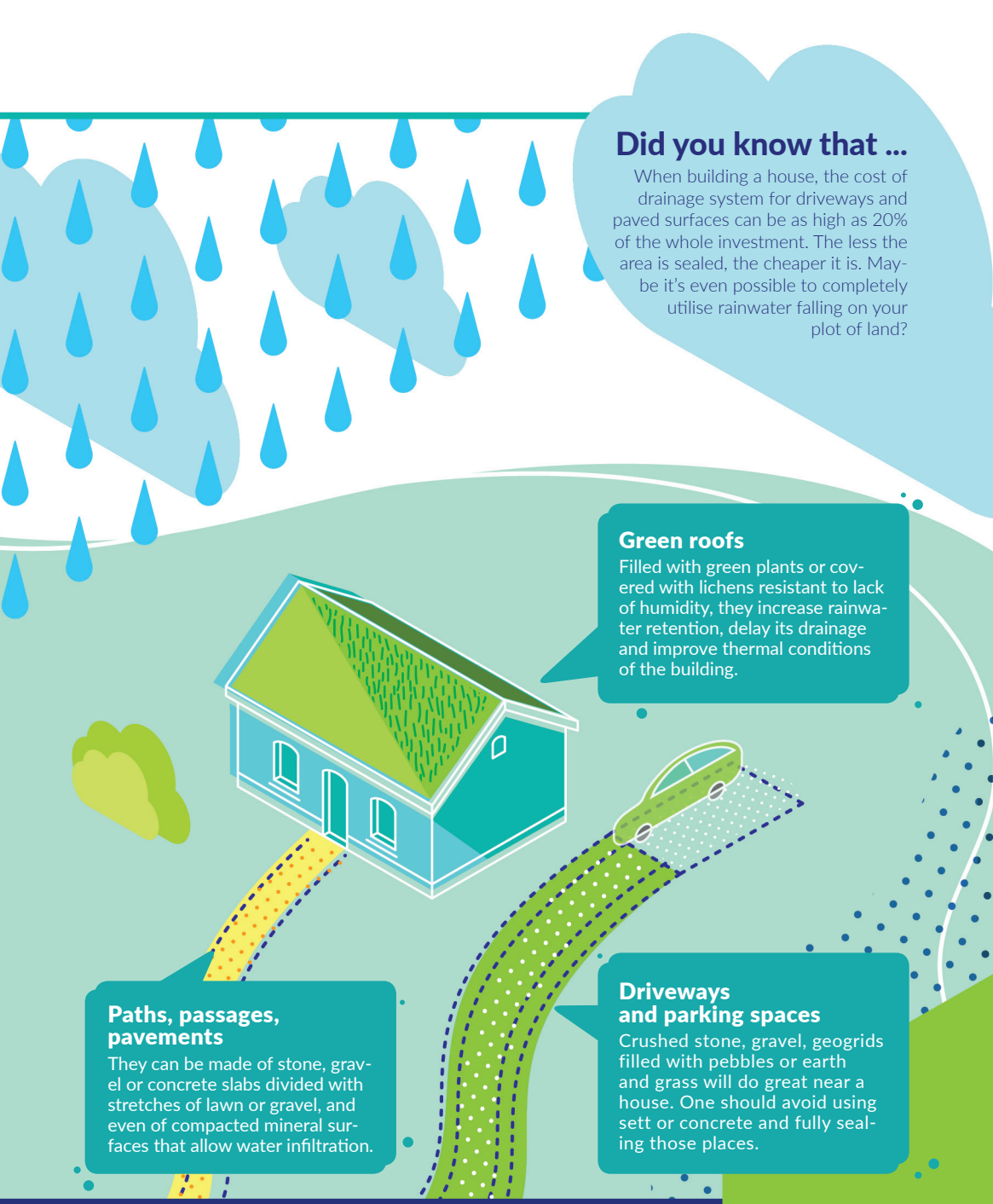
Infiltration
A fundamental question for a construction developer: does the ground allow water infiltration? Natural water drainage, without equipment and pipes, onto your own land, does not require licences.

Parking lot lets water through
Rainwater from small parking lots can soak in freely and does not require purification. For convenient walking, paved pathways to cars are sufficient.

* When engineers calculate the amount of water that can drain from a given area, they multiply the amount of precipitation by 0.9 for sealed surface, and by 0.1 for green surface which allows water to soak in. This means that 100 m^2, even in a small rain of 5 mm, will generate 450 litres of water! The same amount of water falling on a flower meadow or a lawn will mostly soak into the ground, with no more than

Did you know that ...

When building a house, the cost of drainage system for driveways and paved surfaces can be as high as 20% of the whole investment. The less the area is sealed, the cheaper it is. Maybe it's even possible to completely utilise rainwater falling on your plot of land?



Green roofs

Filled with green plants or covered with lichens resistant to lack of humidity, they increase rainwater retention, delay its drainage and improve thermal conditions of the building.

Paths, passages, pavements

They can be made of stone, gravel or concrete slabs divided with stretches of lawn or gravel, and even of compacted mineral surfaces that allow water infiltration.

Driveways and parking spaces

Crushed stone, gravel, geogrids filled with pebbles or earth and grass will do great near a house. One should avoid using sett or concrete and fully sealing those places.

50 litres draining away. One can easily imagine how much it means for the costs of building and maintaining infrastructure! In order to spend less on maintaining a high standard of living in the city, we should avoid sealing the surface area. Simple.

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Drain slowly!

When rainwater rapidly runs down the sealed surface of roofs, squares and streets, and into pipes, the risk of flooding increases dramatically. At the same time, the water is irreversibly lost: it does not soak into the ground, it does not supply lawns, gardens and trees. Slow drainage, with detaining the water in ponds, house gardens, ditches and recesses is the best way to prevent floods and droughts. Let us return natural circulation of water to urban ecosystems as well.*

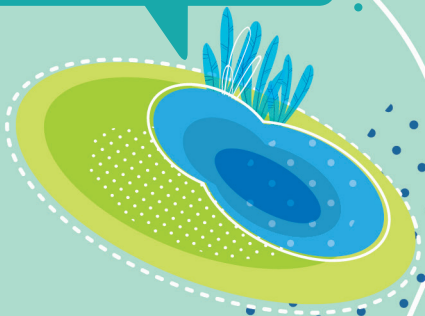
* Equally important as 'retention' - collecting rainwater for later use, is 'detention' - delaying and temporarily catching rainwater. Rainwater sewage systems are built in cities to accommodate moderate rainfall. Accumulated rainwater draining from many sealed areas during a major downpour may prove to be too

Did youknow that ...

Green-blue infrastructure: this is the professional term for combining ponds, rain gardens, rivers and ditches with city greenery in the urban landscape.

Ponds

Pond in a garden offers cooling and relaxation. A pond supplied with water from the gutter will not dry out, while reeds and bulrush growing on the banks, and lilies floating on the surface will complete the picture.



Rain garden

Water-loving plants in a rain garden will make an excellent addition to its appearance, attracting rare species of birds and insects. It's a way to protect biodiversity in the city!

Over the surface, not down the drain

It is much easier, cheaper and safer to drain water over the surface than through underground pipes. Stone troughs have been known for ages. They can decorate any garden.

much for the drainage system, resulting in flooding of the area and basements. That is why delaying rainwater drainage is so important.

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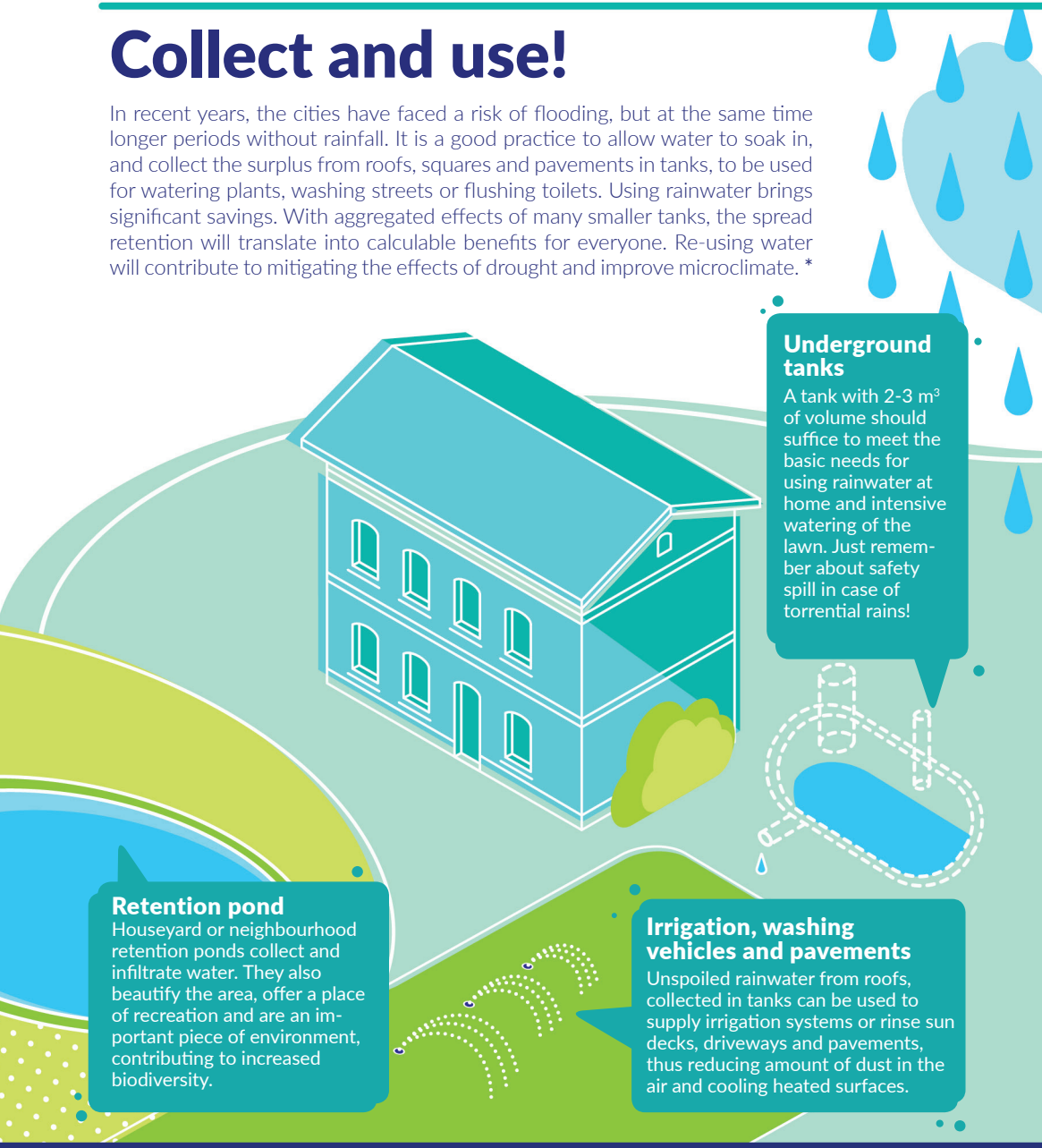
Collect and use!

In recent years, the cities have faced a risk of flooding, but at the same time longer periods without rainfall. It is a good practice to allow water to soak in, and collect the surplus from roofs, squares and pavements in tanks, to be used for watering plants, washing streets or flushing toilets. Using rainwater brings significant savings. With aggregated effects of many smaller tanks, the spread retention will translate into calculable benefits for everyone. Re-using water will contribute to mitigating the effects of drought and improve microclimate. *



Underground tanks
A tank with 2-3 m^3 of volume should suffice to meet the basic needs for using rainwater at home and intensive watering of the lawn. Just remember about safety spill in case of torrential rains!

Retention pond
Houseyard or neighbourhood retention ponds collect and infiltrate water. They also beautify the area, offer a place of recreation and are an important piece of environment, contributing to increased biodiversity.

Irrigation, washing vehicles and pavements
Unspoiled rainwater from roofs, collected in tanks can be used to supply irrigation systems or rinse sun decks, driveways and pavements, thus reducing amount of dust in the air and cooling heated surfaces.

* Average water usage in cities is estimated to be 150 litres per person. Of that, nearly 1/4 is used for flushing toilets. A full bath is nearly 200 litres of water, and a 3-minute shower uses ca. 45 litres. Meanwhile, we only drink between 2.5 and 3 litres of water. Maybe it's about time to think how not to waste the water that's coming down from the sky for free?

Did youknow that ...

Water dripping from a broken or loosely closed tap adds up to 350 litres of wasted water per month.

Using rainwater at home

It is a good solution, especially when building a house. Rainwater has many advantages. It is free and easily available. Soft water is suitable for washing clothes and personal hygiene, it can also be used to flush toilets.

Watering a garden

Rainwater from the roof or clean surfaces of sealed pavements and squares is perfect for irrigation.

Rainwater barrels

Even a small rain can fill a 200 litre barrel with water. Placed at each gutter, they can supply water for the yard garden or washing for over a dozen days.

0.5 m^3 for every 100 m^2 of a garden - this is how much water it takes for intensive irrigation. How not to pay for water? Using rainwater to irrigate the garden is not only frugal, but also shows care for this precious resource and the environment.

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It's raining, collect the water!



Do not seal off! Surface of footpaths, driveways and squares near buildings is crucial. It is good to find a balance between a comfort of walking on an even surface and rainwater infiltration. Water can run down from granite cobbles straight onto a lush lawn, soak into gravel between elegant concrete slabs or pour between stones on parking lots. Proper inclines and lack of raised curbs allow managing rainwater without a costly drainage system. The rest depends only on our imagination.



Drain slowly! Surface rainwater drainage allows to delay its draining, to let it soak into rain gardens. Water will soak right into the lawn if few centimetres of spaces are put between stretches of the pavement, as shown on the picture above. A great alternative to underground pipes is combining stone troughs and water-loving plants, such as: sedge, reed mannagrass, bistort, yellow or Siberian iris, reed canary grass, water forget-me-not, water mint, valerian, common reed and soft rush.



Collect and use! The cheapest and simplest method is to use clean rainwater from roofs and pavements to water plants. Use it as close to the place where it falls as possible, where we can collect it. At a scale of a residential estate, it can be a surface or underground reservoir, supplying an irrigation system or tree-watering bags. In a town house, barrels placed by gutters and a simple watering can will make do, while in the countryside, even a steel tub can be useful.

Adjust the project to the nature of the place.

Sand and grass will be excellent for a playground. Bike racks may require some fortification, but they certainly do not need to be fully sealed. Planning paths around a house or a parking spot, look for inspiration, avoiding the sealing cobblestone. Adjust the project to real-life needs to ensure slow water drainage, a valuable feature fostering a good climate around the house.

Different retention scale.

Bioswales will prevent detention - a delay in drainage. A pond planted with lush vegetation will have a similar effect. A larger retention pond will enhance the appeal of the entire area around the residential or building complex. In total - they will help fight against flooding and aftermath of persistent heat.

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Scan the code or go to www.metropoliagzm.pl
and learn more.

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