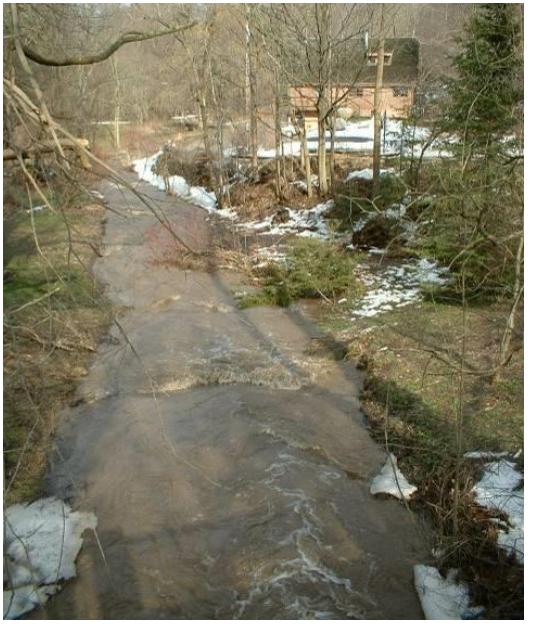
Environmental Landscape Project Ideas for Property Owners

What is stormwater runoff and how does it affect me?

Stormwater runoff is simply rainfall or snowmelt that runs off of surfaces like sidewalks and lawns, travels through storm drains under our streets and ends up in a nearby waterway. In developed communities like Dundas, hard surfaces such as roofs and pavement cause more stormwater runoff to be produced and also cause the runoff to become more polluted. This water can cause a number of problems in the community because the runoff picks up pollutants along its' path. The risks associated with stormwater include increased flooding, property damage and poor water quality resulting in degraded aquatic habitat and loss of aquatic species.

Why manage stormwater in Dundas?

Activities aimed at managing stormwater specifically in Dundas are necessary for two main reasons. First, because of its' high population density, Dundas has a high proportion of paved surfaces which create large amounts of stormwater runoff after a rainfall. Secondly, Dundas is our last opportunity to improve the water quality in the Lower Spencer Creek before it flows into Cootes Paradise and then into Hamilton Harbour. Because Spencer Creek is the single largest source of water supplying Cootes Paradise, the benefits of improving the water quality of stormwater originating in Dundas would be both local, as well as widespread.



What is Green Infrastructure?

Green infrastructure is also called low impact development, or stormwater landscaping and is simply a way to approach urban development design that helps protect our water resources. Green infrastructure draws on techniques that filter and absorb excess stormwater runoff. These technologies can decrease the amount of runoff entering nearby watercourses, in combination with improving the quality of that water. Everyone in the community benefits from improved water resources. Benefits of using such infrastructure include increased property values, a home that is better protected against flooding and building a community that is more resilient to climate change and large storms.

How does Green Infrastructure benefit me as a homeowner?

While using green infrastructure in and around our homes can help us to build a community that is more resilient to climate change and extreme storm events, these techniques also provide many direct benefits to homeowners such as:

- Decreased risk of flooding
- Decreased pooling water
- Decreased risk of property damage
- Decreased watering costs
- Increased property values
- Increased visits from butterflies and song birds
- Visually interesting and beautiful yards

Where can it be used?

Green infrastructure is a flexible design approach, meaning that it can be used almost anywhere and can be tailored to suit just about any property. Green infrastructure works on any size lot, and can be used whether you have a flat lot or steep slopes, whether you have rocky, dry or tight, clay soils. Whether you already have a finished landscape and want to add a few stormwater elements, or are planning to rip out your yard and start fresh, green infrastructure works anywhere to help you manage your stormwater on site and can save you money.

Turn the page to learn more about the green infrastructure options recommended specifically for homeowners living in Dundas.

Photo credit: Barr Engineering

Downspout Disconnect

One of the most significant and simplest things you can do to manage stormwater runoff is to disconnect the downspout that directs the water from your roof and eavestroughs to the storm sewer system and re-direct it to your yard or garden. This allows stormwater to flow away from your home's foundation, decreasing your risks of flooding, and allowing it to slowly filter and soak into the ground. Re-directing the stormwater to your yard or garden also allows you to put the water to good use and avoids letting it go to waste through the sewer system.

What is it?

On most houses, eavestroughs run along the edges of the roof collecting rain, snowmelt and leaves, and transport this as stormwater to vertical downspouts, which were traditionally connected to the municipal sewer system. To disconnect a downspout, the connection between the downspout and the sewer is removed, the sewer pipe is capped and the downspout is then re-directed with the use of an extension pipe.

Can I do it myself?

Yes – most downspout disconnections are simple and can easily be done by the homeowner. All the materials needed can be found and purchased at your local hardware store for less than $25, in most cases. Many of the materials needed are things that you probably already have at home such as a hacksaw, screwdriver, metal file and tape measure. For more complex cases requiring creative disconnection paths, or for smaller lots flanked tightly by other properties, you should consider contacting a licensed contractor.

Where should I re-direct the downspout?

Direct the stormwater to a permeable surface like a lawn or garden, or to a storage device like a rain barrel so that it can be stored and saved for later use when needed. It is important to re-direct the downspout in a way which allows the water to flow away from your foundation as well as from structures such as retaining walls and sheds. Also avoid adding the extension across a walk-way, patio or driveway because this can create a tripping hazard or could cause the extension to crack and require replacement. To avoid soil erosion from the strong current of water, use a splash pad beneath the outflow of the downspout to dissipate the energy.

Do-it-Yourself Checklist

Use this checklist to ensure you have the tools and materials needed to disconnect your downspout.

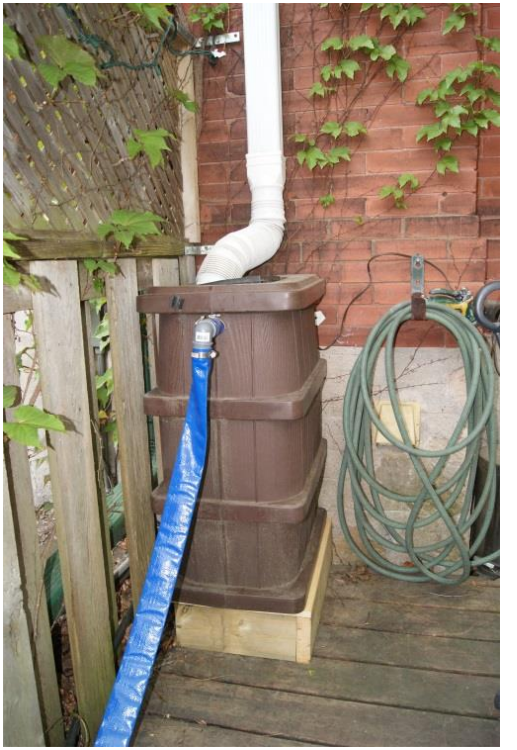
Supplies Required:

- Hacksaw
- Tape measure
- Screwdriver
- Drill
- Sheet metal screws
- Downspout elbow
- Downspout pipe extension
- Cap or plug to seal drain pipe
- Splash pad or a few river rocks
- Wall brackets

Notes:

Rain Barrels

A simple option to help decrease your stormwater impact is to purchase and install a rain barrel. A rain barrel will allow you to capture and use rain water for watering your lawn and garden or for rinsing off gardening tools and outdoor furniture. They also decrease the amount of stormwater runoff that enters the storm sewer system immediately after a storm.



What is it?

A rain barrel is a large container that is used to collect stormwater runoff from your roof, which can then be stored and used later, when needed. Rain barrels can reduce your use of municipal water, lowering your water bill and lessening demands on city stormwater systems, especially during peak summer periods.

Where should I install it?

Most rain barrels are placed directly under the downspout in order to be able to passively harvest the runoff. Install the rain barrel on a strong, level surface such as a patio or paving stone; as your rain barrel fills with water, it will become extremely heavy – a typical 220 litre barrel will weigh over 400 pounds when full! Many users like to elevate the barrel by

placing it on cinder blocks or extra patio stones to increase the gravitational force of the water running through the hose.

Which rain barrel should I purchase?

Rain barrels can range in cost from $40 for the simplest version to over $300, depending on the features, style and size of barrel that you desire. Features like diverters, spigots and filtering systems generally increase costs. There are a variety of styles and colours to match your landscaping style, so be sure to shop around. You should select a barrel that can hold most of the rain that comes off your roof from a typical rain event; in some cases, this may mean buying one barrel for each downspout or connecting multiple rain barrels together.

Will it require a lot of maintenance?

It is a good idea to try to completely drain your rain barrel before a storm to allow for full capacity storage. Rain barrels must be drained and stored upside down during the winter – water left inside the barrel will freeze and can crack your barrel. If you notice leaves and debris inside the barrel they should be removed to prevent clogging of spouts – using a rain barrel with a filter built in can stop this from happening.

Worksheet Space

Use these sample calculations to help you estimate the amount of water you could capture by using a rain barrel in your yard. The amount of water you are able to capture will depend on the size and number of rain barrels you have.

Divide your total roof area (m^2) by the ratio of downspouts that will be discharging into your rain barrel. Multiply this number by a typical rainfall to find out how much water you could conserve and capture during that one event.

Example: Total roof area ÷ 2 of 3 downspouts = $150m^2 \div 0.67 = 100.5m^2$
Roof area draining to rain barrels × 10mm = $100.5m^2 \times 0.01m = 1.005m^3$

A house with a roof area of $150m^2$ that has three downspouts could direct roughly $1.005m^3$, or **1005 litres** of rain during a 10mm rainfall by diverting two of their three downspouts to rain barrels!

Rain Gardens

A great way to create a unique, beautiful and low maintenance yard is to create a rain garden which provides dual stormwater benefits. They store the first flush of rain water after a storm, decreasing the pressure on our storm sewers and natural waterways and they clean the stormwater by allowing it to filter down into the ground. Rain gardens remove up to 90% of nutrients and chemicals, up to 80% of sediments from the runoff and allow for 30% more water to soak into the ground compared to a conventional lawn.

What is it?

A rain garden is a landscaped bowl-shaped garden that is designed to accept and clean stormwater runoff from nearby hard surfaces by allowing it to be absorbed by plants and soak into the ground.

How is a rain garden different from a traditional garden?

At first glance, a rain garden looks exactly like a typical perennial garden. The infiltration and cleaning benefits of a rain garden come from its' loose, well-draining soil and its' dimensions. Whereas in a traditional garden, the planted area is flat or often raised, a rain garden is dug into a bowl-shaped depression to allow it to capture and hold stormwater. In a rain garden, typically the top six to twelve inches of soil is tilled and amended with compost and sand. This deep, loose material allows the soil to collect and absorb rain that would otherwise run off your property or that would collect and

pool in your yard. Rain gardens are planted with perennial grasses and flowers that thrive in wet environments.

Where will the water come from?

Water can be carried to your rain garden in a number of different ways, and the connections can be configured in a variety of ways to match your specific needs and desired layout. The simplest way to supply your rain garden with stormwater is through an extension on the end of your downspout. Depending on the size and location of your rain garden, you can re-direct more than one downspout towards your rain garden. If you have a rain barrel in your yard, you can also divert water to your rain garden through the barrel's overflow pipe.

What plants or flowers should I choose for my rain garden?

A rain garden is planted with deep-rooted, low-care, perennial plants that are native to the region. Unlike cultivated plants from Europe or Asia, native plants have adapted to the local climate, weather and soil conditions. Native plants are recommended for rain gardens because they tend to be hardy due to their deep and variable root systems which can withstand a wide range of moisture conditions, which also makes them lower maintenance than many other non-native choices.

Will it be difficult or expensive to maintain my rain garden?

Once the shallow depression is dug and the soil is amended and tilled, a well-designed rain garden will only need minimum care. Maintaining your rain garden will involve much of the same requirements as any other garden including: mulching, weeding and watering for the first few years to help your

plants establish deep roots, or during prolonged dry periods. If you choose native plants for your rain garden, they should not require any fertilization because they will be well suited to the local growing conditions.

Won't a rain garden create a breeding ground for mosquitoes?

No, when installed properly, a rain garden will drain completely within 48 hours. Unlike pools of standing water, rain gardens are not good breeding areas for mosquitoes because mosquitoes need much more time in pools of standing water to lay and hatch eggs.

Worksheet Space

Use this area to jot down notes or to draw a rough sketch of your yard including the location of downspouts, existing gardens and the size and shape of your ideal rain garden.

Interested about learning more about managing stormwater on your property? Call the Hamilton Watershed Stewardship Program!

Hamilton Watershed Stewardship Program
c/o Hamilton Conservation Authority
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Ancaster, Ontario L9G 4X1
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(905) 525-2181 x.196

Photo credit: Lee Valley Ltd.


Photo credit: David Hymel, Rain Dog Designs

Worksheet Space

Use this area for notes or to create a sketch showing your property's key features such as buildings (house, garage, shed), downspout locations, grassed areas, paths, existing gardens, decks and hard surfaces and the possible types and locations of green infrastructure that you would like to install.