

FAQs – What is Water Sensitive Design and why do we need it?

What is Water Sensitive Design?

Water Sensitive Design (WSD) is an approach to development and re-development that integrates the whole water cycle into the design (stormwater, groundwater, waste water and water supply). This approach improves water quality and manages the volume of water leaving a development, reduces our overall demand on water sources and minimises the pollution entering our waterways. In the local area, the main method of treating stormwater is by constructing a raingarden which collects and cleans the stormwater, and then delivers the treated water back into the stormwater system.

Why do we have Water Sensitive Design in the Development Control Plan?

The Great Lakes community values the health of our waterways with a high expectation for Council to protect those waterways. One of the key directions of Councils' community strategic plan is 'Our Environment' the objectives of which are to 'Protect and maintain the natural environment' and to 'Ensure that development is sensitive to our natural environment'.

We are committed to reducing the impact of stormwater by using WSD. Scientific research conducted in the Great Lakes area has shown that if we continue to develop areas without careful consideration for the impact of stormwater on water quality we will see a decline in the overall health of our waterways.

In 2009, Council adopted the Great Lakes Water Quality Improvement Plan. The plan recommended that Council set water quality targets for new and re-development within the DCP to protect the health of our waterways.

Why do we need to treat rainwater? Isn't it clean?

In an undeveloped area, rainfall soaks into the ground, is used up by the plants through evapotranspiration, and runoff would only be generated a handful of times throughout the year.

When an area is converted from natural vegetation to urban development, the ground is covered with hard surfaces such as driveways, roofs, roads and footpaths. In these developed areas, runoff is generated nearly every single time it rains. This runoff can contain pollutants such as nitrogen, sediments, phosphorus, heavy metals and pathogens. Nitrogen is a nutrient that occurs naturally in rainfall and in a natural situation would be used by plants to grow.

When stormwater is not used up by natural vegetation and is fast tracked to our waterways by roads, paths and buildings, the nitrogen in rainfall can fuel algal blooms. Algal blooms stop light from reaching marine plants which need sunlight to survive. Marine plants are the foundation for a healthy system providing habitat for fish and macroinvertebrates which in turn support local fishing, oyster and tourism industries.

Diverting stormwater through a raingarden is the most efficient way of removing harmful nutrients.

What is a raingarden and how do they work?

Raingardens (also known as biofilters) are one of the water quality treatments that are very effective at removing nutrients and sediments. The gardens are designed with a filter (sandy loam material) and particular plants that are specifically selected to remove nutrients.

The stormwater pollutants that are targeted for this area are nitrogen, phosphorus and sediments (total suspended solids), and the raingardens are specifically designed to remove all of them.

There are two ways in which the raingardens strip pollutants from stormwater.

The first is by physical filtration. As the water passes through the raingarden, the filter media (sandy loam) filters out the sediments and particles, trapping them within the raingarden. Most of the phosphorous is attached to these particles and are also removed by this process.

The second is through biological processes. The specified plants have been selected because they have been proven to be effective at removing nitrogen. The root systems of these plants also contain biofilms that fix nitrogen, providing even further treatment.

