

## Low Impact Design | Stormwater System Maintenance

The stormwater system for KiriMoko Park has been developed using the philosophy and principles of low impact design to reduce the negative effects of stormwater discharges on the downstream environment. The purpose of the stormwater system is to collect and convey water in a series of swales and to store and subsequently infiltrate water into the ground using rain gardens, and attenuation basins. KiriMoko Park's system has been designed to promote natural infiltration and non-permeable surfaces have been kept to a minimum. The result is that the stormwater from the development is being dealt with in the most sensitive way and in turn does not have a detrimental impact on Lake Wanaka or the area's groundwater.

The individual swales and rain gardens are critical elements of this Low Impact Design Stormwater System as they collect and separate contaminants from the stormwater before entering the remainder of the stormwater system. Swales and rain gardens are natural treatment systems, and as such, they are sensitive to inappropriate care and treatment. As these swales and rain gardens are located on private as well as public property and may, from time to time, require some maintenance, the responsibility for monitoring and maintenance of the swales and rain gardens on private land lies with the individual lot owners.

There are certain things that individual lot owners can do, or not do, to maintain the health and performance of any swale and/or rain garden on their lot. These simple do's and don'ts are as follows:

Do's	Swales	Rain Gardens
<b>Do become familiar with the location of the critical elements which feed into the stormwater system.</b> This includes any inlet pipes or sumps which direct water and outlet sumps (if onsite) as well as the swale and rain garden itself. Keep these locations in mind when carrying out activities on site which may drain into your swale or rain garden or the wider stormwater system - such as washing your car.	✓	✓
<b>Do contact the KPRA if you think there is a problem with a swale or rain garden.</b>	✓	✓
<b>Do routinely inspect the state of the vegetation in your rain garden.</b> A green rain garden is a healthy rain garden.		✓
<b>Do water the plants in your rain garden and swale grass during dry periods.</b> When it does not rain the under-drain and infiltration media in the rain garden may cause the planting soil to dry out quicker than the surrounding soils. This will prevent the plants/grass from 'browning off'.	✓	✓
<b>Do keep an eye on the plants; if they are not thriving they may need moving.</b> Plants may need pruning, thinning or replacing from time to time. If you are unsure, contact the KPRA.		✓
<b>Do weed regularly;</b> as you would with any garden.	✓	✓
<b>Do re-establish any bare patches with appropriate seed or vegetation.</b> If you are unsure, contact the KPRA	✓	✓
<b>Do mow any grass within a swale or rain garden;</b> maintaining a grass height of at least 50mm.	✓	✓
<b>Do routinely remove excess vegetation and leaves, litter and debris from the swale or rain garden.</b>	✓	✓
<b>Do keep swales and rain gardens clear;</b> remove any material blocking the swale, the overflow sump or any outlet areas including excess sediment which shall be cleaned out and disposed of in an approved tip site. If you are unsure, contact the KPRA	✓	✓
<b>Do check for localised erosion areas.</b> Provide erosion control measures as required. Erosion protection can be by means of biodegradable matting, grass seed and re-vegetation of eroded area.	✓	✓
<b>Do check for preferential flow paths.</b> Where water finds a preferred path along the swale impeding dispersed flow, the swale is to be repaired by reinstating the swale floor to its former profile and re-vegetating with approved grass species.	✓	
Don'ts	Swales	Rain Gardens
<b>Don't allow any chemicals, detergents or other hazardous substances to drain into any swale or rain garden.</b> Should a spill of such products occur in the area, you should take action immediately to prevent the spill from entering the stormwater system. It is important that any contaminants spilled on the hardstand areas of the site are <u>not washed</u> into the stormwater system. Rain gardens and swales are natural treatment systems, and the plants/grass are not tolerant of poor treatment. Only stormwater or clean tap water can be directed to the rain garden.	✓	✓
<b>Don't dispose of garden waste,</b> such as grass clipping or compost over a depth of 50mm in any swales or rain gardens.	✓	✓
<b>Don't park or drive on your swale or rain garden.</b> They rely on the stormwater infiltrating into the ground as well as downslope along the swale. Driving over the rain garden compacts the soil and makes it more difficult for the stormwater to soak into the ground. It can also leave behind ruts which may cause flows to short circuit.	✓	✓
<b>Don't deposit materials or objects on the swale.</b> The swale should be kept free of foreign objects or obstructions at all times.	✓	

- If necessary the KPRA can provide you with a drawing which identifies the location of the swales or rain gardens within your lot.