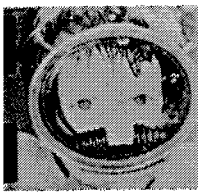
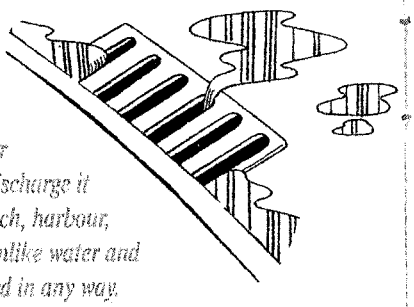


What's stormwater?



Stormwater is rain that runs off hard surfaces like roads, roofs and car parks.

Traditionally we pipe stormwater away from these surfaces and discharge it out into the nearest stream, beach, harbour, or wetland area. Stormwater, unlike water and wastewater, is not usually treated in any way.

Underneath Waitakere City's streets, is a complex network of stormwater pipes (590 km) that carry stormwater downhill to places where it can be discharged. The familiar grates on roadsides and the pipes at the local beach are the only visible signs of this network that we usually see.

WHY STORMWATER HAS BECOME A PROBLEM

In the past, stormwater run-off was only of concern as it could cause flooding. Now, stormwater is acknowledged as being a major source of pollution in the world's waterways. Our modern lifestyle contributes to stormwater pollution. For example, it is estimated that 70% of stormwater pollution is caused by cars.

Stormwater is rainwater that becomes contaminated with:

- Vehicle pollution such as heavy metals lead, copper, zinc from vehicle exhausts, and oil washing off roadways
- illegal and accidental spills/dumping into stormwater drains
- rubbish such as plastic bags, bottles and other street litter
- herbicides, fertilisers, plant waste
- detergent from car washing
- domestic animal faeces
- air pollution
- soil from erosion and land slides

Flooding

Historically, stormwater systems have been designed to collect and transport rain water to avoid flooding. Whilst this has generally been successful, there are areas in the City where flooding still occurs. Flooding may damage property, destroy wildlife habitat, and impact on people's health, safety and wellbeing.

Pollution in stormwater

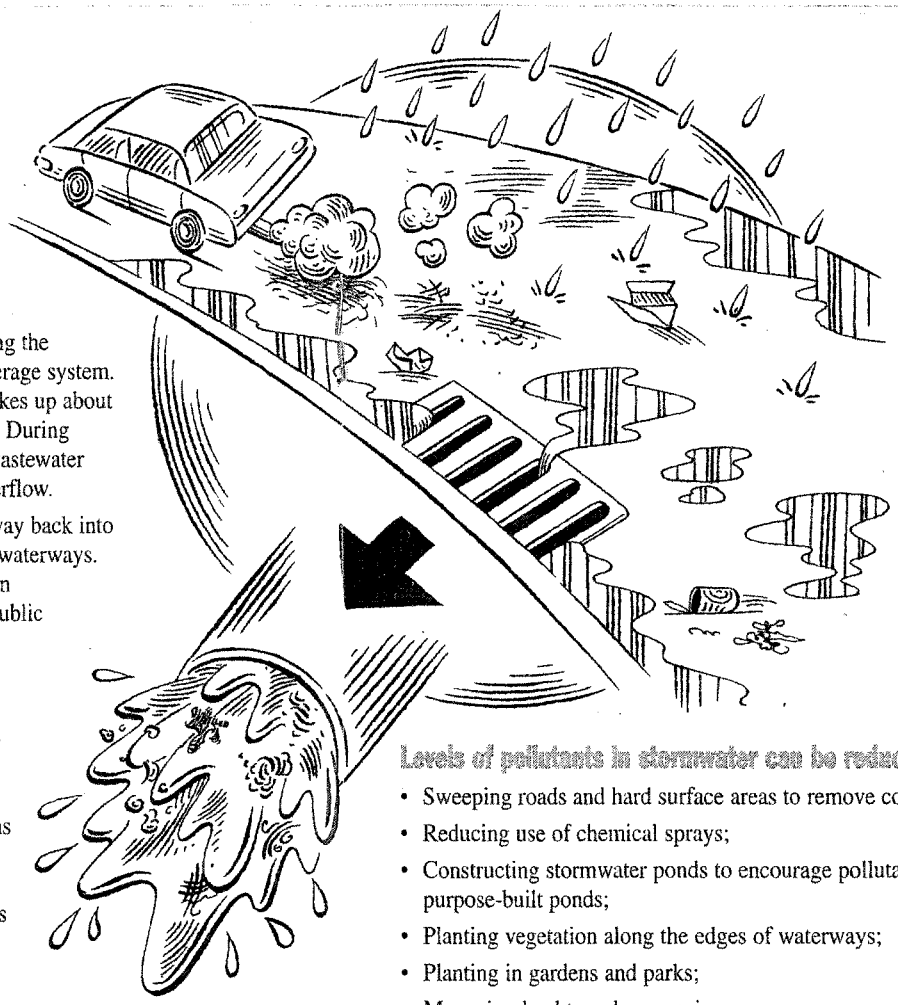
In addition to flooding, the Council is now concerned with the level of pollution in stormwater and the effects that this pollution is having on the environment.

These pollutants enter creeks, rivers, wetlands, harbours, estuaries and the sea, and many of them stay there and build up in the environment. Over time the levels of "pollutants" rises and this may start to affect plant and animal life.

Plants and animals in the water may be affected because some of the pollutants are poisonous, or the pollutants smoother their habitat (eg soil from erosion), or the stormwater may be heated by hard surfaces and cause a change in temperature that kills aquatic plants and animals. In addition, the pipes themselves have an impact on the environment, as they change the habitat of plants and animals.

These pollutants and habitat changes:

- Pose a potential health risk
- May be culturally offensive
- May reduce the ability to use certain areas for shellfish gathering, fishing, whitebaiting, eeling, koura and watercress gathering, swimming and the like
- Harm aquatic plants and animals and where they live and breed by:
  - Stopping passage of native fish (whitebait, eels, kokopu or native trout) and other aquatic life from the sea to stream headwaters
  - Increasing amounts of pollutants in fish, shellfish and crabs
  - Harming birdlife which eat polluted fish, shellfish and crabs
  - Encouraging toxic algal blooms
  - Killing plants and animals



Infiltration and overflows

Stormwater is also dramatically reducing the effectiveness of our wastewater or sewerage system. In the Auckland region, stormwater makes up about 40% of the wastewater flow each year. During heavy rain, stormwater leaks into the wastewater network, causing it to overload and overflow.

These overflows eventually find their way back into the stormwater system and our natural waterways. They add to the toxic cocktail already in stormwater and pose a serious risk to public health as well as to the health of our environment.

STORMWATER SOLUTIONS

There are a number of things that we, as users of the land, can do to reduce the risks of flooding and to reduce the amount of pollution entering waterways such as creeks, rivers, wetlands, harbours, estuaries and the sea.

Flooding can be reduced by:

- Constructing stormwater ponds or basins to slow down water flows and encourage the stormwater to be soaked into the soil;
- Planting vegetation along the edges of waterways;
- Planting in gardens and parks;
- Collecting and recycling rainwater;
- Channelling and piping of waterways (although this affects plant and animal habitat);
- Designing subdivision and developments to minimise hard surface areas, and avoid direct discharges into waterways;
- Locating subdivision and developments away from flood risk areas.

Levels of pollutants in stormwater can be reduced by:

- Sweeping roads and hard surface areas to remove contaminants
- Reducing use of chemical sprays;
- Constructing stormwater ponds to encourage pollutants to settle in purpose-built ponds;
- Planting vegetation along the edges of waterways;
- Planting in gardens and parks;
- Managing land to reduce erosion;
- Filtering rubbish out of stormwater with grills and grates;
- Trapping pollutants (e.g. sediment traps, swales or plant filter strips on road verges, or cut-off drains at the end of driveways with no stormwater system) before they enter waterways;
- Minimising accidental spillages and deliberate dumping onto land or into stormwater collection points;
- Changing land use;
- Installing 'bunding' (raised edges) on hard surface areas, combined with filters at the collection points.

We need your assistance to help Council decide which approaches described above should be used to reduce flooding, pollution and infiltration.