



Photo by Jillian Wardlaw

Stour Catchment Initiative

Urban Contribution

Urban development changes the environment and puts natural areas within and near our towns at risk. Public parks and green spaces provide a refuge from the built environment, but can fall short of retaining the way in which the land should function naturally to provide clean air and water, sustain wildlife habitats and species, aesthetics, and recreational opportunities. As a result, the 'liveability' of an urban area is compromised when natural areas are converted to more intensive land uses.

Key concerns on the water environment in the Stour catchment urban areas include: water pollution, flooding issues, physical modification of streams and rivers, increased demand for water and "low flows" in rivers, misconceptions, retaining and improving green spaces for health and well-being and climate change.

Run-Off

Physical modification of rivers and streams, through culverting and channelisation, impacts on natural water processes. When urban areas expand, the behaviour of the water catchment is changed. Grassland and woodland that absorb rainfall are lost, wetlands that retain water are often filled in and natural streams are redirected in man-made channels. This takes away nature's ability to cope with extreme weather events and its ability to filter out contaminants before they end up in the rivers and streams. This change is most acute in the south of the catchment area where former wetland has been drained and filled in and heathland streams have been 'lost' within the urban fabric of Bournemouth and its suburbs.



Road run off, ConnectRight website

The traditional approach to run-off has been to remove it as quickly as possible from urban areas. And the pressure for land

for development can lead to streams being culverted underground and 'lost' into sewer systems. The cumulative result of such changes throughout a catchment is an increase in flashy high flows and a loss of space for water and for nature. . In unusually wet weather flooding may occur as flows exceed capacities along the drainage system, threatening homes and businesses on low ground by rivers and streams, and on other land which once provided a pathway for water but has been built over.

Water Demand Pressures

Abstraction of water from rivers and groundwater to meet the demand from urban areas reduces the water in rivers and wetlands and can affect the health of their ecology. Although abstraction is controlled, low flows occur and remedial action is necessary, like stream support where water is pumped from groundwater into rivers to prevent harm to their ecology. In the future, population growth, climate change and economic development are likely to increase pressure for more water to be abstracted.



Urban Creep

Impermeable surfaces expand as urban land becomes more intensively used; natural surfaces that absorb water and recharge ground water supplies are covered with hard, impermeable surfaces (roads, paths, driveways). Conversion from predominantly vegetated land use to urban uses may result in tremendous reductions in an area's water absorption capacity. Flooding has been highlighted as a concern in urban areas both from the loss of green space and vegetated land within the urban fabric (reduced permeability of the ground) and development and drainage in the broader upstream catchment.



Urban Pollution

Urban run-off has a significant influence on the water environment, polluting surface water systems, affecting river ecology and potentially degrading the quality of bathing waters. As urban areas such as Bournemouth have expanded, so the influence of urban run-off has increased over a growing geographical area.

Run-off water from buildings, roads and paths carries many pollutants including: sediment, nutrients, bacteria, oil, metals, chemicals, road salt, dog and other animal faeces and litter. Some businesses and industries discharge into rivers but may still cause changes in river water quality by adding nutrients or other substances that then affect the river ecology. These 'point sources' are regulated and in recent decades this has greatly reduced their impact on the water environment. Pollution from urban land comes from many 'diffuse sources' that are generally not regulated. These sources include:

- particulate matter from vehicle exhausts and from tyre and road wear
- construction and building works
- misconnections – waste water draining to the wrong place
- disposal of waste liquids down surface water drains
- 'run-off activities' – water from car washing, for example
- discharges from contaminated land
- accidental spillages
- litter and fly tipping

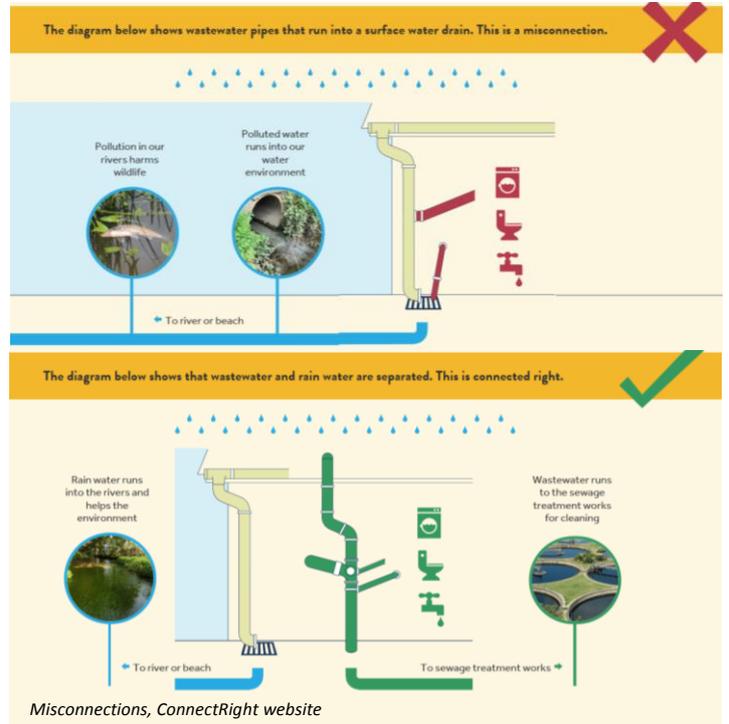
Misconnections

Misconnections are considered to be a major source of urban diffuse pollution.

A misconnection is where the drainage from a building has been connected to the wrong sewer network. There are two examples of a misconnection. The first is where foul (contaminated) water gets into the surface water system, which then discharges and impacts on a watercourse downstream.

The second type is where surface water (such as rainwater) goes into the foul sewer (a sewer that carries sewage from homes), exceeding the capacity of the sewer. This can cause sewer flooding and the discharge of foul sewer water from overflows into watercourses and the sea.

To check if your property has a misconnection, or to find out more about preventing water pollution through misconnections, visit the ConnectRight – stop water pollution website.



What can be done?

There are various control measures to address urban water pollution including:

- Providing people and local businesses with better knowledge on what causes pollution and how to avoid it.
- Use of SuDS (sustainable drainage systems) in development to filter contaminants and slow the rate of increased run-off before they enter streams and limit the area of impermeable surface.
- Sediment and pollution traps in urban storm water systems
- Storm water retention.
- Landscape design and planting for water infiltration into the ground and erosion control
- Discouraging disposal of fats, wet wipes etc. to sewer system
- Recycling and proper disposal of household and garden liquids and chemicals.
- Sewers overflow reduction.
- Restoring the natural functioning of streams and rivers in urban greenspaces by providing better habitat and more space for water in times of flood.
- Deculverting ('daylighting') streams buried underground in sewers.
- Frequent street sweeping and use of vacuum sweepers to remove sediment and other substances that would otherwise wash into drains and then pass to streams and rivers.