



Manaaki Whenua
Landcare Research

Low impact urban design & development

The environmental, social and economic sustainability of our cities could be drastically improved through low impact urban design and development (LIUDD) practices.

The problems associated with conventional development

Recent conventional developments have seen a drastic increase in the size of houses and a decrease in the size of sections (the old 'quarter acre' section is becoming increasingly rare). The extent of paved areas has also increased—including the paved areas around houses, the width and number of roadways, the extent of covered shopping malls with huge asphalted car parks, and the size of commercial factories with their vast expanses of roofing. All these impervious surfaces increase the volume (and rapidity) of storm runoff, an issue that has traditionally been met by increasing municipal piped stormwater systems that channel high volumes of surface water (plus all the contaminants) into streams and estuaries. These piped stormwater systems just move the problems to another location, compounding them in the process by scouring stream banks and stream beds, and through the build up of contaminants in estuaries.

The benefits of low impact design and development

The goal of low impact urban design and development is to *prevent* the stormwater problems occurring in the first place. This can be achieved by using extensive natural areas such as planted road verges, parks and green spaces, raingardens, wetlands, and enhancing the natural hydrology and ecology of streams to maximise the retention and absorption of rainwater. These measures reduce the amount of surface flooding following rainstorms and reliance on municipal stormwater infrastructure. Just as importantly, the more environmentally-sound low-impact approach reduces the amount of pollutants being washed off surfaces into waterways and coastal areas.

Impacts on streams and estuaries

Most coastal areas around Auckland are already degraded from the deposition of contaminants and sediments that have been washed from roads, car parks, industrial areas, and from scouring of streams into which stormwater pipes empty. With massive redevelopment projects such as Auckland's 'Tamaki Edge' getting underway, there is huge potential for further environmental degradation. However, if low impact urban design and development practices become mainstream, enormous environmental improvements could be expected — with social and economic benefits ensuing. Low impact urban design and development is consistent with the goals of Auckland Regional Council.



Practical research should lead to behavioural changes

Despite the enormous potential benefits of low impact urban design and development, developers have been slow to adopt these practices. Part of our joint research with the University of Auckland is identifying why this is so and how obstacles can be removed. With the features being used on site at our new facilities on the University of Auckland Tamaki Campus, and in our other research sites in the Tamaki / Glen Innes area, we will be demonstrating the effectiveness and acceptability of low impact urban design and development.

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