

Green buildings with Eclipse

With our planet currently recording its hottest temperatures in history, the need for buildings to be “greened” with roof top gardens, green walls and planted apartment terraces will only become greater as Perth addresses its own “heat island” issues.

But greening buildings is not a straightforward process. The key structural engineering issue for roof top gardens and terraces is the weight of the soil especially when the soil is wet and heavy.

Floor plates in multi-story buildings are designed to carry specified weight loads, which for safety reasons, must not be exceeded. This load encompasses all interior goods - appliances and furniture - as well as resident numbers, and garden areas including roof tops, planted decks and terraces, and green walls attached to the building.

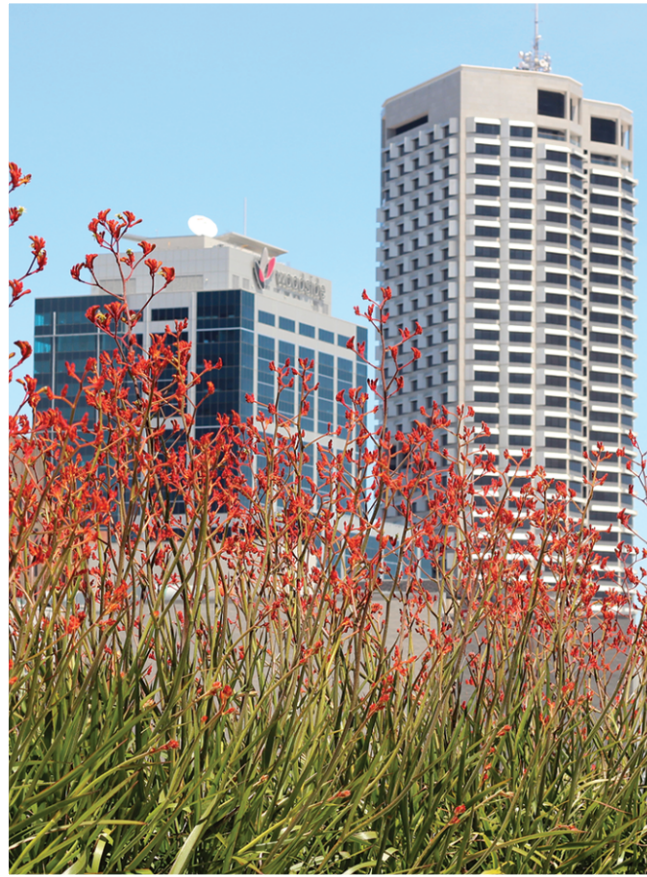
A typical rooftop garden engineering requirement in Western Australia specifies that one cubic metre of heavily saturated garden soil can weigh no more than 1.2 tonnes. To put that in context, typical saturated sand has a bulk density of around two tonnes per cubic metre as does rocky stone aggregate.

Traditional approaches to the problem of providing decent growing conditions for plants while still meeting the engineering specifications for weight have concentrated on using lightweight organics and compost or a base of ultra-lightweight vermiculite and perlite as base materials.

These products do provide light weight growing environments with water retention and, in the case of the organics, nutrients and beneficial microorganisms.

Unfortunately, they also have major drawbacks - the compost and organics obviously continue to break down; a process known as “slumping” - and need regular replacement, which can be very costly and time consuming in major buildings.

The ultralights tend to simply blow away and need a top layer of stone or mulch to keep them in place. They are also



Kangaroo paws in a city rooftop garden using Eclipse Soils

very energy intensive to produce, and as a result are cost prohibitive for bulk soil applications.

The good news is that soil scientists at WA's leading specialty bulk soil manufacture, Eclipse Soils, have developed a product that meets all engineering

specifications, provides an excellent growing environment, is extremely water retentive and never needs replacing.

Eclipse Soils rooftop garden soil uses spongolite, sourced from the State's great Southern, and recycled charcoal mixed with a minor portion of fine compost to produce outstanding results in building soils.

“Spongolite consists of a soft, rocky sediment which has been formed from sponges which grew in an ancient sea which was then infilled with sediments from the surrounding land,” explains Eclipse chief scientist Martin Bowman.

“The resultant sediment is highly siliceous, and highly porous and has a dry bulk density of about 0.65 to 0.75 tonnes per cubic metre which is about half the dry bulk density of sand.”

The recycled charcoal also has exceptionally low bulk density and both materials contain intra-particle pore spaces where plant available water is stored.

“Our component materials do not biodegrade. This provides a permanent growing medium that retains a good soil structure that never needs to be topped up or replaced,” Sean Bennett.

“There are no ultra-light components of the nature of vermiculite and perlite and wind-blown disaggregation of the blend is not a problem”.

“We truly believe that Eclipse Rooftop soil is a superior product to historical light weight soil formulations, being both well drained and therefore aerated, water retentive, and structurally resilient to slumping over time.”

For a comprehensive scientific explanation of Eclipse Rooftop soils go to the website:
<https://eclipse soils.com.au/technical-papers/>