



**Sealco**  
Waterproofing Systems

# GreenSEAL Garden Roof



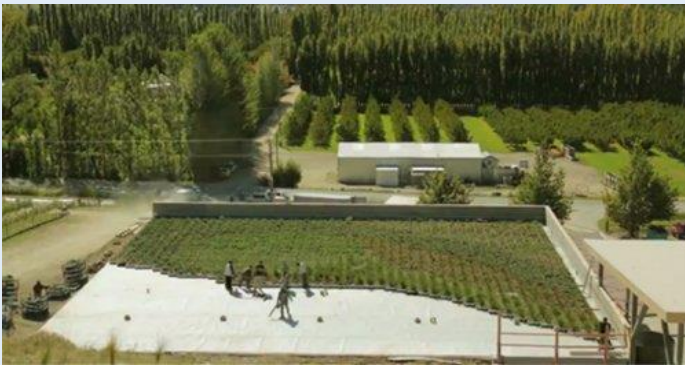
GREENSEAL Garden Roof System

## PRODUCT DESCRIPTION

Sealco Waterproofing Systems GreenSEAL® and SkyGARDEN® green roof system is a complete system of membrane, water channels and geotextile filters that enables a fully functional garden roof system to be able to thrive on your roof.

### ENVIRONMENTALLY FRIENDLY

GreenSEAL® and SkyGARDEN® roofs have been scientifically proven to have a positive impact on the environment. Not only do the plants generate better air by minimising greenhouse emissions, toxins are absorbed, stormwater systems under heavy rain are relieved and the positive impact on the cityscape creates a better environment.



Mount Difficulty Winery, Cromwell

### OVERVIEW OF THE GreenSEAL & SkyGARDEN System

#### Substrates

**Substrates:** Concrete, plywood, steel, insulated (warm roof design).

#### Waterproofing membrane

**EcoTUFF TPO:** EcoTUFF is a high quality TPO (thermo plastic polyolefin) membrane that is installed over concrete, steel or plywood substrates. The reinforced sheet is adhered to the substrate and all details are fully welded.

**FlameSEAL:** FlameSEAL anti-root base sheet is a modified bitumen membrane that is torched down onto the substrate.

#### Drainage

**Drainage Modules:** Polyethylene drainage system that holds the soil and a small portion of water whilst allowing heavy water to drain from the roof.

#### Filter Cloth

**Geotextile:** A filter cloth that allows water to pass beneath the soil while holding the soil in place preventing it from entering the drainage modules.

## CONSTRUCTION

Sealco Waterproofing Systems has a range of techniques developed for modern green roofs. These include drainage materials, substrates, choice of plant materials and establishment methods. For each green roof project, different site conditions and your aims and motives will govern the choice of materials and establishment methods. Therefore, if you are planning to build a green roof, consider your end requirements carefully. The result will be so much better if you know what you want, and what is possible.

## AESTHETICS

Green roofs are extremely aesthetic to look at especially if you are living in a hillside community. To many people, looking down onto a green roof is certainly much more aesthetic than a metal or plain membrane roof. Green roofs also enhance cities and work areas by providing "green belts".

## STORMWATER

A lot of green roof projects are motivated mainly as a solution to problems arising from rain. In order to hold as much water as possible, you might consider a thicker soil layer and drainage material that can store more water. This also increases (apart from the weight) the variety of plant species that can grow on the roof.

## ECOLOGY, BIODIVERSITY AND ENVIRONMENT

Since green roofs have great potential in providing habitats in an otherwise rather sterile city context, imagine the impact if large industrial buildings would contribute to alleviate the effects of a consumer society by laying eco-roofs especially designed for biodiversity and environmental benefits. In this case, choose materials that are as natural as possible, or at least recycled, and put some consideration that the plant species chosen are of local origin, or at least fits in the ecosystem. Use substrates favored by invertebrates.

### BRANZ APPRAISED MEMBRANES

The EcoTUFF® and FlameSEAL® membrane systems are BRANZ appraised.

Please contact Sealco Waterproofing Systems Limited for a copy of these certificates. Certificates are also available for download from our website

[www.sealco.co.nz](http://www.sealco.co.nz)



Full system specifications, drawings & installation information can be viewed and downloaded from the WarmSEAL page on our website:

[www.sealco.co.nz](http://www.sealco.co.nz)

## BENEFITS OF A GARDEN ROOF SYSTEM

### COOLING

Green roofs save energy for a building in many ways. When a soil layer and the shading plants protect the roof, the surface temperature usually doesn't rise above the surrounding air temperature. In addition to this, the plants and soil evaporate water, creating a cooling effect and moist air, being more comfortable to breathe.

### INSULATION

In the winter, the soil layer provides an additional insulation. In climates such as in New Zealand, a green roof, especially the versions with thicker soil layer, can make a difference in the heating required in the building.

### LIFE EXPECTANCY OF THE ROOF MEMBRANE

Green roofs protect the roof membrane. The UV level in New Zealand is extremely high and is the main cause for membrane deterioration. The green roof protects the waterproofing membrane from both the UV-light and the temperature extremes, significantly increasing the life expectancy of the membrane.

### STORM WATER

After heavy rains, green roofs will retain and slow down the water flow into the city's stormwater systems. Much of the rainwater actually stays on the green roof, is soaked up in the soil, used by the plants and then evaporates, thus never reaching the ground. When it rains more in a shorter time, the green roof becomes saturated with water, the excess drains off, allowing less water to enter the city pipe systems and causing flooding.

### HEALTH AND THE ENVIRONMENT

Concern for the environment is a policy of Waterproofing Solutions Ltd. There are several positive effects on a community and even the global environment that can be achieved with green roofs.

### THE URBAN ISLAND HEAT EFFECT

The large amounts of stone, asphalt and concrete in the towns and cities that absorb the heat from the sun in the daytime, releases this heat at night. An additional cause is the lack of trees and other vegetation. Both the day and night time temperatures rise creating a warmer climate in the cities. In turn the costs of air conditioning goes up. The living plants give shade and stop the hard surfaces from absorbing much of the heat, and they also transpire moisture into the air, which helps to cool it down.

## RECREATION AND HEALTH

Green natural environments are places where humans can recover and relax after stressful or tiring work. This is true for healthy persons as well as those recovering from an illness.

Studies show that with regular visits in green environments, less medicine is needed, and recovery is faster than for patients that have been indoors. It also makes a big difference what view you have from the windows of an office or your home.

Roof gardens and extensive green roofs can provide green space where there used to be a view of concrete and asphalt. It can provide a nature experience and a relaxing environment in an otherwise stressful city.

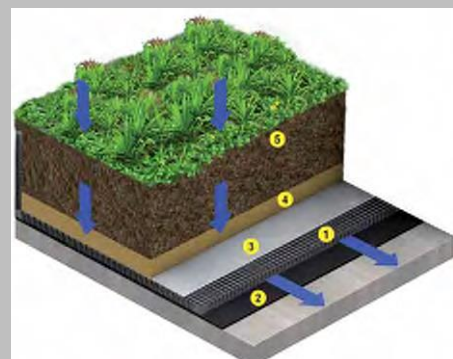
Ecology Green roofs can be of great importance to the animal life in the cities, since the natural habitats are so scarce there. In modern city planning, "green corridors" are planned into the cities, where parks and waterways can connect the city with the surrounding countryside, and get humans in closer contact with nature. In the places where there isn't enough ground space for green space, the green corridors, and the habitats for animals don't have to be discontinued, when the flat roofs are used.

### EXTENSIVE OR INTENSIVE GARDENS

EXTENSIVE – Less than 300mm depth of growing media



INTENSIVE – More than 300mm depth of growing media



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## SYSTEM COMPONENTS

### ECOTUFF® TPO WATERPROOFING MEMBRANE

EcoTUFF® a high quality TPO (thermo plastic olifin) used to provide waterproofing protection for garden roof applications. The fibre reinforced EcoTUFF® system includes the EcoTUFF® TPO membrane and EcoTUFF® contact adhesive. Also included as part of the system is the unreinforced ecoTUFF accessories, pre made corners, penetrations and cut edge sealant.

### FLAMESEAL® ANTI-ROOT WATERPROOFING MEMBRANE

The FlameSEAL® APP-modified bitumen membrane with 180gm/m<sup>2</sup> spunbond composite polyester reinforcement has the prevental B2 anti-root additive incorporated into the formula giving high resistance to both root penetration and aggressive attack from fertilizers, herbicides etc. The FlameSEAL® system may be fully torched, mechanically fixed or cold-applied.

### WATER RETENTION DRAINAGE TRAYS

A lightweight, cost-effective water management tray used below the growing media that functions to store and drain water and to protect the waterproofing membrane. The high water storage capacity of the cells coupled with high discharge capacity ensures effective capillary irrigation, eliminates the possibility of water-logging, reduces irrigation frequency and minimizes fertilizer runoff and usage.

### CONFINEMENT CELLS

Lightweight, expandable, high strength and flexible thermoplastic strips that are ultrasonically bonded to form a strong, dimensionally stable and inert honeycomb structure that both contains and prevents, growing media movement on sloped roofs.

### GEOTEXTILE FILTER FABRIC

A needle-punch geotextile filter fabric placed onto either drainage trays or confinement cells prevents fine particles in the growing media from entering and causing clogging. A >50mm layer of coarse washed sand is positioned on the geotextile in intensive green roof systems before the addition of lightweight growing media. The geotextile also acts as a 'capillary wick' when positioned onto water retention trays.



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