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## The future's bright the the future's "Green"

### Times are Changing

The electric car and use of lithium batteries will transform the motor industry and don't think for a moment that this will take 25 years or more – it won't; within a decade the use of the combustion engine will be in decline. Other green initiatives will follow suit. There is a developing appetite for "green technologies" including green roofs, in part because of a shift in cultural attitudes, but also in recognition of the benefits.

### Green Roof Benefits

The creation of green roofs, particularly in built up towns and cities can have a number of advantages:

1. Improved air quality
2. Improved temperature regulation
3. Reduced rainwater run-off
4. Creates wildlife habitats & promotes biodiversity
5. Extends life span of roof
6. Roof membrane protection
7. Improves efficiency of solar panels
8. Improved aesthetics
9. Reduced energy costs
10. Positive effect on well-being

The basic types of green roof fit into either extensive or intensive categories. There are of course hybrid versions (i.e. semi- extensive or semi-intensive) allowing for a degree of design flexibility.





## Extensive Green Roofs

Extensive green roof systems are not normally used as a recreational space and often have limited access. Due to the shallower substrate depths of extensive systems, the plant choices are more restricted to drought tolerant species such as sedums, grasses, wildflowers and mosses.

Extensive systems would be more ideally suited to flat roof areas where there is no access available other than for maintenance staff. Extensive systems can also be adopted for pitched roof applications.



## Intensive Green Roofs

These systems are designed to be used as recreational spaces and often involve many features similar to traditional ground level gardens which can include paving, water features, lawns, shrubs and trees. These intensive 'roof gardens' are soil based multi layered systems and are so called because they are labour-intensive; requiring higher levels of irrigation, feeding, and other forms of maintenance compared to their extensive counterparts.

Intensive systems are more suited where an area of flat roof is able to be used by the buildings users which in the case of residential blocks would be the lessees and tenants.



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### Green Roof Considerations

The option of choosing a green roof is a more complex undertaking than choosing a more traditional roofing solution. There are some very real and positive social and environmental reasons for choosing a green roof. There are also some more practical considerations including:

- What will the green roof be used for (extensive or intensive)?
- What are the maintenance requirements?
- Can the flat roof take the additional structural load of a green roof?
- Is there sufficient drainage provision?
- What is the buildings position, height, roof orientation? Is it shaded or too exposed?
- Are there any ancillary works required? i.e. raising of parapets.
- Is the type of waterproofing membrane / system adequately designed?
- What are the irrigation requirements?
- Are there any temporary water supply requirements?
- How quickly will the green roof mature / blossom?
- Is a green roof tantamount to betterment – if so, is this permitted (legally)

### Green Roof Costs

As a general guide, the initial capital outlay cost of a green roof can be as much as 200% more expensive than a more traditional flat roof water proofing solution. This figure does not take into consideration the fact that the overall lifespan of a green roof can be twice that of a traditional roof. Over a 25 to 50-year period the green roof would win out (despite the high initial capital cost).

### To Green or Not To Green

The benefits of creating a green roof are indisputable. The current levels of capital expenditure are however a perceived barrier to more green roof solutions being adopted. What is clear is that a careful, detailed and fully costed scheme appraisal should be carried out before a decision is made as to whether to take the plunge and go green.

It is likely that with regulatory and continuing social and cultural changes, the take up of green roofs will increase over the coming years and the capital costs of green roofs will reduce accordingly. This will make the option of creating a green roof a very attractive proposition indeed and so like the rise of electric cars we also predict the rise of green roofs to follow a similar upward curve. You heard it here first!

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