

Terra Firma director  
**Lionel Fanshawe FLI**  
offers a personal  
perspective on the  
evolution of green  
roof projects during  
his 25 years in  
landscape architecture.

# Elevated perspective

Petershill, City of London:  
designed by the author in  
the early 1990s while with  
Charles Funke Associates, it  
is perhaps typical of many  
urban podium schemes in  
not being an obvious roof  
garden to many of its users

**WHEN I INADVERTENTLY FOUND** myself making an in-depth study of roof gardens in order to detail my final-year university project nearly 25 years ago, little did I realise how that early induction would come to be of such use in my ensuing quarter of a century in practice.

I would estimate that in excess of ten per cent of the projects I have been involved with have involved roof garden technology, and the percentage is increasing. Of our current workload at Terra Firma, some 80 projects between offices in the UK and Middle East, 16 involve useable roof gardens or podiums and a further 11 extensive green roofs. I'm sure we are not unusual and could well imagine practices with solely an urban workload working on still higher percentages.

Mine is a general assessment of the evolution of roof gardens over this period, from the experience of one practitioner. I am neither a roof gardens specialist nor expert, but can certainly claim to have been involved with a good many and tracked their progress throughout this time. At the time of my student study, the most useful text available on the subject was Steven Scrivens' series of articles in *The Architects' Journal*, summarised in 1982. These gave excellent guidance on the basic factors to consider when designing a roof garden and are still as valid today. Weight-loadings, wind-loadings, exposure, aspect, access,

safety, irrigation, drainage, waterproofing and insulation all feature on the checklist as much now as they did then. There had been many fine examples to draw inspiration from, going back to Derry and Toms in the late 1930s and the 1970s landmark roof garden projects at Gateway House, Basingstoke and Willis, Faber and Dumas in Ipswich, along with countless examples from the US, but it was the introduction of the emerging Swiss and German green roof technologies that heralded a new age of progressively thinner construction profiles.

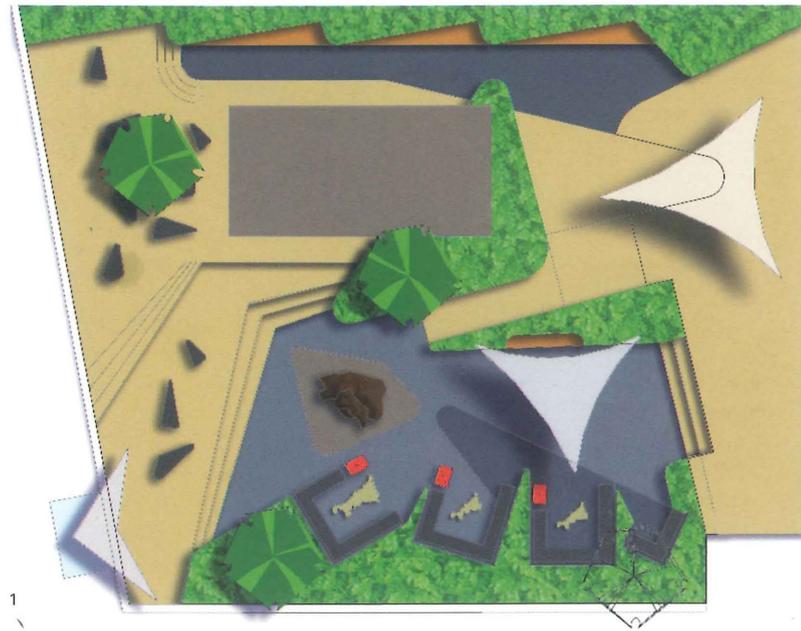
The roof gardens that I was involved with during my early years of employment were essentially terraces and balconies with 'stand alone' planters, but by 1990, I was with Charles Funke Associates, the creators of the Basingstoke roof gardens (which still look fabulous today) and the City of London's Broadgate, bringing high-level urban greening right into the heart of cities. This was profiled by Robert Holden in the April 1992 issue of *Landscape Design* and later that year, the September issue was given over entirely to roof gardens.

These are interesting articles to look back on, with an excellent introduction by Janet Jack followed up with further notes from her on the Barbican and Cannon Street Station and technical notes by James Hitchmough and Charles

1 Basecamp One, St Austell; Terra Firma-designed rooftop space for a retail and hotel activity hub on a redundant multi-storey car

park, with climbing rocks, diving tubes and oversailing hang glider simulator, due for construction 2010

2 Dropmore Park in South Bucks: parking has been put underground and hidden from view with the help of roof garden technology



“Roof gardens will increase as urban density intensifies”

Funke. Interestingly, the bibliography and adverts show a vastly increasing trend towards more roof gardens, podiums and green roofs. It was around this time that the first extensive green roofs started appearing (some ten years after the Scrivens articles and firms such as Bauder first began offering proprietary systems in this country). Schemes were progressively expanding beyond amenity or ornament to provide ecological value or disguise intrusion in the wider landscape. Noted contemporary schemes at the time included Lovejoy's RMC Group HQ and Foster's Sainsbury Wing at the University of East Anglia, which did a combination of these things while primarily trying to integrate their buildings into sensitive environments.

I found myself becoming increasingly involved in schemes requiring roof garden technology whether they were obvious gardens on roofs, disguising roofs of buildings sunk into parkland landscape or quite simply podiums over 'underground' car parks. Whenever I take people to look over the Petershill scheme that leads up

to St Paul's from the Millennium Bridge, it often comes as a surprise to them that one of the key factors we had to juggle with – beyond the obvious urban design objectives of multi-directional pedestrian movements, ramped access, respect to listed buildings and a fitting processional approach to one of Britain's greatest buildings – was that there is extensive car parking beneath. During the design stage, that fact brought further criticality to levels and interfaces with constructed slab and services below.

Expanded polystyrene was used to provide the sub-base for areas of significant build-up from a succession of terraced roof slabs, with levels worked out with the engineer. The slab was formed with voids to take drainage downpipes, sunken planters and electrical conduits for lighting. A flexible waterproofing system was then applied, above which insulation and drainage were laid, falling to drainage fittings. Wall, step and pavement construction all built off this and planted areas similarly so, except with lightweight drainage and soil mediums. Most podiums and intensive roof gardens I have /...



been involved with have followed these same principles.

Speaking with colleagues in our industry, I believe we all share the view that the amount of projects involving roof garden technology will continue to increase as density of urban development intensifies, sensitivity in rural environments is increasingly required and the varying needs of space for amenity, visual impact mitigation, increasing biodiversity and (most importantly) climate change mitigation are expected as standard.

Specialist conferences have been held frequently, guidance is readily available. I would particularly note here the British Council Offices and Corporation of London green roofs advice note that is routinely issued to developers in central London. A variety of different approaches such as brown roofs, vegetable and fruit gardens and green walls have now been pioneered successfully.

Technology has evolved over the years, with alternative laying systems, flexible slab support pads, a variety of drainage mats and a plethora of proprietary substrate and green roof systems, but perhaps the more interesting developments are the tray systems that can be equally used vertically as green walls, horizontally as roofs or at any angle in-between. These have the advantages of being self-contained, with their own irrigation, drainage and soil mediums being easily removable should inspection of the

waterproofing and roof below be required, and they can be pre-grown with any mix of plants.

A multi-million pound industry has evolved in the green roof technologies and it is good to hear that the leading suppliers have formed a Green Roof Advisory Board and are currently working on a set of guidelines (based on German standards) due for publication next year. The provision of a demonstration area at Sheffield University's Green Roof Centre is also welcome news, showing the results of the latest trials and research for extensive roof garden growing mediums.

From designing roof gardens over several years, there are some key lessons that we have learned. In situations where installing over an existing building, make sure to have a thorough existing conditions survey undertaken. We have been caught out when suspected leakage turned out to be an historic problem unrelated to the job.

With new build, it is imperative that the client and all the design team work together from commencement to ensure all the correct infrastructure is in place to allow for load bearing, drainage, servicing, construction, maintenance, access etc.

Be sure to engage a good specialist landscape contractor in the installation. A thorough understanding of the overall requirements for the establishment

1 Gateway House, Basingstoke: Charles Funke's 1970s roof terraces with Arup, the iconic roof garden of the moment while the author was studying. The project is still bearing up well 25 years later



and maintenance of a healthy rooftop landscape needs more than construction knowledge. Even suppliers of simple rolled-out seed mats report horror stories of poor installation by roofing contractors. Ensure waterproofing testing is undertaken (both electronic and flood testing with dyes) before installing growing mediums.

It is important to be adventurous. There is a place for proprietary systems, but at the very least, planting palettes should be explored by the landscape architect to suit the individual scheme.

For our part, at Terra Firma, we can count among current projects those that intend providing green roofs oversailing buildings or parking areas in sensitive rural locations using locally sourced grasses and flora (the Bunker, Kent; Tye Rock, Cornwall; Butterflyworld, Hertfordshire); parkland lawn (Odney Club, Bucks; Dropmore Park, Bucks); urban roof podiums (City Gateway, Southampton; Larnaca Works, Bermondsey and pretty well all our projects in Dubai); and intensive roof gardens (Bartholomew Street, Newbury;

Basepoint One, St Austell; Richmond Road, Hackney).

Roof gardens can be technically challenging, exciting schemes, but there is always the reservation that they will have shorter lifespans dependent on the lifetimes of their supporting structures, compared with those emanating from natural soil profiles, where the old adage was always that we would never see our designs achieve real maturity in our own lifetimes. However, the assumptions of such longevity are quickly countered by the pressing need to address climate change, and doubtless green roofs, in all their forms, have a vital part to play within the built environment. □

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2 John Lewis Conference Centre, Odney Club, Cookham: the green roof is integral to the building design by Crispin Wride within the context of a garden setting, with the lawn finish assisted by a robot mower



**REFERENCES:**

Roof Gardens Design Guides Steven Scrivens. *Architects' Journal* 17 March 1982  
*Landscape Design* issues no. 209 and 213. April and September 1992.  
Information gained at the *Architects' Journal* Green Roofs 2008 conference at the Barbican Centre 14 May 2008 and World Green Roof Congress, Bishopsgate 17-18 September 2008.

Green Roofs Research Advice Note published by British Council for Offices and Corporation of London. [www.cityoflondon.gov.uk](http://www.cityoflondon.gov.uk)  
Planting Green Roofs and Living Walls by Nigel Dunnett and Noel Kingsbury, Timber Press, 2008.