



Imagine a future Adelaide where city growth has been designed to lock in environmental sustainability, promote biodiversity and improve the health of the residents that live there.

Where a 'green' transport system meets the communities' needs and the roof tops of our buildings have been transformed into living ecosystems that support food production, flora, fauna and places for our own recreation.

The future liveable Adelaide will have been retrofitted and reinvented using the world's leading research in wastewater management sustaining 'green' infrastructure that is fused with the parkland surrounds through planned green corridors.

Landscape Architect Sharon Mackay and Architect Tim Horton, both Senior Associates at HASSELL, believe that Adelaide has the potential to become a sustainable city through smart planning and design, leveraging off our existing natural and heritage assets.

"The 30 Year Plan projects growth of 27,000 residents in the city by 2030, requiring 15,000 new dwellings. We need to start now if this growth is not to place pressure on our infrastructure, open space and natural resources. Getting it right offers an unprecedented opportunity to invent our future now"

"Adapting our cities offers the pay-back of improving the way we live. A truly liveable city is attractive to new residents, globally competitive and genuinely environmentally sustainable. The Adelaide of tomorrow should improve – not diminish – the quality of our life"

The key to achieving this liveable city starts with creative government policy that actively supports an integrated approach to urban planning and provides incentives to the community and developers, to partner in the vision.

Policy approaches adopted in other cities such as Berlin, Portland and Chicago provide targets, tools and financial incentives to encourage sustainable development.

Walkable cities are healthy cities. And in a nation that spends around \$58bn on obesity, walkable cities are fast becoming recognised for the savings they deliver to the community in improving public health and reducing health care costs

It will be walkable and pedestrian friendly, with a central zone that gives preference to green public transport, pedestrians and cyclists. Public car parks within the walkable zone will be retrofitted to accommodate food production and retail.

The city will seamlessly integrate public transport, cycle networks and open space corridors. A network of green space will include rooftops that provide accessible space, help to mitigate extreme heat days during summer and provide corridors that enhance biodiversity and capture rainfall.

We will have a new city form that reflects a confident, vibrant culture; one that supports new forms of working and living. One that values courtyards, terraces and outdoor rooms more than internally focused boxes, connecting with the landscape. A city that demonstrates an urbanism that can coexist with nature rather than opposing its natural order. This will take determination, imagination and intelligence, and will only occur by design.

"A liveable city can balance an increased population while providing an ecological framework for environmental, social and economic stability."

HASSELL has been leading the way with recent projects such as the Adelaide Zoo Entrance Precinct, where sustainable design practices have been demonstrated through the implementation of living walls and roofs, stormwater capture and reuse and connecting the development to its parkland surrounds.



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Benefits of Living Roofs

The principal triple bottom line benefits (environmental, economical and social) of living roofs in Adelaide are;

- _Helping Adelaide to adapt to and mitigate climate change.
- _Improving building energy balance and reducing CO2 emissions.
- _Reducing Urban Heat Island Effect.
- _Enhancing amenity value by providing accessible roof space and outdoor living area.
- _Conserving and improving biodiversity.
- _Sustainable urban drainage by improving storm water attenuation by reducing the amounts of storm water run-off.

Policy approaches adopted in other cities

The principal means by which the cities are encouraged or require green roof developments can be summarised as follows:

- _Direct financial incentives – grants and subsidies;
- _Indirect financial incentives – reduced drainage charges or larger development allowances;
- _Ecological compensation – the green factor approach;
- _Building regulations and planning policy.

In addition, many of the cities are sponsoring demonstration projects and the provision of information to developers.

London: Standard Policy

The provision of green roofs or recreational roof space should be provided on all new developments.

A minimum of 70 per cent of the roof space should be vegetated to provide maximum building energy performance and biodiversity.

At least 25 per cent of the total roof space in any one development should be accessible to residents and/or workers.

Beijing: Policy Targets

Beijing has set a policy target of greening 30 per cent of high-rise buildings and 60 per cent of low rise buildings (i.e. less than 12 storeys)

Berlin: Financial Incentives and Mandatory Policy Requirements

Berlin is one of three German municipalities combining the functions of city and state government in one. The city has pioneered the 'biotope area factor' (BAF), which expresses the ratio between 'ecologically effective surfaces' (e.g. gardens, green roofs, etc) and the total area of a site. BAF target values are set for different forms of development, with new housing attracting a BAF of 0.6 and commercial development 0.3. Different forms of ecologically effective surface then receive a weighting for the purpose of calculating whether the development complies with the BAF target or not. Thus, a conventional sealed roof surface scores 0, and a surface with vegetation with more than 80cm of soil covering (i.e. an intensive green roof) scores 0.7.

Green roofs result in a reduction of drainage charges of 50 per cent irrespective of whether they are connected to the storm drains or not.

Chicago: Building Regulations and Financial Incentives

In response to the city's pronounced heat island effect, the city employs an energy conservation code that requires roofs to achieve a minimum solar reflection of 25 per cent and green roofs are a practical means of meeting this requirement.

Chicago also encourages developers by allowing them to develop at higher density than policy would otherwise allow if at least 50 per cent or more less than 160m2 of a roof surface area – whichever is greater – is covered by vegetation.

Chicago also operates a modest grants scheme and storm water retention credits.

Cologne: Financial Incentives

Cologne offers developers reductions in storm water drainage connection charges if their buildings incorporate green roofs meeting specified performance standards.

Portland, Oregon: Financial Incentives

City-owned buildings are required to have a green roof covering at least 70 per cent of the roof. Remaining roof surfaces must be covered with energy-efficient roofing materials.

Other incentives offered by the city include 'floor area bonuses' – understood to be a preferential property tax – and a 35 per cent reduction in storm water management charges.

Tokyo: Planning Policy and Financial Incentives

The city has a target of creating 30km2 of green roofs. To this end, it applies a policy that compels developers of new private buildings with a footprint larger than 1,000m2, and new public buildings with a footprint greater than 250m2, to green 20 per cent of their roof areas or face an annual fine. The policy is effective, stimulating the construction of c. 50,000m2 of green roofs annually.



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