



Roadmap for green roofs, walls and facades in Australia's urban landscapes 2020-2030

Roadmap Summary

Strategy 1 - Gather and share knowledge

Action 1.1 Establish a Knowledge Hub

Establish a Knowledge Hub for green roofs, walls and facades (GRWFs) - an online portal for sharing research data, case studies, ideas and resources designed for practitioners, government, researchers and the community.

Action 1.2 Create opportunities for knowledge exchange

There is a significant body of knowledge about the benefits, value and construction requirements of GRWFs in Australia that has been developed by practitioners, scientists and government. Knowledge exchange amongst and within sectors is essential for accelerating uptake, and existing and new technologies should be used to gather data, create networks and disseminate information.

Action 1.3 Identify and address knowledge gaps

Collectively identify existing knowledge gaps across industry, government, community and academia that are current barriers to uptake of GRWFs in Australian context. Identify the economics of health and wellbeing from GRWFs.

Strategy 2 - Collaborate and advocate

Action 2.1 Establish a national industry body to advocate and educate on GRWFs

An effective, independent, national advocacy body is needed to drive the uptake of GRWFs across Australian cities. It would have an essential role in advocacy, leadership, education and could develop training, accreditation and community outreach programs.

Action 2.2 Identify champions and encourage leadership

Champions and leadership can be highly effective at driving change and are needed from all sectors - both at a national level and for individual projects.

Strategy 3 - Government coordination and national leadership

Action 3.1 A national approach to green infrastructure planning and implementation

Green infrastructure is essential infrastructure for cities. National leadership and a national strategy are needed to deliver the transformation to greener cities on a scale that will deliver measurable benefits. A coordinated, national approach amongst federal, state and territory governments is required to achieve future green cities. GRWFs and other forms of green infrastructure need to be considered across multiple portfolios, including health, embedded in policy and 'mainstreamed'.

Action 3.2 Federal and state governments develop the policy framework

Federal and state governments to lead and provide the framework for delivery of GRWFs, providing support for local government initiatives and projects.

Action 3.3 Integrate GRWFs in intergovernmental initiatives and arrangements

Link living infrastructure with initiatives and partnerships between the three levels of government. The Australian Government's Smart Cities Plan and City Deals need to consider green infrastructure (including GRWFs) as essential infrastructure and prioritise green infrastructure projects for funding.

Action 3.4 Dedicate funds and improve the process for approvals

Coordination is required amongst all levels of government for funding and approvals. A clear, consistent and efficient process for applications and approvals for a range of project scales is needed to help accelerate the implementation of high-quality projects. The permitting process for retrofits needs to be simplified, and capacity and skills enhanced in those working to assess and approve projects.

Action 3.5 Governments to lead by example

Create demonstration sites and install GRWFs on government buildings. Increase community exposure to GRWFs through municipal demonstration projects that can serve to dispel public misconceptions and provide opportunities for education and trial of new technologies. Governments to integrate GRWFs into government buildings - new builds, extensions and retrofits – and other infrastructure projects where practicable.

Action 3.6 Invest in research and development

Greater government investment is required to support GRWF research and development, including installing trial sites to explore GRWF technologies and applications.

Action 3.7 Government support for industry growth

Map the potential for GRWF industry development and growth, including new jobs and skilled employment opportunities to grow and sustain the workforce.

Strategy 4 - Develop and implement policy mechanisms

Policy tools are essential for accelerating the uptake of GRWFs. Cities that have incentives and/or regulation have been shown to have higher rates of GRWF installation, particularly when combined with education and advocacy.

Action 4.1 Create incentives at a city scale

Grants, rebates and subsidies can encourage adoption of new products and systems such as GRWFs and drive innovation. State governments should lead and fund incentives, setting goals to be delivered at a local level by local governments.

Action 4.2 Establish mandatory regulations

Establish regulatory requirements for GRWFs and combine this with education and outreach, ensuring regulations complement incentives. GRWFs to be embedded in regulations and codes including *The National Construction Code of Australia (NCC)* to ensure minimum standards are met.

Action 4.3 Develop guidelines and standards

Industry-relevant guidelines can assist developers, building owners and managers and along with standards can help mainstream GRWFs. Well-considered technical standards can help develop the industry, ensure the quality and performance of GRWFs and help to avoid failures.

Action 4.4 Embed GRWFs in design of new developments

GRWFs should be incorporated into all new developments where the creation of street level green infrastructure is not possible. GRWFs in new developments should be integrated at all stages in the design and construction and not treated as an ‘add-on’ that can be discarded due to budget restraints. Integrate plants into the built form and adopt biophilic design principles in building and architecture.

Action 4.5 Integrate GRWFs into building infrastructure ratings tools.

GRWFs to be included in building and infrastructure sustainability rating systems (both voluntary and mandatory) as part of the approvals process for new builds and developments including Green Star, Green Leaf, NABERS (National Australian Built Environment Rating System), BESS (Built Environment Sustainability Scorecard) and considered by the Infrastructure Sustainability Council of Australia.

Action 4.6 Identify funding mechanisms for GRWFs

Funds are required to drive the uptake of GRWFs and support incentive schemes, education and the creation of demonstration sites. All levels of government (federal, state and local) should work cooperatively to develop funding models to support the implementation of GRWFs.

Strategy 5 - Enhance skills and expertise

Action 5.1 Develop education and training

Encourage development of education and training programs implemented through institutions and providers at varying levels: higher education, vocational/TAFE, professional and industry training, general public interest activities and short courses.

Investigate the opportunities for developing industry-based accreditation and training for GRWF professionals.

Strategy 6 - Design for success - maintenance, function and form

The benefits of GRWFs depend on good design and construction, the selection of appropriate plant species, long-term maintenance and water availability.

Action 6.1 Design for function

Unlike trees, shrubs and other street level green infrastructure that naturally performs a range of ecosystem services, GRWFs need to be designed to achieve their stated function(s) or objective(s), for example stormwater capture, human thermal comfort and

aesthetics. Guidelines, standards and information shared through the Knowledge Hub will assist in a best practice approach to design that will optimise GRWF performance.

Action 6.2 Design for maintenance

Good maintenance is essential to the long-term performance of GRWFs. Maintenance requirements and costs should be considered in the design phase with input from those with expertise in GRWF maintenance and facilities management.

Action 6.3 Adopt an Integrated Water Management approach to planning and design of GRWFs

Irrigation is essential for GRWF survival and for cooling via evapotranspiration - particularly over summer. Climate change will both decrease the availability of potable water in cities and increase the need for irrigation. GRWFs can be used as storm water control measures and can be irrigated with alternative water supplies such as captured stormwater and recycled water. GRWFs are useful tools that should be considered in the water sensitive urban design (WSUD) of cities.

Action 6.4 Use indigenous and native plants

GRWFs have the potential to conserve and enhance locally indigenous plants in urban areas from which they have been lost, create habitat for fauna and create a sense of place for urban dwellers. GRWFs may provide refugia for plant species that are vulnerable or threatened in their natural range. Those with horticultural expertise can build on existing information to identify local/indigenous plant species that can flourish on GRWFs.

This roadmap is an output of the Green Roof, Wall and Facades (GRWFs) summits led by the University of Melbourne and UNSW Sydney in 2019 and funded by Hort Innovation through the Green Cities Fund. The summits brought together representatives from multiple GRWF sectors (industry, government, academia) to collectively create a positive vision for future green cities and identify the actions needed to achieve this.

For the detailed roadmap go to:

<https://girg.science.unimelb.edu.au/>

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Authors' Organisations

