Australian Institute of Landscape Architects

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Green Infrastructure

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Introduction

Green infrastructures (GI) are the strategically planned networks of natural and semi-natural areas in urban and regional settlements that provide environmental, social and economic benefits to society. Governments and the wider community have for centuries relied on urban natures such as parks and public spaces to improve the social and environmental conditions of our built environments. Confronting today's challenges presented by global warming, urban migration and environmental decline requires new forms of infrastructure and new approaches to landscape planning and management in our urban and regional settlements. Many of our urban environmental and social problems require strategies and interventions that are multidisciplinary and collaborative; crossing jurisdictional boundaries and involving a broad range of stakeholders; particularly, community organisations, property owners and the private sector. GI provides a framework for delivering such benefits to society.

Green infrastructure is identified as one of nine key sectors in AS 5334-2013 'Climate change adaptation for settlements and infrastructure—A risk based approach'. AILA's position reflects the formal recognition of green infrastructure in contemporary national and state environmental policy.

A GI strategy aligns with an ecosystems management approach to provide ecosystem services that can be measured, evaluated and deployed at a landscape scale; transcending private and public land, geographic and municipal boundaries. Developing a GI strategy helps us to understand what the ecological and biological components of urban systems are; prioritise the preservation and the enhancement of those green structures and engage in cross disciplinary dialogue about how to achieve more sustainable and resilient urban systems.

What does Green Infrastructure do?

Green Infrastructure performs certain functions in the same way that other forms of infrastructure contribute to the functioning of our urban and regional settlements. For example, a constructed wetland is part of a city's water management and treatment infrastructure. A wetland captures and retains stormwater and removes excess suspended nutrients such as nitrogen and phosphorous along with inorganic pollutants and heavy metals. The wetland performs other roles beyond improving water quality. It enhances biodiversity by providing habitats for a range of organisms from bacteria to birds, reptiles and mammals. The urban park that hosts the wetland also provides educational and recreation opportunities; encouraging positive experiences with nature and improving mental and physical health outcomes.

GI should not be thought of as individual elements in the landscape (a tree, a wetland, a park, or a garden). Rather it should be treated as components of an infrastructure system that interact with a range of other urban systems (transport, stormwater, ecological communities) that perform certain functions and provide ecosystem services that contribute to the sustainable operation and enhancement of urban and regional settlements.

Key objectives

A Green Infrastructure framework can interact with the built environment, underpin urban ecosystem functions and improve the performance of conventional urban and infrastructure systems. There a four key objectives to developing a GI framework.

1. GI provides a strategic approach to conserve and enhance ecological and biological functions across a range of urban scales from a suburb to a metropolitan region.

A GI strategy for enhancing biodiversity can support planning and land use decision making. Many challenges facing urban environments demand collaborative responses that are cross jurisdictional and cross disciplinary in nature. A strategic GI approach to evaluating, prioritising and resourcing actions and interventions is essential to conserving and enhancing ecological and biological resources.

2. GI helps to regulate and support the flow of water, energy, materials and organisms that maintain urban ecological functions.

A GI plan for reducing our dependence on energy. A GI energy offset plan can help governments and civil society to develop ways to mobilise existing urban natural spaces and vegetation to reduce total energy consumption, assimilate waste and become more sustainable. As we progress towards carbon neutrality, cities will have to do much more with far fewer natural resources. Supporting natural systems to reduce our dependence on non-renewable energy will be essential in progressing towards a carbon neutral economy.

3. GI integrates ecological functions into conventional infrastructure systems, enhancing their performance and reducing the carbon footprint of conventional infrastructure.

Developing a GI performance tool for infrastructure design, procurement and management will drive innovation in the way cities develop more sustainably. Urban infrastructure such as streets, railways, sewage and storm water systems, parks and ovals shape the patterns of urban development. They are essential elements for maintaining productive healthy and engaged urban lives. Improving the ecological function of new and existing conventional infrastructure can improve their performance and reduce the negative environmental impacts of conventional infrastructure systems in construction and operation.

4. GI improves the sustainability of the built environment through the delivery of ecosystem services.

Developing a GI evaluation framework for enhancing ecosystem services will improve the quality of life for all. Identifying, measuring and evaluating ecosystem services provided by urban nature can help urban and regional settlements to improve the quality of life for citizens and achieve urban sustainability targets. The ecosystem services provided by urban nature can be measured and incorporated into a green infrastructure strategy for a neighbourhood, local government area, or an entire metropolitan region. Ecosystem services are the benefits people obtain from ecosystems . These include food and fibres, clean air and water. They help regulate microclimates and reduce pollutants that improve our health and enhance our daily lives. Ecosystem services come from the habitats and environments that support and maintain urban biodiversity as well as the parks and public spaces that we use for recreation, cultural expression and relief from the stresses of daily life.

AILA's position on Green Infrastructure

As a key member of the Living Cities Alliance, AILA supports the development of a living infrastructure policy framework. AILA supports the creation of a national living infrastructure fund to drive change in accountancy, business case preparation and feasibility process standards to enable living infrastructure to be considered an asset class. This GI position statement provides strategies and actions that incorporate green infrastructure as a key component of the living infrastructure agenda.

AILA advocates that we will, in partnership with non-government agencies, industry organisations and governments at all levels to make significant progress towards improving the liveability and sustainability of urban and regional settlements by incorporating GI principles in urban and regional policy and planning in the following ways;

Promote good GI governance at all levels of government through

- Promoting the positive role that GI contributes across the fabric of urban and regional settlements.
- Encouraging opportunities for landscape policy integration across a broader range of urban agendas through small scale experimentation and facilitate a learning culture across agencies to initiate and sustain adaptive management practices.

Advocate for industry engagement in GI strategies for urban design and development through

- Supporting industry organisations to improve GI components of sustainability rating tools such as the Infrastructure Sustainability Council of Australia rating tools and the Green building council of Australia Green star communities rating tools.
- Promoting the development of stand-alone GI tools for municipal authorities seeking to improve urban design outcomes. Such as the City of Melbourne Green Factor tool.
- Promoting the greening of existing and new conventional infrastructure
- Collaborating with industry organisations such as the asset management council of Australia to reduce and remove barriers to the design and implementation of GI in urban and regional settlements.

Advocate for community engagement in the development of GI strategies, particularly at municipal levels of government through

- Encouraging community partnerships and programs that support urban biological greening such as the National Trust of Australia bushland management.
- Supporting community action in preserving and enhancing ecological and biological resources.
- Encourage community participation through environmental agencies, parks and wildlife departments.

Champion high quality GI research to improve policy formulation through

- Supporting and collaborating with research organisations such as the Clean Air and Urban Landscapes Hub to expand our collective knowledge about how to enhance the sustainability of urban and regional settlements through the strategic incorporation of GI frameworks in planning and development policy.
- Improving access to and incorporation of high quality spatial and statistical data for managing urban and peri-urban landscapes.

Case studies

National- 202020 Urban Canopy Vision

WA- Eric Singleton Bird sanctuary

VIC- Wonthaggi desalination project

NSW – Greener Places Policy

SA – The Adelaide Design Manual (Green City Plan) incorporates GI targets as well as a quality of our public spaces. This plan informs Adelaide's policies for creating great public spaces.

A summary of the key issues and findings can be accessed here and the full report is here

SA- Torrens River Recovery Project

QLD- Wet tropics landscape resilience program

NT- Darwin urban forest program

ACT- Mulligans Flat Woodlands Sanctuary

TAS- Wellington Park Management Plan