



# BIOPHILIC URBANISM IN THE BUILT ENVIRONMENT

An overview of 'how' and 'why'  
we should, integrate nature into  
cities



Angela Reeve  
PhD Candidate, QUT  
[angela.reeve@qut.edu.au](mailto:angela.reeve@qut.edu.au)



Australian  
Green  
Development  
Forum





**Sustainable  
Built Environment**  
National Research Centre



## Innovation Underpinning Australia's Infrastructure and Building Industry

[Home](#)

[About Us](#)

[Research](#)

[Partners](#)

[Publications](#)

[Media](#)

[Links](#)

[Contact Us](#)

### ● Research Programs

[Greening the Built Environment](#)

[People, Processes and Procurement](#)

[Productivity through Innovation](#)

## 1.5 Harnessing the Potential of Biophilic Urbanism In Australia, an Economic and Policy Investigation

 [Project 1.5 Industry Brochure \(809.81 Kb\)](#)

The concept of 'Biophilic Urbanism', championed by Tim Beatley and Peter Newman for decades, has been used widely to create more liveable and pleasant cities. This field is about to get a significant boost in activity as the realisation grows that natural features can be used as design elements in cities to help respond to climate change. The concept of biophilic urbanism is inspired by E. O. Wilson's concept of 'biophilia' that suggests we have an innate affinity with nature and that increasing nature in cities can lead to many benefits. Studies show that a connection with nature tends to lead to reductions in depression, anger, tension and fatigue.

Having been applied to a number of aspects of psychology and interior design, the concept is now receiving strong interest as an urban design principle, not only for the human well-being benefits, but a range of direct and indirect economic and environmental benefits. Biophilic urbanism has the potential to make significant contributions to a range of national, state and local government policies related to climate change mitigation and adaptation: reducing urban energy consumption, enhancing urban biodiversity, improving resilience to natural disasters, improving worker productivity, and responding to pressures related to densification and revitalisation of cities.

In collaboration with project partners, the research team from Curtin University and Queensland University of Technology (QUT) are investigating how natural elements can be used in cities as design features and will produce a report on the key elements and aspects of biophilic urbanism, especially related to building landscaping; a report on the economic considerations of the use of biophilic elements; and a report on the policy considerations to underpin the wider uptake of biophilic elements (both based on case study research and interviews). Each of the outcomes will be focused on providing value to partners and will continue to be developed in close collaboration with stakeholders.

Project partners include: Parsons Brinckerhoff, Western Australia Department of Finance, Townsville City Council (CitySolar Program), and PlantUp. The project will be advised by Professor Tim Beatley (University of Virginia, USA), a world leading biophilic urbanism expert and author of the new book 'Biophilic Cities'.



**Professor Peter Newman**

PhD DipES&T BSc(Hons)  
FTSE  
Program Leader  
Curtin University



**Charlie Hargroves**

BE (Civil)  
Co-Project Leader  
Curtin University  
E:  
[charlie.hargroves@curtin.edu.au](mailto:charlie.hargroves@curtin.edu.au)



**Dr Cheryl Desha**

BE (Env), PhD  
Co-Project Leader  
Queensland University of  
Technology  
E: [cheryl.desha@qut.edu.au](mailto:cheryl.desha@qut.edu.au)



# Today's story:

- A bit about biophilia and biophilic urbanism
- Key benefits of biophilic urbanism
- 2 case studies – a short overview
- Some emerging findings from the research project
- Key messages to take home
- From you - questions, reflections, experiences to share





# Biophilia



Biophilia ... is the innately emotional affiliation of human beings to other living organisms.  
- *Wilson, 1984*



# Biophilia and us

*Benefits of experiences with nature*



- Cognitive function & attention recovery
- Healing
- Reduced depression, anxiety & stress
- Community connection
- Immunity
- Likelihood of walking & cycling
- Physical wellbeing
- Reduced crime



# Biophilic urbanism

Biophilic urbanism is emerging as an important **design principle for cities**, featuring a suite of natural design features that address **multiple pressures** related to climate change, increasing urban populations, finite resources and our inherent need for contact with nature.

The principle **directs the creation of urban environments** that are **conducive to life**, delivering a **range of benefits** to stakeholders including building owners, occupiers and the surrounding community.

*SBEnc, 2012*





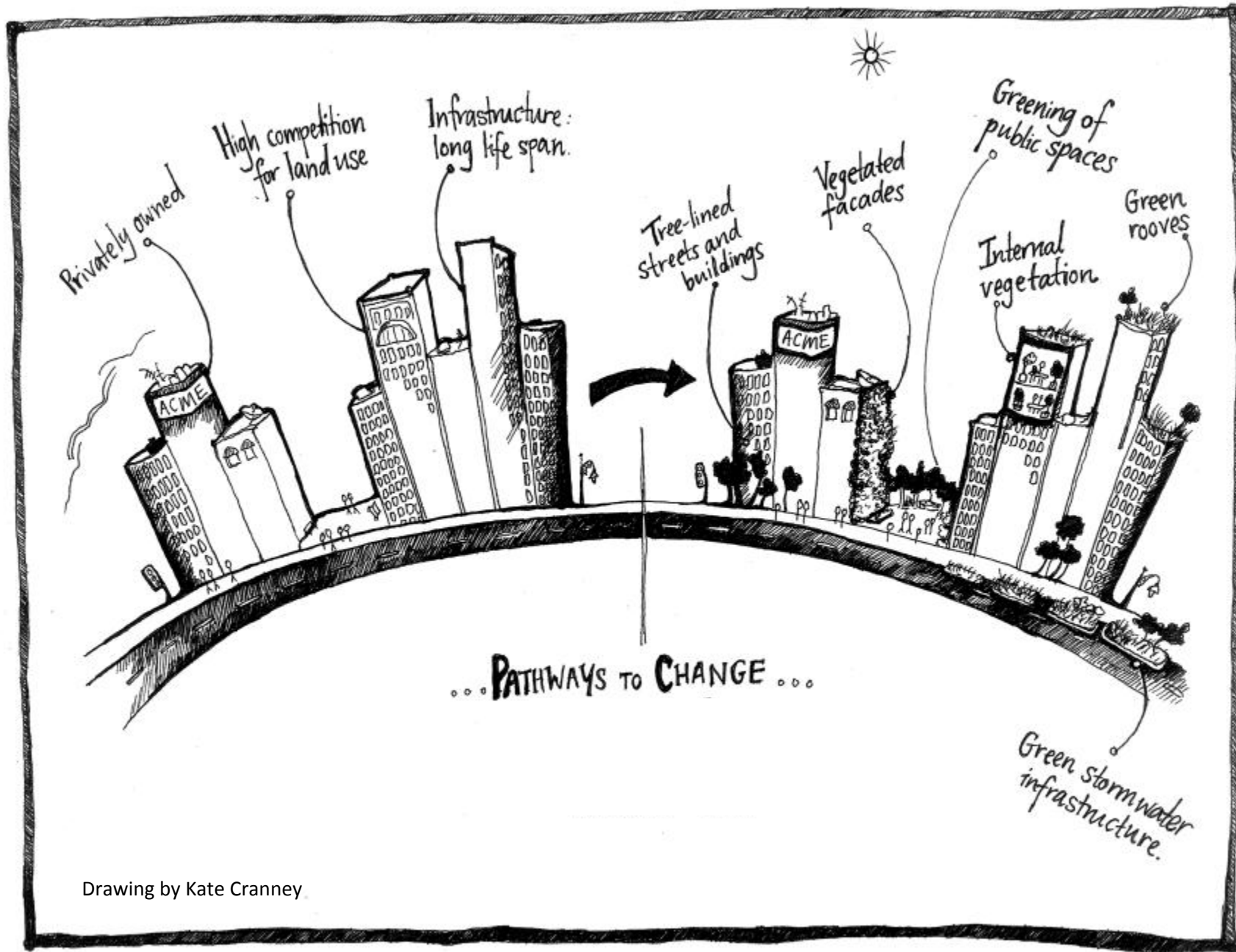
# Benefits of biophilic urbanism

*Ecosystem services to improve urban function – green roofs*



- Reduces urban heat island effect
- Reduces building energy use for cooling
- Reduces stormwater runoff & improves quality (mixed results)
- Sequesters carbon and reduces greenhouse gas emissions
- Preserves urban biodiversity
- Food production
- Improves air quality
- May increase roof life
- Enhances visual amenity for overlooking buildings
- Can create valuable, viable space for building occupants

Toronto City Hall green roof, Padriac, 2006



Drawing by Kate Cranney



# Case studies of pathways to biophilic urbanism

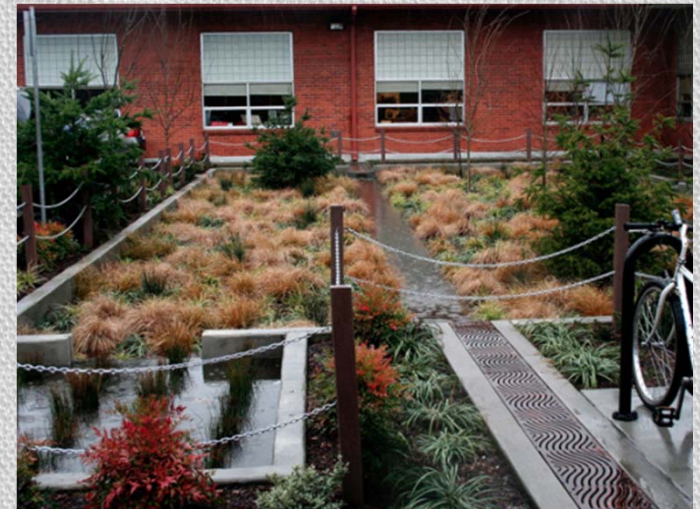




# Portland, USA

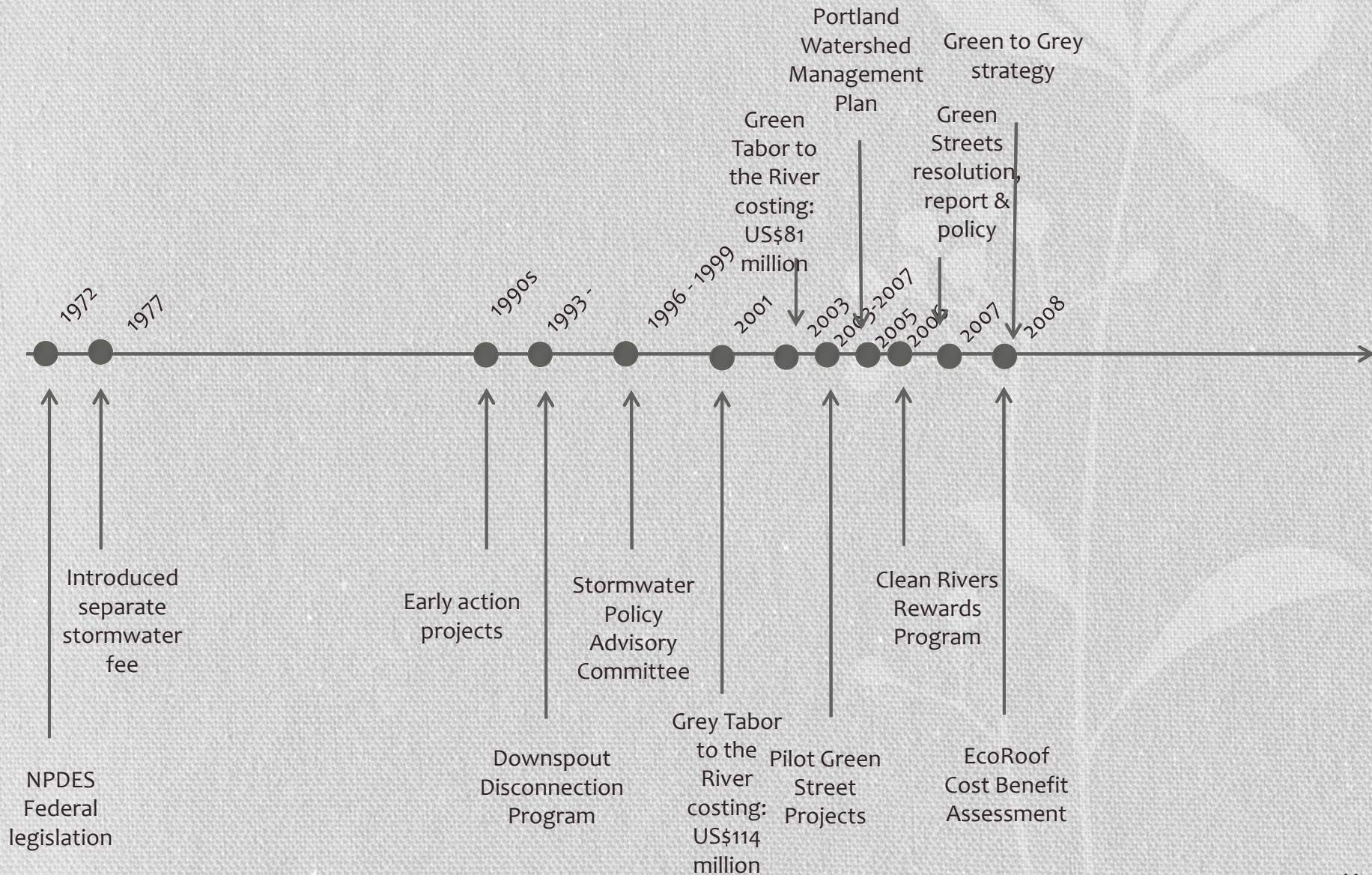
## *Stormwater infrastructure*

Incentives, Government funded initiatives, Regulation





# Portland – timeline of biophilic urbanism





# Vauban, Freiburg, Germany

Community engagement and citizen demand, integrated policies,





# Vauban – balancing density and green space

## 1. **Reduced car living**

- Minimal road infrastructure
- Promotes active & outdoor lifestyle

## 2. **Baugruppen ‘building community’ construction model**

- Shared facilities reduces apartment footprint
- Close working arrangement creates community

## 3. **Extensive citizen engagement**

- Citizens co-developed Master Plan, including protection of existing trees and allocation of space for green wedges
- Residents designed & helped develop green spaces
- Empowerment and sense of ownership over district



# Gaining support & momentum

## Make challenges visible and tangible

- Helps people understand the need to change
- Link biophilic urbanism directly to the challenge – often begins as a ‘single-issue’ policy

## Create & communicate a vision for the city

Focus on the ‘why’, not just the ‘what’

## Demonstration – evaluation – communication – incentivise – regulation

- Regulation works well once there is sufficient experience and industry capacity to develop biophilic elements
- Begin small: demonstration projects & measure performance, and then widely communicate outcomes





# Effective policy & program types

## Performance-based regulation

- Supports innovation and better outcomes

## Price externalities where possible

- Separate storm water charges provide dedicated pot of funding for government & incentive for property owners to reduce runoff

## High-level policies addressing urban issues

- Policies addressing stormwater runoff, air quality, climate change, open space provision, biodiversity etc. create drivers for local action
- Urban nature as a strategy to address a range of issues

**Wide range of policies & programs seen – depends on type of urban nature**





# Effective policy & program types - financing

- Density/Floor Area Bonus & fast-tracked approvals
- Tax increment financing
- Financial incentives to private property owners based on the size of the cost barrier & value of public benefits
- Separate stormwater (or other) charges, with reductions for mitigation measures
- Engage philanthropists
- Utility run & funded programs (water & power)
- Spread costs across departments & budgets
- Mandatory requirements for new build and redevelopment





# Critical success factors



## Strong government commitment

- Establishing and communicating a clear vision for urban greening
- Structures that promote inter-departmental communication, coordination & collaboration
- Strong mandate from executive
- Build local knowledge and experience
- Investment in research and demonstration projects
- Effective communication of demonstration project performance & benefits to public and private property owners
- Extensive community consultation promoting active citizen engagement
- Building capacity in industry skills and knowledge



# Key messages to take home

- Biophilic urbanism isn't new...
  - ...but the *context* for developing it today is.
- Urgent & unprecedented challenges facing cities around the world
  - Biophilic urbanism offers an array of benefits that can help.
- Much international experience to draw from – but no ‘cookie-cutter’ approach.
- Timeframes have been long elsewhere – we have the opportunity to leapfrog this process
  - ➔ A wide range of strategies, policies and programs that have been effective
  - ➔ Key lessons also on pitfalls to avoid
- Strong government commitment is essential
- Can't quantify all the benefits, but are evident and appreciated when experienced

We face a *critical* and *urgent* opportunity for our generation to integrate nature into dense urban areas as an *intentional* and *mainstream* design feature.





# Thank you – questions?

Angie Reeve  
angela.reeve@qut.edu.au  
0415 175 930  
sbenrc.com.au



Source: BCC