

Project 1.5

Harnessing the Potential of Biophilic Urbanism in Australian Cities



RESEARCH PROGRAM 1: GREENING THE BUILT ENVIRONMENT

Stakeholder Engagement Report – Stakeholder Workshops

Workshop Details

Workshop Details - Perth

Date: Wednesday 13 July 2011 Time: 9:15am – 12:30pm
Venue: Optima Centre, Osborne Park Facilitators: C. Hargroves (CU), C. Desha (QUT)
Team: A. Reeve, M. Bucknum, O. Baghdadi, D. Sparks, M. Walker, C. Hargroves, & C. Desha.

Workshop Details – Brisbane

Date: Wednesday 7th September 2011 Time: 9:30am – 3:00pm
Venue: Parsons Brinckerhoff, Northbank Plaza Facilitator: C. Desha (QUT)
Team: A. Reeve, M. Bucknum, O. Baghdadi, D. Sparks, O. Wilson, and C. Desha.

Workshop Context

As part of the Sustainable Built Environment National Research Centre (SBEnc) a research team from Curtin University and Queensland University of Technology (QUT) held a series of stakeholder and experts' workshops in Brisbane and Perth. Topics investigated in the three workshops included: the post-occupancy assessment of the performance of green commercial/office buildings; an investigation into the role that roads will play in supporting Australia's response to climate change and other associated challenges; and a consideration of the application of E. O. Wilson's concept of 'Biophilia' to urban planning to enhance Australian cities.

Along with a project focused on sustainable infrastructure procurement based at Swinburne University and QUT and led by Professor Russell Kenley, the projects make up the first round of projects as part of the SBEnc '*Greening the Built Environment*' program led by Professor Peter Newman, Curtin University. The program is investigating important aspects of greening the built environment that will assist Australia to respond to growing environmental, social and economic issues related to climate change and other environmental pressures. The projects are designed as industry collaborations and involve a number of government and industry partners.

Interested parties, stakeholders, SBEnc partners, and experts in the field were invited to join each of the three workshops to contribute to informing the direction of the first stage of each of the projects, which will be completed in September 2012. Based on the learnings of the first stage the second stages of each project will be developed in close consultation with stakeholders and partners, beginning October 2012. The workshops were aimed at learning from the experiences of participants, identifying a range of challenges the research team must

consider, and gaining a strong understanding of how the research can directly support and enhance industry and government practices and policies. Hence, the workshops were a valuable opportunity for the research teams to engage with the project partners and experts in the field to ensure that the projects are well informed and guided towards tangible outcomes.

Overview of Project

The focus on ‘biophilic urbanism’ is inspired by E. O. Wilson’s concept of ‘Biophilia’ that suggests that human beings have an innate affinity and need to connect with nature. Such a need to connect with nature is potentially evident to many, however studies now qualify these benefits, including that a connection with nature tends to lead to reductions in cases of depression, and the incidence of anger, tension and fatigue. Having been applied to a number of aspects of psychology and interior design, the concept of Biophilia is now receiving strong attention as a core urban design principle. Research and preliminary experience indicates that the application of biophilic urbanism can improve physical and psychological well-being, improve social connectivity, improve environmental conditions, and a range of direct and indirect economic benefits. As the psychological, physical, social and environmental benefits of biophilic urbanism have been well documented elsewhere, the first stage of this project will focus on developing and trialing a robust framework to investigate the economic benefits and communicating the initial results to industry and policy makers. This stage will also describe the various options for landscaping buildings, roads and other civil infrastructure associated with reducing urban heat island effects, reducing energy consumption, improving water management, and increasing urban biodiversity.

The development of the framework will include a number of case study assessments and pilot trials with project partners that will investigate the direct and indirect economic benefits and inform a range of national, state, and local government programs and policies. Anticipated benefits to government include a better understanding of the economic benefits of the use of biophilic elements in urban centers and public buildings such as: reducing energy consumption, reducing heat island effects (such as reducing urban heating from concrete and pavements open to solar radiation that will heat buildings and vehicles), enhancing urban biodiversity that may provide greater tourist attraction and greater levels of well-being, improving resilience to natural disasters and extreme weather conditions, improved health and healing outcomes, improving the experience of those visiting and working in urban areas and public buildings, providing learning opportunities through living learnscapes, and responding to pressures related to densification and revitalisation of cities.

The founding partners of the project include: Parsons Brinckerhoff, Western Australian Department of Finance, Townsville City Council (CitySolar Program), Curtin University, and QUT. 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*’.

Workshop Summary

The workshops were hosted by project partners, including the Western Australian Department of Finance (Perth workshop) and Parsons Brinckerhoff (Brisbane workshop). The research team wishes to in particular thank Carolyn Marshall and Anna Evers from the WA Department of Finance, and Shaun Nugent and Tony Duncan from Parsons Brinckerhoff for their support and commitment to the research project.

The Perth workshop was opened by a keynote by Professor Tim Beatley from the University of Virginia, a world-renowned expert in biophilic design, who provided an overview of the concept and outlined a series of projects in cities around the world that are harnessing the potential of biophilic urbanism to deliver substantial benefits. In Brisbane, Dr Cheryl Desha and Angela Reeve provided provocation to the topic through outlining key concepts and some examples of biophilic urbanism in Australian cities.

The Stakeholder Engagement Workshops used a workshop process based on the methodology of 'Collective Social Learning', created by Emeritus Professor Valerie Brown,¹ to guide participants through a process to consider first their vision for a biophilic (nature loving) city and the aspects that enable and disable achieving such vision. Following this a brainstorm was undertaken to consider the various elements of an economic consideration of both direct and in-direct economic benefits and costs of the use of biophilic elements in cities and urban areas.

In Perth, there were 14 workshop participants, with over 35 people attending the opening keynote presentation by Prof. Beatley. Participants included staff of Building Management and Works, Western Australia Department of Finance (a SBEnrc Core Partner and founding partner in the development of the research project), staff from the Curtin University Sustainability Policy Institute and the QUT Faculty of the Built Environment, and industry practitioners. The Brisbane workshop was attended by 11 participants, including representatives from Brisbane City Council, Department of Parks and Wildlife, AECOM, Queensland University of Technology, Australian Green Infrastructure Council, Deicke Richards and Parsons Brinckerhoff.

Key Workshop Outcomes

The two workshops were structured to be consistent and facilitate similar discussions with the participants in each. Due to practical factors, however, the time available for the Perth workshop was less than for Brisbane, and it was furthermore not possible to have Prof. Tim Beatley present at the Brisbane workshop. Hence the workshop structure and direction of the conversations differed in some respects between Perth and Brisbane. The diversity of participant backgrounds also differed between the workshops.

¹ Brown, V., and Harris, J. (2012) *The Collective Learning Handbook: from collaboration to transformation*" Earthscan, London.

The research team did not seek to compare findings between the workshops, and rather to cumulatively build a broader understanding of the research questions (listed below), hence this report will not draw comparisons between the findings of each workshop and instead seeks to address the following key outcomes:

- Appreciation of the level of consideration and understanding of biophilic urbanism amongst participants and stakeholders,
- Comparison to the literature review findings of biophilic urbanism elements to assess the completeness and appropriateness of these,
- Identification and consideration of potential enablers and disablers to the application of biophilic urbanism,
- Consideration of components of an effective economic analysis of biophilic urbanism.

Workshop Facilitation Process

The Perth workshop was facilitated by the project leaders Charlie Hargroves (Curtin) and Dr. Cheryl Desha (QUT). As the workshop was designed as a half day session, following the keynote session by Prof. Beatley the facilitators encouraged participants to quickly enter into small group discussions and creation rather than undertake introductory and context setting activities. This furthermore served to encourage additional attendance from the keynote audience and to maximize the time invested by the participants.

The Brisbane workshop was facilitated by the Brisbane project leader, Dr. Cheryl Desha (QUT). The workshop ran from 9:30am to 3:00pm, beginning with a provocation and overview of Biophilic Urbanism in Australian cities by Dr. Desha and Ms. Reeve (QUT). Due to having more time available for this workshop, the process was extended, as noted in the workshop outline below:

The workshop was undertaken in with three main stages in Perth, with an additional stage in Brisbane:

1. What should be: A visioning exercise, which invited participants to envision what a biophilic city would look like, as a first step to explore the concept and application of biophilic urbanism;

The purpose of this stage of the workshop was to a) allow the participants to create a vision of how biophilic urbanism can be applied, considering how this could make urban areas places more liveable, and b) provide some inspiration and background to the remainder of the workshop, encouraging the participants to focus on how biophilic urbanism could be applied in Australian cities.

2. What is: An exploration of current enablers and disablers of biophilic urbanism;

The purpose of this stage of the workshop was to provide insight to the current situation of what is enabling and disabling the greater inclusion of biophilic urbanism in Australian cities, allowing the research team to structure the project to strategically target key areas to overcome disablers and enhance enablers. The findings from this stage will inform the investigation of policy frameworks to encourage biophilic urbanism.

3. What could be: A discussion of key considerations and components of an effective economic analysis of biophilic urbanism;

The purpose of this stage of the workshop was to gain a deeper appreciation of the key elements to be considered for inclusion in an effective economic analysis of biophilic urbanism to enable decision makers to assess the viability and value of including these elements in Australian cities. The findings from this stage will inform the development of a framework for economic analysis of biophilic urbanism.

4. What can be (Brisbane only): A commitment statement to undertaking actions to further the biophilic urbanism agenda in Australia

The purpose of this stage of the workshop was to provoke participants to consider how they could undertake personal actions to create the kinds of change discussed throughout the workshop. The research team will not track any of the commitment statements made by participants, and this stage of the workshop was intended to provide completion and a sense of empowerment to participants.

Participants were clustered into 4 groups of between 3 and 5 participants at tables in the workshop room. The discussions and activities used several techniques to capture information, including:

- a) Brainstorming within each sub-group, and documenting ideas, thoughts and comments on butchers' paper;

This technique was used for the first stage (visioning biophilic urbanism) and for the second stage (exploring enablers and disablers). The purpose of using this technique was to: a) capture a wider breadth of ideas by allowing each subgroup to explore the concept separately; b) to provide the research team with a hard copy of the brainstorming process to accurately capture the language and ideas of participants; c) to ensure all participants had the opportunity to share their ideas; and d) to encourage interaction between participants.

- b) Whole of workshop discussions, including reporting the findings of the sub-group brainstorming, with results and findings documented on a whiteboard;

This technique was used for the first stage (visioning biophilic urbanism) and the second stage (exploring enablers and disablers). The purpose of using this technique was to: a) provide feedback to all participants of the breadth of possible applications of biophilic urbanism; b) to identify any emerging consensus within the group of the application of biophilic urbanism; c) to ensure participants could share their thoughts and ideas to the workshop.

- c) Whole of workshop brainstorming and discussions, with ideas and findings documents on a whiteboard;

This technique was used for the third stage (considering an effective economic argument). The purpose of using this technique was to: a) quickly identify any emerging consensus; b) capture the findings of this discussion on the whiteboard for the research team, and c) ensure participants agreed with the language and content of how the discussion was transcribed on the whiteboard.

Workshop discussion and key outcomes

Session One: Visioning Biophilic Urbanism

Participants were asked to brainstorm what they felt biophilic urbanism meant, and how it could be applied in an Australian city. The facilitators invited participants to list and/or draw these ideas on butchers' paper within the sub-groups at each table. Participants in the Perth workshop appeared to see biophilic urbanism as a holistic concept, incorporating the social, technological, economic, commercial and functional aspects. Participants appeared to appreciate the social and psychological aspects of biophilic urbanism (as opposed to 'green infrastructure' which may not consider the human experience). In the Brisbane workshop, participants viewed biophilic urbanism as an integral part of sustainable development and sustainable living. Concepts of sustainable transport, passive solar design, renewable energy, new economic models, self-sufficient food systems, improved planning processes, social integration and community connectivity, culture and education were all discussed in the groups. Participants discussed less what 'elements' might be included in a biophilic city, and focused more on the sort of systems and concepts that would underpin the development and functioning of such a city. A summary of the findings from each of the sub-groups can be found in Appendix B, and the key findings from the workshops overall are summarised below:²

- *Participants discussed the concepts of Biophilic Urbanism as including:*
 - ⇒ City as an ecosystem
 - ⇒ Resilience
 - ⇒ Regenerative city
 - ⇒ Multi-level, vertical nature
 - ⇒ Integration and connectivity (of nature/habitat and communities)
 - ⇒ Closed resource loops
- *Ideas were presented for various urban settings, including residential, roads, industrial, and services (i.e. schools), and participants explored a wide range of possible applications including:*
 - ⇒ Green (vegetated) roofs,
 - ⇒ Green (vegetated) walls (incorporating vines and trellises),
 - ⇒ Day-lighting streams (referring to uncovering waterways contained in pipes, under roads or under urban landscapes),
 - ⇒ Creating wildlife corridors along infrastructure corridors based on tracked migration patterns (such as roadways),
 - ⇒ Parks (connected by wildlife corridors),
 - ⇒ Community information centres providing knowledge on local species and environment,

² Note: Information, recommendations and opinions expressed herein are not intended to address the specific circumstances of any particular individual or entity. This list has been produced for general information only and does not represent a statement of the policy of the participants of the stakeholder workshop, the SBEnrc, or the SBEnrc partner organisations.

- ⇒ Creating storm/sea buffer zones with vegetation,
 - ⇒ Vegetable gardens, and community gardens,
 - ⇒ Greening verging strips, including with food production,
 - ⇒ Street trees, and canopies over streets, including for food production,
 - ⇒ Internal plants and vegetation for buildings (incorporating aquaponics),
 - ⇒ Urban constructed wetlands (incorporating storm and wastewater capture and treatment),
 - ⇒ Shopping centre greening (as communal, public spaces, and taking advantage of increased sales in greened commercial districts),
 - ⇒ Running water (incorporating water capture and storage, and evaporative cooling),
 - ⇒ Shade plantings (strategic planting to reduce internal building temperatures in summer),
 - ⇒ Swales (to be utilised rather than traditional stormwater conduits),
 - ⇒ The use of natural light and ventilation in buildings,
 - ⇒ Green sidewalks (rather than pavement), and
 - ⇒ Connectivity within green spaces and greenways.
- *Ideas were presented as part of a vision of a biophilic city, such as integrating renewable power generation and water tanks into urban areas; and urban planning concepts, such as integrated work and living and transit orientated design concepts, as well as sustainable coastal management planning.*
 - *Similarly, some participants discussed what systems are essential and integral to biophilic cities, including: Education (integrating sustainability, connecting people and nature, creating nature based experiences); Transport (public transport, enable walking and cycling, efficient and whole-system optimized freight); Economic systems (resolving split incentives, quantifying externalities); Energy systems (renewable energy, co-generation, tri-generation, energy efficiency); Governance (new planning frameworks); Water; Health and Food*
 - *Participants discussed potential barriers to biophilic urbanism, including:*
 - ⇒ Water shortages,
 - ⇒ Lack of local research into the viability of Australian native flora for biophilic urbanism elements, and
 - ⇒ Lack of local research into appropriate damp proofing for the Australian climate.
 - *Participants discussed the process for integrating biophilic urbanism, and some key considerations were:*
 - ⇒ The need to firstly understand the intrinsic needs of the environment and to use this as a base for designing a biophilic urban area,
 - ⇒ That biophilic urbanism is non-linear, never ‘finished’, human scale (rather than car scale), and provides a sense of ownership and responsibility to residents,
 - ⇒ Appropriate place naming, incorporating aboriginal history and knowledge,
 - ⇒ Incorporating appropriate signage to inform residents,
 - ⇒ Design for biophilic urbanism must be embedded within the design and planning process, ‘not the last thing’, and
 - ⇒ Spatially analyse the natural elements of a municipality and their existing connectivity through mapping software.
 - *Some key opportunities for integrating biophilic urbanism were identified, including:*

- ⇒ Identifying and utilising cheap land (this may include disused industrial sites, landfill sites, vacant lots, etc.),
 - ⇒ Targeting ‘green’ companies who may achieve competitive advantage or marketing benefits from biophilic urbanism in their building or precinct,
 - ⇒ Incentivising residents to develop and maintain biophilic urbanism elements in their area – for example, to adopt and take responsibility for a verge strip, roadside garden or creek,
 - ⇒ Mandating a percentage of construction budgets to be spent on biophilic urbanism elements (to insulate spending on BU elements from financial shocks), and
 - ⇒ Integrating social and technological values, creating a sense of place and connection, and fostering community responsibility.
- *Key considerations in designing a biophilic city include:*
- ⇒ Considering scale, from individual houses, to streets, neighbourhoods and whole cities
 - ⇒ Optimising urban density and green space concurrently
 - ⇒ The use of local and endemic species, or exotic species that may be more resilient or better adapted to the urban environment
 - ⇒ Creating designated space for life within cities
 - ⇒ Finding the most impactful areas to target in the system to maximise the benefits and outcomes
 - ⇒ Considering and designing to enhance multi-functionality of biophilic urbanism and urban design

Session Two: Exploring Enablers and Disablers

Participants were asked to work within their sub-groups to create two lists on the provided butchers’ paper: ‘enabling’ factors (enablers), which are currently likely to assist in increasing biophilic urbanism in Australian cities, and ‘disabling’ factors (disablers), which are impeding such an increase. Having created these lists, the facilitators in the Perth workshop asked participants to highlight what they felt were the top three enablers and disablers, and to present these to the group. A summary of the findings from each of the sub-groups can be found in Appendix B, and the list of the top three enablers and disablers from each of the three groups is presented below in Table 1 which captured the key enablers and disablers raised by each group during the full workshop discussion.

Table 1: Summary of key enablers and disablers to biophilic urbanism from Perth workshop

<u>Enablers</u> →	← <u>Disablers</u>
<ul style="list-style-type: none"> – <i>Innovative and adaptive frameworks,</i> – <i>Leadership in planning authorities,</i> – <i>Social pressures – community forums,</i> – <i>Local / State Gov policy able to be informed by BU metrics,</i> – <i>Demonstration sites e.g. New Delhi (UHI), Ulrich (health benefits),</i> – <i>Community gardens and associated community groups,</i> – <i>Corporate donations and sponsorship,</i> – <i>Supportive local governments that are connected to the needs of community</i> – <i>Availability of vacant lands to be used as biophilic elements, and</i> – <i>Growing level of education, experience, and exposure in nature in cities.</i> – <i>A lot of good work being driven at grassroots level</i> 	<ul style="list-style-type: none"> – <i>Planning frameworks (Business as usual),</i> – <i>Lack of quantitative/financial analysis of BU (rather than qualitative...)</i> – <i>Cultural stagnation,</i> – <i>Control issues (e.g. at local government level there are internal struggles about control and how things happen),</i> – <i>Lack of Info at the level of the decision makers (eg buildings, town planning etc</i> – <i>Lack of research on local, holistic systems,</i> – <i>Benefits/Costs fragmented,</i> – <i>Regulations/Planning permit requirements,</i> – <i>Lack of integrated planning,</i> – <i>Lack of rigorous cost benefit analysis using a systems approach, and</i> – <i>Level of social disconnection to natural environments.</i>

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Source: SBEnrc Stakeholder Workshop, Hosted by the Western Australian Department of Finance (held at the Optima Building), and facilitated by Curtin University and QUT, 13 July 2011, Perth.

In the Brisbane workshop, participants were asked to denote the relative importance of enablers and disablers using arrows of varying length and thickness. In reviewing the data, there is little differentiation between the enablers and disablers listed. Hence, the data has

been reviewed by grouping enablers and disablers into common themes, which were found to include:

- Economic enablers and disablers (**Table 2**);

Policy and governance enablers and disablers (*Source: SBEnc Stakeholder Workshop, Hosted by Parsons Brinckerhoff, and facilitated by Curtin University and QUT, 07 September 2011 Brisbane.*

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- **Table 3);**
- Industry and private investment enablers and disablers (

Table 4);

- Citizen, social and community based enablers and disablers, including education and establishment of norms and expectations (

Table 5).

There is significant overlap between these themes, which are presented in the tables below, with a summary of the lists prepared by each of the sub-groups at the workshop in the appendices.

Table 2: Summary of economic enablers and disablers to biophilic urbanism from the Brisbane workshop

Enablers →	← Disablers
<ul style="list-style-type: none"> – <i>Incentives (offset uptake costs)</i> – <i>Economic analysis</i> <ul style="list-style-type: none"> - <i>Perception change</i> - <i>Forward planning</i> - <i>Economies of scale</i> – <i>Recognition of building upfront and operational costs</i> – <i>Establishing building value/valuation techniques</i> <ul style="list-style-type: none"> - <i>Loan conditions</i> - <i>Green star</i> – <i>Quantify the value of ecosystem services (make economic case)</i> – <i>Rewards for truly sustainable solutions</i> – <i>Consumption and expectation need</i> – <i>Competitive edge</i> – <i>Economic arguments</i> – <i>Positive development frameworks</i> – <i>New wealth opportunities</i> 	<ul style="list-style-type: none"> – <i>Pay back period</i> – <i>Owner-occupant benefit</i> – <i>Mindset (perception that traditional solutions cheaper/easier and lower risk)</i> – <i>Lack of reward for truly sustainable solutions</i> – <i>Lack of funding</i> – <i>Cost, different economics – short term economic thought</i> – <i>Consumption and expectation – cost</i> – <i>Economic system/ideological growth</i> – <i>Split incentives</i> – <i>Traditional economic theories (values)</i> – <i>Current investment in existing infrastructure</i>

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Source: SBEnc Stakeholder Workshop, Hosted by Parsons Brinckerhoff, and facilitated by Curtin University and QUT, 07 September 2011 Brisbane.

Table 3: Summary of policy and governance enablers and disablers to biophilic urbanism from the Brisbane workshop

Enablers →	← Disablers
<ul style="list-style-type: none"> – <i>Government policies (follows other enablers)</i> – <i>‘Human’ decision makers (turn their lights on!)</i> – <i>Creative leadership</i> – <i>Transparency</i> – <i>Key people / leaders innovators</i> – <i>Governance, long range reflective</i> – <i>Top down action</i> – <i>Strong governance with social conscience</i> – <i>Building regulation flexibility</i> – <i>R&D</i> <ul style="list-style-type: none"> - <i>Private</i> - <i>Government</i> – <i>Green door ‘fast tracks’ development application processes</i> – <i>Design standards (for new developments and brown/greyfield)</i> – <i>Offsets for environmental disturbance (no net canopy loss etc)</i> – <i>Rewards for truly sustainable solutions</i> – <i>Commonwealth government needs greens preferences</i> 	<ul style="list-style-type: none"> – <i>Political tenure – short term thinking</i> – <i>Government policies</i> – <i>Education not applied, information not action (inaction not enabled) – disempowered</i> – <i>Governance not society driven, driven by economics – slower to action</i> – <i>Building regulation baby steps – not open to change</i> – <i>Planning approval processes</i> – <i>Lack of consequences for poor compliance. Inertia of old habits</i> – <i>Short-term focus of elected officials and decision-makers</i> – <i>Legislation (difficulty of meeting performance standards vs. prescription/acceptable standards)</i> – <i>Lack of reward for truly sustainable solutions</i>

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Source: SBEnc Stakeholder Workshop, Hosted by Parsons Brinckerhoff, and facilitated by Curtin University and QUT, 07 September 2011 Brisbane.

Table 4: Summary of industry and private investment enablers and disablers to biophilic urbanism from the Brisbane workshop

Enablers →	← Disablers
<ul style="list-style-type: none"> – Building regulation flexibility – Incentives (offset uptake costs) – Best practice case studies – Recognition of building upfront and operational costs – Establishing building value/valuation techniques <ul style="list-style-type: none"> - Loan conditions - Green star – Green door ‘fast tracks’ development application processes – R&D <ul style="list-style-type: none"> - Private - Government – Technology (ingenuity to solve any problem) – Design standards (for new developments and brown/greyfield) – Offsets for environmental disturbance (no net canopy loss etc) – Rewards for truly sustainable solutions – Safety (heat reduction), less pollution – Action, embarrassing, uncertainty – Skills, broad knowledge – Competitive edge – Economic arguments – Positive development frameworks – New wealth opportunities 	<ul style="list-style-type: none"> – Building regulation baby steps – not open to change – Industry anxiety – Information gap – Developers – Operation – Clients – Available technology – Pay back period – Owner-occupant benefit – Planning approval processes – Buy-in to tech. solutions (convincing decision makers) – Competition for space – Lack of consequences for poor compliance. Inertia of old habits – Legislation (difficulty of meeting performance standards vs. prescription/acceptable standards) – Lack of reward for truly sustainable solutions – Lack of funding – Safety / risk, (eliminate risk) – Split incentives – Current investment in existing infrastructure

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Source: SBEncr Stakeholder Workshop, Hosted by Parsons Brinckerhoff, and facilitated by Curtin University and QUT, 07 September 2011 Brisbane.

Table 5: Summary of citizen, social and community based enablers and disablers to biophilic urbanism from the Brisbane workshop

<u>Enablers</u> →	← <u>Disablers</u>
<ul style="list-style-type: none"> – <i>Best practice case studies</i> – <i>Training opportunities</i> <ul style="list-style-type: none"> - <i>Schools/Universities</i> - <i>Workplaces</i> – <i>Innate biophilic tendency</i> – <i>Technology (ingenuity to solve any problem)</i> – <i>Community awareness and demand for change</i> – <i>Community objection to sub-optimal outcomes</i> – <i>Key people / leaders innovators</i> – <i>Practice – social conscience</i> – <i>Collective conscience</i> – <i>Strong governance with social conscience</i> – <i>Skills, broad knowledge</i> – <i>Inner connected communities (people and place)</i> – <i>Hope, positive thinking</i> – <i>Population: growth is inherently hopeful – obligation/hope</i> – <i>Consumption and expectation need</i> – <i>Feelings</i> – <i>‘Human’ decision makers (turn their lights on!)</i> – <i>Communities – social mobilisation</i> – <i>Establishment of norms</i> – <i>Community awareness</i> – <i>Guilt</i> – <i>Creative leadership</i> 	<ul style="list-style-type: none"> – <i>Information gap</i> – <i>Clients</i> – <i>Owner-occupant benefit</i> – <i>Extinction of biophilic experience (TV, videogame etc)</i> – <i>Mindset (perception that traditional solutions cheaper/easier and lower risk)</i> – <i>Disempowerment</i> – <i>‘Near enough is good enough’ mentality</i> – <i>Bio-phobia / fear / health danger of nature, mixing with people and infrastructure</i> – <i>Education not applied, information not action (inaction not enabled) – disempowered</i> – <i>Cocooning, removal from nature/cyberspace</i> – <i>Disconnected</i> – <i>Negative thinking – the end of the world</i> – <i>***Overpopulation at high consumption levels***</i> – <i>Consumption and expectation – cost and benefit analysis – want</i>

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Source: SBEnc Stakeholder Workshop, Hosted by Parsons Brinckerhoff, and facilitated by Curtin University and QUT, 07 September 2011 Brisbane.

A subjective, qualitative analysis of the findings from this stage of the workshops suggest that there are a wide range of enablers that may assist in increasing biophilic urbanism in Australian cities, including:

- **Policy:** policy frameworks and building/design standards that go beyond compliance to drive innovation, and are adaptive and supportive of biophilic urbanism.
- **Government:** Various levels of government and planning authorities willing to show leadership to trial and/or introduce policy for biophilic urbanism. Creative leadership based on social and community expectations rather than political cycles and traditional economics.
- **Social pressures:** Existing community groups, community gardens and networks are a strong driver for biophilic urbanism, which has many innate but potentially unquantifiable benefits to the broader community. Fostering innate biophilic tendency through education, access and awareness, and enabling community leaders to drive the development of new social norms and a collective conscience. Reconnecting to ‘feelings’ related to nature, and fostering hope and positive thinking.
- **Private Sector:** The private sector can provide funding, leadership and ‘biophilic entrepreneurship’ to drive the development of biophilic urbanism demonstration sites and general use within cities. Effective policy mandating certain percentages of construction funds be spent on biophilic elements can drive innovation in the field, while quarantining this budget from financial shocks. New economic models and valuation methods can enable the private sector to correctly value biophilic urbanism.
- **Demonstration:** Developing demonstration sites to showcase (to provide education, experience and exposure) and quantify benefits of biophilic urbanism. This may help foster social acceptance and pressure for biophilic urbanism and provide a foundation for policy shifts. Using existing vacant land can enable initial biophilic urbanism demonstration sites to potentially encourage the use of these elements to retrofit currently developed areas.
- **Economics:** Establishing new valuation techniques and metrics to enable the inclusion of traditional externalities in financial evaluations of building and urban design with biophilic urbanism, which in turn may enable access to finance for biophilic elements.

A similar inspection of the disablers identified by workshop participants suggests the following key factors are impeding the increased application of biophilic urbanism in Australia:

- **Lack of proof and quantification:** There is a lack of local research and information to assist decision makers in making informed decisions and to appropriately apply biophilic elements to Australian cities. Without a clear economic argument, it may be difficult for decision makers to justify including biophilic elements, and to appreciate how these elements will affect long-term bottom lines. Further, without proper quantification,

biophilic elements are particularly vulnerable when financial pressures such as the GFC result in budget cuts to designs.

- **Existing policy and planning frameworks:** There is currently a perceived lack of integration across government departments, which may hinder the ability to introduce effective policy for biophilic urbanism, as the costs and benefits are spread across multiple departments. A “silo effect” does not allow governments to have the ability to look holistically at a concept, as there are offices devoted to exclusively look at one or two sub-areas. There is furthermore a perception that there is a lack of mandatory requirements, making biophilic urbanism a ‘beyond compliance’ addition to building and planning. Existing regulations and planning requirements generally don’t seem to support the inclusion of biophilic urbanism elements.
- **Cultural inertia and social stagnation:** There is a perceived general disconnection from the natural environment such that there may be a common lack of appreciation of the benefits of nature, or knowledge of place and local species. This can impede the application of biophilic urbanism if nature and nature-based experiences are not valued by society. Further, sustainable development is often a secondary consideration and is frequently cut from construction budgets if funding is tight.
- **Split incentives:** A key disabler to biophilic urbanism is that the benefits and costs are split across government departments and between stakeholders (i.e. private organisations, government and society) such that the costs may be paid by a department, organisation or individual that doesn’t recoup the full benefits.
- **Traditional economic models:** Traditional economic models are not able to value externalities and disempower decision makers from including biophilic elements in urban and building design.

Key Economic Argument Considerations

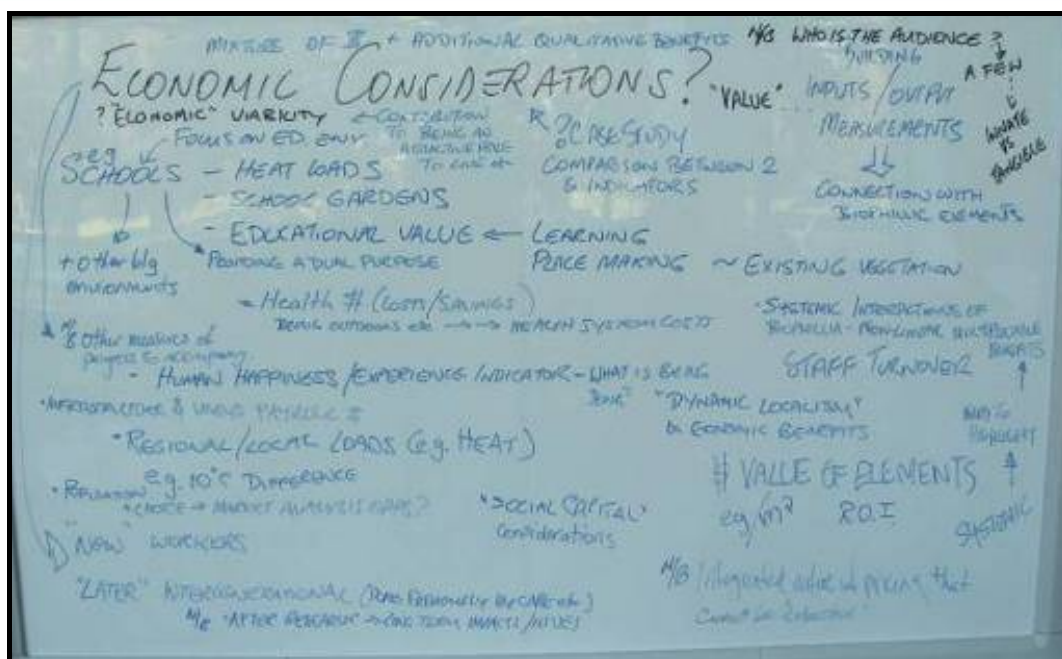
To identify the key considerations for an economic argument for biophilic urbanism in Australia, participants were asked to consider what they feel are the factors that would be most important to decision makers. The workshop participants brainstormed as a group, with their thoughts and responses collated on the whiteboard (Perth workshop)

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Figure 2 (Brisbane workshop) below), with the following being a summary of the key findings:

- *Participants identified several potential indicators and metrics for understanding and measuring the economic costs and benefits of biophilic urbanism, including:*
 - ⇒ Staff retention rates,
 - ⇒ Infrastructure costs vs. Payroll costs,
 - ⇒ Productivity
 - ⇒ Liveability

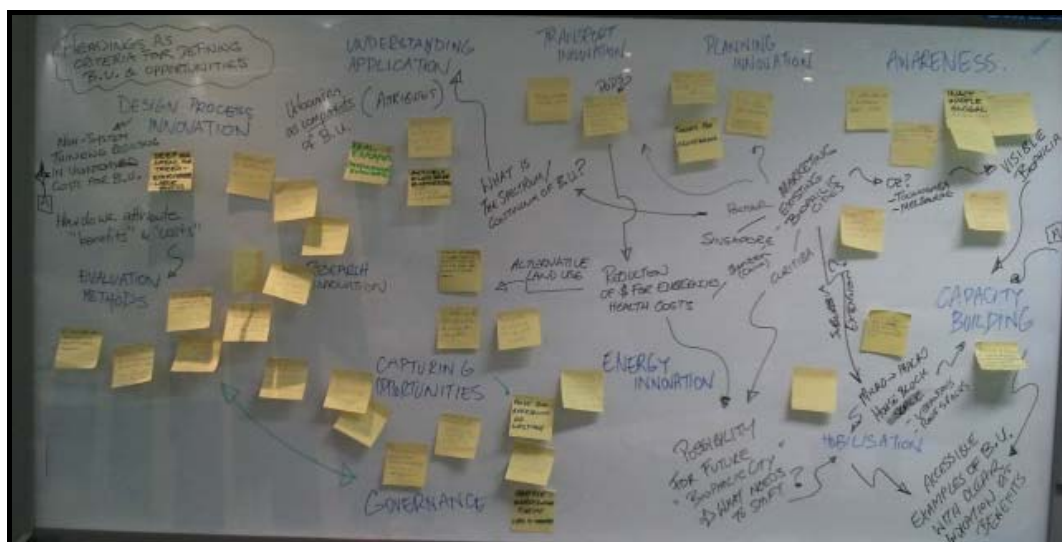
- ⇒ Temperature and HVAC cost differences,
 - ⇒ Building inputs and outputs – connection with biophilic elements,
 - ⇒ Health costs and savings, especially related to particular biophilic elements and experiences (for example, being outdoors for a certain amount of time, a view of nature through the window, etc),
 - ⇒ Some measure of economic viability – being an attractive place to live/work etc, and
 - ⇒ Returns on investment.
- *Participants suggested the use of case studies to provide a comparison between two different locations (with and without biophilic urbanism), and the use of indicators to quantify the costs and benefits.*
 - *Schools (and other similar, institutional building environments) are a useful case study, providing dual purposes of being both a case study and an educational facility. There are many ways in which biophilic urbanism could be applied, such as school gardens and maintaining existing vegetation, while measuring heat loads and encouraging learning about the environment and fostering a sense of place.*
 - *In developing an economic argument, it is possible to use a mixture of cost measures as a foundation, supported by additional qualitative benefits. What is needed are some metrics (not necessarily economic values) to measure the benefits of nature in cities, including net positive benefits (i.e. not only reduction in negative impacts). There is currently a shortage of indicators and metrics for successes.*
 - *Some key considerations for an economic argument include:*
 - ⇒ Considering other measures of progress to accompany an economic argument, such as a human happiness/experience indicator (What is already being done in this area? See Bhutan and the UK),
 - ⇒ There is a need to consider the audience for an economic argument, and there may be several,
 - ⇒ Note the different between innate benefits vs. tangible,
 - ⇒ ‘Dynamic localism’ and economic benefits,
 - ⇒ Systemic interactions of biophilia – non-linear multiplicative benefits – need to highlight these,
 - ⇒ Integrated nature of pricing that cannot be ‘extracted’, and
 - ⇒ Considering costs and benefits longitudinally, for example - ‘now’ workers and ‘later’ intergenerational (done previously or by case etc). This may enable inclusion of long term impacts and benefits into the economic argument
 - ⇒ Considering the scale of economic assessments, to be able to measure these at a building level as well as city level (and scales in between).



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Figure 1: Summary of economic considerations from Perth workshop participants

Source: SBEnc Stakeholder Workshop, Hosted by the Western Australian Department of Finance (held at the Optima Building), and facilitated by Curtin University and QUT, 13 July 2011, Perth



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Figure 2: Summary of economic considerations from Brisbane workshop participants

Source: SBEnc Stakeholder Workshop, Hosted by Parsons Brinckerhoff, and facilitated by Curtin University and QUT, 07 September 2011 Brisbane.

Key findings and considerations for the SBEnc project

A key aim of the workshop was to allow the workshop findings to guide the scope and structure of the SBEnc project, ensuring that the project would deliver strategic benefits to stakeholders and partners, in the current and future stages. Listed below are key findings and considerations drawn from this process of stakeholder engagement, supported by the literature review:

- There appears to be a strong understanding of biophilic urbanism amongst the project stakeholders. In visioning a biophilic city, workshop participants acknowledged the variety of settings in which biophilic urbanism could be applied (i.e. roads, buildings, public spaces, commercial spaces, industrial zones, parkland etc.); the range of considerations of biophilic urbanism which distinguish this field from green infrastructure (i.e. sense of place, encouraging biodiversity, the human experience of the biophilic elements, education, fostering well-being and health as well as cost and energy savings, etc); and a wide selection of potential biophilic elements (i.e. green roofs, green walls, street trees etc).
- Workshop participants did not frequently link biophilic urbanism to climate change adaptation, however did make reference to peak oil, and climate change mitigation.
- The exploration of key enablers highlighted the need to foster an appreciation and understanding of biophilic urbanism from multiple perspectives, and reinforced the approach of this project in developing local (Australian based) research and case studies, developing an economic argument, creating a policy framework and in disseminating the findings of this research more widely amongst the community.
- The exploration of key disablers highlighted how the approach taken in this project can address many factors currently impeding the wider application of biophilic urbanism in Australia, such as addressing split incentives for biophilic urbanism through quantifying the costs and benefits, providing proof and quantification of the costs and benefits to enable informed decision making and policy development, and providing guidance for effective policy development to encourage biophilic urbanism through the investigation of a policy framework.
- The exploration of key disablers revealed that there are few (if any) significant physical impediments to biophilic urbanism, rather that the impediments are largely systemic and grounded in current social, political and economic paradigms.
- The exploration of key enablers and disablers showed that there are cultural, social and community factors that may both enable and impede the wider application of biophilic urbanism in Australian cities. This project does not address these factors directly, however through the development of local case studies, describing the biophilic elements, quantifying the costs and benefits, and disseminating the findings, this project may indirectly foster a greater appreciation and understanding of biophilic urbanism within the community.

Project 1.5

Harnessing the Potential of Biophilic Urbanism in Australian Cities



RESEARCH PROGRAM 1: GREENING THE BUILT ENVIRONMENT

- The exploration of enablers and disablers, and conversation around key considerations of an economic argument suggest that this will be the foundation for stimulating an increase in biophilic urbanism in Australian cities. This will likely form the basis for policy change and innovation, and may also be necessary to gain public support for such measures.
- The exploration of enablers and disablers revealed that these are frequently paired, such that a disabler (such as policies and planning frameworks) can also be an enabler (or become an enabler), depending on the context and content.
- Biophilic urbanism has many innate benefits that are difficult to quantify, and these should be used alongside a cost-benefit economic analysis to provide further evidence and a broader picture of the impacts, interactions and benefits of biophilic urbanism.
- There is a clear need for metrics and indicators to measure the costs and benefits of biophilic urbanism.
- There is a need for local evidence for biophilic urbanism, as the research in this field is currently focused on North America and Europe, where the vegetation, climate and urban development patterns differ from those in Australia.

Project/Scope Recommendations

Based on the key findings and considerations from the workshop, the following recommendations are made for the project scope and structure:

- The scope of the project is likely to provide significant benefits to stakeholders and partners, and to encourage the application of biophilic urbanism in Australia. The project should maintain the focus on the development of local case studies (i.e. in WA and Townsville), and where possible provide locally relevant information and quantification of costs and benefits.
- The project should develop a focus as part of the first stage (up to September 2012) and in the second stage starting October 2012 on the building level application of biophilic urbanism. The project should focus on biophilic urbanism elements or case studies that could be practical on single-building projects. These case studies would be assessed from a point of view of practicality and value for money.
- The second phase of the project, in which a cost-benefit analysis will provide an economic argument for biophilic urbanism, will establish the foundation for policy change and acceptance of biophilic urbanism. The research team should focus on developing appropriate metrics and indicators, and quantifying, where possible, these costs and benefits. Although the innate benefits are currently less readily considered through existing decision making mechanisms, these should be provided as supporting information to an economic argument.
- It is likely that the 'split incentives' nature of biophilic urbanism, and persistent 'silo' approach to governance and policy will complicate the use of an economic argument, and the research team should attempt where possible to identify measures to overcome this. This may result in an alternative form of presenting the economic argument, or potentially in policy measures which reduce this disabler.
- A policy framework to enable biophilic urbanism in Australian cities may differ considerably from existing policy frameworks, as it will need to internalise the many innate, holistic, benefits of biophilic urbanism, and overcome traditional 'silo' approaches to decision making and policy formation. It may place greater importance on 'grass-roots' and community movements, taking a bottom-up approach to decision-making and policy change. Conversely (or potentially concurrently), it may consider higher-level policy options to over-arch traditionally separate departments and budgets.
- The finding that the key impediments to biophilic urbanism are largely systemic and grounded in current social, political and economic paradigms, rather than physical, reinforces the non-technical focus of this project. However it is understood that local evidence is required as particular many types of biophilic elements may not be well-proven in an Australian context. The project needs to consider local evidence that the economic benefits outweigh the costs.