The Value of Waterway Health to the Residential Community in two Urban Sydney Catchments

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Project Team

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“We often overlook the fact that liveable cities, efficient, productive cities, the environment of cities, are economic assets.”

Prime Minister Malcolm Turnbull – Changes to Ministry Transcript – 19 Sept 2015
Urban Planning & Liveability

- A professional index for employee relocation compensation that became urban policy
- National Urban Policy (2011)
- Sydney Metropolitan Plan (2013 & 2015)
- Water utilities and Local government.
Waterways key for liveability
Traditional houses backing on to Cooks River - Sydney
Urban waterway services being valued in architecture and design
The Problem

• A lack of local, defensible data on how urban communities value their natural areas (urban waterways in particular)

• Quantifying restoration works for cost benefit analysis.

• Connecting restoration dollars with the most value for the community.
Governments and service providers should clarify the roles and responsibilities .... in contributing to more liveable communities. Decisions need to be supported by more appropriate funding arrangements, based on robust evaluation of the full benefits and costs.

“The Commission considers that further applied work needs to be undertaken to better understand the full benefits and costs of water-sensitive cities options (for example, those associated with the values of improving urban waterway health).”
Project Aims

1. Show connection between improvements in urban waterway health, property prices and community benefits
2. Estimate economic values for environmental amenities for different environmental attributes
3. Demonstrate the achievements of council/government policy when the values are used in cost benefit analyses,
4. Guidance for future policy and decision making processes for priority setting for river restoration investments,
Techniques

This project will use three non-market valuation techniques to estimate people’s preferences for improvements in waterway health as three studies:

1. Hedonic Property Valuation model study (Today’s presentation)
2. Random Utility Travel Cost model study
3. Stated Preference
• Urban Areas of the Cooks and Georges Rivers – 629km²
• House sales data from 2003 to 2013
• n= 29,749
Method – Hedonics study

Houses located spatially and attributed values of the closest waterway and for a distance up and down stream.
Highly Modified – Concrete lined, Steel barriers, straightened channel form

Modified – Meandering but stabilisation evident

Unmodified – Minimal anthropogenic modification
Vegetation Riparian Condition

Categories developed from Earth Tech (2007) Sydney Metropolitan CMA Waterways Health Strategy
Results – Hedonics study

Table 5: Effect of riparian vegetation and channel condition on house values (Spatial lag model results)

<table>
<thead>
<tr>
<th>Vegetation and riparian condition (VRC)</th>
<th>No vegetation</th>
<th>Little/no vegetation but degraded</th>
<th>Little/no vegetation</th>
<th>Good/moderate vegetation</th>
<th>Good vegetation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Little to no canopy or buffer</td>
<td>Discontinuous canopy, little to no buffer</td>
<td>Discontinuous canopy, buffer greater than 10 m for 30% of length</td>
<td>Semi-continuous canopy, buffer greater than 20 m for 70% of length</td>
<td>Continuous canopy, buffer greater than 50 m for 70% of length</td>
</tr>
</tbody>
</table>

Channel condition

- Unmodified
- Modified
- Highly modified

Diagram:

- VRC 1
- VRC 2
- VRC 3
- VRC 4
- VRC 5
- VRC 6

- 0.9%
- -4.5%
- -3.6%
- 4.8%
- 5.4%
- 2.3%
Theory discussion

Urban communities and their waterways as a socio-ecological system. 3 proposed states:

**Bare and Barren:**
Highly modified channel no vegetation.
Value is low
Ecosystem Service = flood regulation

**The urban waterway:**
Improved channel and some vegetation. Value varies considerably.
Ecosystem Services = Aesthetics, Recreation

**Bushland Living:**
Natural channel connected wide vegetation.
Value is high
Services = Sense of place, Biodiversity, Aesthetics, Recreation

Variability of value due to interaction between views and vegetation?
Hedonics study – takeaway points

• Vegetation width, vegetation condition and channel condition all impact property prices and demonstrate community values.
• Home buyers are willing to pay the most amount for a stream quality with good vegetation and an unmodified channel.
• However, relationship is non-linear.
• More riparian vegetation width, yet with a modified channel and degraded vegetation quality, will reduce property values.
Next?

- Hedonic models extended to rental properties
- Random Utility (recreation use) and Stated Preference surveys
- Further development of theory
Thanks & Questions

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