Flood Resilience in High Density Urban Spaces

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UQ Water Forum, July 4-5, 2016
Sustainable Water Program @ the UQ Global Change Institute
Our research question…

How can water sensitive urban design positively address the potential adverse consequences of making inner-city multi-residential development in flood prone areas near the Brisbane River?

The current research looks at high-density development in order to:

• develop an understanding of how planning policies relating to flood-risk affect development along the riverfront and;

• identify design strategies that respond to the planning, environmental and economic issues positively and effectively.

Image: Bowstead, 2015
This study builds on previous research documenting the architectural, environmental and economic impacts of flood planning policy on low-density residential development in suburban Brisbane.

The study looked at the relationship between local government planning controls and built outcomes and the consequences for the amenity of housing and suburban spaces in flood-prone areas.

Two broad strategic approaches emerged:

- Designing to a flood datum;
- Designing for resilience.

Image: Bowstead, 2015
Research problem

What is the scale of the issue facing Brisbane?

A survey conducted of publically available development applications shows that 13,000 apartments are approved or under construction in flood risk areas, centred around Milton/Toowong, West End/South Brisbane and Newstead/Teneriffe.

Image: Current high-density development and Brisbane City flood risk areas
What we found...international best practice

Rotterdam
“water square” as retention basin

• Spaces which serve as infrastructure as well as public amenity

Hamburg
Activated public/private interface

• Flood datum and street level are within 1 metre to preserve city amenity

New York
Progressive ground-floor programming

• Allowable commercial uses in flood prone ground floor spaces

Image: De Urbanisten, 2013

Figure 03. Design and Construction requirements for buildings in the SFHs
The ‘global change’ aspect of the research…
Where to next?

- Condition
- Issue
- Next stage…

Image from 2011 Brisbane flood
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