Designing The 21st Century City in Nature; Prospects for a High(er) Density Urbanism

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Cities Are THE Global Issue

Population growth and rapid urbanization mean we need to create the equivalent of one new city of one million people every 5 days between now and 2050.

(source: The Anthropocene Journal)
How we continue to modify natural systems in cities will be fundamental to survival: design is pivotal

So why are we still designing 20th century cities?
The City versus Nature
Long drives in air-conditioned cars from large air-conditioned homes to air-conditioned workplaces.
“...reconnection to the natural world is fundamental to human health, well-being, spirit, and survival.”

How do you do that in high density?
Definition of green+blue infrastructure

‘Natural or semi-natural networks of green (soil covered or vegetated) and blue (water covered) spaces and corridors that maintain and enhance ecosystem services’

Arup City Water Resilience Framework

City Water Resilience Approach

1. Establish a core team
2. Collect background information
3. Multi-hazards risk framework workshop
4. Research data collection
5. Assessment and diagnosis process
6. Findings report
7. Validation workshop
8. Establish water resilience
9. Developing a Joint Action Plan
10. Develop AU 5 resilience
11. Engage facilitators and stakeholders
12. Evaluation of the baseline assessment
13. Evaluate AU 5 resilience
14. Analyse changes in context and evaluate key outcomes
15. Review objectives for next period
Urbanism in the ‘torrid’ zone - torrid: weather, intensity of urbanization. “Torrid zones” are special, and important.
40% of the world’s population live in the tropics. By 2050, it will be over 50%

Tropics the most bio-diverse region on Earth, hosting about 80% of the planet’s terrestrial species and over 95% of its corals and mangroves

Source: State of the Tropics Report 2015
Many of the world’s fastest growing cities are in the tropics and subtropics.
Tropics and subtropics are fantastic places to make 21\textsuperscript{st} century ecological cities: CLIMATE WATER VEGETATION
Climate comparisons; Mumbai, Brisbane, Hong Kong, Guangzhou
Water a resource; with climate change flood, drought – resilience key
Vegetation can grow profusely in tropical and subtropical climates; coolness, ecology, water, air, human health
How to make subtropical and tropical green cities at higher densities? Transport is fundamental, but we need L.O.D as well as T.O.D.
In tropics and subtropics more sense to create linear neighbourhoods organised around transport and ecological/water and landscape corridors

Architectus project
Will the driverless car make it possible to recapture urban green and manage water?  

Architectus
Brisbane - we are consolidating – higher densities - how can we rebuild natural systems at the same time?

BCC CCMP 50 new towers in 20 years

Reinvest informal/modified inner city ecology into high rise? Habitat, green, small spaces, canopy
Porous urban mesh in plan and section

Patchwork of green (backyards, parks and treed streets)

Seams of green (watershed and ecological corridors)
Model ‘porous green’ high rise

Architectus
Connect green on the ground
Sky gardens, garden rooms, green meeting spaces, apartment gardens, green terraces

Architectus
BCC CCMP 50 new towers over 20 years – hypothetical sites mapped to demonstrate transformative impacts

Architectus
Brisbane streets 21m wide

Brisbane City Council City Centre Master Plan
‘Buildings that Breathe’
Design projects over several years – more porous, open and green ground plane, public and semi public areas - series of ‘types’.

Architectus
Cool shady retreat – stepped levels for entries – porous to breezes and raingardens

‘Urban undercroft’

Architectus
Deep shaded occupied edges for west and east facing buildings

Subtropical Loggia

Architectus
The ‘biophilic’ aspects have to have tangible value — usable gardens, indoor outdoor spaces designed for climate, filtering water that are commercially viable, valued.
Effect of 50 subtropical building bases over 20 years

Brisbane ground plane now
443 Queen St Brisbane
Architects: WOHA and Architectus
443 Queen St Brisbane
Architects: WOHA  and Architectus
Implementation - Singapore world leaders in making biophilic cities
Vancouver

- Sustained initiatives, ‘branding’ and commitment to being an ecological city
- Unique series of leaders with planning backgrounds
- Unique combination of history, geography, culture and politics
Ecological cities in Australia ....... utopian?

- Era of:
  - small government struggling to keep up with basic service provision
  - political volatility, less leadership stability
  - no frameworks for incredible complexity of city making
  - inconsistent policy settings across scales and jurisdictions

- Need **robust strategies** that can survive this
This is the city we get from siloed practice

Fragmented city
Complexity needs different approaches and tools.

Design as a platform for collaboration
BUT STILL NEEDS TO BE ROBUST
Robust strategies and integrated thinking across sectors, across scales

Green infrastructure

We can enhance and expand the All London Green Grid, so that by 2030 we will have a network of green infrastructure providing flood protection, shade, biodiversity, space for cycling, walking and recreation, and a more attractive environment.

THE ALL LONDON GREEN GRID
DEVELOPMENT PLAN

- Strategic corridors
- Strategic paths
- Metropolitan park opportunities
- Regional parks and green belts
- Regional parks
- Metropolitan parks
- Distinctive parks
- Local parks & amenity spaces
- Oases of green space
- Greenlink walking routes
- Strategic cycling routes

Mayor of London and London Assembly
Meaningful Infrastructure
Ulsoor Lake, Bangalore

• Retrofitting polluted lake
• Physically reconnecting to high density city as a resource
• Private developer driven strategy
A holistic and lasting approach to transform Ulsoor lake

4 key moves for enduring transformation

1. Clean the lake
   The source of the pollution lies within the dense urban catchment. The strategy sets out a series of sequential measures that work in tandem towards the vision of a lake that once again provides a potable water source for Bangalore.

2. Reactivate the lake
   Unlocking the potential of the spaces surrounding the lake with new interventions into the landscape and lakeside edge, Ulsoor can once again form an active heart of the local community with capacity to provide for a broad range of existing and new public uses.

3. Connect the lake to the city
   Ulsoor lake currently is disconnected from the thriving urban realm around it. The strategy creates bold moves to remove barriers and prioritise the movement of people over cars. Interventions along streets and the extensive nalah network will form a green infrastructure strategy for the city.

4. Engagement and governance
   Key to the success of the overall strategy is building support with the local community in calibration with the organisations charged with its maintenance and curation. The success of the new spaces and the water quality strategy relies in part on behavioural change within the catchment, supported by some of the specific initiatives in the 20 projects by 2020 programme.
Clean the lake

- Project intercept
- Community toilets
- Project connect

- Ulsoor lake Skimmers
- Project Aerate
- Continuous wetland treatment
Reactivate the lake
The Promenade, providing a continuous route away from traffic and close to the water and nature
Ulsoor Gardens with terraces giving access to the water
In process of delivery – the value of the infrastructure – Queen Elizabeth Park, London – value of the property around
Surfers Paradise

North of Surfers; earmarked for higher density, but vulnerable to sea level rise.
Gold Coast Climate Resilience Proposal

2017: light rail, walking catchments, employment, retail

2100: inundation
2037 Gold Line
light rail extended

2047 Green Line
manage water’s edge

Gold Coast Climate Resilience Proposal
2057 Sky Line
Linear high density city form extended to north

Gold Coast Climate Resilience Proposal
Gold + Green + Sky Line

- Complete the linear city of high density villages
- Reinforce waterfront as destination whilst protecting land behind from sea level rise
- Urban framework to integrate public and private benefits – mutual dependence
Resilience:

Integrated framework for:
- civil
- water
- architecture
- planning
- economics
- transport
- property
- community
- density

Waterfront – social/economic value enhanced whilst protective structure created

Interdependencies require integrated implementation and thinking
Creating the 21\textsuperscript{st} century higher density city in nature

• Integrated, connected up thinking across disciplines and deliverers is critical: water, green, property, transport, architecture, planning, implementation, community

• Meaningful infrastructure – understanding the people and city shaping value – link to commercial nous in era of small government

• THE challenge of 21\textsuperscript{st} C city making