Geospatial information for disaster recovery and rebuild
University of Canterbury Geospatial Research and Innovation Symposium
Christchurch, Nov 9th 2012

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Green the greyfields: developing geospatial tools for 21st century planning

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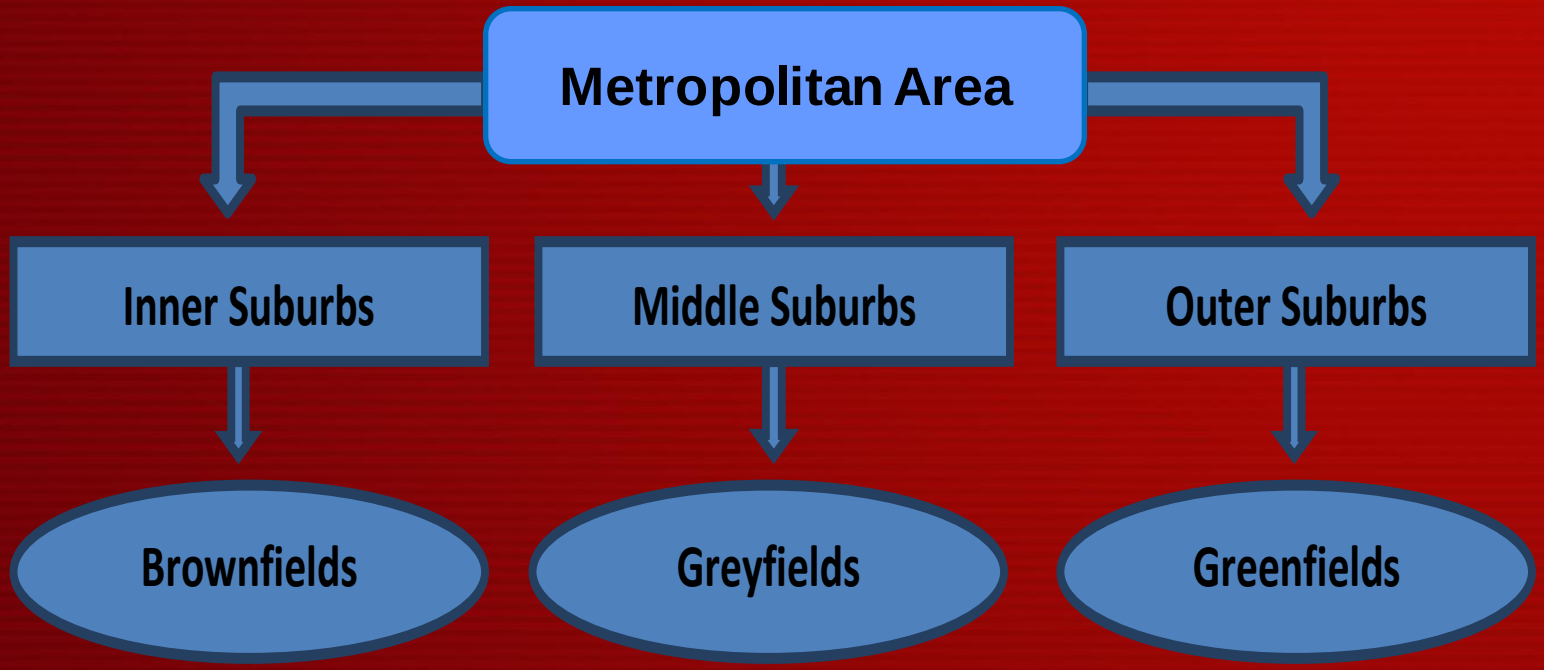
University of Canterbury

What are 'greyfields'?



"**Greyfields**" are those **ageing** but **occupied** **tracts of inner and middle ring suburbia** that are **physically, technologically and environmentally failing** and which represent **under-capitalised real estate assets**" (Newton,2010)

Why research the greyfields?

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	2006	2031
Total households	7.8m	11.8m
Lone person	1.86m	3.6m
Couple with children	2.58m	> 2.47m
Couple without children	2.13m	3.79m
Population	20.7m	28.8m

SCOURCE: ABS,HOUSEHOLD PROJECTIONS, SERIES III

Hidden costs…

1000 houses built on the fringe of Australian cities cost **$300 million** more than **1000** houses built within existing growth boundaries.

Infill Targets

City	Strategic planning document	Time-frame	Target dwellings (number)	Percentage from infill (%)
Sydney	City of Cities: A Plan for Sydney's Future	2005–2031	640,000	60 to 70
Melbourne	Melbourne 2030: A Planning Update – Melbourne @ 5 million	2009–2030	600,000	53
South-east Queensland	South East Queensland (SEQ) Regional Plan	2009–2031	754,000	50
Perth	Directions 2031 Spatial Framework for Perth and Peel	2009–2031	328,000	55
Adelaide	The 30-Year Plan for Greater Adelaide	2010–2040	258,000	Moving from 50 to 70

Source: **National Housing Supply Council, 2010**

Christchurch	Urban Development Strategy	2007-2041		45-60% (80% in 2006)

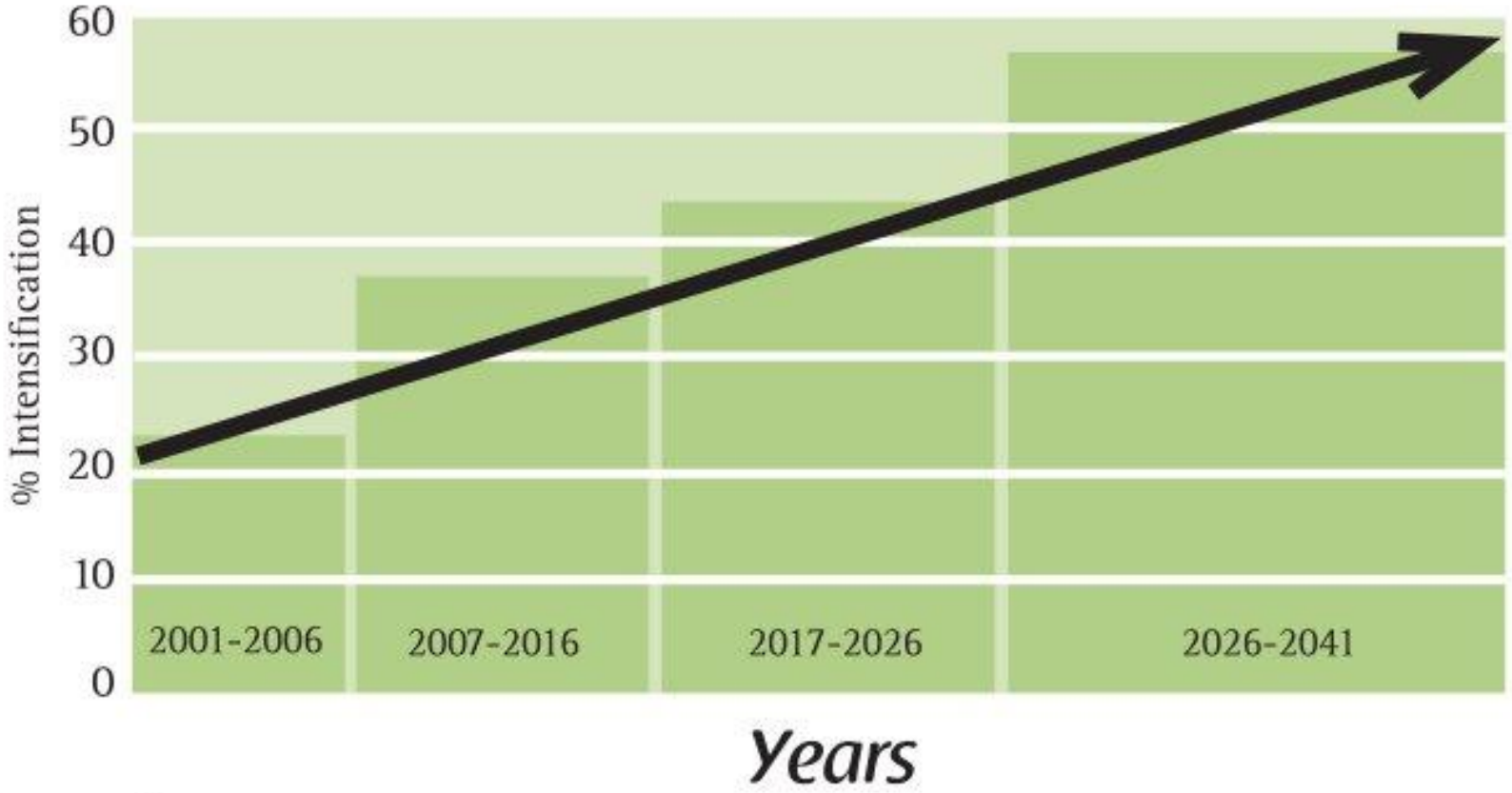

Figure 11: Projected share of growth through intensification

Source: Greater Christchurch Urban Development Strategy and Action Plan 2007, p32

Types of infill

Christchurch

Types of infill

Slateford Green, Edinburgh

Types of infill

Hammarby Sjostad. Stockham

Types of infill

Christie Walk, Adelaide

What are the barriers to ‘good’ infill

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- Rules and regulations
  - Parking requirements
  - Tried and tested
- Land area
  - You need bigger land parcels to do better development
- Need a tool to find the cost effective land parcels in the right areas

Greening the Greyfields - Project stages

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- **Module 1:** Why? – Urban Development Economics
- **Module 2:** Where? – Identify areas for housing regeneration
- **Module 3:** What? – Visualisation and Assessment
- **Module 4:** Who and How? – Community Engagement

Module 2: Where?
Identify areas for housing regeneration

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Shared Urban Spatial Information Platform (SUSIP/Envision)

Australian research

Cooperative Research Centre for Spatial Information

- Curtin University (Perth) – Prof Peter Newman & Dr Roman Trubka
- Swinburne Universities (Melbourne) – Prof Peter Newton & Dr Stephen Glackin
- Victoria Department of Planning and Community Development (DPCD) & City of Manningham
- Western Australia Department of Planning (DoP) & City of Canning

Approach

Toolset developed

Uses Open source software packages

- Database management system (back end)
- Quantum GIS (front end)
- Plug-in in Quantum GIS using Python programming language

- Based on research
- Locally variable
  - Sensitive to changes in individual attributes

Tools

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- Multi-criteria evaluation tool
  - Property, demographic and location attributes
- Market re-development tool
  - Which attributes contribute to property being re-developed e.g. age of dwelling, density, nearby demolitions, zoning
- Zoning capacity tool
  - Allows rezoning to higher densities
- Housing typology / design tool
  - Looks at type of housing that could be added

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Module 3: What?
Visualisation and Assessment

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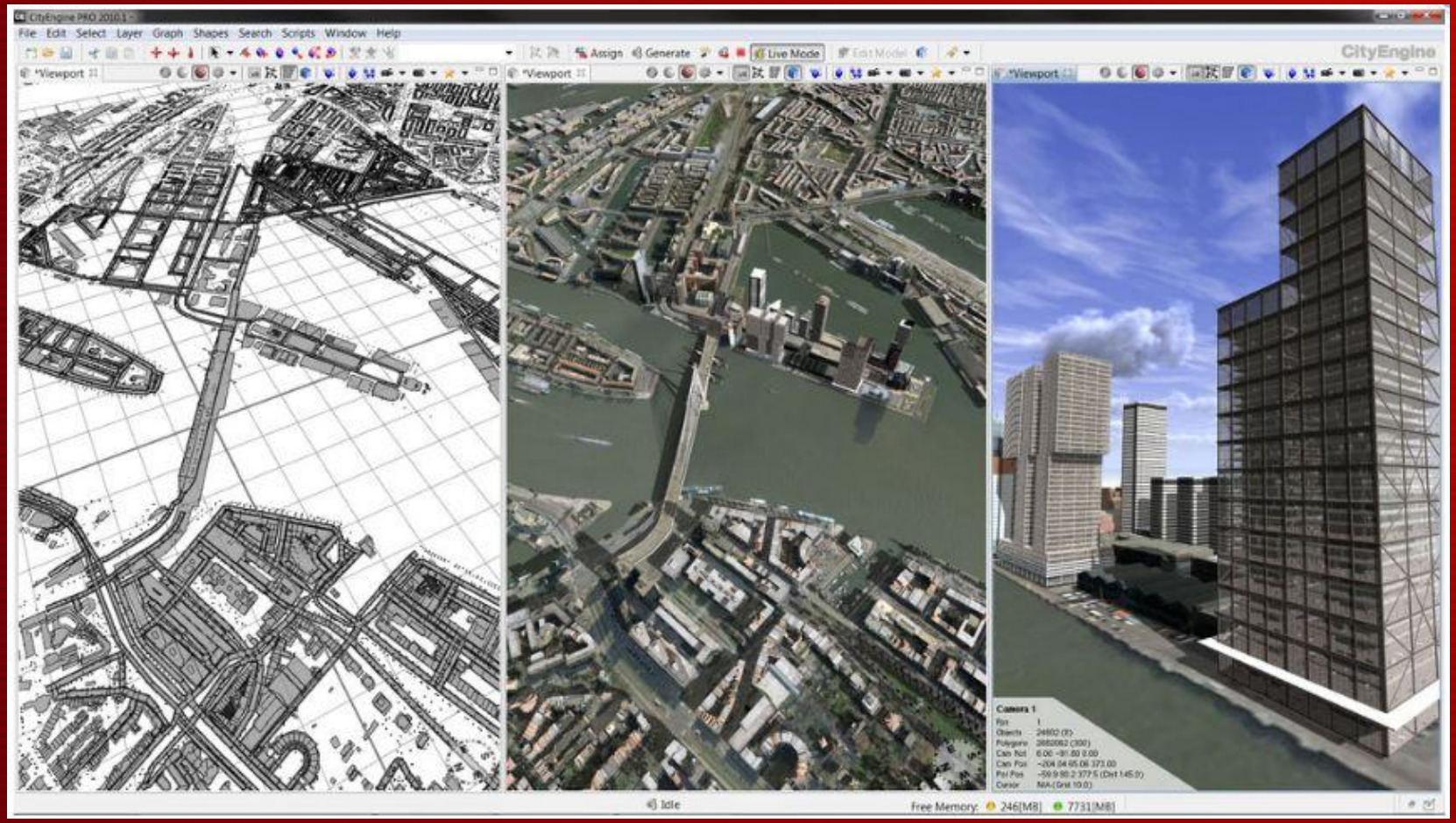

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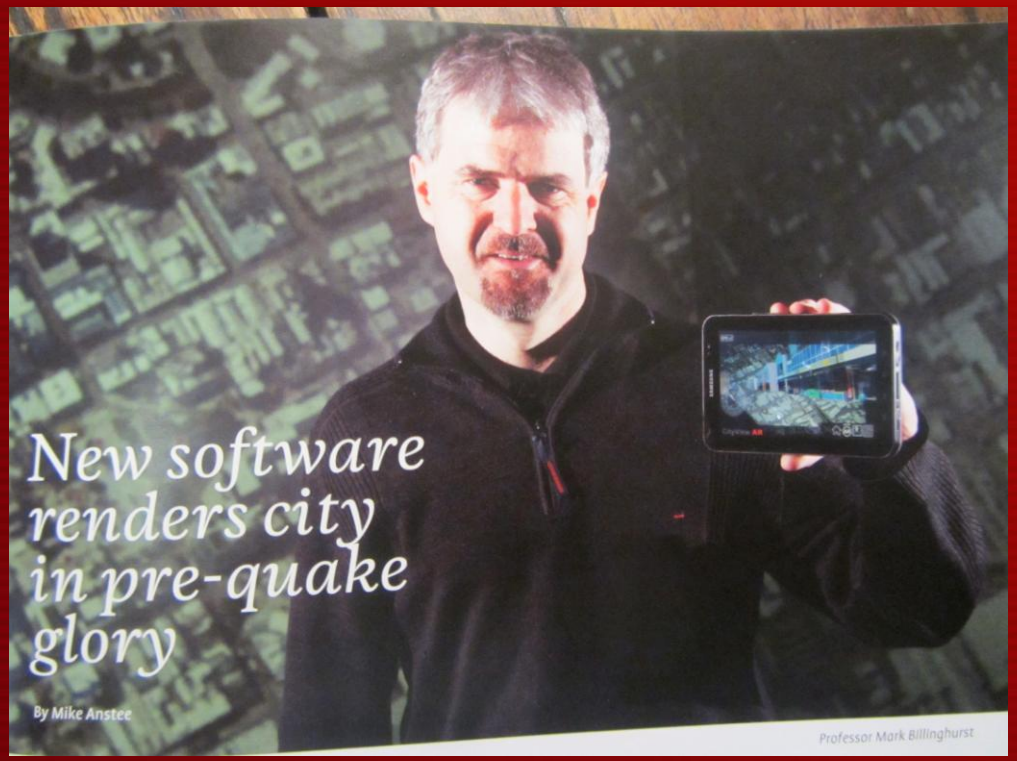
Linking Shared Urban Spatial Information Platform to City View AR



Module 4: Who and How? Community Engagement

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Linking tools to people

- How do we use and how will it be received

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Thank you

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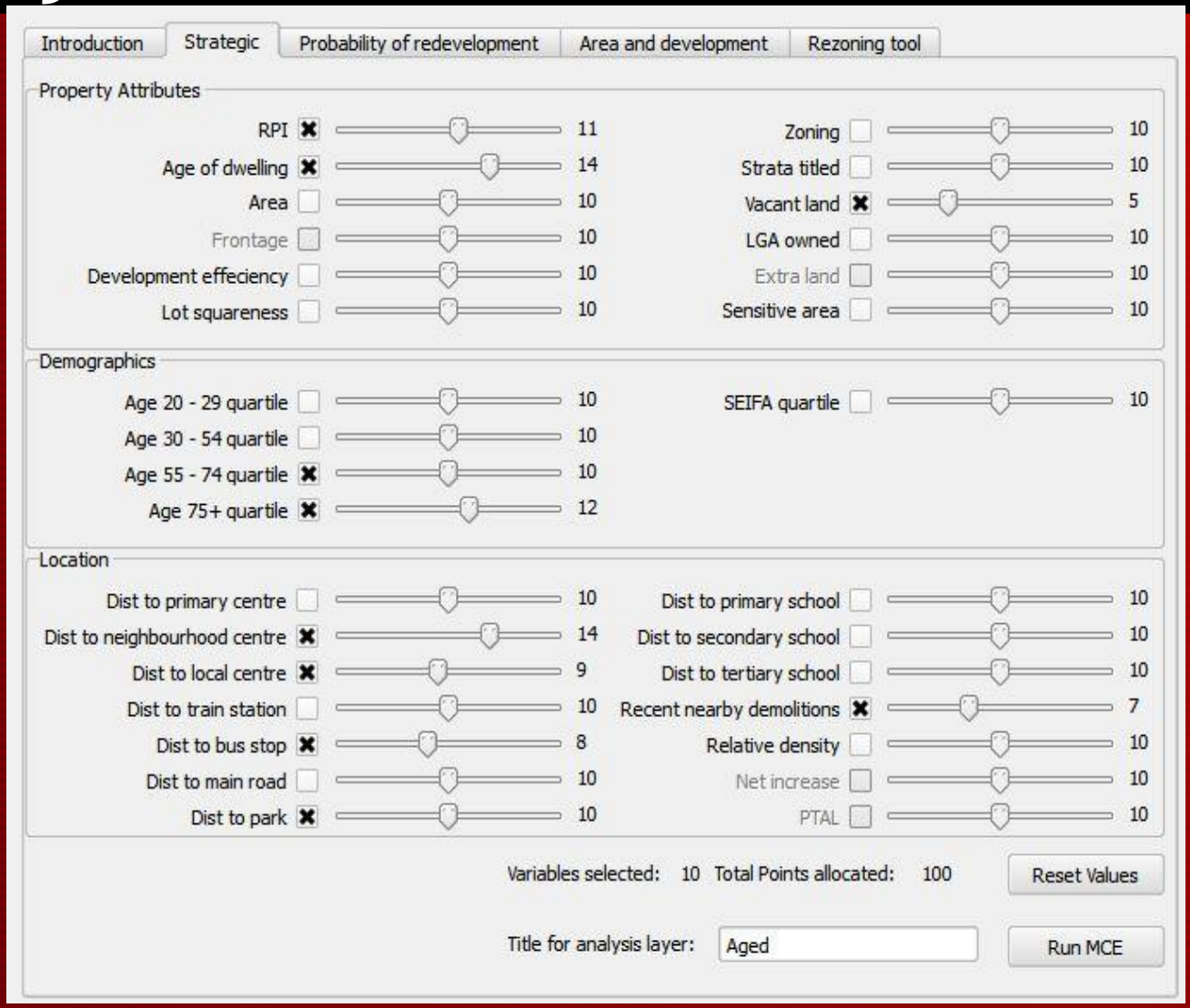
Multi-criteria Evaluation (MCE) Tool



City of Canning – aged persons housing potential based on MCE

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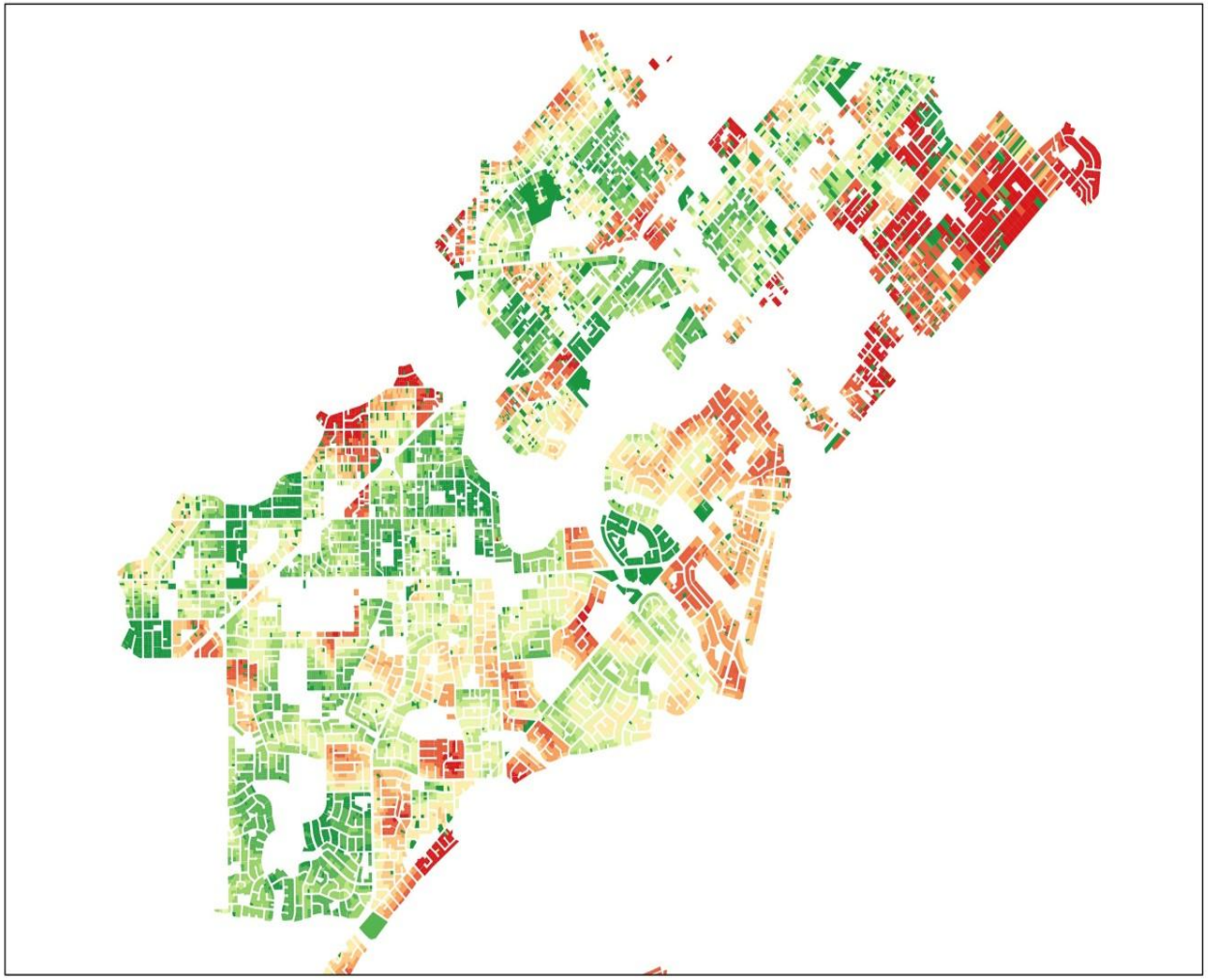
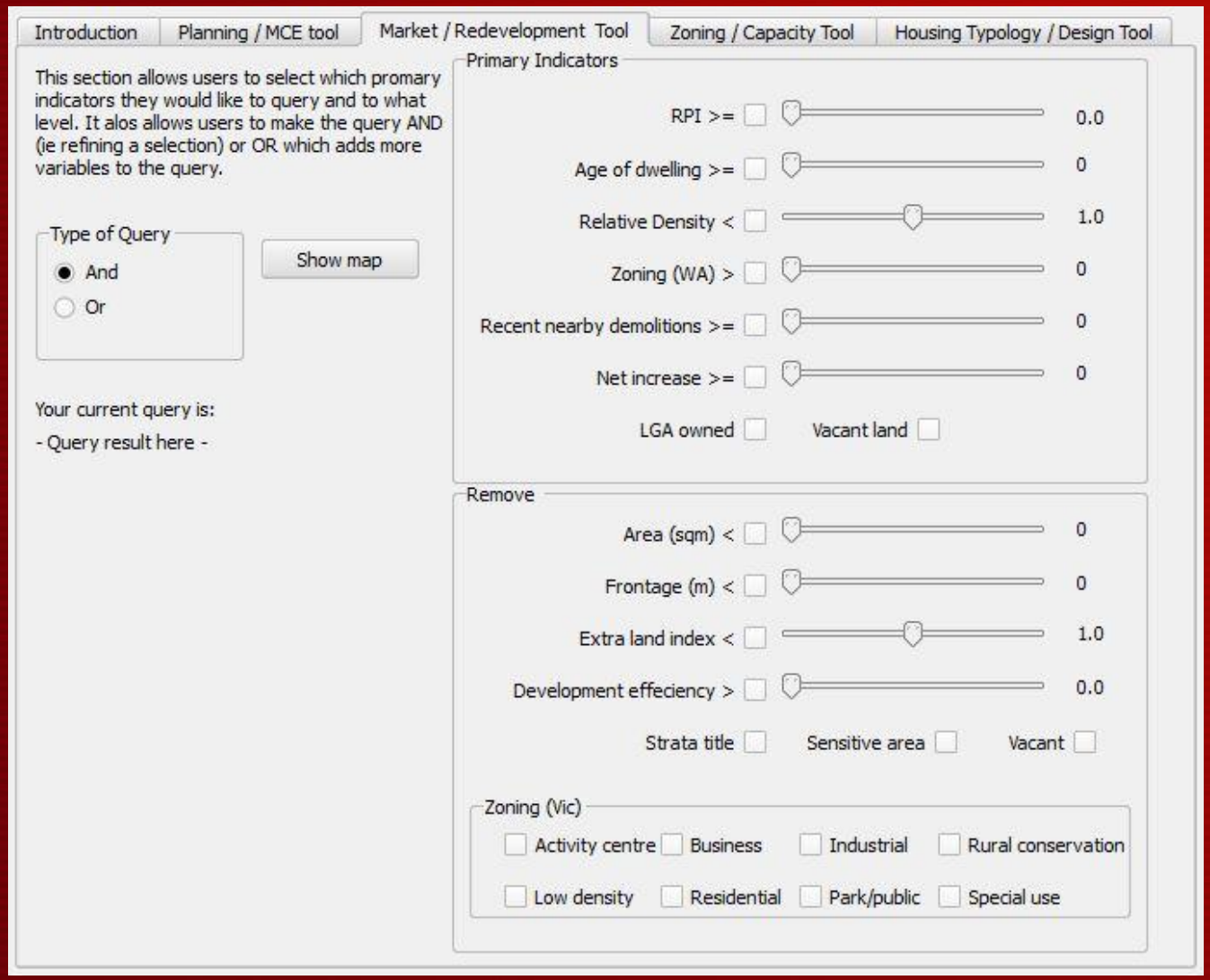
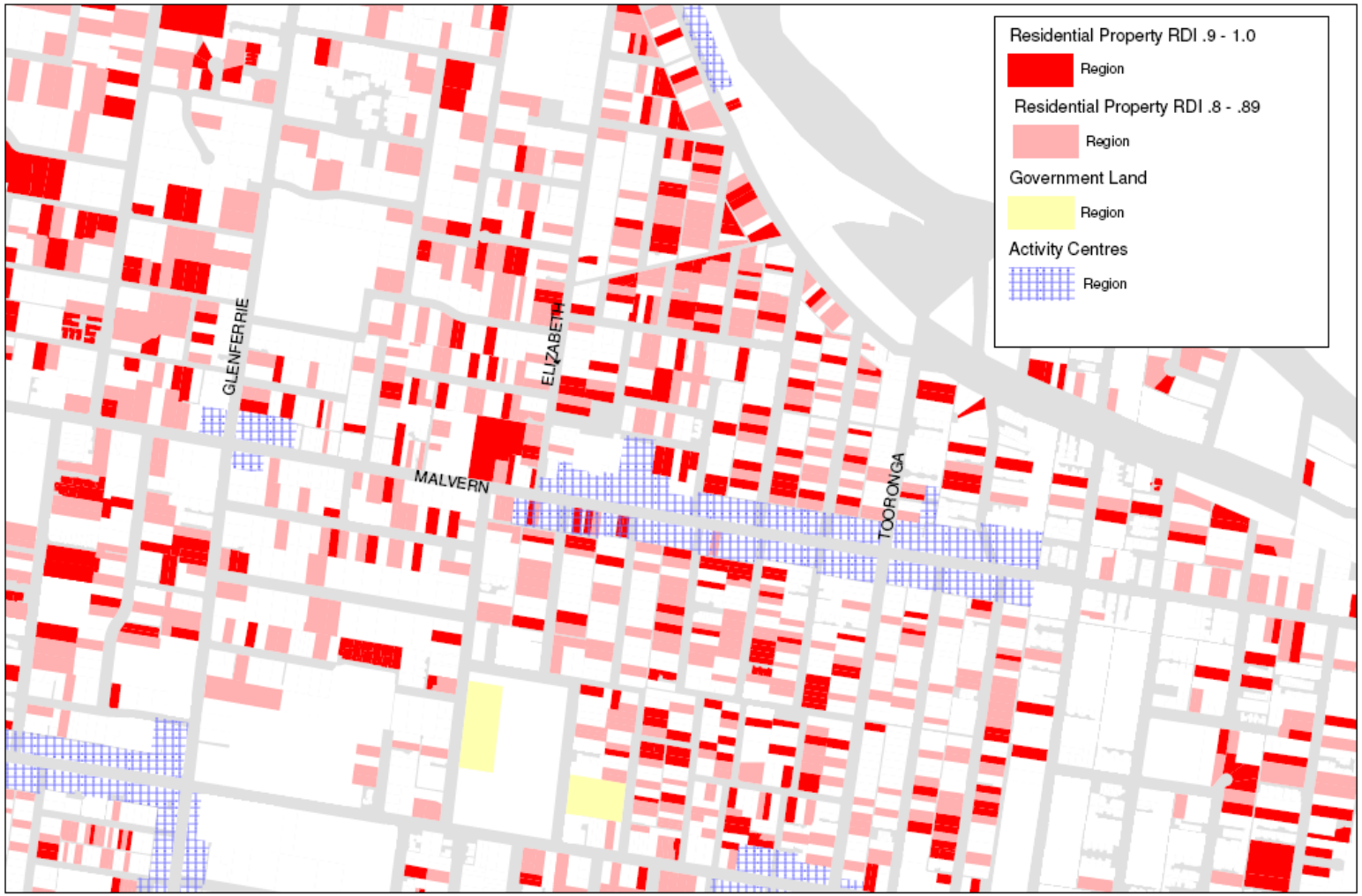


Market / Redevelopment Tool



REDEVELOPMENT POTENTIAL INDEX (RDI) 2006



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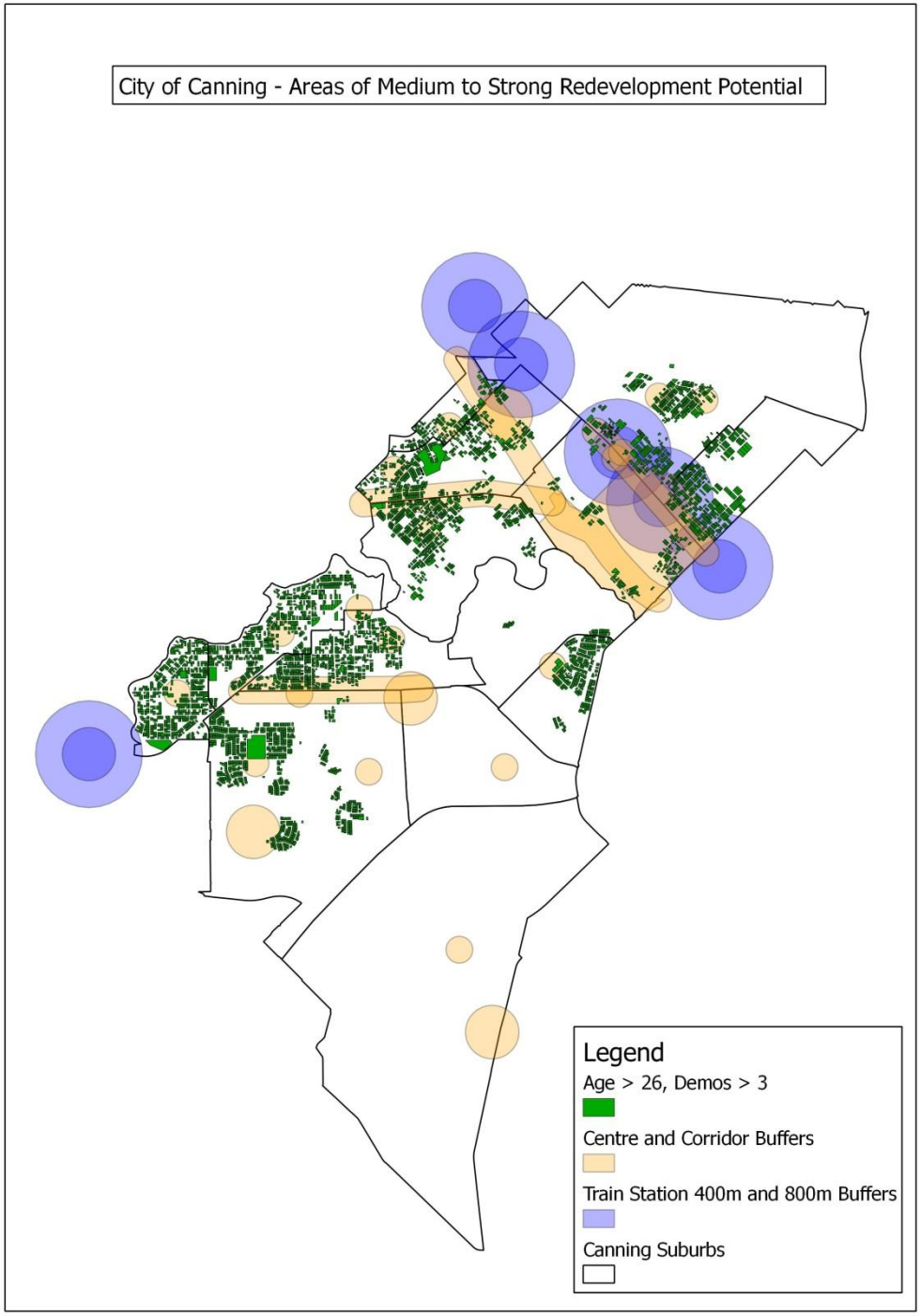

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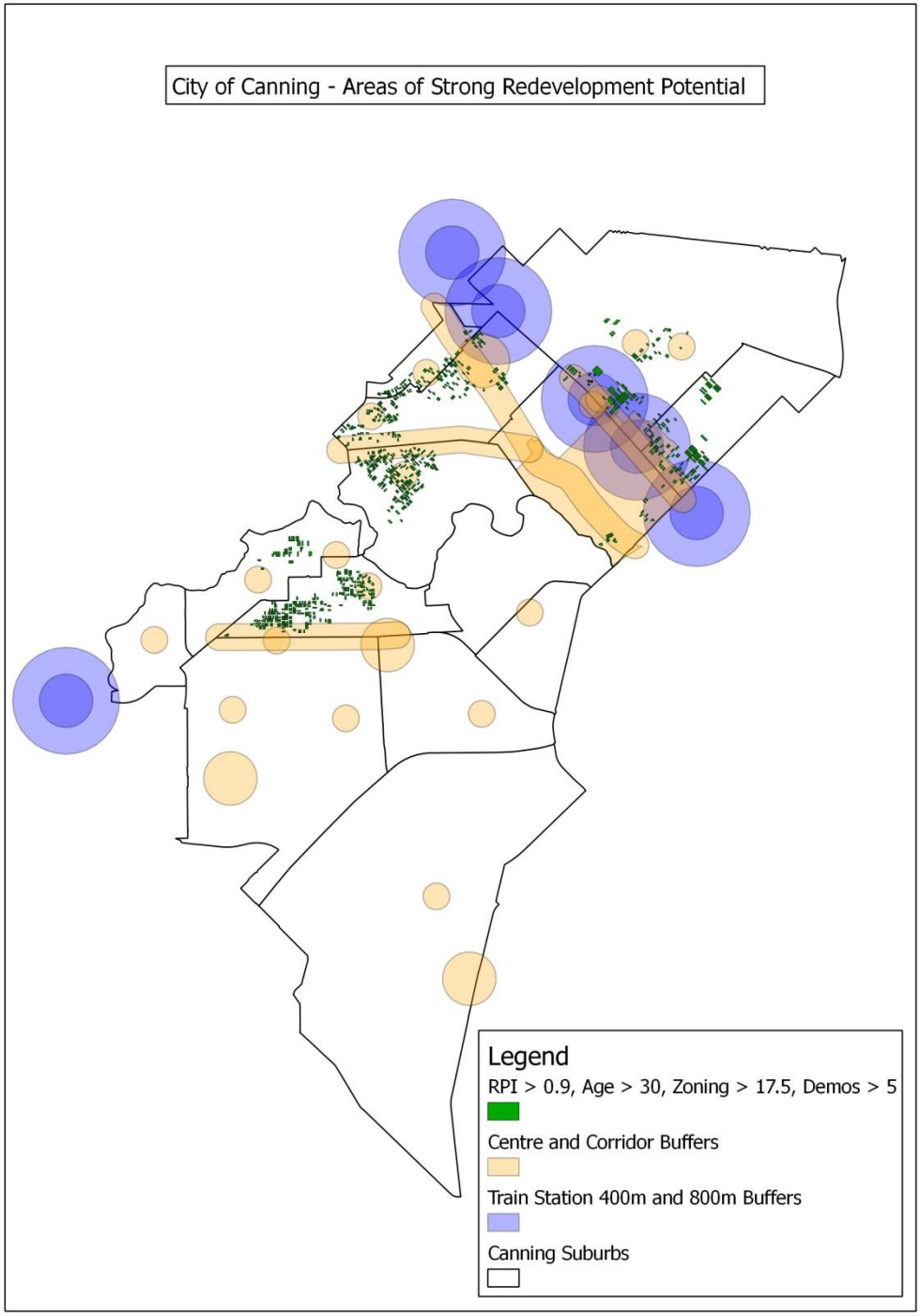
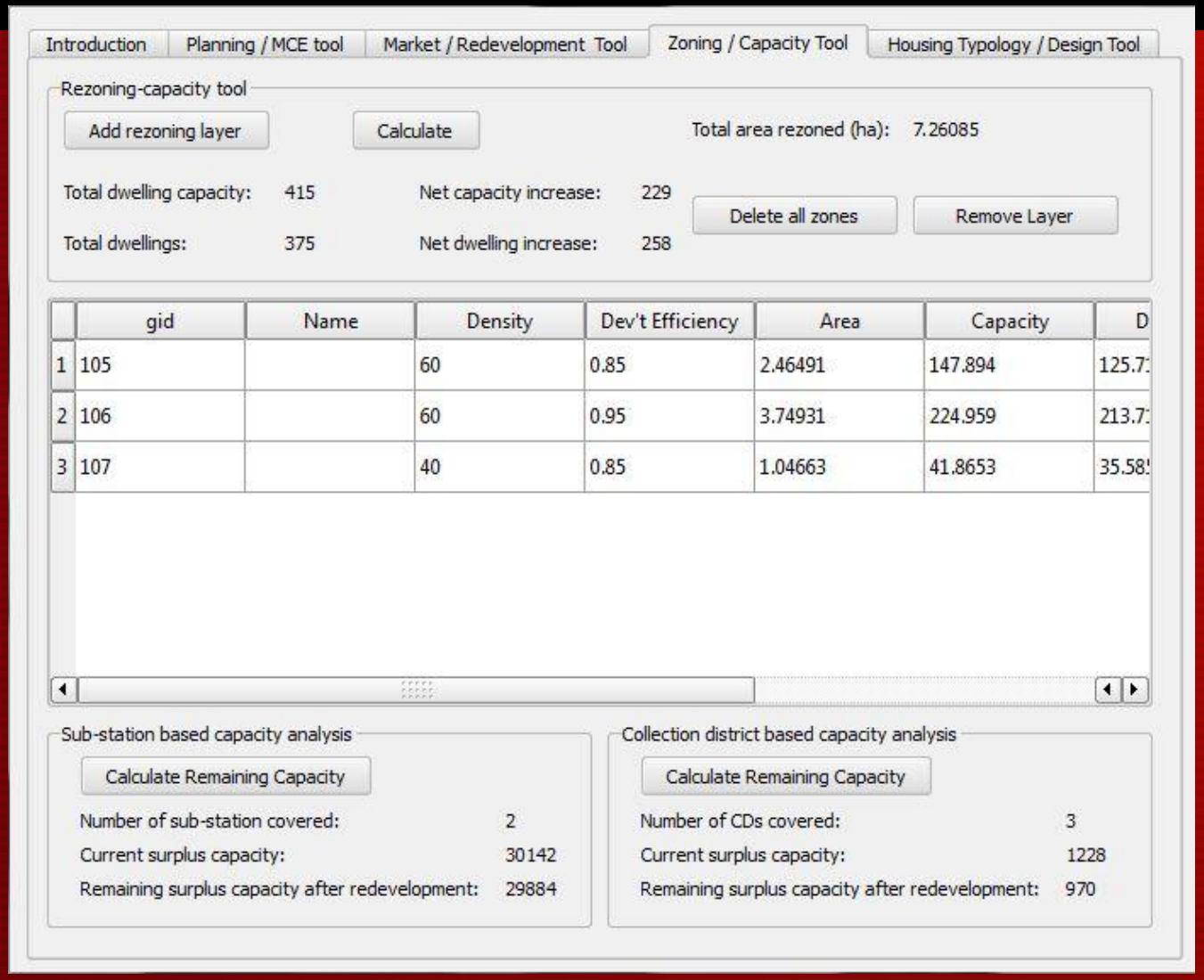
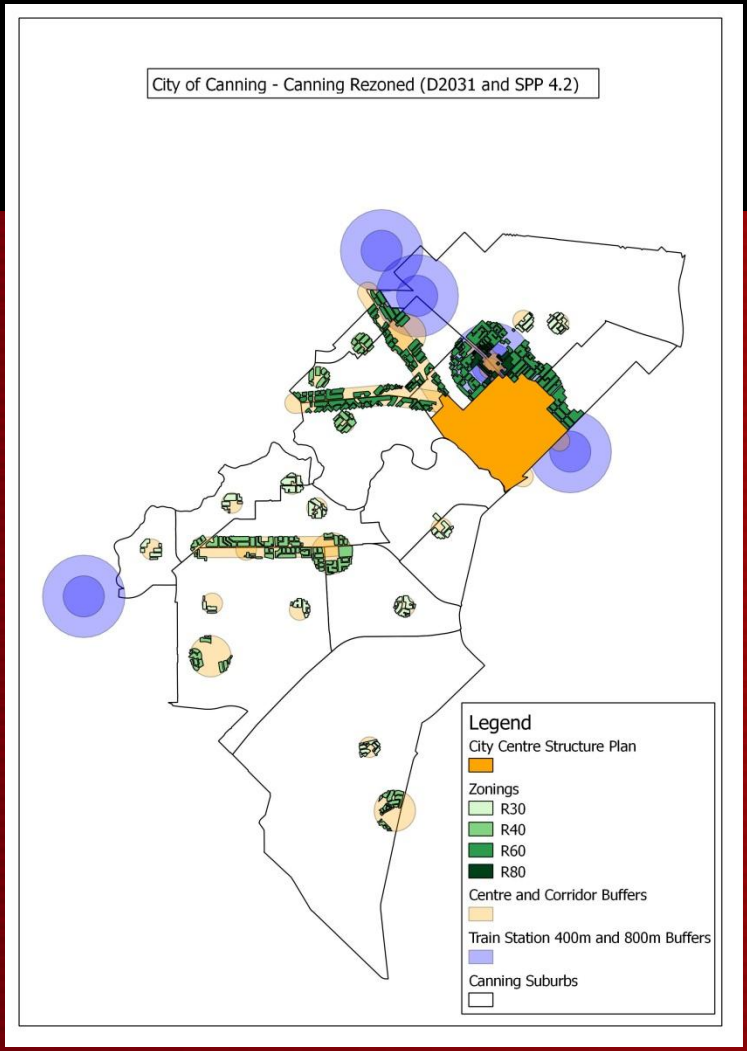
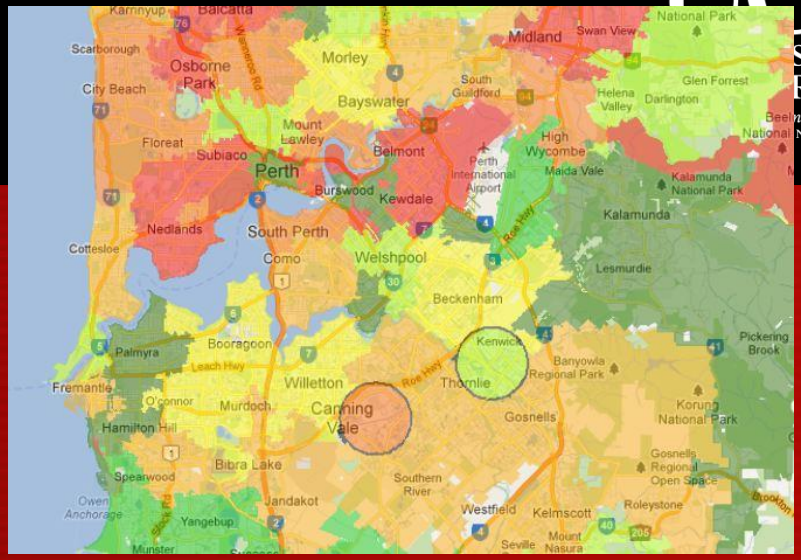
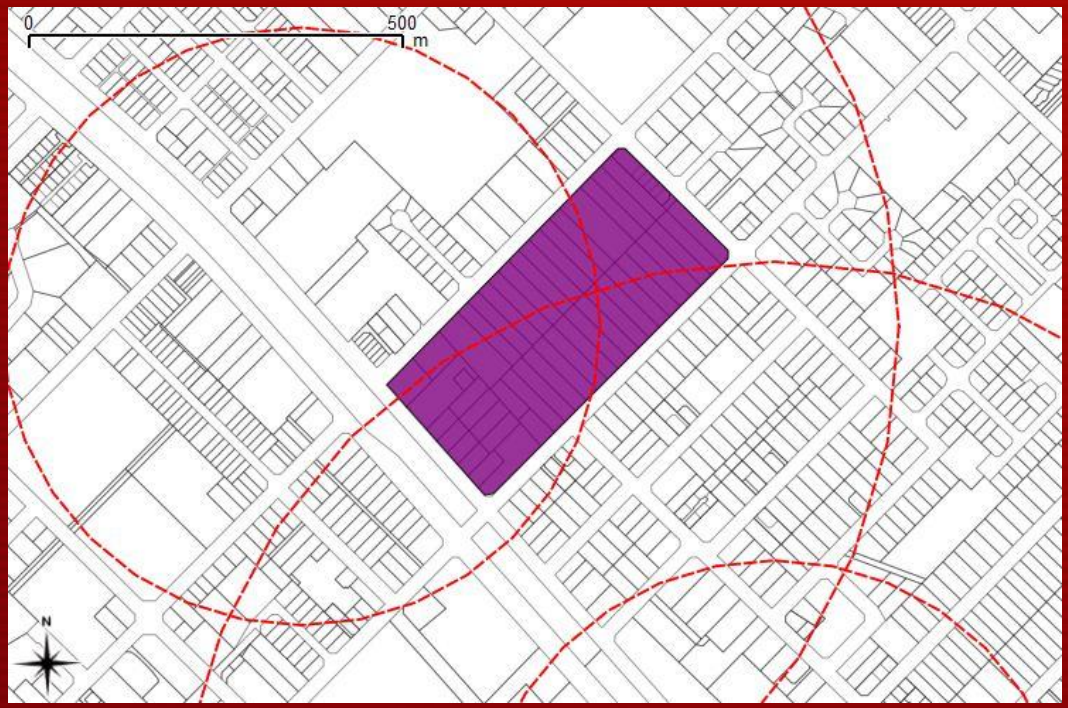


Rezoning Tool




City of Canning - Canning Rezoned (D2031 and SPP 4.2)
Legend
City Centre Structure Plan
Zonings
R30
R40
R60
R80
Centre and Corridor Buffers
Train Station 400m and 800m Buffers
Canning Suburbs


Midland
Swan View
National Park
Morley
Scarborough
Osborne Park
City Beach
Bayswater
Glen Forrest
Helena Valley
Darlington
Floreat
Subiaco
Mount Lawley
Belmont
High Wycombe
Maida Vale
Perth
Perth International Airport
Burswood
Kewdale
Kalamunda National Park
Kalamunda
Nedlands
South Perth
Cottesloe
Como
Welshpool
Lesmurdie
Beckenham
Palmyra
Booragoon
Kenwick
Pickering Brook
Fremantle
Willetton
Thornlie
Banyowla Regional Park
O'connor
Murdoch
Canning Vale
Gosnells
Korung National Park
Hamilton Hill
Bibra Lake
Spearwood
Southern River
Jandakot
Westfield
Kelmscott
Roleystone
Yangebup
Seville Grove
Mount Nasura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Housing Typology / Design Tool

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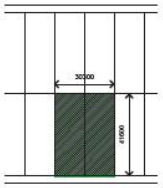
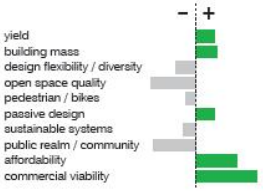
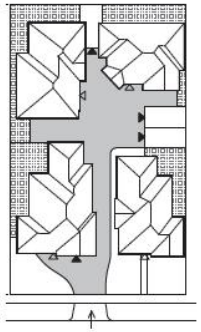
Dwelling Typologies: Double (side by side) lots

Double Lot Redevelopment

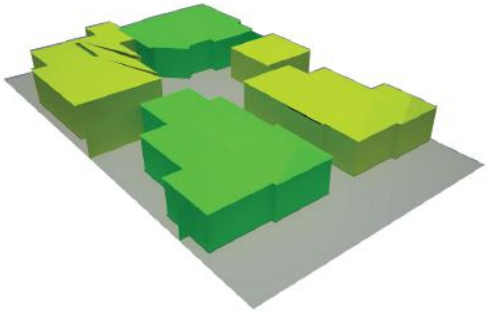


Business as Usual

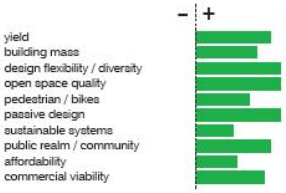


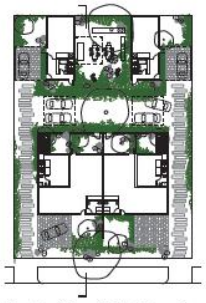


4 x detached units

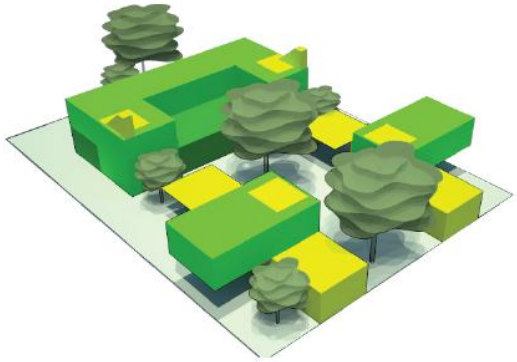


Design Alternative





6 x dwellings (hybrid apartment & courtyard model)



Dwelling Typologies: Triple lot ‘Lifted’ (6 or more stories)

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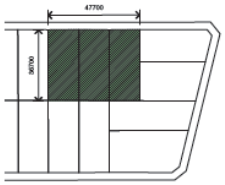
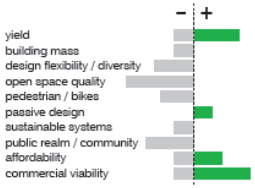
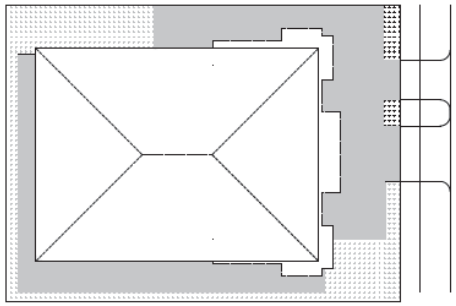
Triple Lot ‘Lifted’ (6 or more storeys)

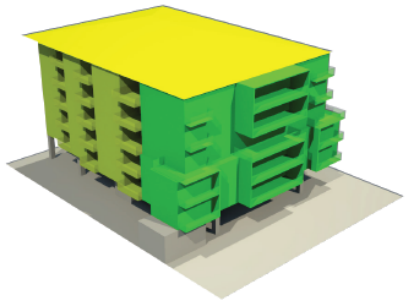


Business as Usual

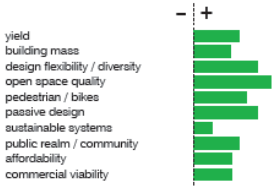




1, 2 & 3 bedroom apartments (basement parking)

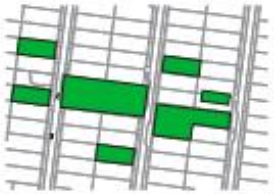


Design Alternative



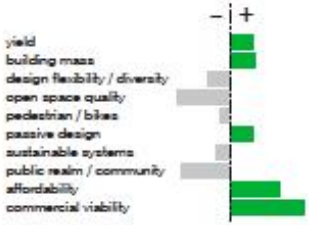
1, 2 & 3 bedroom apartments (basement parking)

Precinct Redevelopment

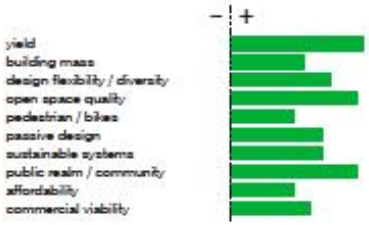


30 dwellings.
All dual occupancy units.
Parking garages adjacent each dwelling.

Business as Usual



Design Alternative



66 dwellings.
Diversity of apartments, terrace and courtyard housing.
Mix of uses, including local business & community uses.
Common parking areas, improved pedestrian & bike lanes.
Public open space and infrastructure upgrades.
District-wide energy, waste, water & technology systems.