Where is it heading, this unprecedented urban experiment of ours on planet earth?

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Research publications

Urban Eco-lution
Joerg Baumeister
Daniela A. Ottmann

Take me to the River
Julian Bolleter

Sprawl and the City
Anthony Duckworth-Smith

Adequate Urbanisation in Poverty
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Scavenging the suburbs
Julian Bolleter

Exploring the death spiral
William Grace
The sprawling city of Perth has one of the lowest population densities in the world and is arguably poorly adapted to the emerging environmental and societal challenges of the twenty-first century. This book tackles this issue on two fronts. First, it audits Perth’s suburban core for infill development opportunities that may have been overlooked in current planning. The result is the identification of sites that could potentially yield almost a million infill dwellings. Second, it investigates spatial trade-offs individuals and communities can make in a bid to curtail further outer suburban growth.

This book argues the result could be a city which is simultaneously denser, more liveable and supports greater biodiversity.
Perth suburban area, 2061

If Perth reaches its Series A ABS population projection of 6.6 million people by 2061 this could mean an increase of 1,486km² of suburban area (shown in red). This figure presumes that infill development continues at a rate of 28% and that suburban development occurs at a net density of R15 (15 dwellings per ha), allowing for roads (20%), public open space (10%), infrastructure (15%), regional open space (10%), industry (10%), schools (1%) and universities (1%).

1486km²
Additional suburban development by 2061

…the 28% city…
When I visit those big cities (New York, London) I am happy to come home to our wide open spaces. Why do so many people want to live in Perth? Not for cramped concrete living conditions like those cities, it’s for the parks, the open space and being able to see the sky. 

Mell

I think people living in the outer suburb have a very warped view of inner city living that is completely incorrect. Also, a family of 4 (or less) does not need a 4 x 2 with a huge backyard. That is simply greedy and unnecessary but it is the backwards mentality of many people in Perth unfortunately. 

Matt
The potential of public land

This book focuses generally on the potential of public land (shown in black) to yield infill development opportunities. Much of this land hasn't been considered for infill development because it is controversial (owing in part to its public ownership) and/or complicated (it is the jurisdiction of government departments not concerned with urban form issues).
Gardens - Perth 2015
Area = 10,340ha or 21% of the suburban core area
Gardens, Perth 2015
Perth's suburban core currently provides a generous 132m² of household gardens per person.

Gardens, Perth 1955 (planned)
The 1955 Plan for the Metropolitan Region proposed that each person should have 142m², a figure believed to roughly equate to human happiness.
Gardens, United Kingdom 2005
In the UK new residential subdivisions provide on average 75m² of garden space per person.

Gardens, Australia 2015
In Australia new residential subdivisions provide on average 29m² of garden space per person.
Gardens, rationalised

If household gardens in Perth's suburban core were rationalised from the existing 132m² per person to 75m² per person (as per new UK residential subdivisions), this could yield 115,158 new infill dwellings at a semi-detached density (based on the overall rationalised garden space being reduced by 32% to allow for inefficient land parcels and development at net density of R4). This could avoid the need for a new suburb on the urban fringe 12.1 times the size of Ellenbrook, which has about 460 residential dwellings.
The ‘Ned Kelly’
Asphalt (Roads and car parks) - Perth 2015

Area = 6259 ha or 12.8% of the suburban core area.
Your car is as welcome as you are!

Asphalt, Perth 2015
Each resident in Perth’s suburban core has an average of 78m² of asphalt.

Asphalt, Manhattan 2015
Due to Manhattan’s considerable density each person has only 9m² of asphalt.
Asphalt, rationalised

Developing 50% of the area of ground-level car parking in Perth’s suburban core to low-rise apartment density would hypothetically reduce the area of asphalt per person to 64m² yet potentially yield 230,332 new dwellings (assuming development at a net density of R200). This could avoid the need for a new suburb 24.3 times the size of Ellenbrook on the urban fringe.
Freeway reserves - Perth 2015
Area = 1633 Ha or 3% of the suburban core area
Freeway reserves rationalised

The area of freeway reserves in Perth's suburban core amounts to 20m² per person. Reducing this area to 16m² (by 20%) could yield 48,950 new dwellings at a medium-rise apartment density (assuming that 20% of the total freeway reserve area is developed at R200 with an allowance of 15% for internal roads and 10% for public open space). This could avoid the need for a new suburb 5.2 times the size of Ellenbrook on the urban fringe.
Industry - Perth 2015
Area = 3,181 ha or 7% of the suburban core area
**Industrial areas rationalised**

If 20% of the light industrial/commercial zoned land in Perth's suburban core was redeveloped with residential medium-rise apartments, 95,434 new dwellings could be created (assuming development at a net density of R200 and allowing 15% area for roads and 10% for public open space). This would reduce the average area per worker from 335 m² to 267 m² and could avoid the need for a new suburb 10 times the size of Ellenbrook on the urban fringe.

![Diagram showing 267 m² area](image)

![Diagram showing X 95,434 yielded](image)

![Diagram showing X 10 avoided](image)
Parks - Perth 2015
Area = 3,181 ha or 6.5% of the suburban core area
Parks, Perth 2015
Perth’s suburban core has 40 m² of public open space per person.

Parks, Sydney middle suburbs 2011
Sydney’s middle suburbs average about 20 m² park area per person – about half that of Perth.
Parks, City of Stirling, Perth, 2015

While Perth’s suburban core has 40m² of public open space per person, some local government areas (LGA) have significantly more. The City of Stirling is a large LGA in the northern part of the city, and its suburban core provides an enormous 75m² per person – almost three times the Australian standard.

Parks, Australian standard

The recognised Australian standard for park provision per person is 28m².
Parks, time-lapse

Mid-week time-lapse photography of Hillcrest Park, Baywater reveals a sparsity of occupation. Utilisation of such district open space increases significantly on weekends.

0500-0600 (People=1, dogs=0)

0800-0900 (People=3, dogs=0)

1100-1200 (People=1, dogs=0)

1400-1500 (People=2, dogs=0)

1700-1800 (People=4, dogs=0)
Parks, time-lapse photography

Time-lapse photography of Yvonne Park, Bassendean reveals a complete absence of people from 5 am to 6 pm. Some residual trees could be rationalised to provide infill dwellings (with existing trees protected) or revegetated for greater ecological performance.
Parks, rationalisation

If park space in Perth’s suburban core was reduced to the Australian standard of 28m² per person it would free enough land for 144,003 dwellings at medium-rise apartment density (presuming the rationalised park area is developed at a net density of R200 and allows for 10% of open space and 15% for internal roads). This could avoid the need for a new suburb 15.2 times the size of Ellenbrook on the urban fringe.

X 144,003 yeilded

X 15.2 avoided
Golf courses - Perth 2015
Area = 1,153ha or 2% of the total suburban core area
Mt Lawley Golf Club, maximum occupation

In the unlikely event of all the playing members of Mt Lawley Golf Club being on the course at one time, each player would still have 900m² of golf course to themselves.
Golf courses, rationalisation

If all the golf courses in Perth's suburban core were reduced from eighteen holes to nine holes, enough developable land for 86,497 dwellings at a mid-rise apartment density could be made available (assuming that 50% of the existing area of golf courses is developed at a net density of \( \frac{P}{200} \) with a 15% allowance for internal roads and 10% for open space). This could avoid the need for a new suburb 9.1 times the size of Ellenbrook on the urban fringe.
River foreshores - Perth 2015
Area = 2,068 Hectares or 4% of the suburban core area
Kangaroos, Heirisson Island

On the 30ha island, less than 2km from the city centre, lives a colony of only six Western Grey kangaroos who have an average space of 29,920m² each.
Swan and Canning rivers foreshore reserves, Perth 2015

Foreshore reserves in Perth's suburban core amounts to a generous 25 m² per resident.

Yarra river foreshore reserves, Melbourne 2014

Foreshore reserves in the Melbourne central subregion (roughly equivalent to Perth’s suburban core) amount to a 5.4 m² per resident.
Swan and Canning rivers foreshore reserves, Perth 2015

If the area of foreshore reserves in Perth’s suburban core were reduced from 25 m² per resident to 20 m² (by 20%) they could yield 62,049 new dwellings at a medium-rise apartment density (calculated at a P200 density with an allowance of 15% for internal roads and 10% for public open space). This could avoid the need for a new suburb 6.6 times the size of Ellenbrook on the urban fringe.

X 62,049 yielded

X 6.6 avoided
Bushland - Perth 2015
Area = 4,966 Hectares or 10% of the suburban core area
Bushland, expanded
To ensure connectivity between large patches of remnant vegetation, and to meet the Aichi targets for biodiversity, requires an increase in bushland area to 104m² per person.
X 913,879 yielded

Infill dwelling

X 97 avoided

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