

# CONTESTED SPACE. FUTURE CHALLENGES AND PATHWAYS FOR OPEN SPACE IN AUSTRALIAN SUBURBS

## Research Question

**What is the current change of open space land use that is occurring from infill development practices?**

**The amount of open space and green space in Australian suburbs is changing due to infill development. While infill is necessary, maintaining open green spaces is vital for our health and wellbeing, and to provide ecosystem services that mitigate the urban heat island effect and reduce energy consumption.**

**This project documents the changes in different suburban morphologies within Melbourne to investigate the efficacy of planning provisions in open space design, development and management in shaping and responding to infill development.**

## Methodology

Two municipalities were chosen as case study areas, providing a range of urban and suburban morphologies, and variations in lot size, forms of infill development dwelling types and rates of development activity. A spatial analysis documenting the change in private open space resulting from infill development was carried out, and interviews conducted with practitioners designing infill development. A subset of results from Moreland, a municipality spanning inner and middle suburbs north of the CBD are included here.

## Results

**Single lot land ownership is shaping the process and spatial form of infill development.**

For each case study suburb, infill

development was categorised according to lot size and dwelling yield, as lot size is a key factor in the potential dwelling yield, which effects the minimum open space requirements as regulated in the planning scheme. The Housing Development Projects dataset (State Govt Vic) between 2004 and 2012 with georeferenced to aerial photographs was used to measure open space pre and post development using a sampling method by lot size and dwelling yield.



Figure 1: Example of open space measurements pre and post development

Spatial analysis demonstrates that the type of infill development, and pattern of open space loss differs between inner and middle suburbs. In urban Brunswick, brownfields lots were infilled with higher density developments, the open space in these areas was predominantly cleared industrial land. Whereas in suburban Glenroy, most infill development occurred at lower densities on residential lots, the reductions occur throughout the suburb. Green space is also more fragmented, with a greater number of smaller, isolated patches which may not be able to support significant trees into the future.

Suburb	1	2	3	4	5-9	10-19	20+
Brunswick	5.8	10.1	7.0	3.1	14.7	9.8	49.5
Coburg	16.8	21.5	10.7	5.7	4.1	9.3	31.9
Fawkner	21.7	54.3	15.8	4.2	1.8	2.2	0.0
Glenroy	8.9	31.9	29.1	18.5	11.1	0.5	0.0

Figure 2: % loss of open space by dwelling yield for 4 Moreland suburbs

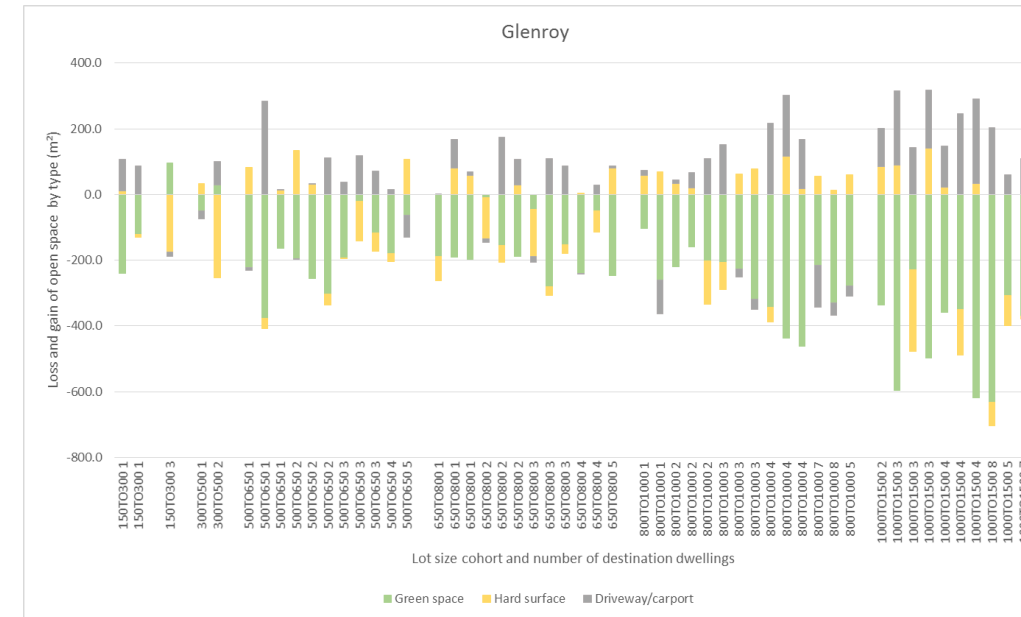


Figure 4: In addition to an overall loss of open space, green space was overwhelmingly replaced with hard surfaces, as shown here in Glenroy.

Suburb	Distance from CBD	Open space loss
Brunswick	4km	3.3Ha
Coburg	8km	3.9Ha
Fawkner	12km	3.0Ha
Glenroy	14km	8.8Ha

Figure 3: Loss of open space was extrapolated from the mean difference in open space pre and post development, using lot size and dwelling yield cohorts.

## Conclusions

**Current residential planning provisions limit building configurations and results in major reductions and fragmentation of private open space.**

As a part of a broader open space system, this shifts the ecosystem service and recreation demands of public open space. As infill development now occurs at equal rates to greenfields developments, this affects the efficacy of the broader open space system to provide ecosystem service benefits including reducing storm water

runoff and mitigating the urban heat island effect. Currently, private open space in infill development is not determined by or designed in relation to other types of open space in the surrounding neighbourhood.

An integrated

planning approach including public and private open space is required for resilient suburbs

## Anticipated impacts

Contribute to the growing body of multidisciplinary research that can contribute to system wide open space planning and management in Australian cities.

Develop a framework that can facilitate high quality open space system development as a part of broader suburban infill development processes.

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