

Bringing Nature and the Neighbours Into Infill: NATURAL CAPITAL URBAN INFILL

Summary



small housing
BC



SIMON FRASER UNIVERSITY
URBAN STUDIES



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Bringing Nature and the Neighbours Into Infill:

A Summary of the Natural Capital Urban Infill Report

Introduction

One key barrier to the expansion of alternative 'small' housing forms of infill development in Metro Vancouver is public opposition to infill housing projects that differ from the traditional single-family housing, particularly when such projects significantly impact the established natural and cultivated landscape. Residents in the Lower Mainland and indeed across BC appreciate the natural beauty, stunning landscapes, and rich biodiversity this province has, and want these landscapes protected.

How can this barrier be lowered? What effective site planning and design processes might work to reduce local resistance to alternative infill housing projects? Are there ways to both preserve the natural landscapes of established neighbourhoods while also increasing the supply of housing?

To answer these questions, Small Housing BC (SHBC) and Simon Fraser University Urban Studies (SFU Urban Studies) undertook research into an innovative land use planning process that balances development and natural capital, to determine best practices that could be applied to building local community support for alternative 'small' housing projects in established residential neighbourhoods. This is a summary of the resulting report titled *Bringing Nature and the Neighbours Into Infill*.

This study of *Natural Capital Urban Infill* constructs an argument for the integration of land use and natural capital as a more complete approach to development through the use of 'Natural Capital Accounting of Values'. It offers compelling evidence that a development approach that values and protects the 'natural capital' of a given site can yield not only better results in terms of retaining the natural characteristics of the site but also higher densities of housing, thus creating a win-win result.

Even more importantly, the study explores how this approach to residential development can also yield cost savings over the more traditional site services infrastructure associated with low density housing, which could be passed on to the end user (the final purchaser) in the form of lower housing costs. This is of high significance in this region where housing costs have risen dramatically and affordability is now a major issue. Finally, this approach is more likely to find support in established single-family housing communities that value their natural landscape.

The *Bringing Nature and the Neighbours into Infill* project has great value to BC cities by showing how such an alternative to the status quo of condominium apartment and townhouse projects can result in transit-supportive housing density while the special character of mature neighbourhoods and natural landscapes in these cities is retained. As such, this study is an important voice in the continuing conversation around sensitive infill development in the cities and towns of British Columbia and beyond.

What is 'Natural Capital'? Natural Capital can be defined as the living and non-living components of ecosystems – excluding people and what they manufacture – that contribute goods and services of value to people. In other words, Natural Capital is 'the planet's stock of renewable and nonrenewable natural resources (forests, minerals, oil, plant and animal species), environmental resources (atmosphere, water) and land'. Not all natural features are Natural Capital. The term Capital points to the interrelationship between natural phenomena, and human benefit.

The City of Surrey was a key partner in this *Natural Capital Urban Infill* study. The City has made a strong political commitment to environmental excellence and the inclusion of ecosystem stewardship values in land development. Surrey has made a specific commitment to enhancing its urban tree canopy cover, which has been in decline. Working with the City's Planning Department, this study looked at a specific test site in the City of Surrey. The test site is a prime candidate for small lot redevelopment and has been identified by Surrey's Small Lot Residential Zones Policy for sites within 800m of SkyTrain and the City Center. Adjacent land use is composed almost exclusively of single-family homes on 0.5-1 acre lots.

This report summarizes the key lessons learned from this research.

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Key Lessons

The key lessons learned from this research include:

- Infrastructure is one of the biggest determinants of infill viability. In sites where existing infrastructure servicing is insufficient in accommodating the target densities, the cost of upgrades may be prohibitively expensive for the developer.
- The leverage point in the infrastructure system is drainage. Fresh water system capacity is generally oversized in order to meet firefighting requirements. Sanitary sewer is often already oversized and can accommodate moderate increases in density. Transportation infrastructure is often dictated by area plans and municipal transportation plans. Drainage system upgrades on the other hand can often be mitigated through green design practices.
- Conventional single-family housing development in Surrey typically results in the destruction of more than 80% of trees found on site. In addition, this type of development typically only yields a 11% urban tree canopy target, and an impermeable surface ratio of over 70%. Using standard development pro forma inputs, conventional development of the test site yielded total costs of \$10.41 million, and a net profit of 16% (\$1.96 million) to the developer. On-site servicing costs were estimated at approximately \$0.91 million with municipal servicing agreement fees/charges totaling an additional \$0.39 million.
- Conversely, three alternate test site plans using a natural capital approach and small housing infill yielded costs ranging from \$10.99 million to \$12.95 million, and net profits ranging from 15% (\$1.96 million) to 21% (\$3.36 million). In other words, using a natural capital site planning approach yields very similar or better profit margins on the same site over conventional site planning.
- The three alternate test options using a natural capital approach also yielded 16–32 ‘cottage’ houses, versus just 11 houses using a conventional development model. In other words, using a natural capital site planning approach yields significantly more housing on the same site over conventional site planning, thus contributing to more housing supply.
- Natural Capital Urban Infill has the potential to alter the costs associated with development in a way that makes it more financially lucrative for the developer. First, innovative development could yield immediate savings in the fixed costs associated with development. Second, innovative development could yield reductions in soft-costs. Third, while construction costs are typically higher for custom built housing compared to standard speculative basic quality, natural capital infill through small housing forms is able to achieve higher unit yields, at a higher margin than otherwise possible.
- This study demonstrates that Natural Capital retention in development can yield servicing agreement and on-site works cost savings to developers. These cost savings could be passed on to the end user (the home purchaser), thus contributing to housing affordability.
- The study recognizes that, in most cases, implementing housing forms that enhance the retention of natural capital in urban infill does not mean the creating of new zoning typologies, but rather alternative uses of land with underlying zoning. To encourage alternative forms to single-family detached housing, developers must be offered incentives to make this an equal or greater business opportunity.
- Natural Capital Urban Infill and Small Housing initiatives have the potential for greatest impact in existing single-family neighborhoods.
- Innovative development must understand and exploit the complex financial pressures of development. A developer will generally choose to build conventional homes, until the threshold where an increase in the number of homes permitted makes innovative development equally or more profitable. This number must be met.

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- On the other hand, the number of homes permitted on a given site must not exceed what's feasible for natural capital retention. The minimum level of tree canopy integrity must be determined for every site and design exploration should be undertaken to test the feasibility of a particular Leaf Area Index minimum being preserved across the site. Leaf Area Index (LAI) describes the amount of canopy in terms useful to ecosystem services accounting, and in particular storm-water interception.
- Small scale 'cottage' housing fulfills key opportunities that are specific to Surrey, but these opportunities may also apply to many other municipalities across the region:
 - Small scale cottage housing able to appeal to a demographic that would otherwise choose a single-family detached home. Cottages offer the privacy and independence of a conventional detached home, with increased affordability, green space, and community amenities.
 - Small housing is able to address a number of additional challenges faced by Surrey's (and many other cities') housing strategy: affordability, availability, ageing in place, social cohesion, character retention and many more.
 - Cottage housing is exceptionally compatible with Surrey's urban form in infill, and helps retain a feature prized highly by Surrey's citizens: a rural like character, human scale, a safe and welcoming public realm, and the orientation of housing towards natural capital.

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