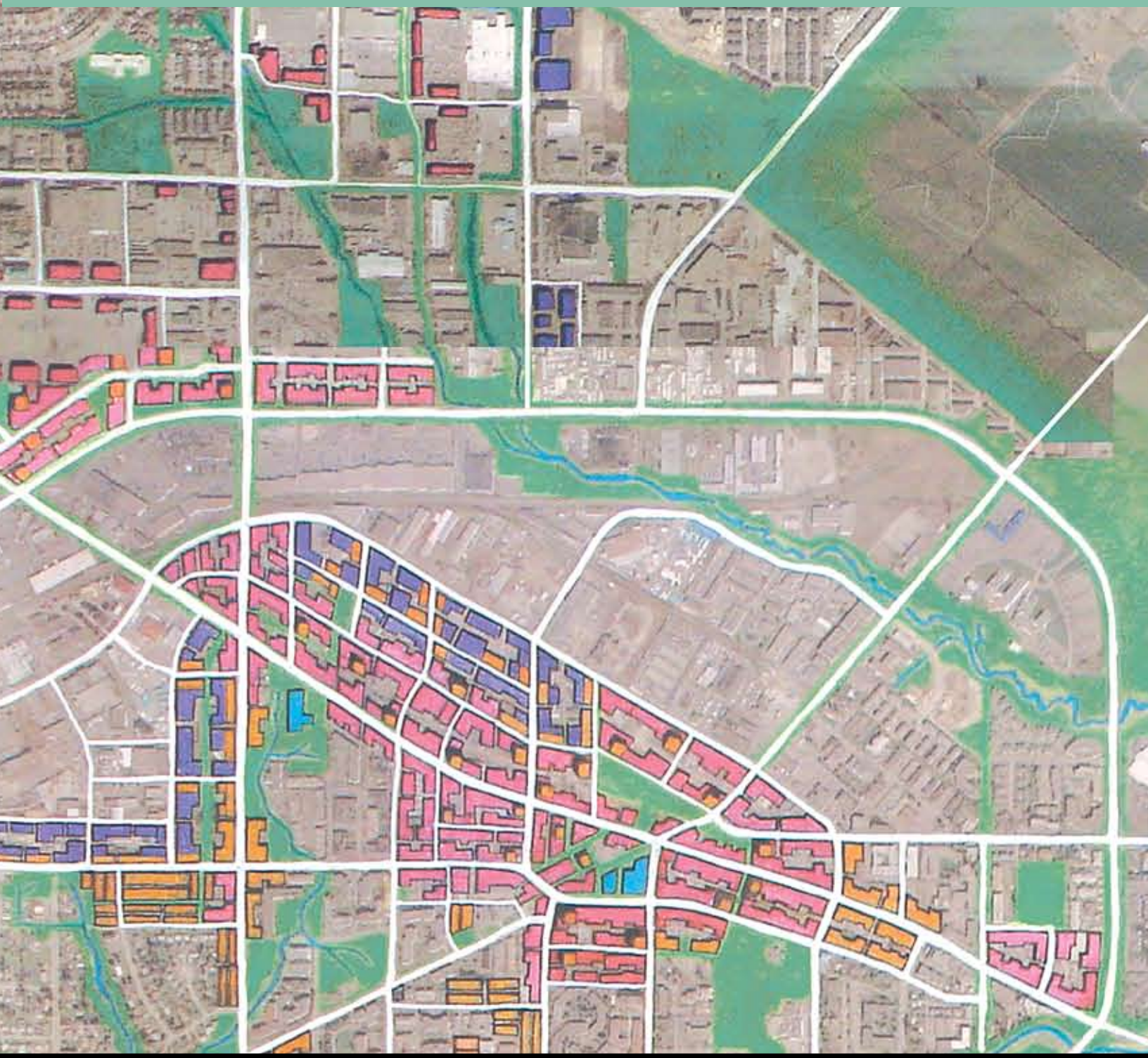
Sustainability *by* Design

GUIDING PRINCIPLES



UBC DESIGN CENTRE FOR SUSTAINABILITY

CONTENTS

THE site IS TO THE region WHAT THE cell IS TO THE body.

THE ISSUE — our response

BY 2025, GREATER VANCOUVER'S CURRENT POPULATION OF 2 MILLION WILL INCREASE BY 50%, TO 3 MILLION. IT WILL DOUBLE TO ALMOST 4 MILLION BY 2050.

How can we manage demographic and population change **in the decades ahead?**

How will the region accommodate **future growth sustainably?**

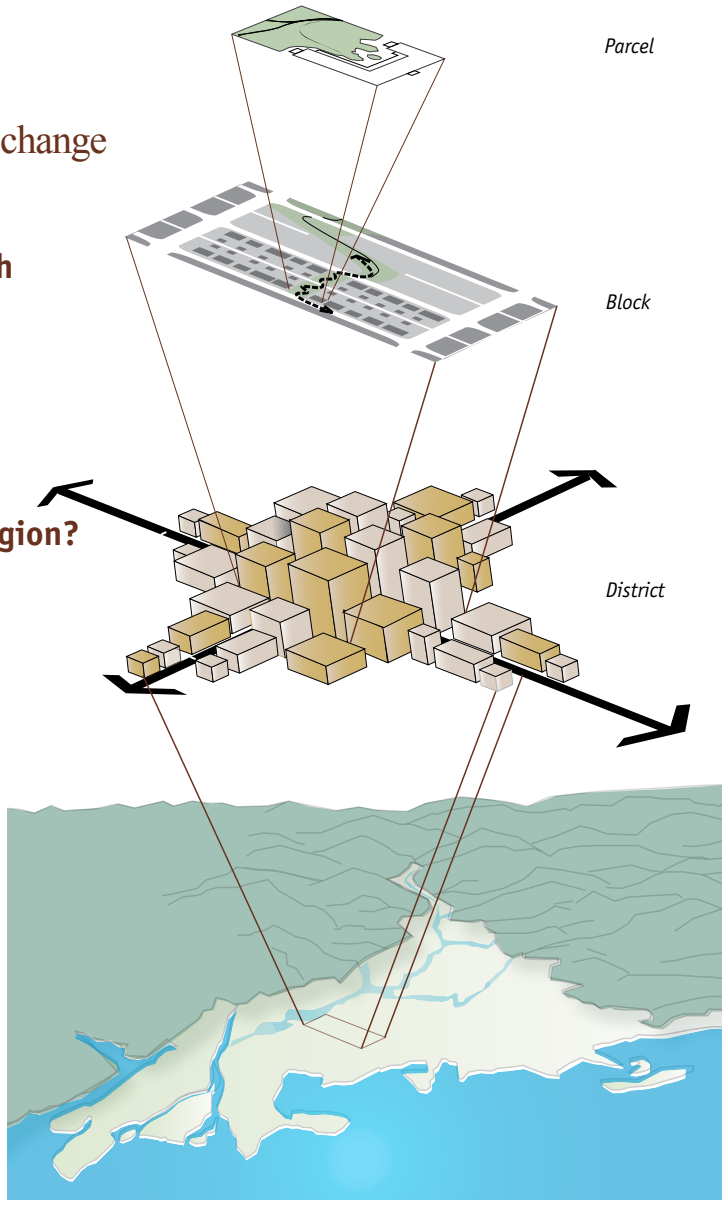
How will housing, jobs **and** transportation **be designed, delivered and distributed?**

How do we ensure continued livability **in the region?**

How can we do even better?

The Greater Vancouver region has earned a reputation as one of the world's most livable places. That achievement is the direct result of our region's natural assets as well as the visionary long-term planning of previous generations. Our challenge, in this generation, is to transform our livable region into a sustainable one.

Sustainability by Design (SxD) will strive to demonstrate how the interplay between regional collaboration and local area design is essential to achieve a successful and sustainable region.



A sustainable region exhibits sustainability features at every scale, from the individual parcel, to the block, to the district, to the region. Just as the health of each cell of our body is integral to the well-being of our body, so too is the ecological, social, and economic health of each site integral to the sustainability of the region.

SUSTAINABILITY BY *design*

The UBC Design Centre for Sustainability (DCS) is leading a collaborative effort to produce a compelling visual representation of what the Greater Vancouver region might look like in 2050, at neighbourhood, district and region-wide scales.

We call this project **Sustainability by Design**.

Over the next few years, Sustainability by Design (SxD) will create and coordinate a series of design briefs, research tools, stakeholder design charrettes, educational events, community workshops, exhibitions and publications.

Municipal officials, researchers, citizens, and community stakeholders will explore consensus-based concepts for how a sustainable Vancouver region might evolve.

PROJECT *goal*

This project is intended to galvanize support for, and participation in, sustainable community design among elected officials, municipal and regional planners, the NGO sector, developers and real estate professionals as well as the broader population of community advocates and citizens.

We invite all citizens in the region to join us.

(Below) In the fall of 2005 a team of UBC Landscape Architecture students produced the first SxD vision for a sustainable region. These students collaborated to create a large map envisioning the GVRD with 4 million inhabitants. The goal was to see what the region might look like if developed according to the principles of sustainability listed in this brochure.

OBJECTIVES

Sustainability by Design will provide a unique opportunity to test key sustainability principles and targets against real site constraints and emerging market conditions, and to see what kind of communities and neighbourhoods might result in BC's Lower Mainland if they became more, rather than less, sustainable.

work

with citizens and stakeholders to draw up a vision of what a sustainable region would look like -- at the regional scale, at the district scale, and at the scale of individual neighbourhoods

build

citizen and stakeholder support for local and regional sustainability

demonstrate

the opportunities and benefits for smarter and more sustainable community design

exchange

and communicate our efforts and results with other regions, as well as with policy makers, students, and professionals throughout the world

PROCESS

Sustainability by Design will apply sustainability targets, tools and principles (arrived at via workshops and described in design briefs) to prototypical urban/suburban sites within the Vancouver region. In collaboration with its member municipalities, we will select those study area sites that are most likely to face significant growth (intensification, infill and redevelopment) over the next several decades.

For Sustainability by Design, we have identified three typical areas for study: corridors, edges and nodes.

These three study areas represent the building blocks of a more sustainable region; each provides unique and replicable opportunities for smarter, greener urban design in the decades ahead.

CORRIDORS
(e.g. commercial arterials, public transit corridors)

EDGES
(e.g. interfaces between green zones or agricultural lands and urban areas or industrial lands)

NODES
(e.g. key regional interchanges — regional or town centres, transit stations or hubs, commercial shopping districts)

WHAT IS A charrette?

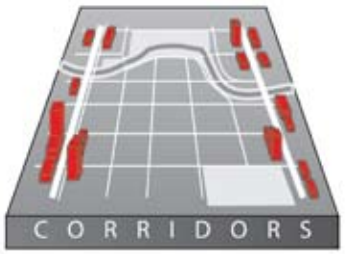
A charrette is a collaborative planning process that helps integrate best practices and approaches into planning and design projects during their formative stages. It actively engages technical professionals, experts and key stakeholders. Charrettes take place in a roundtable format to explore a problem holistically, clarify project goals and objectives, to identify constraints, and to illustrate possibilities using the collective expertise, energy and interests of the group to generate design solutions.

Charrettes collectively explore and illustrate the trade-offs and consequences of design decisions. Charrette are effective tools with which to constructively engage stakeholders in the design process and to build stakeholder and community support for long-range, municipal or regional planning.

SUSTAINABILITY principles

1 JOBS

Job sites located within communities reduce time spent travelling to work.

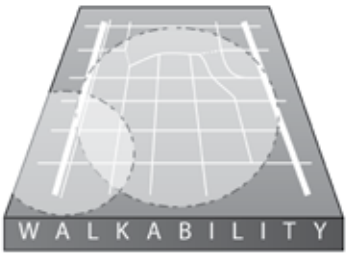


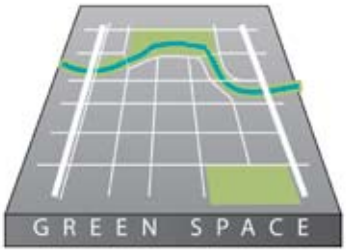
CORRIDORS 2

High density commercial and residential corridors focus growth along transit routes.

3 WALKABILITY

Interconnected street systems link residents with the services they need.



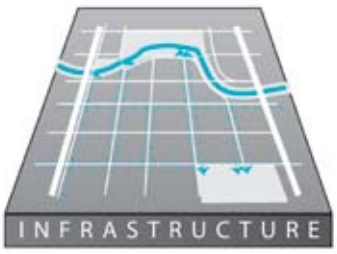


GREEN SPACE 4

Green spaces provide recreation opportunities and connect people with natural systems.

5 INFRASTRUCTURE

Integrating natural systems reduces infrastructure costs and environmental impact.

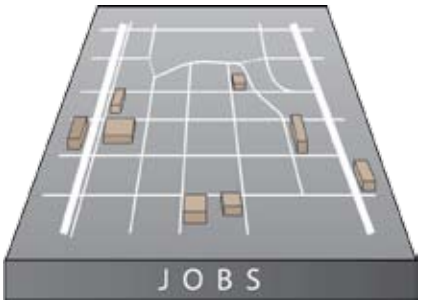


HOUSING 6

A range of housing types allows residents of differing economic situations to live in the same neighbourhood and have access to the same services.

GOOD & PLENTIFUL jobs CLOSE TO HOME

Sustainable communities foster local economic opportunities and growth. Residents can find employment close to home. Government policies and local infrastructure support local businesses and individual enterprise.



Office space in the GVRD is increasingly expanding into business parks, which are separated from homes and transit service. Between 1990 and 2000, office space in business parks grew at a rate of 107 percent compared to office space in the metropolitan core and regional town centres, which grew at a rate of 26 percent and 27 percent, respectively.

Target:

Provide at least one job for every two households within eight kilometres of all homes.

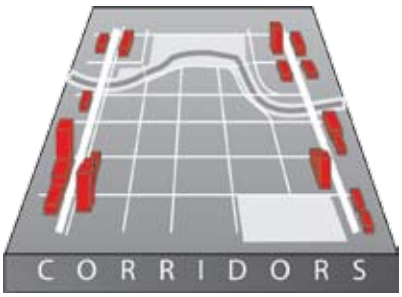
1

Locations where visitors, residents and workers co-exist make lively communities. Places such as working waterfronts or business areas, mixed with or adjacent to residential and commercial areas, increase synergy between land uses and decrease travel demand.

Integrating job sites into the community creates opportunities to walk or ride to work and reduces reliance on passenger vehicles. Job sites such as this can provide an attractive and friendly street frontage.

MIXED USE corridors ACCESSIBLE TO ALL

Sustainable communities allow residents to live, work, shop and play in their local areas. Land and public infrastructure are designed for multiple purposes and mixed use. Transportation corridors and commercial arterials provide both commuter mobility and access to multiple services and daily activities. Corridors enable diverse transportation choices, including access and movement for pedestrians, bicycles, transit and automobiles.



Successful corridors, such as those along Broadway and 4th Avenue in Vancouver, provide local examples of the benefits of densifying and diversifying corridors. Commercial businesses and transit services are well-used and easily accessible to a large group of residents.

Target:

Provide at least one high-density, attractive and pedestrian-friendly mixed-use transit and commercial corridor within a ten-minute walk of all homes.

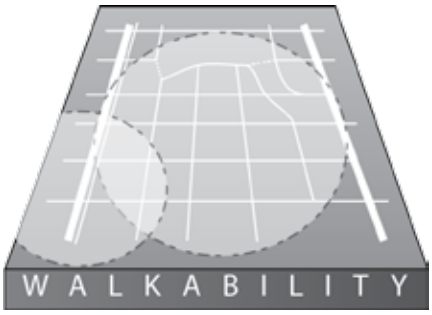
Including many compatible services and uses within one building can offer a more affordable space option while providing a greater amount of retail and community services to nearby residents.

High density corridors are easily accessible to many residents by foot, bike or car. Multi-modal access boosts commercial activity, transit use, and social vitality.

FIVE MINUTE walking DISTANCE

Sustainable communities have compact neighbourhoods with an interconnected street network that ensures quick access to commercial and public services and amenities. Streets and arterials are designed for walking, cycling and transit access -- not just for cars. Neighbourhoods have sufficient residential densities and mixed uses to provide sustained transit ridership and service.

A study by Translink showed an increase in transit ridership of 30% for residents living within a five-minute walk of a Sky Train station. Recent development around the new Millenium Line stations shows that access to high-speed transit can have a great effect on development potential within a five- to ten-minute walk of stations.



Target:

Provide all homes in medium- and high-density neighbourhoods with transit and services within a five minute walking distance.

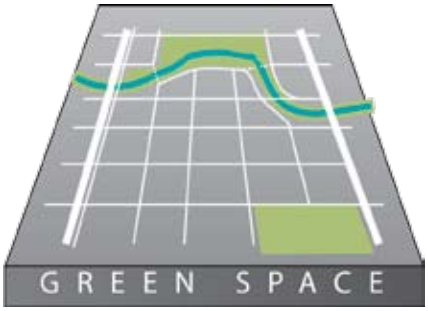
3

(Above & above left) The five-minute walk bubble (approx. 400m diameter) places residents within a certain distance of major intersections, where transit and other services are likely to be located.

Residents who live within a five-minute walk of frequent transit service are more likely to choose transit as a mode of travel than those who live further away. In order to be effective, transit must also be located within a five-minute walk of their destination (i.e., job sites).

ACCESS TO natural AREAS AND PARKS

Sustainable communities respect the natural functions of the landscape, particularly agricultural land, stream systems and aquatic habitats. Well designed communities integrate natural systems with human activities, placing high value on community access to natural systems and parks. Sustainable communities maintain and restore ecosystem functions. Effective ecosystem management and restoration can achieve significant energy efficiencies, cost savings, and environmental benefits.



The Central Valley Greenway that is currently under construction will connect New Westminster and False Creek. The Greenway will provide green space for recreation, movement, habitat, and ecosystem functions.

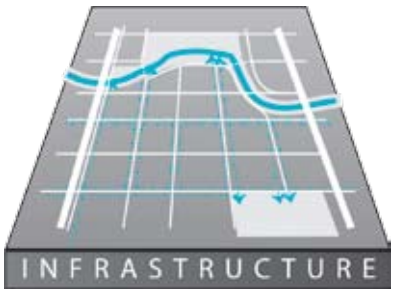
Target:

Provide at least one type of green space within half a kilometre of all homes. Link green spaces in order to protect ecosystem function and to connect communities.

The principle of easy access to linked green spaces includes local streets, major and minor parks, schools, riparian protection areas, neighbourhood parks, and buffers. This linked system of green spaces within the community satisfies social, recreational, and educational demands while meeting important ecological goals.

Residents of this complex are all within easy access of green space. The park functions as a recreation destination, maintains ecosystem functions, and connects residents with the natural environment.

LIGHTER, GREENER, CHEAPER, SMARTER infrastructure



Sustainable communities optimize the economic, social and ecological impacts of buildings and infrastructure. Innovative development standards and practices will reduce community and environmental impacts as well as private, public, and taxpayer costs of development and infrastructure. Low impact solutions such as green infrastructure and natural drainage systems will save money over the longer-term, ensuring the sustainability of economic growth.

Crushed stone-lined streets capture, absorb, and filter rainwater instead of sending it downstream in pipes. If the first one inch of every rainfall is captured and absorbed, 90% of stormwater is prevented from entering stormwater pipes.

Target:
Infiltrate the first one inch of rain that falls on a site or street during any twenty-four-hour period.

5

Natural drainage systems in which stormwater is held on the surface and allowed to seep naturally into the ground protects against downstream degradation such as streambank erosion and increased water temperature, which is a byproduct of conventional stormwater management systems. Using natural systems to collect and filter stormwater reduces infrastructure costs. This neighbourhood protects all streams and uses natural systems for stormwater management.

Infiltrating rain water ensures that stream base flows and stream habitat are supported, maintains the hydrological cycle of the soil, and ensures that groundwater is recharged at predevelopment rates. Infiltration is the single best way to protect most aquifers from depletion (and most streams from degradation).

DIFFERENT housing TYPES

Sustainable communities include a variety of housing in the same neighbourhood, and very often on the same street. A mix of housing types, both owned and rented, allows residents to live affordably in the same community throughout their lives. Good neighbourhood design fully recognizes current and future demographic trends, especially aging populations, empty nesters, single-parent families and smaller, non-traditional households. A mix of housing types also helps accommodate lower income residents (including students and fixed-income seniors), allowing access to local jobs, amenities and medical services.

The majority of housing stock in many new municipalities is single-family detached. These dwellings are unsuitable for many residents, particularly those in the fast-growing over-fifty age demographic. In Maple Ridge, a fast-growing metropolitan edge municipality, 392 out of 492 housing starts in 2004 were for single-family detached dwellings.

Target:

Provide at least three different housing types and/or tenures within each ten-hectare parcel of developed land.

More compact development requires less infrastructure, resulting in fewer roads per person, less land per house, fewer car trips per person, and more accessible transit.

Accomodating a broad range of housing types and tenures into the same negihbourhood helps to create a diverse and socially cohesive community. The principle of mixed housing types promotes integration and symbiosis between different family types and ages as a way of strengthening the larger community.

RESOURCES

- SUSTAINABILITY BY DESIGN
  www.landfood.ubc.ca/sxd
- JAMES TAYLOR CHAIR IN LANDSCAPE AND LIVEABLE ENVIRONMENTS
  www.sustainable-communities.agsci.ubc.ca/projects
- SMART GROWTH ON THE GROUND
  www.sgog.bc.ca

A Project of

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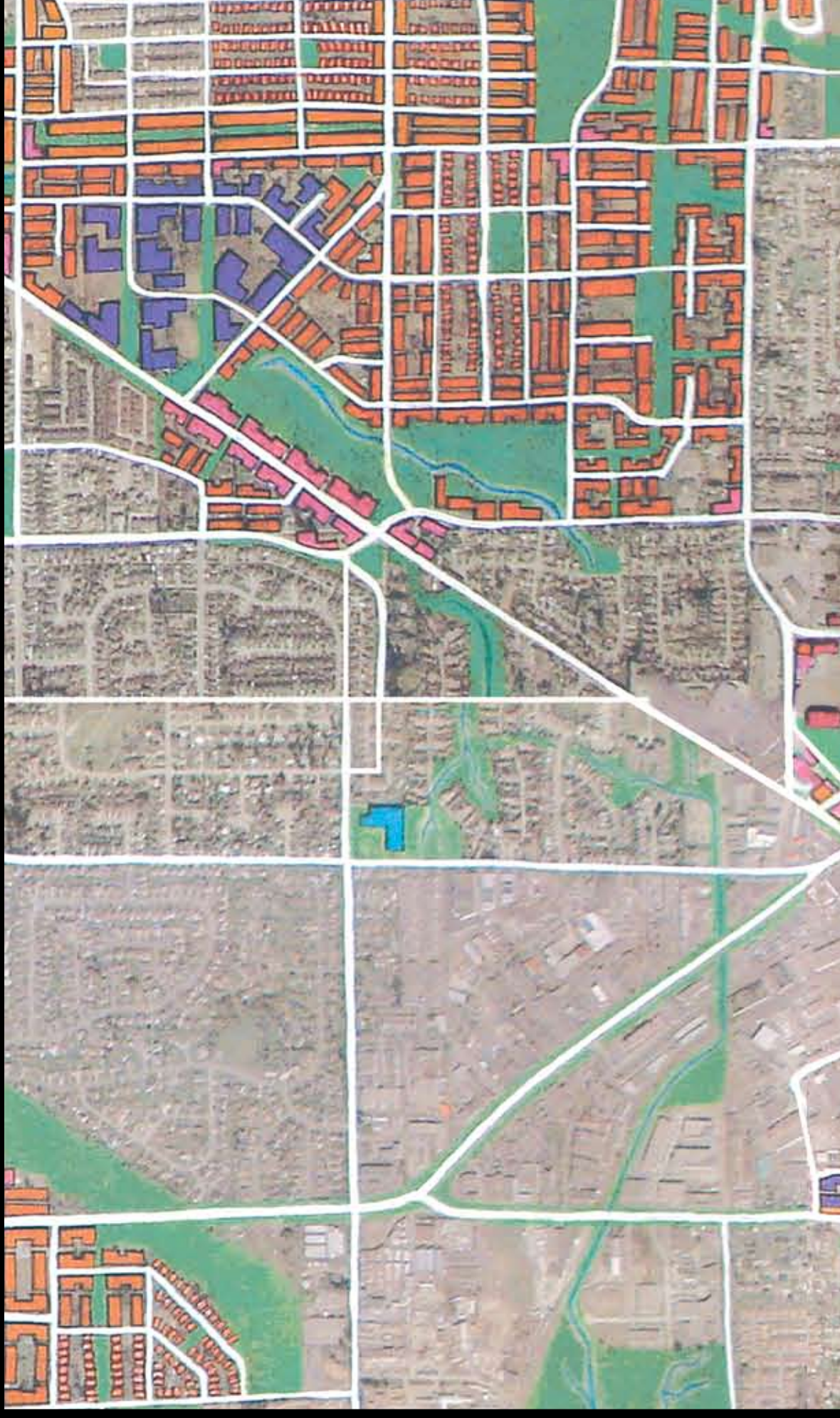

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