Skinny Streets & Green Neighborhoods

DESIGN FOR ENVIRONMENT AND COMMUNITY

CYNTHIA GIRLING AND RONALD KELLETT

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Neighborhoods

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Contents

ure, building this ever-expanding suburban landscape remains the dominant planning and design project of our day. Ellen Dunham-Jones concludes that approximately 76 percent of new population growth, 95 percent of new office space (and jobs), and 75 percent of new construction expenditures are concentrated in the suburbs.[10] Although suburban growth has persisted in many cities, the development patterns into which it has been accommodated have begun to change. The contemporary challenge for many cities is how to stem the rate of outward expansion by encouraging so-called smart growth—more compact, pedestrian-friendly development patterns that consume less land and allow transportation choices beyond the automobile.

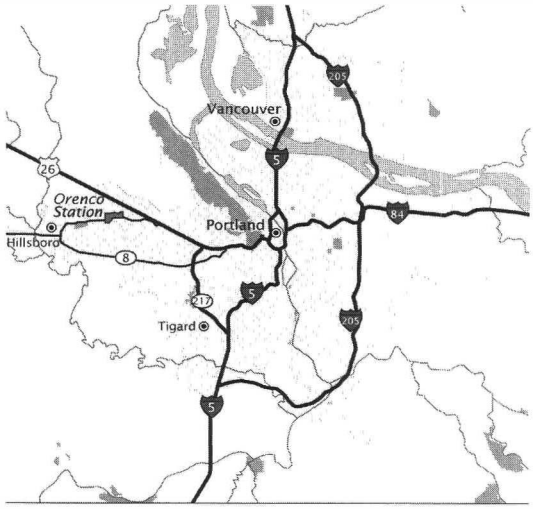


Figure 0.1 Orenco Station relative to Portland, Oregon.

Growing Compact

Portland, Oregon, is one example of a city that has, since the mid-1990s, focused on directing population growth into targeted compact neighborhoods. Working within the context of state growth management policies that require new development to be within urban growth boundaries, the metropolitan region coordinated overall growth and land use and transportation planning in its Region 2040 plan. According to this plan, growth would be concentrated at town centers located at transportation nodes, most along light rail lines. Orenco Station illustrates one successful town center (see the case study in Chapter 2).

Orenco Station is a new "greenfield," transit-oriented neighborhood in Hillsboro, Oregon, on the western perimeter of the Portland metropolitan area, approximately 20 miles from downtown (Figure 0.1). Located at a rapid transit station, Orenco was planned in 1995 and 1996 to accommodate 1,835 dwellings and a mixed commercial center on a 156-acre site (Figure 0.2). Density targets were set at a gross density of twelve dwellings per acre—roughly three times that of the prevailing pattern in Hillsboro and other Portland suburbs. As of 2004, the development was achieving those targets (Figure 0.3).

Orenco Station demonstrates how transit-oriented, compact development patterns can succeed in a perimeter suburb and shows that planning and design quality is crucial to that success. Initial sales exceeded projections, and dwelling unit prices ran

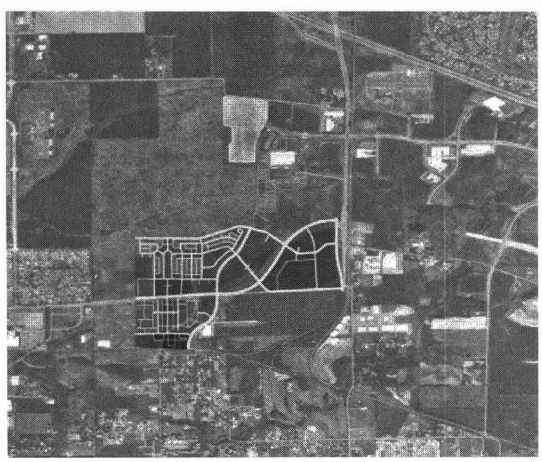


Figure 0.2 Orenco Station plan in context.

water drainage and pedestrian and bicycle paths at the scale of a block. The greenways connect to larger public open spaces and agricultural landscapes of orchards, vineyards, and community gardens.

A connected network of pedestrian and bicycle routes is well integrated with the open space and the street network, making it easier to walk or bike from one part of Village Homes to another than it is to drive. The longest travel distance within the network is less than five minutes, and many routes can be negotiated without crossing a street. Elements of automobile transportation are secondary and much less direct. The entire street network is served by only one street, which lies along the east side of the plan. All local streets leading from it are very narrow, curving, service-oriented cul-de-sacs.

Open space and low-density residential land uses dominate the Village Homes plan (Figure 0.6). One liability is the lack of commercial services nearby. A small commercial area includes a restaurant and offices; however, most shopping and other daily services are within biking (not walking) distance. As a result, most residents drive to commercial centers in Davis, Woodland, or Sacramento for more significant purchases.

The stormwater management and food production capacity enabled by the open space network of Village Homes is significant. Within the open space network is a finely scaled open-drainage system (Figure 0.7). With the exception of peak storm events, the open spaces manage all of the stormwater runoff generated on-site at lower capital and infrastructure maintenance costs than those experienced in adjacent neighborhoods. In addition, residents are able to grow about 24 percent of their own fruits and vegetables (about a third more than adjacent neighborhoods) and gain modest income from an almond crop.[13]

This green neighborhood works and is highly valued by the residents. Surveys of Village Homes and adjacent neighborhoods reveal that Village Homes residents know more than twice as many of their neighbors. And like Orenco Station, the strong sense of community has economic value. When Village Homes houses are put up for sale, they tend to sell quickly and at a premium compared to similar houses in adjacent neighborhoods.[14]

Despite the considerable contribution of Village Homes to environmentally oriented development patterns, it also has

Figure 0.5 Village Homes plan in context.

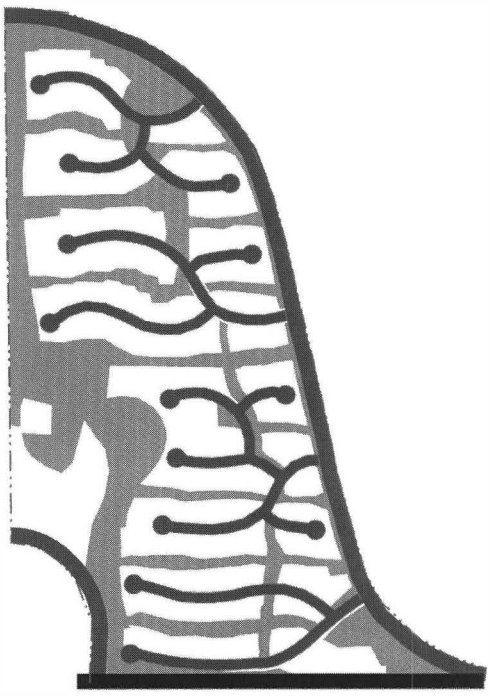


Figure 0.6 Village Homes: green and gray networks.

The linked network pattern in particular abandons the convention of giving a hard form to open space pattern and focuses instead on a more negotiated distribution and connection of diverse open space elements. Open spaces and connections could be larger, and connections to them more generous, at points of higher environmental value and lesser development value, such as near an important stream corridor. Open spaces could be smaller, and connections to them narrower, at points of high development value and lower environmental value, such as near major roads. Since this open space pattern is continuous and interconnected yet closely intertwined with urban uses at many points, nature is more easily close at hand. From many points in developed areas, people can more easily connect to the open space system and, once in the system, can move through it uninterrupted.

Clarence Stein's neighborhood prototype is an example of a networked open space pattern (Figure 1.5).[9] Stein's plan follows the convention of a school-centered service area of approximately a half-mile radius with emphasis on the amount and distribution of open space in a linear, interconnected pattern. Stein also significantly reduced land areas allocated to streets, purposefully decreased connectivity for automobiles, and increased connectivity and accessibility to commercial services for pedestrians and bicycles. This design, which fundamentally changed the development pattern from street centered to open space centered, became known as the Radburn pattern, after its best-known example in New Jersey (Figure 1.6). Despite the opportunity presented, Stein's prototype was never completed at Radburn; the small built portion did not realize potential open space connectivity at larger scales, from neighborhood to neighborhood or from neighborhood to natural areas.

More recently, architect Peter Calthorpe has made open space and resource protection a key guiding principle in his neighborhood prototype, the transit-oriented development (TOD).[10] Advocating conservation of major creeks, riparian habitat, and other environmental features, Calthorpe recommended their integration into new neighborhoods as something more than edges. This more negotiated, better integrated synthesis of open space, street network, and land use pattern presented much greater opportunity and multiple uses for natural open space beyond simple resource protection or visual amenity. Figure 1.7 illustrates Calthorpe's transformation of the original TOD

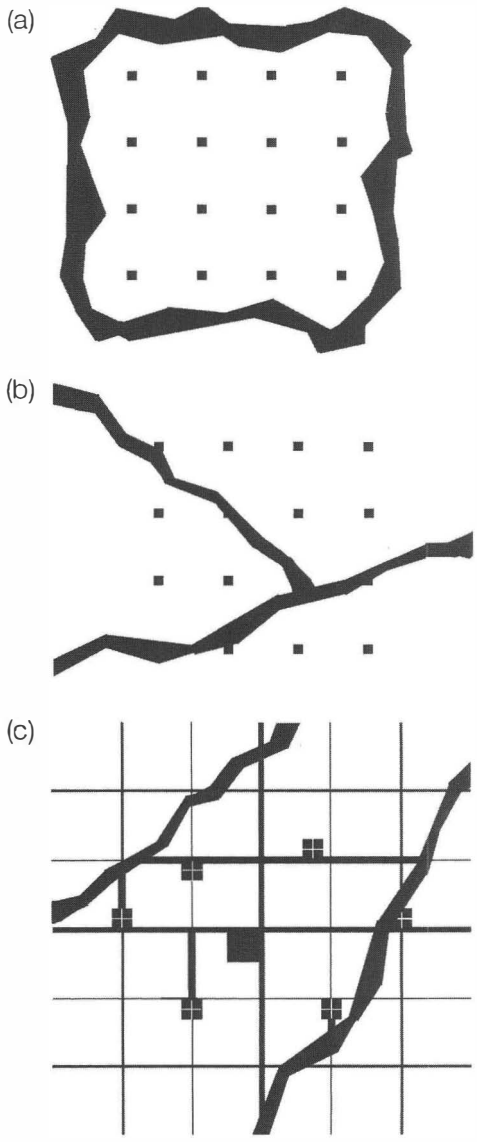
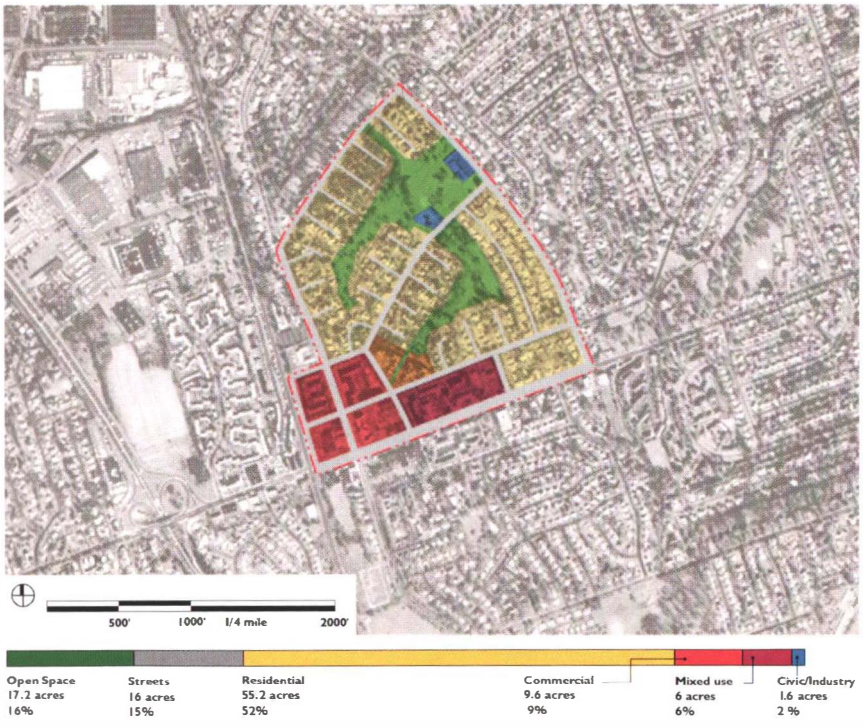


Figure 1.4 Spatial patterns of open space: (a) greenbelt, (b) green wedge, and (c) green network.

Radburn



106-acre study area, including 492 dwellings with a small commercial area, community pool, elementary school, and community open space. Initiated in 1928 but never fully built out. Gross density is 4.7 dwellings per acre.

Radburn is located in the suburban borough of Fair Lawn, New Jersey, with approximately 32,000 people, located 21 miles northwest of New York City.

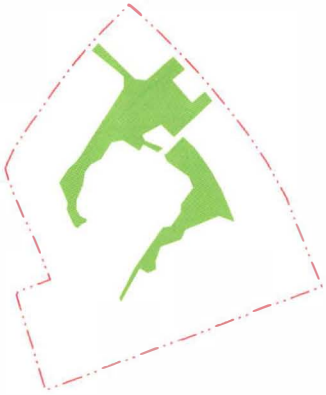
Radburn was the first model Garden City to be developed in the United States. Although the design was originally conceived as a planned city of 30,000 people, only about 500 dwellings were constructed before the U.S. stock market crashed in 1929. This innovative plan was designed with the safety of children in mind and is said to have turned neighborhood design inside out by featuring a park system as the neighborhood "front." Also notable is a circulation system that separates major vehicular traffic from the primary pedestrian circulation, which is located in the parks.

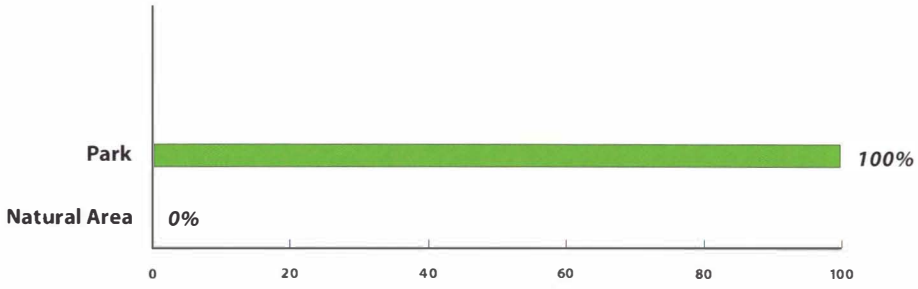
Radburn is located at a commuter rail station and has at its center a modest shopping area and some apartment housing. The segregated pedestrian pathway system leads uninterrupted to the shopping area; however, street crossing is necessary in the commercial area. The vehicular circulation system, called a "superblock," was designed to keep the central area in parkland. Through roads are located on a grid of about 1,000 by 1,600 feet; within that grid, homes are located on narrow lanes. Pedestrian circulation interconnects the lane ends with the pathway system, creating a fine-grained pedestrian network.

Much of the Radburn neighborhood is allocated to shared, public open space that forms a hierarchical network interconnecting private yards, via narrow common pathways, to continuous public parks, schools, and a community pool.

Credits

City Housing Corporation; Clarence S. Stein and Henry Wright, town planners





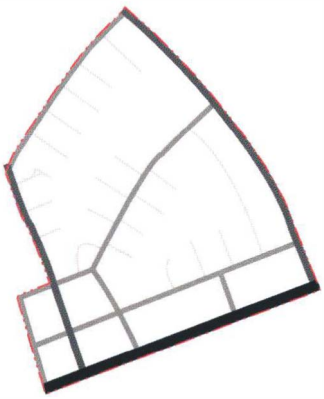
STUDY AREA ALLOCATED TO GREEN NETWORK (BY TYPE)

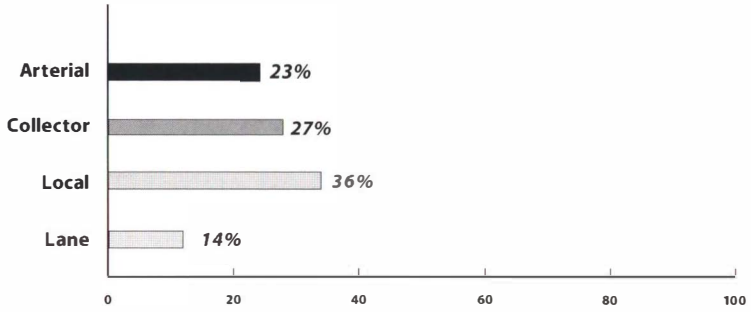
(a)

(b)

(a) Interior parkland. Photo by K. Helphand. (b) Path leading to one of several street underpasses. (c) Edge conditions between yard and park: low fences and hedges mediate public and private. Photo by K. Helphand.

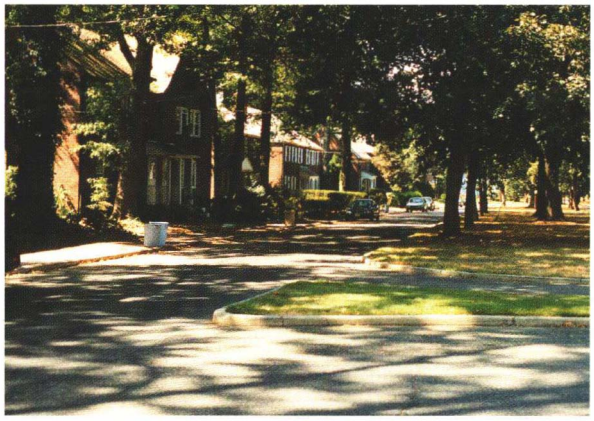
(c)





STUDY AREA ALLOCATED TO GRAY NETWORK (BY TYPE)

(a)



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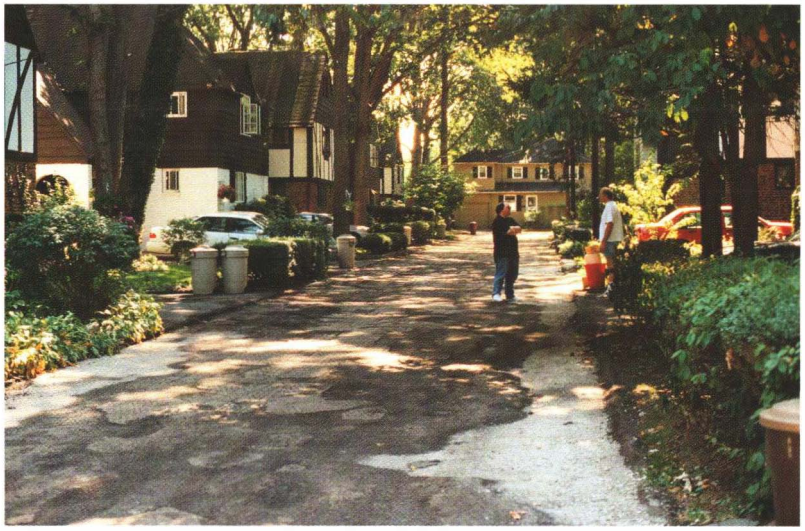
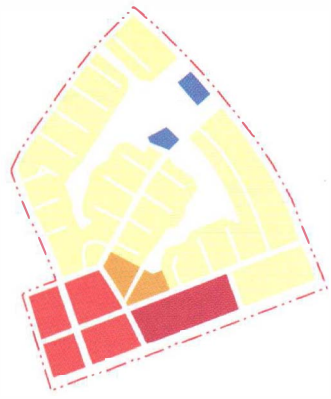
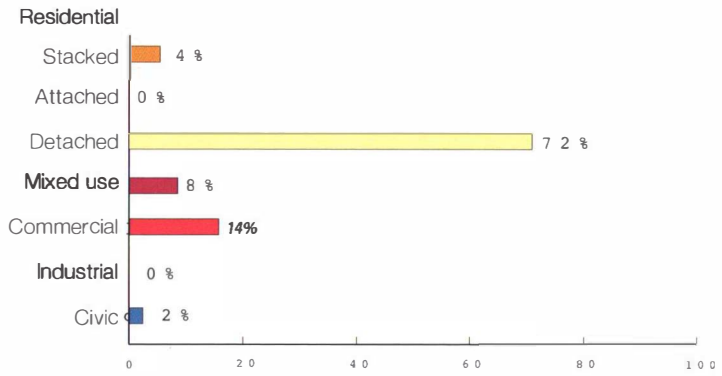


(c)

(a) Pedestrian paths alternate with cul-de-sacs to connect collector street edges to the interior park system. (b) One of the broader collector streets. Photo by K. Helphand. (c) Cul-de-sacs service the homes and are important social spaces. Photo by K. Helphand.

Radburn: Gray Fabric

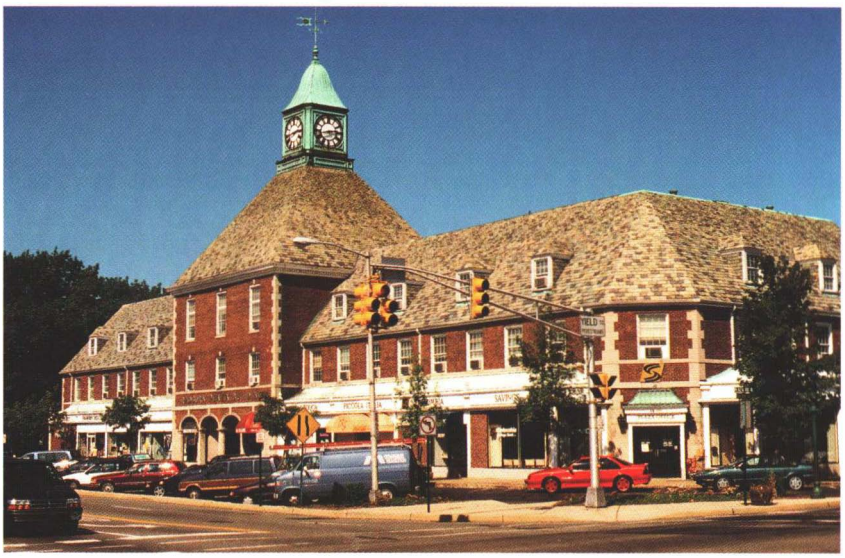




STUDY AREA ALLOCATED TO GRAY FABRIC (BY TYPE)

(a) Homes and yards enfront public spaces. (b) Radburn's commercial center. Photo by K. Helphand.

(a)



(b)

Figure 4.7 The Beach: midblock pedestrian path linking the neighborhood to the park.

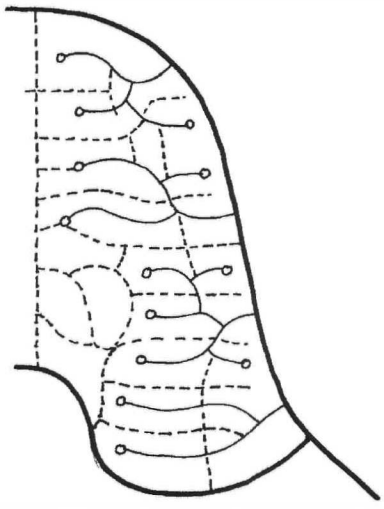


Figure 4.8 Village Homes: diagram of the streets and pedestrian paths (dashed).

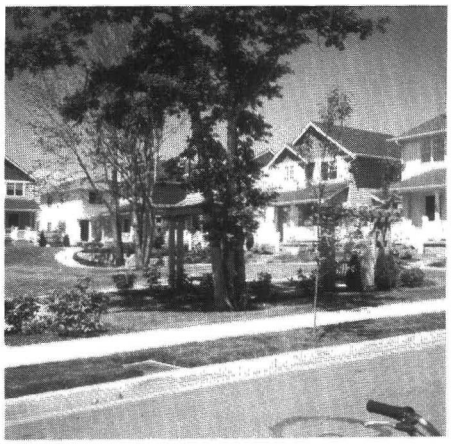


Figure 4.9 Northwest Landing: a cluster of homes front onto open space.

two fronts rather than the clear front and back yards of conventional development. Village Homes in Davis, California, uses a modification of the Radburn street system. A finely scaled grid of off-street paths interconnects all areas of the neighborhood (Figure 4.8). Vehicles use a street system of cul-de-sacs served by an adjacent collector street. These low-volume residential streets weave through the interconnected system of green spaces used for circulation, stormwater drainage, and agriculture. At Village Homes, carports and private walled gardens abut narrow residential streets, whereas the more public side of each house is on the greenway.[31]

Hybrid networks also help to work around environmental assets and with difficult topography. Along streams or wetlands, where frequent crossings would harm natural systems, cul-de-sacs may be used to break the vehicular grid. Pedestrian connectivity, however, can be retained using paths, bridges, and boardwalks between cul-de-sac ends and along interior greenways without significantly increasing imperviousness. In difficult topography, streets should follow contours to reduce disturbing the ground. Cross streets that might fall on steep grades can be replaced with pedestrian paths. In select cases, alleys may suffice for vehicular connections to homes, allowing front streets to be replaced with green space. An example of this use of alleys occurs at Northwest Landing in Washington. In this case, a common green, which allowed a cluster of mature trees to be protected, serves as the front of the homes (Figure 4.9). Vehicular access to the homes is from a rear alley for residents, while visitor parking is provided on a nearby side street. A street network like this is also planned for Southeast False Creek in Vancouver, home of the Olympic Village in 2010 (see Chapter 8).

Green Streets

Local-scale gray networks represent 20 to 30 percent of the land area of most neighborhoods.[32] Such networks require a significant investment both in land area and in capital and operating tax dollars for most jurisdictions. Because gray networks are paved, they also contribute to water pollution. Impervious surface is land covered by roads, rooftops, parking lots, driveways, sidewalks, patios, and any other surface that prevents water penetration into

> balance the highest possible levels of social equity, livability, ecological health and economic prosperity, so as to support their choices to live in a sustainable manner.
>
> City of Vancouver, "South East False Creek Policy Statement"

Adjacent to downtown Vancouver, South East False Creek (SEFC) is the newest community planned for approximately 80 acres of a former inner-city industrial area, the last remaining waterfront in the False Creek basin (Figure 8.1). Since the late 1800s, the area has accommodated heavy industrial and transportation land uses, including sawmills, foundries, shipbuilding, metalworking, salt distribution, warehousing, and public works facilities. As a result of the major shift in land use priorities that had been unfolding since the 1970s, first at False Creek South and later at False Creek North, industrial uses had all but abandoned the area by the 1990s. As it had with many other underutilized commercial and industrial areas in the downtown, the City released SEFC from the industrial land base in 1995.

Figure 8.1 South East False Creek: aerial view of site (shaded) looking toward downtown and the north-shore mountains, City of Vancouver, *Draft ODP By-law for South East False Creek*)

Notably, the timing of this conversion parallels an increasing public interest and political will on the part of the City to advance the cause of environmental quality in the region. "Sustainable development" was added to the planning and urban design mandate that would shape SEFC. Where prior central city planning had concentrated on, and substantially achieved, livable models of compact development, SEFC would do this in addition to elevating an emerging environmental agenda. The overall intent was to create a dense, mixed-use urban neighborhood with three- to twelve-story buildings while concurrently reducing energy and resource consumption as well as waste and pollution generation (Figure 8.2). When completed, a diverse mix of approximately 5,000 dwelling types will create three neighborhoods that derive their form from the historic pattern of the adjacent neighborhood.

These neighborhoods are to be integrated with a network of streets, parks, and public spaces that organizes the development pattern of the site (Figure 8.3). Streets, paths, and transit will also connect SEFC to adjacent areas and regional systems. Integrating consideration of environmental performance in very early stages of planning and design has profoundly affected the proposed

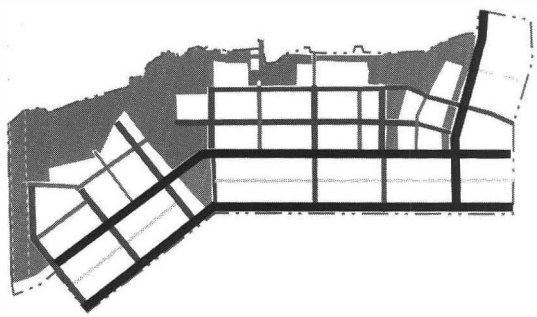
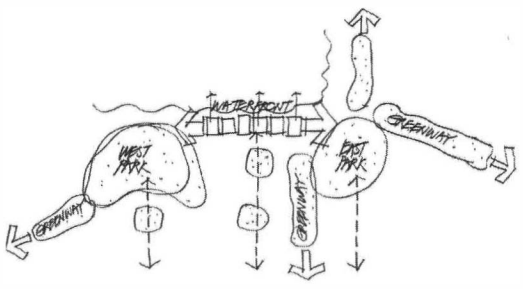


Figure 8.2 South East False Creek: green and gray networks

Figure 8.3 South East False Creek: (a) diagram of major open spaces, (b) diagram of the three neighborhoods, and (c) diagram of major transportation routes. (Source: Via Architecture et al., *South East False Creek Official Development Plan*)



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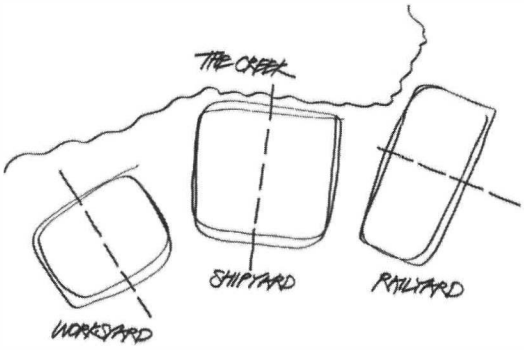

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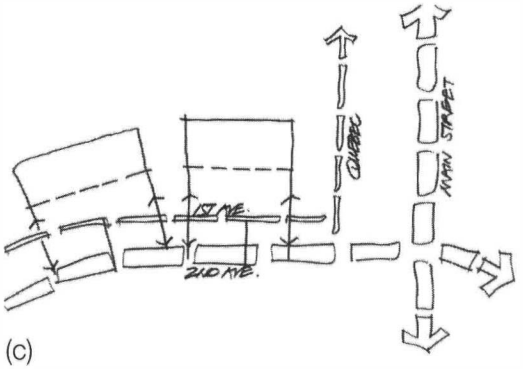

(c)

development for the better. The current concept plan proposes a very dense and urban mix of approximately 5,000 market, low end of market, and nonmarket (subsidized) dwelling units that are well served by commercial, educational, cultural, and recreational services at an average floor-space ratio of 3.5 and a gross density of about 60 dwellings per acre.[10]

Approximately 26 acres of parks and public open spaces will form a green infrastructure that supports stormwater management, urban agriculture, and other ecological functions alongside traditional recreation and open space functions. With this public green network in place, private development can be designed to leverage that investment, enabling more sustainable strategies at the urban block, parcel, and building scales, such as green roofs, stormwater infiltration and harvesting, urban agriculture, and recycling.

Impressive goals for environmental performance are within reach for South East False Creek. All of the dwellings can be located within 1,200 feet of basic shopping, personal services, and transit choices (bus, rapid transit, streetcar, and pedestrian ferries), and 60 percent of all daily trips can be by modes other than automobile. Parking requirements can be reduced, and 100 percent of the streets can be designed to favor walking, cycling, and transit over private automobiles. Water use per capita can be reduced to 50 percent of the regional average, and 12.5 percent of the produce consumed by residents can be grown on-site in public open spaces or private green roofs. About 60 percent of the site can effectively be "pervious," with stormwater being managed through an on-site infiltration and conveyance network. In the public domain, road widths have been reduced, and all curbs, gutters, and storm sewers can be eliminated. About 60 percent of all open space and 80 percent of the foreshore can have significant habitat value. Targets include a range of habitats for at least thirty species of birds.[11]

The first built results are anticipated with the construction of the 2010 Winter Olympic Village in 2006. With this development, the city will add another benchmark to what Welsh urban design author and critic John Punter considers Vancouver's justifiable "claim to be a compact, proto-sustainable city with a livable downtown surrounded by a series of high-density, mixed use residential areas, whose residents need not commute by car but can

ARCHITECTURE / PLANNING / DESIGN

Skinny Streets and Green Neighborhoods weaves together the most innovative thinking in urban planning and urban ecology. Drawing from eighteen case studies, these green neighborhoods are the best examples of how the natural environment can play an integral role in neighborhoods.

This book provides proven methods to solve complex problems such as how to make communities accessible and walkable while better integrating natural and urban landscapes. In these communities, wooded areas, meandering streams, and wetlands are planned for and planted to clean the air and the water, while skinnier streets and accessible paths connect to a transportation network that provides services close to home. This book shows how we should all be living.

ADVANCE PRAISE

"A great treat. This well-researched, clearly presented book is a crisp validation of what my eyes, ears, feet, and heart have been saying to me on my ten year trek working in 2,000 different communities. This book is a great companion for my own journey, as I know it will be for environmentalists and urbanists who need to come together on a common language and knowledge. This book shows the path to a sustainable future."

Daniel Burden, Senior Urban Designer and Director of Walkable Communities, Inc., Glatting Jackson, Community Planners

"*Skinny Streets and Green Neighborhoods*, a synthesis of the best ideas about urban planning and green space, could not come at a better time. Girling and Kellett provide a blueprint for creatively interweaving gray and green infrastructure, urban design, and the environment. The results are sustainable neighborhoods and green metropolitan regions that artfully preserve nature and create better cities."

Mike Houck, Executive Director of Urban Greenspaces Institute, Portland State University

Cynthia Girling is Director and Associate Professor of Landscape Architecture at the University of British Columbia and author of numerous publications and books including *Yard, Street, Park: The Design of Suburban Open Space.*

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