



AGRICULTURAL URBANISM

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Agricultural Urbanism

Research is ongoing to develop techniques for assimilating agriculture into an urbanism acceptable to the expectations of modern life and meeting the choice of lifestyles of Transect-based plans.

The ability to grow food has implications for communities on multiple levels: from food security and health issues, to ensuring a local economy, to the vast environmental benefits of local farming, and the social benefits of a productive activity in which all members of a community can engage.

The dominance of large lot, low-density housing has become typical in many American suburbs. While appearing idyllic, when these spaces are not incorporated into a larger urban and regional plan, the repetition and redundancy of a single slice of the transect can be the most detrimental type of sprawl, whereas when carefully incorporated into a larger plan arranged according to the transect, can have quite a different effect.

When farmland is built upon, a basic premise in Agricultural Urbanism is that one third will be urbanized while the production of the whole will be tripled. This trade-off is achieved by intensifying the agricultural activity at every level of the transect; from window boxes, balcony

and roof gardens in the more urban Transect Zones, to the progressively larger community gardens, yard gardens, small farms, and ultimately large farms in the more suburban and rural Transect Zones.

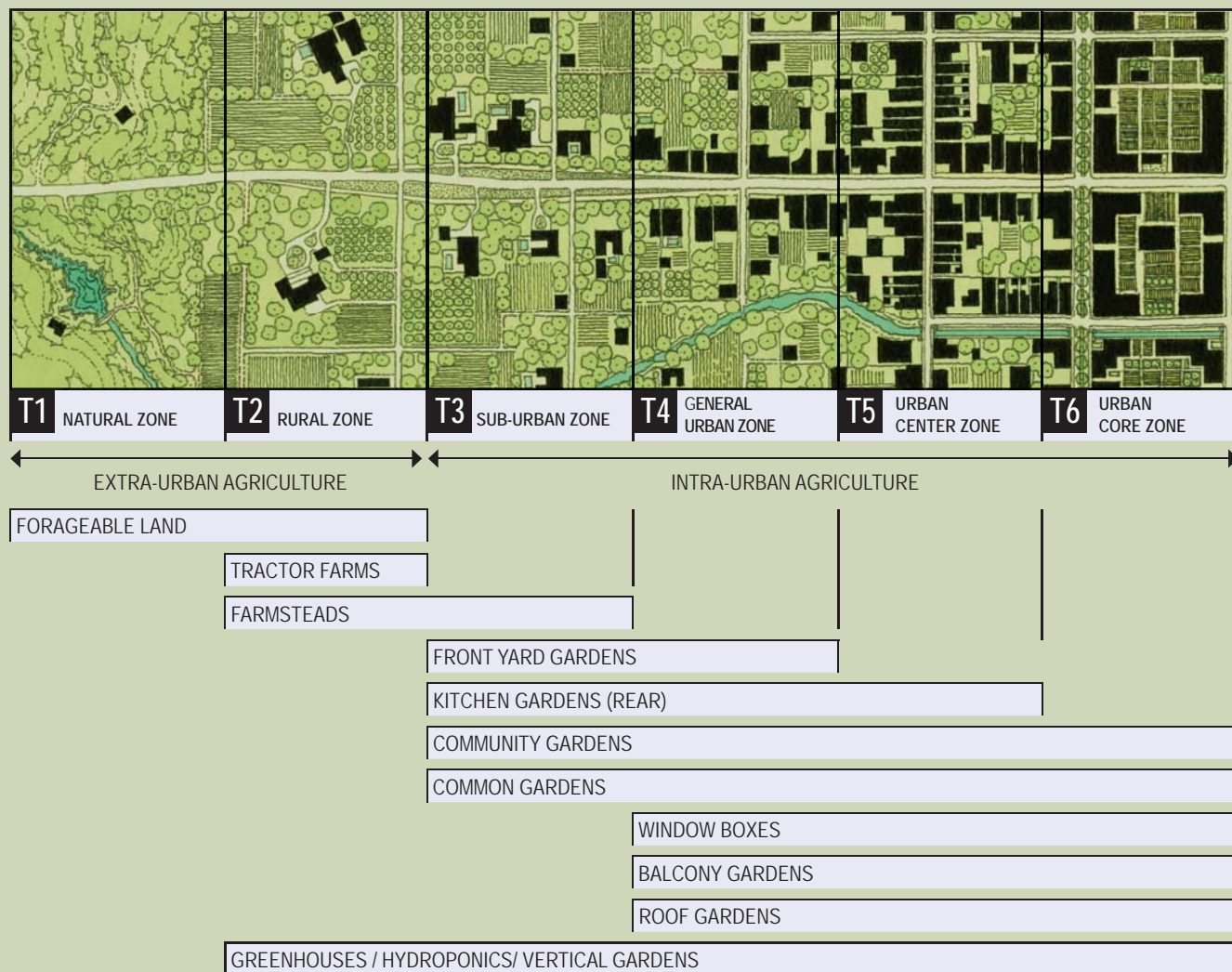
The condition specified in Association Documents will be that every dwelling, in some measure, participates (or allocates that portion of the household budget which would normally be dedicated to maintaining ornamental landscaping) in the production of food. Larger farms may be centrally managed with connection to distribution systems. There will be a heavy equipment yard held in common, as well as facilities for the processing and storage of high value food. This is part of the town square also has the new facilities of a local university's agricultural department.

This is NOT urban agriculture. This is *agricultural urbanism* in which all aspects of the urbanism are focused on the production of food.

There is a very positive attitude towards agricultural urbanism on the part of those who are environmentally concerned, those who would enjoy the society of a shared endeavor (front gardens were introduced for the purpose of social discourse—a role not unlike that of a porch) and

for those who wish to take precautions with their health and welfare.

Urbanism must be cohesively designed. By concentrating development, land is liberated for agricultural use. Agricultural projects must be precise both in terms of the land cultivated, and in the management of it. The transect will help organize the appropriate placement of agriculture at the scale of both the master plan and the architecture of buildings.



Food Production Along the Transect

Every dwelling along the transect will contribute in some measure to food production, either by labor or by wages. Owner's association agreements regarding dedicating the funding which is normally allocated to landscape will be for agriculture subsidies. Producing food on-site allows:

- Greater independence from mass-produced food, buffering from petroleum shortages, less pressure on government
- Control over food processing, including: pesticides and other additives to food, humane treatment of animals
- Social Benefits of including non-driving members of society in economy
- Economic Self-Sustainability: food is a reliable commodity, particularly when the means to preserve it through with *Value Added Agriculture* is considered



The transect in an agricultural village, as studied in Hertfordshire, England.

The Transect: Fostering Good Agriculture and Urbanism

At the edge of the Transect, the same large lot zoning, which can, in repetition, lead to the worst kind of sprawl can exist successfully in limited quantities. The critical difference shown here is proximity to urbanism which limits the repetition of a single transect zone. The location of the structures along the thoroughfare creates a sense of community and, the farther from urbanism these lots are, the more self-sufficient they are shown to become. In most circumstances, a five acre parcel is large enough to allow some animals and some crop rotation.





Stormwater Collection and Purification with this uphill reservoir; Tsawwassen, British Columbia.

Environmental Implications

Incorporating the production of food sources into an urban masterplan results in built-in efficiencies, both economic and environmental. Because there is practicality towards closing a natural cycle, many costs may be reduced or eliminated, including waste disposal, food fertilizers, and food transportation, when food is grown locally. In the project shown here, the following efficiencies were realized:

Water

- Collection, filtration, storage in reservoirs designed as civic landmarks
- Great increase in pervious land

Energy

- Less driving for food and its transport
- On-site job creation
- Proximity to food
- Buildings energy-efficient

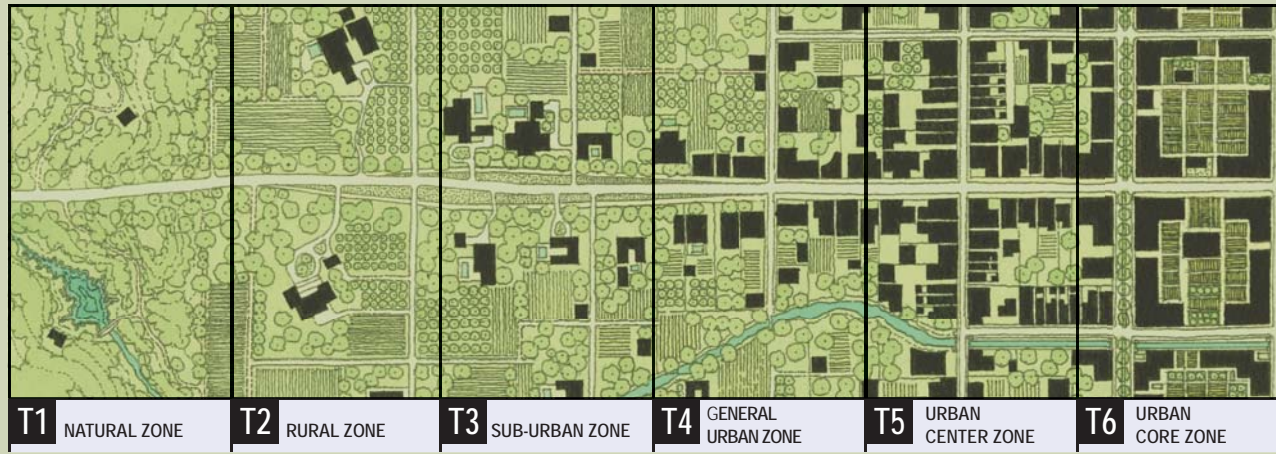
Food

- Closer to closed nutrient cycle
- Better control over supply of food
- Better control over food additives
- Better control over treatment of animals

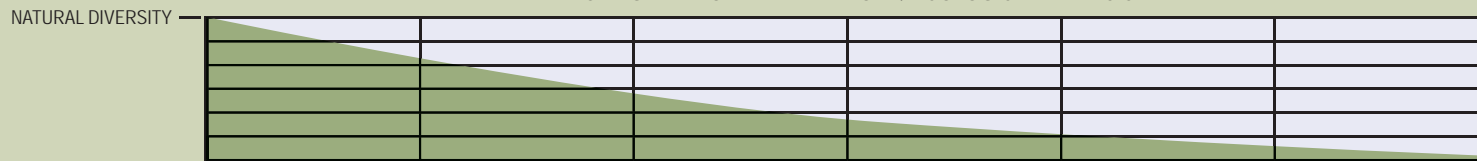
Waste

- Composting sites at both public and private gardens
- Recycling stations become a part of town life

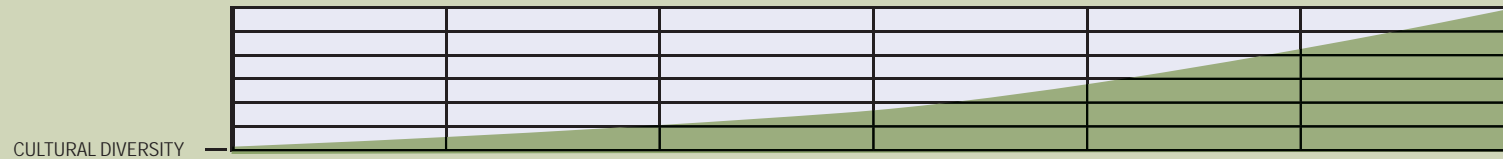
INDICES OF DIVERSITY



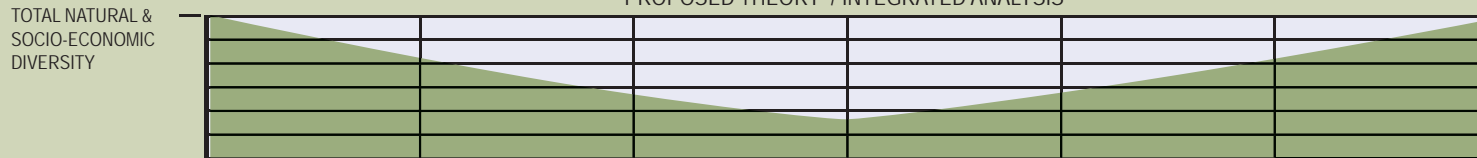
EXISTING ENVIRONMENTAL THEORY/ ECOLOGICAL ANALYSIS



EXISTING URBAN THEORY/ SOCIO-ECONOMIC ANALYSIS



PROPOSED THEORY / INTEGRATED ANALYSIS



PROPOSED CULTURAL ADJUSTMENT





Agricultural Urbanism and the Charter of the New Urbanism

PRINCIPLE 1: CONCERNING THE METROPOLIS

The project supports economic and housing interests for the region, as well as the production of food and the maintenance of open space.

PRINCIPLE 2: CONCERNING THE METROPOLITAN ECONOMY

The program includes education, agriculture, mixed-use streets and blocks with live-work units. Project is designed to contribute positively to the surrounding areas.

PRINCIPLE 3: CONCERNING AGRARIAN/NATURAL LANDSCAPES

By only building on 1/3 of the site, 2/3 is maintained for open space or food production.

PRINCIPLE 4: CONCERNING INFILL OVER EXPANSION

The site was a low-productivity agricultural land sandwiched on two sides by existing communities.

PRINCIPLE 5: CONCERNING NEW DEVELOPMENT

The project is organized into neighborhoods.

PRINCIPLE 8: CONCERNING TRANSPORTATION

The project is organized around a pedestrian shed, will have jobs on-site, and will be connected with the existing transportation network into the adjacent communities by bus routes and bicycle paths.

PRINCIPLES 10 AND 11: REGARDING NEIGHBORHOODS

The project is compactly organized to allow connected open space and agricultural land. Neighborhoods are compact, pedestrian-friendly and contain mixed-use.

PRINCIPLE 12: REGARDING THOSE WHO DO NOT DRIVE

Agricultural Urbanism not only provides the normal activities of a well-planned mixed-use place, but also a variety of employment opportunities that might not otherwise exist.

PRINCIPLE 13: CONCERNING DIVERSITY

A broad price range of both housing and gardening opportunities is included. In particular, co-housing proponents participated in the charrette.

PRINCIPLES 14 AND 15: REGARDING TRANSIT

The project is walkable with planned connection to existing transit. Walkability diagrams are provided.

PRINCIPLE 16: COMMUNITY CIVIC SPACES AND SCHOOLS

An existing school in Boundary Bay is walkable, and the Agricultural Department of a local university is proposed as are an additional primary school and recreation fields.

PRINCIPLE 18: COMMUNITY GARDENS, GREEN SPACES

The project contains all of these.

PRINCIPLE 19: MIXED USE STREETS AND PUBLIC SPACES

The project is designed with places of Shared Use

PRINCIPLE 21: CONCERNING DESIGN FOR SAFETY

The project contains both "eyes on the street" and protected courtyards. These shield working areas from the community and create safe places with non-vehicular thoroughfares.

PRINCIPLE 22: ACCOMMODATING CARS AND PEDESTRIANS

A hierarchy of thoroughfares allows a combination of alternative transit and vehicular routes, benefitting the pedestrian and reducing environmental and economic impacts of infrastructure.

PRINCIPLE 23: SAFE, WALKABLE STREETS AND SQUARES

The project is designed with neighborhood centers.

PRINCIPLE 25: CIVIC BUILDINGS AND COMMUNITY IDENTITY

The Identity of the project is clearly marked by the Market Square, visually anchored by large barns.

PRINCIPLE 26: APPROPRIATE BUILDING DESIGN

The architecture of the project is based on local precedent.

PRINCIPLE 27: PRESERVATION OF LANDSCAPES

The maintenance of an open agricultural area both supports the vista the neighbors are accustomed to and provides an on-site economy for the community.



1. AT THE URBAN EDGE: TRACTOR FARMS



2. AT THE URBAN EDGE: SMALL FARMS



3. AT THE URBAN EDGE: ONE-ACRE FARMSTEADS



Extra-Urban Agriculture: The Corrugated Edge of Agricultural Urbanism

The plan for this agricultural community provides a variety of ways for different scales of agriculture to plug into the urban fabric. This maintains open views into the agrarian lands and allows an economic and social interchange between the active agriculture and the town.



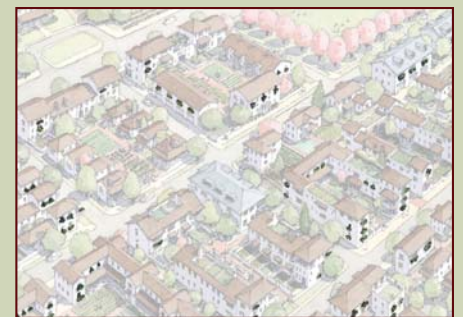
1. ON THE GROUND: COMMUNITY & COMMON GARDENS



2. ON THE GROUND: FRONT OR BACK YARD GARDENS



3. IN BUILDINGS: ROOF GARDENS



4. IN BUILDINGS: WINDOW AND BALCONY CONTAINERS

Intra-Urban Agriculture: The Diversity of Places

Intra-Urban greens are intended to democratize agricultural opportunity. These growing spaces vary in size depending on their location and proximity to density, in accordance with the transect. They may be publicly or privately held on the ground or within buildings.



A Market Square Area

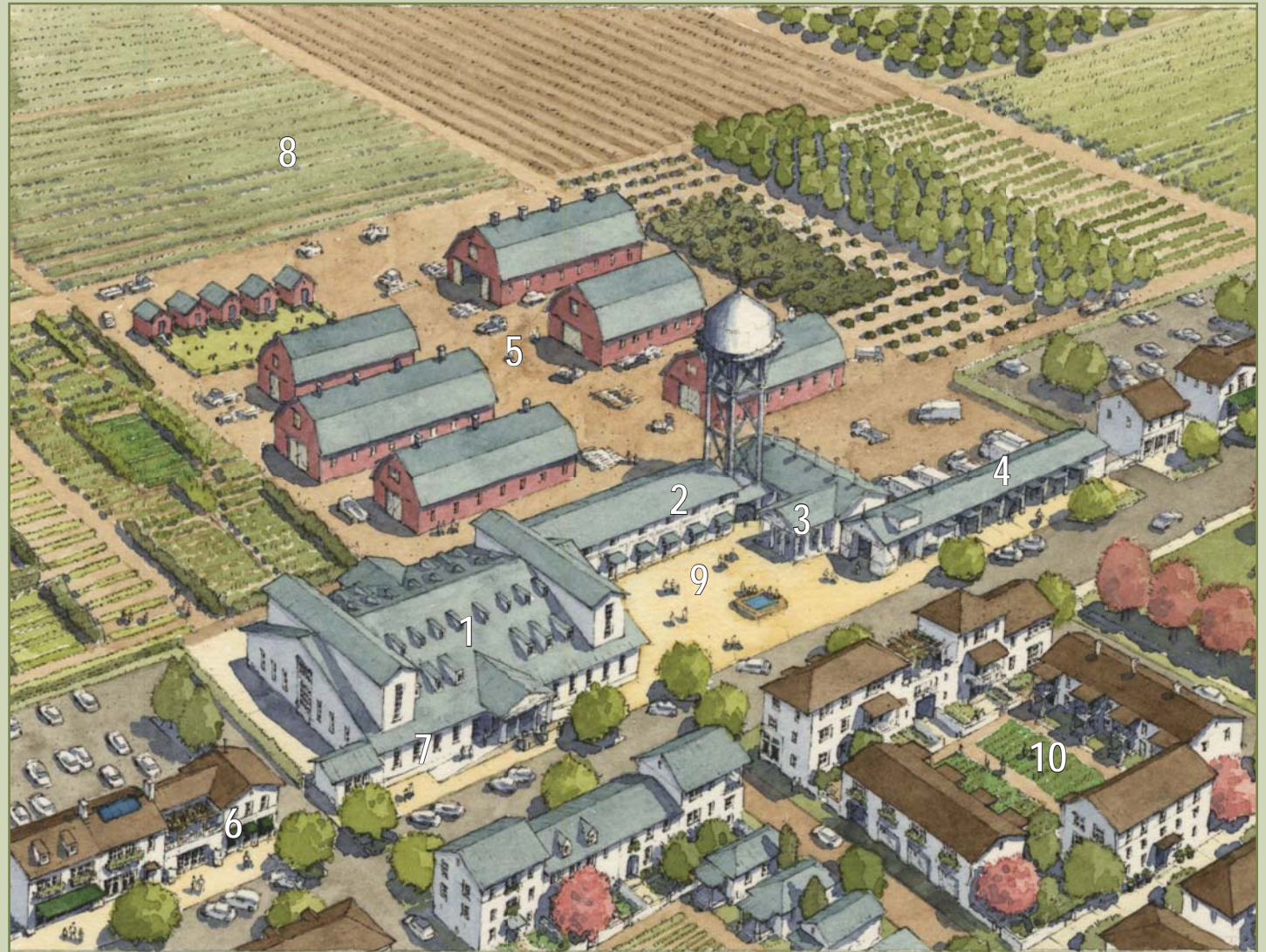
This plan detail illustrates how the block structure and street layout of how a central market square area might be designed. Within the town, each neighborhood is within walking distance of a neighborhood center. Different block types illustrate how a variety and intensity of housing types and shared green spaces are

accommodated within block layouts, densest blocks adjacent to the neighborhood center, filtering down towards the edges. Across the transect, design is planned to facilitate the production of food across transect zones.

The Market Square

The Market Square depicted here is centrally situated between agricultural land and residential development and is anchored by a university's Urban Agriculture studies department. It is within a ten-minute walk of all residences and will be part of a regional transportation network, connecting it to the existing town and village centers.

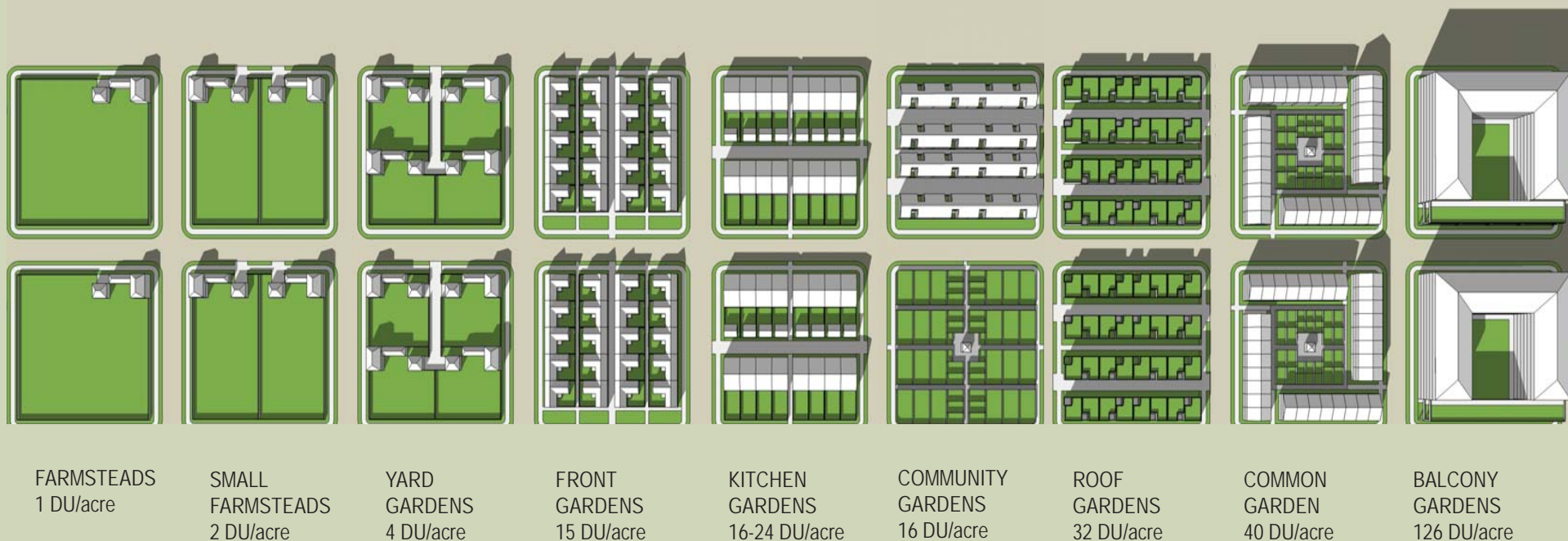
The main thoroughfare that passes the square is lined with ground-floor retail, live-work units and community facilities.



1. Multi-purpose Building
2. University Center for Agriculture
3. Culinary Institute
4. Farmers' Market
5. Agricultural Support Structures
6. Mixed-Use Buildings
7. Value Added Agriculture Processing (Bakery, Cannery)
8. Agricultural Land
9. Market Square
10. Community Gardens

Value Added Agriculture

Value Added Agriculture refers to the processing and preservation of foodstuffs in a way that increases their market value. Bakeries and canneries are examples of two programs that buffer market and crop fluctuations, allow the use of less than perfect produce (creating value where none might otherwise exist), and make use of less skilled or part-time labor, including a part of the population that might not otherwise be employed. Therefore, including of these spaces into the program of an agricultural town is important for its economy.



Building Types Matrix

This study shows the insertion of dedicated agricultural areas into various lot and building types along the Transect. It is an organizing diagram that moves from the more rural to the more urban, using the single acre as a point of reference.

In reality, a hierarchy of thoroughfares would allow several blocks to be joined depending on the location along the transect.



Illustration of four one-acre blocks, Tsawwassen, Canada

Building Types

The One Acre Block as the Model

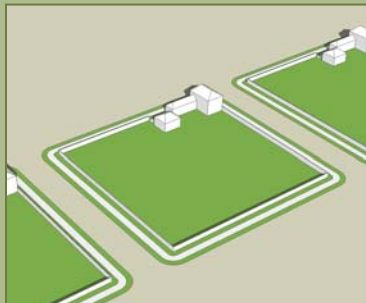
This study uses the single acre as a point of reference to show the insertion of dedicated agricultural areas into different building and lot types along the transect.

Some buildings which cannot have a dedicated growing area can contribute by using roofspace for water or energy collection; most would probably have at least window boxes.

Maintaining an agricultural potential without losing quality

of life requires a conscious effort to balance access to sunlight, building heights, and block sizes.

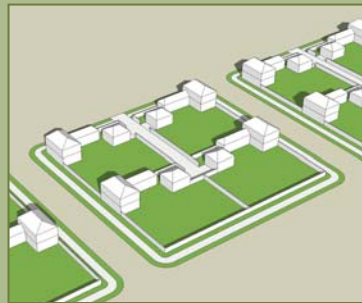
In reality, the plan would allow several blocks to be joined, with mid-block connections being non-vehicular, reducing the cost and impact of heavy paving, and dedicating more resources to bicycle and walking paths.



FARMSTEADS
1 DU/Acre



SMALL FARMSTEADS
2 DU/Acre



YARD GARDENS
4 DU/Acre



FRONT GARDENS
15 DU/Acre



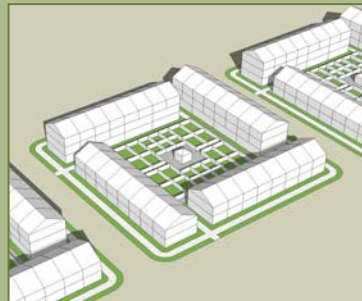
KITCHEN GARDEN
16-24 DU/Acre



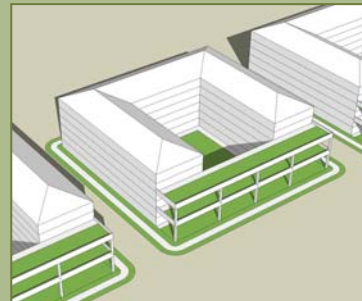
COMMUNITY GARDENS
16 DU/Acre



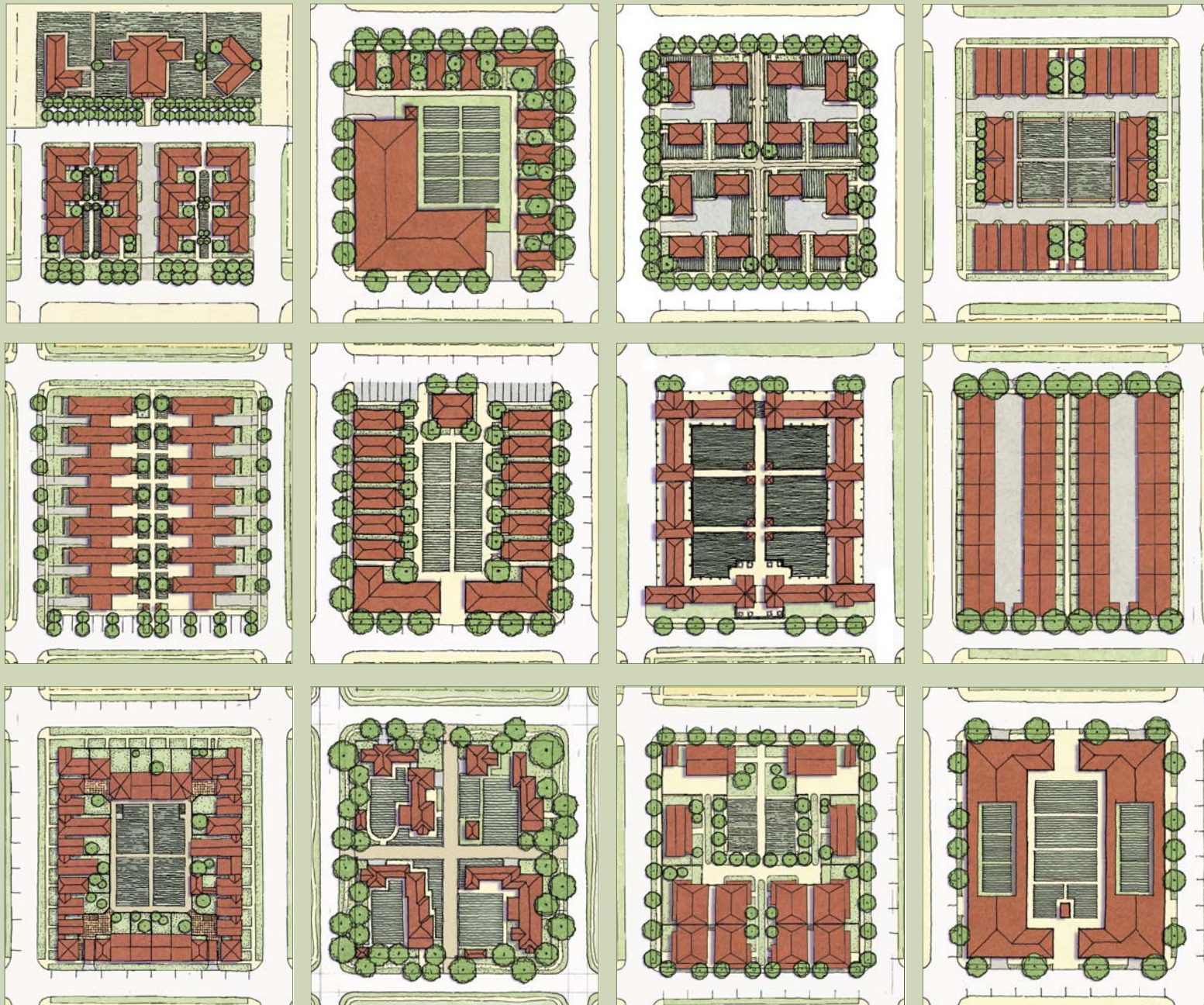
ROOF GARDENS
32 DU/Acre



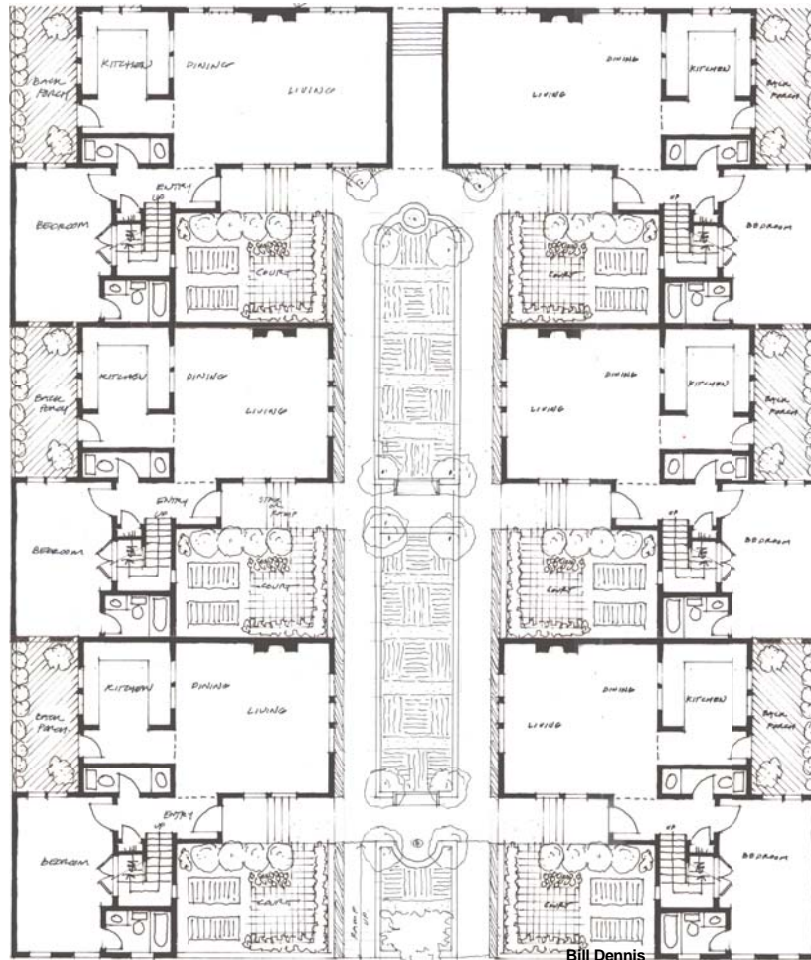
COMMON GARDENS
40 DU/Acre



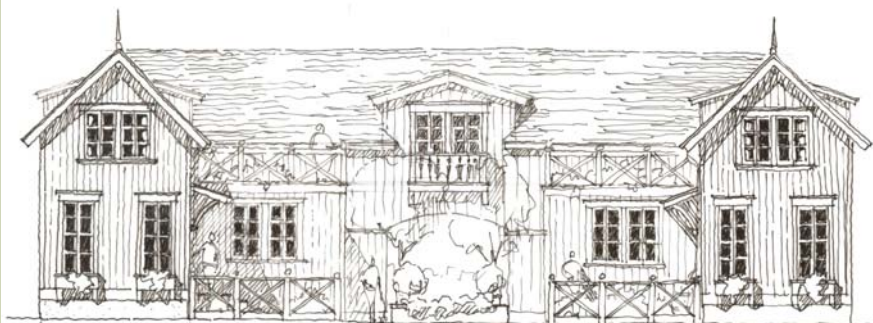
BALCONY GARDENS
126 DU/Acre



Studies For One Acre Blocks

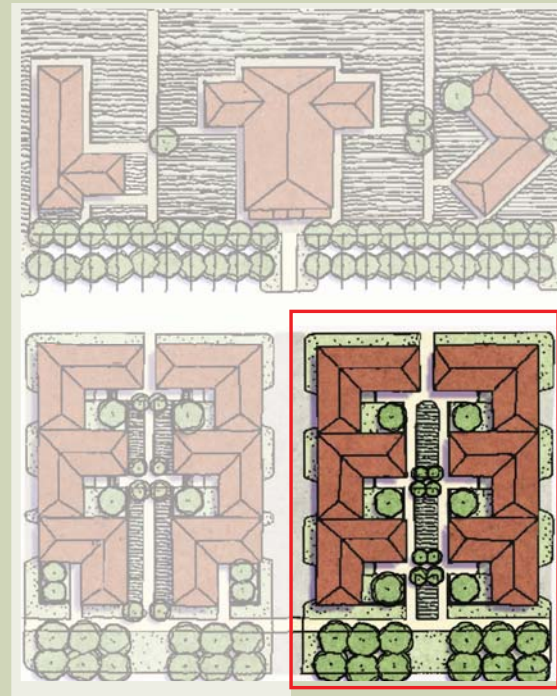


PLAN OF ATTACHED UNITS WITH FRONT GARDENS
20+ DU/ACRE



ELEVATION

Bill Dennis



TYPICAL PLAN

Example of a One Acre Block Detail

A series of one, two, and three acre blocks are designed to address intra-urban agriculture at the appropriate scale across the transect. This is one of many floor plans that depicts a courtyard type of building.

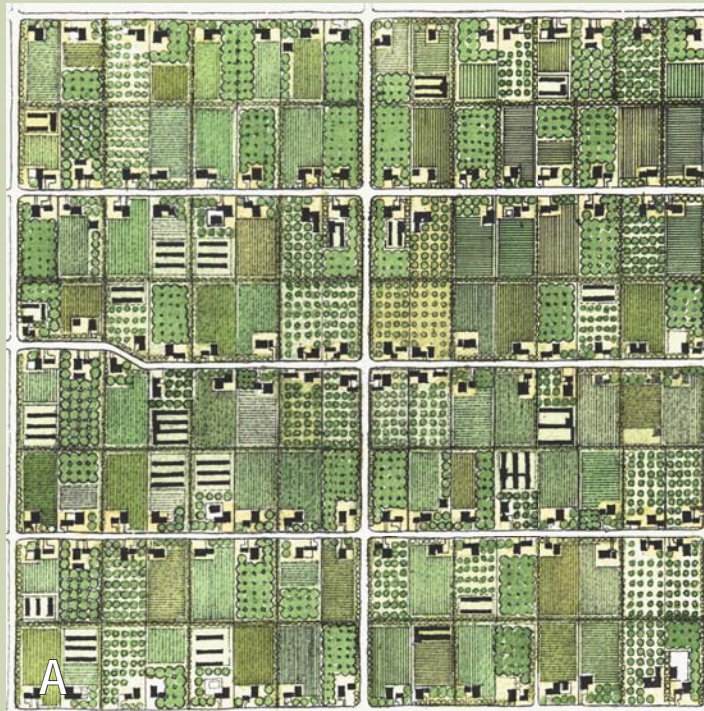
Case Study A: Absence of the Transect

This series of illustrations shows a variety of ways a one square mile (640 acres) might be impacted by zoning regulations. Each option works with the densities as allowed by the typical 1 unit/ 5 acre zoning designation. In this breakdown, up to 128 houses can be built.

The repetition of large-lot single family zoning may severely limit both the availability of land for larger-scale agriculture and does not allow for walkability, meaning that all needs must be met by car.

Clustering and Urbanism

Illustrations B and C also depict 128 houses but explore options which are more productive, more sustainable, and provide better urbanism, meaning children might walk to a friend's house or older people to a market. Food may be grown on a small scale within lots, but larger tracts are open to a master farmer.

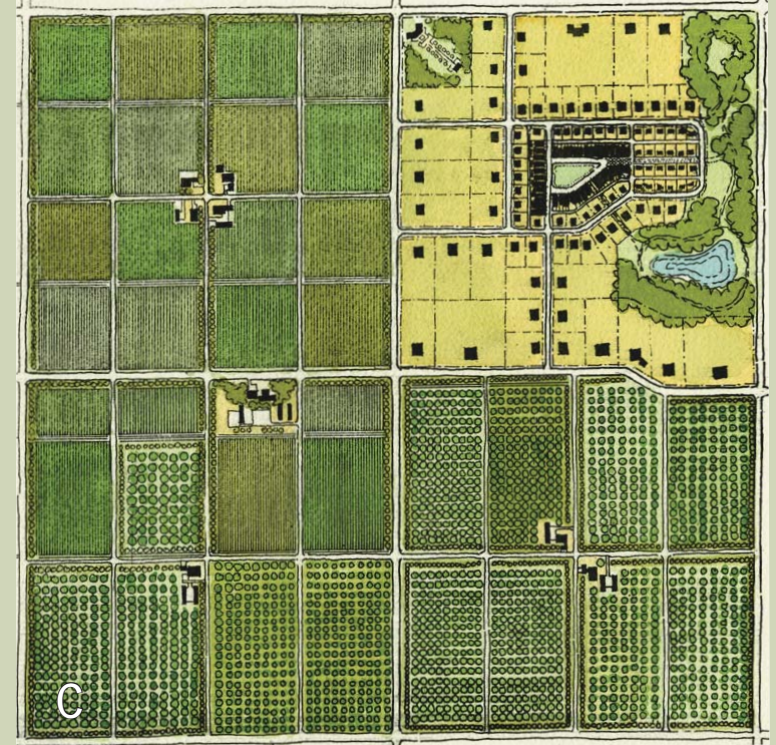


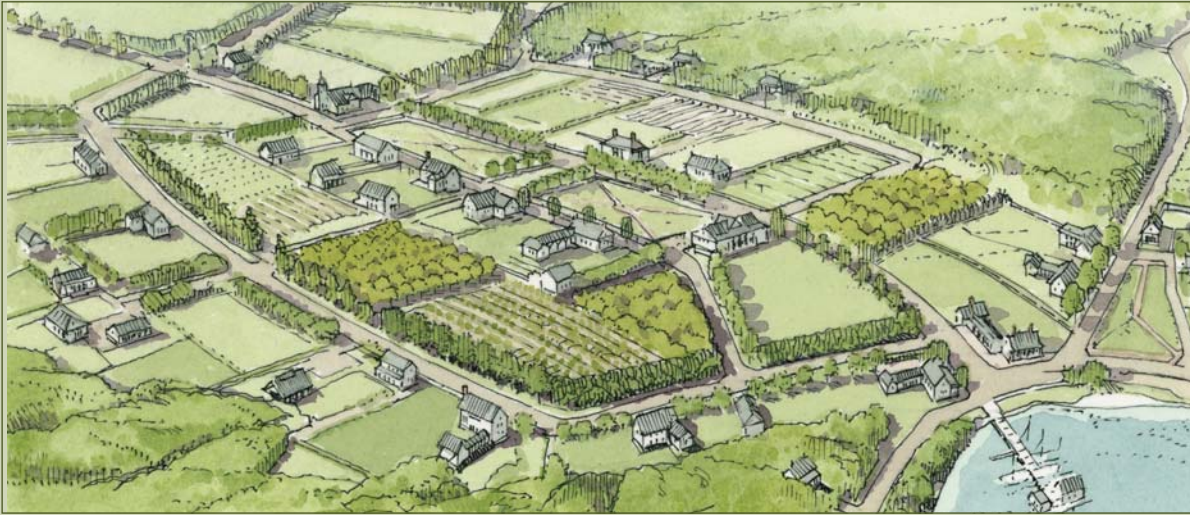
Illustrations A-C: one mile tracts as analyzed for Miami-Dade County Agricultural Study, 1997. B and C show more efficient use of land: clustering. With clustering, up to 128 houses under existing development rights are built, allowing for both walkability and the preservation of large tracts of arable land and open space.

Illustration B depicts a scenario of clustering within one's own property. This allows for the realization of existing development rights while maintaining a variety of tract sizes for agriculture.

In Illustration C, all built land is clustered on a quarter section so that 3/4 of the remaining land is retained for Agricultural Use or preserved as Open Space. Here are accommodated a variety of housing types and densities, with tighter and smaller lots towards the center of the neighborhood, and larger lots (these can be greater than 5 acres) buffering the agricultural land.

A variety of policy tools are available to regulate and even incentivize the retention of large contiguous tracts of land for greatest agricultural flexibility now and in the future.





Aerial View of Sandy Point, North Carolina



Masterplan for Sandy Point, North Carolina



Plan Detail of Sandy Point, North Carolina

Case Study B: Self-Sufficiency and Urbanism

Sandy Point is located near historic Edenton, North Carolina. A 938 acre farmstead, just south of the very fertile Chesapeake Bay, Sandy Point benefits from the rich soils of the region as well as fishing and other sources of aquatic sustenance from Albemarle Sound. The new village is designed to continue its history of agricultural cultivation, producing fresh food on site. This type of development is sustainable when it is largely self-sufficient.

Case Study C: The Garden Village

This Garden Village represents the harmonious intersection of agriculture and urbanism in the form of a free-standing rural settlement. Garden Villages restore the village to its original function: the growing of food.

In this plan, a central green spine houses the principal Civic or Community structures and gathering spaces. Higher density urbanism defines the edge of this green with apartments equipped with window boxes and vertical gardens. Community gardens are designed in close proximity to these higher-density structures that otherwise have minimal or no yards. Extending from this central space are agricultural wedges/ slivers that fan out into the countryside. Private gardens such as kitchen gardens, roof gardens, or window boxes occur in smaller houses.

The next scale of gardening occurs on lots of a quarter to one-half of a hectare with larger houses. One to 5+ hectare homesteads round out the village edges and tractor farming happens beyond.



Masterplan of Hertfordshire Village

“The overall agricultural yield of the post-development land, measured by both bulk and economic value, shall double that of the overall pre-project yield.”

- First Principle of Agricultural Urbanism

Case Study D: The Agricultural Town

Project Information

Location

Tsawwassen, British Columbia, Canada

Submission Category

I. The Region: Metropolis, City, and Town

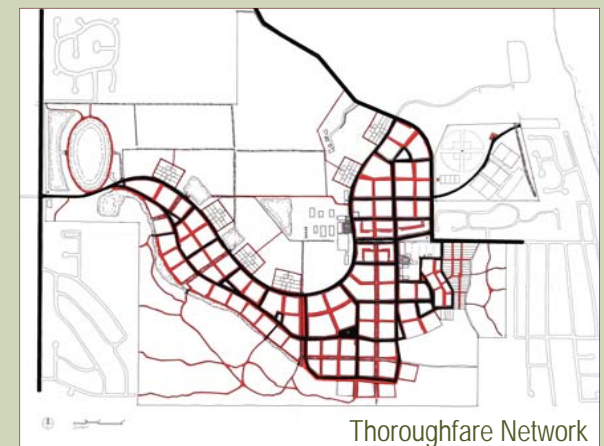
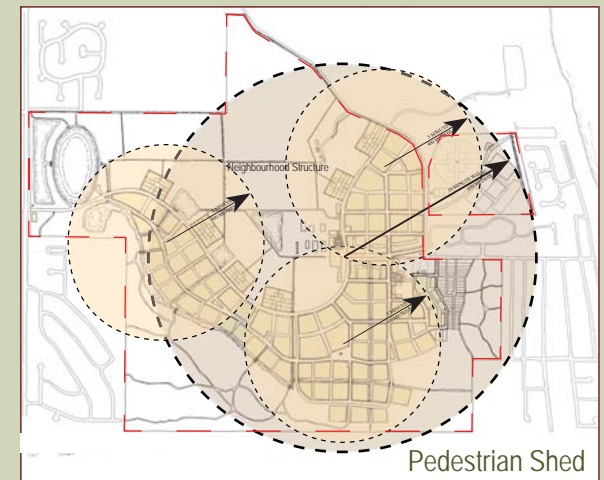
Project Characteristics:

- Public Policy Program: Agriculture, Education
- Town Extension
- Includes affordable housing, social housing, and co-housing
- Includes a University Institute for Sustainable Horticulture

Project Information

- Project is in the process of seeking approval from local authorities.
- Site Area: 536 acres gross. Area Urbanized: 178 acres gross.
- Civic Uses: plazas, squares, agricultural lands, meeting spaces.
- Parks / Open Space: open space and food-producing land account for 2/3 of land in all project options.
- Number of Residential Units: 1900-2000
- Residential Unit Types Range: houses, rowhouses, apartments, live-work units, farmsteads
- Retail, Office, Industrial Square Footage: approx. 190,000 sf.
- Transect Zones Included: T1, T2, T3, T4, T5





Case Study D: The Agricultural Town

The Sweep: Single hard agricultural edge

Built Land 31.7% or 169.9 acres

Green Land: 68.3% or 366.8 acres

Agricultural Land: 41.7 % or 224 acres

Open Space: 26.6% or 142.8 acres



A bicycle path traverses the rural to urban transect.

