Transforming Suburbia : The Networked Pedestrian Village of Bayview Hills.

by

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Abstract

The ubiquitous North American suburban model has created devastating challenges for successful community life in the twenty-first century. This thesis addresses those challenges through the transformation of the existing suburban model into networked pedestrian villages. The urban and architectural design strategies of the networked village reintegrate community programs, workplaces, and residences to create self-sustaining, socially integrated community life for the twenty first century. The specific suburban town of Richmond Hill was chosen to study how greater densification and mixed-use zoning are necessary at the regional scale. Within Richmond Hill, the neighbourhood of Bayview Hills is adapted through changes in building types, setbacks, street definition, and a central public space. The creation of the new village hall and community telecentre are necessary to define the central public space and to generate the successful urban transformation from suburban neighbourhood to networked village.

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INTRODUCTION

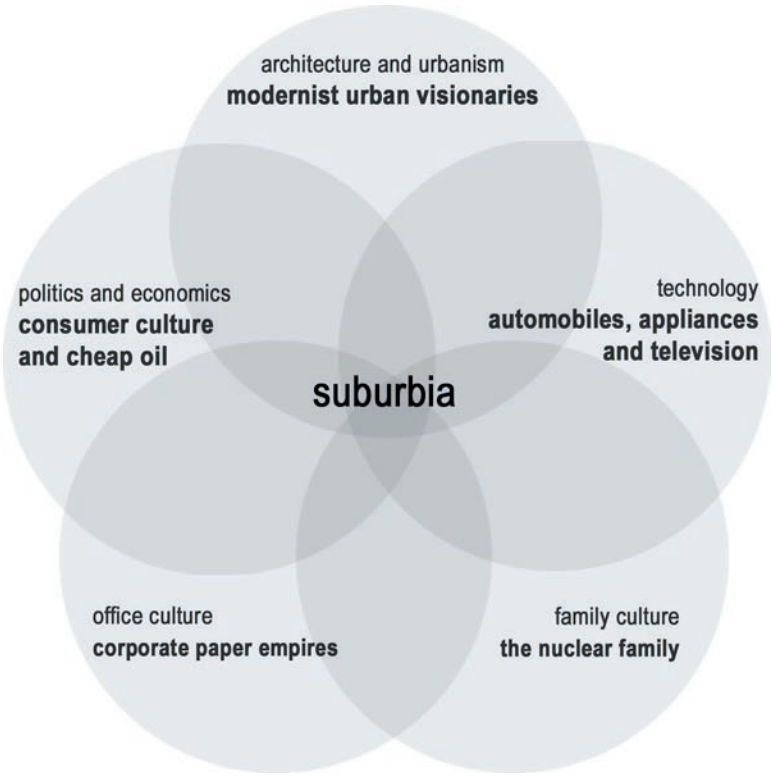


Figure 1.01
Suburbia's Sweet Spot.
The combination of architectural, urban, politico-economic, social and technological conditions created the perfect climate for suburban expansion during the post war era.

The current condition of North American Suburbia has developed from a set of conditions which originated in the 1950's post-war era. The combination of modern architectural and urban movements, technological advancements, economic climate, business culture and family culture created a perfect climate for the suburban model of city expansion. The modernist architectural and urban theories of Ebenezer Howard, Frank Lloyd Wright and Le Corbusier, established visions of post war suburbia that were realized and initiated through government incentives and political support. Most notably, the government subsidizations of new highways and financial loans to war veterans stimulated suburban developments. The technological advancement of vehicle mass production made it possible for individuals and families to travel vast distances with their own freedom. This expanded radius of personal travel made it possible to separate the family home from the noise, pollution, and traffic, of the city's downtown core. The periods of the great depression and world war heightened the social desire for stable and prosperous nuclear families. This heightened nuclear family culture in North American society created a surge in demand for safe and affordable private housing. The suburban model fulfilled this demand through vast developments of low density, single detached houses. The combination of these conditions created the ideal environment for the expansion and development of suburbia over the North American landscape.

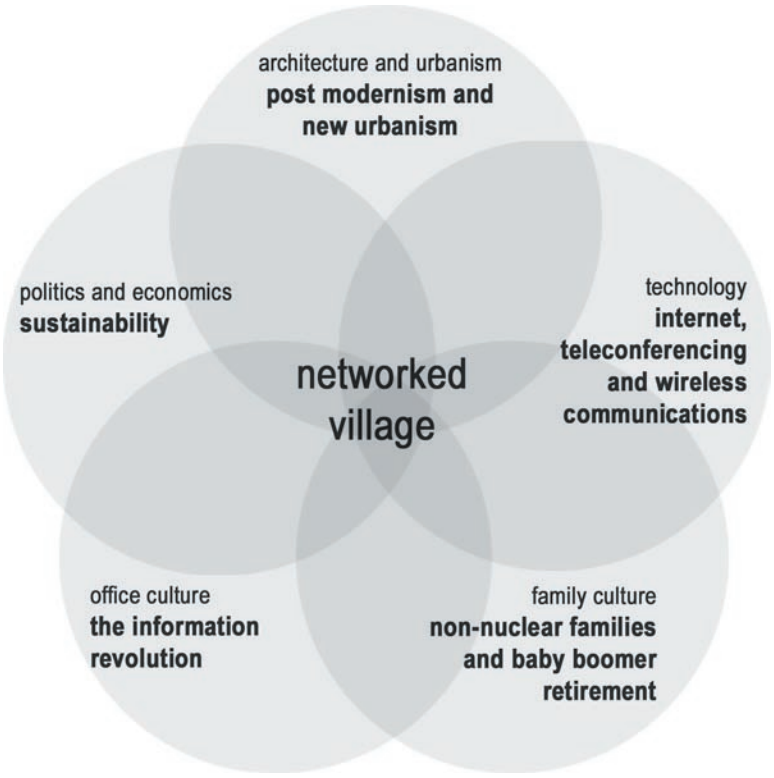


Figure 1.02
The Networked Village Sweet Spot.
The changing architectural, urban, politico-economic, social and technological conditions of today point towards the transformation of suburbs into a new kind of technoburb : a high-tech pedestrian village.

The ubiquitous landscape of suburbia and the change in the conditions from the post-war era has formed a response of adaptation and transformation for the twenty first century—the networked pedestrian village. This transformation to the networked pedestrian village employs post-modernist urban strategies of Jane Jacobs, Leon Krier, and the New Urbanist movement. This transformation also responds to the change in the economic and environmental condition of diminishing non-renewable energy resources, forcing suburbs to decrease energy consumption. Changes in communications technology will aid the integration of the workplace into suburban neighborhoods. The metamorphosis form car dependent suburbia to a pedestrian village will accommodate the North American demographic shift from predominantly traditional nuclear families to dual-income, single-parent and baby boomer senior families. The combination of these changing conditions and responses to the suburban model forms the basis for the networked pedestrian village as a transformation of suburbia.

1 THE THEORY OF THE SUBURBAN SWEET SPOT

1.1 Suburbia

1.11 Architecture and Urbanism: Modernist Urban Visionaries

The early modernist planning movement of the late 1800's was a reaction to the squalid living conditions of the industrial city in the mid 1800's and early 1900's. The factories and workplaces of the industrial city created a mass influx of people from the countryside, forming an explosive growth of industry and workers into a shapeless metropolis. [1] This mass migration created overcrowded living conditions in cities such as Manchester, England where blue-collar workers crammed into city slums in close proximity to the industrial workplaces. Large groups of people often lived in a single room with no natural light or ventilation. The pollution of air from the smog of the factories, and the lack of a proper sewage system created an unhealthy environment where the spread of diseases was rampant. Improving the unsanitary and overcrowded living conditions of the industrial city was the principal goal of early modernist urban theories.

Decongestion and functional zoning formed the basis of many twentieth century modernist urban theories. Decongestion by de-densification (reducing overall density by spreading the people out over a larger area) was the modernist solution to congestion. Functional zoning (separating industrial, commercial and residential into large districts, also known as zoning) was the modernist solution to pollution. These strategies were common elements portrayed by the two modernist urban projects which were most influential in North American suburban development - Ebenezer Howard's Garden City 1902 and

Figure 1.03
Housing in the Industrial City.

Frank Lloyd Wright's Broadacre City 1935 [2] . The urban strategies in these proposals were widely adopted in the postwar era and eventually became the definitive architectural and urban planning language of the post war North American suburb.

The first of the twentieth-century modernist visionaries was

Figure 1.04
The Social City.
Six Garden cities and the central city, connected by canals and railways.

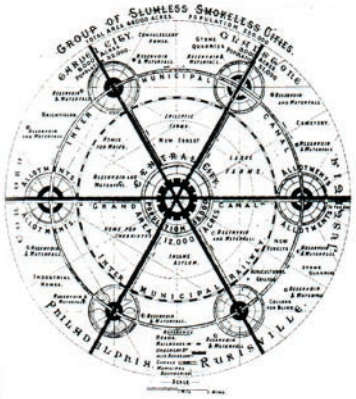


Figure 1.05
The Garden City.
Howard's Garden City is a diagram, but the neatness, geometric order, logic and is visually and clearly expressed in his geometric city design.

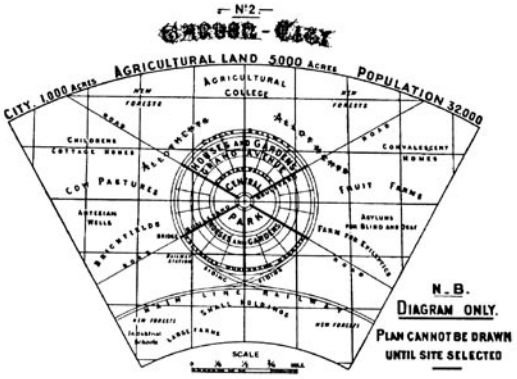


Figure 1.06
Garden City Plan Detail.
The beginnings of functional zoning. Zones for city programs - residential, commercial, civic, cultural, recreational and industrial - are separated onto layers of concentric rings.

WARD AND CENTRE OF GARDEN CITY

Ebenezer Howard. His publication of Garden City in 1902, marks the beginning of the modernist urban planning movement and its strategies of decongestion and functional zoning. Howard's proposal promotes the decongestion of the industrial city through the building of railway infrastructure, facilitating the migration of populations to low density Garden Cities. His intent was not to decongest the industrial city but to replace it completely with a network of Garden Cities. Howard expected the industrial city to become slowly abandoned marking the first use of transportation technology to decongest the industrial city.[3]

Howard's Garden City was also the first to portray a city scale segregation of urban functions by assigning different city programs on layers of concentric rings. In his diagram, civic-cultural programs occupy the city centre, residential areas dotted with churches and schools surround the center forming the bulk of city rings and industry and railway lines are pushed out to the city periphery. Geometry is used to segregate living areas away from the pollution of industry while simultaneously creating a city edge and centre.[4] Howard's Garden City is a diagram, but the neatness, geometric order, and logic is visually and clearly expressed in his city design. Segregation of urban functions such as residential, industrial, park, and civic zones is more than a functional requirement, but a deeply embedded desire for order which characterizes the modern movement.

Frank Lloyd Wright published Broadacre City in 1935. Like

Howard, Wright implements strategies of decongestion and functional zoning. However, in adopting hyper-low density and departing from strict symmetrical geometry, Wright's Broadacre city becomes a city without a centre, a far more accurate depiction of the North American post war suburb.

Wright's vision of democracy was individualistic and private; he believed each family to be the centre of their own city. By protecting each family in a home surrounded by an acre of greenery, Wright attempted to give each family the freedom to create their own city by choosing with whom to associate.[5] Through low density supported by an extensible vehicular infrastructure, Wright created a new city centered on private family life, which today still remains an essential selling point of suburbia.

Wright's Broadacre City uses a grid street system to segregate urban functions. However, Broadacre City's dissent from symmetry enables a patchwork growth while the strict symmetry of Howard's Garden city appears unfinished until built to full completion. Without a centre, shops and stores in Broadacre City develop at intersections of heavy traffic, which can be seen as a foreshadowing of the suburban shopping mall.[6]

Functional zoning, in Wright's vision, comes not from the desire for order and control, but from the desire to protect the family's privacy and their freedom to create their own city by choice of association. Essentially, Wright's solution to the problem of congestion is a city centered on the decentralization of public life and the privacy of the family home.

In Bourgeois Utopias, Robert Fishman identifies two models of

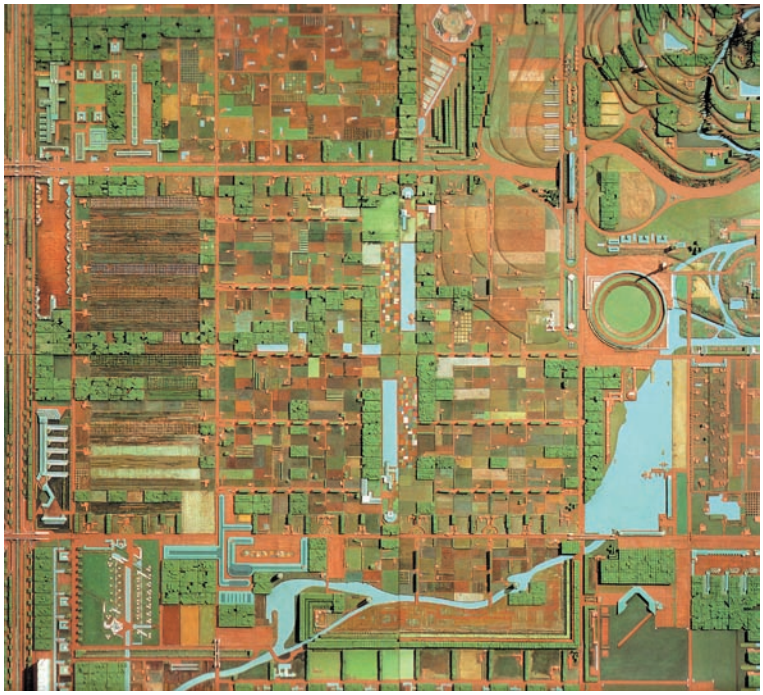


Figure 1.07
Broadacre City Model Plan View.

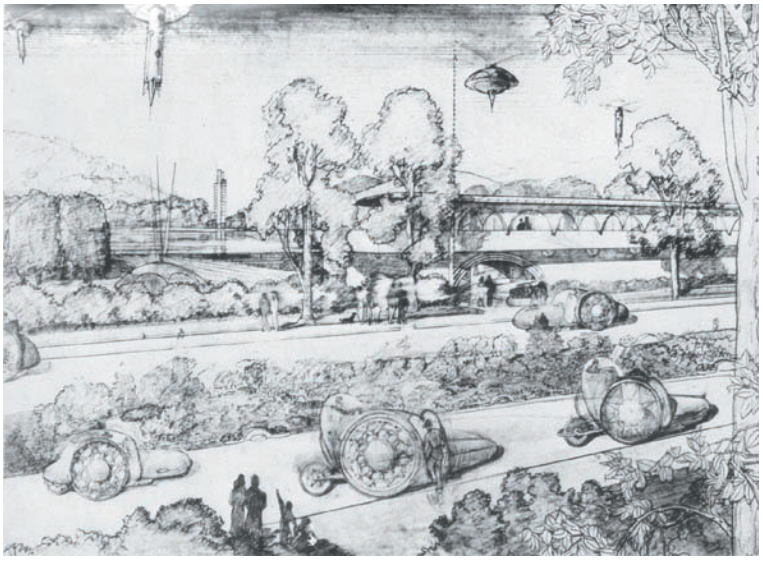


Figure 1.08
Broadacre City Perspective.

1.12 Politics and Economics : Consumer Culture and Cheap Oil

expansion of industrial cities - the Manchester model and the Paris model. The difference between these two basic models lies in the location of its middle class housing. The traditional Paris urban model, called the modern continental-style city, houses the middle class in designated districts in the city core, pushing the lower classes and industry to the periphery. The unconventional Manchester model, called the Anglo-American Industrial City, houses the middle classes in new suburbs on the city periphery sandwiching the lower classes and industry between the suburbs and the city centre.[7]

By the early 1900's, North American industrial cities were already expanding on the Manchester model. By the 1920's, the suburban population was growing at twice the rate of the metropolitan population and at three times the rate by the 1930's. Governments resigned themselves to this increasing rate of suburban development which came to a halt at the beginning of World War Two.[8]

The end of the World War II, the American government, faced with insufficient housing in the industrial city for the returning soldiers, supported and encouraged suburban expansion though a variety of initiatives. Having suffered the least damages of all the world powers from the war, the United States was able to increase its share of world manufacturing, thereby boosting its economy and increasing consumer buying power enabling Americans to buy suburban homes.[9] The G.I. Bill of Rights, enacted in 1944 which granted loans to war veterans for housing, specifically encouraged returned soldiers to purchase suburban homes. The Interstate Highway Act of 1956 created the

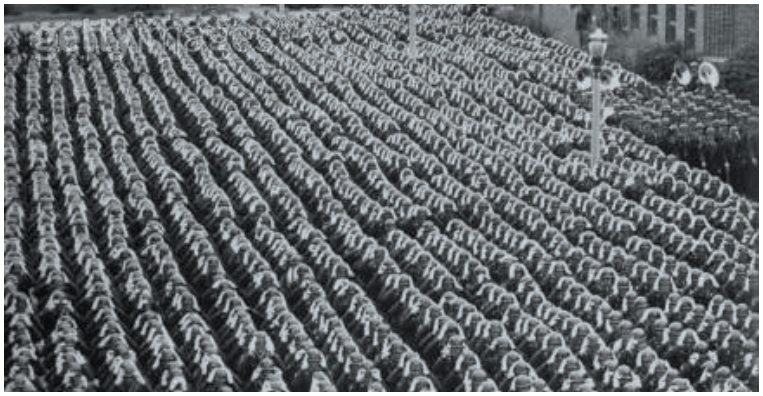


Figure 1.09
Texas A&M ROTC Cadet Corps standing in formation.
In North America, new thousands of new homes were built to accommodate returned soldiers after the Second World War.

Figure 1.10
Men Working in Clothing Factory.
America was able to increase its world share of manufacturing from thirty-tow percent to forty-five percent in the postwar era.

Figure 1.11
Aerial View of American Postwar Suburb.
Populations once crammed into crowded cities spread across outlying farmlands now divided into tiny lots increasing the overall value of land.

Figure 1.12
Workers building a highway.
The laying of new roads, water pipes, sewage pipes, telephone lines, electrical wires employed thousands of workers.

Figure 1.13
Suburban House Under Construction.
The building of bigger houses also employed a larger labor force and consumed more building materials.

infrastructure for suburban expansion, required each state to build a uniformly designed interstate highway to support a ten year projection of traffic volumes. Furthermore, suburban development drastically increased America's overall consumption of oil, fueling the growth of America's powerful oil companies.

Government in North America supported the Manchester model of suburban expansion, opposed to the Paris model, both before and after the war for its greater economic and social benefit. Suburban expansion increased overall land value of the country; populations once crammed into crowded cities spread across outlying farmlands now divided into tiny lots, increasing the overall value of land. Suburban development also created jobs. The laying of new roads, water pipes, sewage pipes, telephone lines, and electrical wires employed thousands of workers. The building of bigger houses also employed a larger labor force and consumed more building materials. Upon completion, suburban homes increased consumption of household goods such as furniture, dishware, televisions and electrical appliances. Furthermore, the pedestrian unfriendly suburbs and functional zoning ensured the ongoing consumption of cars and gasoline. By the mid-1950's, America's economy was booming, as consumption levels had reached unprecedented levels.

Henry Ford, founder of the Ford motor company, was an avid supporter

of suburban expansion. Ford knew the car was the very lifeline of suburbia, that its existence hinged upon the automobile technology to transport residents from their homes to downtown offices and commercial areas. He correctly predicted that suburban development would ensure his company ongoing cars sales for decades.

However, it was not the invention of cars or its mass production which induced suburban expansion. Ford had been mass producing cars since 1907, yet most middle class families up until the end of the Second World War were unable to afford cars and relied upon public transit as their primary means of transportation. Suburban mass expansion had to wait until the government subsidization of highways system, loans for education and home purchases were put into place during the post war era, enabled the majority of the middle class to purchase cars. With this government support of suburban expansion, the following twenty years saw a population increase of 35 percent and an automobile registration

Figure 1.14
A Suburban Family and Their Car.
Until the end of the Second World War, families were unable to afford cars and relied upon public transit as their primary means of transportation.

Figure 1.15
Ford Advertisement, 1949.
Ford once said, 'We shall solve the city problem by leaving the city.' This advertisement which appeared in Good Housekeeping and Ladies' Home Journal portrays the car in a park-like suburban setting.

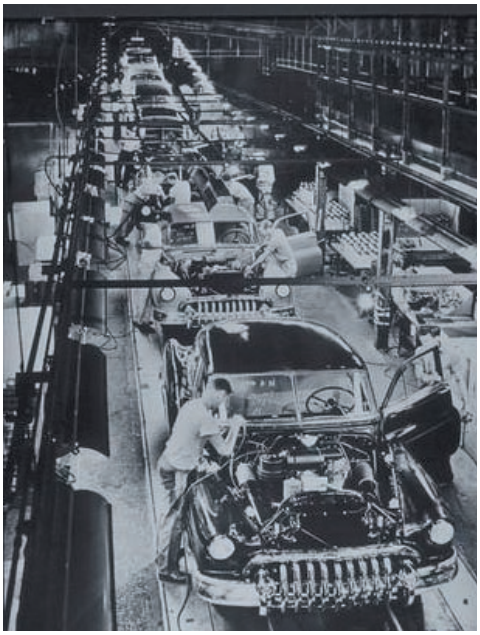


Figure 1.16
A Car Manufacturing Plant.
Henry Ford correctly predicted that suburban development would ensure his company ongoing cars sales for decades.

Figure 1.17 (left)
A Suburban Family on Their Driveway.
The front elevation of the suburban home is dominated by the car garage and the driveway.

Figure 1.18 (right)
A Woman Organizing A Kitchen.
The modern kitchen had been redefined around its technological equipment.

Figure 1.19 (left)
Advertisement Electrolux.
As appliances individualized the home, suburban housewives became independent of services once provided by the city.

Figure 1.20 (right)
Advertisement Century Gas Cooker. Technological devices like stoves, became the iconographic pieces representing the suburban family.

increase of 180 percent. [10]

Modernist visionaries understood the potential of technology to change society. Howard's rail infrastructure and Wright's vehicular roads and highways were the primary means used to decongest the industrial city and segregate urban functions. While Wright drew inspiration for his designs from nature, his European contemporary, Swiss Architect Le Corbusier, drew his inspiration from machines. In his book Towards a New Architecture, 1923, Le Corbusier states, 'A house is a machine for living in.'[11] Through examples of airplanes, boats and automobiles, Le Corbusier explains how architectural ornamentation should be stripped to reveal a building's mechanical beauty. This Modernist idea of the bond between architecture and technology transcended into the postwar suburban home, as technological devices - cars, stoves, refrigerators, dishwashers and air conditioners - became the iconographic pieces representing the suburban family. Furthermore, spaces within the home became reconfigured and defined around these technological pieces; the front elevation became dominated by the car garage; the kitchen configured around the stove, refrigerator and dishwasher; and the living room hearth replaced by the television. Most electric household appliances were readily available in the early 1900's, but because the industrial city was so congested, apartments were too small to house large appliances. Large suburban houses which accommodated the many electrical appliances inside, linked the idea of suburbia to a technologically modern lifestyle. As appliances individualized the home, suburban housewives became independent of services such as laundromats and bakeries, previously provided within the industrial city. This privatization of city functions further isolated the family within

the suburban home, creating an increasingly private culture depicted by Wright's Broadacre city.

The most significant piece of technology within the suburban home was the television. The thirteen stations which became available to the North American public in 1947 quickly became the most powerful advertising tool in history. Thousands of suburban homes and all of their accompanying household products were sold not only through television advertisements but the through television shows themselves. Situation comedies, such as Leave it to Beaver, portrayed typical suburban family life surrounded by an array of toys, appliances and products. Furthermore, television increased the isolation of suburban life, as lonely housewives often filled the lack of real urban social interaction by watching soap operas.

As suburbia's growth was dependant upon technological devices - cars, electrical appliances and television - its identity has become intertwined with the process and ideals of technological progress. This acceptance of technological devices has continued into the twenty-first century.

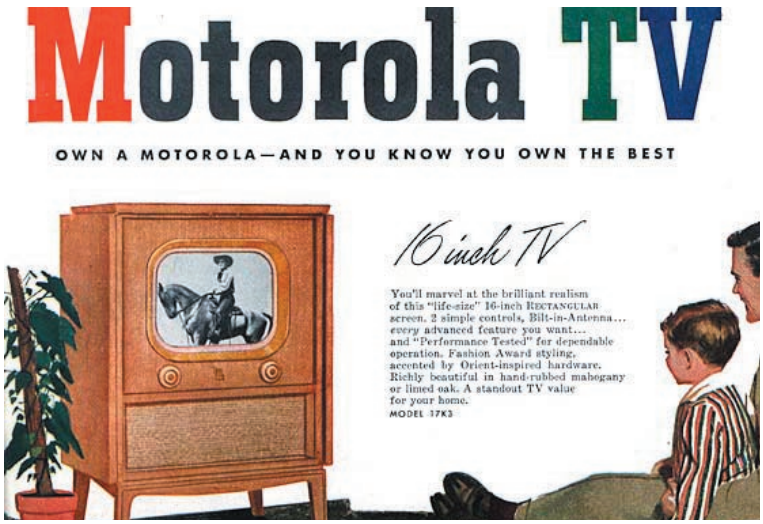


Figure 1.21
Advertising for Motorola TV.
The thirteen stations which became available to the North American public in 1947 quickly became the most powerful advertising tool in history.

Figure 1.22
Postwar sitcom Leave It To Beaver.
Suburban homes and all of their accompanying household products were sold not only through television advertisements but through television shows themselves.

1.14 Office Culture : Paper Corporate Empires

During the great depression of the 1930's, the progress of industrialization from manual labor to machine based labor replaced thousands of factory workers with new machines, leaving them without jobs. During the Second World War, the economy shifted its production to the manufacturing and assembly of military goods. The large numbers of workers who were previously unemployed, became drafted as soldiers while increasing numbers of women were hired in the factories to replace the men who left to fight the war. After the War in 1944, the American government granted loans to war veterans for post-secondary education as a means of integrating the veterans into the new industrialized economy. Unlike the previous assembly line economy, this post war economy relied on enormous amounts of administration and office services to maintain its technological advantages and efficiencies. As a result, a new middle class of white collar office workers was created. Within the following decades, large numbers of corporations built office towers in the historical centers of industrial cities to accommodate the large number of new office workers.

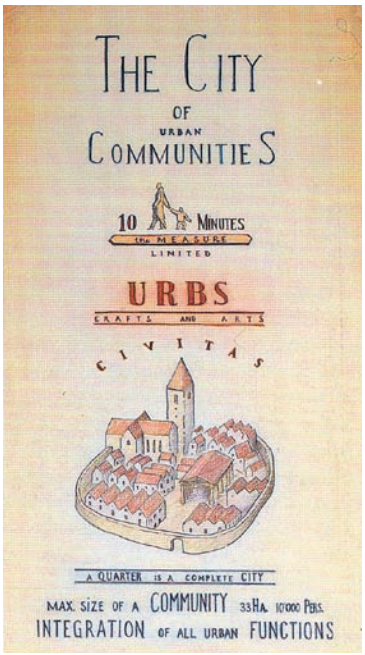
The workplace of the new paper economy was symbolized by office towers such as Mies van der Rohe's Seagram building built in 1954 - a minimalist tower of glass and steel supported on a grid of black columns with an open rectilinear plan and central service core of elevators, stairs and electrical-mechanical infrastructure[12]. As all corporate accounts were recorded entirely on paper, this office tower type became a practical concentrated container of information - hundreds of filing cabinets could be stored under one roof yet each file

Figure 1.23 (left)
Canning Factory.
Figure 1.24 (right)
Open Filing System in Prudential Headquarters.
The shift from manual labor to machine based labor was transforming large parts of the assembly-line economy into a paper based economy.

Figure 1.25
Seagram Building, New York, by Mies van der Rohe and Philip Johnson.
As all corporate accounts were recorded entirely on paper, this office tower type became a practical concentrated container of information.

Figure 1.26 (left)
Urbs, by Leon Krier, from The Reconstruction of the European City, 1983.

Figure 1.27 (right)
Suburbs, by Leon Krier, from The Reconstruction of the European City, 1983.
Krier's diagrams illustrate suburbia's contrasting megazones for working and living linked by massive automobile infrastructure.



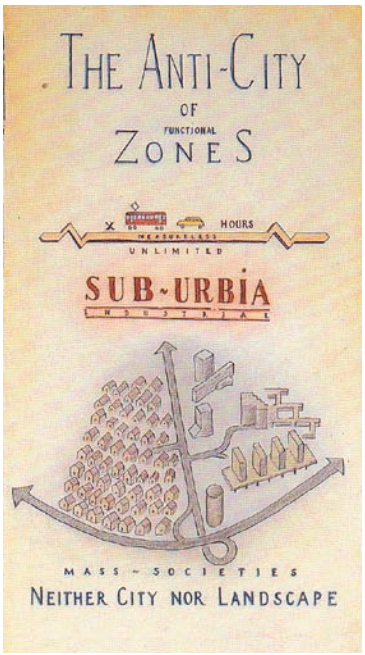


Figure 1.28 (right)
Skyline of Los Angeles.
Middle class American life is polarized by two extremities - the family life of isolated suburbia and the fast paced congestion of the high rise financial district.

could be easily accessed via the elevator. Furthermore, as photocopiers and printers were still unavailable, much of the repetitive office work - typing and organizing paper documents - could be easily surveyed by organizing workers desks in rows between columns. Aesthetically, the clean minimalist tower articulated business ideals of machine-like efficiency and precision, while the tower's vertical form expressed the hierarchical nature of the corporation. In addition, the mass production of steel and glass components made the construction of the office tower efficient and economical. The office tower was thus perfectly suited to the corporations of the paper economy.

Office towers were concentrated in one area of city - the historical centre usually designated in land use zoning as the financial district. As each company office tower housed thousands of paper files, concentrating towers close to one another allowed business transactions to take place with much greater efficiency. In this way, the paper based economy fueled the segregation of urban functions by transforming historical city centers into single use business districts. As office towers took over previously mixed use areas of the industrial city, residential areas were pushed out to the city periphery in the form of low density residential suburbs which formed a counterbalance to the fast paced hyper-density of the financial district. Middle class life became polarized by two extremities - the family life of isolated suburbia and the fast paced congestion of the high rise financial district. The automobile commute served as the link between these two worlds. As territories were established, the industrial city of mixed zoning became replaced with segregated modernist zoning.

1.15 Family Culture : Re-emergence of the Nuclear Family

The mid-eighteenth century saw the emergence of a new type of family described by Lawrence Stone as the 'closed domesticated nuclear family[13]. The difference between the typical mid-eighteenth century family and this new nuclear family is described by Stone as an unusually strong emotional attachment between mother, father and children. Prior to the emergence of the nuclear family, home and work place were both contained within the same location, and often in the same building. With limited means of transportation, people worked as close as possible to their place of residence. Bakeries fronted the baker's house, lawyers worked in their home office, farmers' homes sat on the corners of their fields.

Robert Fishman believes the emotional ties between members of the eighteenth century nuclear family tore the family home away from its traditional counterpart – the workplace. The eighteenth century nuclear families, by moving their homes to the city periphery traditionally inhabited by the lower class, according to Fishman, thus created the first recorded suburbia. The suburban residence, isolated in landscape and nature, was intended to shelter the introverted family from the stress of the outside world, and create in environment which would allow family members to develop stronger emotional ties to one another. [14]

The years of the Second World War, created a pent up desire for a return to a peaceful family life. When the war finally ended in 1944, a sudden increase in the number births known as the baby-boom, created a reemergence of nuclear family culture in North American society. This nuclear family culture, like the eighteenth century nuclear

Figure 1.29
End of World War Two, Members of the 345th Disembarking.
During the years of the Second World War, North America yearned for the return to a peaceful family life.

Figure 1.30
The baby boom.
When the war finally ended in 1944 a sudden increase in the number births known as the baby-boom, exasperated the already crowded conditions of the industrial city.

Figure 1.31
Aerial Photo of American Suburb.
During the twenty years after the Second World War In America, 85 million single detached homes suburban homes were built while only ten million new homes were built cities.

Figure 1.32
Suburban Family at the Dinner Table.
The suburban nuclear family soon became the emblem of the North American middle class

family was characterized by a strong emotional attachment between family members, and wanted to separate their homes from the workplace and the city. The North American suburbs depicted by Frank Lloyd Wright's vision Broadacre City, aimed at protecting the privacy of the family, was thus perfected suitable for the postwar nuclear family. Simplified suburban tracts, like Levittown on Long Island, was extremely marketable to the unusually large number of nuclear families and generated huge profits for landowners, developers, builders, suppliers and manufacturers. As a result, 85 million single detached suburban homes were built during the twenty years after the war while only ten million new homes were built in America’s cities. The suburban nuclear

1.2 The Networked Village

1.21 Architecture and Urbanism : Post-Modernism and New Urbanism

family soon became the emblem of the North American middle class[15].

By the late 1970's, twenty years after the post war building boom began, Modernist urban visions had become a suburban reality. While residential suburbs sprawled outwards endlessly engulfing farmlands on city peripheries, downtowns were overtaken by shining towers of the financial district. As imagined by Frank Lloyd Wright, North American culture had become centered on private life. The middle class spent their leisure time living out domestic dreams in their large suburban family houses as the cities around them were transformed into mono-functional megazones - shopping malls, financial districts, office parks and civic centers. Public transit systems became increasingly limited and infrequent as it stretched over the sprawling suburbia. As a result, suburbanites drove their cars everywhere. The streets of suburbia, stripped of the shops, public squares, restaurants and theatres typical of

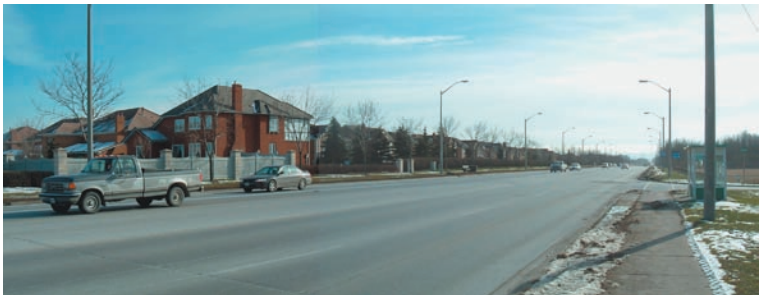


Figure 1.33
Bayview Avenue in Richmond Hill, author photo.
By creating a bubble of private space around its passengers, the car severs human interaction from the street.

Figure 1.34
Richmond Hill suburban house, author photo.
As imagined by Frank Lloyd Wright, North American culture had become centered on private life.

city centers, became car-dominated transportation corridors that were hostile to the pedestrian. The car, protecting its passengers in a bubble of privacy, severed human interaction from the street transforming the street into an essentially private realm.

Post-modernism emerged in the late 1970's as a reactionary movement to these conditions of the North American city created by post-war Modernist city planning. As the principal aim of Modern Planning was to improve the overcrowded conditions of the industrial city, the aim of the Post-Modern movement was to improve the Modernist city by re-creating public spaces destroyed by functionalist zoning and automotive infrastructure. The strategies adopted by the Post Modernists were therefore precisely the opposite of Modernist strategies. Wile Modernists advocated decongestion, car infrastructure and functional zoning, Post Modernism advocated mix-use zoning, pedestrian infrastructure and densification. These strategies were the common elements advocated by three significant contributors to the late century Post-Modern development of the Modernist suburb - Jane Jacobs, Leon Krier and the Congress of New Urbanism founded by

architects and planners Peter Calthorpe, Stefanos Polyzoides, Elizabeth Moule, Daniel Solomon, Andres Duany and Elizabeth Plater-Zyberk.

Jane Jacobs published The Death and Life of Great American cities in 1961. At a time when Modernist concrete towers and suburban housing developments were in the most confident stage of growth, Jacobs' book was the first to criticize the deterioration of public life caused by Modernist functional zoning.

Jacobs focuses on two main strategies aimed at re-establishing public life in the North American city. The first is the sidewalk as a city public space. Jacobs argues that a frequently used city sidewalk not only acts as a public corridor, but animates the community with the circulation of pedestrians, instigates social interaction with neighbors, keeps eyes on the street, makes a play space for children and ultimately creates safe neighborhoods. Architecture which creates inhabitable public pedestrian sidewalks builds up to the sidewalk and address it

Figure 1.35
Family walking down a street.
Jane Jacobs argues that frequently sidewalks not only act as a public corridors, but animate the communities with the circulation of pedestrians, instigates social interaction with neighbours, keeps eyes on the street and makes a play spaces for children.

with entrances, windows and porches.[16]

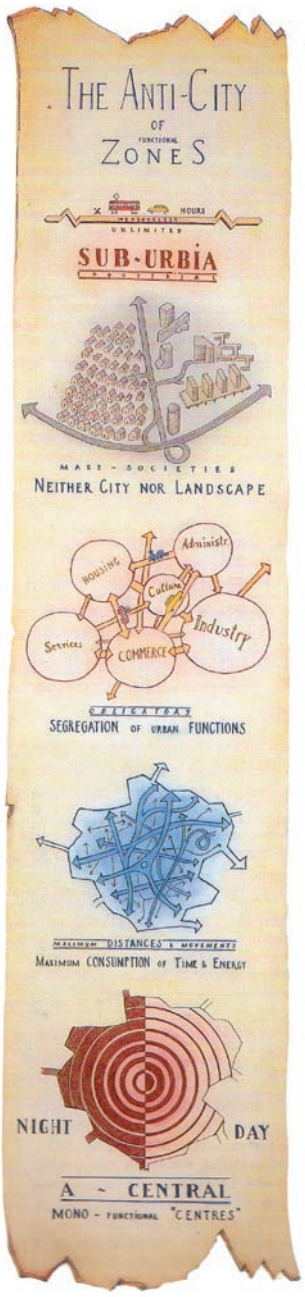
Jacob's second strategy focuses on the creation of diversity as a means of re-establishing public life in the city. Jacobs argues that in order for sidewalks to be frequently used, the city must have a variety of places - shops, workplaces, restaurants, houses, apartments, hotels, theatres, community centers, parks, schools and sports facilities - within walking distance of one another. The main urban strategies she advocates for creating city diversity are the implementation of mixed-use zoning, the creation of smaller blocks to allow convenient pedestrian circulation, densification and the adaptation of old buildings for new uses.[17]

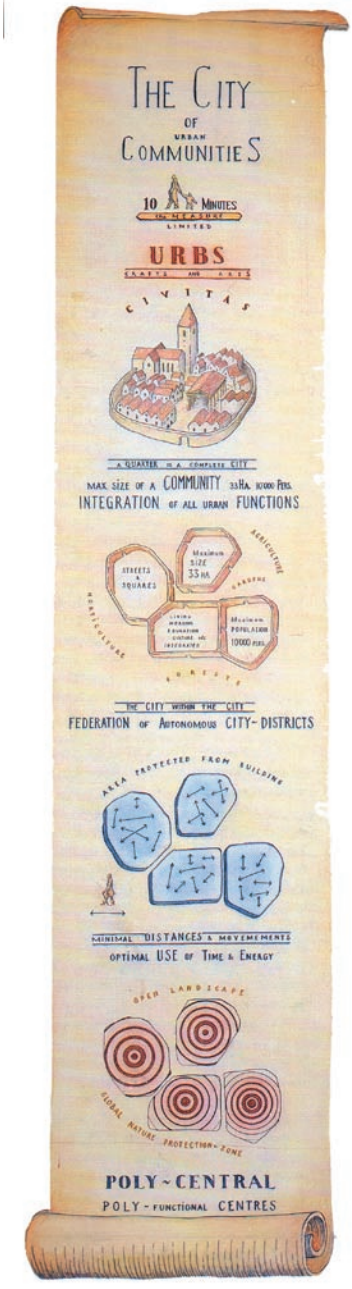
Despite her adoption by the Post-Modernist movement, Jacobs is not considered a Post-Modernist. However. Still, her criticism of the modernist city, strategies of re-establishing deteriorating public space and strong avocation of pedestrian city life formed the initial basis for the

Figure 1.36
Baldwin Street in Toronto, author photo.
Jacobs advocates mixed-use zoning as a means of creating diversity of building types which generate pedestrian friendly neighbourhoods.

Figure 1.37 (left)
The Anti-City of Functional Zones, by Leon Krier, from The Reconstruction of the European City, 1983.
Krier illustrates the Modernist city's of segregated urban functions ensures the maximum wastage of time and energy.

Figure 1.38 (right)
The City of Urban Communities, by Leon Krier, from The Reconstruction of the European City, 1983.
Krier illustrates how the traditional city with mixed urban programs conserves time and energy.





fundamental principals of the Post-Modern movement in urbanism.

Leon Krier published his essay The Reconstruction of the European City, 1984, nearly twenty years after Jane Jacobs published of The Death and Life of Great American Cities. Krier's aims - the creation of public space in the Modernist city through mixed use zoning, increasing density and creating pedestrian friendly streets - are similar to Jacobs. Yet Krier's essay differs from Jacobs in his use of the European city as a model for the urban design of future cities. As Modernism sought to wipe out history in order to start on a clean slate, Post-Modernism sought to reconnect architecture and urbanism back to its historical roots and to completely reject any of the initiatives of Modernism. Krier's proposal, the Poly-Central City, which illustrates the transformation of the Modernist city into clusters of small European quarters, is clearly Post-Modernist in its attempt to recreate a traditional historically evolved urban pattern[18]. Krier's work, though lacking political and economic validation due to his lack of built projects, remains an important critique of the Modernist city and emblematic to the Post-

Figure 1.39 and 1.40
The So Called 'City' and the Nameable City, by Leon Krier, from The Architect as Master Planner, 1987.

Figure 1.41 and 1.42
Mistaken and Correct Zoning of Large Employment, by Leon Krier, from Urban Components, 1978.

Modernism's romantic view of the historical European city.

The Congress of New Urbanism was founded in 1993 by architects Peter Calthorpe, Stefanos Polyzoides, Elizabeth Moule, Daniel Solomon, Andres Duany and Elizabeth Plater-Zyberk. The aim of this New Urban movement was to bring the strategies proposed by Jane Jacobs and Post-Modernism into realization by adding to them a dimension of political and economic viability. Unlike Krier and Jacobs whose works remain theoretical, New Urbanist works have been widely undertaken and many have been built. The premise of their designs is the creation of public spaces, the building of pedestrian friendly urban environments and densification of the North American city and suburb. Facing political and economic realities, New Urbanists have adopted a more compromising attitude than Jacobs and Krier. Their manifesto, The Charter of New Urbanism, explicitly states their intention is not to eliminate the car, but to create environments in which cars, bikes and pedestrians may co-exist. Design strategies proposed by the charter at multiple scales of the region, neighborhood and the building, are aimed to 'reinforce human scale at the same time that they incorporate contemporary realities'. [19]

As a co-founder of the Congress of New Urbanism, Peter Calthorpe's proposal 'the pedestrian pocket', illustrates the creation of pedestrian scale neighborhood co-existing with automotive infrastructure. The pedestrian pocket has a five-minute walking radius from a public transportation terminal which contains a mixture of residential, cultural, commercial and civic buildings. This community is supported by an environmentally sensitive light rail system linking it to other similar pedestrian pockets. [20]

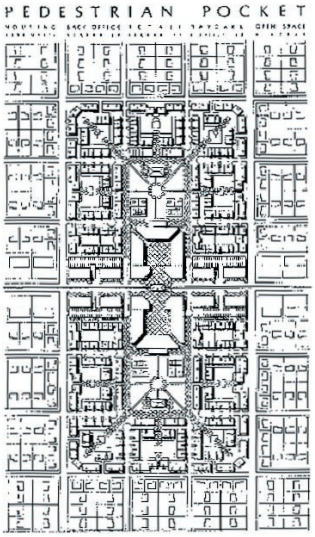


Figure 1.43
Pedestrian Pocket, by Peter Calthorpe, August 1989.
The Pedestrian Pocket exemplifies the coexistence between the city's automotive infrastructure and pedestrian scale neighbourhood.

Figure 1.44 and 1.45
Niagara on the Lake, masterplan and perspective, design by Duany Plater-Zyberk, 1996.
New Urbanism successfully creates public spaces and pedestrian neighbourhods but with neo-traditional aesthetic.

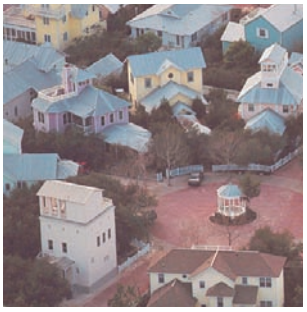


Figure 1.46 and 1.47
Seaside Resort Village, Florida, aerial photo and photo of square, design by Duany Plater-Zyberk, 1978.

New Urbanist co-founders Andres Duany and Elizabeth Plater-Zyberg, have designed urban plans for over 250 communities in North America and are at the very heart of the New Urbanist movement. Their works, which range from greenfield suburban developments to urban infill projects, exemplify the translation of New Urbanist concepts into built works. Duany Plater-Zyberg's recent theoretical and polemical work Suburban Nation: The Rise of Sprawl and the Decline of the American Dream (written in collaboration with Jeff Speck), reinforces the concepts of New Urbanism. The work identifies and criticizes the 'five components of sprawl' - housing subdivisions, shopping centers, office parks, civic institutions and roadways[21]. In the spirit of Post-Modernism, the un-sustainability of suburban sprawl is contrasted with the economic and environmental sustainability of traditional towns and villages. New Urbanist strategies, as they have come to be called - densification, mixed-use zoning, and creating a pedestrian friendly communities - are then described as solutions to the problems created by the Modernist city. [22]

Suburban Nation illustrates New Urbanism's roots with Post-Modernism, drawing upon historical urban forms as precedents for future urban designs. Once called Neo-Traditional Urbanism, New Urbanism, though attempting to break out of stylistic boundaries, remains associated with the design of new neighborhoods with the aesthetic of old neighborhoods. However, selected recent works of Duany Plater-Zyberk have successfully broken away from this Neo-Traditional style. These designs mark the emergence of New Urbanism's architectural language which no longer mimics styles of the past, but creates a new language which reflects the technology, attitude and spirit of the twenty-first century North America.

Figure 1.48 (left)
Downtown Los Angles, perspective, design by Duany Plater-Zyberk, 1990.

Figure 1.49 (right)
Downtown Masterplan, design by Duany Plater-Zyberk, 1990.

Figure 1.50
Aqua Urban Infill, Site plan, design by Duany Plater-Zyberk, 1998.
Recent works of Duany Plater-Zyberk such as the Auqa Urban Infill retain New Urbanist planning principal but have successfully broken away from the Neo-Traditional aesthetic.

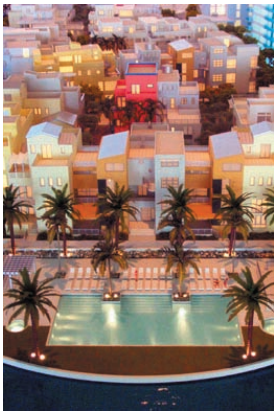


Figure 1.51
Aqua Urban Infill, Model, design by Duany Plater-Zyberk, 1998.

Figure 1.52
Aqua Urban Infill, Model Detail, design by Duany Plater-Zyberk, 1998.

1.22 Economics : The End of Cheap Oil and the Age of Sustainability

As suburbia was driven into existence by an economy of consumption, an economy of conservation is giving rise to New Urbanism. This economic shift has been largely caused by the depletion of non-renewable energy sources foreshadowed by the recent rise of oil prices.

As of October 2004, oil prices reached record highs of over $55 a barrel. [23] According to Matthew Simmons, adviser to the Bush-Cheney energy plan, this price is only a fraction of his estimated appropriate market value of oil which is $182 a barrel. Ali Bakhtiari, head of strategic planning at Iran's National Oil Company, stands in accordance with Simmons estimate and further predicts that oil prices will not gradually increase, but will suddenly skyrocket. He adds that those affected most will not be the very rich who can afford expensive gas or the very poor who do not consume gas, but those of the world's middle class. [24]

Canada is ranked the thirteenth highest oil consuming country in the world with sixty-two percent of its total primary energy consumption being oil and gas.[25] Although Canada is ranked as the tenth highest oil producing country meaning it will likely also profit from rising oil prices, the price of oil for Canadian consumers is expected to increase so drastically in the next fifty years that the average Canadian will be forced to change their patterns of energy consumption. [26]

Optimists believe alternative energy sources will allow North Americans to continue their current energy-wasting lifestyles. Environment Canada speculates that wind power, which currently generates less than 0.4 percent of Canada's total energy, can potentially

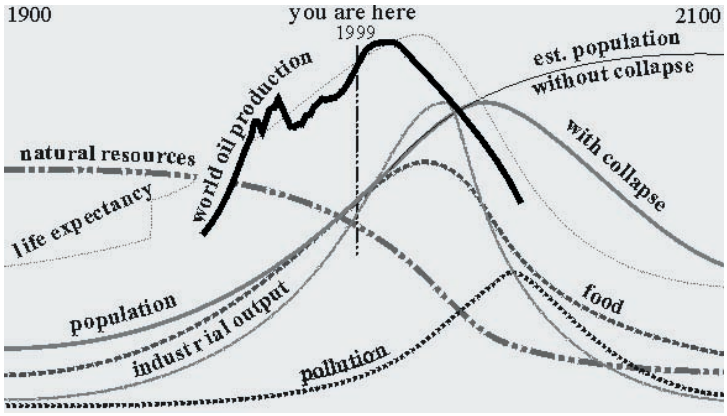


Figure 1.53
Global Oil Production Peak.
Extremists predict the end of oil will lead to the collapse of modern civilization.

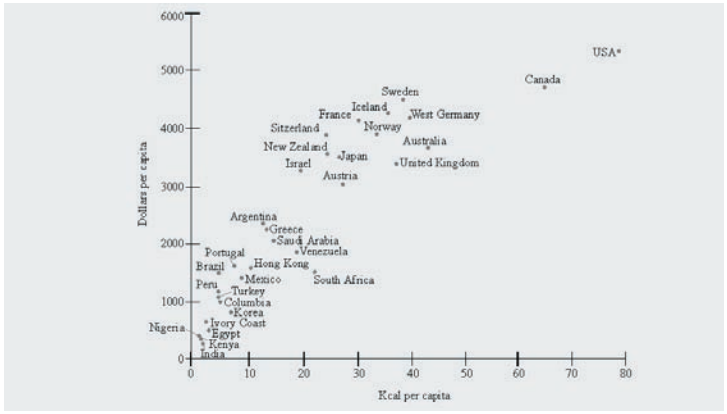


Figure 1.54
Energy Use of Selected Countries.
Canada is ranked the thirteenth highest oil consuming country in the world

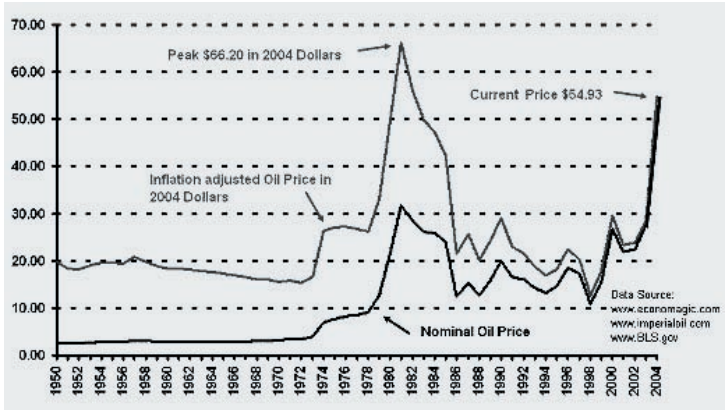


Figure 1.55
Oil Prices in Canada showing nominal oil price which factors in inflation.
Matthew Simmons estimated appropriate market value price of oil is $182 a barrel.

Figure 1.56
Canadian Energy Consumption
Canadian consumption of petroleum has increased drastically with suburban development.

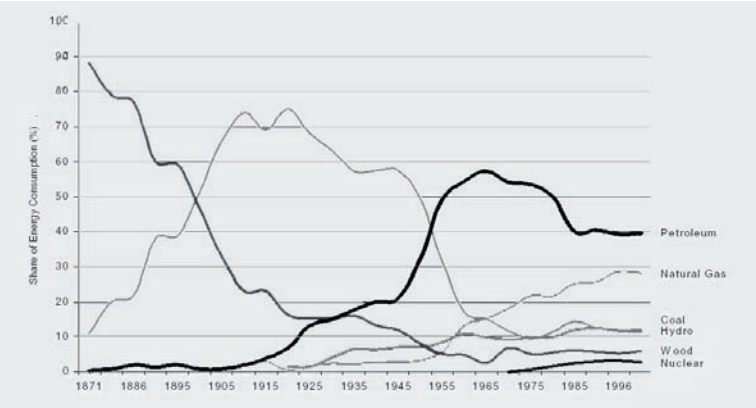


Figure 1.57
Mode of Travel in Canada, Statistics Canada, 2002.
Over 80 percent of all travel in Canada is by car.

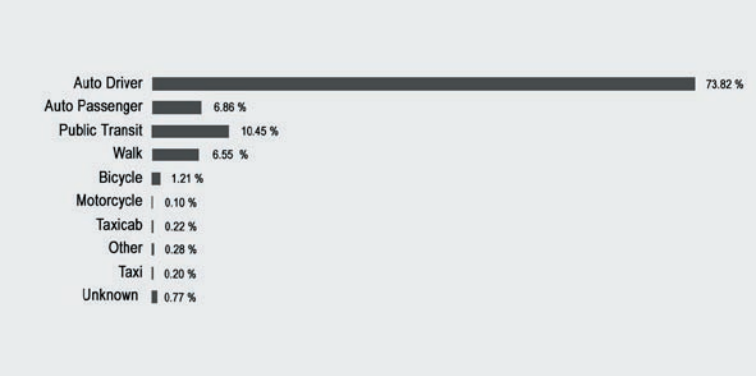


Figure 1.58
Oil Use, from the Canadian Association of Petroleum Producers
Forty percent of oil is refined into gasoline.

generate up to twenty-five percent[27]. Oil's energy profit ratio, however, is one hundred to one - one unit of energy produces one hundred units of oil energy.[28] Wind, solar, hydro and nuclear energy's profit ratio are a fraction of oil's profit ratio. Unless tremendous breakthroughs are made with hydrogen or biodiesel, both of which currently have energy profit ratios barely above one to one, North Americans will be forced to reduce energy consumption by adopting more sustainable lifestyles.

According to the Canadian Association of Petroleum Producers, forty percent of Canada's oil is refined into gasoline. Twenty-two percent of Canada's overall energy consumption is used primarily for automotive transportation.[29] The first measure taken to curb oil consumption will be the reduction of automobile use.

The Modernist city designed with the aim of decongestion and segregating industrial pollution from residential zones was adopted in the post war era precisely because it increased consumption of cars and oil. In today's economy of skyrocketing oil prices, the energy wasted by the Modernist city is becoming increasingly economically unsustainable. Extremely low density suburban communities that rely on cars as a primary means of transportation must transform into pedestrian friendly communities or risk slow abandonment as land values decrease and plummet with the demobilization of the car. The sooner suburbs are transformed into pedestrian friendly neighborhoods using urban strategies proposed by Jane Jacobs and the New Urbanists, the less likely they will face a sudden devaluation and consequent abandonment.

1.23 Technology : The Internet and The Decentralization of the Workplace

As the twenty-first century economy shifts from consumption to conservation in the developed world, new technology is being employed not to consume energy but to save energy. Automotive technology facilitated the decentralized expansion of the industrial city in the post war era, and so computer technology is now facilitating the decentralization of the workplace.

In 1980, when the personal computer first became widely available, large corporations began to rid mountains of paper files, digitize their records, and move into suburban office parks. These office parks offered cheaper rent, more open space and spared suburban employees the often congested commute to downtown. The personal computer freed corporations from their paper records and facilitated the first step in decentralizing the downtown financial district of the Modernist city.

A decade later in the early 1990's, the Internet became available to the general public. It's rapid success, after the mid 1990's development of easy-to-use graphical browser interfaces for Internet sites, gave birth to the electronic-business (or e-business) - a company which relies on Internet as its primary means for business transactions. On the World Wide Web, an e-business, has the potential to be completely decentralized. The non-location based nature of e-business has given rise to home based entrepreneurs, some of which have started multi-million dollar e-businesses inside of suburban homes, undetected

Figure 1.59
Prudential employees at an off-site storage facility.
Corporations of the Postwar era were tied to their location by paper files.

Figure 1.60
SEI Investments Headquarter, Oaks, Pennsylvania, architect : Meyer, Cherer & Rockcastle.
When the personal computer became widely available large corporations rid of their mountains of paper files, digitized their records, and moved into suburban office parks.

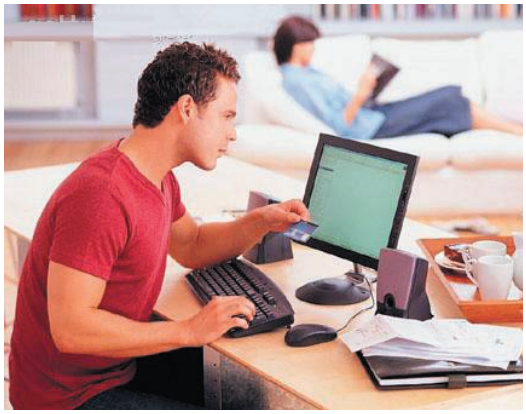


Figure 1.61
The Internet Home Office.
The internet has given rise to home based entrepreneurs some which have stated multi-million dollar e-businesses undetected from inside their suburban homes.

Figure 1.62
Companies Offering Telecommuting by Industry, 1997.

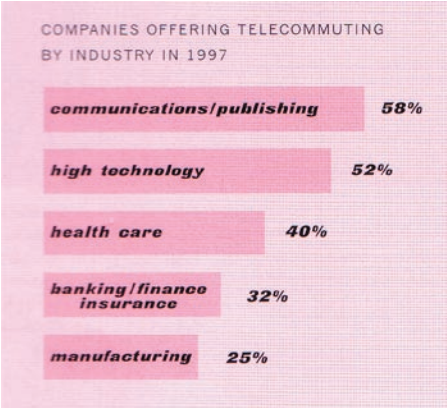


Figure 1.63
Companies with Work-at-Home Option.

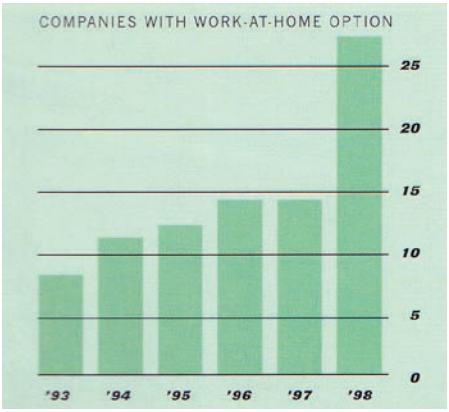


Figure 1.64
Employee and Independent Contracts Working at Home at Least one day a Month in Millions.

from the outside. Without changing the physical appearance of the residential suburb, e-businesses have begun to defragment the purity of the functional residential megazone. While appearing purely residential from the outside, North American residential suburbs are essentially being transformed by e-businesses into mixed-use neighborhoods.

E-businesses are not the only form of invisible suburban commercial activity. A Growing number of teleworkers (or telecommuters) - employees who work part-time or full time from home for an outside business- are also infiltrating residential suburbia. Some companies prefer to employ teleworkers because they are better able to manage private life and work life, can periodically work longer hours by working at home and save employers the cost of office space, furniture and equipment. 'Hotelling', part-time teleworkers sharing a single desk in the main office on different days of the week, is an arrangement which allows employers to save some money on office space yet keep regular face-to-face contact with employees.

In the past few years, teleconferencing - an internet audio-visual communication system where two parties in different locations

Figure 1.65
The teleconference.
Largely undiscovered by the average business, the teleconference is predicted to have a societal impact as great as that of the telephone.

in the world can speak to, hear and see one another - has emerged as the next technological breakthrough predicted to have a societal impact as great as that of the telephone. Teleconferencing equipment - a video display, a camera, a computer, speakers, microphones, software and high speed internet connection - can cost as little as $50 and up to $20,000 depending on the complexity [and quality] of the interactions needed. Largely undiscovered by the average business, the teleconference is used predominantly by large international companies for overseas meetings or by private individuals for socializing. As teleconferencing becomes adopted by mainstream office culture, the number of teleworkers will increase, further decentralizing the modernist financial district and office park.

New sophisticated wireless digital technology, which has also emerged in recent decades, will further decentralize the workplace. The nomadic worker, a completely mobile worker with a cell phone, a laptop and wireless Internet connection, can turn any environment, an

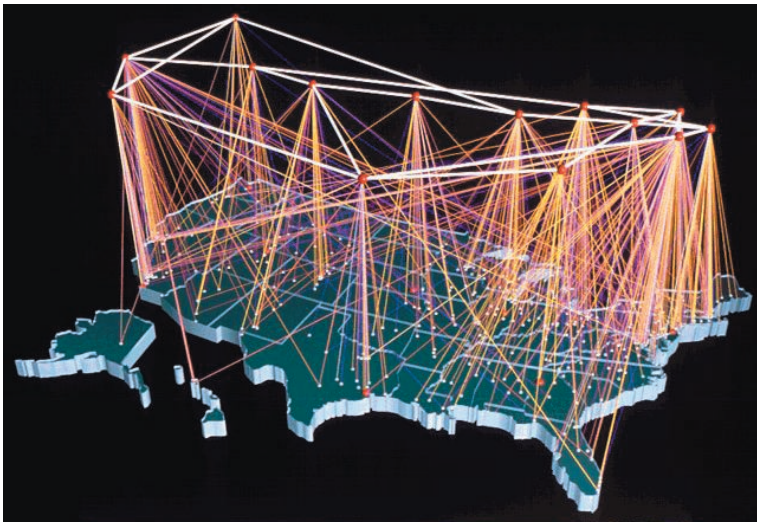


Figure 1.66
Satellite network across the United States.
In the a not-too distant future, wireless Internet may will cover entire cities.

airport terminal, a bus, a cafe or a park bench, into a fully functioning office. While wireless internet in Canada is currently limited, the advent of devices such as the Research in Motion's Blackberry, combines cell infrastructure with the Internet. These advances in technology point towards a not-too distant future where wireless Internet will cover entire cities. When such handheld computers and wireless internet transform cities into one giant fluid office for nomadic workers, office culture will have reached the maximum form of decentralization.

William Mitchell, in Etopia, speculates on the redistribution of secondary relationships caused by the future decentralization of the workplace. Secondary relationships are relationships between two people interacting with each other in a single one of their particular roles, for example a boss and an employee. Mitchell argues that the advancement of communications technology will allow some secondary relationships to be eliminated by internet services, such as the relationship between a bank teller and bank customer, while new secondary relationships will form at the local neighborhood level. [30]However, the strict conservative city zoning bylaws of many North American suburbs force internet home-based workers to remain invisible, stifling the building of new neighborhood secondary relationships. These suburban neighborhoods, often depressing and isolating work environments, could be transformed using New Urbanist strategies of densification, mixed-use zoning and design for the pedestrian, into energy efficient, pedestrian friendly healthy work environments which foster the growth of new neighborhood secondary relationships.

1.24 Office Culture : Knowldedge-Based Work in the Information Revolution

As the industrial revolution marked the labor force shift from farm work to factory work, today's information revolution marks a shift from clerical work to knowledge-based work. A knowledge-based worker (or information worker) is 'anyone who creates, develops, manipulates (including selecting and organizing), disseminates or uses knowledge to provide a competitive advantage or some other benefit contributing towards the goals of the organization.'[32] An increasingly large percentage of knowledge-based workers in the labour indicates a increasing amount of non-location based work in the information economy. This has resulted in what William Mitchell describes the as 'dematerialization' – the replacement of a physical facility with a virtual facility, such as when a bank machine replaces a bank branch. [31] Because computers use substantially less energy than buildings, tasks once done by people are now being done by computers; insurance, airline tickets, stocks, newspapers, music and computer software can now all be purchased online, eliminating the business cost of human personnel as well as physical buildings. As location based jobs, such as retail sales in a music store or newspaper delivery, become fewer and fewer, non-location knowledge-based work, such as writing, design and analysis, become more and more. In comparison to a predominantly service-based labor force, the new information-based labor force, due to the non-location based nature of their work, will be able to decentralize into formerly non-commercial or residential areas.

The rise of the information worker has also begun to change

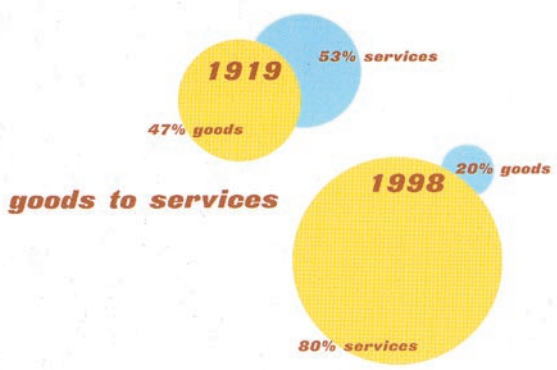


Figure 1.67
The Labour Force Shirt of the Industrial Revolution
The economic shift from goods to services propelled the rise of the managerial class and the need for office.

Figure 1.68
An Office of Clerical Workers.
The post-war era's direct observation of work process is characterized by the supervisor walking up and down isles surveying rows of desks.

Figure 1.69 and 1.70
Knowledge-based Worker Teams.
Teams which often contain experts in a variety of fields operate on a flattened hierarchical system where each member is given the opportunity bring their unique expertise to the project. Knowledge workers teams are often not heavily surveyed in efforts to foster the team's creativity.

Figure 1.71
A Plan of the Schnelle brothers's 'burolandschaft' or landscape office.

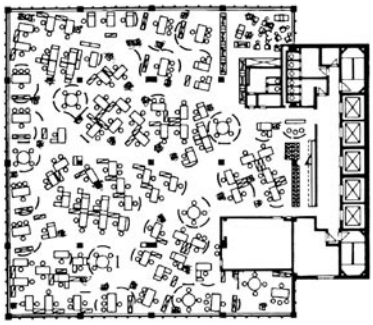
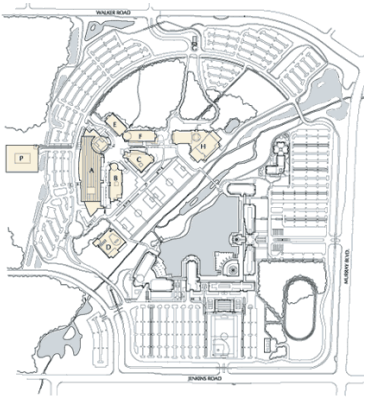


Figure 1.72 (left)
Norman Foster's Commerzbank in Frankfurt. The emergence of high-tech architecture continued the expression of corporate power through flexible, open ended buildings with machine aesthetic.

Figure 1.73 (right)
Herman Hertzberger's Beheer Office Building in Holland. Described as 'a house for a thousand people'.

Figure 1.74 and 1.75
Nike World Campus Headquarters in Beaverton, Oregon by Thompson Vaivoda & Associates. Corporate campuses, through isolated from the city, have begun to define an architecture designed for the creative teamwork of the new information economy.



business structure. The post-war era business management, based on direct observation of work process, is characterized by the supervisor walking up and down isles surveying rows of desks. In contrast, the management structure of today's corporation of information workers is based on observation by results, characterized by self-supervised teams given tasks and time limits, evaluated on the quality of the final product. [32] Teams which often contain experts in a variety of fields operate on a flattened hierarchical system where each member is given the opportunity to bring their unique expertise to the project. Knowledge based workers are often minimally supervised in efforts to foster the team's creativity.

Office architecture of the past few decades has made various attempts to create an environment suitable for the information worker. In 1958 Mannheim Germany, the Schnelle brothers designed the first open-concept office called the 'burolandschaft' or the landscape office to better facilitate group work. Popular for a short while, the landscape office became disliked for spoiling 'the quality of everyday life by making spontaneity difficult and by forcing everyone to wear a permanent mask'[33]. In 1974, Herman Hertzberger designed the Beheer office building in Holland which he described as 'a house for a thousand people'.[34] Vertical gardens, informal gathering nooks and natural light were used to create a comfortable social environment for group work. The emergence of high-tech architecture characterized by Norman Foster and Richard Rogers in the early 1990's linked the expression of corporate power back to flexible, open ended buildings with a machine aesthetic, advocating a return to the 'burolandschaft' open office model. Simultaneously prestigious corporate parks such as the Nike World Campus Headquarters in Beaverton, Oregon by Thompson Vaivoda & Associates, have attempted to enhance employee creativity, health,

company loyalty, and productivity by providing a variety of attractive workspaces - offices, design centers, athletic clubs and conference halls are intermingled between outdoor parks and sports facilities. These types of corporate campuses, though isolated from the city, have begun to define an architecture with a wide variety of specialized workplace which accommodate the many different creative activities essential to keeping a competitive edge in the information economy.

The most revolutionary developments in office space, however, are taking place in the world of computers. Mark Weiser's Ubiquitous Computing Project at the Xerox Palo Alto Research Center is an experimental office in which the entire building is a computer. Upon entering the office, each employee is given a transponder pin, a digital identification that they wear on their body which allows the computer to track their location. The office is a landscape of handhelds, 'wearables', interactive displays, projection screen[s], touchpads and keyboards which automatically log on the user and bring up their files as they approach the machine. [35] This fluid environment, where employees are not assigned a desk or territory but instead share a variety of spaces, furniture and equipment, is an ideal environment for information workers which fosters creativity, teamwork and innovation.

In contrast, Mitchell predicts face to face business transaction environments of the future will strive to create 'the persistent power of place' – the power of being in a non-virtual environment. [36] Mitchell argues that because information work is often intangible and virtual, preferred working environments of the future will be restaurants, lounges, spas and parks – environments which heighten the senses of touch, taste and smell which are absent in the virtual world.

The challenge of providing an ideal balance of virtual and the

Figure 1.76
Ubiquitous Computing.
The office is a landscape of handhelds, wearables and interactive displays, projection screen, touchpads and keyboards which automatically log on the user and bringing up their files as they approach the machine.

Figure 1.77
The Italian hill town of Colletta
This once abandoned hill town is now inhabited by teleworkers and e-business owners.

Figure 1.78
Swimming Pool in Colletta.
Because information work is often intangible and virtual, preferred working environments will heighten the senses of touch, taste and smell which are absent in the virtual world.

Figure 1.80
The Converted House Co-Workplace, by Laura Johnson.

tangible has given rise to a new outlook in the workplace, the teleoffice - a telecommunications-equipped shared office which offers teleworkers and entrepreneurs shared facilities, social interaction and a comfortable work environment in a desirable location. Teleoffices have appeared in a variety of locations around the world. Coletta, a once abandoned Italian hill town was rejunvinated by the teleoffices built by architect Giancarlo De Carlo, as e-business and teleworkers workers moved to the remote community for its scenic location. Similarly In Belgium, a teleoffice, because of its convenient location at the intersection of two highways, was used by workers living in remote rural areas. In London England, urban teleoffices which offer rentals of conference rooms with presentation and teleconferencing facilities, are used by local business who otherwise could not afford to the expensive equipment. [37] Different types of teleoffices offer a unique range facilities, spaces and equipment user packages - from one-time uses to scheduled weekly, monthly, and unlimited rates to permanent part-time and full-time workstations.

In Canada, the emergence of telecentres has been documented by urban planner Laura Johnson. In her book, The Co-

Figure 1.81
Suburban Community Centre Co-workplace, by Laura Johnson.

workplace, Johnson identifies the emergence of six potential teleoffice types in Canada - the suburban community centre, the converted heritage building, the high-rise building, the strip mall, the converted house and the converted warehouse. (1) Although telecentres in Canada remain few, Johnson portrays the teleoffice building type as a viable solution to both the problem of over-centralization in the office park and over-decentralization in the home office. The teleoffice is decentralized enough to be walking distance from home, yet centralized enough to create a hub of economic activity. This working environment] has the potential to provide the ideal amount of workplace centralization for Canadians suburbanites of the twenty-first century.

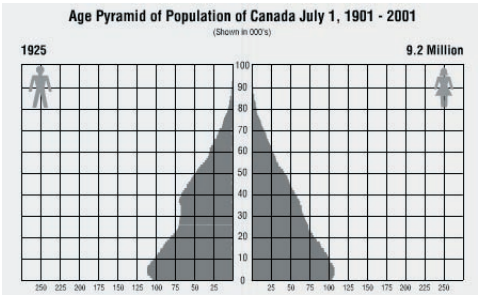
Suburbia was originally built to accommodate the large number of young nuclear families of the post war era. After fifty years, this demographic

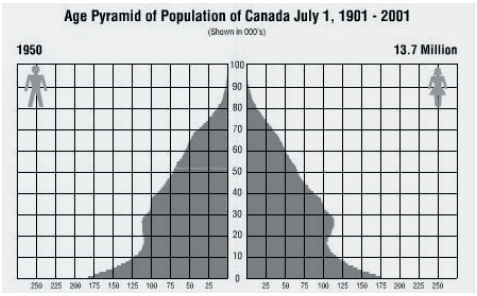
1.25 Family Culture : The Baby-Boomer Retirement and The Non-Nuclear Family

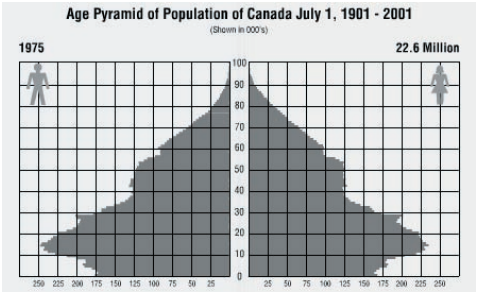
group no longer dominates today's North America[n] population. Currently, the largest demographic age group are the baby boomers, people born in the post war era between 1945 and 1955. By 2020, last of the baby-boomers will have turned sixty-five, creating the largest number senior citizens in North American history.

The Modernist suburban city was designed for the young post war nuclear family, and is an unfit environment for this large number of soon-to-be seniors - many of which will be forced to give up their cars. If Modernist zoning continues to dominate suburban planning policies, segregating shopping, working and living districts at un-walkable distances from one another, the next twenty years will see baby-boomers abandoning suburbia for pedestrian friendly communities or even central downtowns. However, Seniors who are too old to drive and can not afford to leave the suburbs, will face complete isolation in the remaining pedestrian hostile suburban residential megazone.

The pedestrian unfriendly suburbia is not only unsuitable for future seniors but also for today's North American families. As a single income was typically enough to support an entire suburban family in the early 1950's, the typical father commuted to work while the typical housewife and mother managed the housework, cooked the meals and cared for the children. Today's typical family, however, consists of two commuting parents. Housework, cooking and child care are either passed off to hired help, or become additional work for parents on weekends and evenings. Large suburban houses, designed to be







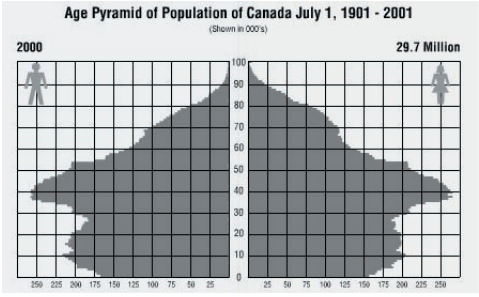


Figure 1.82 (far left)
Age Pyramid of Population in Canada Series, 1925, 1950, 1975 and 2000.
Currently, the largest demographic age group are the baby boomers, people born in the post war era between 1945 and 1955. By 2020 last of the baby-boomers will have turned sixty-five creating the largest number senior citizens in North American history.

Figure 1.83 (far left)
A dual-income family.
As the majority of Canadian families have two working parents, large suburban houses, are largely uninhabited for much of the work week.

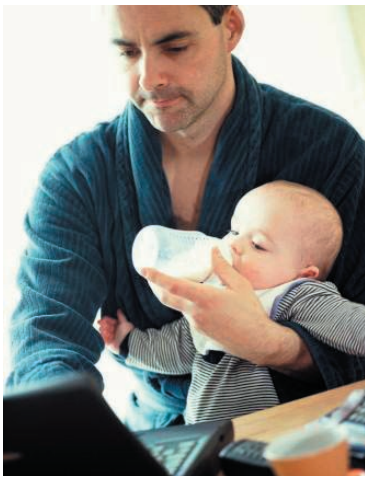


Figure 1.84 (left)
A Working Father.
Working at home allows parents to multi-task domestic work with office work.

Figure 1.85
Suburban House
Without a place of social interaction within walking distance, the home office is isolating and lacks the cross-pollination and the synergy of a working environment with other people.

maintained by a full time housewife, are largely uninhabited for much of the work week.. Furthermore, today's Canadian families are now made up of fifteen percent single-parent families. Many of these single parents have full time jobs and must balance careers while managing all household responsibilities. Suburbia's megazones with schools, grocery stores, homes and offices separated at great distances from one another, add unnecessary inconvenience to the busy lifestyle of this large minority of Canadians. As a result, e-business and telework have become extremely popular amongst single working parents as working at home allows parents to multi-task domestic work with office work. More importantly, working at home allows parents to spend more time with their children, to eat lunch with their kids at home and take breaks playing with their children in the backyard.

Despite the advantages of working in the home, most residential suburbs are unsuitable environments for work. Without a place of social interaction within walking distance, the home office is isolating and lacks the cross-pollination and the synergy of a working environment with other people. As long as [the] present zoning of residential suburbs forbids the development of commercial buildings, the teleworker and e-business parent will continue to endure the isolation of working at home in exchange for more time with their family.

Modernism successfully solved the problems of the post-war era by employing automotive technology to allow the residences of families

1.3 Chapter Conclusion : The Networked Village of the Twenty-First Century

to be separated from the overcrowded and polluted industrial city. Residences expanded into suburbs while businesses, centralized into financial districts to support their workplace structure and the paper technology of the time. As a result of this vast separation, the modernist city was unable to expand in a way that would allow socially integrated pedestrian communities to form. The critical setback of modernist planning has been the vast segregation of residences from the programs of the city—a distanced separation between home, the community, and the workplace. This has resulted in expansive developments of monotonous, low density, residential suburbs.

If Modernism was an age of future expansion, New Urbanism is an age of reaction based on the past. New Urbanism has had the ambition to bring back the social and community programs of residential neighbourhoods by promoting vibrant pedestrian communities that incorporate the automotive infrastructure of the modern city. It has also had the ambition to reintroduce the complex dialogue between the home, workplace and civic place of traditional urban patterns of civilizations throughout history which enforce the functionality as well as the identity of cities. However, the architectural implications of many New Urbanist theories have involved nostalgic romances for the past, which have been largely executed as poor mimicry. The form and language of the network village should reflect the technologically progressive, information-based, and energy efficient society of the

twenty first century.

The transformation of suburbia to the Network Village will allow for the social, community, and workplace integration that is necessary to create successful communities of the future. Communications technology will allow workplaces to be integrated into the vast residential zones of suburbia. The conservation of diminishing global resources will give greater importance to the development of pedestrian communities. Aging global demographics and the diminishing of traditional gender roles will promote a more integrated environment where work, public life, and family life are supported within close proximity. The adaptive urban and architectural infrastructure which reflects the change in conditions must be specific in promoting the community, workplace, and residential programs while supporting the material and communication technology of the future. The successful transformation of suburbia to the network village must incorporate society's changing in conditions,

2 SITE

2.1 Site

2.11 The Town of Richmond Hill

Figure 2.01
The Town of Richmond Hill in the Greater Toronto Area
Richmond Hill is located in York Region directly north of Metropolitan Toronto.

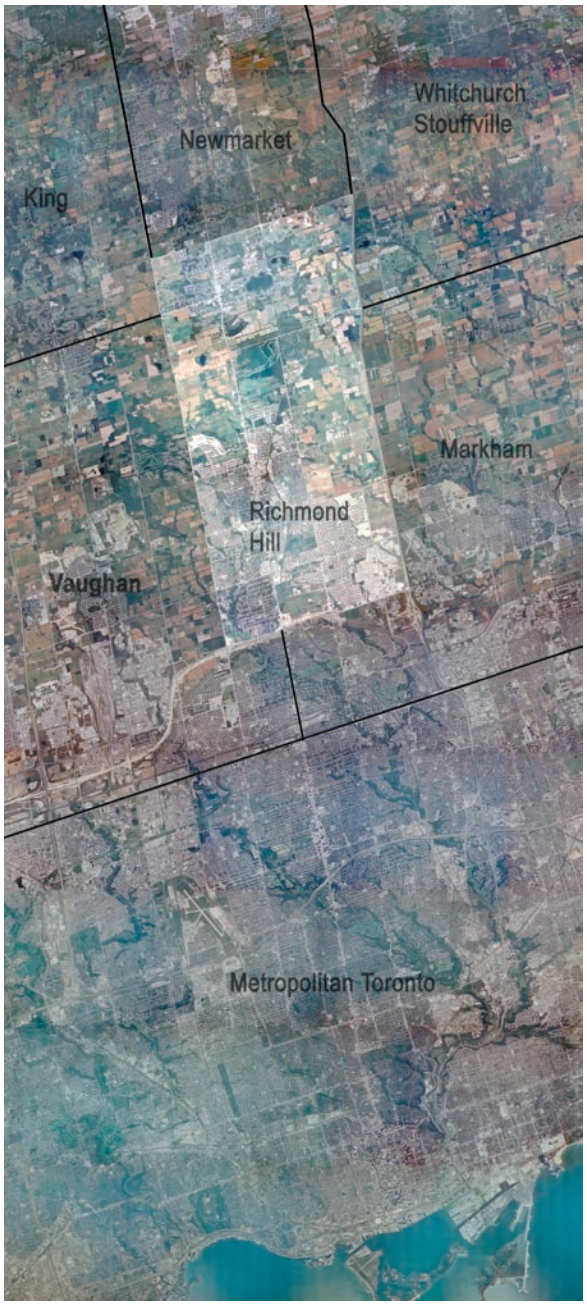


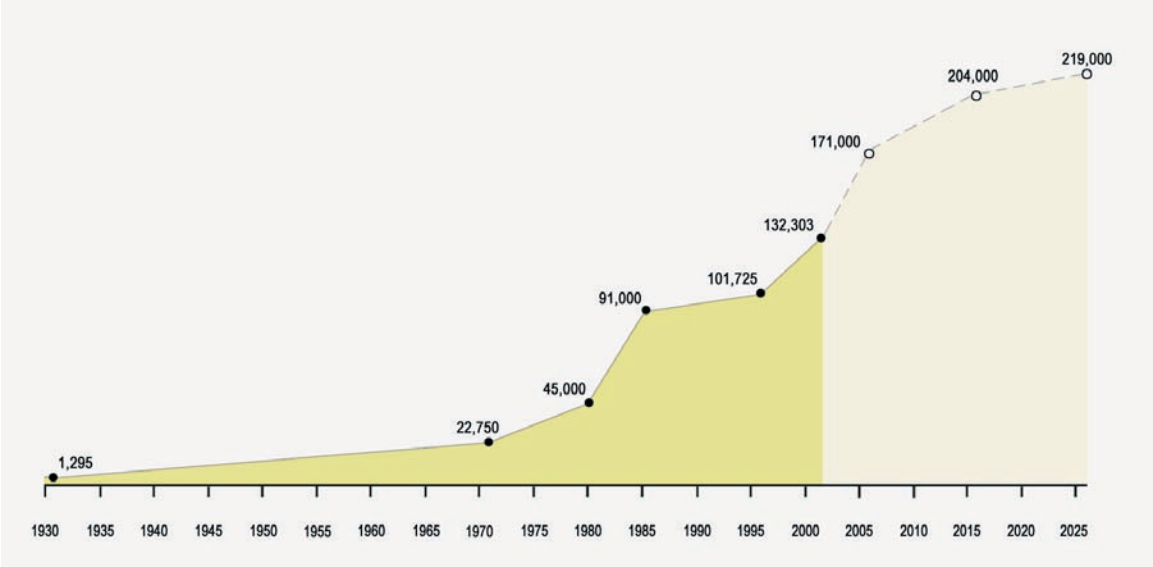
Figure 2.02
Aerial photo of Richmond Hill, Metropolitan Toronto and surrounding townships.
The distance between the southern edge of Richmond Hill and Toronto's waterfront is approximately thirty kilometers - forty-minutes to an hour drive.

Figure 2.03
1872 Richmond Hill
Richmond Hill, originally an outpost along the military road Yonge Street marked by Lieutenant-Governor John Graves Simcoe in 1794, establishes itself as a village in 1872.

Figure 2.04
1957 Richmond Hill
In 1957, Richmond Hill becomes a Township, its border expands annexing townships to the east and west.

Figure 2.05
1971 Richmond Hill
When Regional Government was implemented in Ontario 1971, Richmond Hill borders expanded to cover twelve times its previous area.

Figure 2.06
Richmond Hill Population Growth and Projected Population Growth. Richmond Hill's most rapid growth occurred between 1980 - 1985. During the recession, growth slowed but accelerated again in 1996 until the present. Because its expansion occurred when modernist urban planning had been well established and post-modernism was in its early stages, the urban planning of Richmond Hill has been typically modernist. Based on its current growth patterns, Richmond Hill's population is predicted to reach 219,000 by 2026.



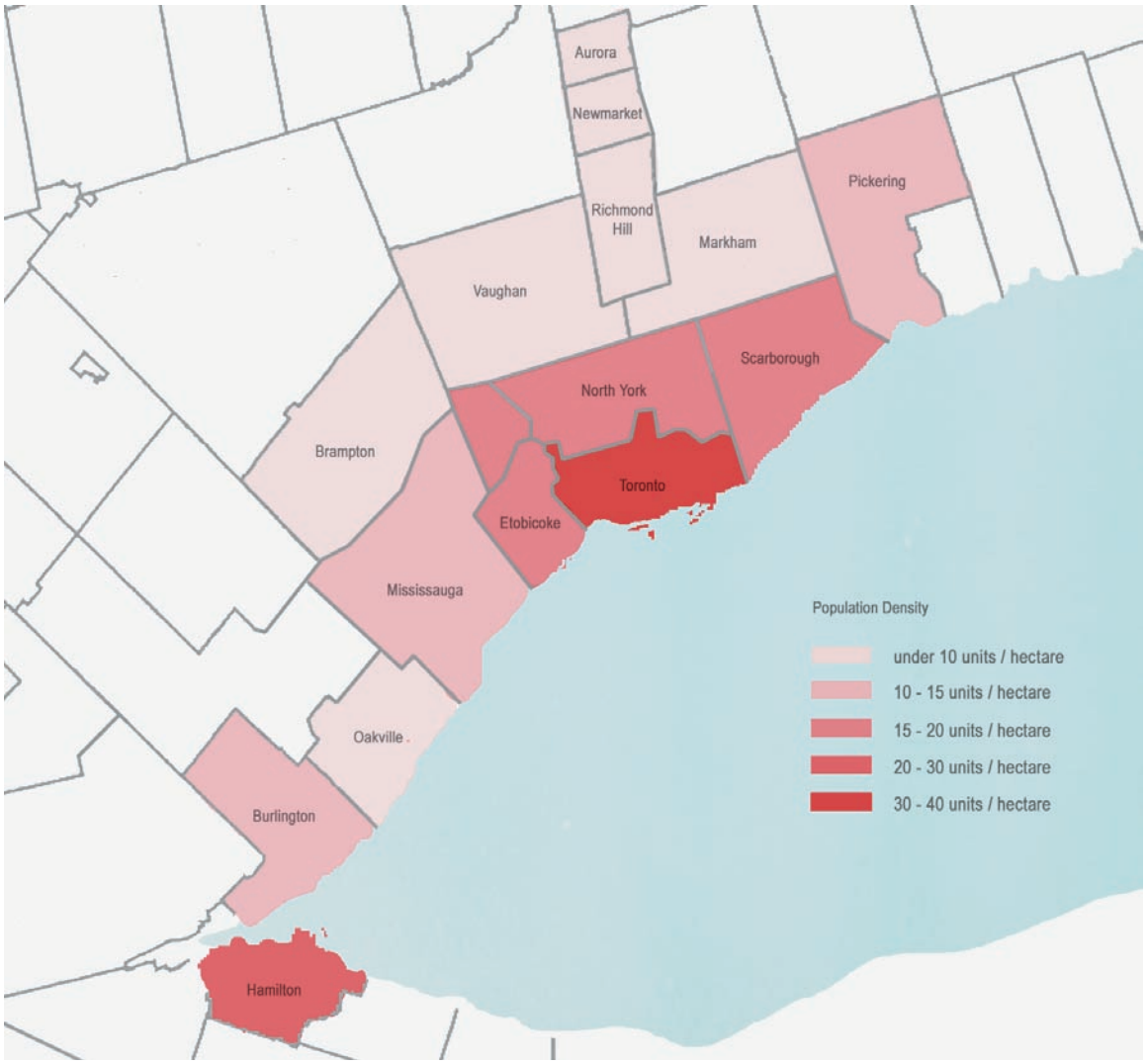


Figure 2.07
Population Density of selected regions of Southern Ontario.
The density of the Greater Toronto Aera reveals suburban sprawl; densities of townships decrease with distance from Toronto and Hamilton's downtowns. Like other townships in the Greater Toronto Area, Richmond Hill is politically independant, yet fucntions as a remote suburb of Metropolitan Toronto.

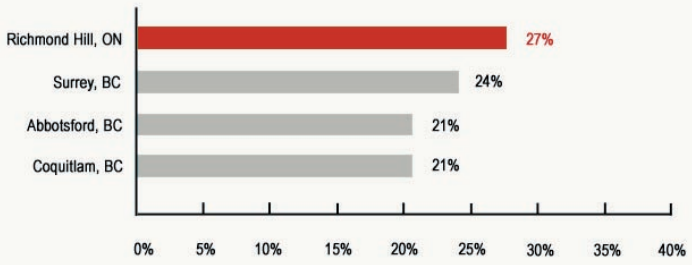


Figure 2.08
Fastest Growing Large Municipalities in Canada 1996.
Source : Statistics Canada 1996 Census.

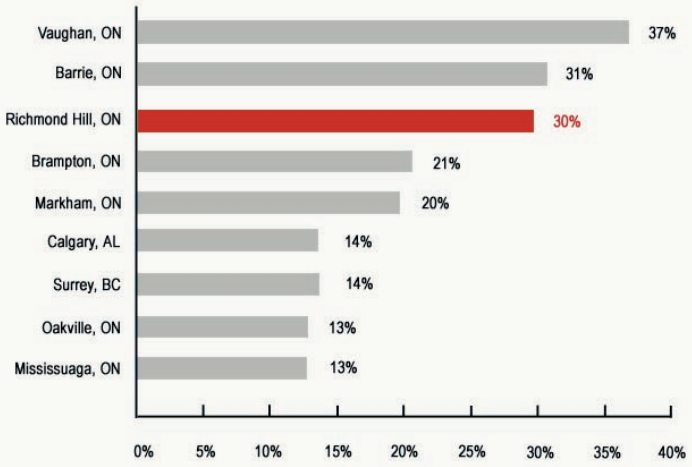


Figure 2.09
Fastest Growing Large Municipalities in Canada 1996 to 2001 Growth Rate.
Source : Statistics Canada 2001 Census.

The rapid growth of townships around Metropolitan Toronto indicates that Toronto's suburban sprawl continues to expand. Canada's fastest growing municipalities are predominantly townships bordering large cities, this indicates that suburban sprawl is expanding not only in the Greater Toronto Area but across Canada.

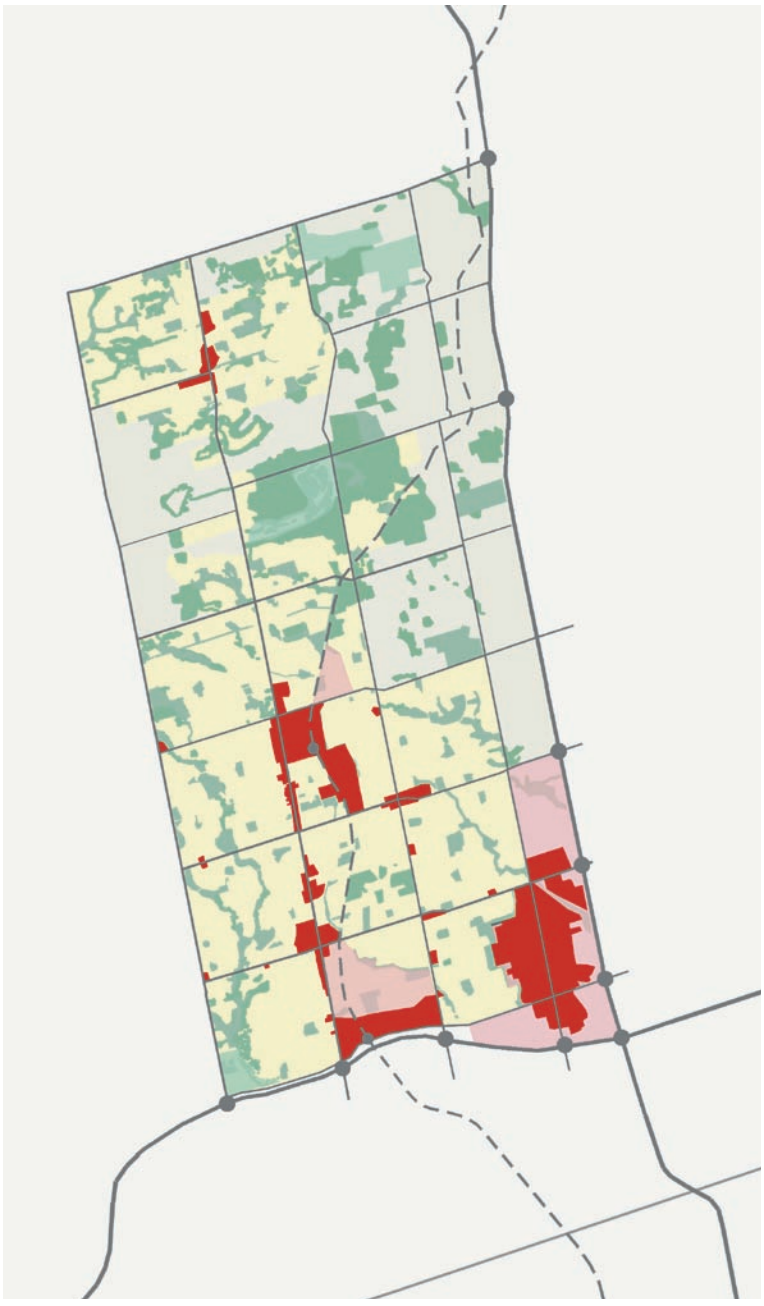


Figure 2.10
Richmond Hill Urban Patterns
Richmond Hill is made up residential, commercial and office park megazones typical of suburban townships bordering metropolitan cities, heavily influenced by modernist planning principals to segregate urban function. The city blocks shown in the diagram each measure four kilometers square; mono-use residential and commercial districts span over a distance equivalent to a twenty-five minute walk. In some areas, walking from home, to any shop or office, or vice versa, takes close to half and hour.

Figure 2.11
Driving through the East Beaver Creek Office Park 1.
Beaver Creek Office Park is Richmond Hill's largest commercial / office megazone due to its proximity to the towns two major highways 404 and 407. This four kilometer square district contains only office and commercial buildings.

Figure 2.12
Driving through the East Beaver Creek Office Park 2.
Office buildings hide from the street behind trees and landscaping. Roads without sidewalks are designed to encourage employees to drive and to discourage pedestrian passersby and trespassers.

Durham Region
York Region
Peel Region
Halton Region
Metropolitan Toronto
Legend
Richmond Hill
Canada's High Tech Corridor
Highway 404 and 407
Other Highways

Corporate Headquarters in Richmond Hill

Compaq Canada
Container Corporation Canada
WH Brady Inc.
Lexmark Canada
Safety Supply (Acklands) Canada
Seaton Group Canada
Compugen Systems Ltd.
Bank of East Asia
Swiss Herbal Remedies Ltd.
Nu Pharm Inc.
Suzuki Canada Inc.
Unisource Canada Inc.
Levi Strauss & Co. (Canada) Inc.
Bulk Barn Foods Ltd.
Caligo Inc.
Black & Decker Canada Inc.
Dynatec Corporation
Decision One Corporation
Novex Pharma Inc.
Senes Environmental Ltd.
Epson Canada Ltd
Changepoint Corporation
Centrinity
Kwik Kopy Printing Canada Corp.

Figure 2.13
Canada's High Tech Corridor
According to a study conducted by Ernst and Young, over 75% of Canada's compute software and hardware revenue is generated in by companies within ten kilometers of Highway 407 and 404 known as Canada's 'high tech corridor'. Richmond Hill is located at the intersection of these two highways in the heart of this 'high tech corridor'.

Figure 2.14
Stopped at the Intersection of Commerce Valley Street and Leslie Street.
Many of Richmond Hill's high tech companies are housed in large mid-rise office buildings in Beaver Creek Business Park.

Figure 2.15
Beaver Creek Office Building.
The largest high tech companies are housed in eight to ten storey curtain wall office buildings set back from the street.

Figure 2.16
Richmond Hill Arterial Road.
The main roads of Richmond Hill have four or more lanes of high speed vehicular traffic and are void of buildings which face the street.

Figure 2.17
Intersection of Bayview and Highway 16.
Wide four lane roads and buildings which face away from the sidewalk make Richmond Hill a convenient city for drivers, not for pedestrians.

YORK REGION
(other municipalities)
1,285 workers
2.95%
DURHAM
REGION
125 workers
0.29%
Richmond
Hill
12,575
workers
28.91%
Markham
4,710 workers
10.83%
Vaughan
3,380
workers
7.77%
PEEL
REGION
1,515 workers
3.48%
Metropolitan Toronto
18,835 workers
43.3%
HALTON
REGION
60 workers
0.14%

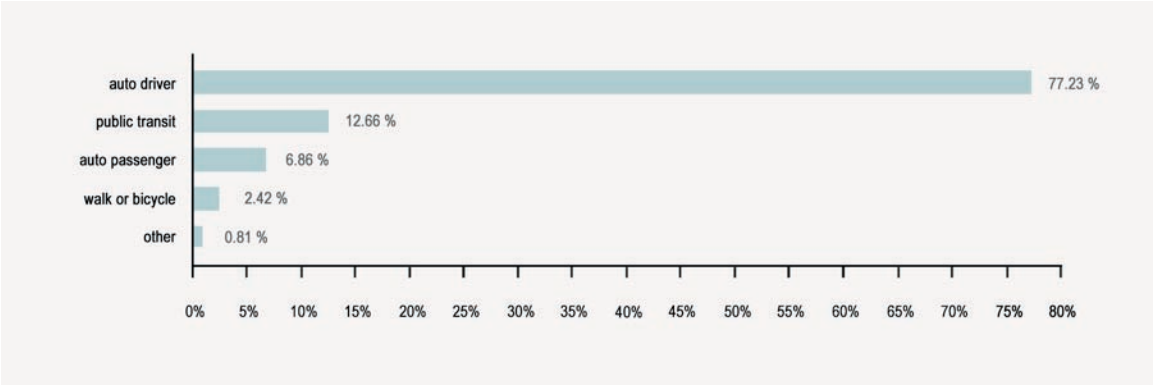


Figure 2.19
Mode of Transportation to Work for Richmond Hill Residents, 2001.
The segregation of residential and commercial / office zones and low density make public transit, biking and walking to work inconvenient for Richmond Hill residents while roads without sidewalks and buildings set back from the street further discourage walking. As a result, over seventy five percent of all Richmond Hill travel is by car.

Figure 2.18
Destination of Labour Force Originating in Richmond Hill
As over forty percent of Richmond Hill residents work in Toronto, the large percentage of Richmond Hill functions as a residential suburb of Toronto.

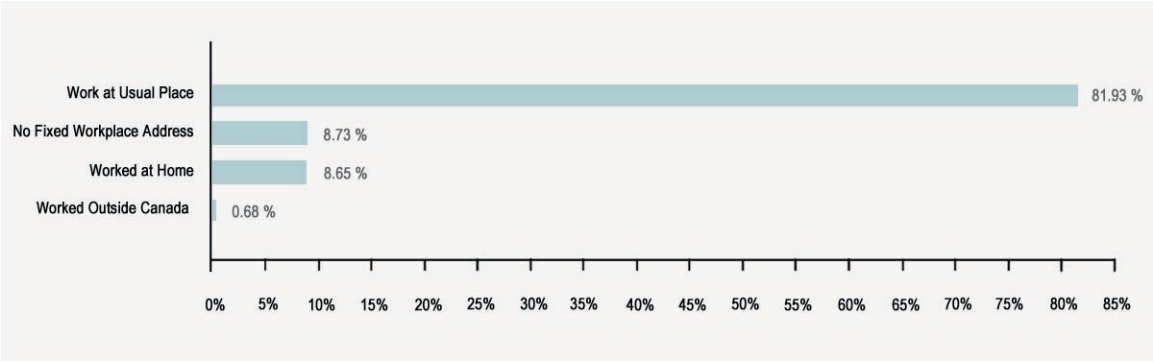
Richmond Hill Telework Program

In March 2000, Richmond Hill a town of 135, 996 situated just north of Toronto implemented a telework pilot program providing staff with a flexible working environment.
Environmental objectives set by the Town to help reduce greenhouse gas emissions were also met through the reduction of employee commuting trips.
Richmond Hill is reportedly the first Canadian city to implement a telework program. This program was started by the Town's Clean Air Initiatives Team, a group formed to help the Town reduce its greenhouse gas emissions.

- The Canadian Telework Association

Figure 2.20
Place of Work Status of Richmond Hill Residents
As the commute from Richmond Hill to Toronto is quite long during rush hour and the internet has given employees the option to telework, a large minority of Richmond Hill residents now work from home or work without a fixed address.

Figure 2.21
Type of Business by Number of Employees in Richmond Hill
The high percentage of small companies in Richmond Hill, Canada's high tech corridor, indicates a potentially high number of e-businesses in Richmond Hill. The creation of mixed-use zones in Richmond Hill is therefore likely to be sucessful as small businesses mixed with residences will create walkable neighbourhoods increasing convenience for employers, employees and customers.


Work at Usual Place
No Fixed Workplace Address
Worked at Home
Worked Outside Canada
81.93 %
8.73 %
8.65 %
0.68 %
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%
50%
55%
60%
65%
70%
75%
80%
85%

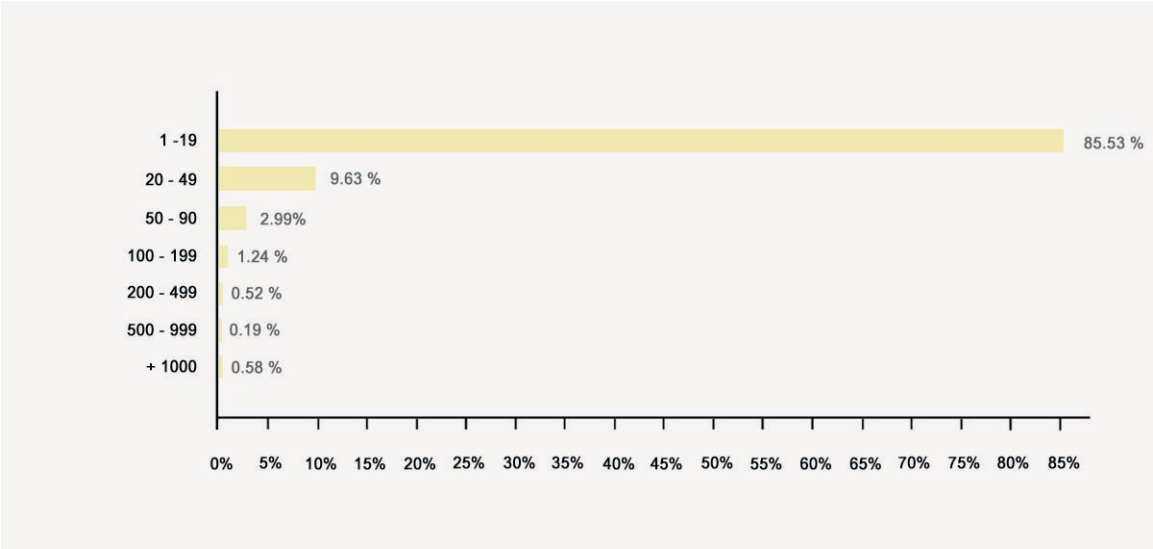
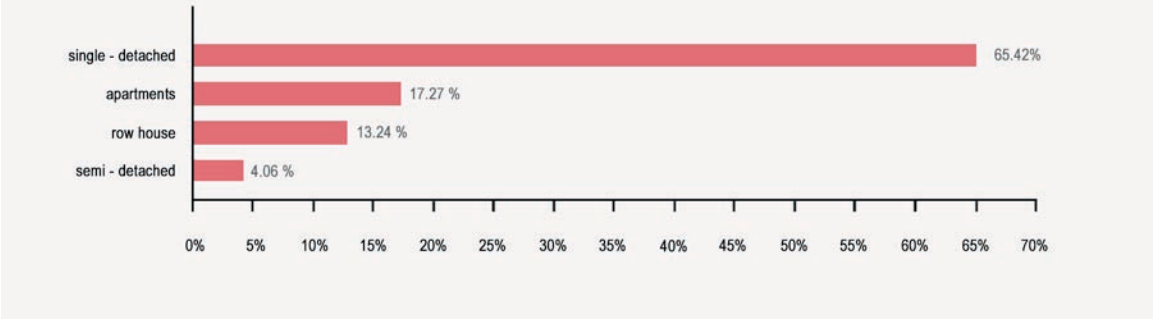
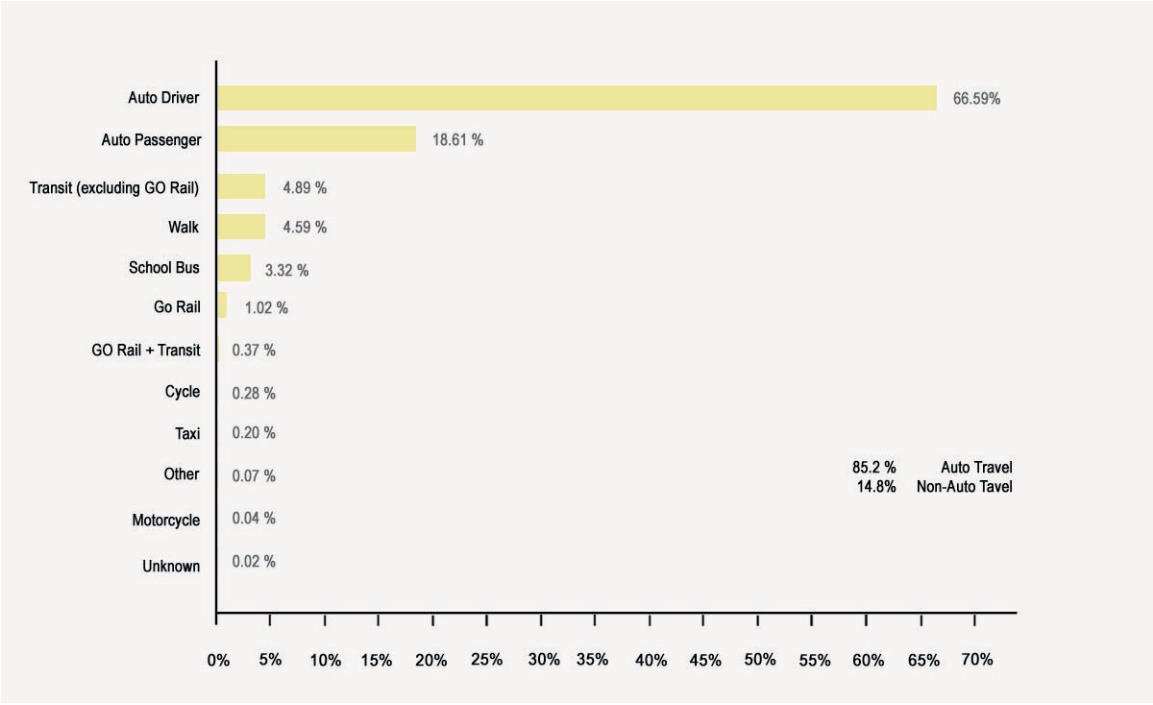

1 -19
20 - 49
50 - 90
100 - 199
200 - 499
500 - 999
+ 1000
85.53 %
9.63 %
2.99%
1.24 %
0.52 %
0.19 %
0.58 %
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%
50%
55%
60%
65%
70%
75%
80%
85%

Figure 2.22
A Residential street in Richmond Hill.
Residential neighbourhoods in Richmond Hill are characterized by low density and the presence of one homogenous housing type - the single detached home.

Figure 2.23
A House in Richmond Hill
The facade of the Richmond Hill suburban home is dominated by the garage, reflecting the residents dependence on the car due to the homogeneity and low-density of the nieghbourhood.


single - detached
65.42%
apartments
17.27 %
row house
13.24 %
semi - detached
4.06 %
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%
50%
55%
60%
65%
70%


Auto Driver
66.59%
Auto Passenger
18.61 %
Transit (excluding GO Rail)
4.89 %
Walk
4.59 %
School Bus
3.32 %
Go Rail
1.02 %
GO Rail + Transit
0.37 %
Cycle
0.28 %
Taxi
0.20 %
Other
0.07 %
Motorcycle
0.04 %
Unknown
0.02 %
85.2 % Auto Travel
14.8% Non-Auto Tavel
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%
50%
55%
60%
65%
70%

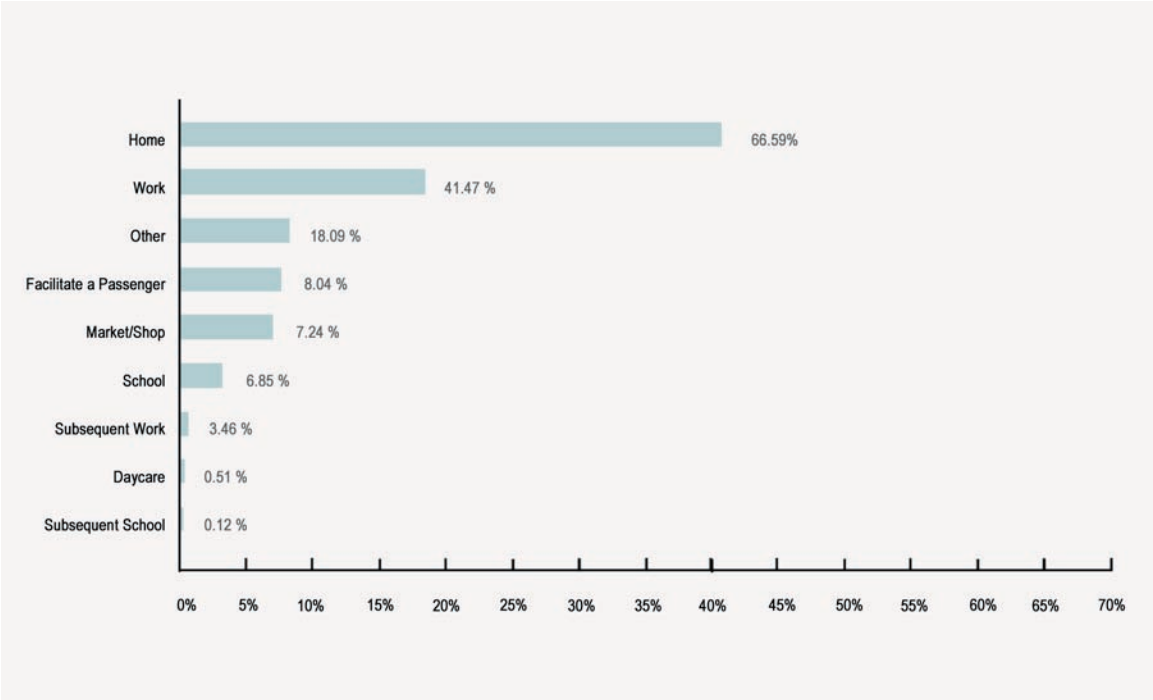


Figure 2.24 (opposite above)
Housing Mix in Richmond Hill
Richmond Hill residences are predominantly single detached homes which create low density neighbourhoods and encourage car use.

Figure 2.25 (opposite below)
Mode of Travel of Richmond Hill Residents
Because of Richmond Hill's low density and functional zoning, eighty-five percent all travel by Richmond Hill's residents is by car.

Figure 2.26 (above)
Purpose of Travel for Richmond Hill Residents
As residential areas are segregated from all amenities, Richmond Hill residences drive not only to work, but also to shops and to school.

Figure 2.27
Strip Mall in Richmond Hill
Shops and restaurants, confined to major intersections on the edges of residential neighbourhoods, accessible by foot to a small number of residences, must attract customers with large signs and visible parking lots.

Figure 2.28
Plaza in Richmond Hill.
Shops are set back from the street to make room for parking.

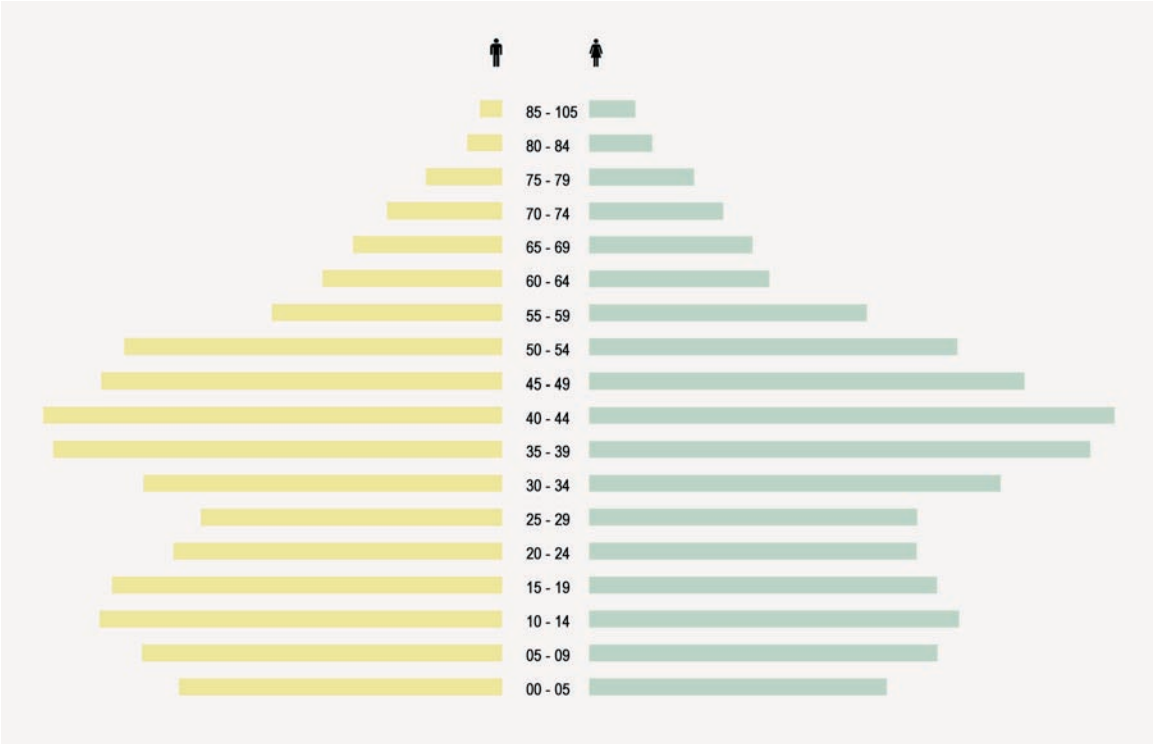


Figure 2.29
Age Characteristics of the Richmond Hill Population, 2001.

Like most of Canada, Richmond Hill's population consists of a proportionally large number of baby boomers - people born during the post war era, whom in 2001 were between the ages of fifty-four and forty-four. Within the next twenty years, many baby boomers will give up driving. Richmond Hill's current zoning which segregates residences from commercial and civic buildings will be unsuitable for the large number of elderly pedestrian residents.

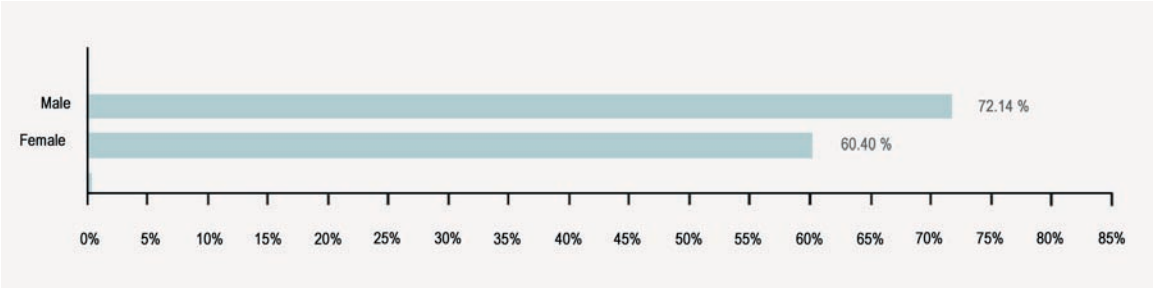


Figure 2.30
Labour Force Participation Rates of Richmond Hill, 2001.
The high percentage of women in the workforce suggests many families are dual income families. As over seventy-five percent the labour force commute to work by car, families with two working parents are likely to commute in two different cars to two different workplaces. Suburbia, supposedly animated during the day by neighbourly housewife socializing now sits empty during office hours.

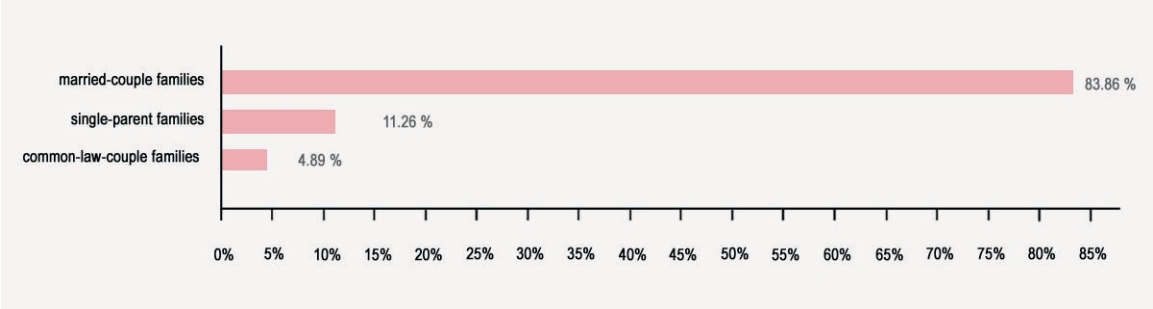


Figure 2.31
Selected Family Characteristics of Richmond Hill Residents, 2001.
Many of Richond Hill's single-parents must balance a hectic schedule of work, child care and domestic chores. Richmond Hill's segregated residential, shopping and working districts, based on the suburban model designed to segregate the domestic realm of women from working realm of men, is unaccommodating for the lifestyle of single-parent families which now constitute a significant percentage of the population.

2.2 The Neighbourhood of Bayview Hills

Figure 2.32
Aerial Photo of the Town of Richmond Hill.
The neighbourhood of Bayview Hills is an extremely low density high-end residential suburb of luxury homes in a the Town of Richmond Hill on the outskirts of Metropolitan Toronto.

Figure 2.33
The Neighbourhood of Bayview Hill in the Context of Richmond Hill's Urban Patterns
Bayview Hills is a residential megazone. Bounded by arterial roads, the a four kilometer square block is composed of predominantly one building type - the single detached house. The neighoubourhood is in a prime location, less than one city block away from Richmond Hill's four business parks and on ramps to two major highways. Known as the 'Rosedale' of Richmond Hill, Bayview Hill is an affluent neighbourhood.

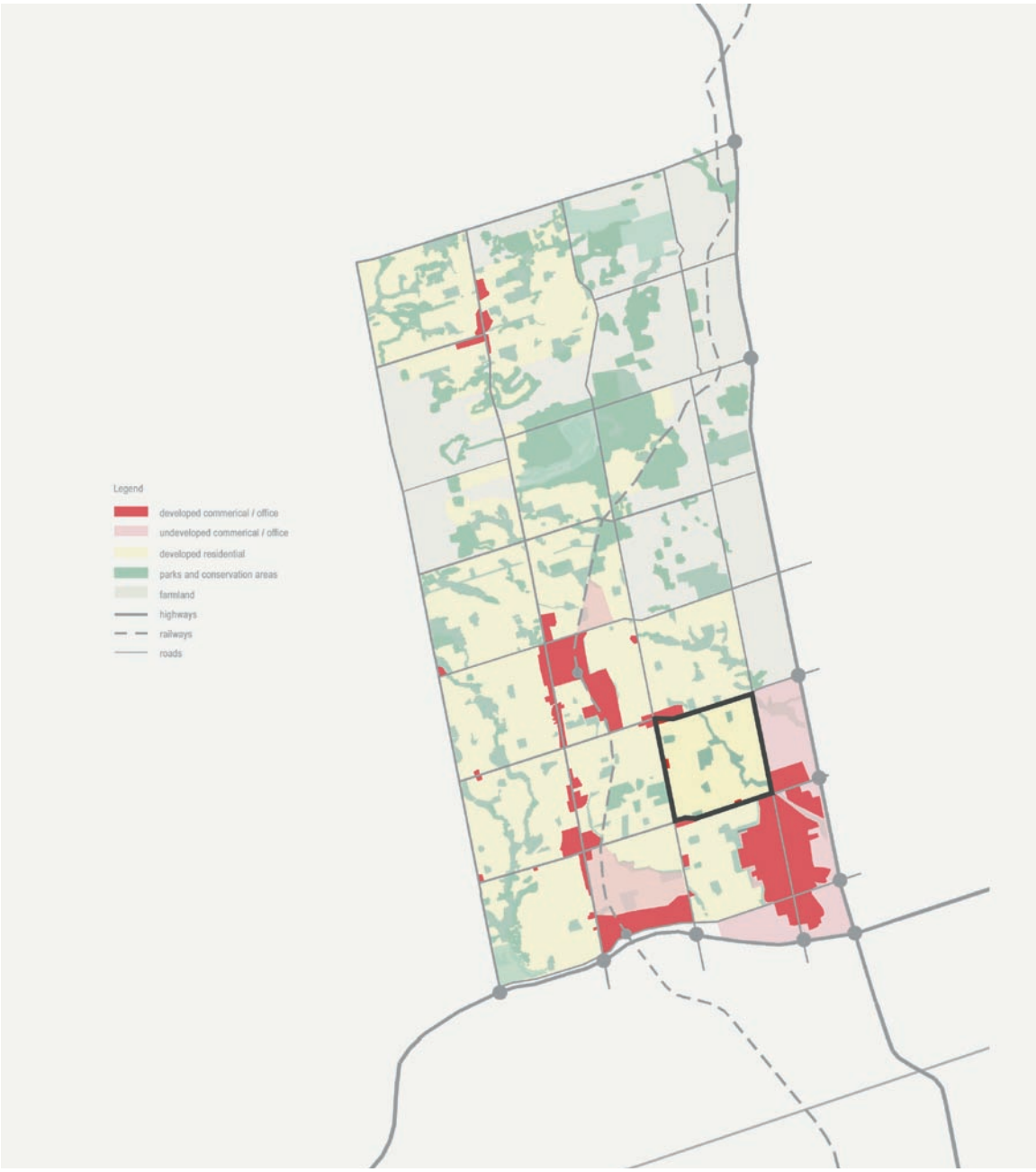
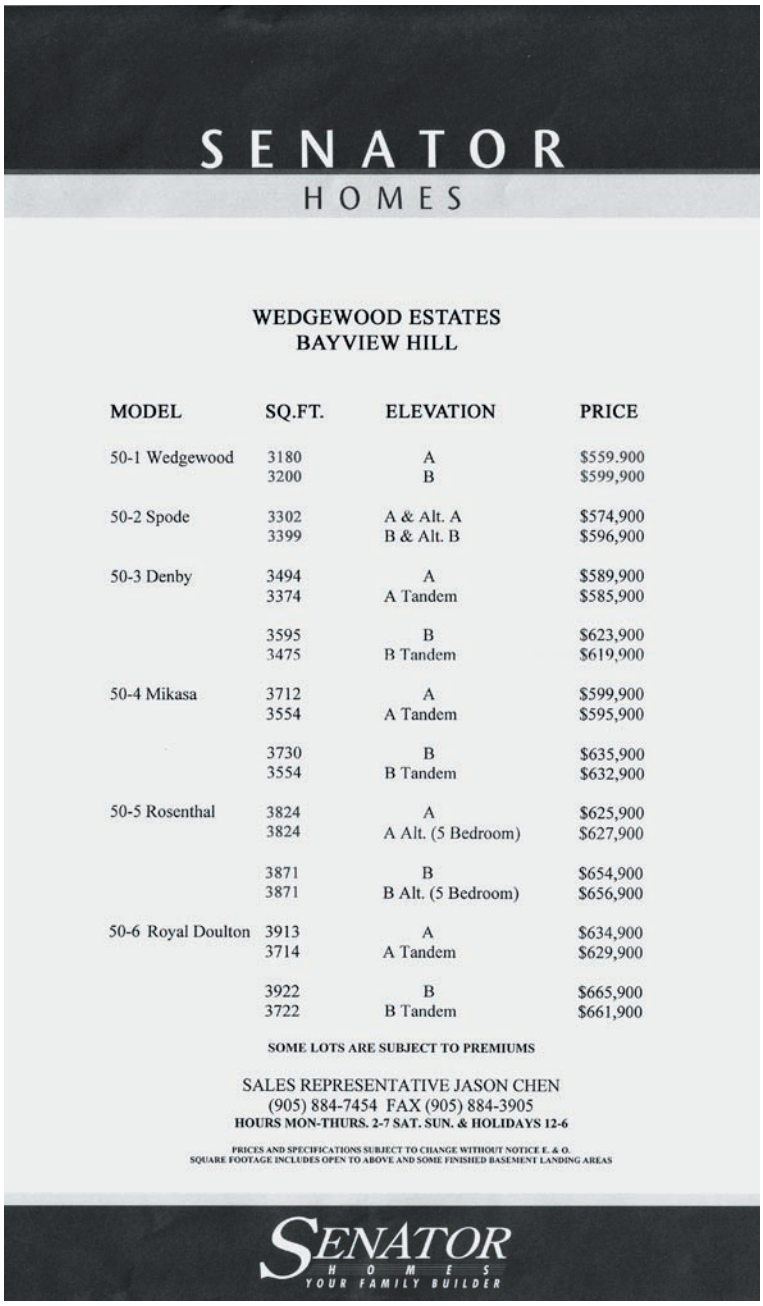

Legend
developed commerical / office
undeveloped commerical / office
developed residential
parks and conservation areas
farmland
highways
railways
roads

Figure 2.34
The Neighbourhood of Bayview Hill Diagram of Urban Program
Commercial buildings in Bayview Hill are contained on the perimeter of the city block, maintaining the purity the residential building type within the neighbourhood block. An elementary school on the south west side and a central community building are the only two non-residential buildings inside Bayview Hills.

Figure 2.35
Bayview Hills Aerial Photo
The considerably larger houses and lots size in addition to the high number of cul-de-sacs and crescents sets Bayview Hills apart from adjacent neighbourhoods as a private high- community of luxury homes.

Figure 2.36
'The Wedgewood'
Elevation A, Rending on Promotional Package by Senator Homes.
Fall 2003, the Senator Homes Company developed the last vacant property in Bayview Hills into neighbourhood of luxury homes.

Figure 2.37
'The Wedgewood'
Elevation B, Rending on Promotional Package by Senator Homes.
Like many developers, Sentor Homes mass produced houses with the interior layout, then clad each house with different styles, materials and colours to create a variety of elevations for customers to choose from.



SENATOR
HOMES

WEDGEWOOD ESTATES
BAYVIEW HILL

MODEL	SQ.FT.	ELEVATION	PRICE
50-1 Wedgewood	3180	A	$559.900
	3200	B	$599,900
50-2 Spode	3302	A & Alt. A	$574,900
	3399	B & Alt. B	$596,900
50-3 Denby	3494	A	$589,900
	3374	A Tandem	$585,900
	3595	B	$623,900
	3475	B Tandem	$619,900
50-4 Mikasa	3712	A	$599,900
	3554	A Tandem	$595,900
	3730	B	$635,900
	3554	B Tandem	$632,900
50-5 Rosenthal	3824	A	$625,900
	3824	A Alt. (5 Bedroom)	$627,900
	3871	B	$654,900
	3871	B Alt. (5 Bedroom)	$656,900
50-6 Royal Doulton	3913	A	$634,900
	3714	A Tandem	$629,900
	3922	B	$665,900
	3722	B Tandem	$661,900

SOME LOTS ARE SUBJECT TO PREMIUMS

SALES REPRESENTATIVE JASON CHEN
(905) 884-7454 FAX (905) 884-3905
HOURS MON-THURS. 2-7 SAT. SUN. & HOLIDAYS 12-6

PRICES AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE E. & O.
SQUARE FOOTAGE INCLUDES OPEN TO ABOVE AND SOME FINISHED BASEMENT LANDING AREAS

SENATOR HOMES
YOUR FAMILY BUILDER

Figure 2.38
Senetor Homes Price List
The price for a new four and five bedroom home in Bayview Hills ranges from $500,000 to $900,000. Residents of Bayview Hill, if faced diminishing property value due to rising oil prices, unlike other less afflent isolated suburbs will be in a position to invest money into thier property to maintain its value.

Figure 2.39
Looking Down Ridgley Court from Spadina Road.
A typical street in Bayview Hills is void of any signs of life. Single detached homes of the same size, shape and material create a continuous, monotonous indistinguishable urban fabric.

Figure 2.40
Two houses at the entrance of an enclave.
The street name engraved on a large stone which splits the road in two, portrays the public realm of the street as a private road for Bayview Hill's monster homes.

Figure 2.41
Looking out the Living Room Window of the Model Home.
The heightened similarity of uninhabited houses connected by continuous ground plane of soil accentuates the assembly line building process of suburban homes.

Figure 2.42
On the Senator Homes Construction Site.
The fronts of houses clad in different materials may give the illusion of diversity, but unfinished backyards reveal that these houses are not similar but identical.

Figure 2.43
View of Backyards from the East Beaver Greenway.
Glimpses of the backs of even inhabited houses reveal that each house has a similar interior layout.

Figure 2.44
Looking at Large House from East Beaver Greenway.
Typical four thousand square feet monster houses consist of four bedrooms each with their own en suite bathroom.

Figure 2.45
Senator Homes Wedgewood Sales Office, Bayview Hills.
The Senator Homes successfully developed and sold all their houses in Bayview Hills.

Figure 2.46
Model Home.
Model homes, with their classical appearance, can be bought are fully decorated and furnished with appliances, furniture and all other household accessories.

Figure 2.47
House under construction of Senator Construction site.
The construction of the home will be covered under layers of decorative ornamentation of a past era.

Figure 2.48
View Down unfinished road of Senator Construction Site
Houses at different stages of completion reveal the developers factory-like assembly-line construction.

Figure 2.49
'Teen Retreat' in Model Home
While the house exterior has a traditional appearance, the interior is furnished with modern furniture and technology, and decorated with icons of pop culture.

Figure 2.50
Kitchen of Model Home
The model kitchen is filled with the most up to date kitchen gadgets and appliances.

Figure 2.51
Walking Down Spadina Road.
While the interiors of homes are large and animated, the streets are empty and void of activity, reflecting rise of private culture and deterioration of public culture in the North American suburb.

Figure 2.52
School Crossing.
At three fifteen in the afternoon, a crossing guard appears at this crosswalk to stop traffic while children cross the road. Because of the high number of drivers, Bayview Hills sees itself as a neighbourhood unsafe for children and for pedestrians.

Figure 2.53
Crossing the Road Looking South on Bayview Avenue.
The speeding traffic on the arterial roads create pedestrian barriers.

Figure 2.54
Standing at the Side of the Road on Bayview Avenue Looking North.
Pedestrian crossings on arterial roads are few. Sidewalks with landscaping on either side are windy, cold and boring to walk along. Without a shop or phone booth in sight, an accident along this the sidewalk could remain unnoticed.

Figure 2.55
Children Playing in a Church Parking Lot.
As children in Italy play in a church piazza, these children of Bayview Hills, part of an after school church program, play in the church parking lot.

Figure 2.56
Children Playing in a Church Parking Lot.
Using a parking lot as a playground reflects Bayview Hill's lack of outdoor public space suitable for children.

Figure 2.57
Bayview Hills Community Centre Entrance
A giant parking lot forms a barrier between the pedestrian and the community centre entrance.

Figure 2.58
Car Entrance to Community Centre
Instead of engaging the street with a play space for children, the community centre engages the street with an entrance for cars.

Figure 2.59
Walking Along Beaver Greenway
The forest around Beaver Creek, which runs through Bayview Hills, has been preserved as parkland. The park's perimeter is defined by backyard fences.

Figure 2.60
Entrance of Beaver Greenway from Boake Trail.
Two kilometers of the Beaver Greenway runs through Bayview Hills, yet the park only has four park entrances and no recreational service buildings.

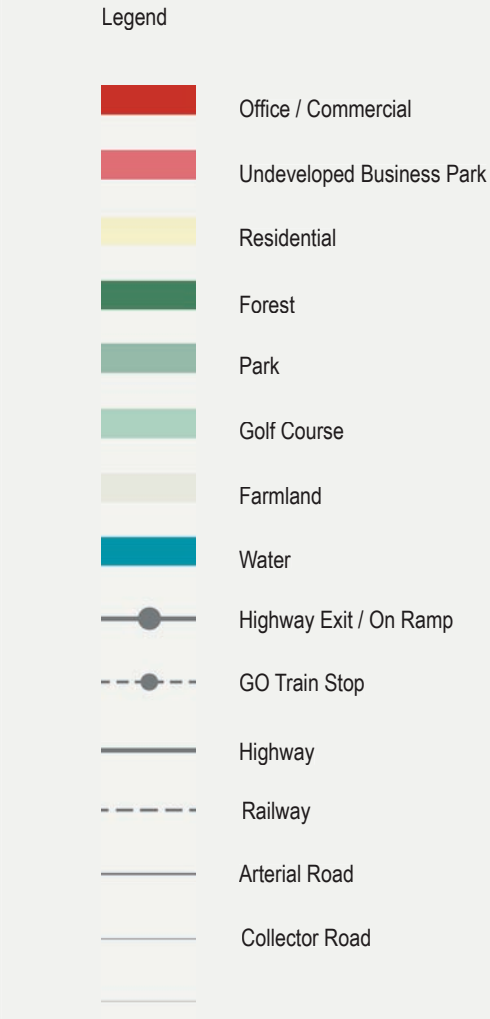
Figure 2.61
Senator Construction Site
Bayview Hills is an inward facing community that turns its back to farmlands that lie outside its borders.

Figure 2.62
Between two unfinished homes
The neighbourhood of Bayview Hills segregates itself from the social and public realm of Richmond Hill.

3 DESIGN

3.1 Town : Richmond Hill

Figure 3.01 Existing Zoning



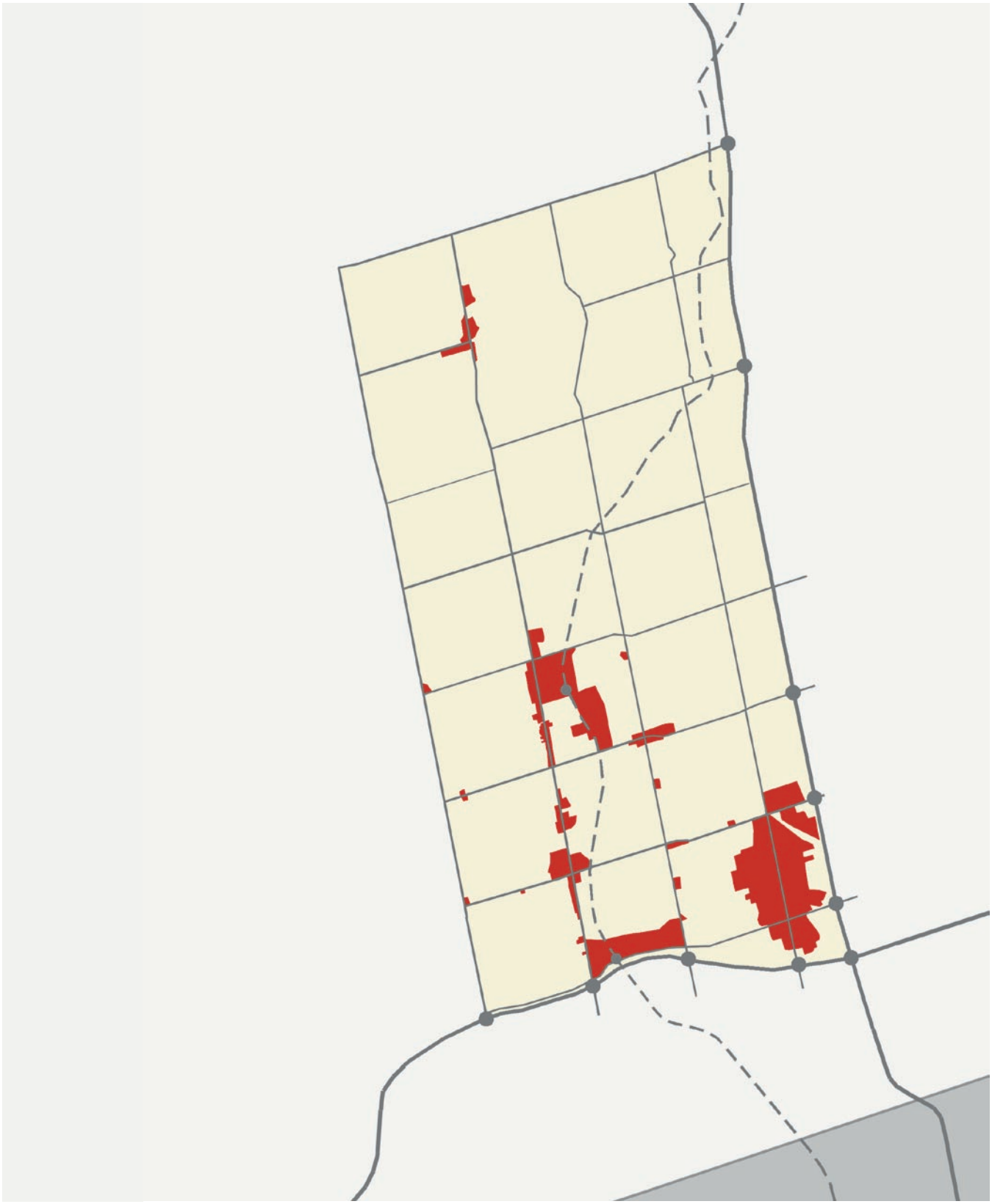
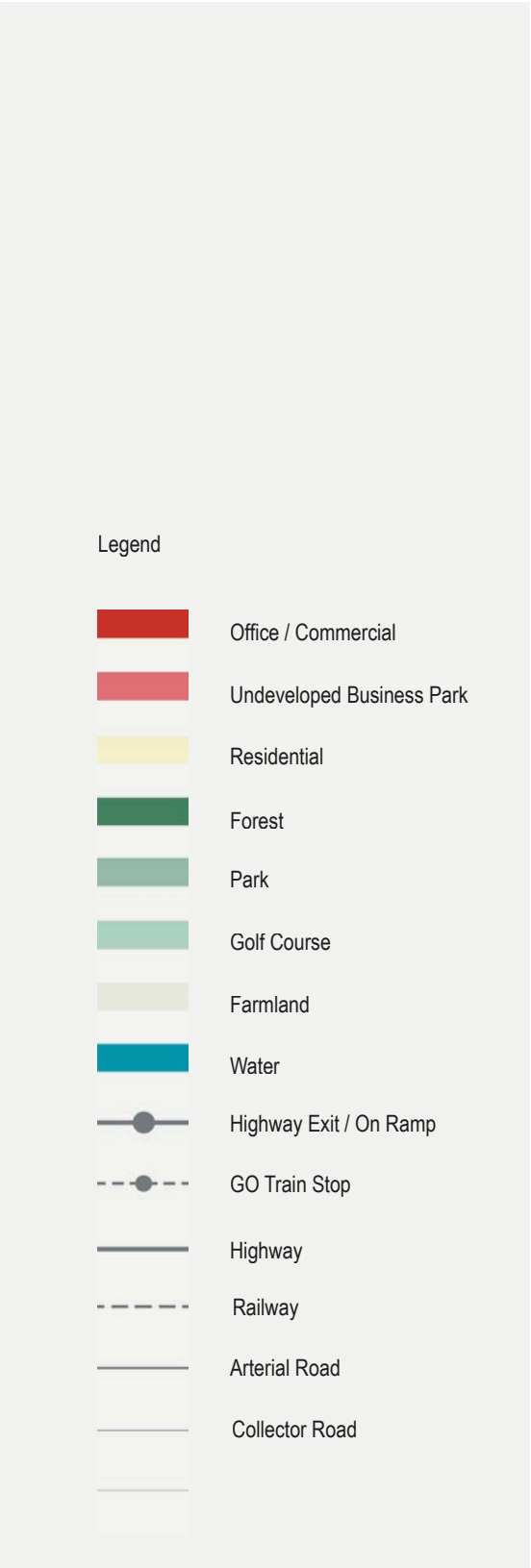


Figure 3.02 Proposed Zoning



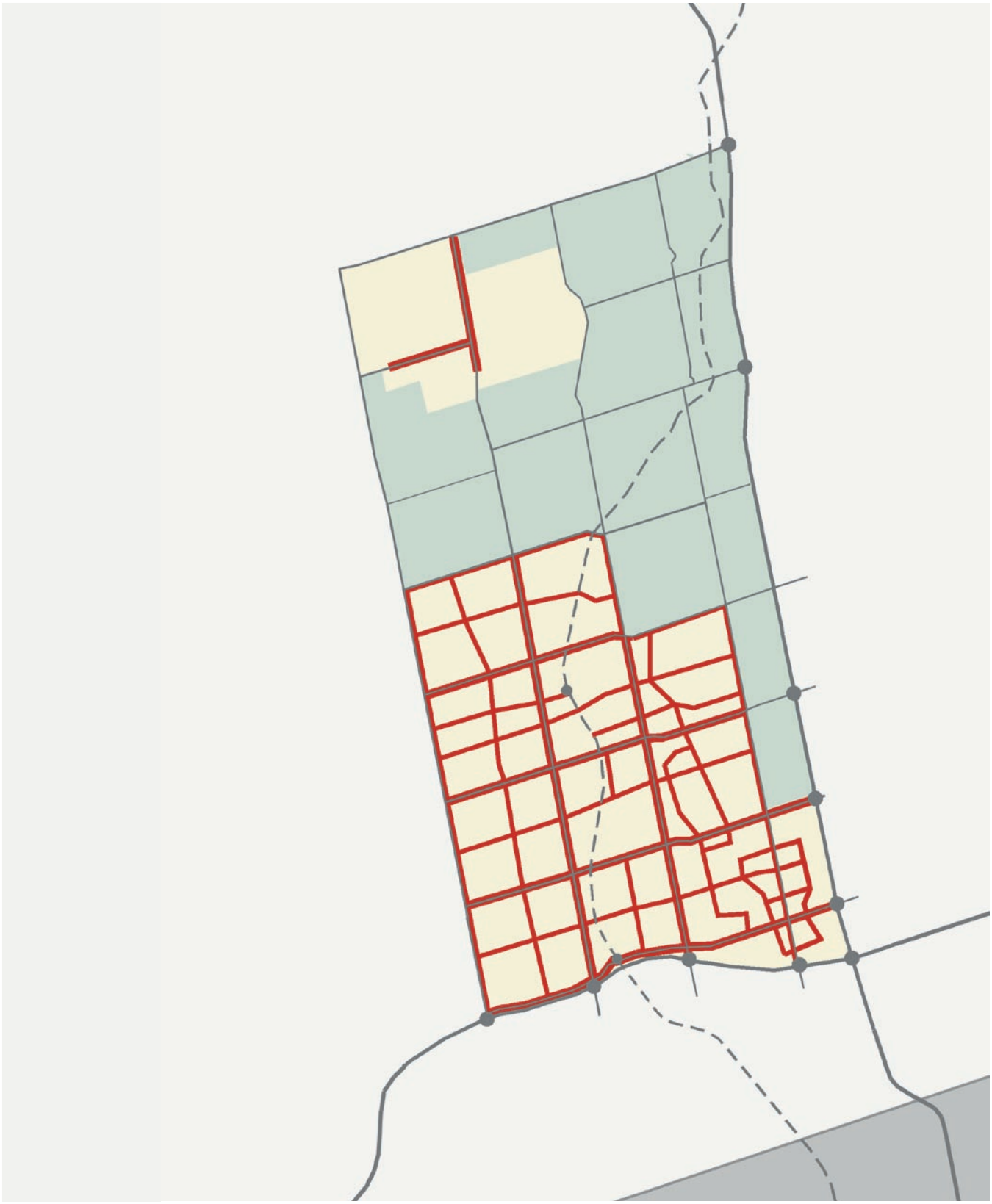
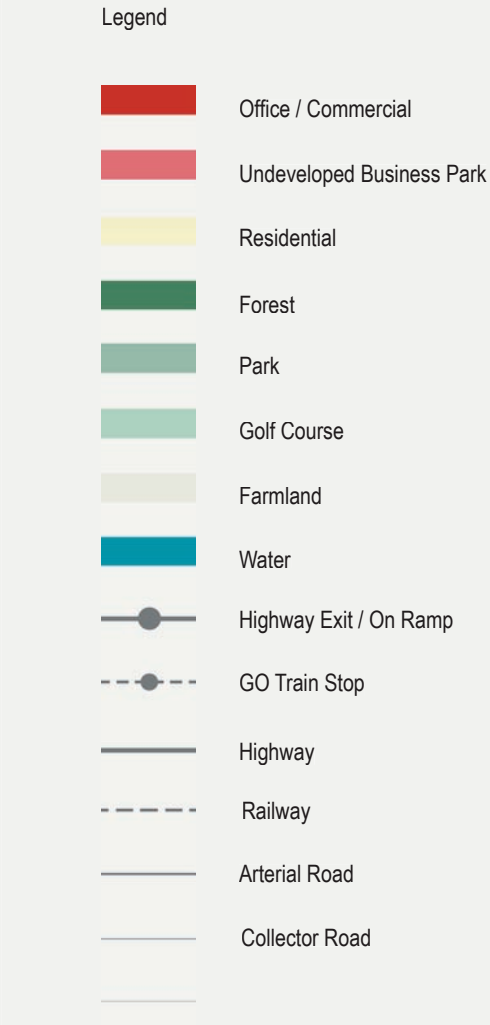
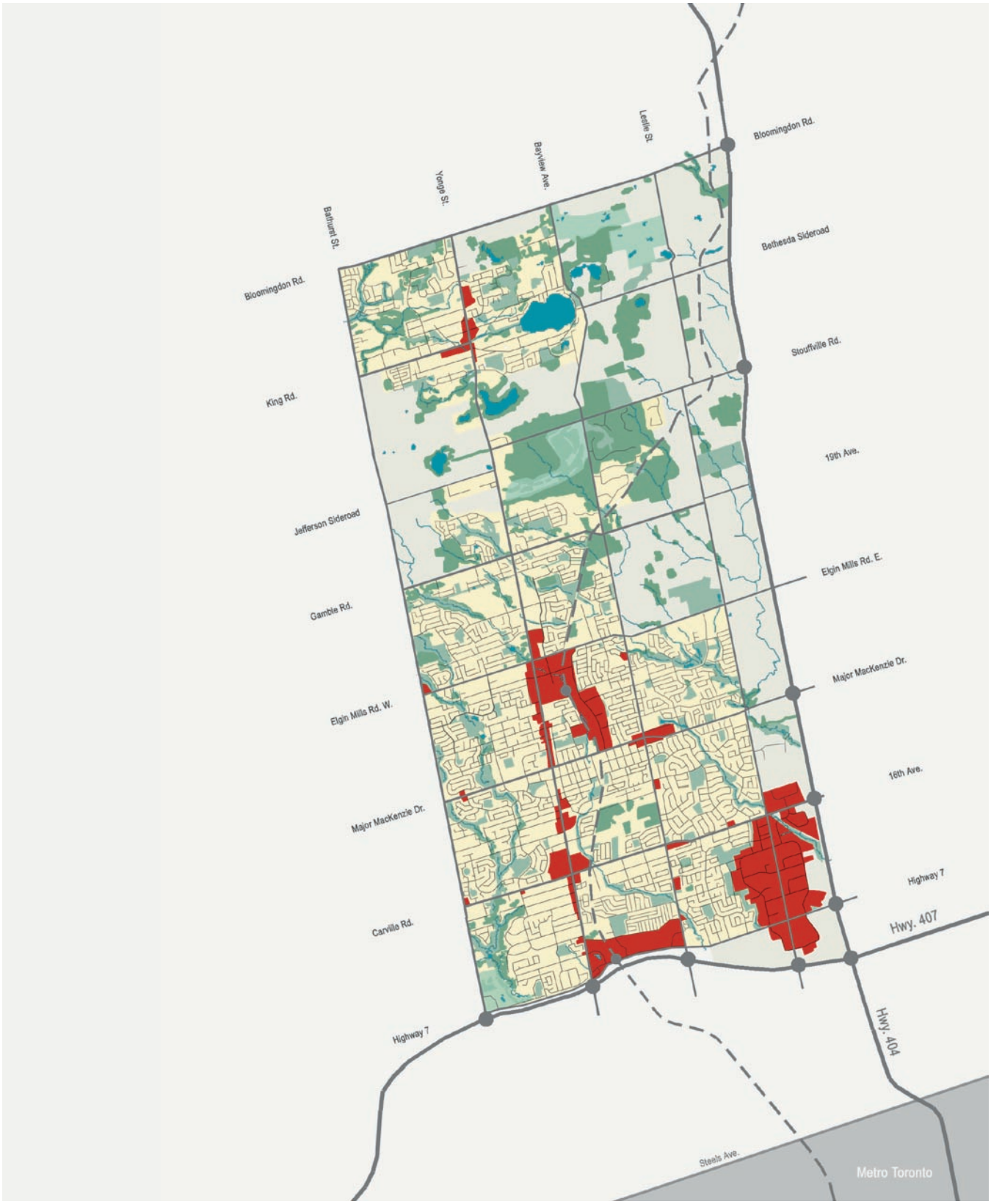


Figure 3.03 2005 Present Conditions
Projected Growth
Under Proposed Zoning

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Yonge St.
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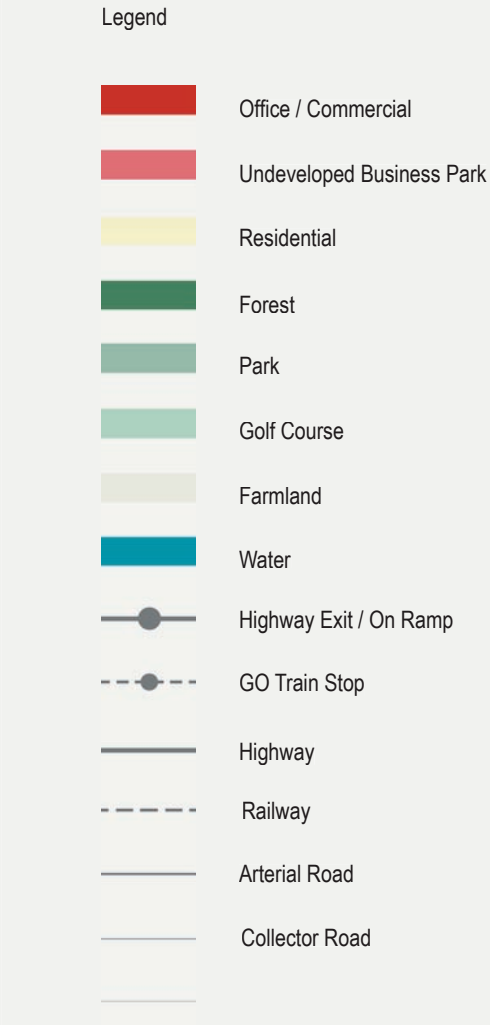
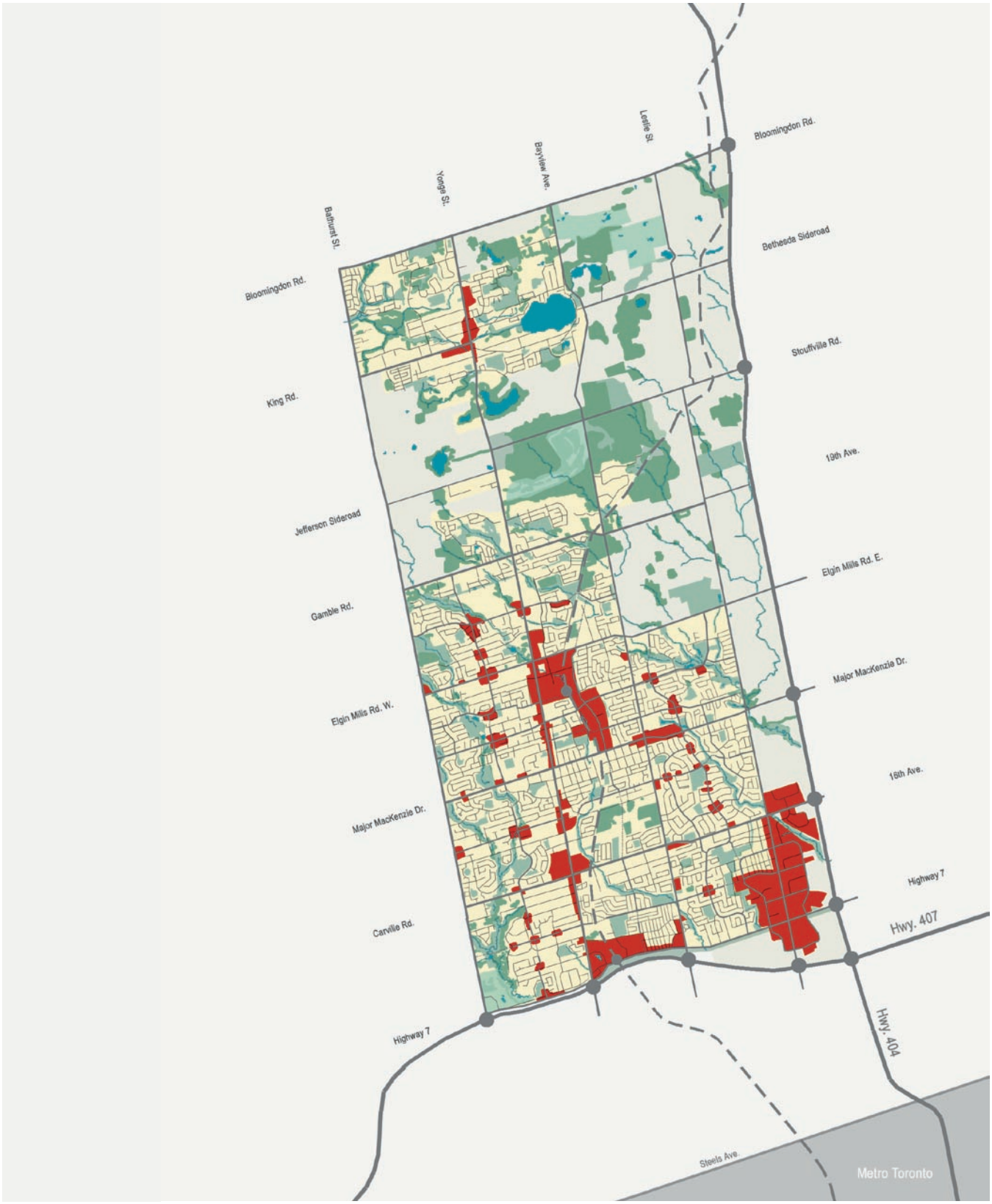
Leslie St.
Bloomingdon Rd.
Bathesda Sideroad
Stouffville Rd.
King Rd.
19th Ave.
Jefferson Sideroad
Elgin Mills Rd. E.
Gamble Rd.
Major MacKenzie Dr.
Elgin Mills Rd. W.
16th Ave.
Major MacKenzie Dr.
Highway 7
Carville Rd.
Hwy. 407
Highway 7
Hwy. 404
Steels Ave.
Metro Toronto

Figure 3.04 2010 + 5 years
Projected Growth
Under Proposed Zoning

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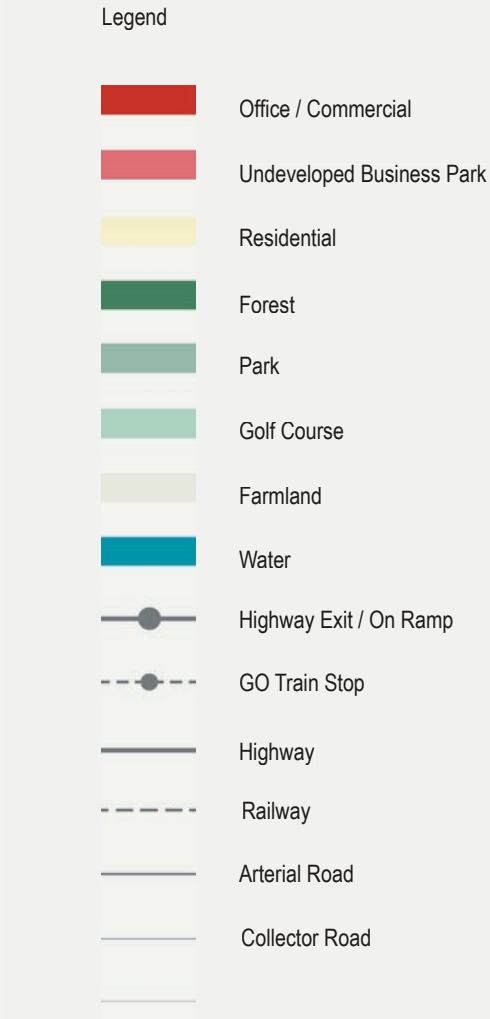
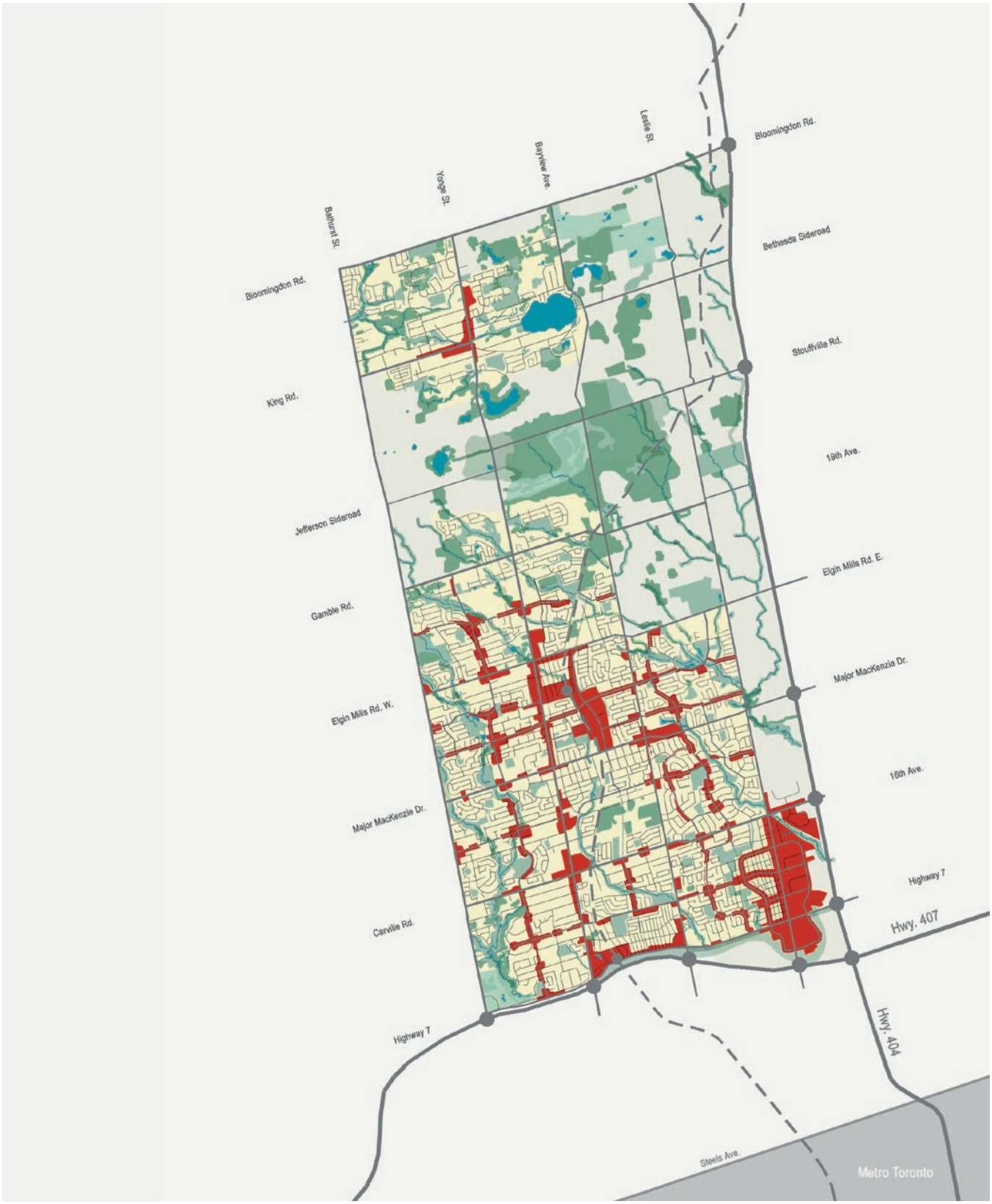
Jefferson Sideroad
Elgin Mills Rd. E.
Gamble Rd.
Major MacKenzie Dr.
Elgin Mills Rd. W.
16th Ave.
Major MacKenzie Dr.
Highway 7
Carville Rd.
Hwy. 407
Highway 7
HWY. 404
Steels Ave.
Metro Toronto

Figure 3.05 2015 + 10 years
Projected Growth
Under Proposed Zoning

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Elgin Mills Rd. E.
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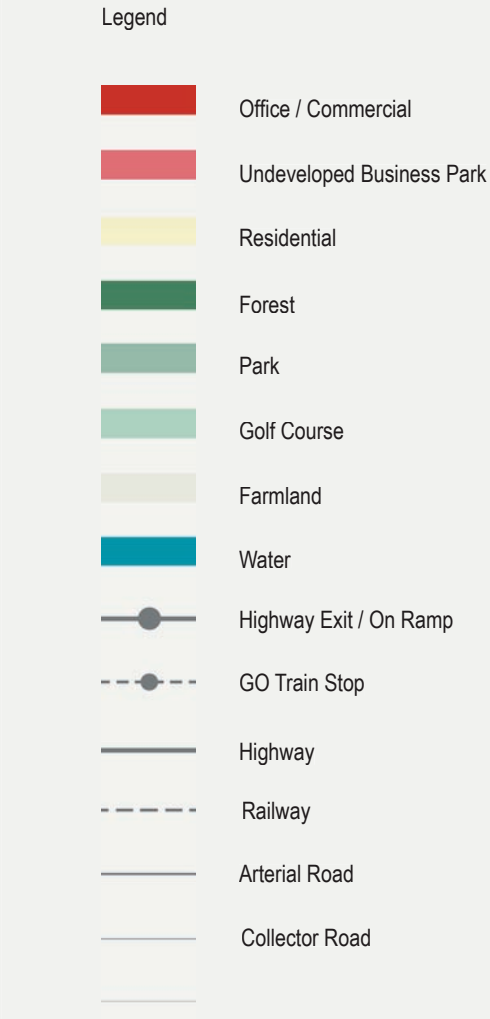
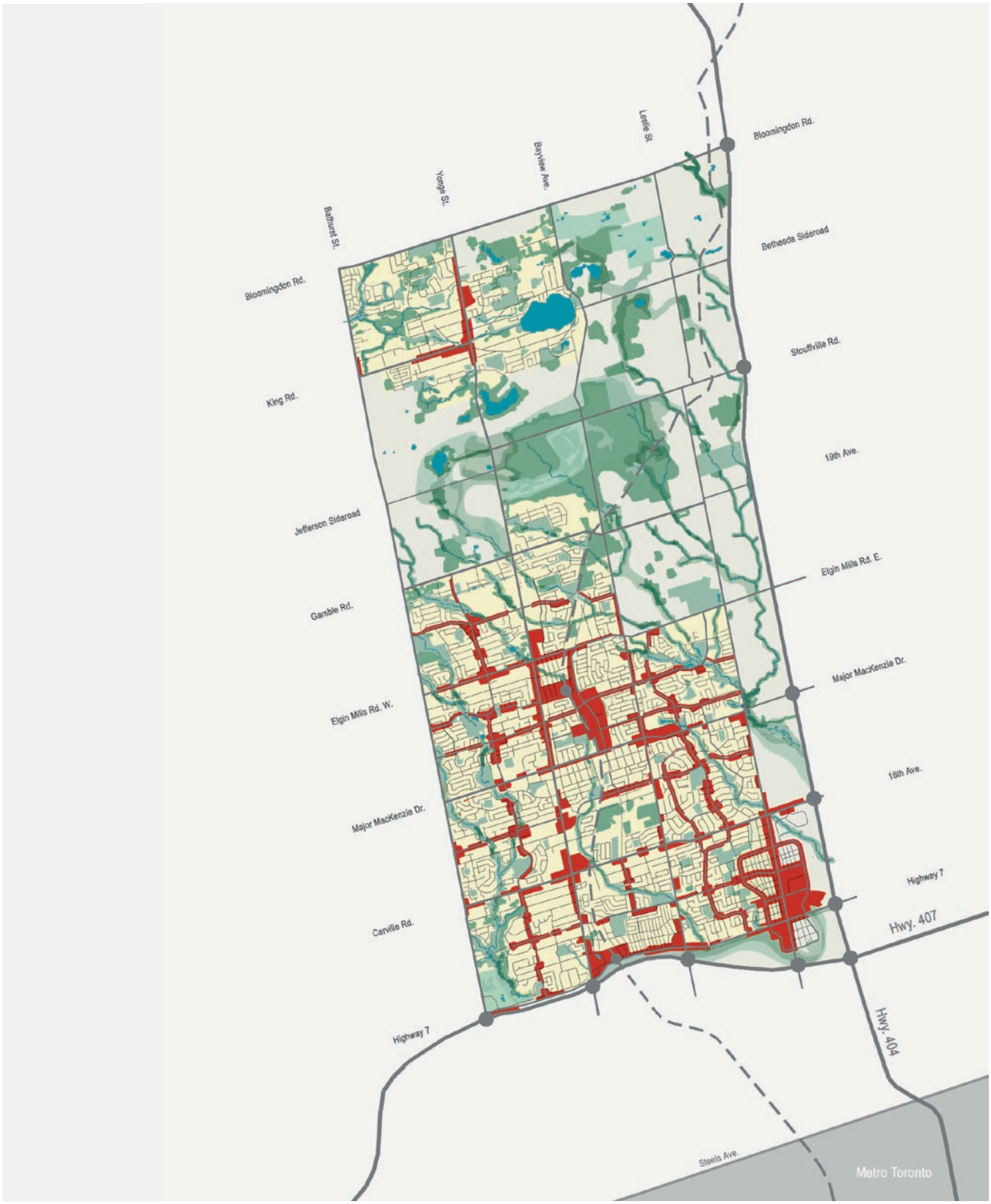
Major MacKenzie Dr.
Elgin Mills Rd. W.
16th Ave.
Major MacKenzie Dr.
Highway 7
Hwy. 407
Carville Rd.
Highway 7
HWY. 404
Steels Ave.
Metro Toronto

Figure 3.06 2020 + 15 years
Projected Growth
Under Proposed Zoning

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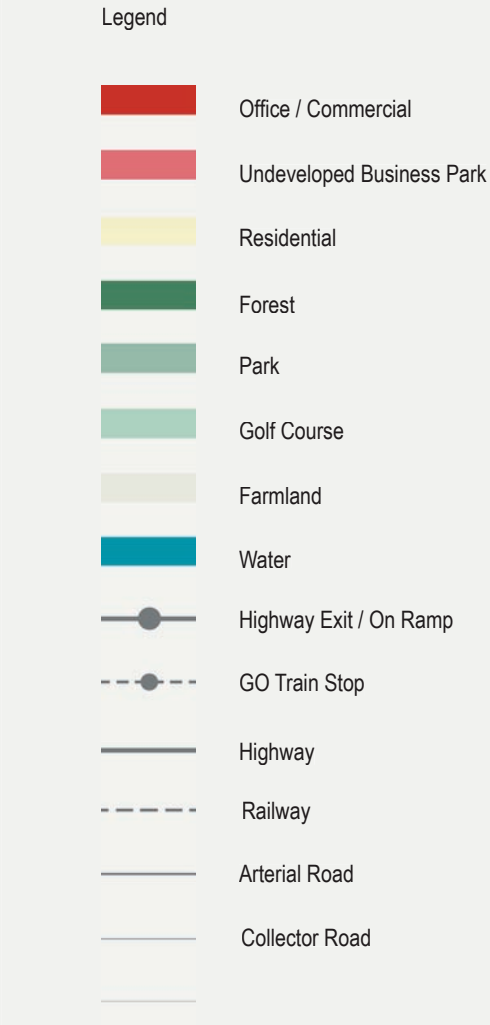
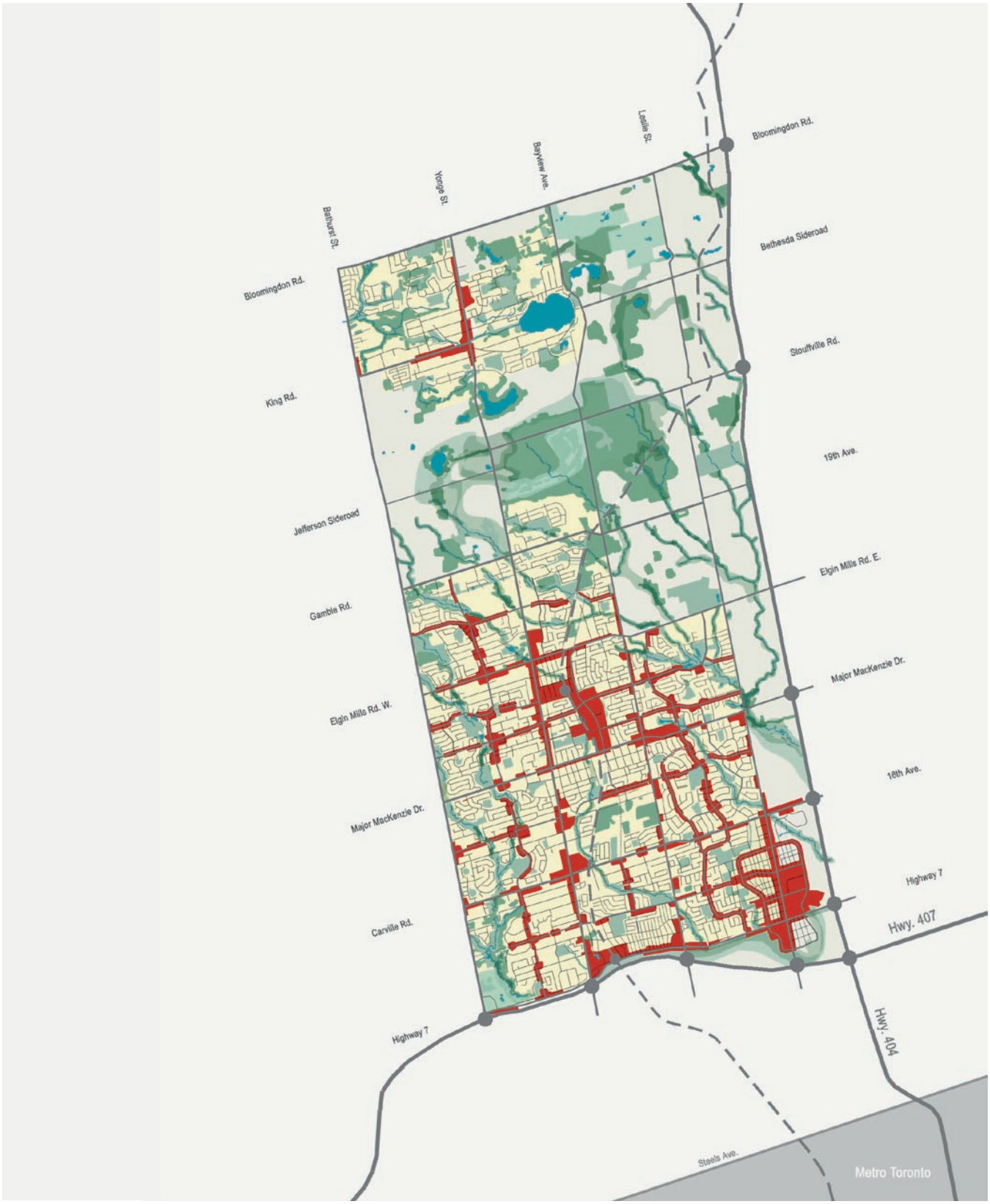
Elgin Mills Rd. W.
16th Ave.
Major MacKenzie Dr.
Highway 7
Carville Rd.
Hwy. 407
Highway 7
Hwy. 404
Steels Ave.
Metro Toronto

Figure 3.07 **2025** **+ 20 years**
Projected Growth
Under Proposed Zoning

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Major MacKenzie Dr.
Elgin Mills Rd. W.
16th Ave.
Major MacKenzie Dr.
Highway 7
Carville Rd.
Hwy. 407
Highway 7
HWY. 404
Steels Ave.
Metro Toronto

3.2 Neighbourhood : Bayview Hills

Figure 3.08 Existing Zoning

Figure 3.09 Proposed Zoning

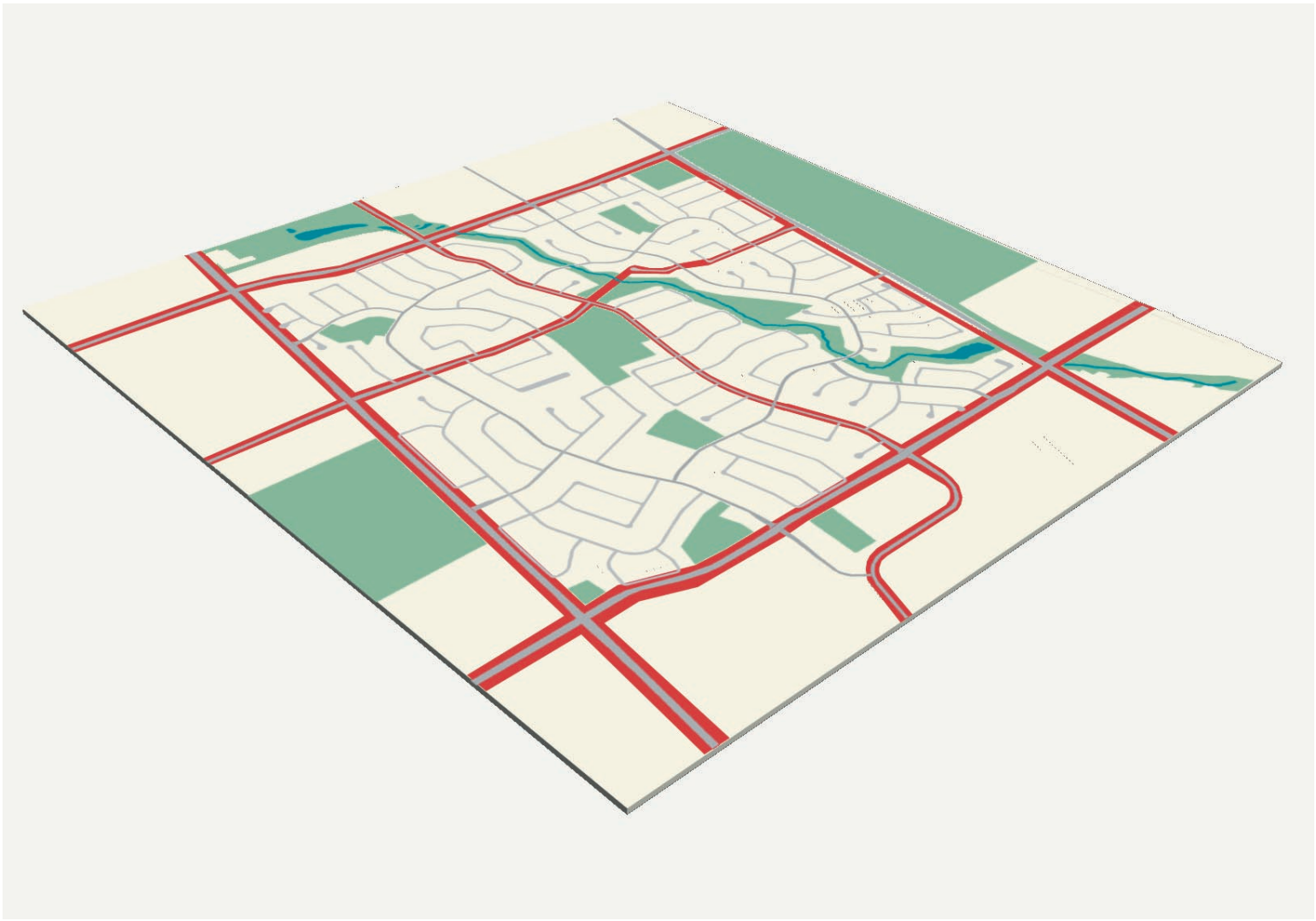


Figure 3.10 2005 Present Conditions
Projected Growth Under Proposed Zoning

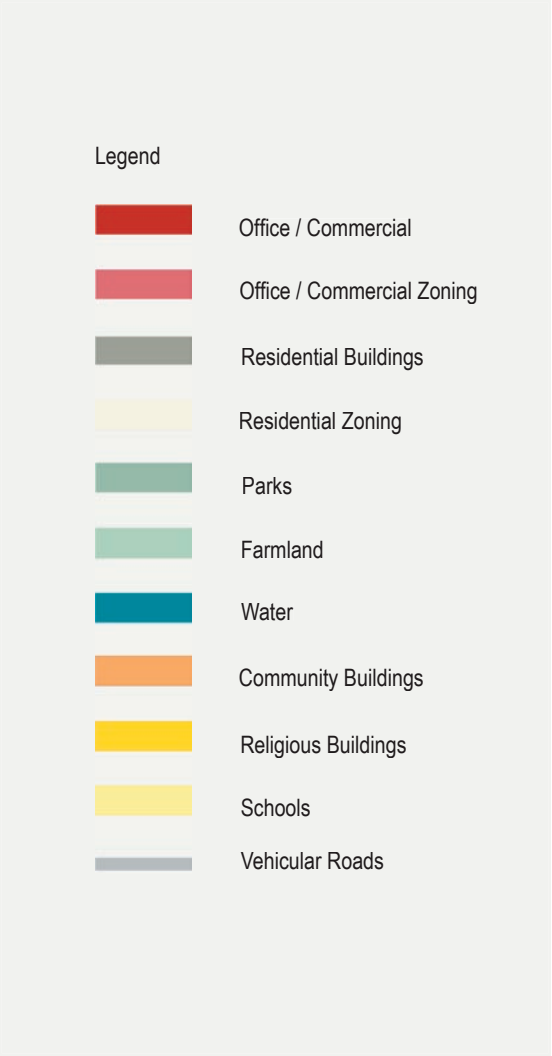


Figure 3.11 2010 + 5 years
Projected Growth Under Proposed Zoning

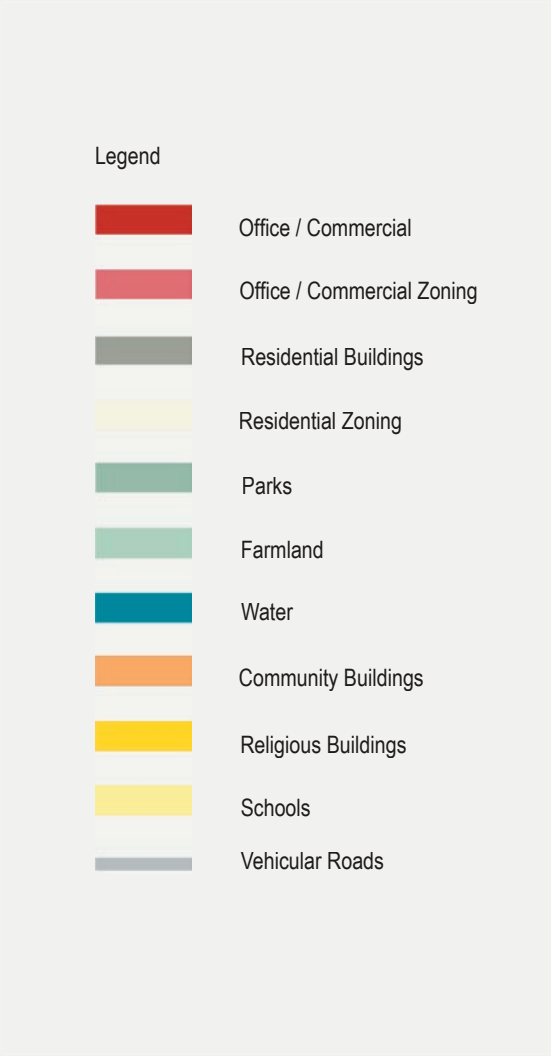


Figure 3.12 2015 + 10 years
Projected Growth Under Proposed Zoning

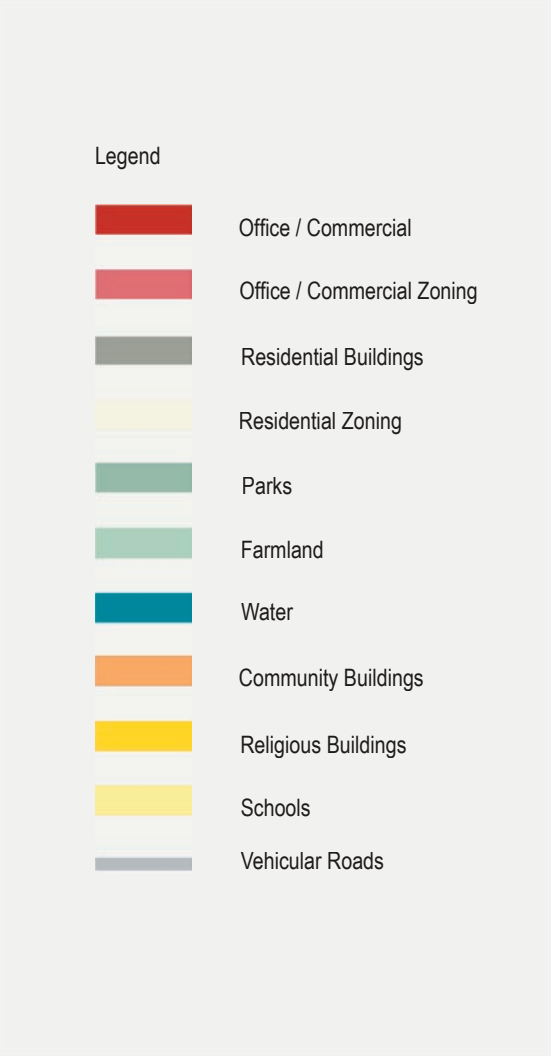
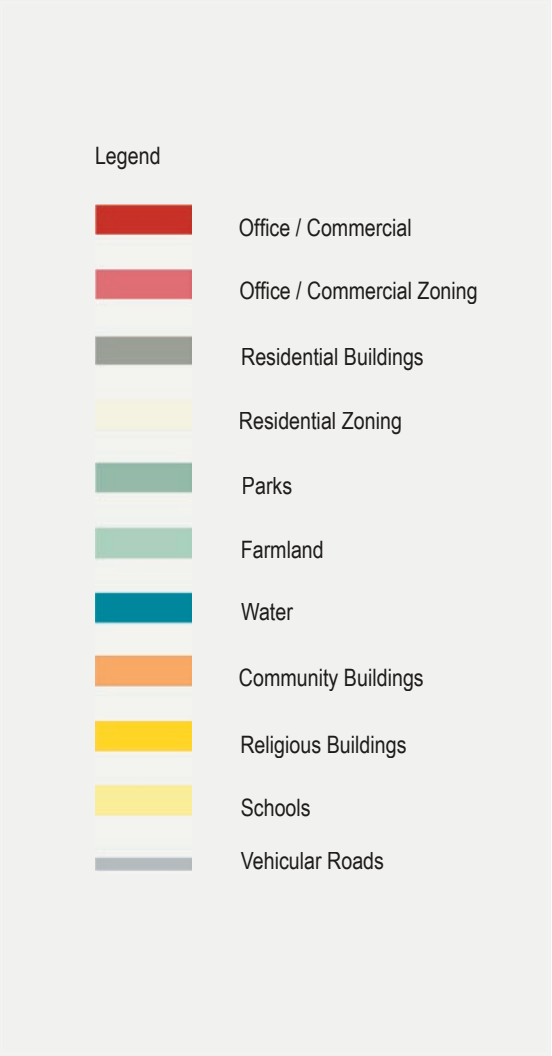


Figure 3.13 2020 + 15 years
Projected Growth Under Proposed Zoning



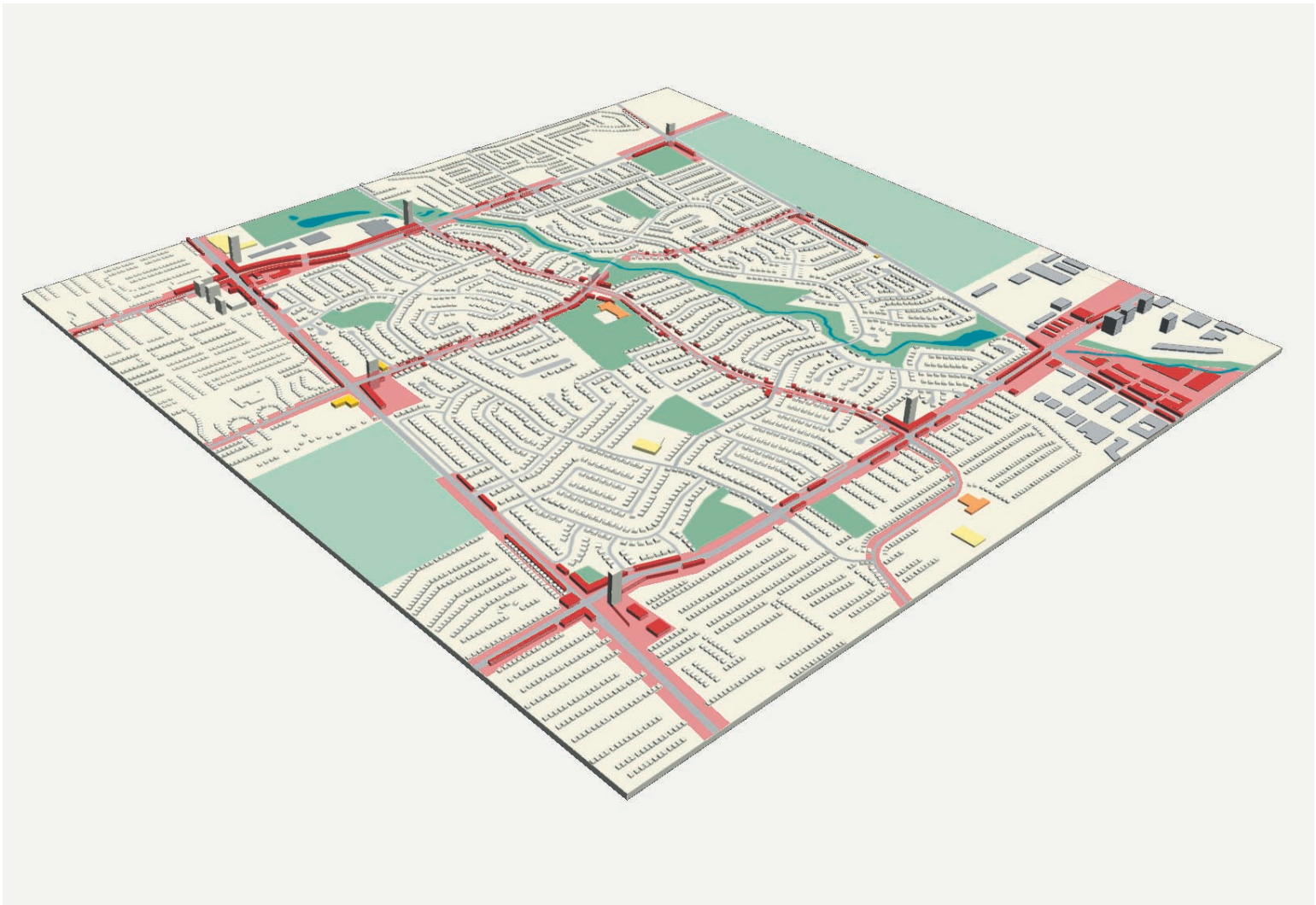
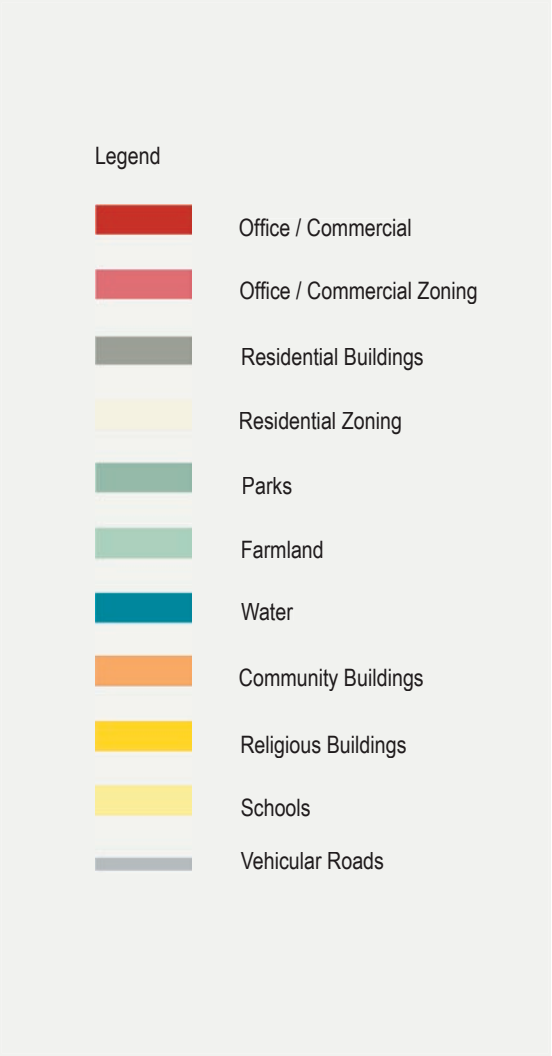


Figure 3.14 2025 + 20 years
Projected Growth Under Proposed Zoning

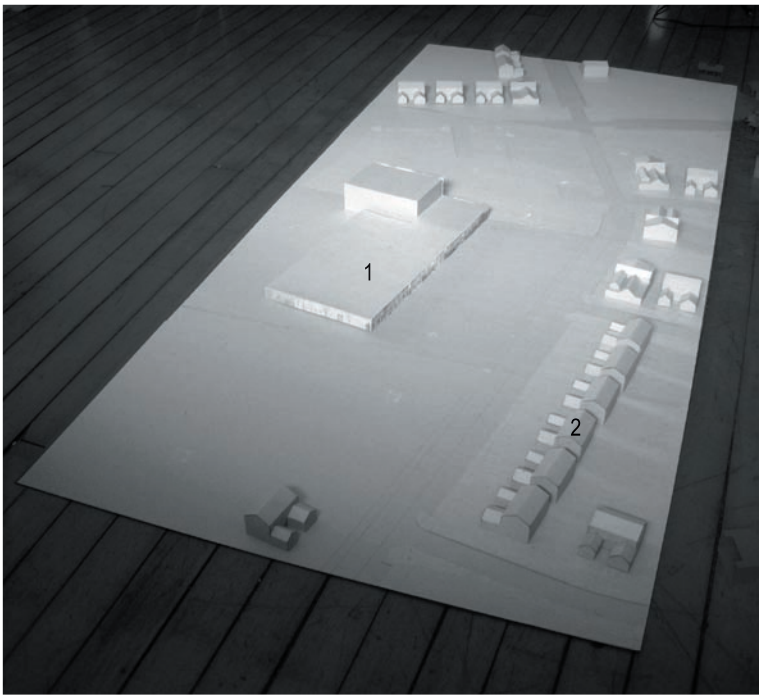


3.3 Square : Bayview Hills Square

Figure 3.15 2005 present conditions
Projected Growth Under Proposed Zoning

Existing Buildings

1 Existing Community Centre with Swimming Pool and Gymnasium
2 Existing Suburban Houses



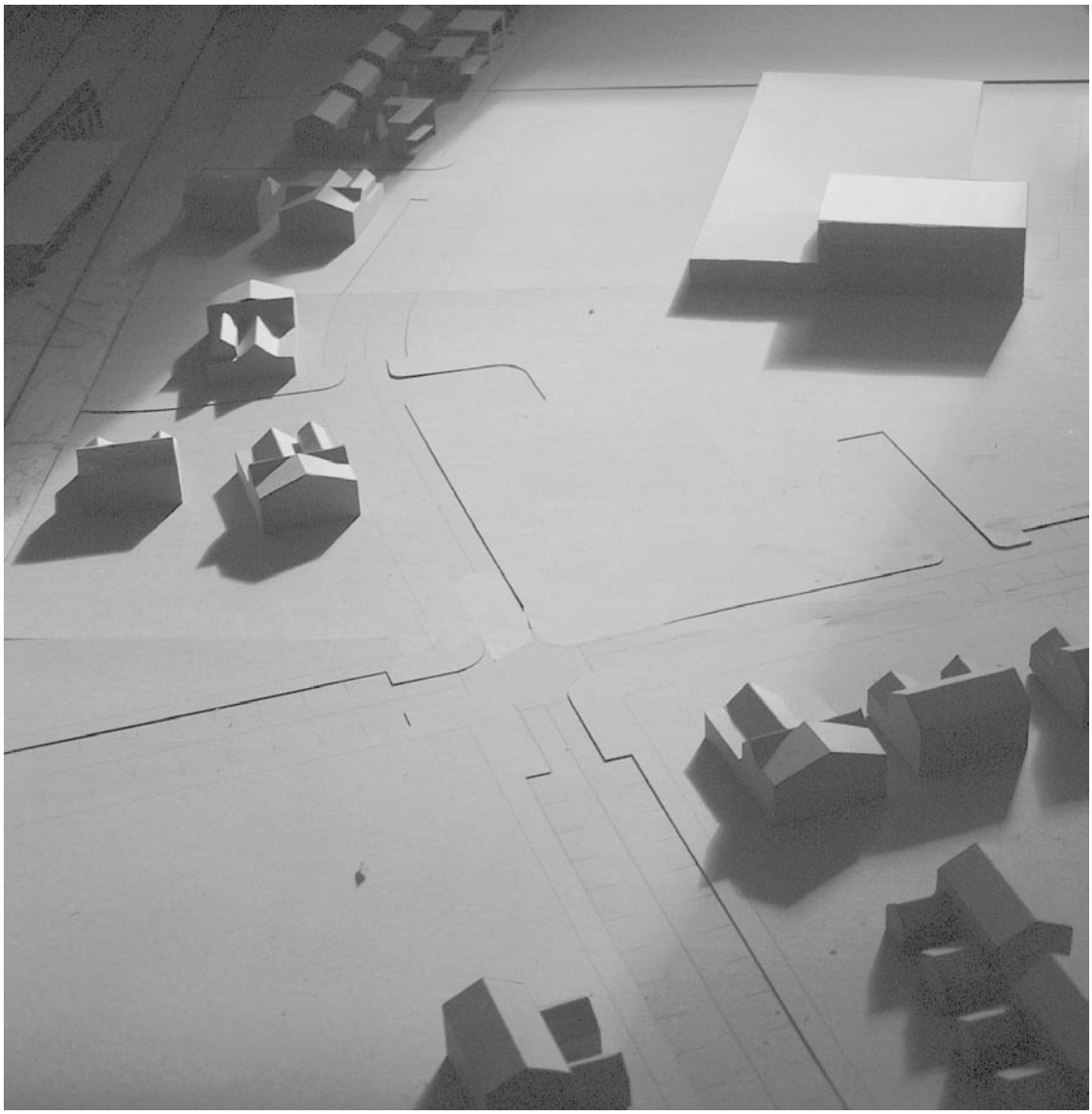
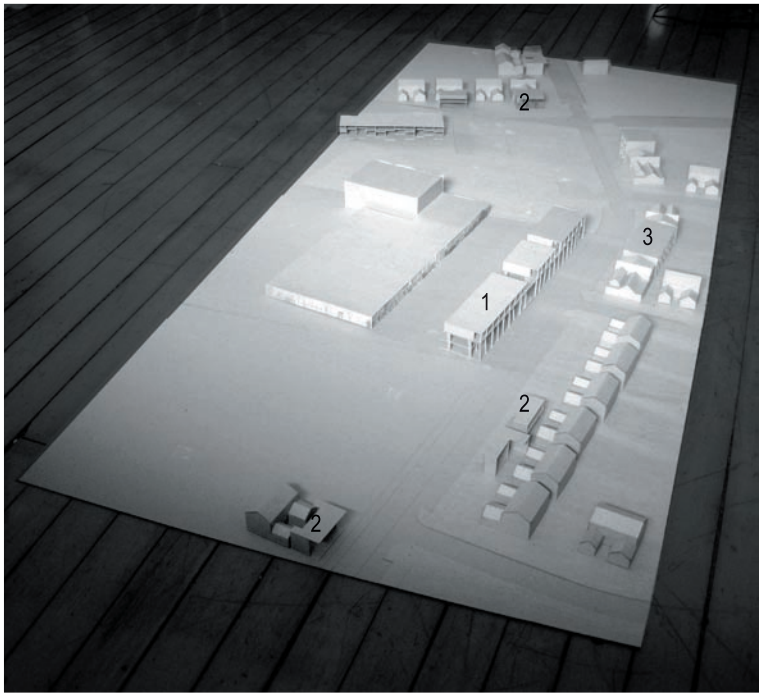


Figure 3.16 2010 + 5 years

Projected Growth Under Proposed Zoning

New Buildings

1 Three Storey Work / Live Building with Arcade
2 Suburban House Front Lawn Commercial / Office Addition
3 Suburban Corner House Backyard Addition



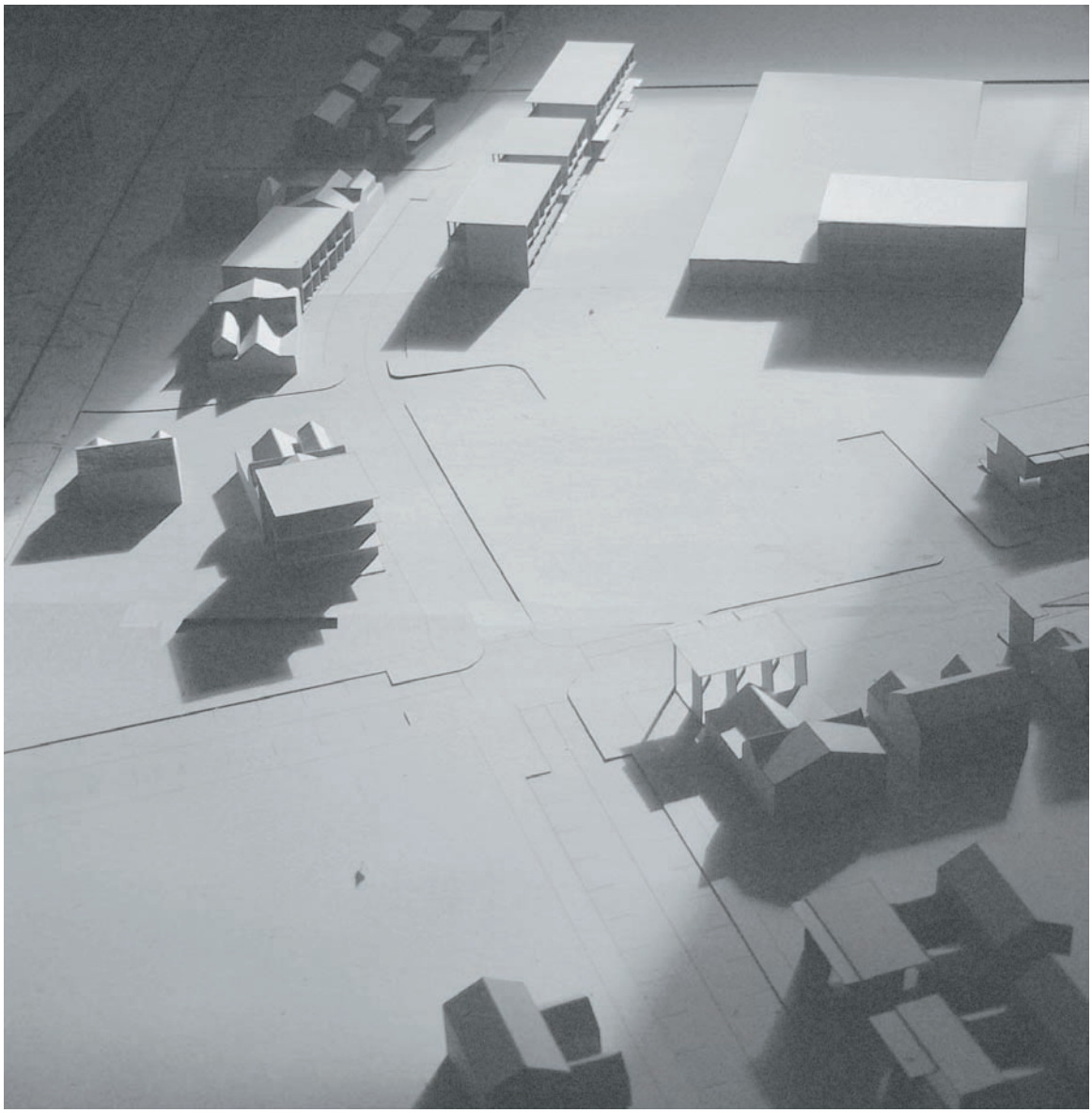
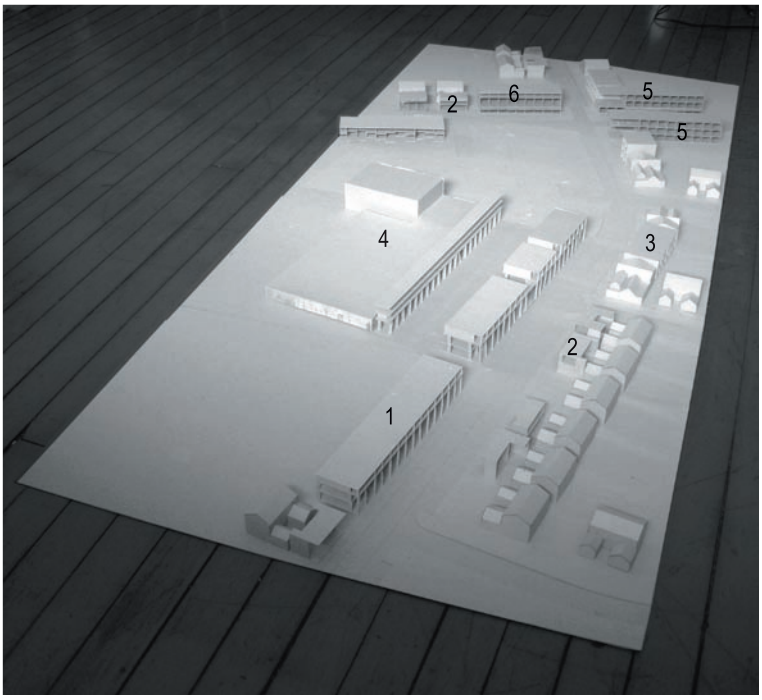


Figure 3.17 2015 + 10 years

Projected Growth Under Proposed Zoning

New Buildings

1 Three Storey Work / Live Building with Arcade
2 Suburban House Front Lawn Commercial / Office Addition
3 Suburban Corner House Backyard Office / Commercial Addition
4 Community Centre Front Addition
5 Three Storey Seniors Residence with Ground Floor Commercial
6 Three Storey Office / Commercial Building



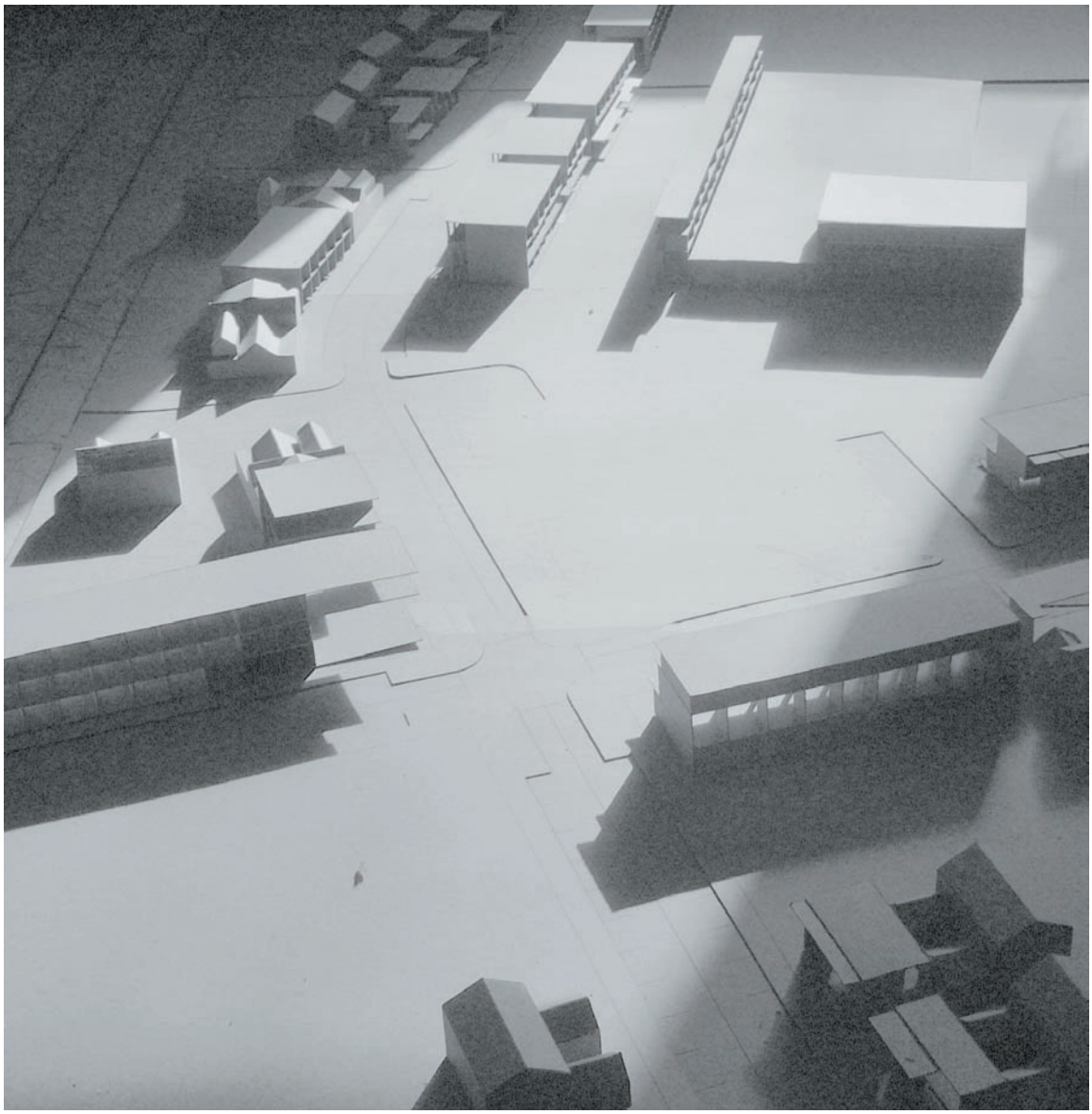
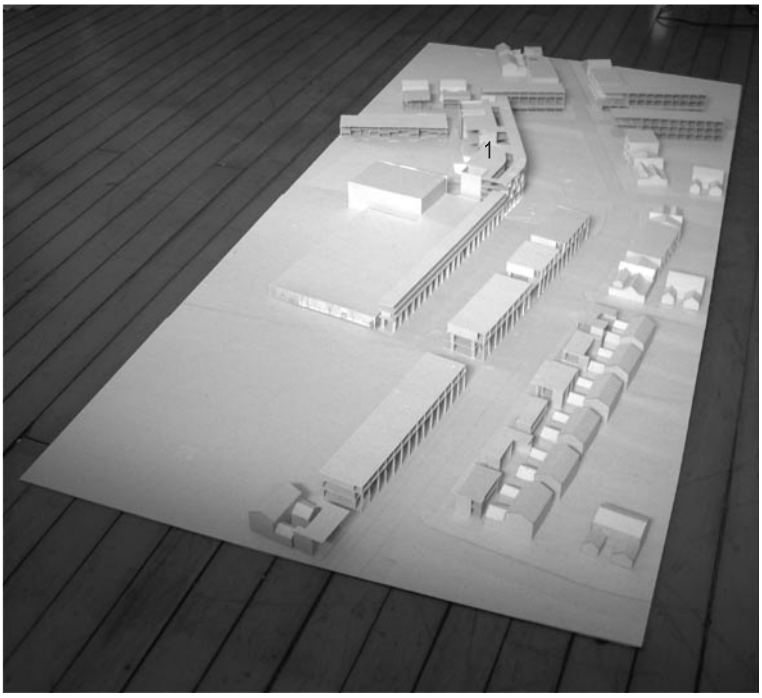


Figure 3.18 2020 + 15 years

Projected Growth Under Proposed Zoning

New Buildings

1 Bayview Hills Tele-Office with Daycare, Post Office, Cafe and Market, Conference Hall and Sky Bar.



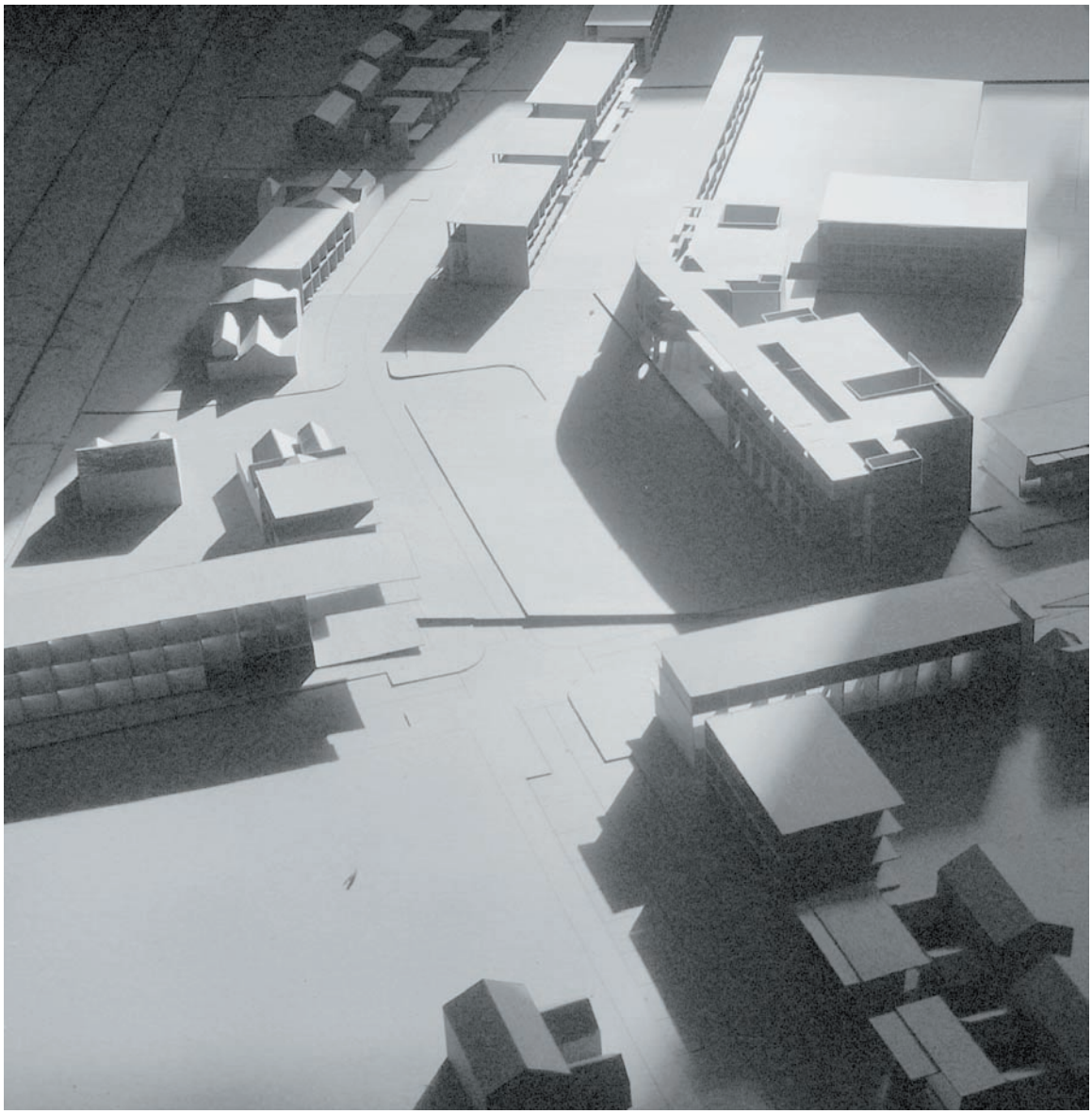
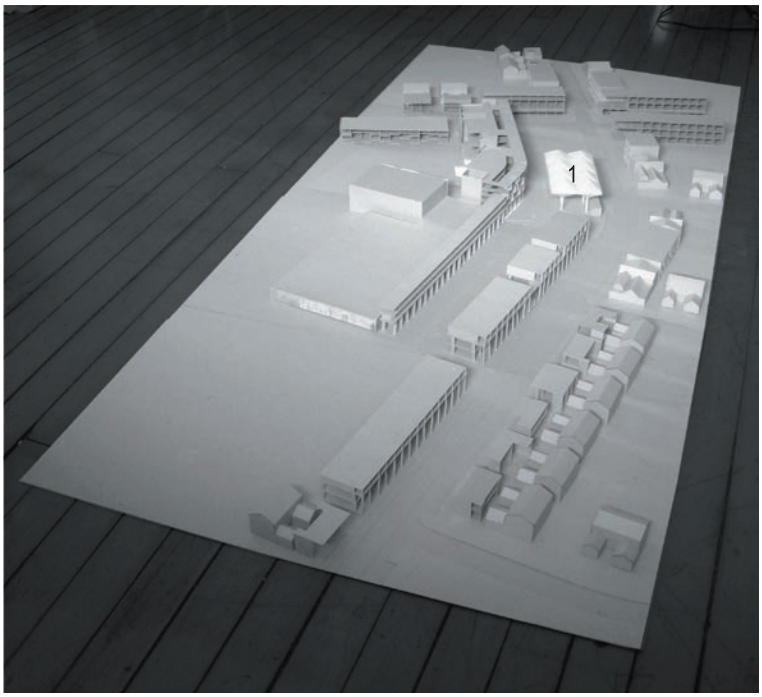


Figure 3.19 2025 + 20 years
Projected Growth Under Proposed Zoning

New Buildings

1 Bayview Hills Village Hall



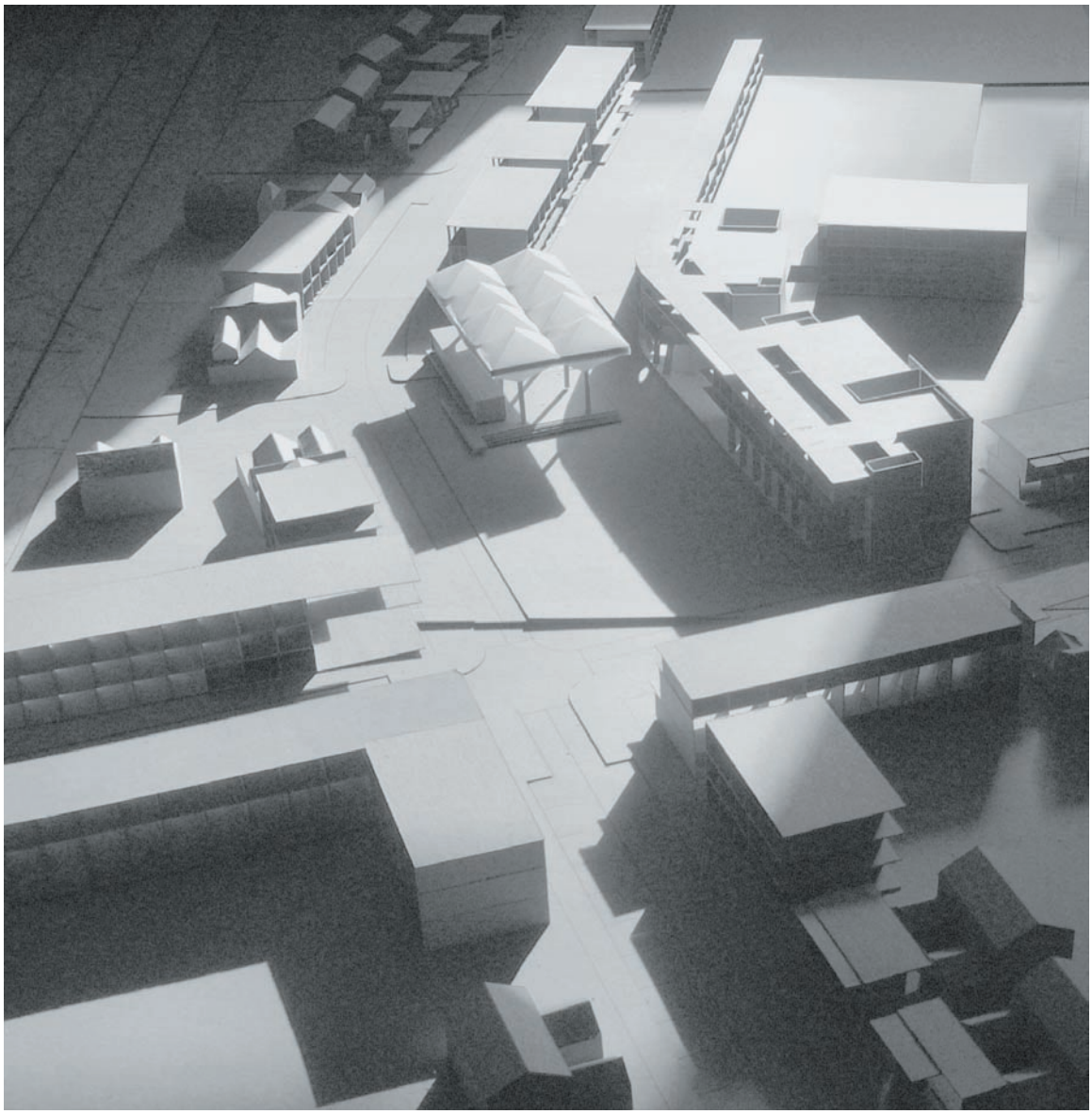


Figure 3.20 **Masterplan**
scale 1: 2000

New Buildings

1 Three Storey Work / Live Building with Arcade
2 Suburban House Front Lawn Commercial / Office Addition
3 Suburban Corner House Backyard Office / Commercial Addition
4 Community Centre Front Addition
5 Three Storey Seniors Residence with Ground Floor Commercial
6 Three Storey Office / Commercial Building
7 Bayview Hills Tele-Office with Daycare, Post Office, Cafe and Market, Conference Hall and Sky Bar
8 Bayview Hills Village Hall
9 Outdoor Swimming Pool
10 Reflecting Pool / Ice Skating Rink
11 Bayview Hills Square Outdoor Event Space
12 Wireless Communications Antenna Landmark
13 Village Hall Promenade

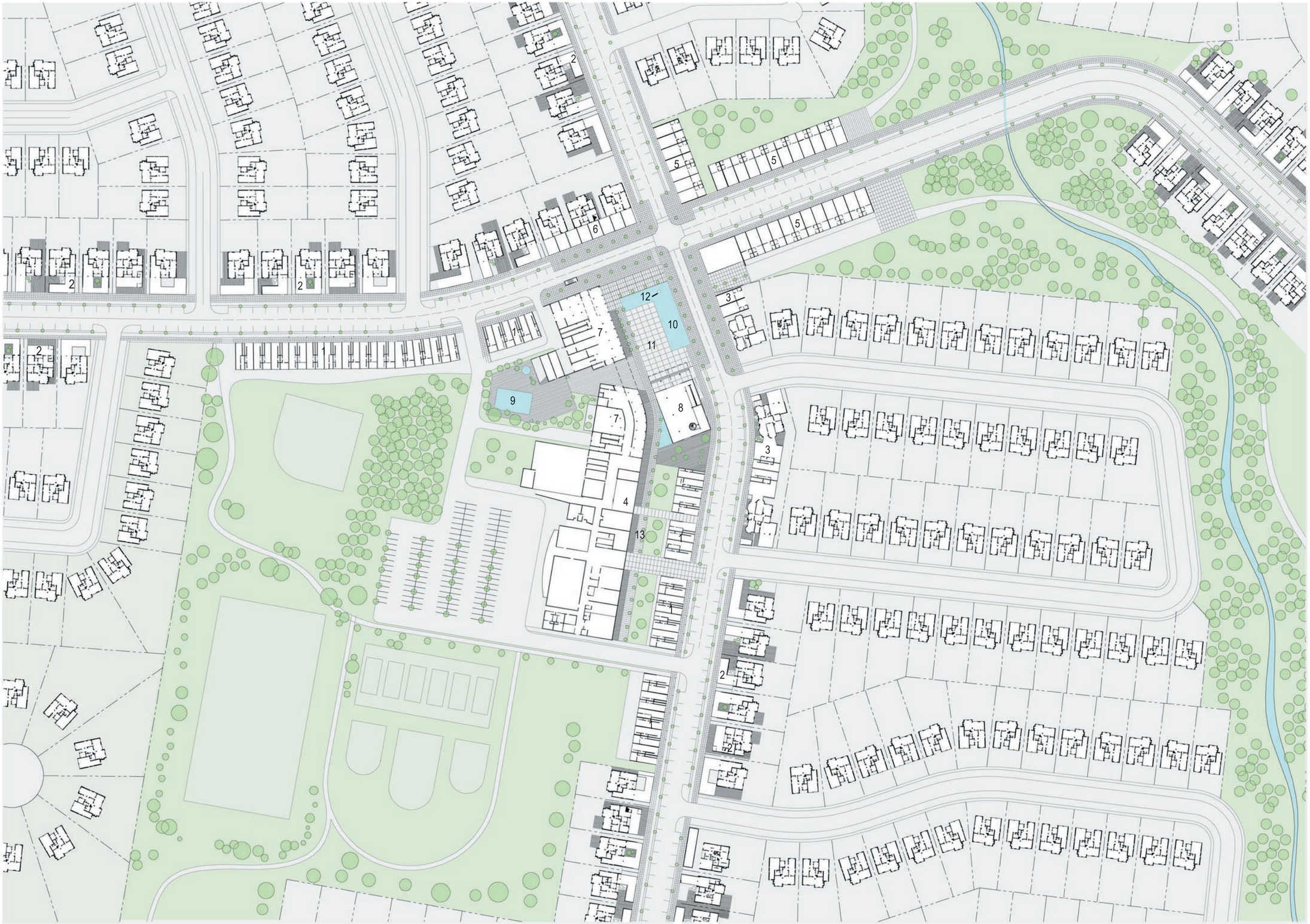

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Figure 3.21 **Section Through Bayview Hills Square Looking South**
scale 1: 500

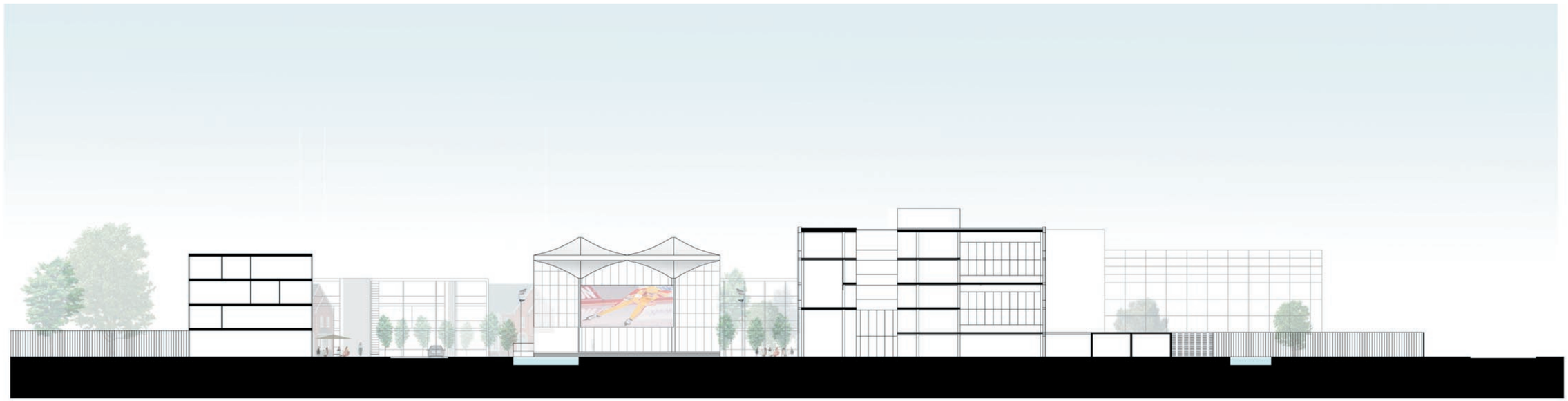


Figure 3.22 **Section Through Bayview Hills Square Looking West**
scale 1: 500

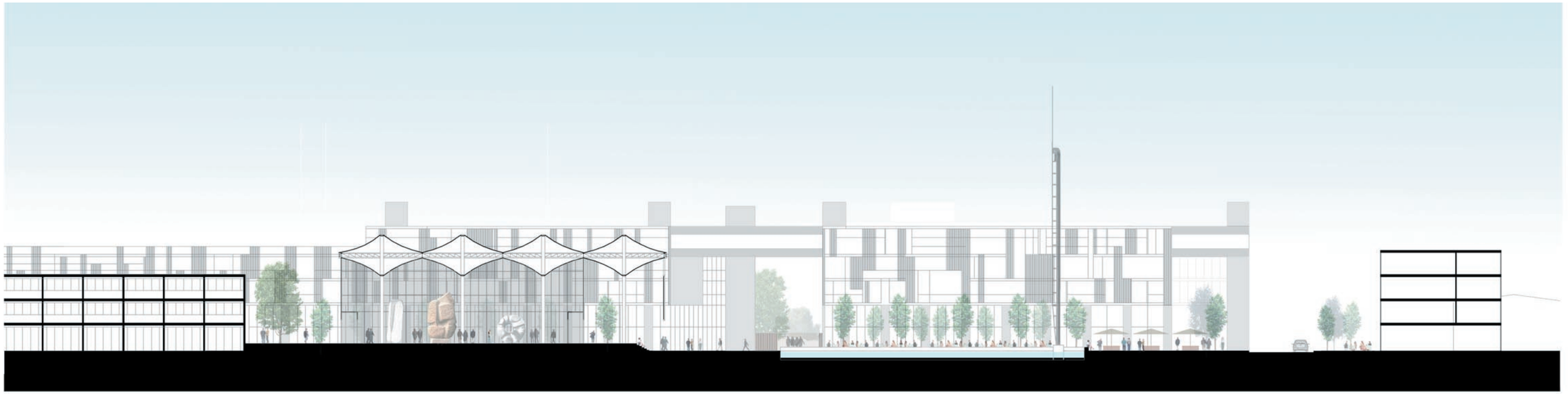
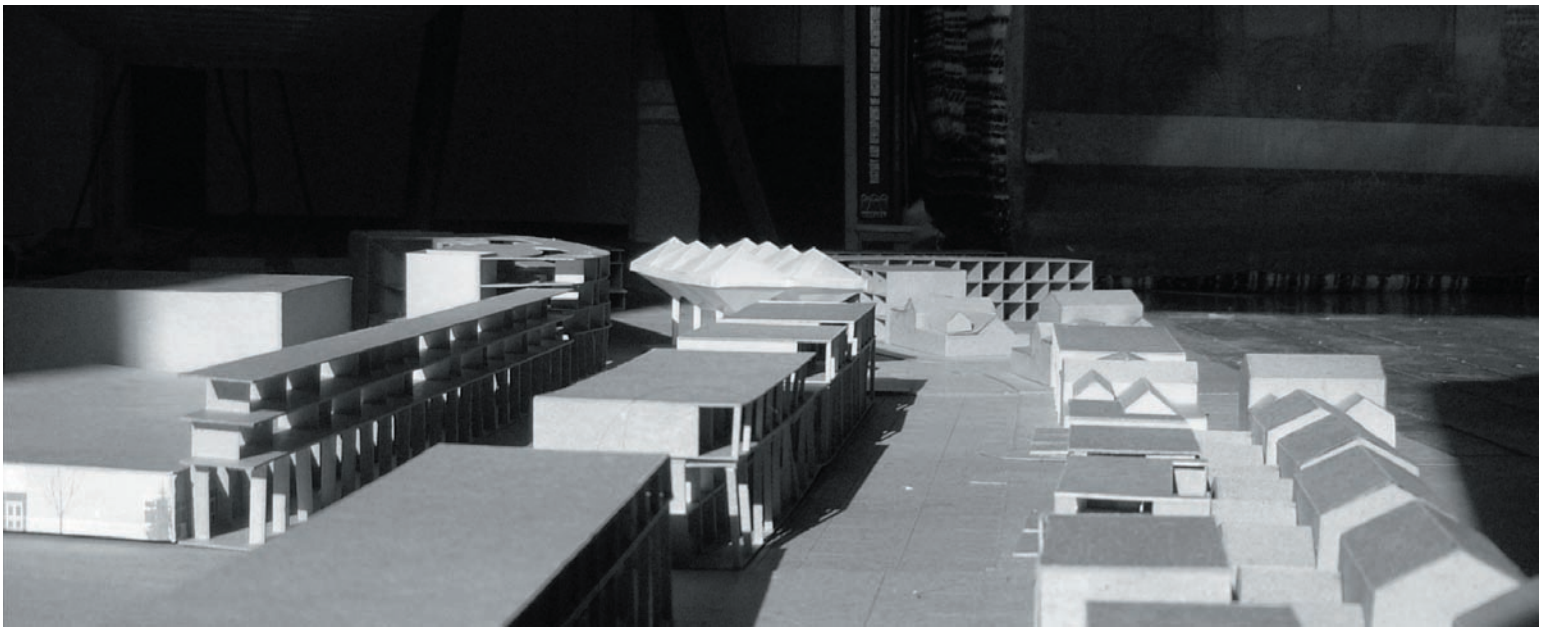
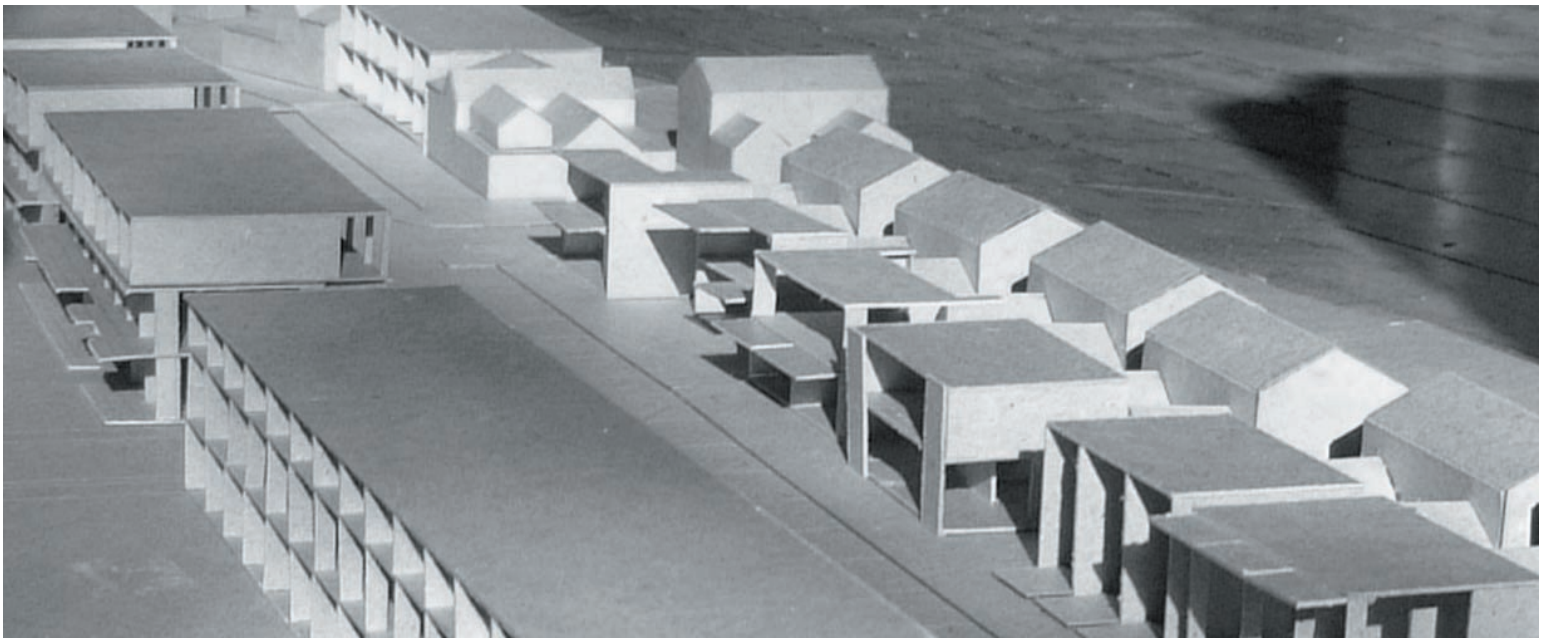


Figure 3.23
View Looking North on Spadina Road Towards Bayview Hills Square

Figure 3.24
Commercial / Office Additions Fronting Suburban Houses





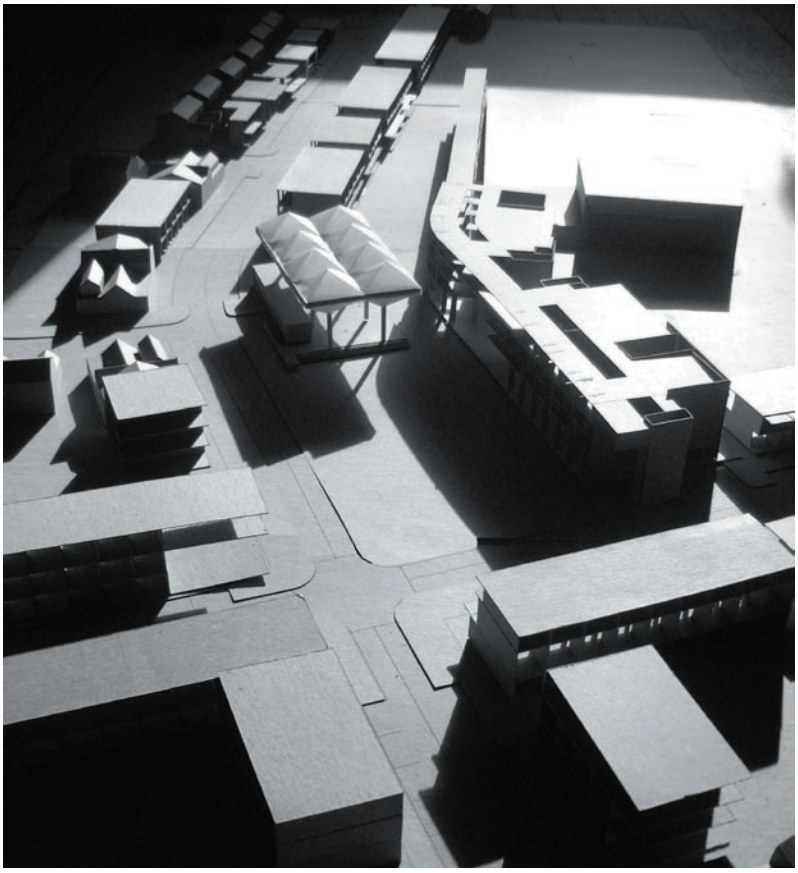
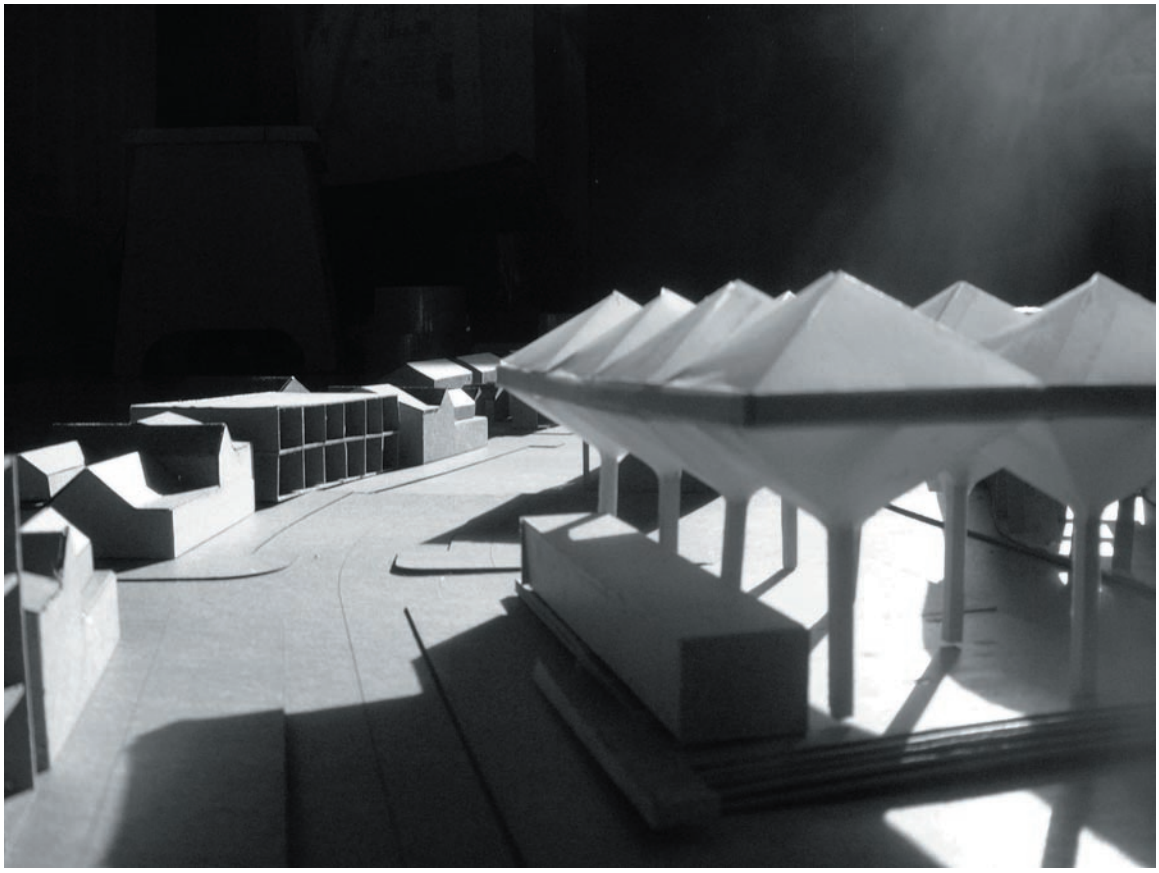
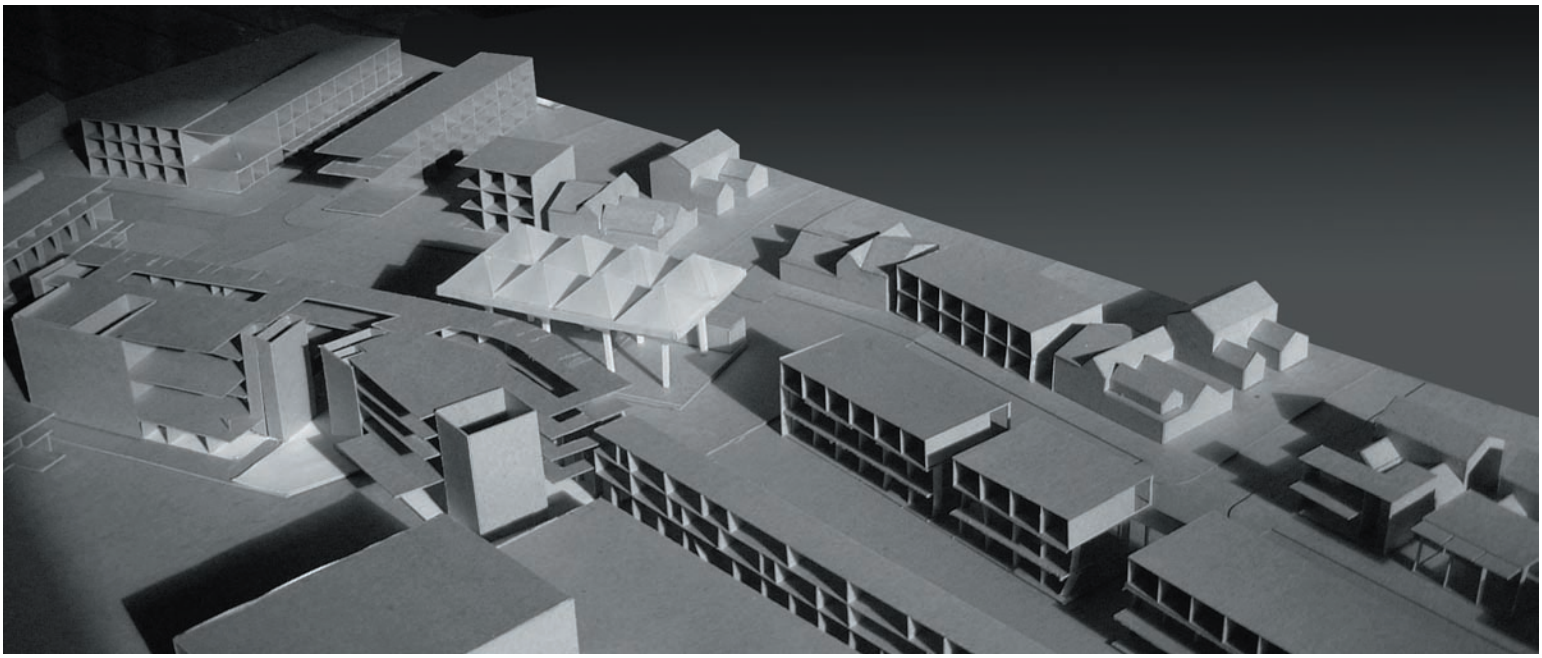


Figure 3.25 (right)
Axonometric View
Bayview Hills Square

Figure 3.26 (opposite page)
View Down Spadina Road





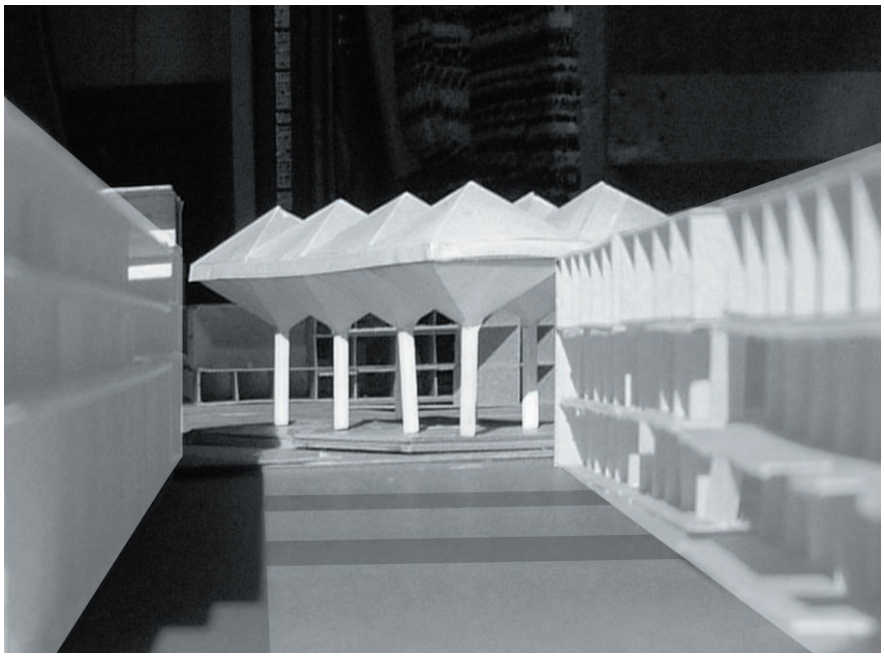


Figure 3.27 (opposite page)
View of Village Hall from the Promenade

Figure 3.28 (left)
Axonometric View
Village Hall Promenade
Leading to Bayview Hills Square

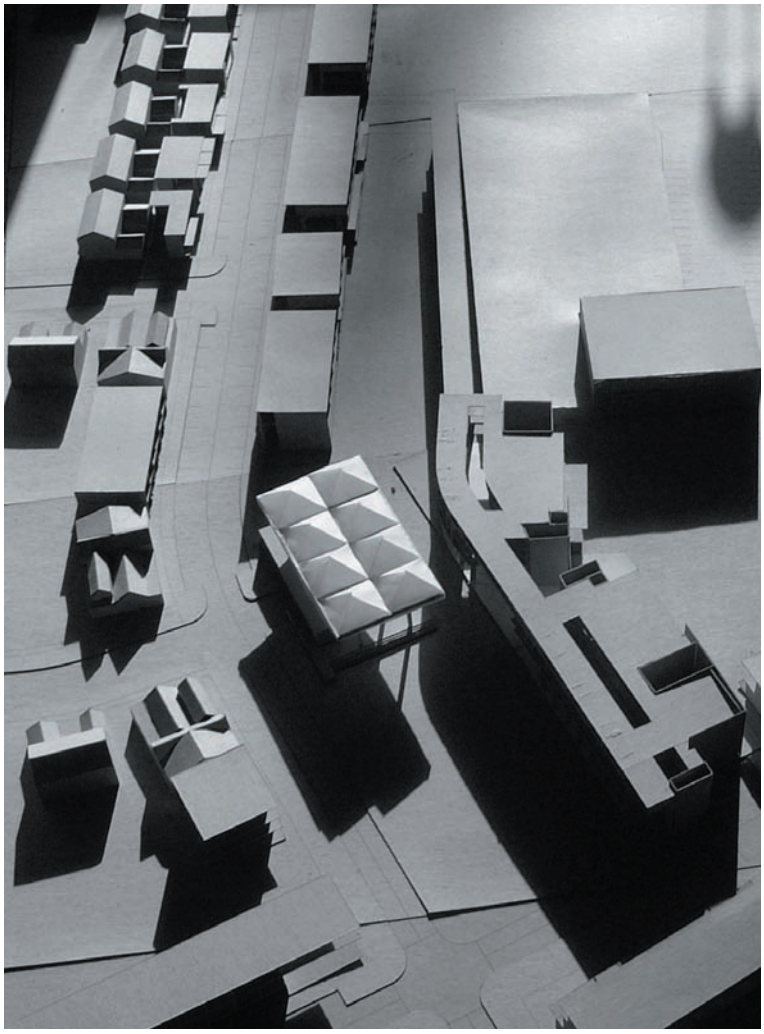
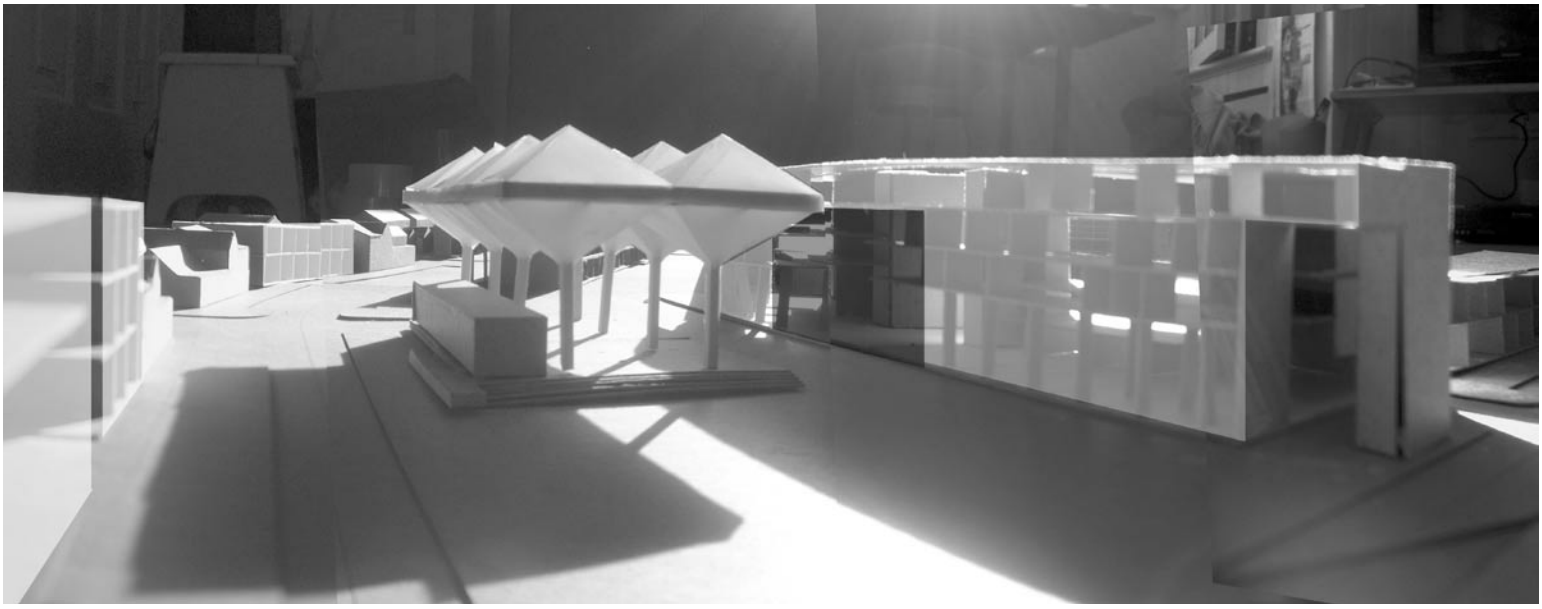


Figure 3.29 (right)
Plan View of Bayview Hills Square

Figure 3.30 (opposite page)
View of Village Hall and Telecentre from Bayview Hills Square



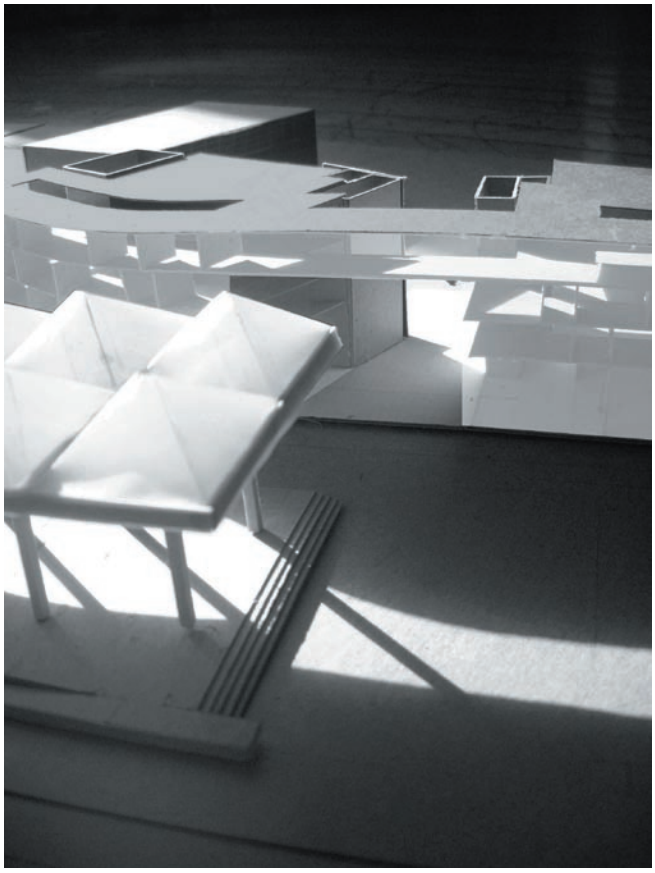
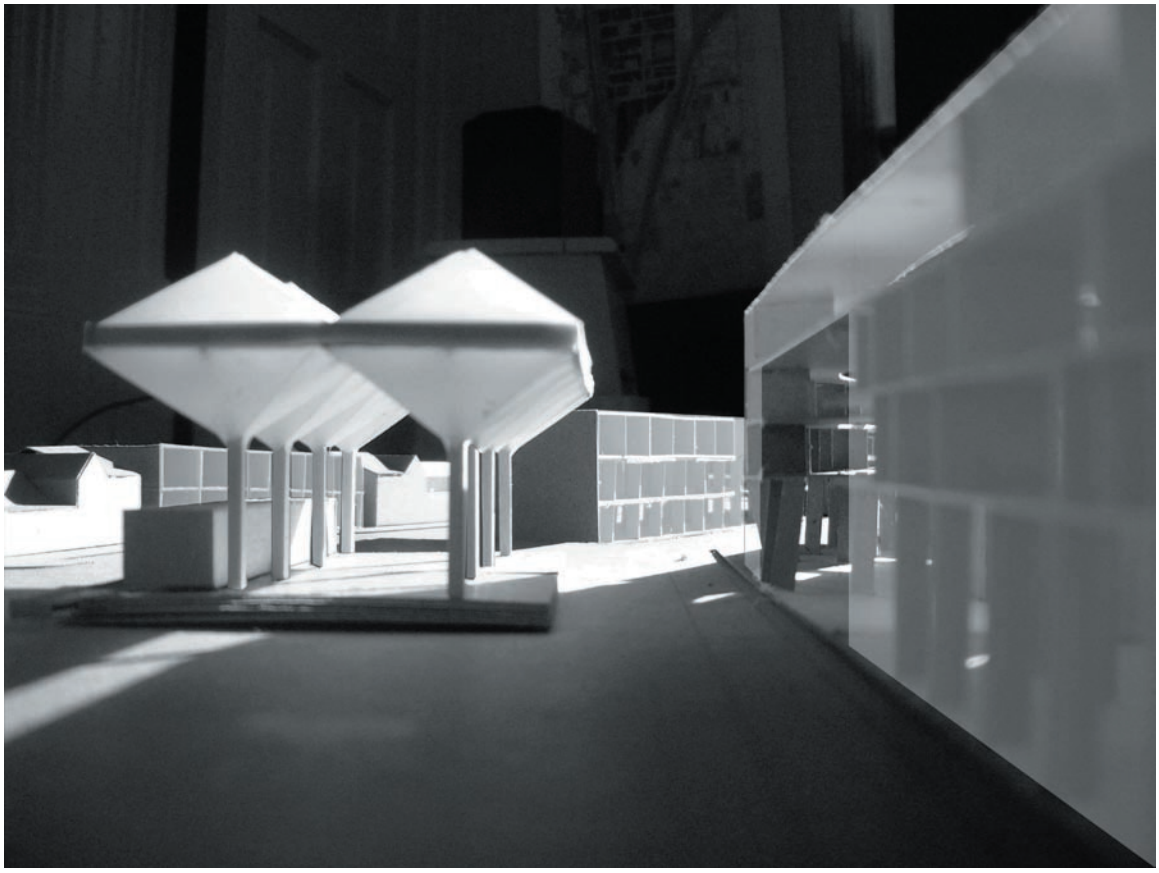


Figure 3.31 (right)
View of Outdoor Passage Through Telecentre

Figure 3.32 (opposite page)
View from Bayview Hills Square of Village Hall and Telecentre with Promenade Beyond



2.24 Architecture : Bayview Hills Community Telecentre

Figure 3.33 Telecentre Ground Floor Plan
scale 1: 500

New Buildings

1 Main Entrance
2 Reception
3 Bookstore
4 Daycare Entrance
5 Daycare
6 Enclosed Daycare Playground
7 Post Office
8 Cafe / Bar
9 Indoor Food Market
10 Public Seating Area
11 Existing Community Swimming Pool
12 Existing Support Spaces for Swimming Pool
13 Multipurpose Community Room
14 Change Room for Outdoor Swimming Pool
15 Loading
16 Storage

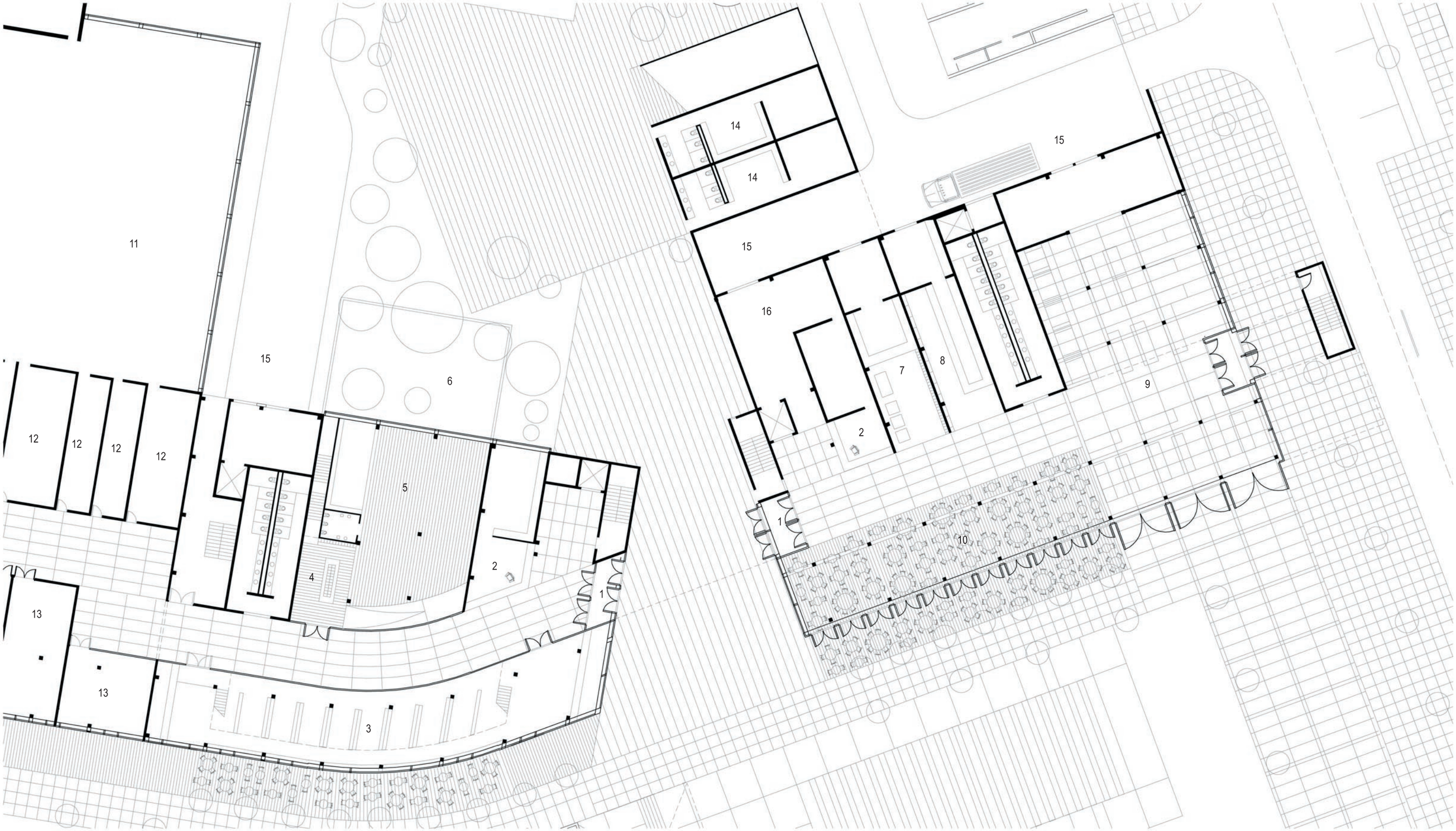

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Figure 3.34 **Telecentre Second Floor Plan**
scale 1 : 300

1 Kitchen
2 Lounge Work Area
3 Deck Meeting Area
4 Tanning Area
5 Stair down to Outdoor Pool
6 Storage
7 Mezzanine Office for Daycare Staff
8 Mezzanine of Bookstore
9 Lockers

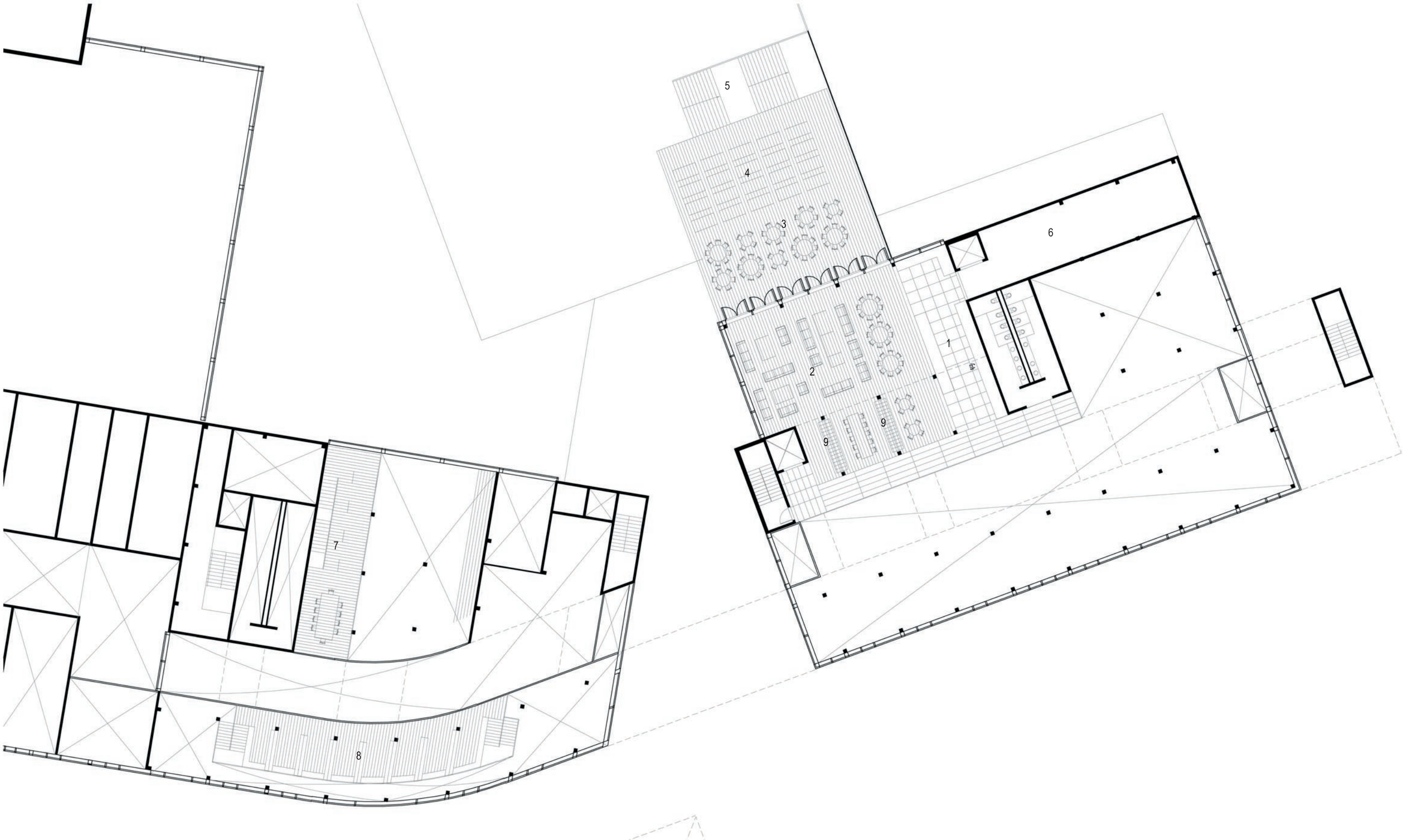
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Figure 3.35 **Telecentre Third Floor Plan**
scale 1 : 300

1 Lounge Mezzanine
2 Kitchenette
3 Classroom / Conference
4 Study / Meeting / Work Room
5 Lecture Hall / Conference Hall
6 Tatami Mat Open Work Area
7 Tatami Mat Meeting / Study / Work Rooms
8 Lockers
10 Kitchenette

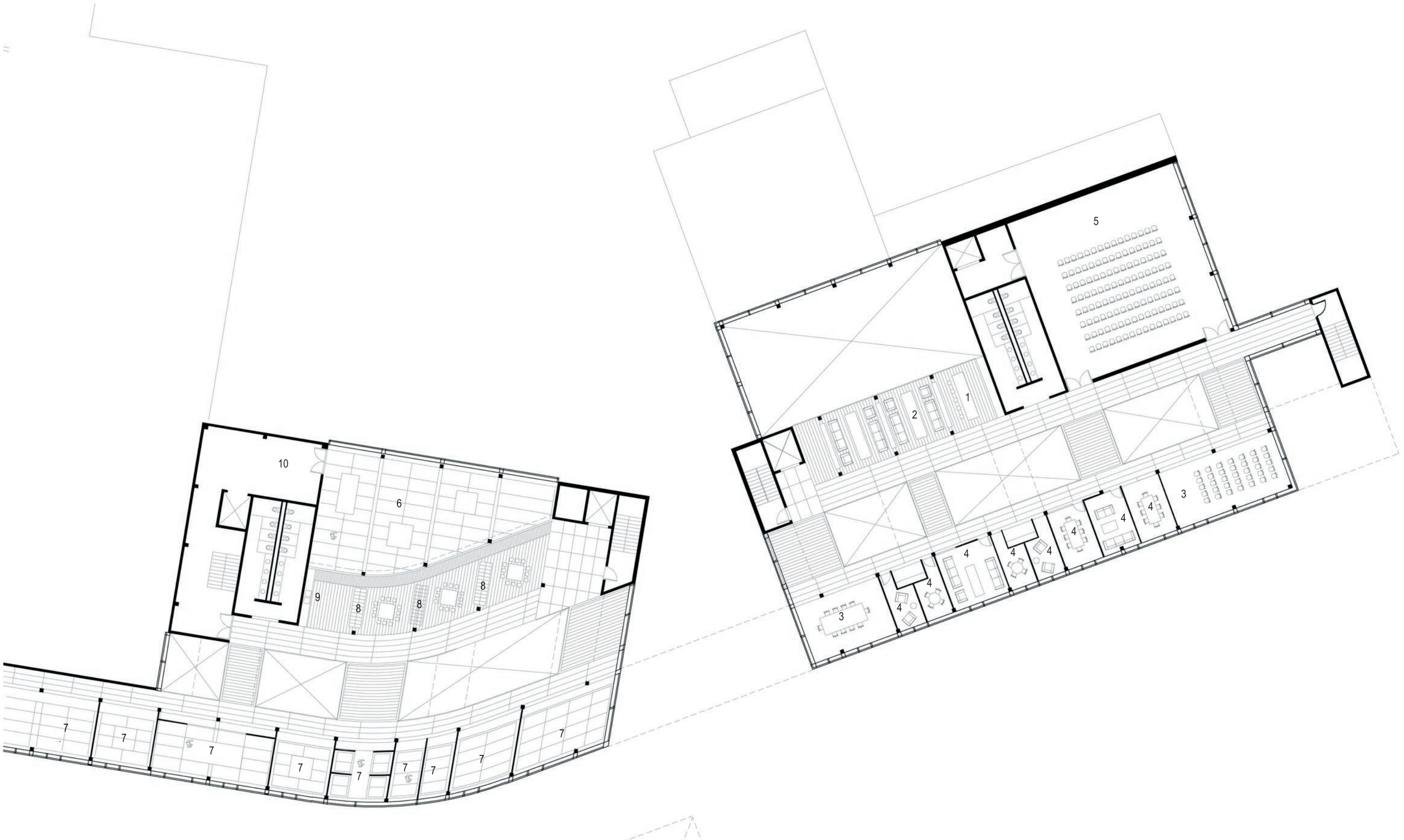
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Figure 3.36 **Telecentre Fourth Floor Plan**
scale 1 : 300

1 Lounge and Open Table Work area
2 Kitchenette
3 Classroom / Conference
4 Study / Meeting / Work Room
5 Lockers
6 Tatami Mat Open Meeting Area
7 Tatami Mat Meeting / Study / Work Rooms

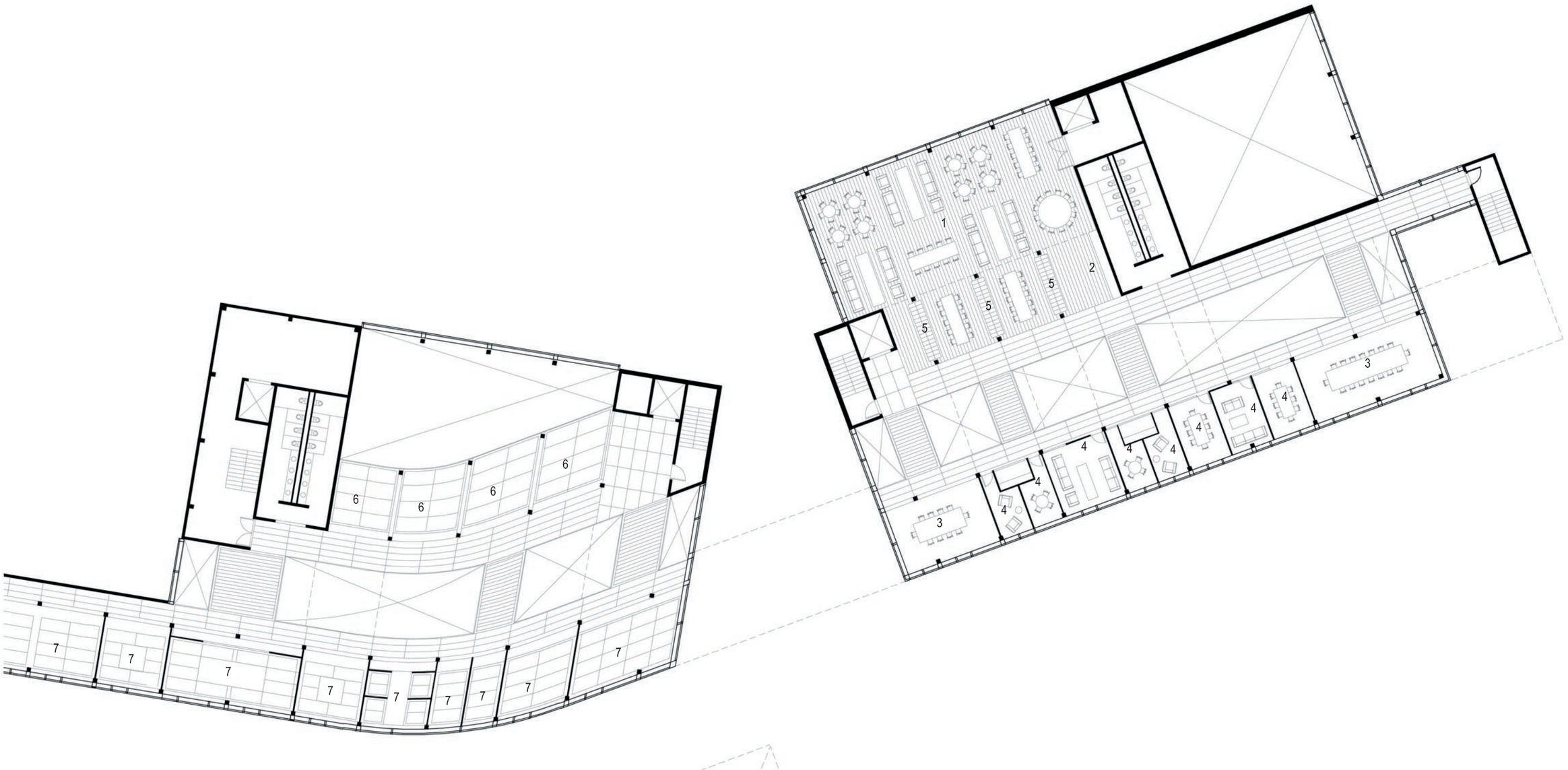
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Figure 3.37 **Telecentre Fifth Floor Plan**
scale 1 : 300

1 Sky Bar
2 Conference / Banquet Hall
3 Meeting / Private Lounge
4 Sky Bar Open Seating Area
5 Lockers
6 Fluid Office
7 Rooftop Patio

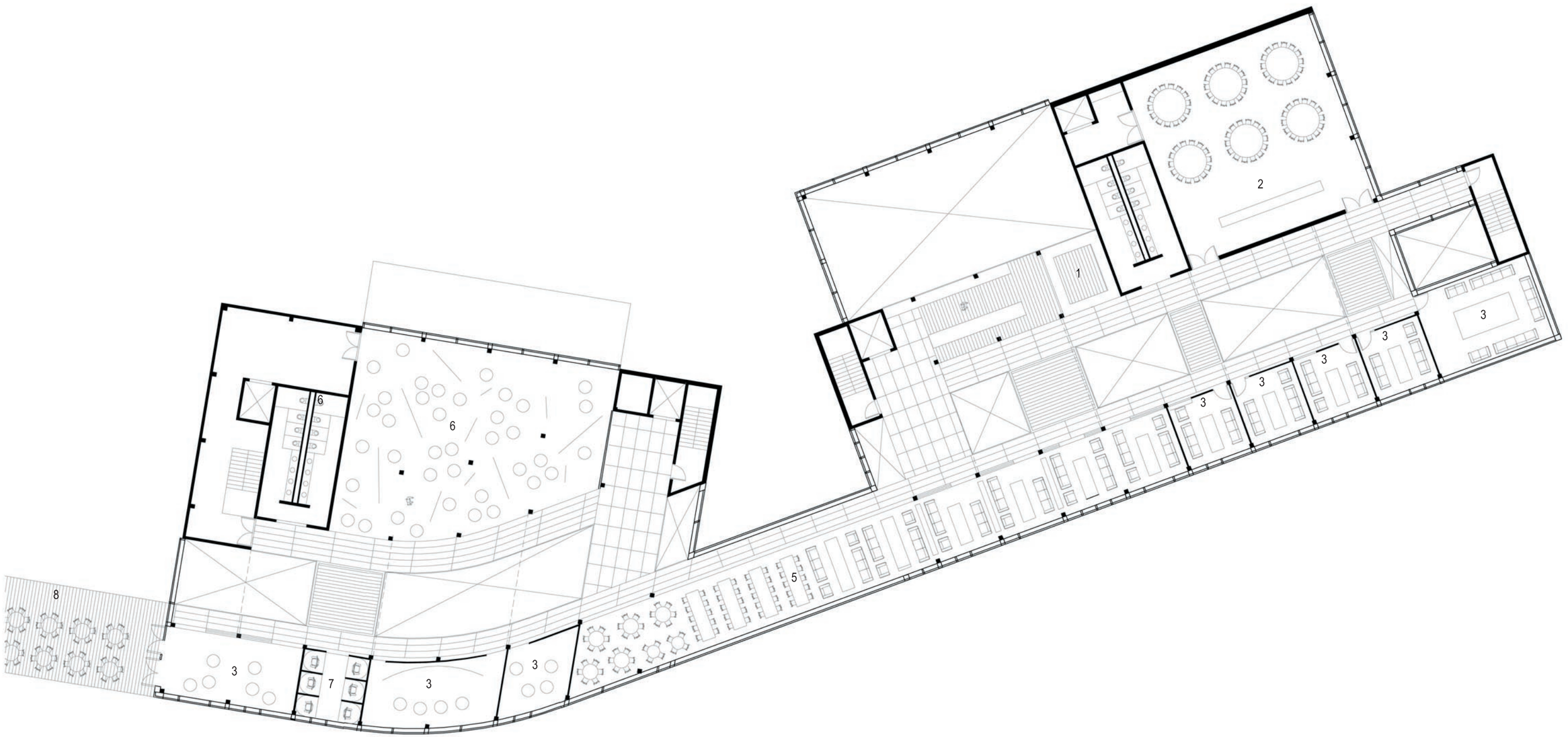
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Figure 3.38
Section Through Telecentre Market
scale 1 : 250

Figure 3.39
Section Through Telecentre Cafe
scale 1 : 250

Figure 3.40
Section Through Telecentre Daycare
scale 1 : 250

Figure 3.41
Section Through Telecentre Meeting Rooms
scale 1 : 300

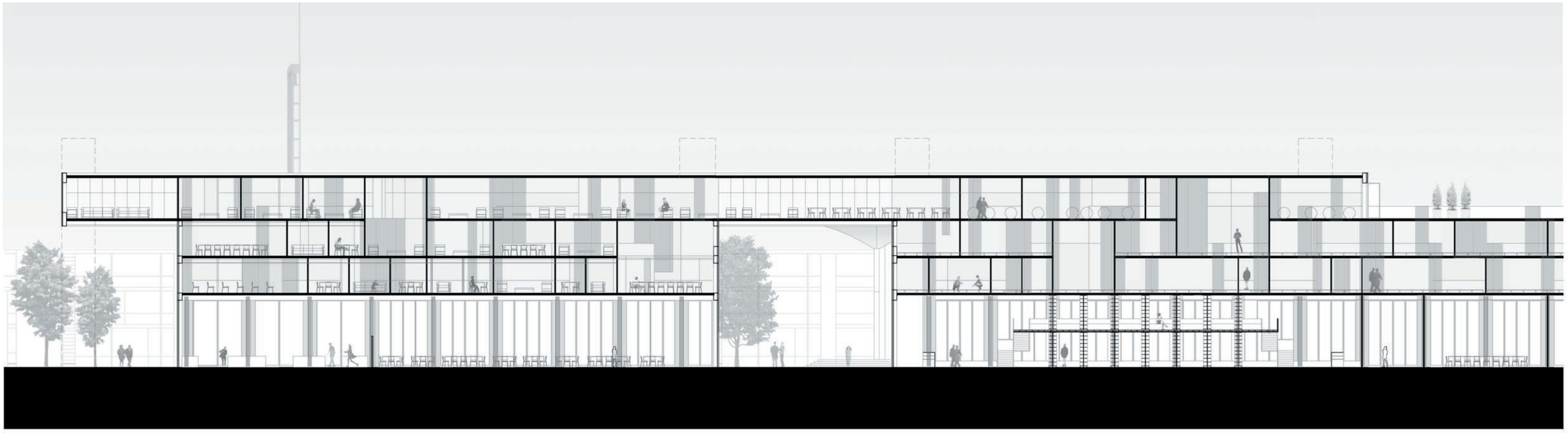


Figure 3.42
Section Through Telecentre Atrium
scale 1 : 300

Figure 3.43
Ground Floor Cafe Opening Onto Bayview Hills Square

Figure 3.44
View from Mezzanine Overlooking Open Work Area with Deck and Swimming Pool Beyond

Figure 3.45
Open Work Area with Mezzanine Above

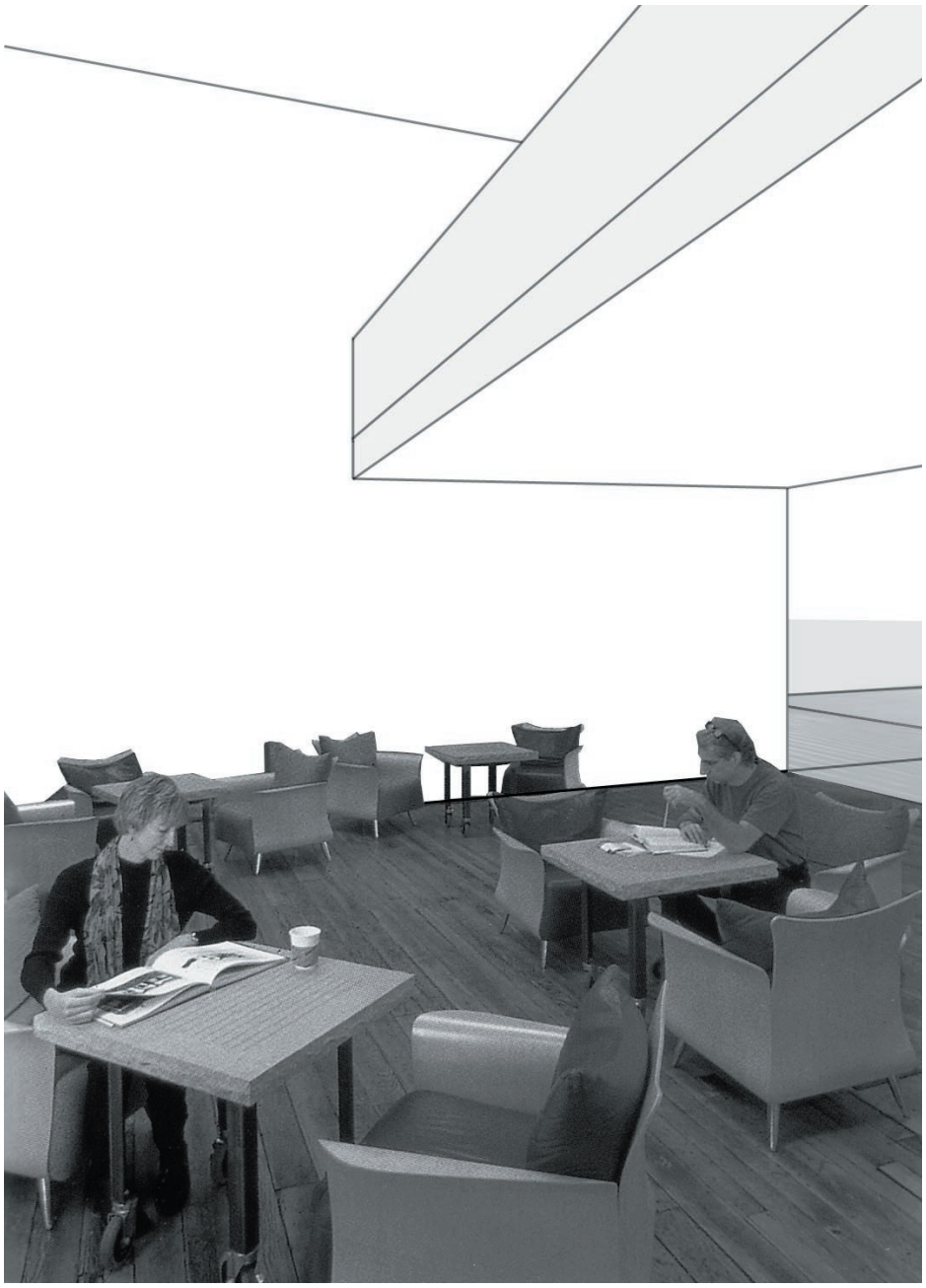


Figure 3.46
Casual Open Work Area

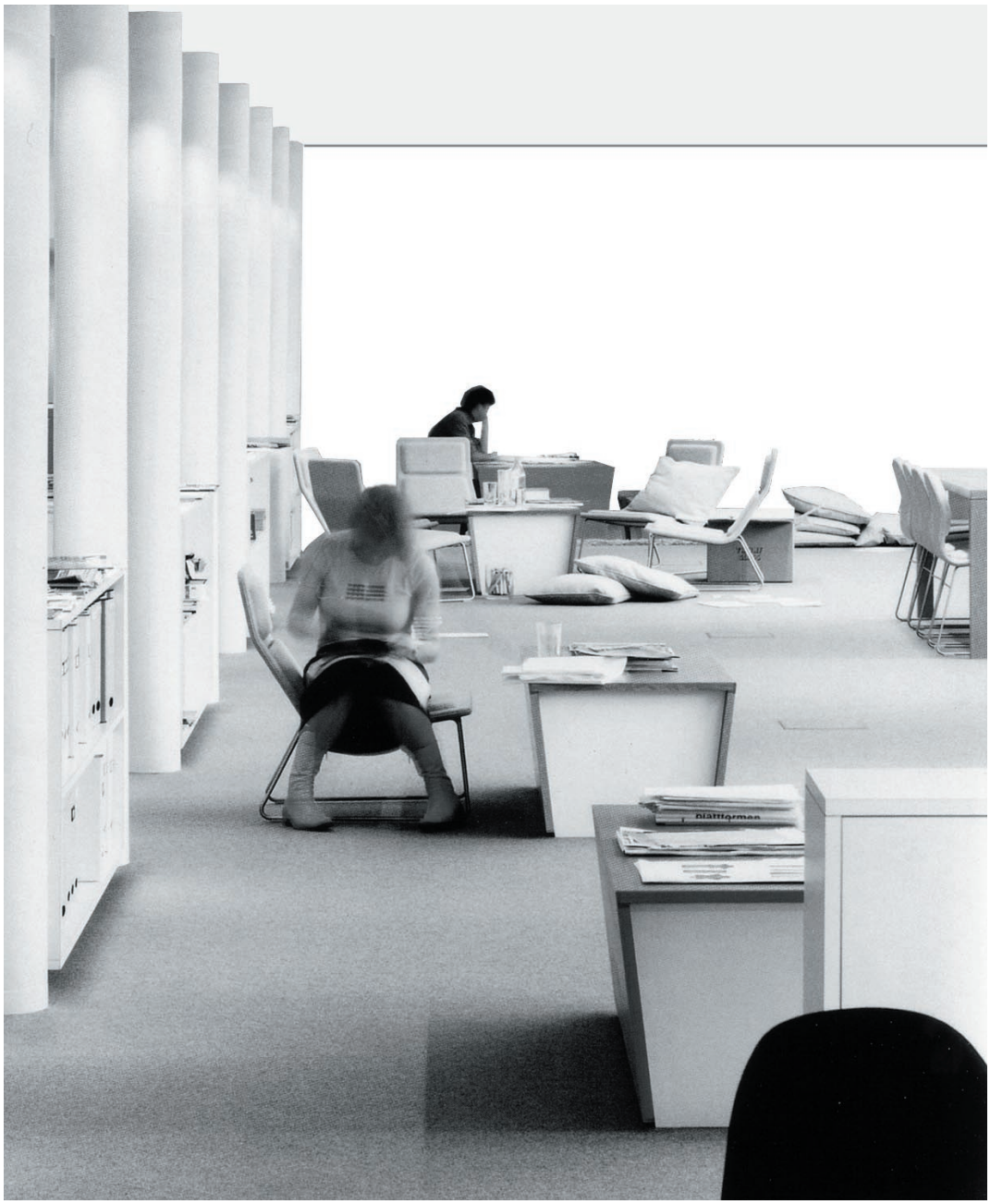


Figure 3.47
Tatami Meeting Room

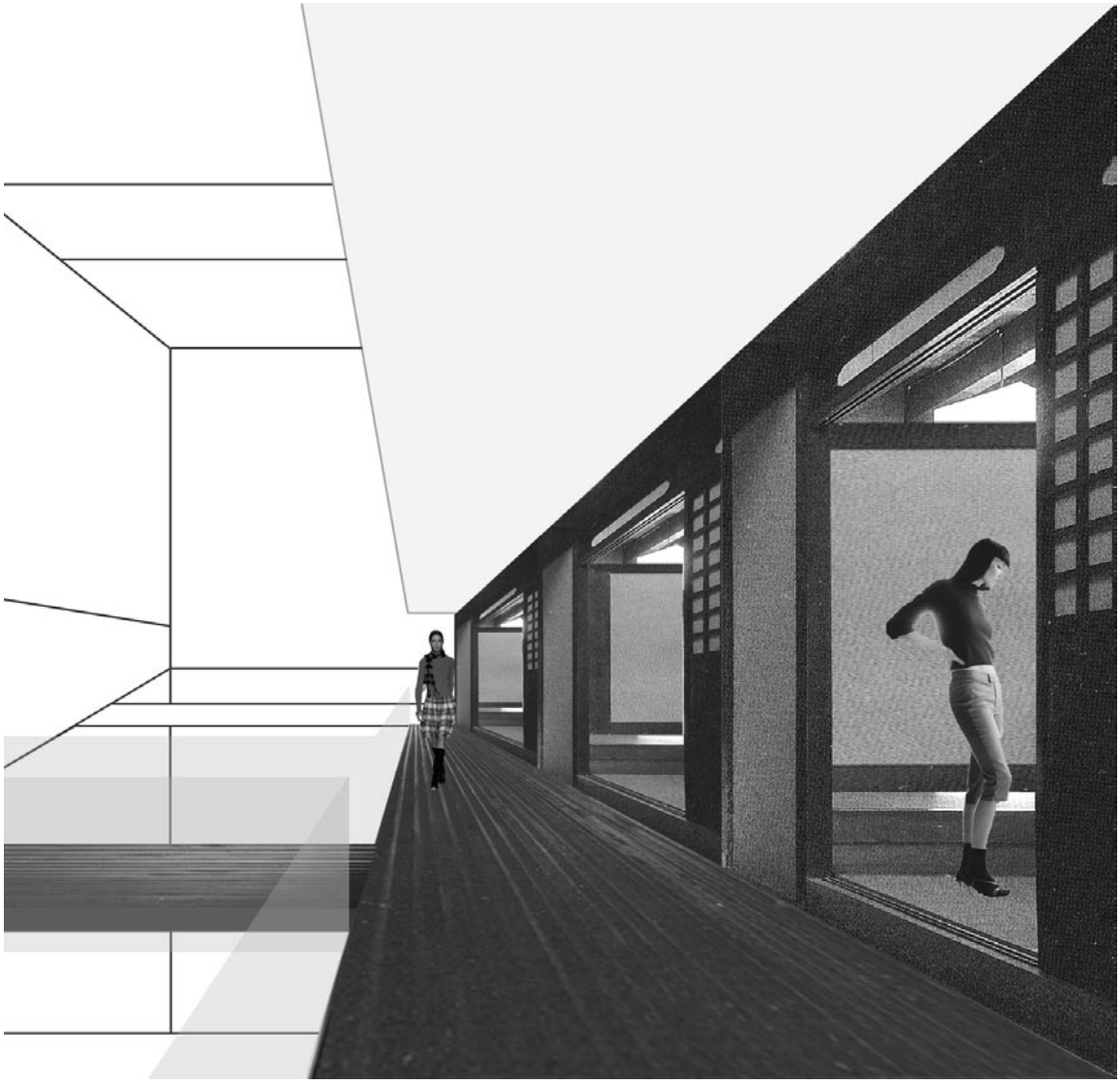


Figure 3.48
Teleconference Room

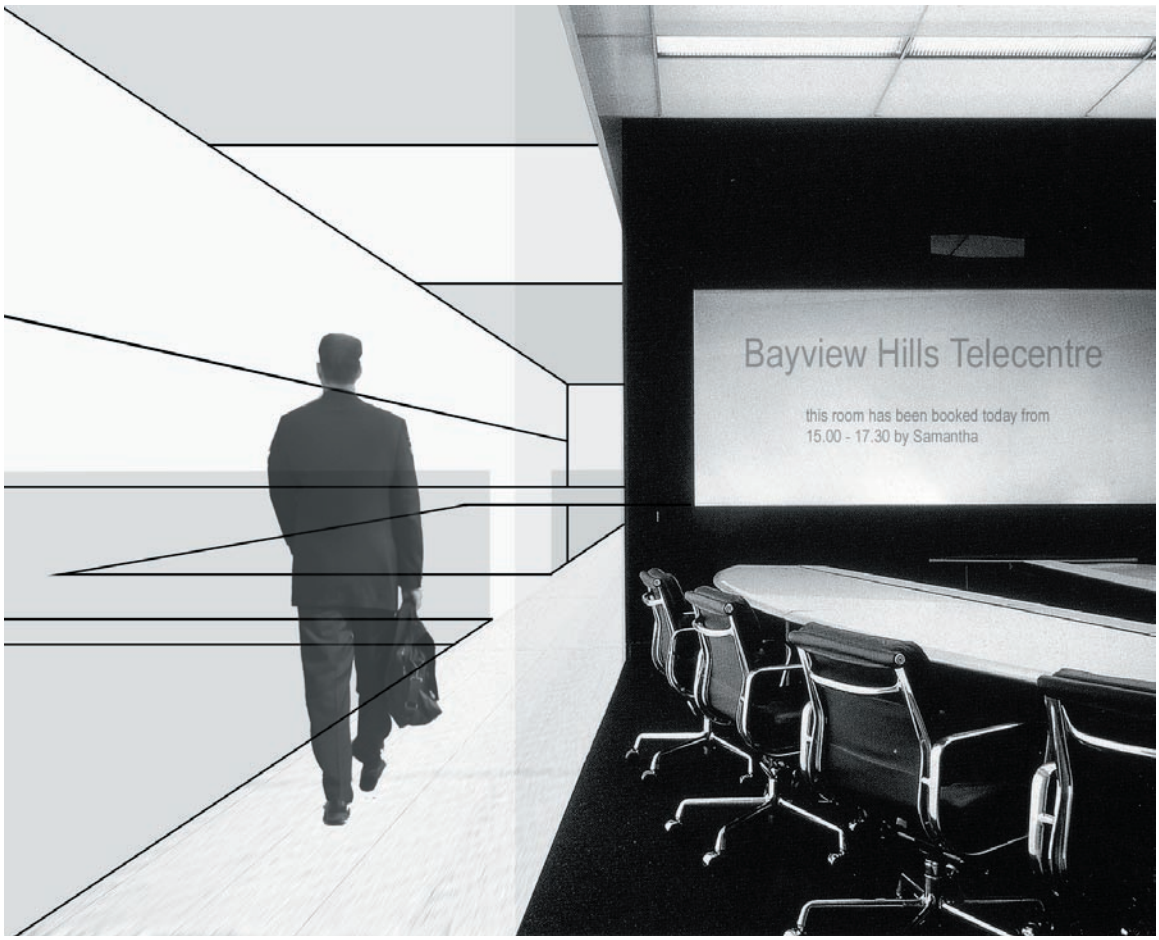

Bayview Hills Telecentre
this room has been booked today from
15.00 - 17.30 by Samantha

Figure 3.49
Teleconference Room with Built-in Seating

Bayview Hills Telecentre
this room is booked today from
11.00 - 13.00 by Stacey
19.00 - 21:00 by Jeff
conference
room 307

CONCLUSION

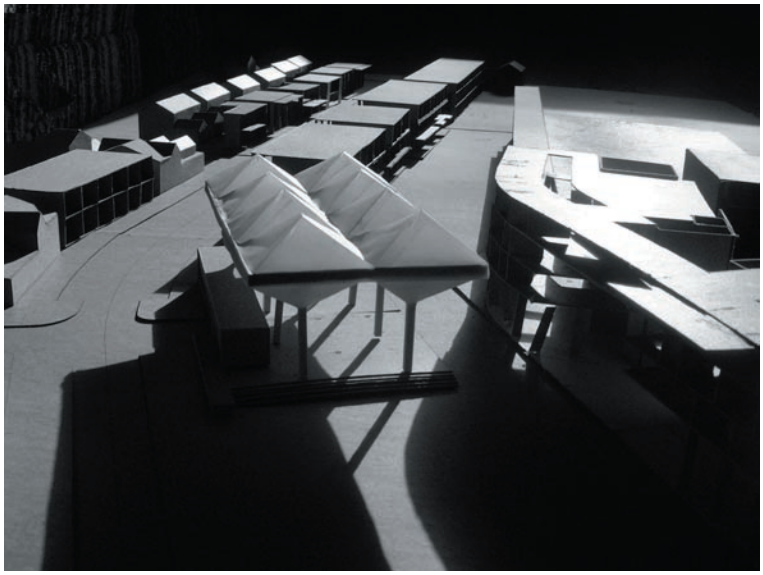
Throughout history, architecture and urbanism have adapted to the changing conditions of technology, economics, business culture, the environment, and social demographics. In the post-war era, the suburban model was a positive solution that addressed the many issues and conditions of that period. The original instance of suburban development provided private housing for the increasing number of baby boomer families; separating the home from the unhealthy and overcrowded environment of the industrial city.

This model of suburbia, however, does not address the new set of conditions that are present today, fifty years after the post-war era. The congestion of highways and environmental pressures of pollution and oil supply have made automobile dependency increasingly unfavorable. The vast distance between urban functions has caused desolate social environments that are hostile to active pedestrian living. This has resulted in expansive developments of monotonous, low density, residential suburbs.

The networked village transformation has extensive implications to the ubiquitous environment of suburbia today. The urban and architectural proposal departs from the modern utopian visions of urban design by assessing the current condition and proposing a series of adaptations rather than a radical revolution. The regional strategy involves changing the functional zoning of suburban residential neighbourhoods to mixed-use zoning. The neighbourhood proposal integrates commercial spaces, community civic buildings, and business workplaces within walking distance of residential homes.

The neighbourhood square creates a central node that represents the community and allows for public gathering. The telecentre building defines the public space by accommodating a diverse range of work and meeting spaces; creating a local centralized hub of commercial, economic and social activity.

The thesis study of Richmond Hill, Bayview Hills, Public Square, and Telecentre Building illustrates the extensive implications for suburban transformation today. This transformation to the Network Pedestrian Village will allow for the urban and architectural integration that is necessary to create self-sustaining, socially vibrant communities for the twenty-first century.

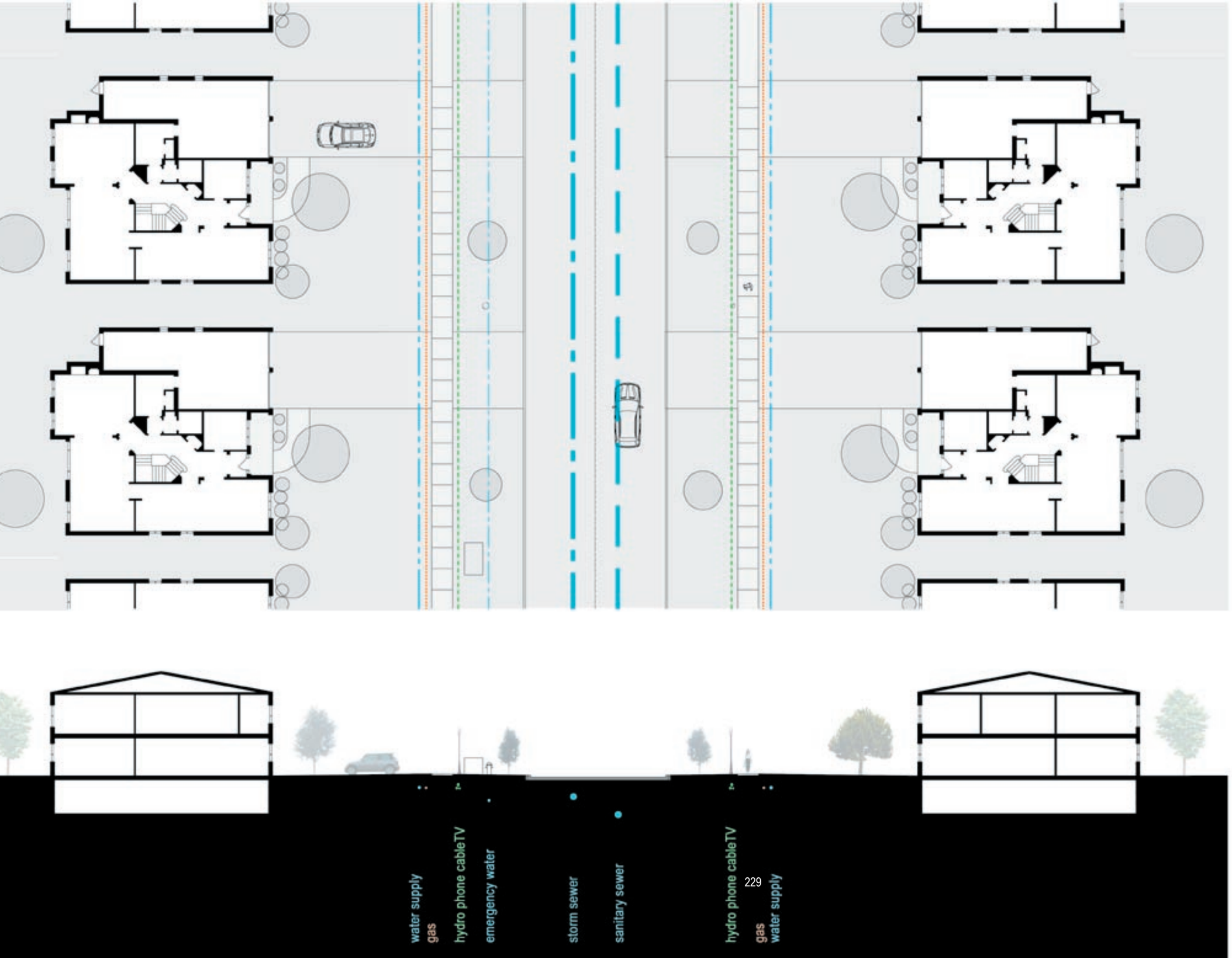


APPENDIX

A.1 Main Street

Figure A.01
Bayview Hills Main Street

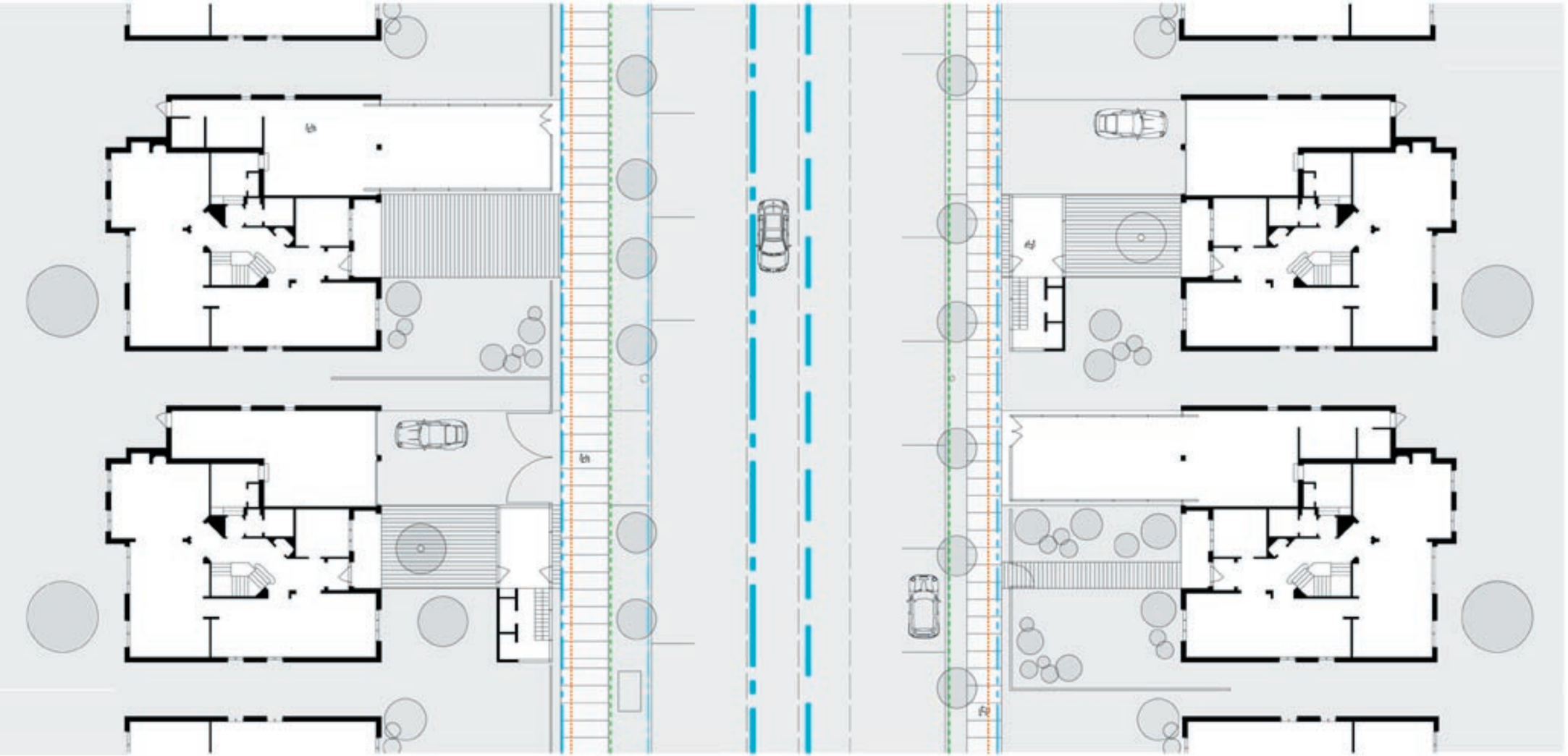
Figure A.02 **Main Street Morphology - Version 1 Existing**
scale 1: 250

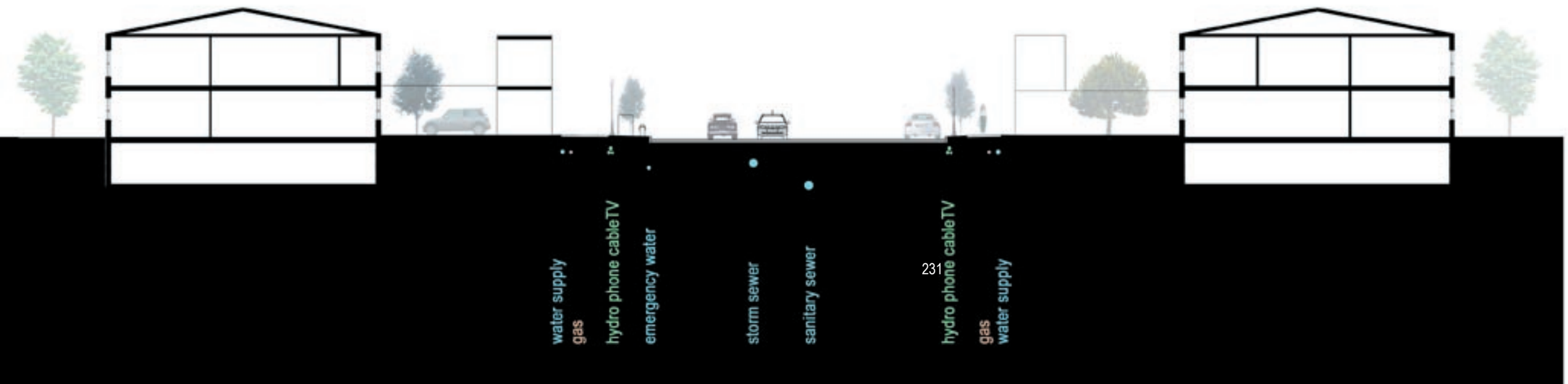


Existing Main Streets

2 vehicular lanes
0 parking lanes
1.5 north sidewalk
1.5 south sidewalk

Figure A.03 **Main Street Morphology - Version 1 Proposed**
scale 1: 250





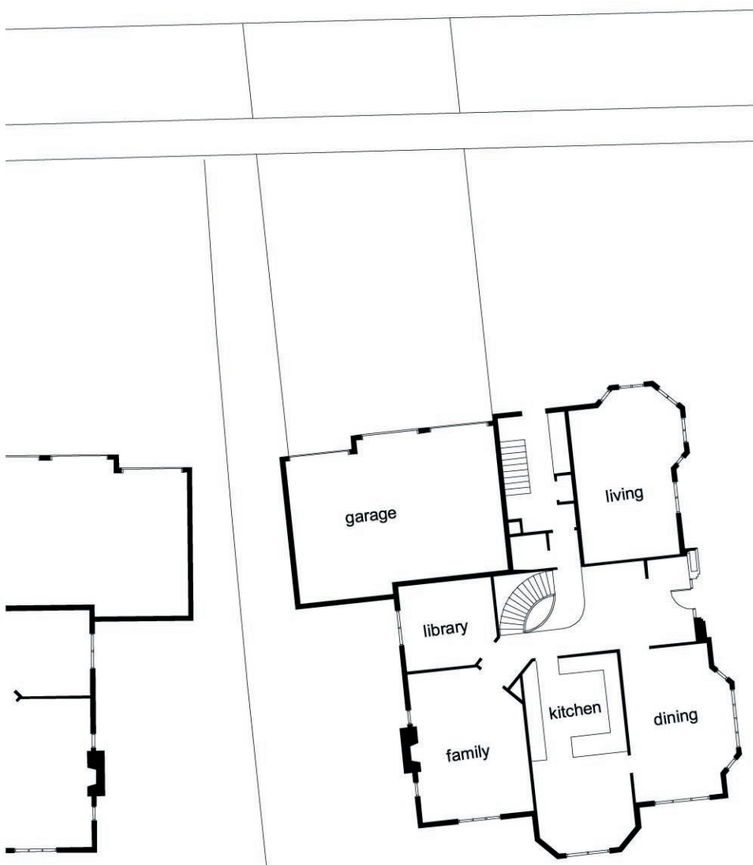
New Main Streets

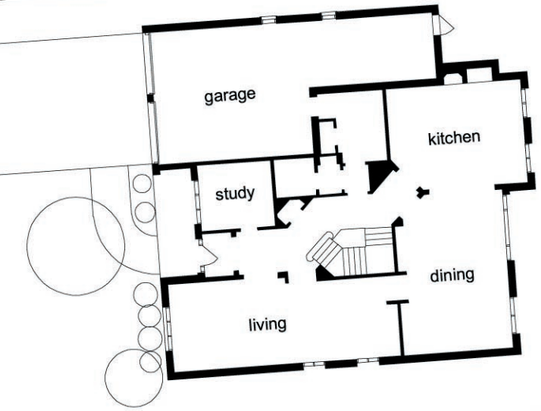
4 vehicular lanes
2 parking lanes
2.75 m north sidewalk
1.5 m south sidewalk

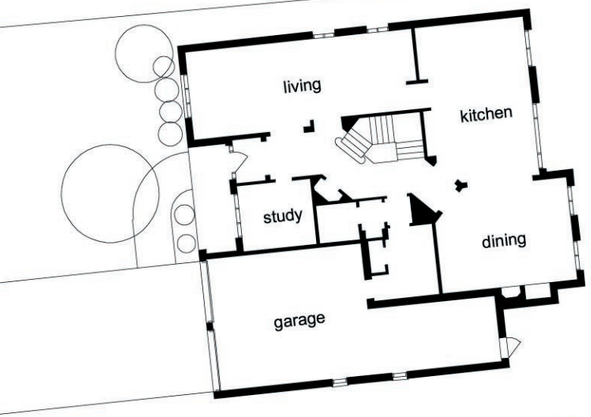
Figure A.04
Main Street Morphology -
Version 2 Existing
scale 1: 1000

Figure A.05
Main Street Morphology -
Version 2 Proposed
scale 1: 1000

Figure A.06 **Main Street Morphology - Version 2 Existing**
scale 1: 250


garage
living
library
kitchen
dining
family


garage
kitchen
study
dining
living


living
kitchen
study
dining
garage

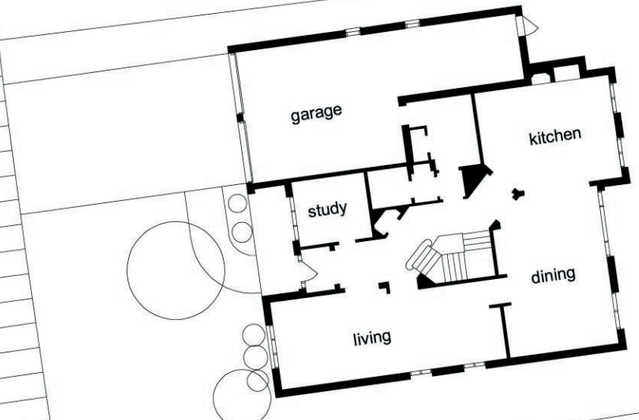

garage
kitchen
study
dining
living

Figure A.07 **Main Street Morphology - Version 2 Proposed**
scale 1: 250

living
office
library
dining
kitchen
office
workspace
storage
office
w/c
w/c
workspace

boutique
storage
w/c
laundry
dining
office
w/c
entrance
kitchen
living
outdoor patio
dining area
office
dining
kitchen
resting
kitchen
laundry
living
home entrance
restaraunt entrance
w/c
w/c
storage
workspace
w/c
workspace
sitting
w/c
entrance
kitchen
library
open meeting area
living
kitchen

A.2 Village Wall

Figure A.08
Possible Village Wall Site Locations in Bayview Hills

Figure A.09 **Village Wall Morphology - Version 1 existing**
scale 1: 250

hydro phone cable TV

storm sewer

sanitary sewer

emergency water

hydro phone cable TV

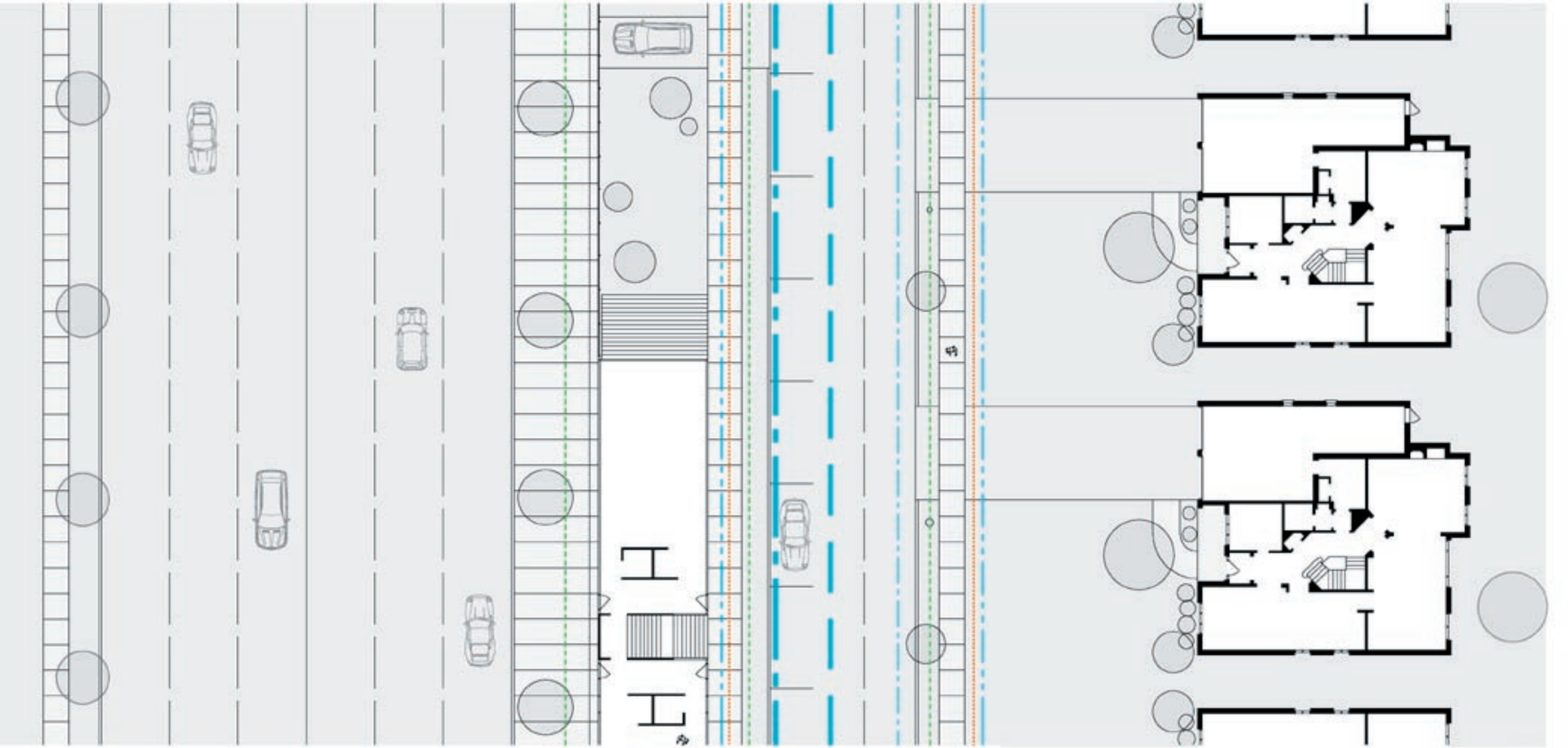
gas

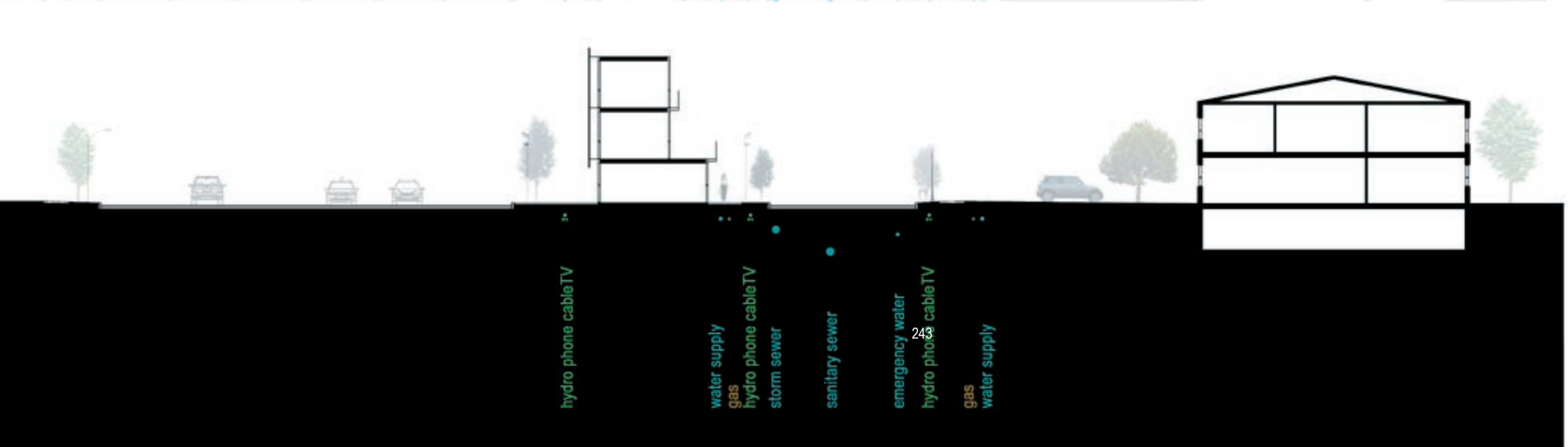
water supply

Existing Edge Road

2 vehicular lanes
0 parking lanes
2 m north sidewalk
2 m south sidewalk

Figure A.10 **Village Wall Morphology Proposed**
scale 1: 250





New Edge Road

2 vehicular lanes
1 parking lanes
4 m north sidewalk
2 m mid sidewal
1.5 m south sidewalk

Figure A.11 **Village Wall Building**
Ground Floor Plan
scale 1: 200

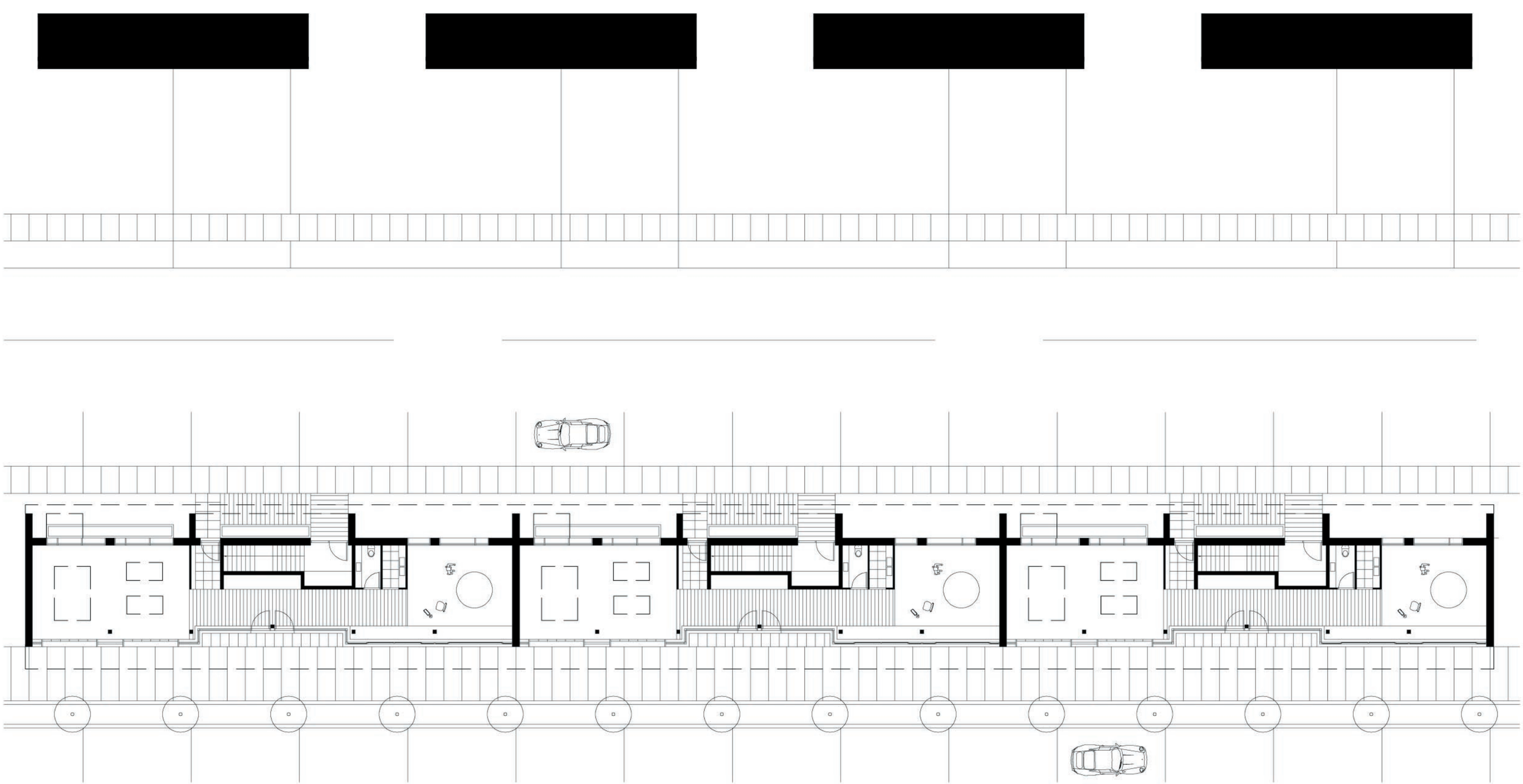
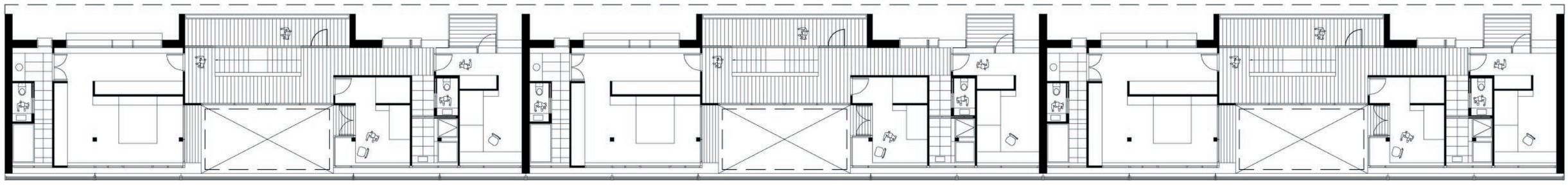


Figure A.12 **Village Wall Building**
Second and Third Floor Plans
scale 1: 200



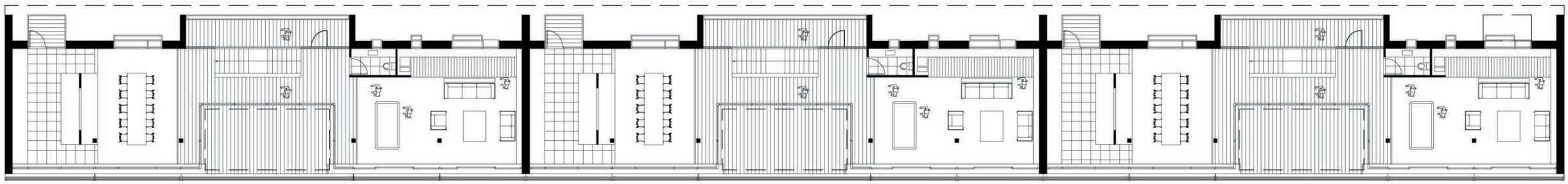


Figure A.13 **Village Wall Building Elevations**
scale 1: 200

north elevation

south elevation

Figure A.14
Bayview Hill Village Wall Site
Existing

Figure A.15
Bayview Hill Village Wall Site
Proposed

A.3 Suburban Residential Infill

Figure A.16
Conceptual Collage of Infill Housing

Figure A.17
Steels and Bayview Site
Template 1

Figure A.18
Steels and Bayview Site
Template 2

Figure A.19
Steels and Bayview Site
Template 3

Figure A.20
Steels and Bayview Site
Template 4

Figure A.21
Steels and Bayview Site
Template 5

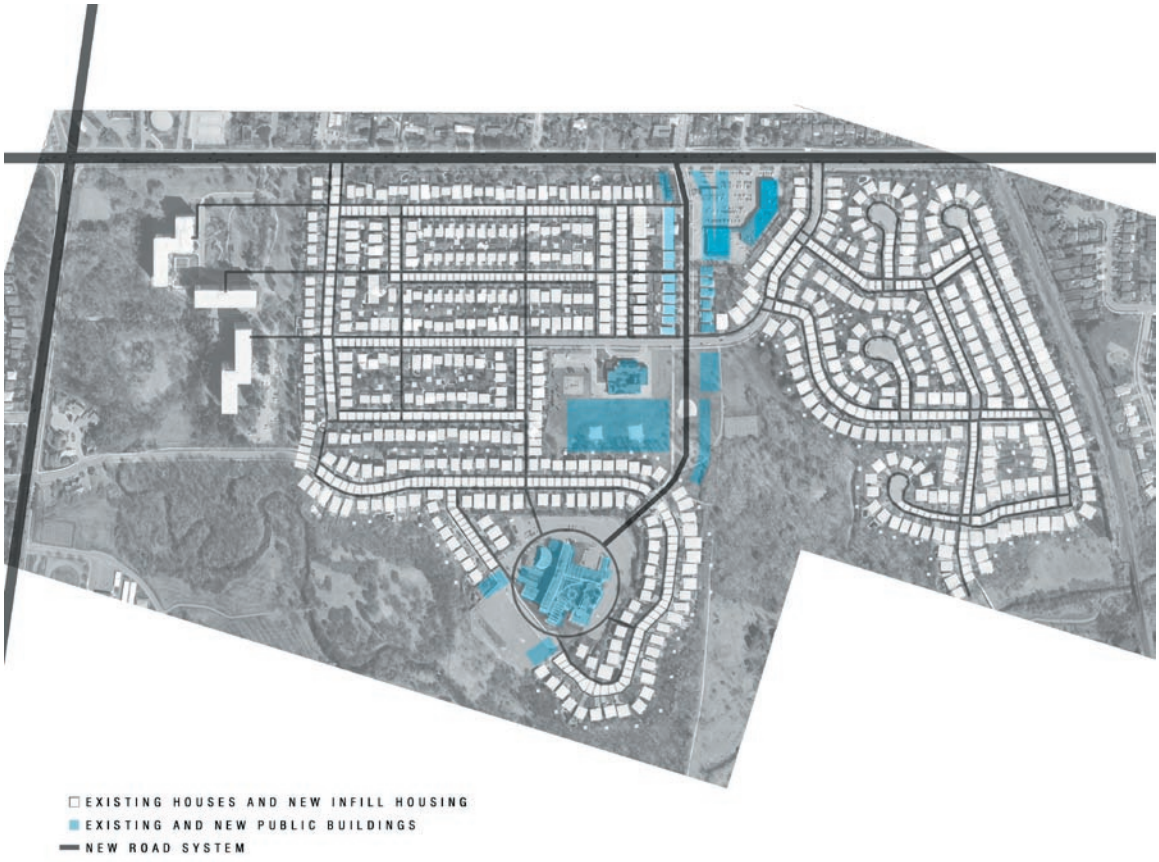
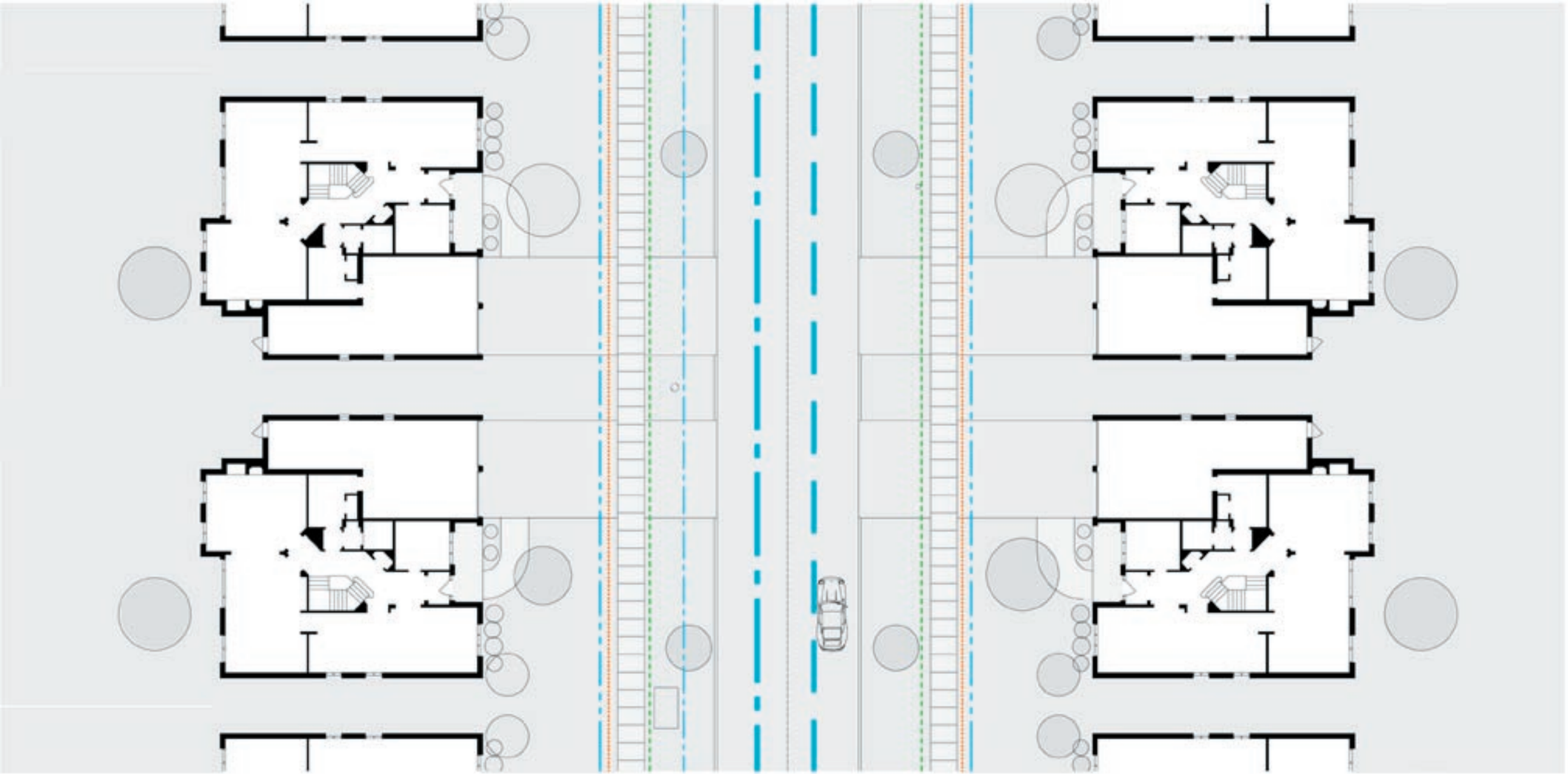
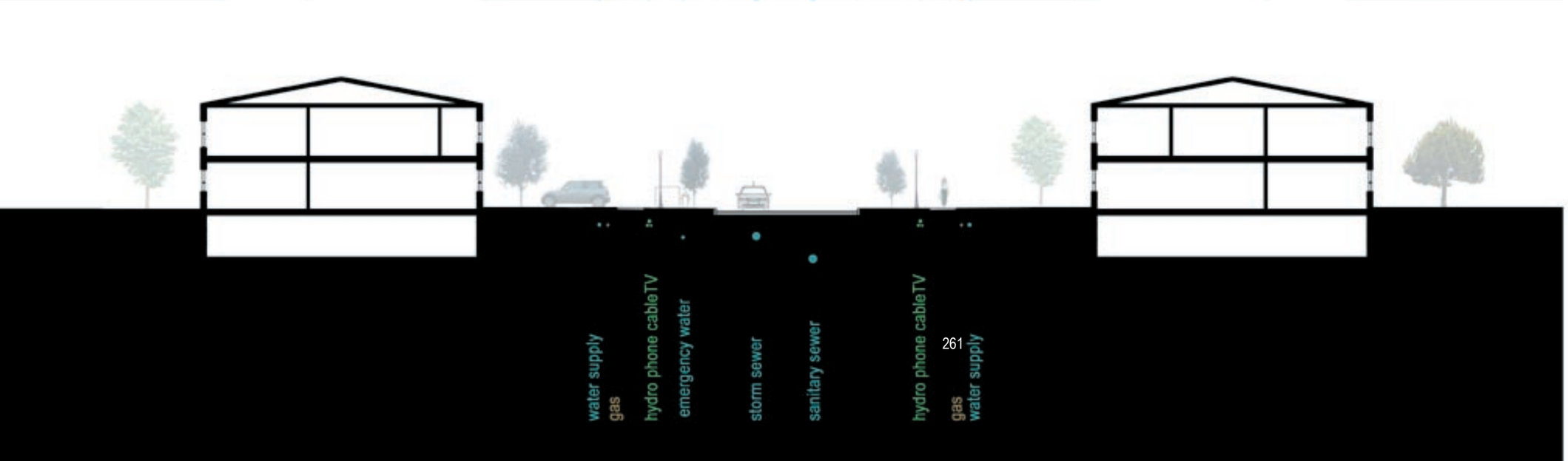


Figure A.22
Steels and Bayview Site
Template 6

Figure A.23 **Residential Infill Morphology - Version 1 Existing**
scale 1: 250





Existing Residential Streets

2 vehicular lanes
0 parking lanes
1.5 m north sidewalk
1.5 m south sidewalk

Figure A.24 **Residential Infill Morphology - Version 1 Proposed**
scale 1: 250

New Residential Streets

2 one-way vehicular lanes
0 parking lanes
2 m north sidewalk
2 m south sidewalk

water supply
gas
storm sewer
sanitary sewer
emergency water
hydro phone cableTV

hydro phone cableTV
emergency water
storm sewer
gas
water supply

Figure A.25 **Residential Infill Morphology - Version 2**
scale 1: 200

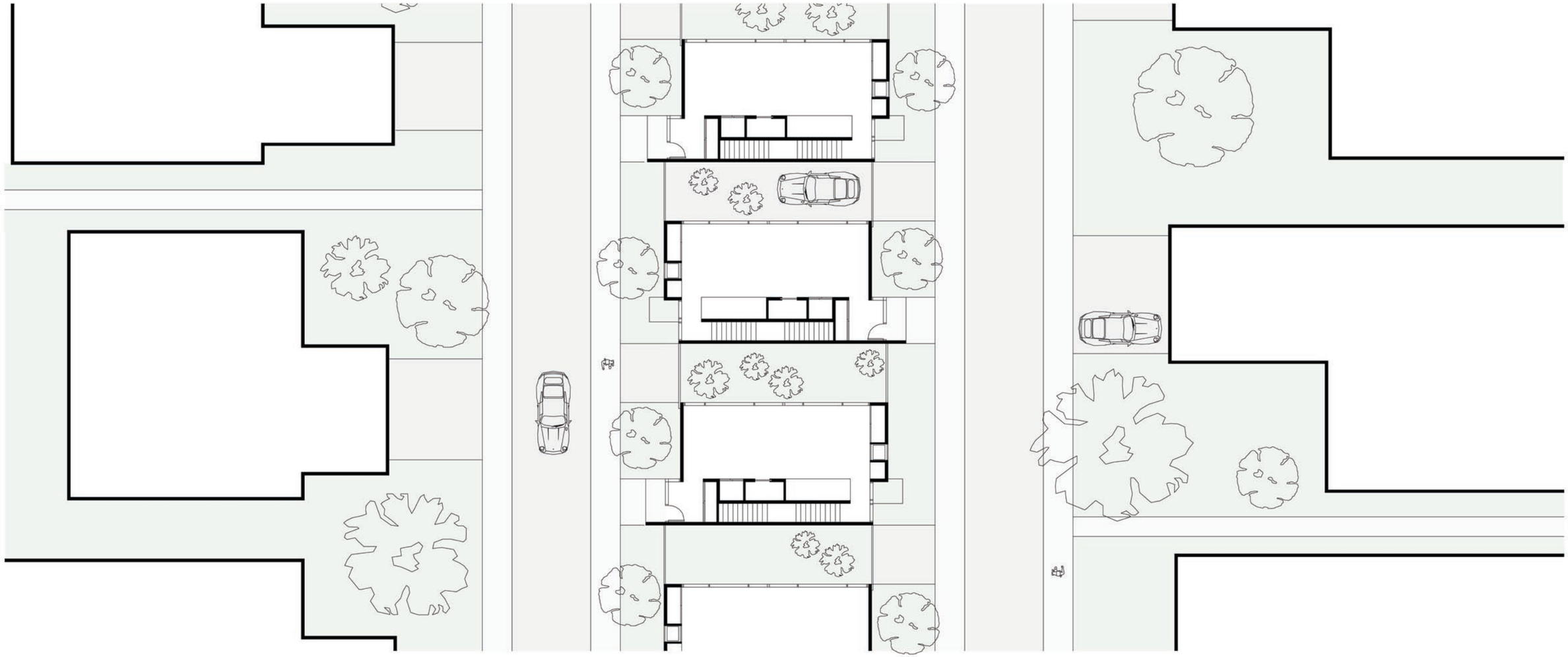


Figure A.26 **Infill House**
Ground Floor Plan and Second Floor Plan
scale 1 : 100

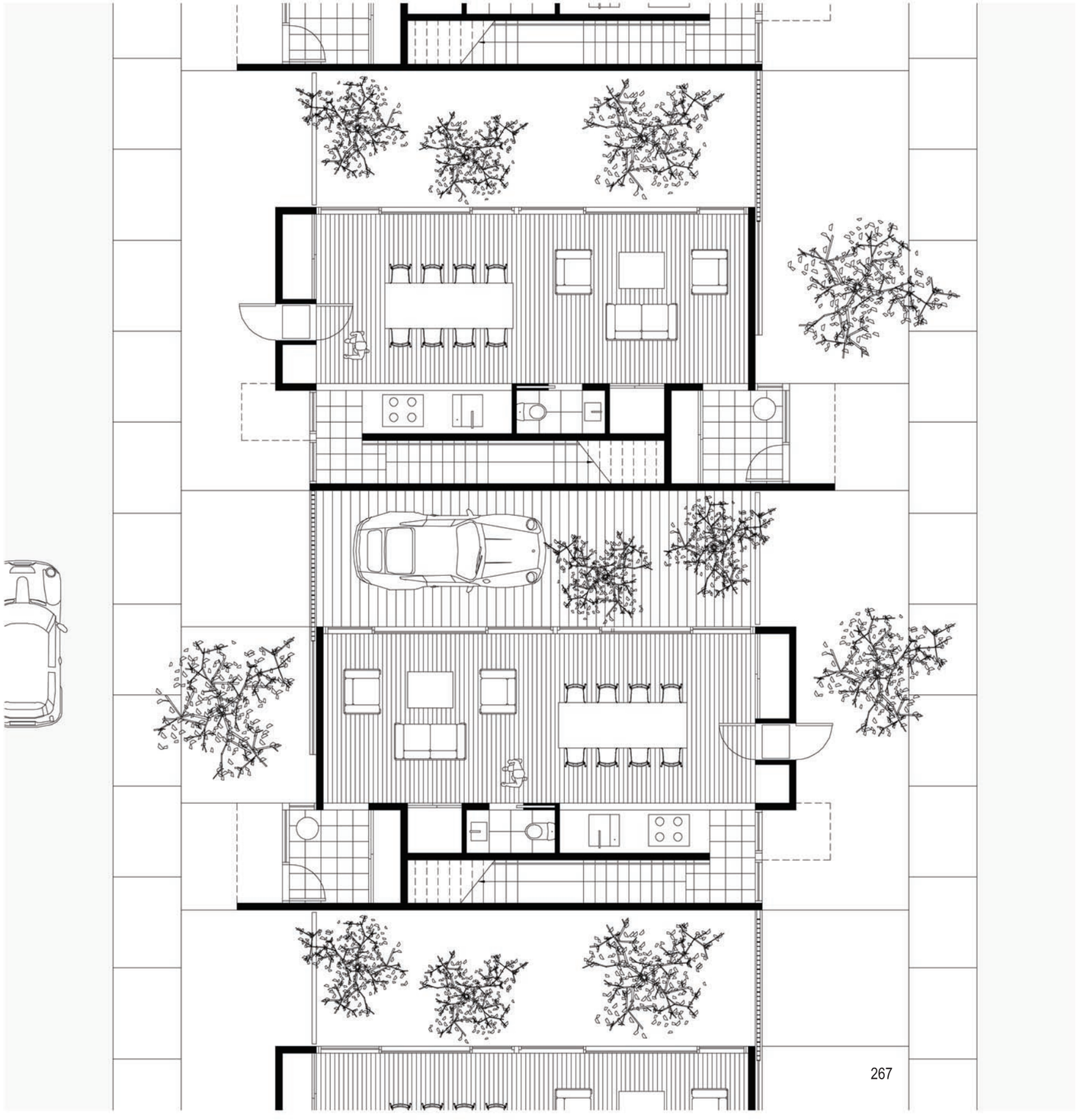


Figure A.27 **Infill House**
Cross Sections and Elevations
scale 1 : 100

Figure A.28 **Infill House**
Long Section
scale 1 : 100

Ingredients
2 cups all-purpose flour
1 tablespoon salt
1 teaspoon celery salt
1 tablespoon black pepper
2 tablespoons dry mustard
4 teaspoons paprika
1 tablespoon garlic powder
5 teaspoons dried thyme
1 teaspoon dried savory
1 teaspoon ground ginger

Figure A.29 **Backyard Infill - Tree House**
Site Plan and Site Section
scale 1 : 200

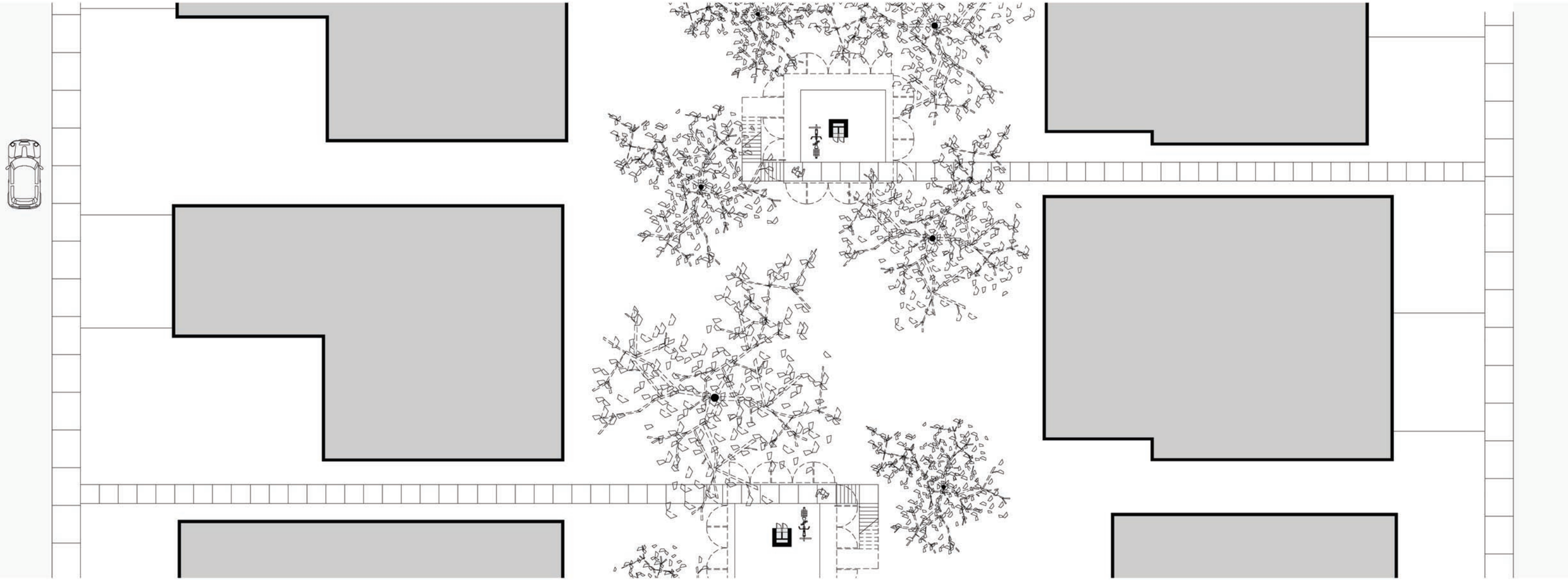


Figure A.30 **Backyard Infill - Tree House**
Ground Floor Plan
scale 1 : 50

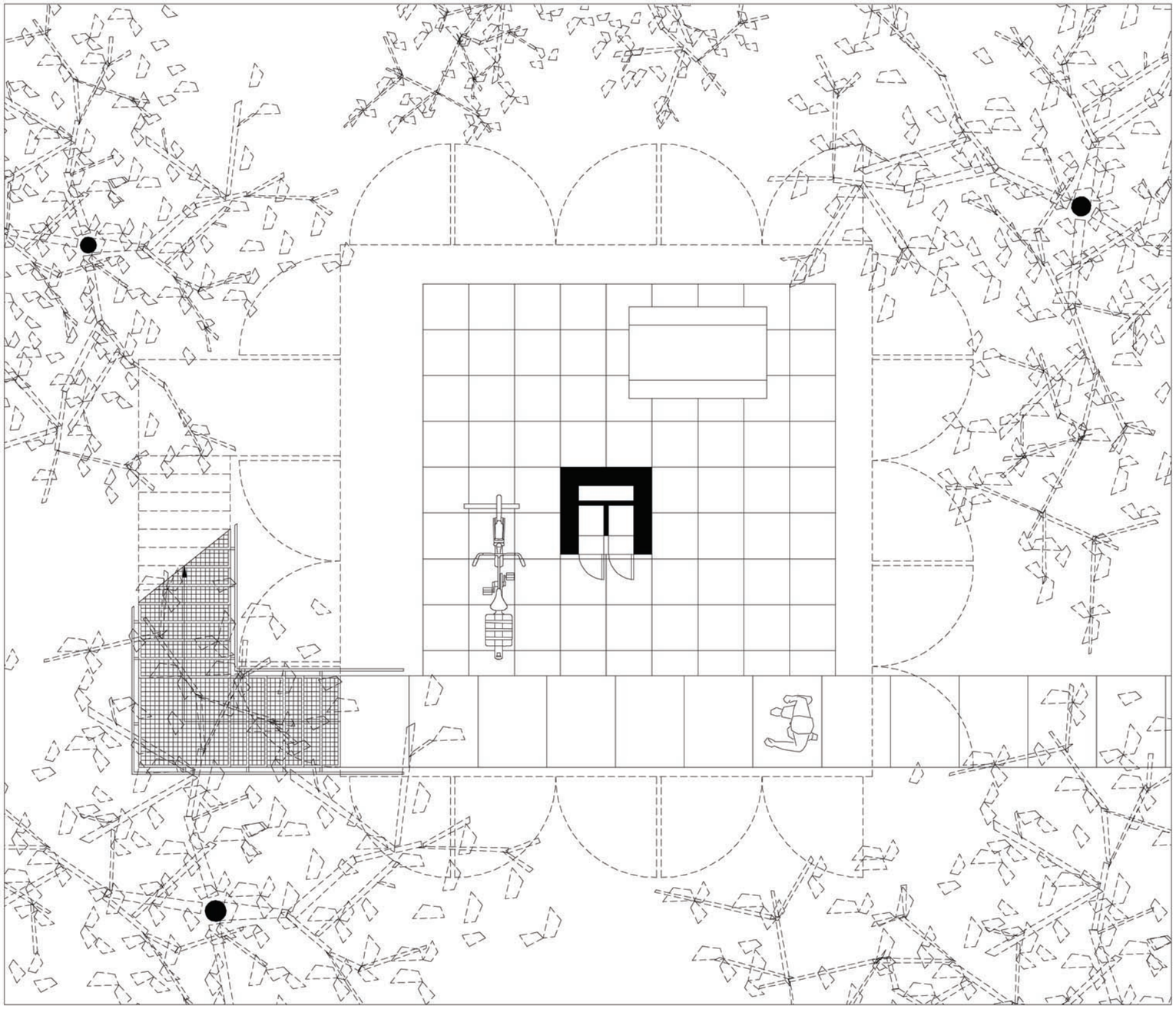


Figure A.31 **Backyard Infill - Tree House**
Second Floor Plan
scale 1 : 50

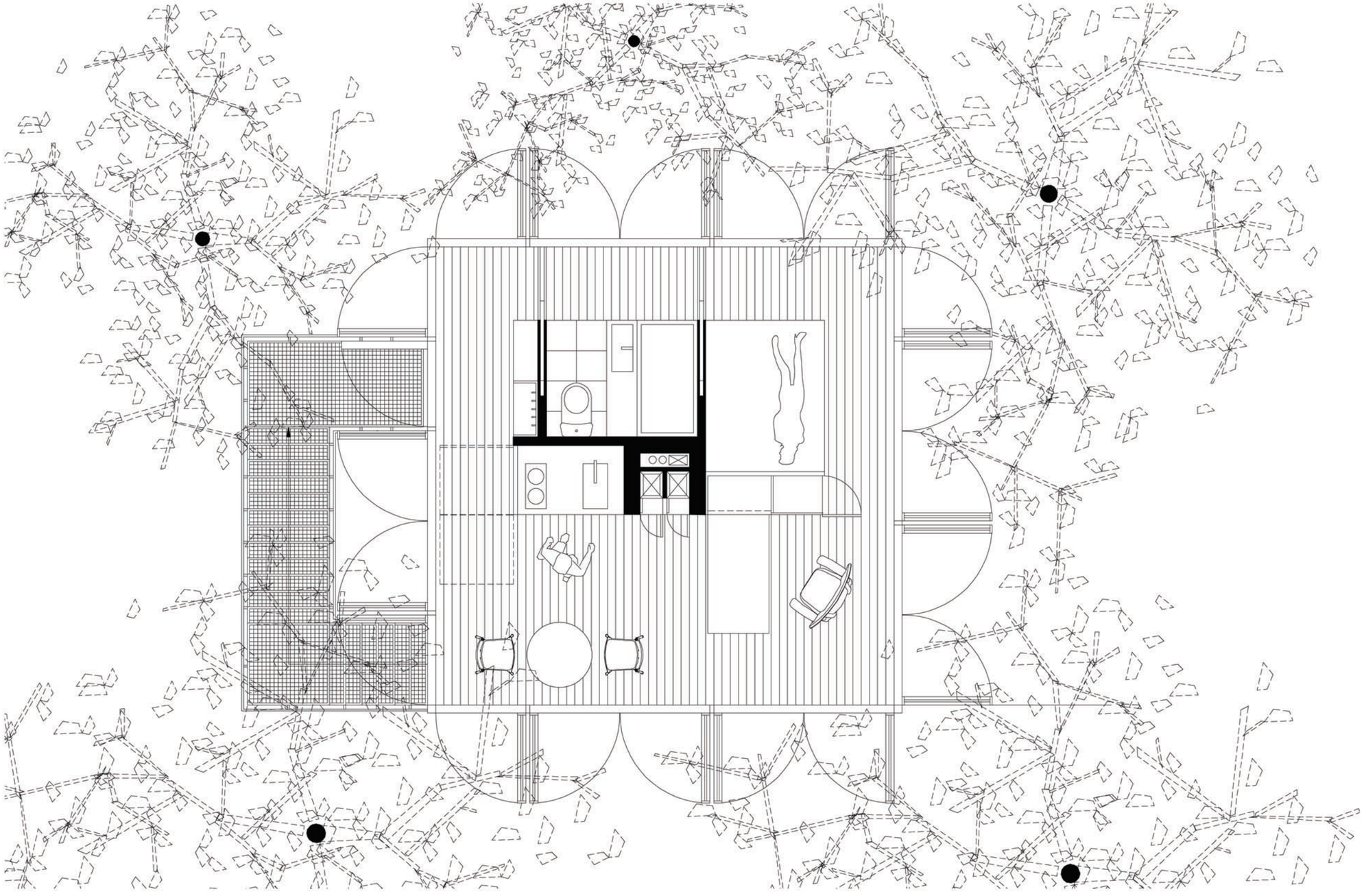


Figure A.32 **Backyard Infill - Tree House Elevation**
scale 1 : 50

Figure A.33 **Backyard Infill - Tree House Cross Section**
scale 1 : 25

The airline, which has been in court-ordered bankruptcy protection from its creditors since April 1, made a profit of $80 million in the same quarter of last year.
On a per-share basis, the airline lost $4.70 a share, compared a profit of 25 cents a share a year ago.
The company's operating revenues were $1.93 billion, down from $2.55 billion in the same period last year.
"The current focus is on renegotiating the company's unsecured claims, all significant

A.4 Dwelling for a Thesis : Digital House

M1 Donald McKay, 3 June 2003.

Figure A.34
Teleoffice Advertisement
Home Page

The subject of my thesis is the televillage also known as the telecenter. 'Televillage' is a registered trademark of a company in Belguim which rents out individual workstations with high speed internet connections. Images from their website are shown on the cover, below and opposite. Their tenants are known as telecommuters – employees of larger companies working outside the main office through internet. In a typical televillage, employees from many different companies share an office space as each workstation is networked into a different company. The major benefit of working in this environment for the employee is the separation between work and home and the elimination of long commutes. In this project, the dwelling for a thesis, I have attempted to design a variation of the televillage called the telecottage - a house with an internet based workstation.

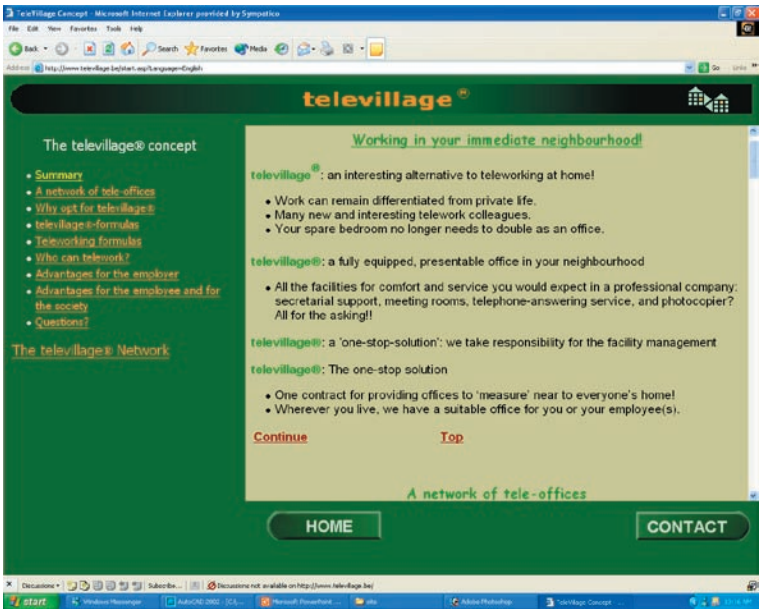


Figure A.35
Teleoffice Website 1

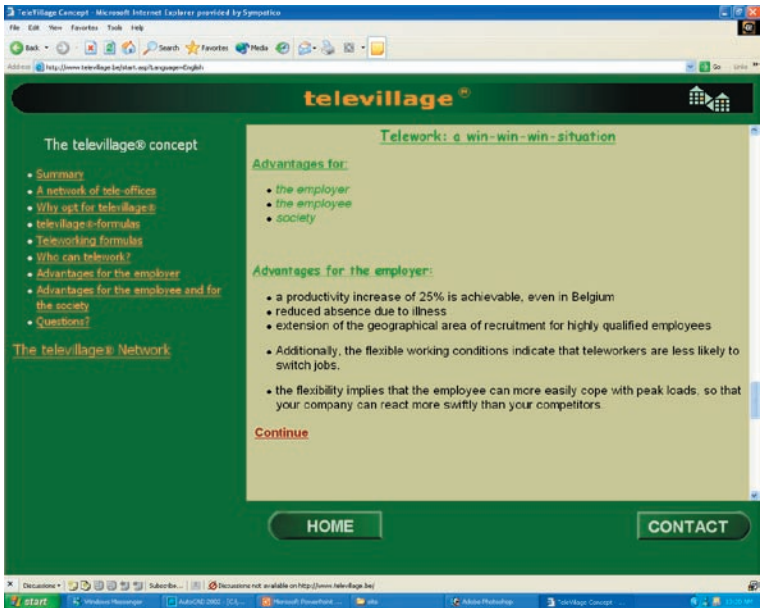


Figure A.36
Teleoffice Website 2

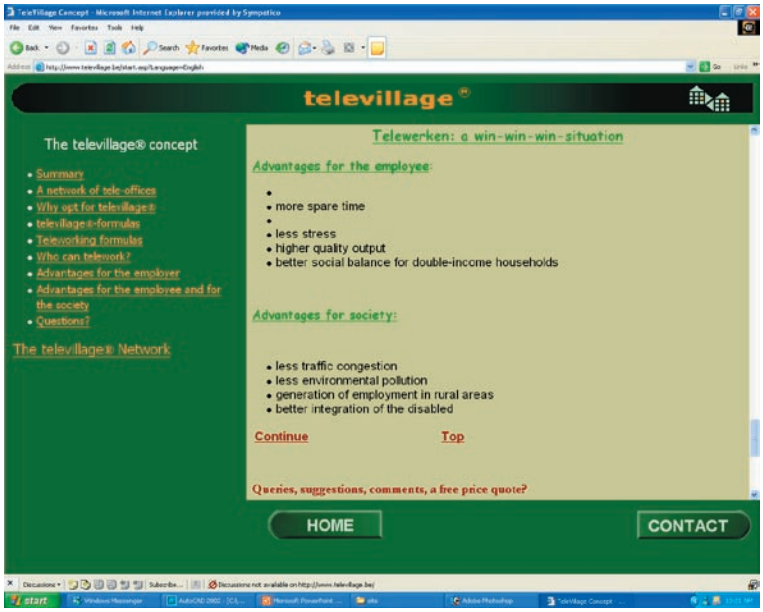


Figure A.37
Teleoffice Website 3

A site was chosen in Waterloo between a residential building and a commercial building. A series of study models were made to explore different site strategies for separating home and office. The scheme chosen to be developed is represented in model 1 in which the digital infrastructure acts as a link between the work space and the living space.

Figure A.38 (left)
Waterloo Location Plan

Figure A.39 (opposite)
Panoramic Site Photo

residential
site
commercial
LOUNGE
MR. SUB

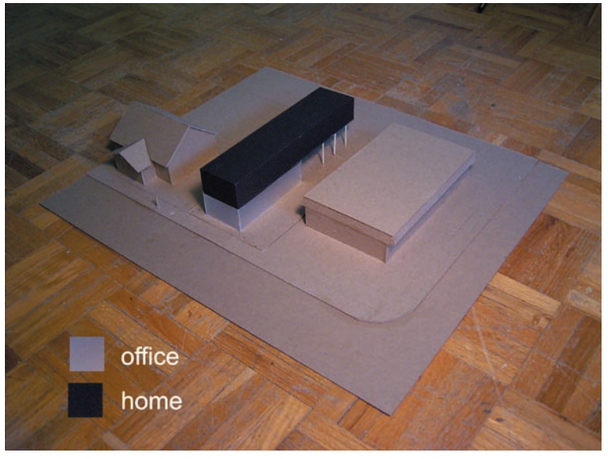


Figure A.40
Sketch Model 1

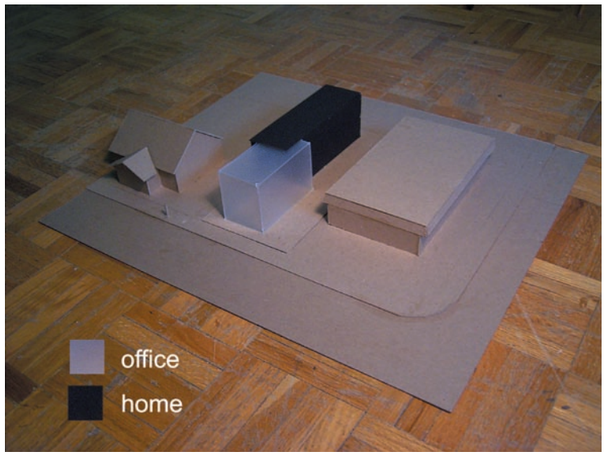


Figure A.41
Sketch Model 2

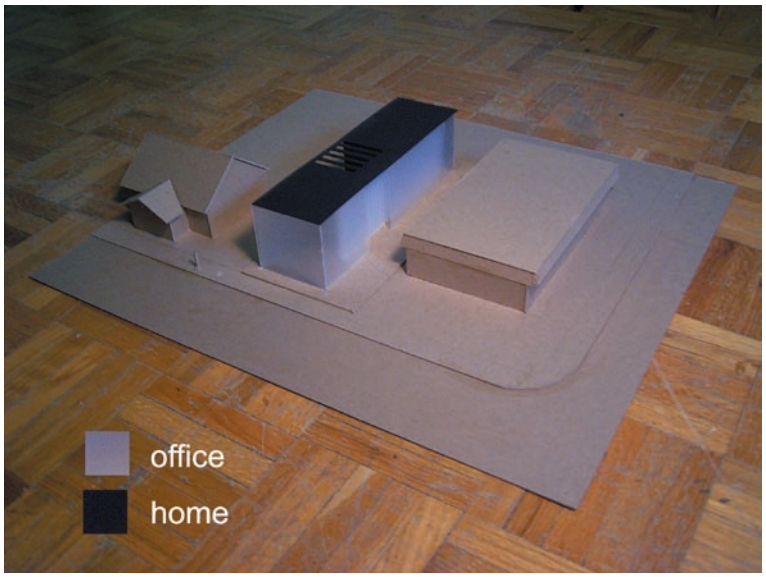


Figure A.42
Sketch Model 1

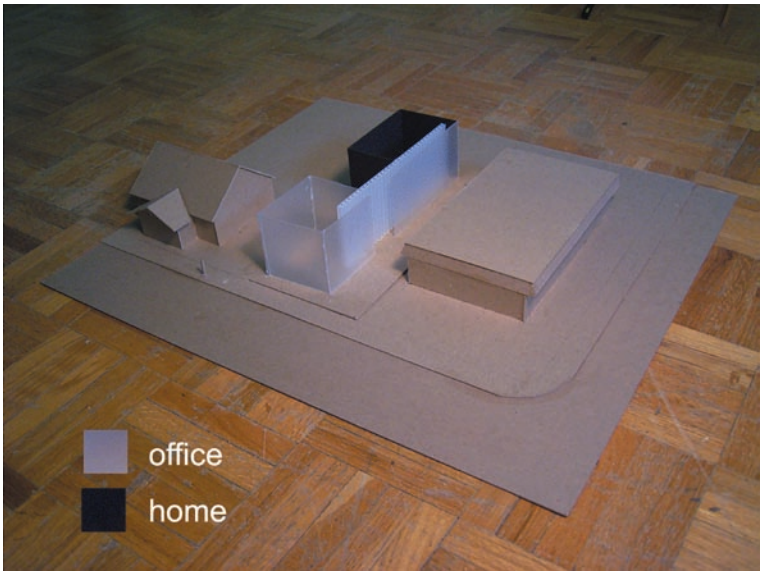


Figure A.43
Sketch Model 4

Figure A.44
Active Home Website 1

A period was spent researching digital technology; two types of products were particularly interesting. The first was automation software.

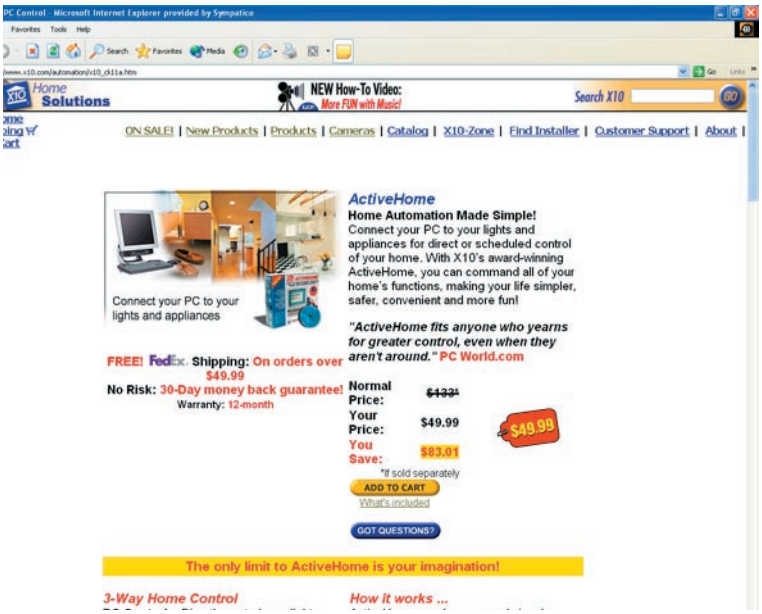


Figure A.45
Active Home Website 2

The most elaborate version, the ActiveHome, allows control of all electrical appliances and equipment through the computer or internet.

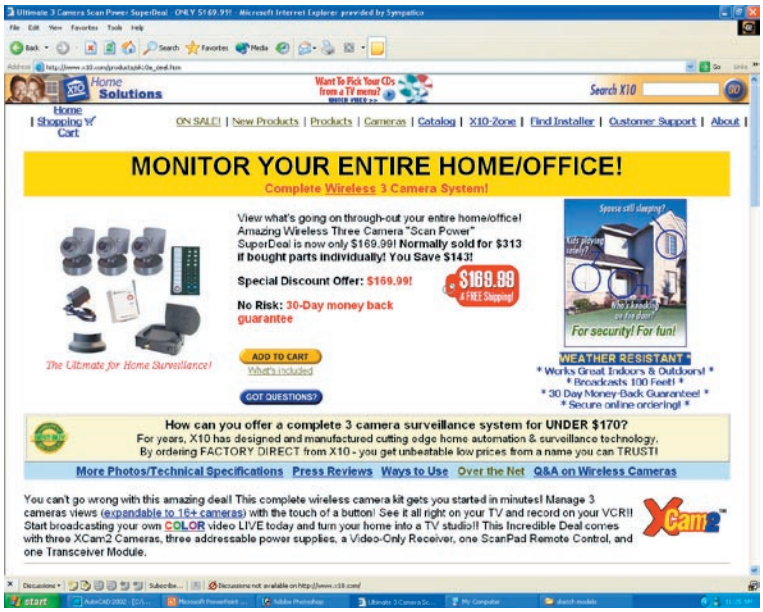


Figure A.46
Home Security Website

Cameras, motion sensors, heat sensors and alarms allows constant monitoring of the home through internet.

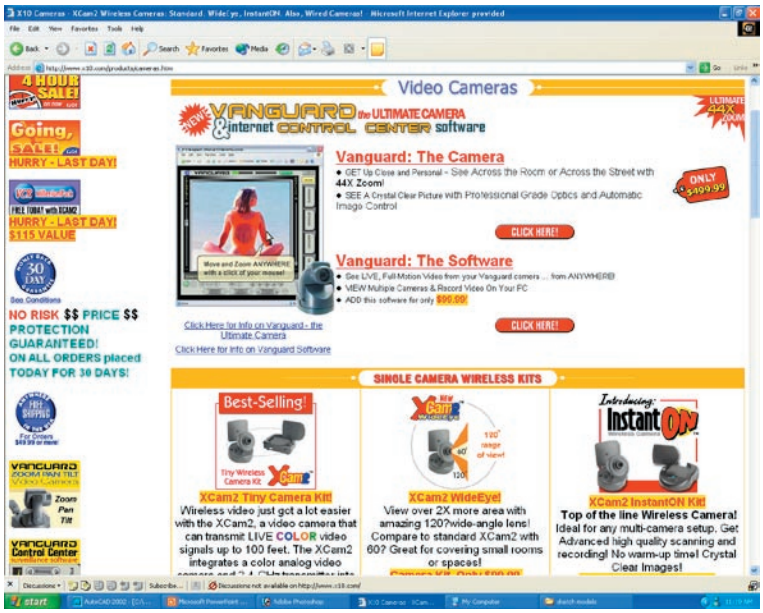
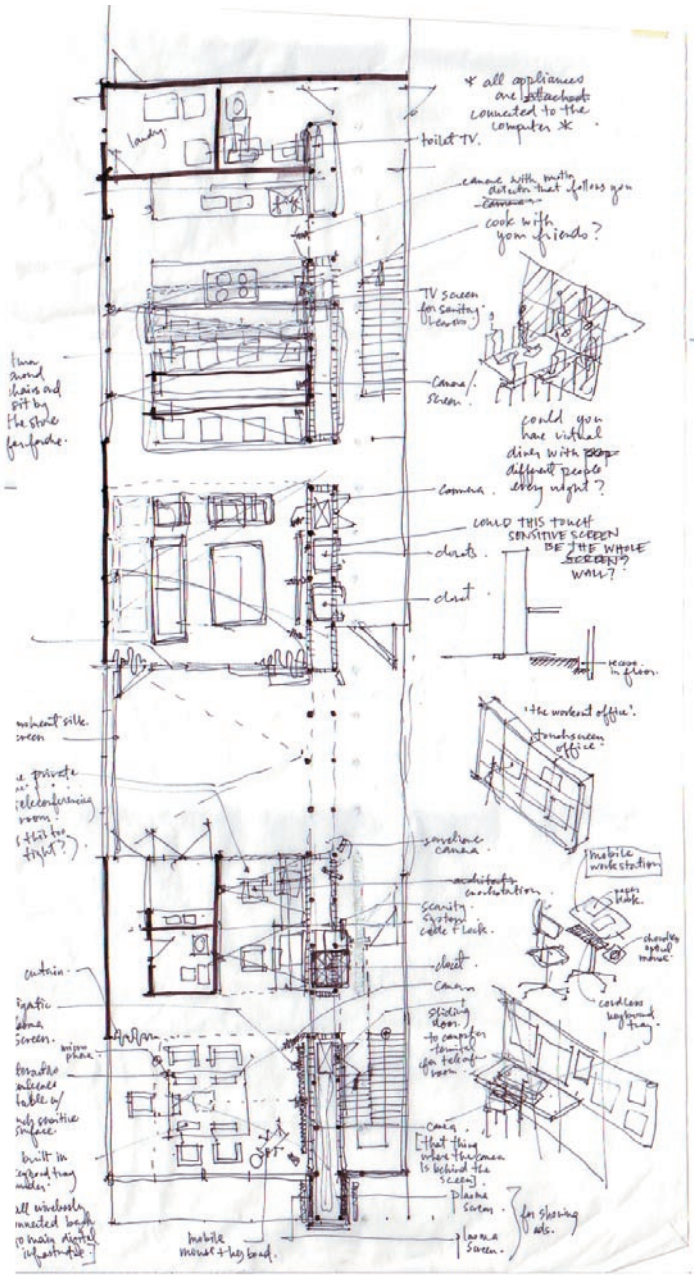
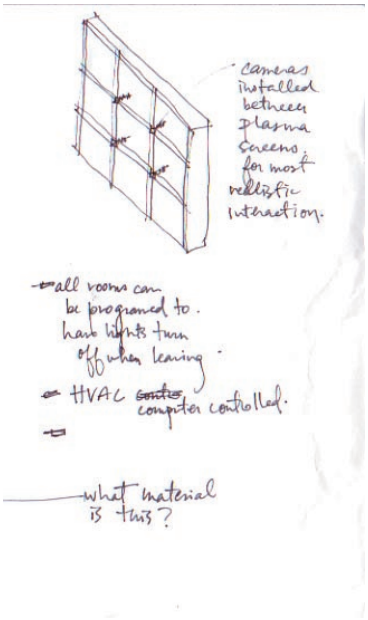


Figure A.47
Vanguard Website

Cameras with pivoting joints and a powerful zoom lenses, also accessible through internet, are advertised as voyeuristic tools.

Figure A.48
Digital House Floor Plan Sketch





Video conferencing
- display
- camera
- speaker
- microphone
- computer
- CODEC
- High speed connection

Surveillance
- heat sensitive detector
- motion detector
- voice dialer

HVAC
- heating
- ventilation
- air conditioning

Appliances
- lights
- television
- stero
- stove
- fridge
- garage
- door bell
- telephone
- water

Control
- remote comtrol
- palm pilot
- cell phone
- voice automation
- motion detection
- touch screen
- touch sensitive surfaces

Figure A.49 (above left)
Sketch LCD Screen Wall

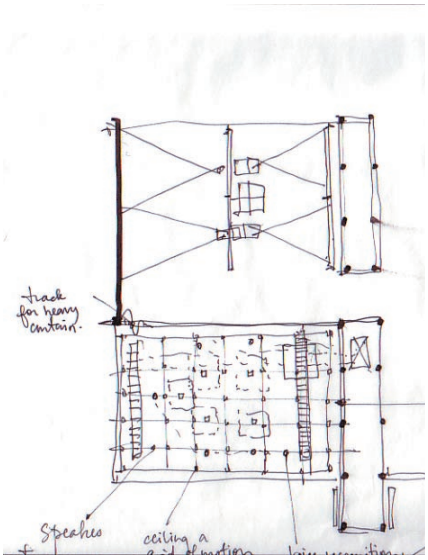


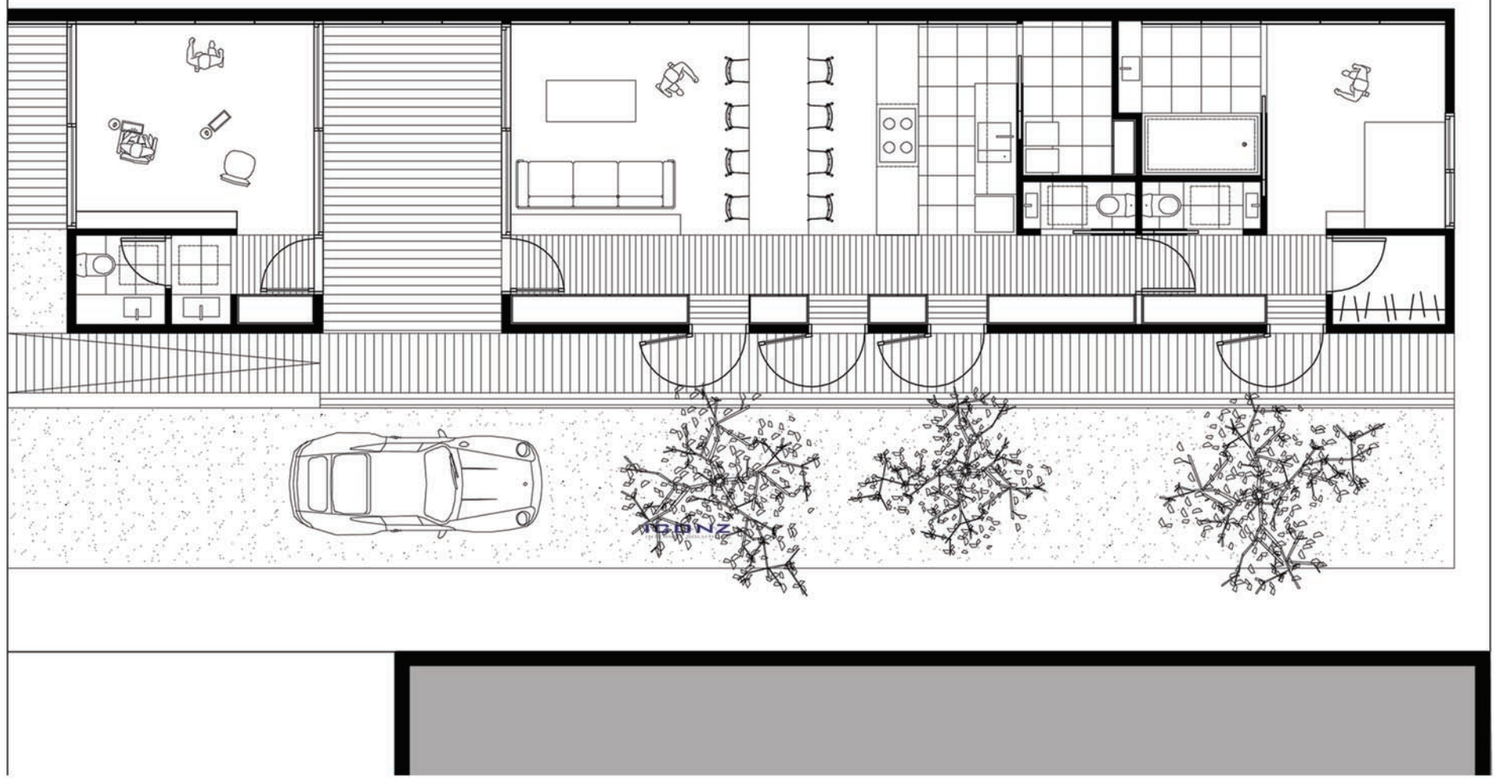
Figure A.50 (below left)
Reflected Ceiling Plan

Figure A.51 (left)
List of all the components amalgamated into the central computer system of the Digital House.

In the final design, the entire house is a computer. On the north side, the media wall which houses the hard drive is covered in plasma screens and embedded with web cameras. The south side, the environmental wall is lined with glass doors which open up onto the garden.

On the east side, the media wall addresses the street by extending out like a billboard. In the office, it becomes a large computer screen on which the user can teleconference and run typical office software from a wireless workstation. The media wall continues out into the courtyard which is covered during winter and can be used year round for working outdoors. In the living area, it can act as an entertainment screen for watching TV and movies. As videoconferencing is possible throughout the house, the dining room becomes a place to dine with far away friends through the internet. Similarly, the kitchen becomes a place to cook with the aid of friends and internet recipes. The media wall discontinues in the service areas and resumes in the bath and bedroom enhancing relaxation with books, music and movies.

Figure A.52 (opposite)
Digital House
Floor Plan and
Longitudinal Section
scale 1 : 100



office
living
dining
kitchen
service
bath
bedroom
118
ICONZ

Between the ceiling tiles is a network of microphones and motion sensors which allow the computer to be aware of movement and sound. This makes it possible for images, sounds, lights and air conditioning to follow the user as they change location. A teleconference with a friend can therefore move uninterrupted from room to room.

An attempt was made to express the idea of the house as a computer through the use of translucent plastic cladding. Without insulation, the hardware and wires of the computer become visible through the plastic. This aesthetic is currently popular in trendy electronic devices.
In the next project, the aesthetic of computers and electronics will be documented as a reference possible material and form of the digital house. A more in-depth study of computer technology will also be conducted to further explore applications of technology to domestic and work spaces.

Figure A.53 (opposite)
Cross Section
scale 1 : 20

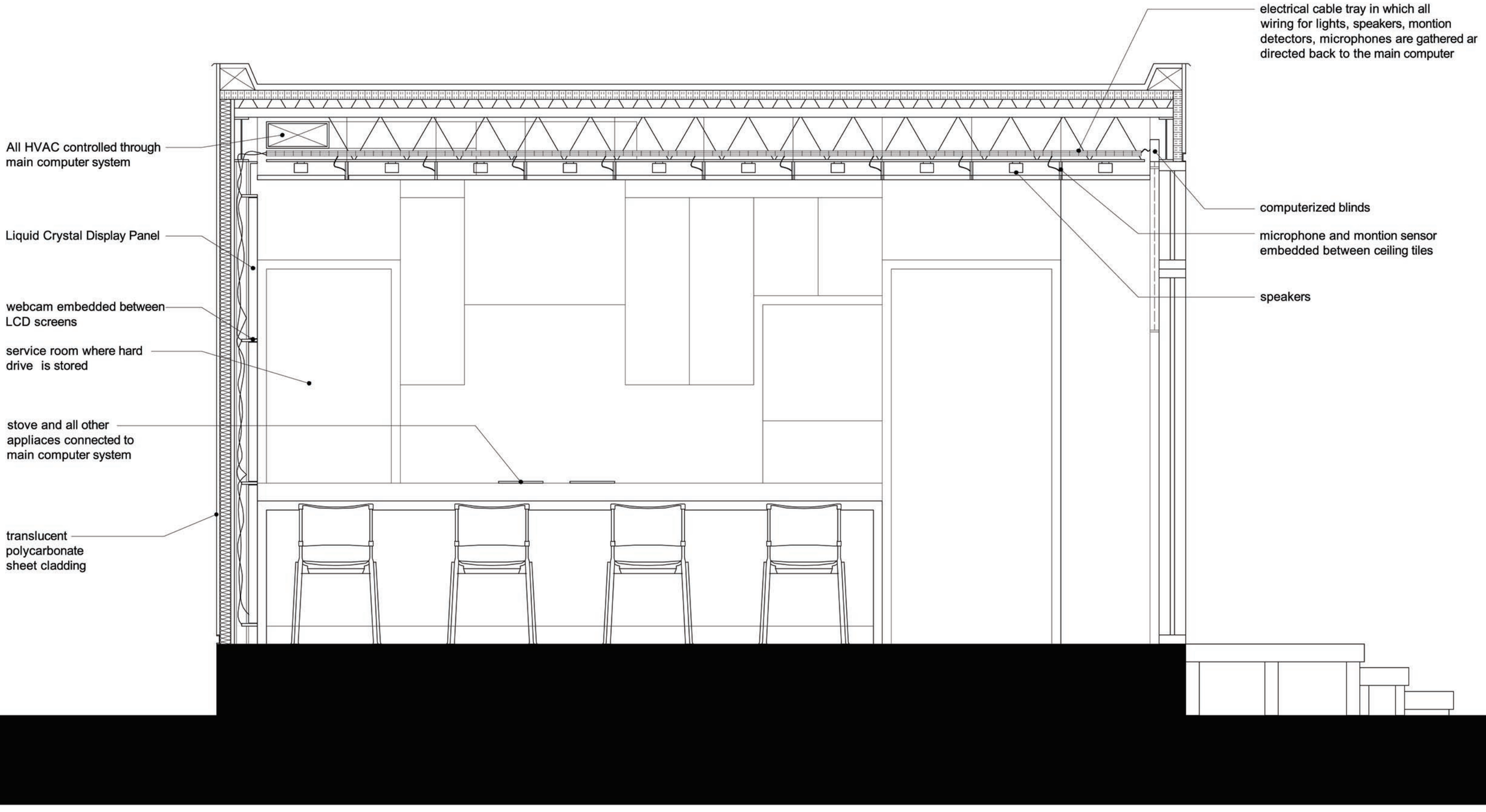

electrical cable tray in which all wiring for lights, speakers, montion detectors, microphones are gathered ar directed back to the main computer
All HVAC controlled through main computer system
computerized blinds
Liquid Crystal Display Panel
microphone and montion sensor embedded between ceiling tiles
webcam embedded between LCD screens
speakers
service room where hard drive is stored
stove and all other appliaces connected to main computer system
translucent polycarbonate sheet cladding

Figure A.54
Exterior Rendering

Figure A.55
Interior Rendering

Notes

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