SmartCentres:

A Catalyst for the Transformation of Power Centres into Livable Communities

by
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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

Canada's housing crisis has increased the demand for shovel-ready land to support new residential development. Brownfield sites, including underutilized power centres, present a significant opportunity to accommodate growth within existing urban boundaries. While many developers have identified the economic potential of redeveloping these sites, proposed projects often prioritize density and financial return over creating communities that align with municipal goals and local aspirations. At the same time, existing municipal zoning bylaws restrict residential developments on brownfield lands, increasing reliance on Minister's Zoning Orders (MZOs), which expedites planning approvals while limiting municipal oversight and opportunities for public consultation.

This thesis argues that planning authorities should reconsider this approach by shifting toward community-guided redevelopment that prioritizes livability, sustainability, and long-term community value alongside housing delivery. Rather than focusing solely on maximizing density, the transformation of underutilized commercial landscapes should integrate diverse housing types, reliable transportation, public green and open spaces, and everyday amenities to create complete, human-centred neighbourhoods.

To explore this approach, the research examines alternative urban development strategies that support sustainable, livable, and complete communities. Through the analysis of successful urban development precedents that emphasize sustainability, walkability, and quality urban design, key planning and design strategies will be identified and applied to the Cambridge SmartCentre as a case study. This investigation will develop alternative future scenarios that challenge conventional redevelopment models driven primarily by density and economic gain.

The proposed design solutions will demonstrate how the redevelopment of power centres can accommodate residential growth while improving walkability, sustainability, and overall quality of the area. Ultimately, this thesis seeks to balance redevelopment approaches that supports municipal planning objectives and demonstrates how brownfield redevelopment can contribute to the creation of sustainable, livable, and complete communities.

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I am also thankful for roommates who have stuck with me through my entire architecture school experience.

To my day ones at home who have been by my side since before preschool. Could not have done it without you, back then and now.

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Dedication

For my Mom and Dad who have supported me through this degree and for always being a phone call away when I needed them most.

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List of Abbreviations

GGH: Greater Golden Horseshoe

MOO: Multi-Objective Optimization

MZO: Minister's Zoning Order

PPS: Provincial Planning Statement

REIT: Real Estate Investment Trust

ROW: Right-of-Way

SDGs: Sustainable Development Goals

VMC: Vaughan Metropolitan Centre

Introduction

Canada is currently in need of more housing. This demand has increased the need for shovel-ready land to support new residential development. Shovel-ready land includes the necessary servicing infrastructure, such as water, sewer, and storm systems, and appropriate zoning to facilitate residential development. Brownfield sites, including underutilized power centres, present a significant opportunity to increase the shovel-ready land supply and accommodate growth within existing urban boundaries. While many developers have identified the economic potential of redeveloping these sites, proposed projects often prioritize density and financial return over creating communities that align with municipal goals and local aspirations. At the same time, existing municipal zoning bylaws restrict residential developments on brownfield lands, increasing reliance on Minister's Zoning Orders (MZOs), which expedites planning approvals while limiting municipal oversight and opportunities for public consultation.

This thesis argues that planning authorities should reconsider their priorities and approaches toward a more community-guided redevelopment that prioritizes livability, sustainability, and long-term community value alongside housing delivery. Rather than focusing solely on maximizing density, the transformation of underutilized commercial landscapes should integrate diverse housing types, reliable transportation, public green and open spaces, and access to everyday amenities to create complete, human-centred neighbourhoods. To date, this has not been the case for most large-scale urban intensification projects.

As the country faces a housing supply and affordability crisis, one of the widely proposed solutions to increase supply is to simply build more homes on new land. To construct the number of homes needed to have meaningful impact on the housing crisis within the next few years, access to land that is ready and available for development must be increased. According to recent studies, Canada, but more specifically Ontario, is experiencing a shortage of developable or shovel-ready land, falling short by roughly 4,800 hectares (11,900 acres)[1]. This land includes the necessary infrastructure, such as water, sewer, and storm systems needed for residential developments. As the inventory of readily available land within existing urban boundaries continues to diminish, developers have advocated for the expansion of boundaries

1 Clayton and Ambroski, *Expanding Housing Supply and Improving Housing Affordability in the GGH Are Pipedreams Without an Ample Inventory of Shovel-Ready Sites,* 20.

into undeveloped areas to meet housing demands. However, this approach increases risk to critical environmentally sensitive landscapes and agricultural lands.

In Ontario, this issue became more prominent with the 2022 release and subsequent reinstatement of 3,000 hectares (7,400 acres) of protected Greenbelt land for the purposes of residential development by the provincial government. An investigation was conducted and found that approximately 92 percent of the released area were parcels removed at the request of two prominent developers[2], raising concerns over the integrity of the Greenbelt protections.

While providing the servicing infrastructure to increase the supply of shovel-ready land is expensive and time consuming, the redevelopment of brownfield sites poses an alternative approach to address the shortage. Brownfields are previously developed commercial or industrial properties that are currently abandoned, vacant, or underused and include existing infrastructure needed to facilitate residential developments. By repurposing these sites, municipalities can accommodate growth within existing boundaries while reducing expansion and preserving greenfield and agricultural lands. Within urban landscapes, one of the most common forms of brownfield land is the power centre[3].

A power centre is an open-air shopping centre including various big box retailers, large parking lots, and extensive underground infrastructure. Unique to the North American suburban landscape, power centres have become increasingly underutilized with the rise of online shopping. Given that these sites are becoming underused, but are serviced by the municipality, they constitute as both brownfield and shovel-ready land. This combination offers a unique opportunity to increase housing supply within urban boundaries without the need for expansion. Reusing power centre land and infrastructure for mixed residential and commercial uses can boost local employment and create a livable community that places people near jobs and everyday essentials and services.

The large corporations, like SmartCentres® REIT and Cadillac Fairview, that own these power centres have already identified the economic advantages of redeveloping these sites. Mixed-use redevelopment diversifies revenue streams, increases property value, and delivers returns on investment. However, existing municipal bylaws often restrict residential uses on these lands because they are designated for commercial uses that support local economic stability and employment.

2 Smart Growth America, "Building on Underutilized Land."

3 Smart Growth America, "Building on Underutilized Land."

SmartCentres® REIT is one of the most common power centre developers in Canada. The company has quietly monopolized the suburban power centre market, accumulating over 1,400 hectares (3,500 acres) of land across Canada[4], which is sufficient land to house roughly 150,000 people[5]. Recently, SmartCentres® REIT has shifted their focus from retail development to residential development as the rise of online shopping has reduced the need for in-person retail. They have committed to the redevelopment of 95 power centre sites across Canada[6]. The company plans to intensify these locations into high-density residential areas, featuring 15 to 35 storey mixed-use buildings.

In 2020, it was announced that SmartCentres® REIT plans on transforming the Cambridge SmartCentre into a high-density residential area; however, due to the areas zoning restrictions, the company has used a Minister's Zoning Order to change land-use designation and subsequently bypass public consultation processes. This has resulted in a proposal that exceeds growth targets established in the city's official plan and has allowed the development to proceed with limited community support.

Developing high-density residential projects without community engagement risks creating poorly designed, less livable districts. Typically, these proposals involve the demolition of discount retailers and replaces them with dense high-rise apartment buildings. While this approach increases housing supply, it has a negative effect on lower-income individuals by displacing affordable retail services and access to essential goods, leading to commercial displacement and gentrification.

Additionally, the introduction of high-density residential developments on power centre sites can lead to the emergence of new edge cities– an urban node at the edge of, but not contiguous with established cities. These approaches can create issues with connectivity, limiting access to employment, services, and public amenities, while increasing reliance on private vehicle transportation. Based on current redevelopment proposals and ongoing projects, like the Vaughan Metropolitan Centre, the transformation of power centre sites is trending toward high-rise residential towers situated along major arterials. Without a change in approach toward more careful planning and integration with the surrounding community, there could be a resurgence of edge cities across Canada.

While power centre sites represent a significant

4 SmartCentres, "About Us."

5 Calculated by dividing 97m^2 (avg. space per person) by site area, 1,400ha.

6 SmartCentres, "About Us."

opportunity to increase housing and land supply, the current approach to their development prioritizes the financial benefit of the developer and bypasses public consultation processes leading to isolated developments that are disconnected from the surrounding community.

To challenge the current development approach, SmartCentres® REIT locations, specifically, the Cambridge SmartCentre, will be used as a case study to explore alternate futures for the site that prioritize sustainability, livability, and the creation of complete communities. This thesis will contribute to the need for solutions to increase land within urban boundaries and reimagine a more appropriate, location specific strategies for residential development. It will explore how SmartCentre sites can act as a template to redevelop underutilized commercial landscapes into communities that prioritize social and environmental wellbeing, are economically stable, and are enjoyable places to live. At the design level, this work will investigate the urban design strategies needed to integrate residential into previously commercial sites to ensure sustainable, complete, and livable communities are created.



Fig. 1 Cambridge SmartCentre

This thesis is organized into six sections:

Chapter 1 begins with an overview of the history of the suburban power centre, the history of SmartCentres® REIT, and a critique of their current intensification plans.

Chapter 2 provides an analysis of the need for more shovel-ready land within urban boundaries to facilitate residential developments; this section will explore the potential of using power centre sites to fulfill the need for more land. This section further discusses how a change in municipal land-use regulation needs to change to allow for the redevelopment of brownfield land.

Chapters 3 and 4 outline the theoretical framework and design methodology that provides insight into urban design approaches that promote sustainability and livability in a community. This section will also illustrate specific design elements and approaches that will be used to ensure sustainability and livability are achieved in the redevelopment of power centre sites.

Chapter 5 explores a range of design iterations that investigate how a series of urban design approaches can shift priorities to better reflect the community. These possibilities will be explored using the Cambridge SmartCentre and envision alternative futures that promote a sustainable, livable, and complete community.

Finally, the thesis concludes with key takeaways from the research and series of design experiments. This section further describes how the strategies applied in Chapter 5 can be used as inspiration for a provincial design guide for the redevelopment of brownfield sites to ensure the development of sustainable and livable communities that integrate diverse housing types, access to public space, reliable transportation, and everyday amenities. Additionally, this chapter outlines possible amendments for municipal zoning bylaw to enable residential developments on underutilized lands.

Ch.1: **SmartCentres® REIT**

1.1 The North American Power Centre

A power centre, or big-box centre, is a common feature in the North American suburban landscape. They are open-air shopping centre with typically 23,000 to 56,000 square meters of leasable area[6]. These centres include 3 or more big box anchor tenants, such as category killers, supercentres, and full-line discounters. These stores are large retailers that dominate a specific product category by offering an incomparable selection of brands, inventory, and heavily discounted prices. The mix of discounters is often supported by various smaller retailers[7]. Power centres are often located near a major arterial, feeding off of its traffic. Although the origins of the term "power centre" are not clear, many believe that it was inspired by the 1980s fad of "power" buzzwords, like power suits or power walking[8]. In 1986, real estate developer Merritt Sher opened the first power centre in California[9]. Unsatisfied with the time it took to purchase an item in North America's retail shopping model, the enclosed shopping mall, Sher aimed to shorten the trip. With parking conveniently located at the entrance of each anchor store, the average visit length decreased from 3 hours to just 45 minutes[10]. As each anchor tenant is its own destination, there is less browsing, power centre developers claiming that 85 percent of shoppers buy something on each visit, compared to only 50 percent of mall shoppers[11].

Unique to North America, these sites litter the suburban landscape offering immediate access to big-box retailers. In the Canadian context, the suburban power centre landscape has been monopolized by large retail development corporations like SmartCentres® REIT and Cadillac Fairview. However, with the rise in popularity of online shopping, power centres have become increasingly underused. Many developers have identified the economic benefits of redeveloping these sites as it diversifies revenue streams and increases property value. However, these developments are often misaligned with community desires.

6 CoStar Realty Information, Inc, "U.S. Shopping-Center Classification and Characteristics."

7 Donnellan, *Merchandise Buying and Management*, 62.

8 Brent H. Felgner, "Power Centers Pack Punch In Mature Market."

9 Michael Totty, "Power' Centers Lure Shoppers by Mixing Elements From Big Malls and Small Plazas," 1.

10 Witold Rybczynski, "The New Downtowns," 106.

11 Donnellan, *Merchandise Buying and Management*, 62.

1.2 **The SmartCentre**

A SmartCentre is a common brand of Canadian power centre. They are generally suburban, open-air shopping malls, including 3 big-box anchor tenants, such as Best Buy and Staples, with Walmart as the lead tenant. Most SmartCentres are located near “key intersections”, the 400-series highways and another major arterial or two major arterials[12]. Due to their proximity to major roadways, SmartCentres are often on the periphery of the nearest urban centre, requiring many visitors to drive to the area. To accommodate this traffic, the centres are dominated by vast parking lots, dedicating approximately 75 percent of land to vehicle infrastructure. This land is typically zoned solely for commercial uses, which includes retail and food and beverage.

12 SmartCentres, “About Us.”

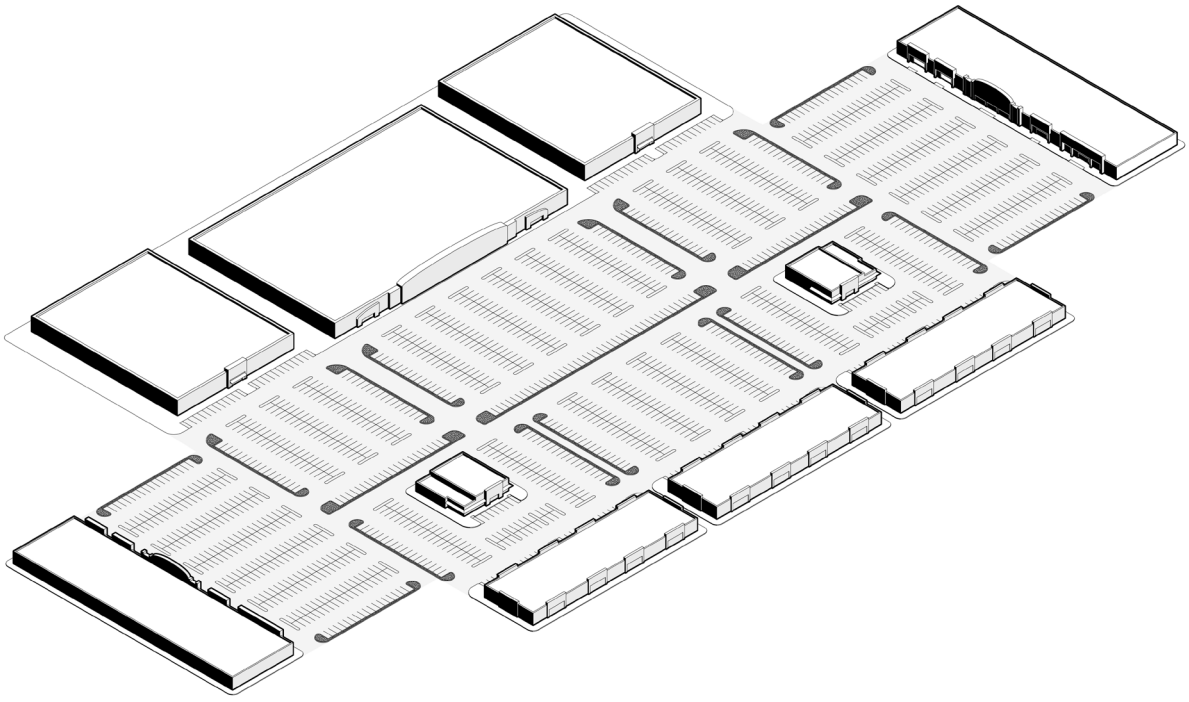


Fig. 2 Typ. Power Centre

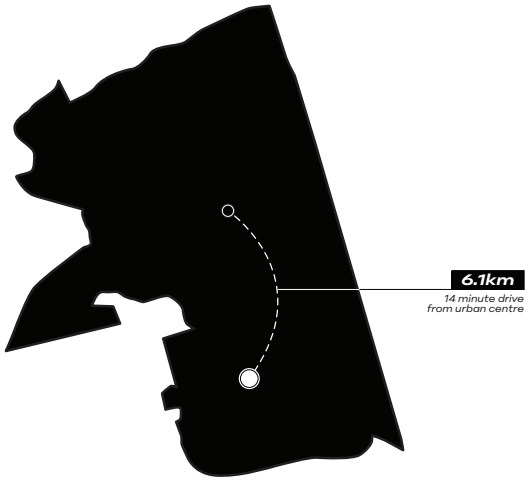


Fig. 3 Cambridge Region Map

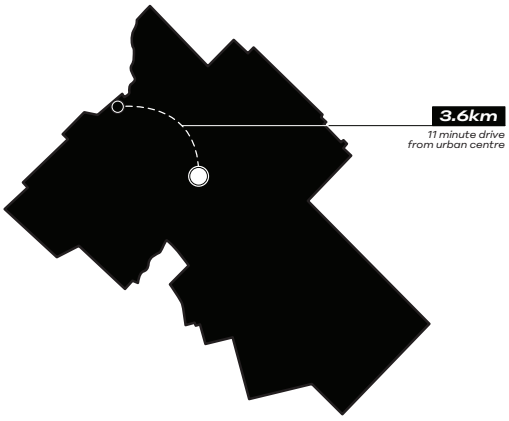


Fig. 4 Guelph Region Map

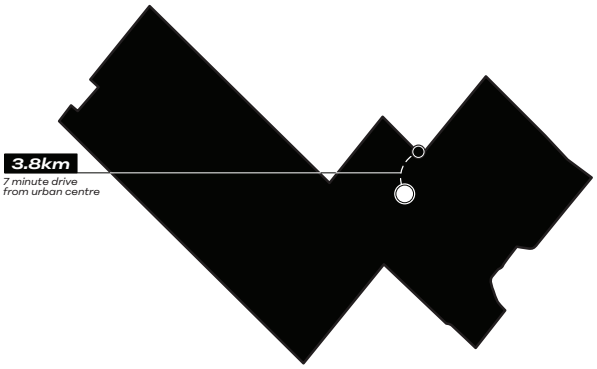


Fig. 5 Milton Region Map

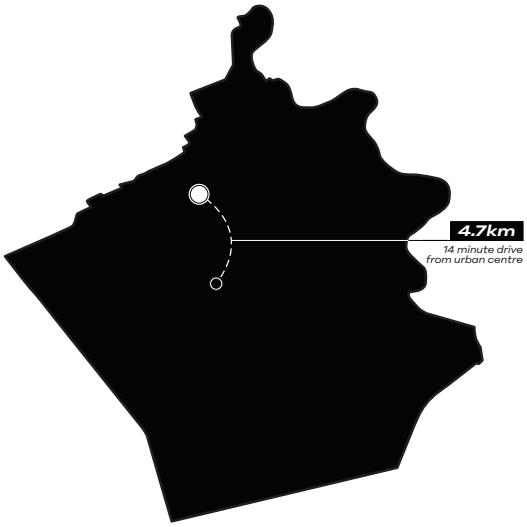


Fig. 6 Kitchener Region Map

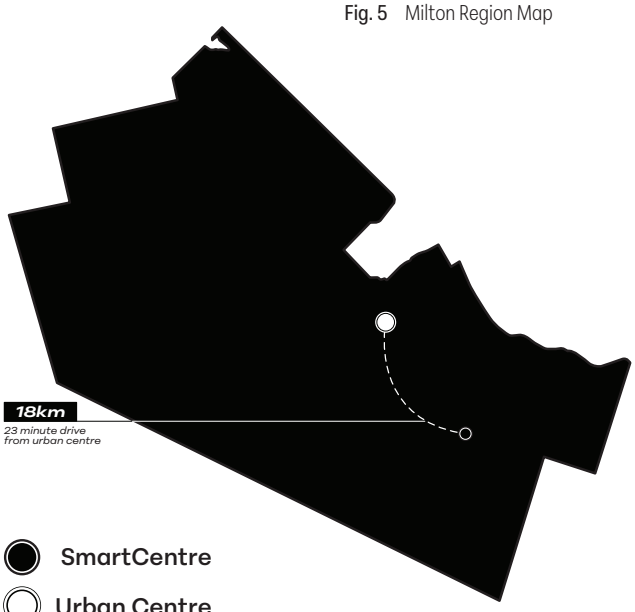


Fig. 7 Hamilton Region Map

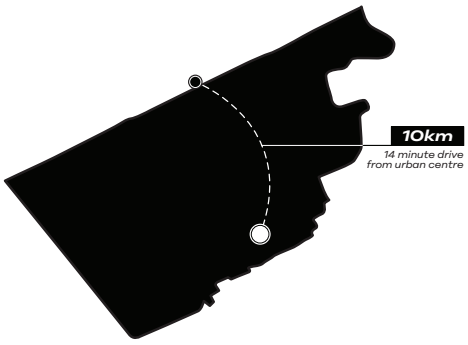


Fig. 8 Waterloo Region Map

Context Analysis Maps

The following series of maps analyzes the surrounding context of six SmartCentre locations in Southern Ontario.

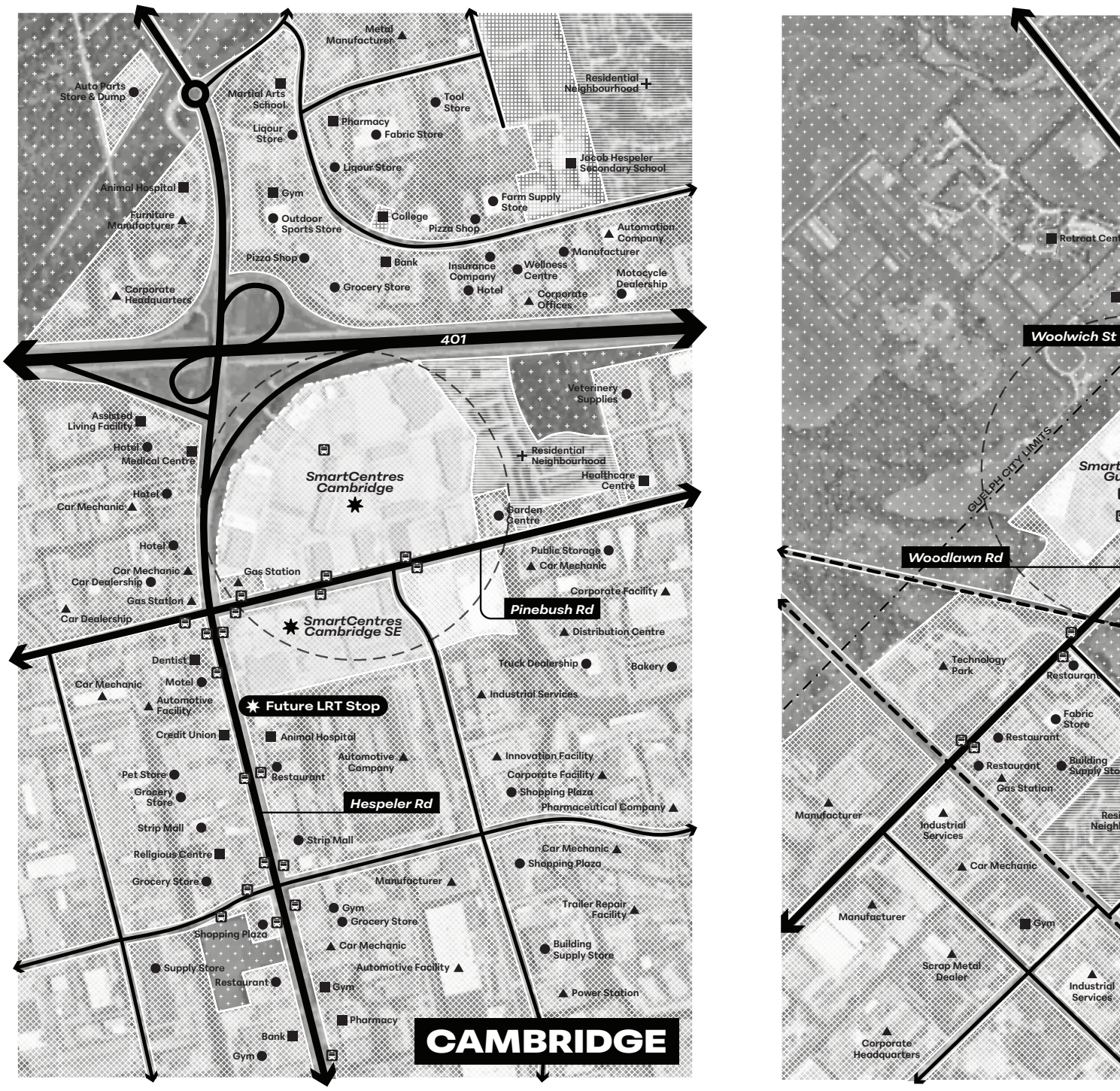


Fig. 9 Cambridge Context Map

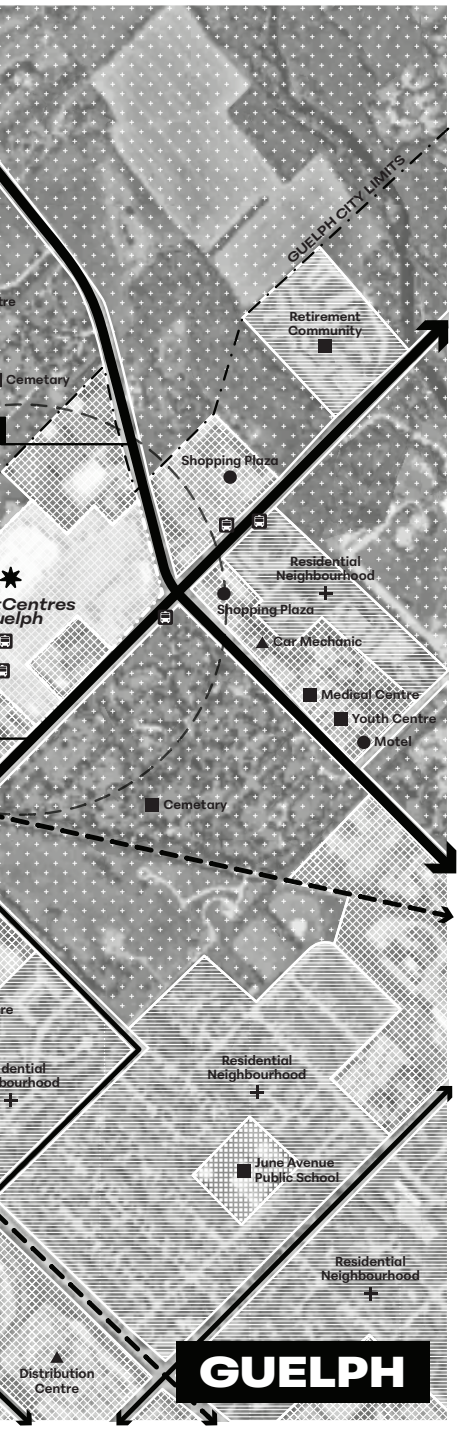


Fig. 10 Guelph Context Map

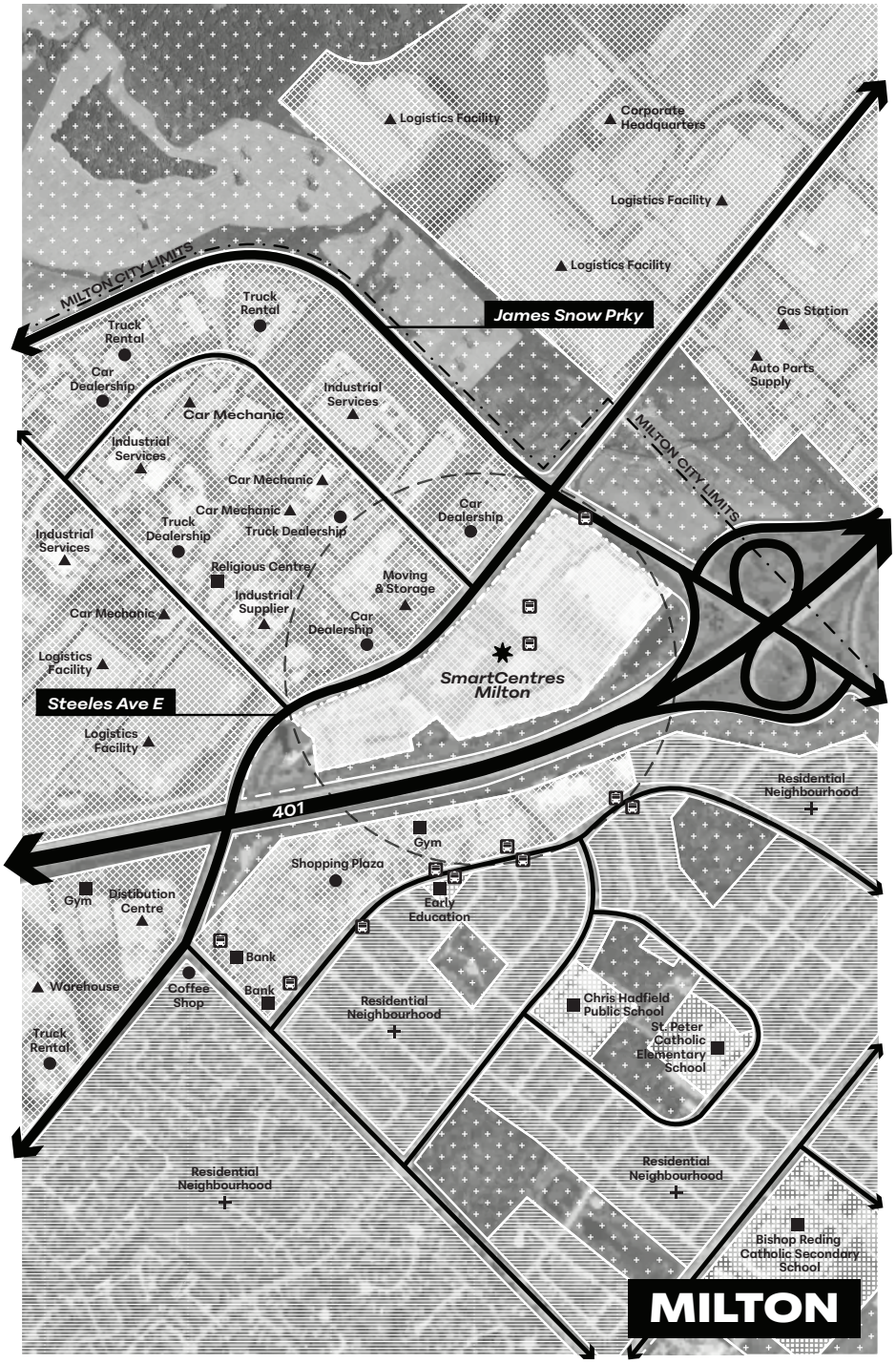


Fig. 11 Milton Context Map

Industrial ■ Education/Community Service ✱ SmartCentre Location ⟷ Roadways - - - 1km Radius ⬭ Future Development Zone

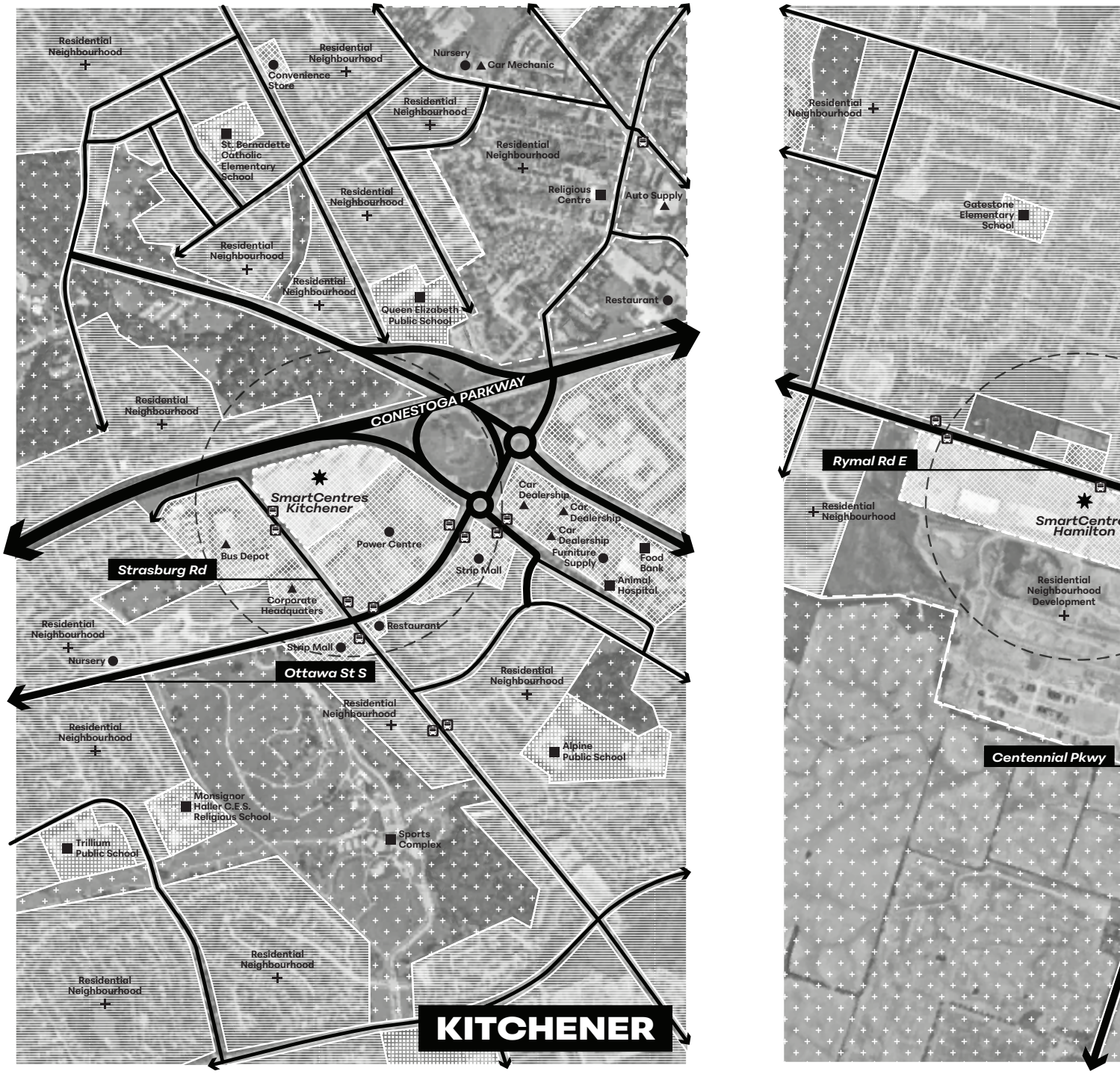


Fig. 12 Kitchener Context Map



Fig. 13 Hamilton Context Map

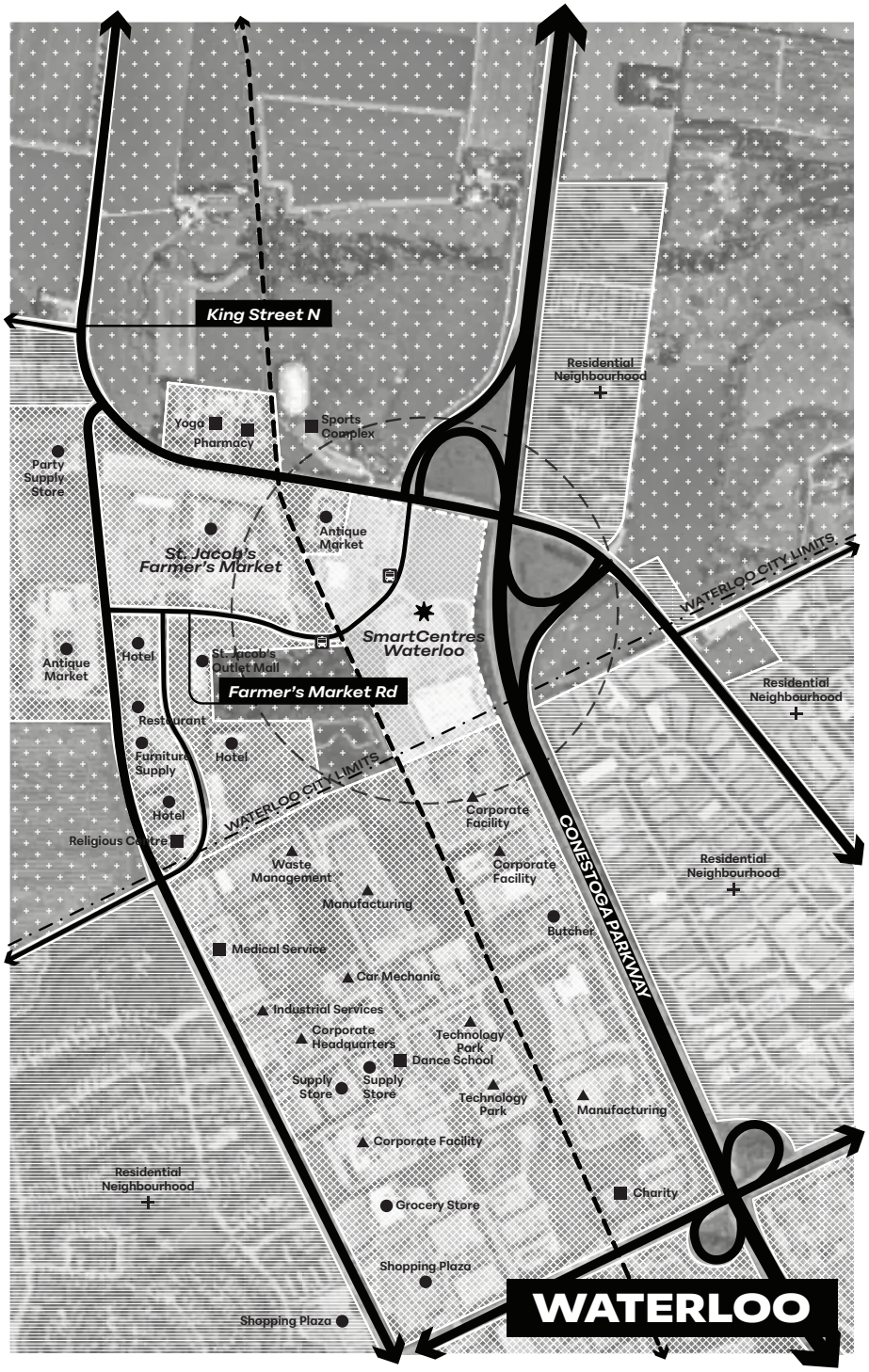


Fig. 14 Waterloo Context Map

Industrial ■ Education/Community Service ✱ SmartCentre Location ⟷ Roadways - - - 1km Radius ⬭ Future Development Zone

SmartCentre Site Analysis

The following maps demonstrate the current site design of the six SmartCentre locations previously analyzed. Typically, these sites prioritize private vehicle traffic, with an

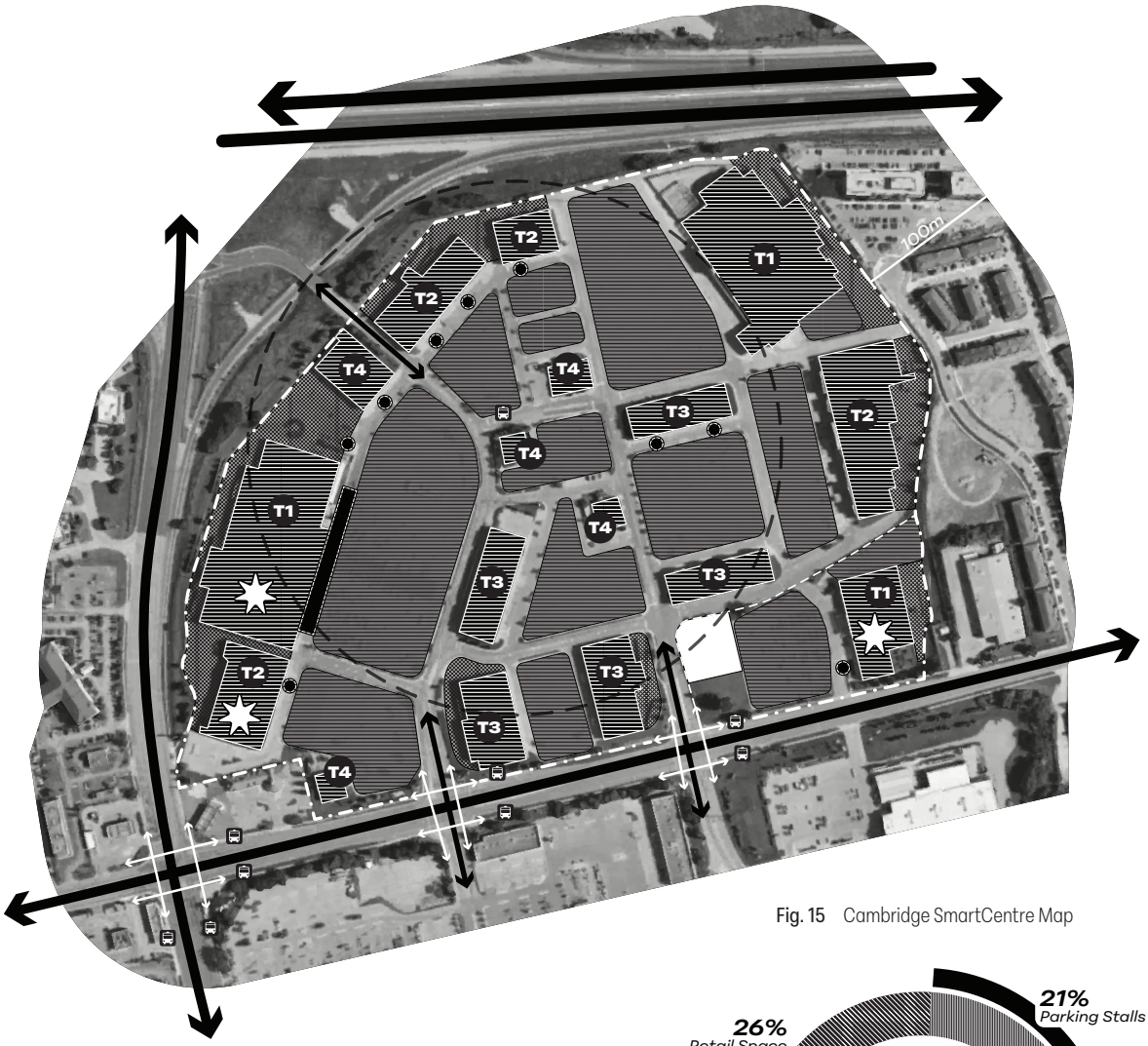


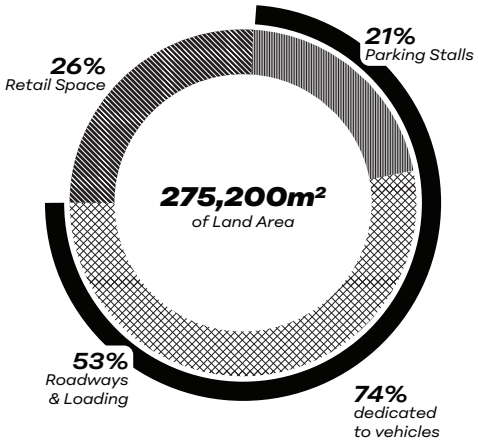
Fig. 15 Cambridge SmartCentre Map

CAMBRIDGE

22 Pinebush Road
(Hwy 401 & Hespeler Rd)

Anchor Stores

Walmart Supercentre
Winners
LA Fitness





average of 75 percent of the area dedicated to parking and circulation routes. The only pedestrian dedicated areas are the various retailers on site.

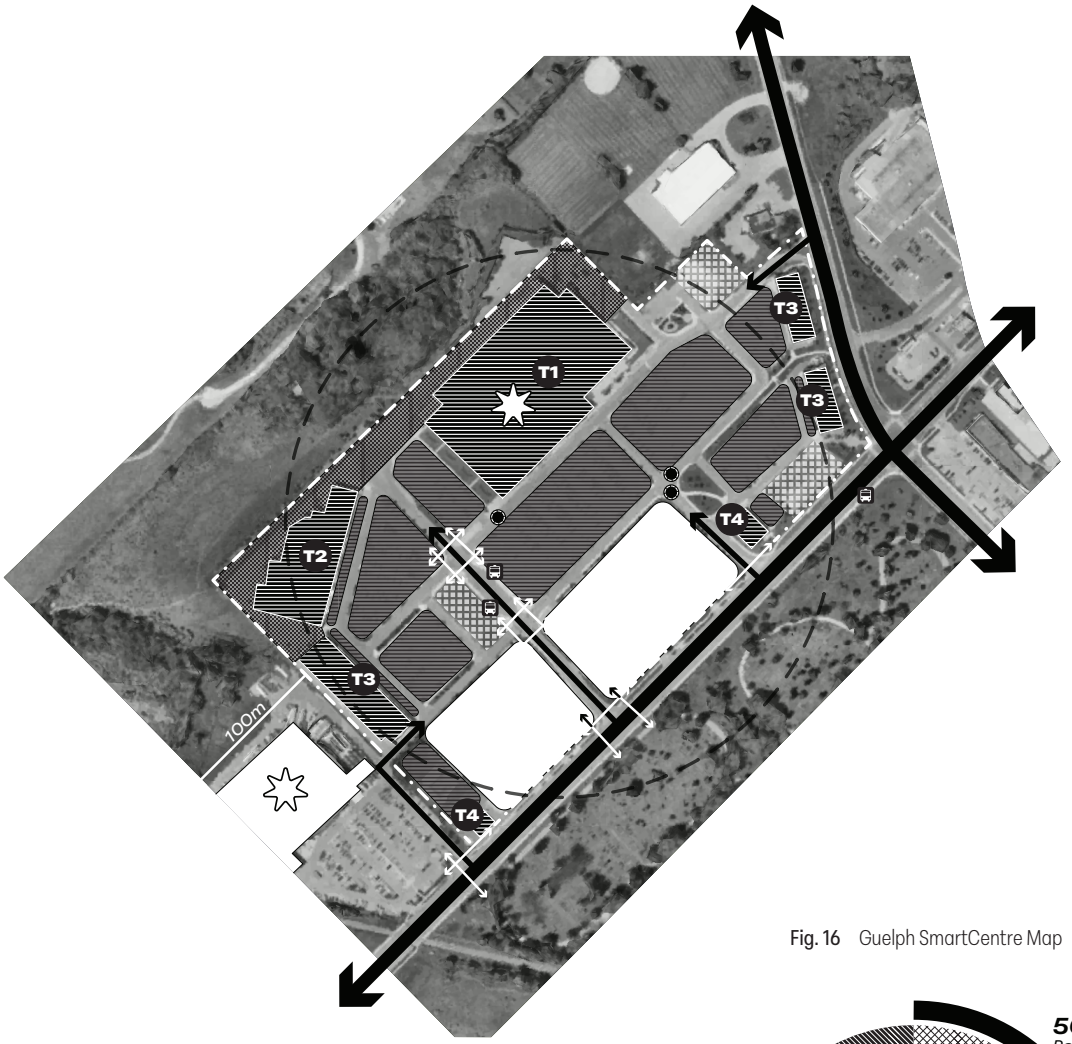
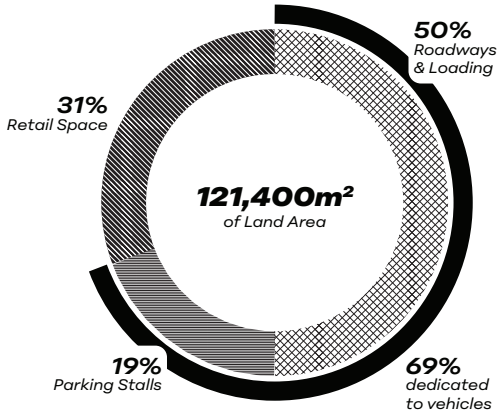


Fig. 16 Guelph SmartCentre Map



GUELPH

3 Woodlawn Road W
(Woodlawn Rd W & Wollrich St)

Anchor Stores

Walmart Supercentre
Home Depot*

**non owned stores*

Crosswalks Pedestrian Access Vehicular Access 5 Minute Walk Radius

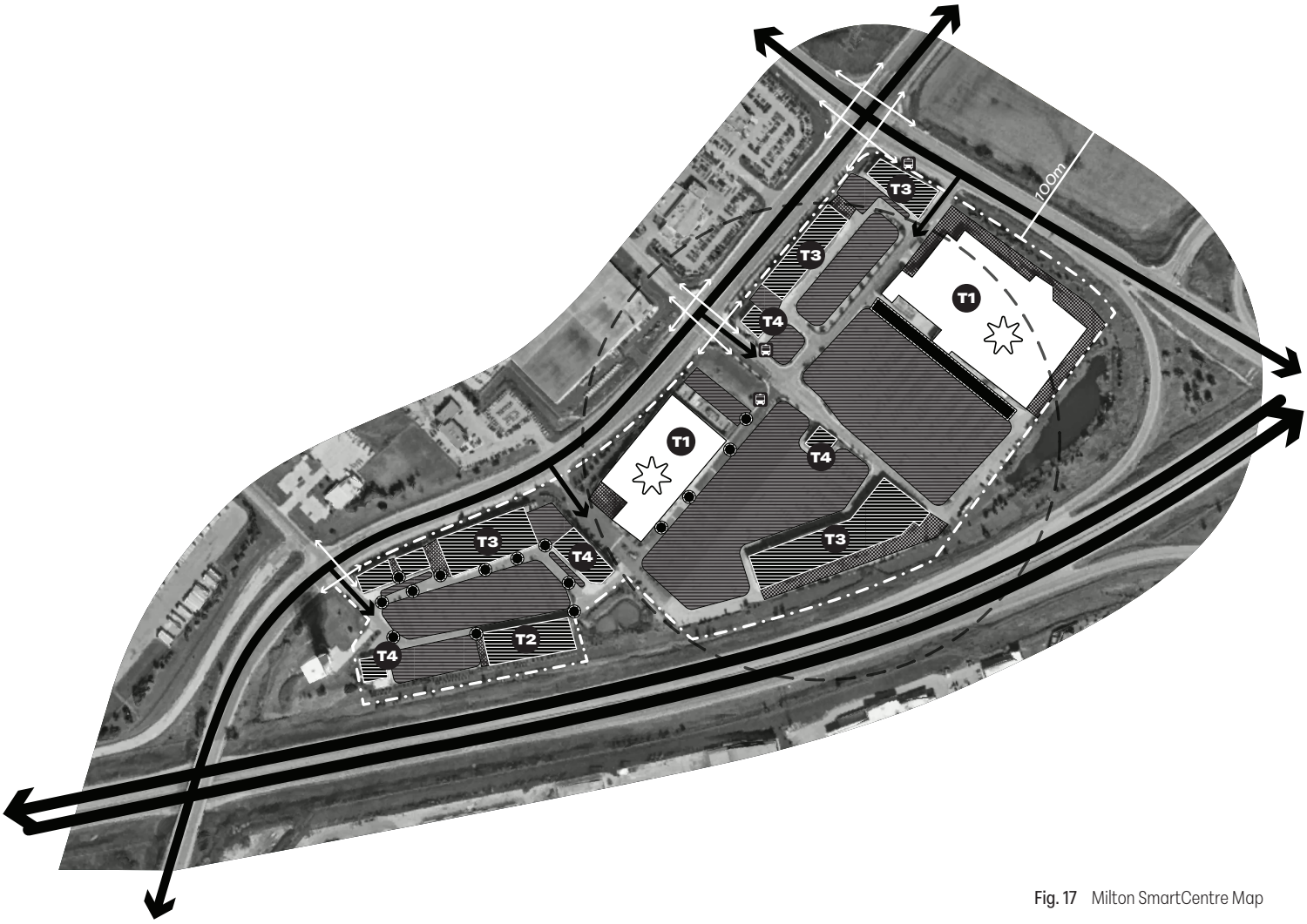
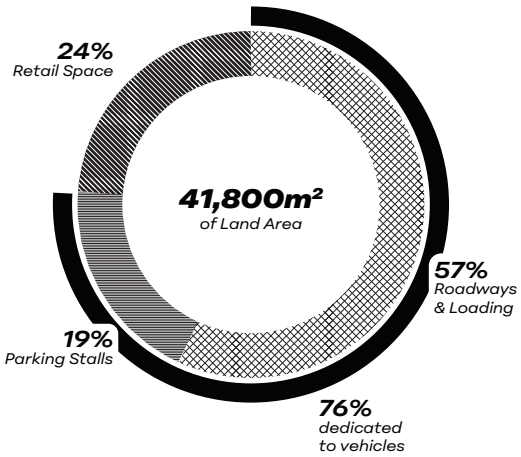


Fig. 17 Milton SmartCentre Map



MILTON

1280 Steeles Avenue E
(Steeles Ave E & James Snow Pkwy)

Anchor Stores

Walmart Supercentre*
Canadian Tire*

**non owned stores*

Loading Zone | Retail Store | Parking | New Development | Not Owned by SC | Anchor Store

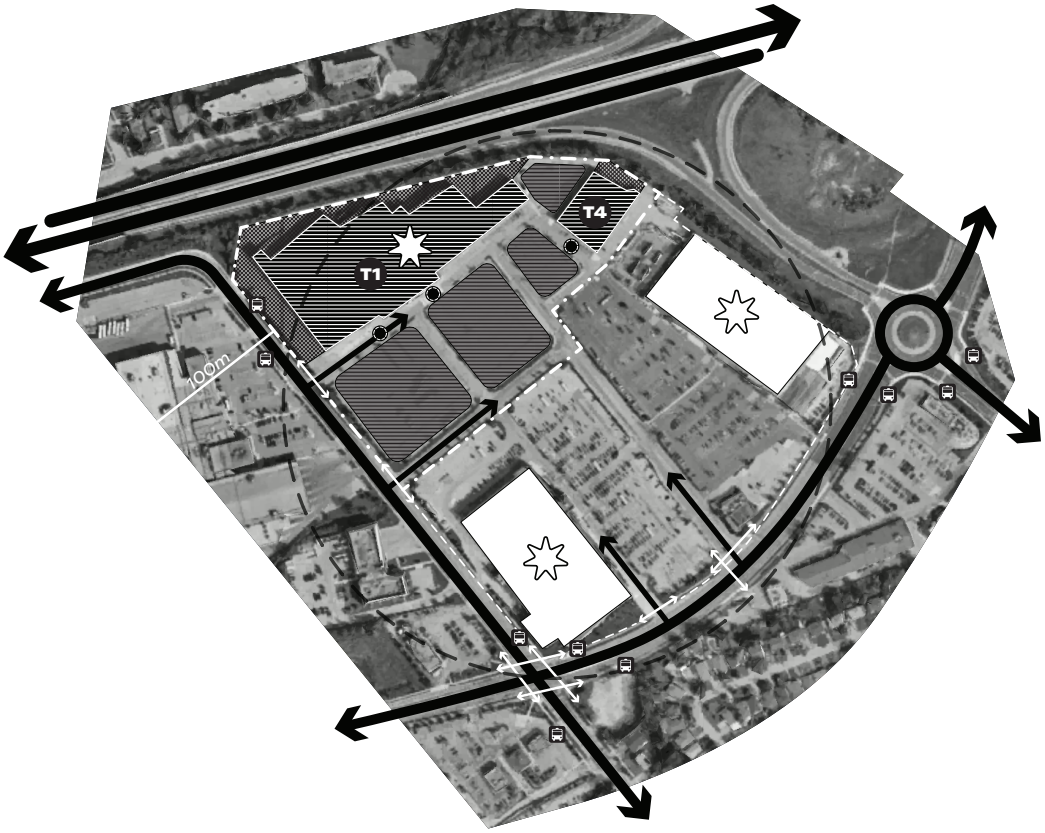
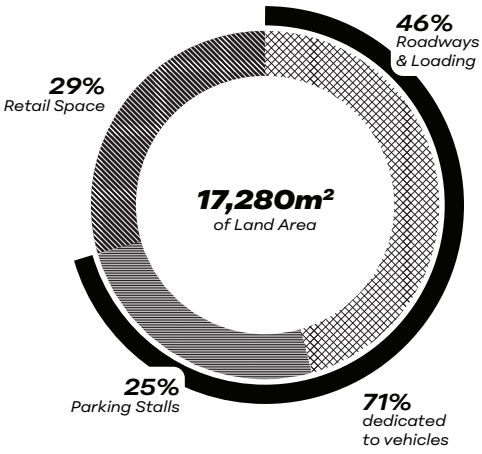


Fig. 18 Kitchener SmartCentre Map



KITCHENER

245 Strasburg Road
(Strasburg Rd & Ottawa St S)

Anchor Stores

RONA*
Zehrs*
Krazy Bins

**non owned stores*

Crosswalks Pedestrian Access Vehicular Access 5 Minute Walk Radius

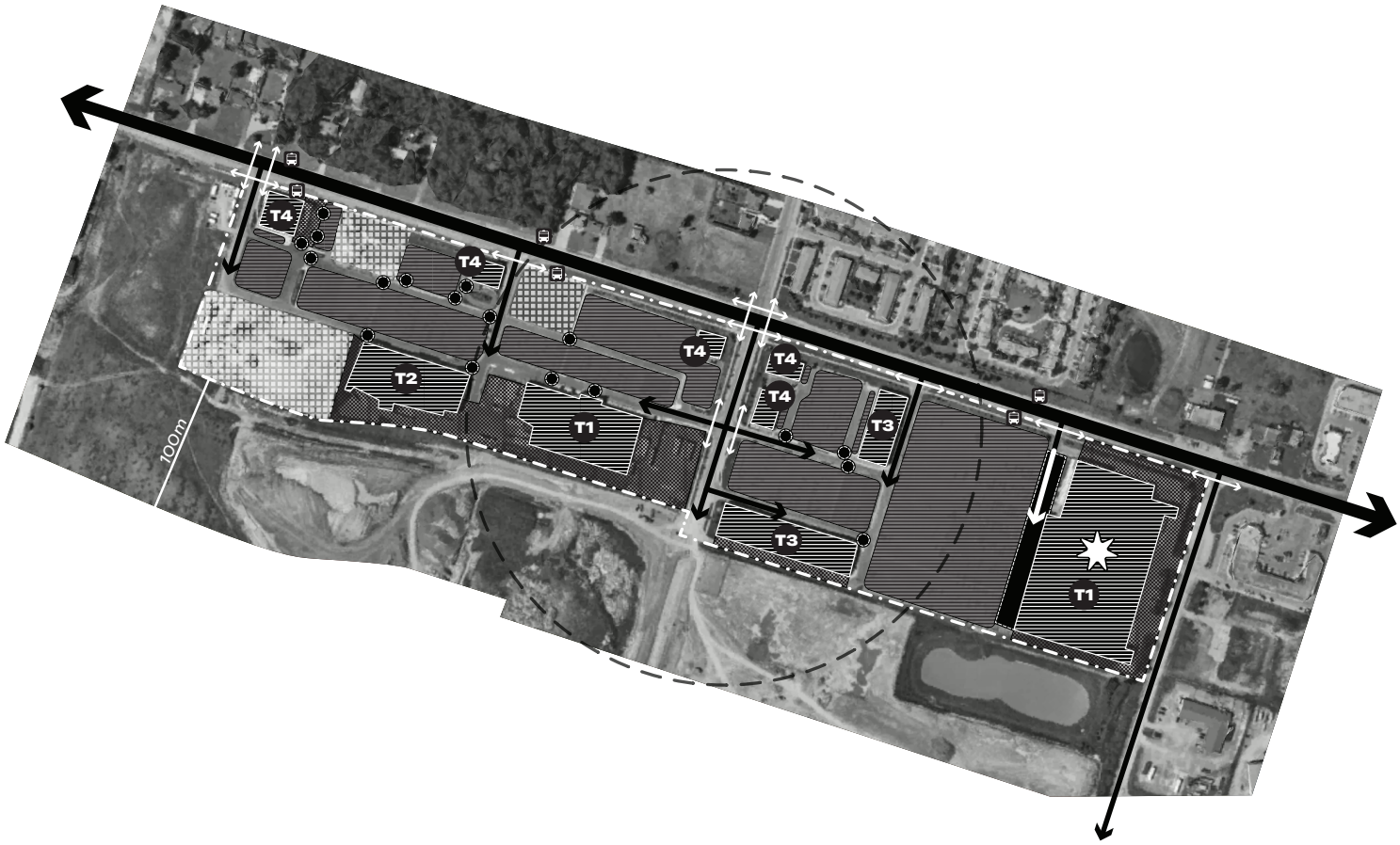
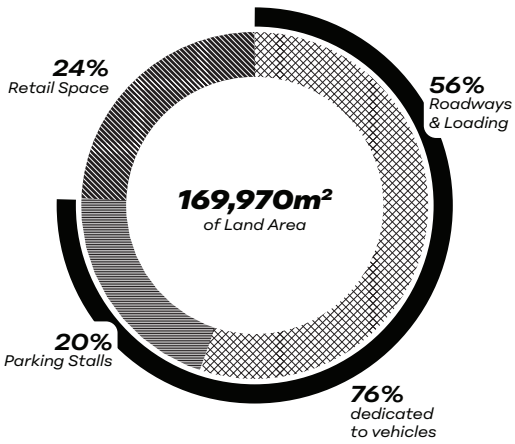


Fig. 19 Hamilton SmartCentre Map



HAMILTON

2190 Rymal Road E
(Rymal RD & Hwy 20 - Centennial Parkway)

Anchor Stores
Walmart Supercentre

Loading Zone | Retail Store | Parking | New Development | Not Owned by SC | Anchor Store

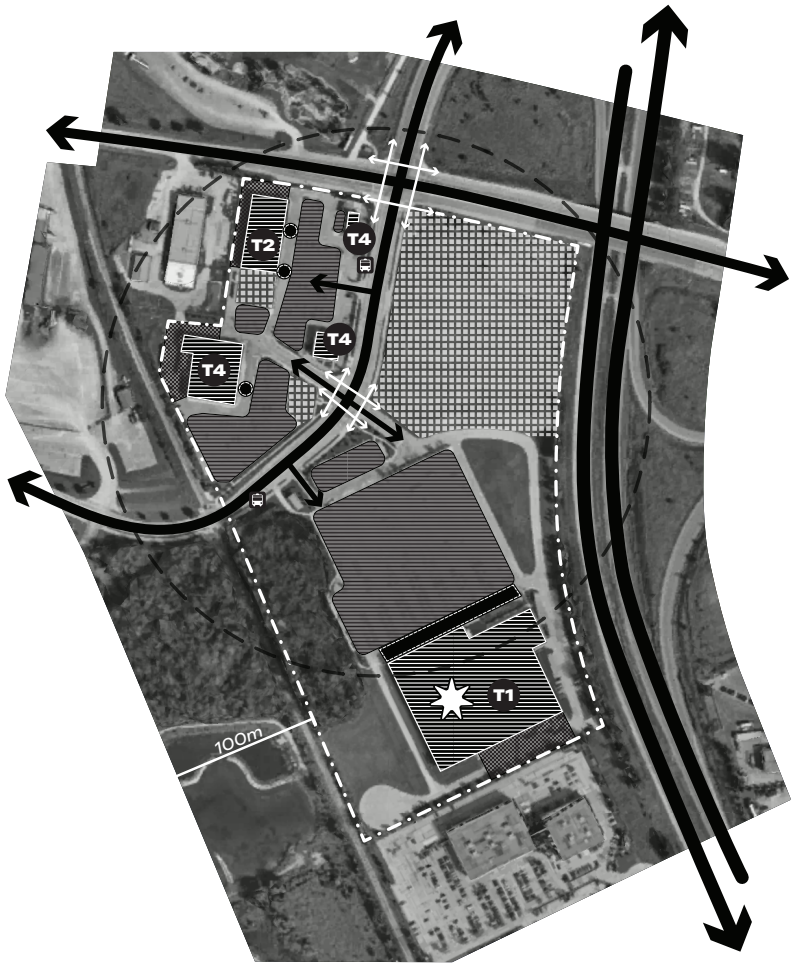
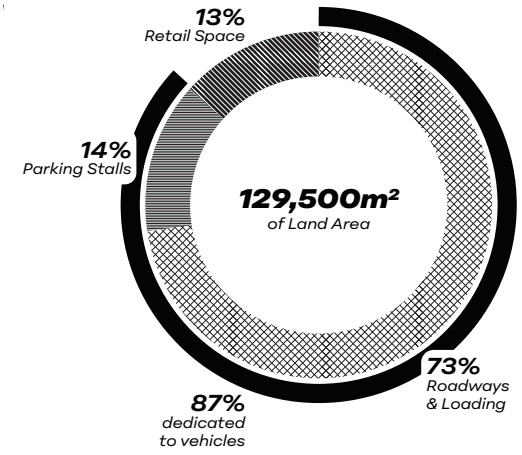


Fig. 20 Waterloo SmartCentre Map



WATERLOO

335 Farmer's Market Road
(Hwy 85 - Conestoga Expressway
& King St N)

Anchor Stores

Walmart Supercentre

Crosswalks Pedestrian Access Vehicular Access 5 Minute Walk Radius

Typical Building Typologies

Each SmartCentre location generally includes 4 commercial building typologies: the Anchor Store, the Big Box Store Strip Mall, the Strip Mall, and the Floating Retail. The number of typologies present on the site fluctuates based on the scale of the SmartCentre. However, each centre will include at least one of each typology.

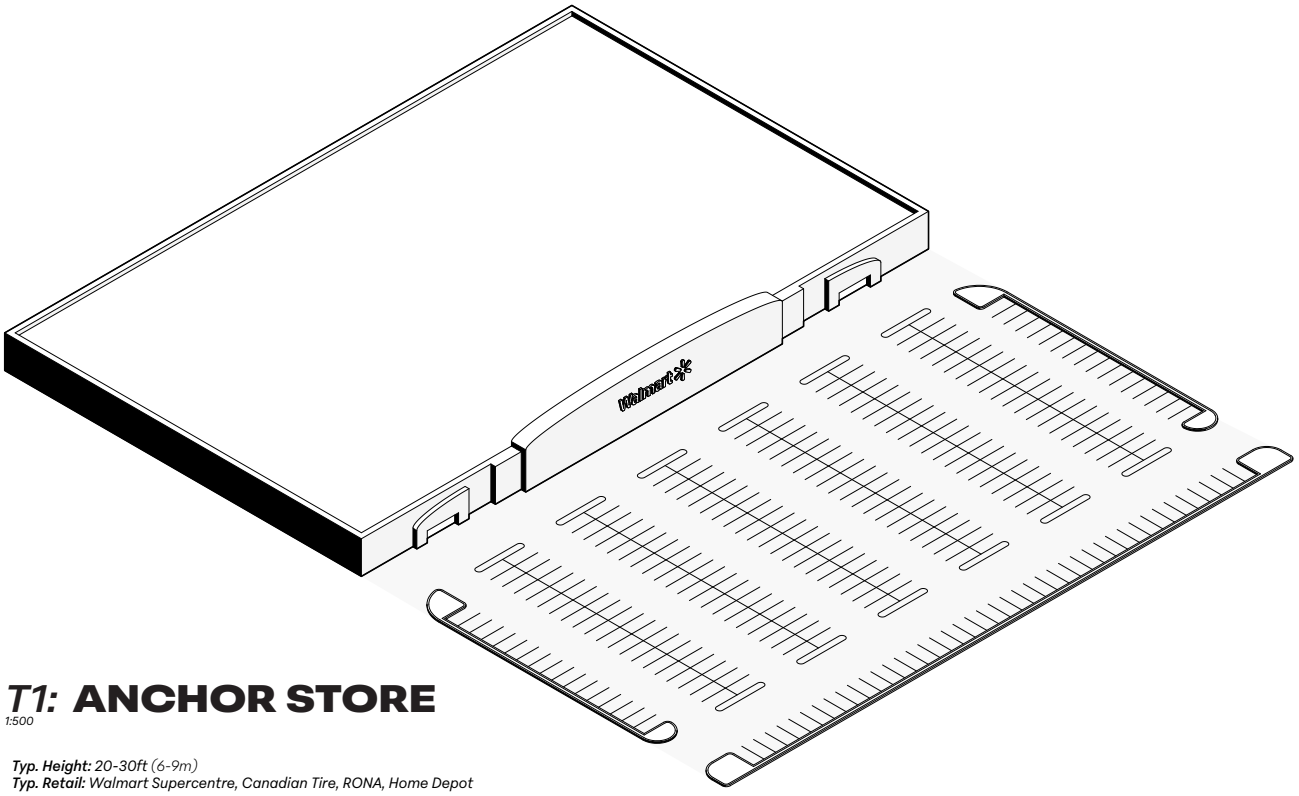
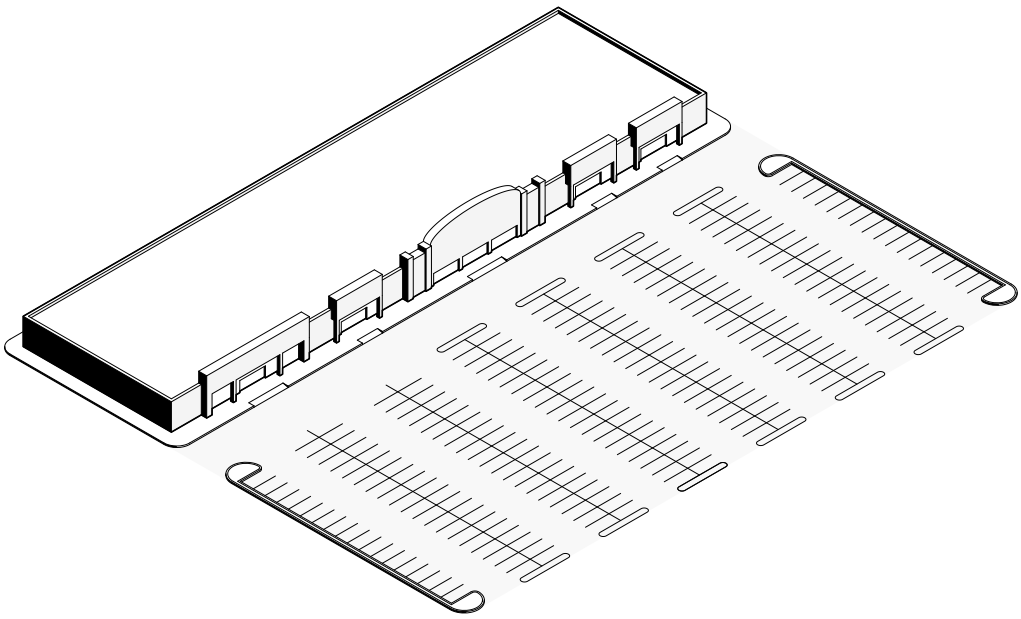


Fig. 21 Anchor Store Typology

The Anchor Store is the primary revenue generator for the site, providing space for anchor tenants, such as Walmart, Canadian Tire, and Home Depot.



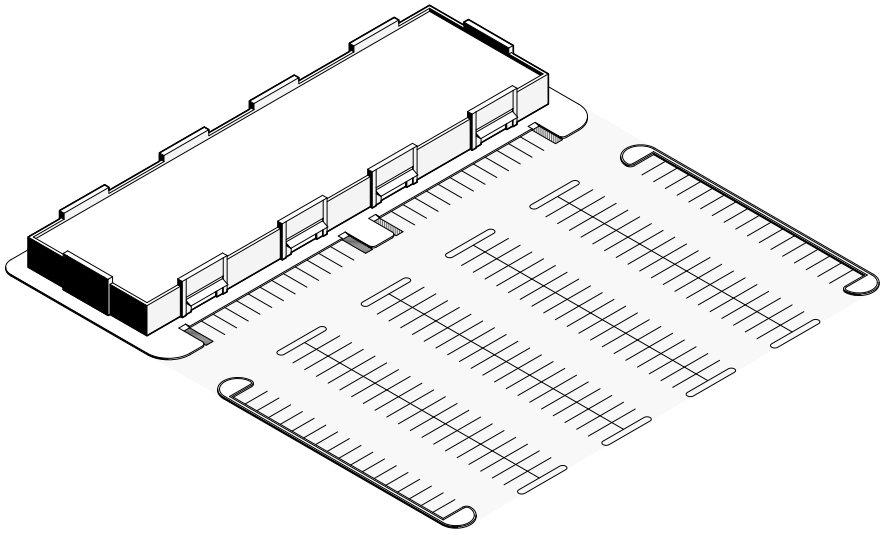
T2: BIG BOX STORE STRIP MALL

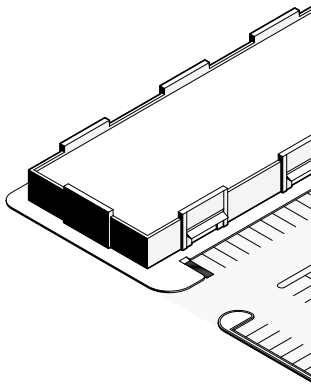
1:500

Typ. Height: *15 - 20ft (4.5-6m)*
Typ. Retail: *Old Navy, Winners, Michael's, Local Retailers*

Fig. 22 Big Box Store Strip Mall Typology

The Big Box Store Strip Mall typology includes smaller or local retailers supported by a big-box discounter. Typical big box tenants include Old Navy, Winners, and Michaels.





T3: STRIP MALL

1:500

Typ. Height: *15 - 20ft (4.5-6m)*
Typ. Retail: *Guess. Mark's Work Warehouse. Urban Planet*

Fig. 23 Strip Mall Typology

Acting as supplementary to the big-box retailers, the strip mall typology can be seen as either one or two buildings facing a parking lot, providing space for medium sized retailers, commonly clothing supply.

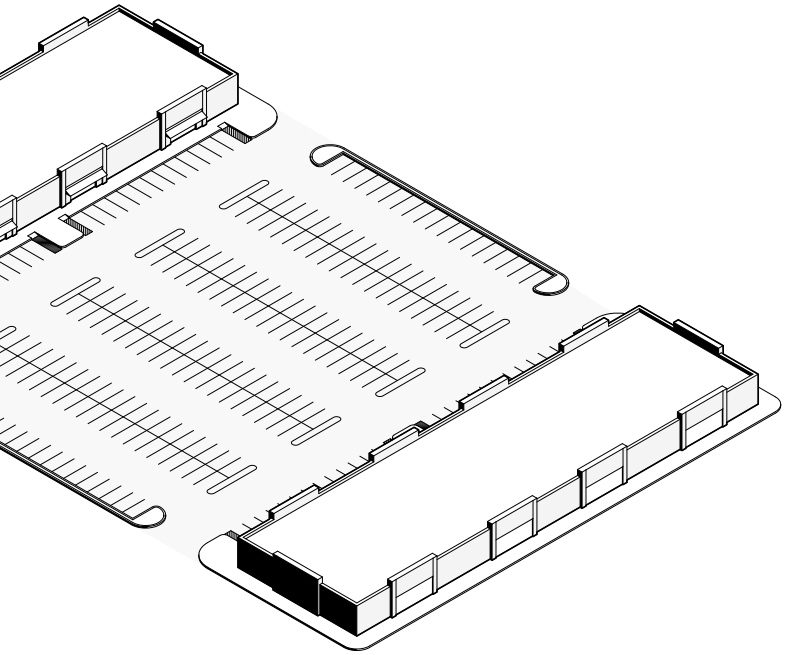
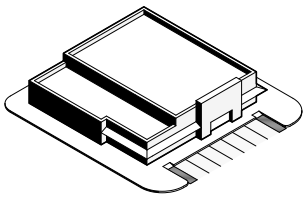


Fig. 24 Double-loaded Strip Mall Typology



T4: **FLOATING RETAIL**

1:500

Typ. Height: *10 - 15ft (3-4.5m)*
Typ. Retail: *Banks, Montana's, The Keg, Lone Star Texas Grill*

Fig. 25 Floating Retail Typology

Littered throughout the site, the Floating Retail typology is reserved for a single program. Typically, these buildings are occupied by banks or chain restaurants.

1.3 History of SmartCentres® REIT

Founded in 1989, the SmartCentres corporation strived to make retail affordable and convenient for Canadians. With this goal, the company has amassed just over 3.2 million square meters (35 million square feet) of net-rentable area across 200 properties[13]. Due to the rise of online shopping, SmartCentres has shifted its focus from retail development to real estate development, becoming a real estate investment trust (REIT). Today, the company is actively transitioning their suburban power centres into master-planned, transit-oriented developments, through the introduction of *Project 512*. However, based on their transformation of the Vaughan Metropolitan Centre and redevelopment proposal for the Cambridge SmartCentre, these intensification projects do not reflect municipal desires.

13 SmartCentres, "About Us."

1.3.1 Project 512

Launched in 2020, *Project 512* is a $15 billion dollar intensification project of 95 existing properties and an additional 85 sites under review for transformation[14]. The project aims to turn shopping centres into "city centres" through the development of "holistic" master plans, SmartCentres® REIT aims to transform every property in their portfolio into mixed-use neighbourhoods[15]. To achieve this goal, the company will redevelop identified power centre sites into high-density developments by incorporating high-rise, mixed-use buildings into the area.

14 Ibid.

15 Ibid.

Currently, SmartCentres® REIT has 8 million square meters (roughly 85 million square feet) of development in the pipeline, 68 percent (5.4 million square meters) which is already zoning approved[16]. Although many redevelopment proposals are still in the approval process, SmartCentres® REIT has been redeveloping the Vaughan Metropolitan Centre into a large, high-density, mixed-use community, becoming the pilot project for the initiative.

16 SmartCentres, "2024 Annual Report," 3.

Although transitioning their power centres into mixed-use communities offers many benefits, as they are becoming underutilized and have the necessary infrastructure in place, the approach to redevelopment is concerning.

Currently, these plans involve the demolition of existing retail buildings and replace them with dense, high-rise apartment buildings, leading to the creation of edge cities. Edge cities, an urban node at the edge, but not connected to established cities, can cause issues with connectivity, increasing the reliance on private vehicle transportation. However, unlike the traditional edge cities, SmartCentres® REIT's proposals face a double density issue, that of population and building proximity.

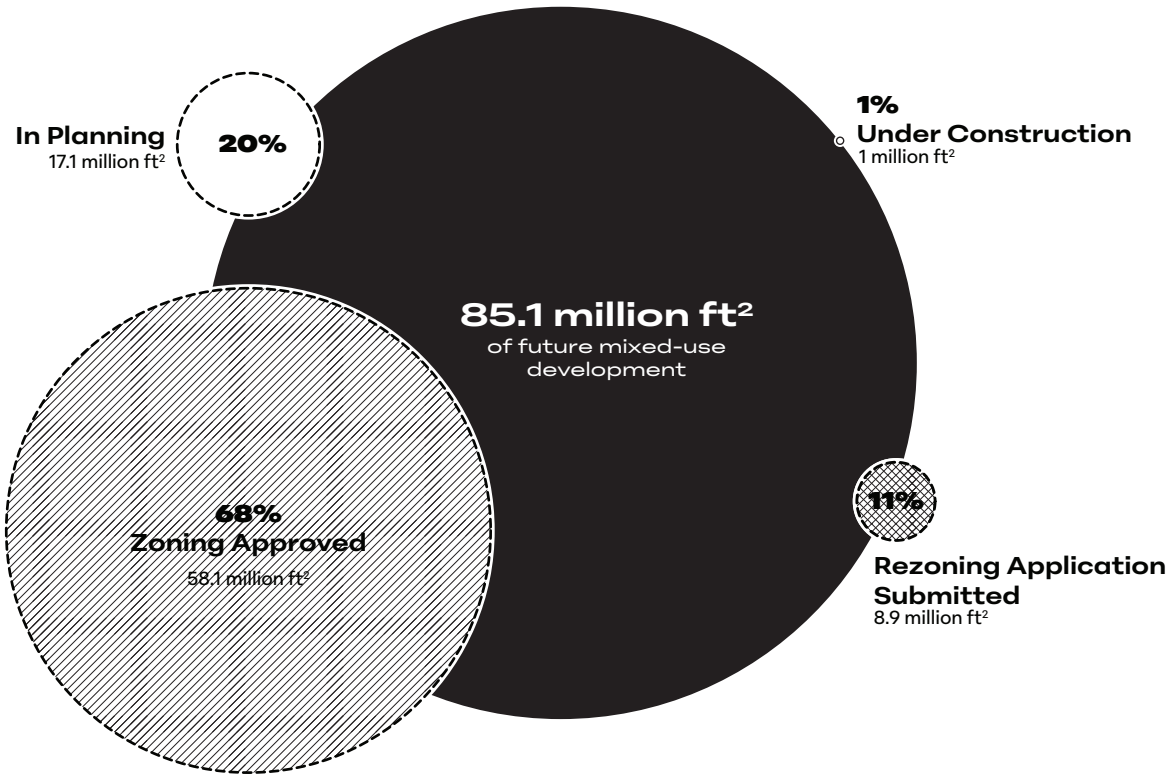


Fig. 26 SmartCentres® REIT Future Development Pipeline

1.3.2 **Edge Cities**

The term "Edge City" was coined by Joel Garreau in 1991 through his book *Edge City: Life on the New Frontier*. According to Garreau, there are five characteristics of an edge city:

- *"Has 5 million or more square feet (465,000 square meters) of leasable office space*
- *Has 600,000 square feet (56,000 square meters) or more of leasable retail space*
- *Has more jobs than bedrooms*
- *Is perceived by the population as one place*
- *Was nothing like "city" as recently as 30 years ago"*[17]

The concept of edge cities has become a new settlement model focused on the decentralisation of dense metropolitan areas[18]. As a result of urban sprawl, edge cities form near existing or planned highway intersections, adjacent to major infrastructural or industrial areas far from the urban centre. Unlike a traditional city, their street networks include winding parkways that connect to arterial roads or highway ramps. Typically, edge cities consist of mid-rise office towers, with some skyscrapers, surrounded by large surface parking lots and manicured lawns[19].

Although the general form of an edge city is being reflected in SmartCentres® REIT's proposals, their proposals are much denser. The transformation of SmartCentre sites include close-knit, high-rise residential towers and increase density beyond what a municipality can facilitate. These trends can be seen in the ongoing redevelopment of the Vaughan Metropolitan Centre, as well as the proposal for the Cambridge SmartCentre. Without a critical change in approach, Canada, but more specifically Ontario, will see a resurgence of edge cities along major arterials.

17 Joel Garreau, Edge City: Life on the New Frontier, 7.

18 Edet, "What Are Edge Cities?"

19 Joel Garreau, Edge City: Life on the New Frontier, 389.

1.3.3 Vaughan Metropolitan Centre Redevelopment Project

Also referred to as SmartVMC, the Vaughan Metropolitan Centre redevelopment is fore fronted by SmartCentres® REIT. The 56-hectare (140 acre) development promises a "compact, pedestrian friendly, mixed-use urban community focused on transit"[20]. The area is planned around Vaughan's new intermodal transit hub and linear central park. When completed, SmartVMC aims to have the density and diversity of a small city with 25,000 residences in towers of varying heights and a mix of commercial uses all built around parks and open spaces.

Recently, the development has faced criticism for amplifying local commercial displacement and increased congestion around the project site[21]. Additionally, the transit-oriented development (TOD), although designed to reduce car dependency and promote a healthier, more sustainable city, has led to gentrification in Vaughan's downtown, significantly changing the socio-economic class of the area[22].

20 "SmartVMC District Master Plan."

21 Huang, *Commercial Displacement in Vaughan's Emerging Downtown.*

22 Ibid, 15.



Fig. 27 SmartVMC Masterplan Render

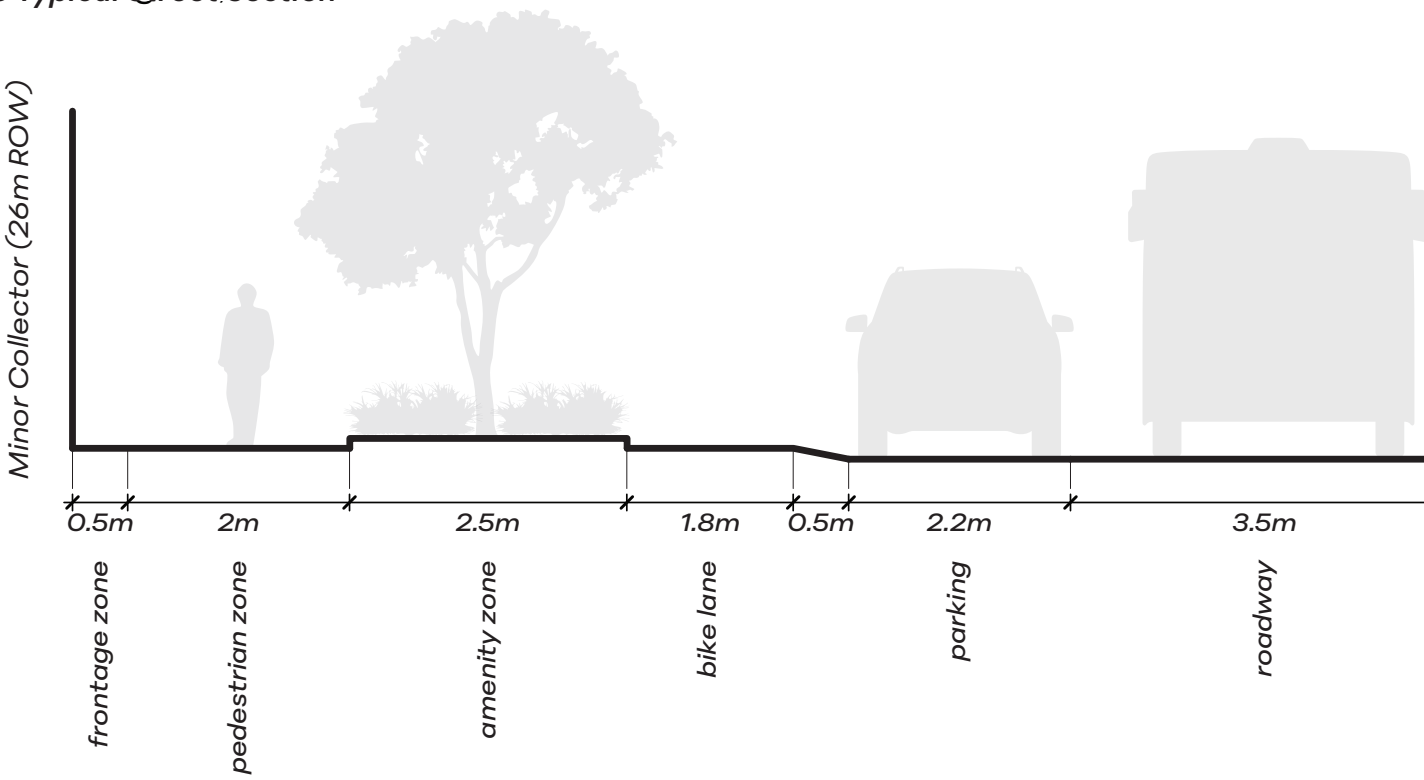


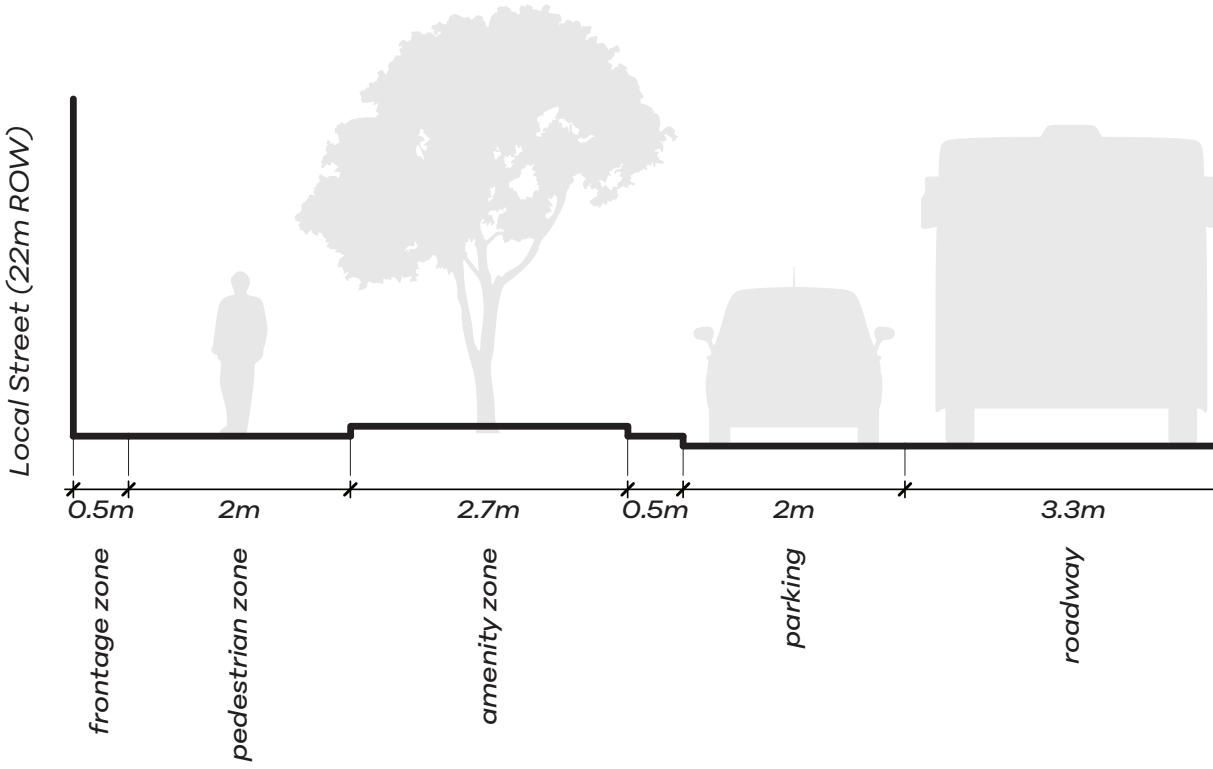
Fig. 28 SmartVMC Aerial Render

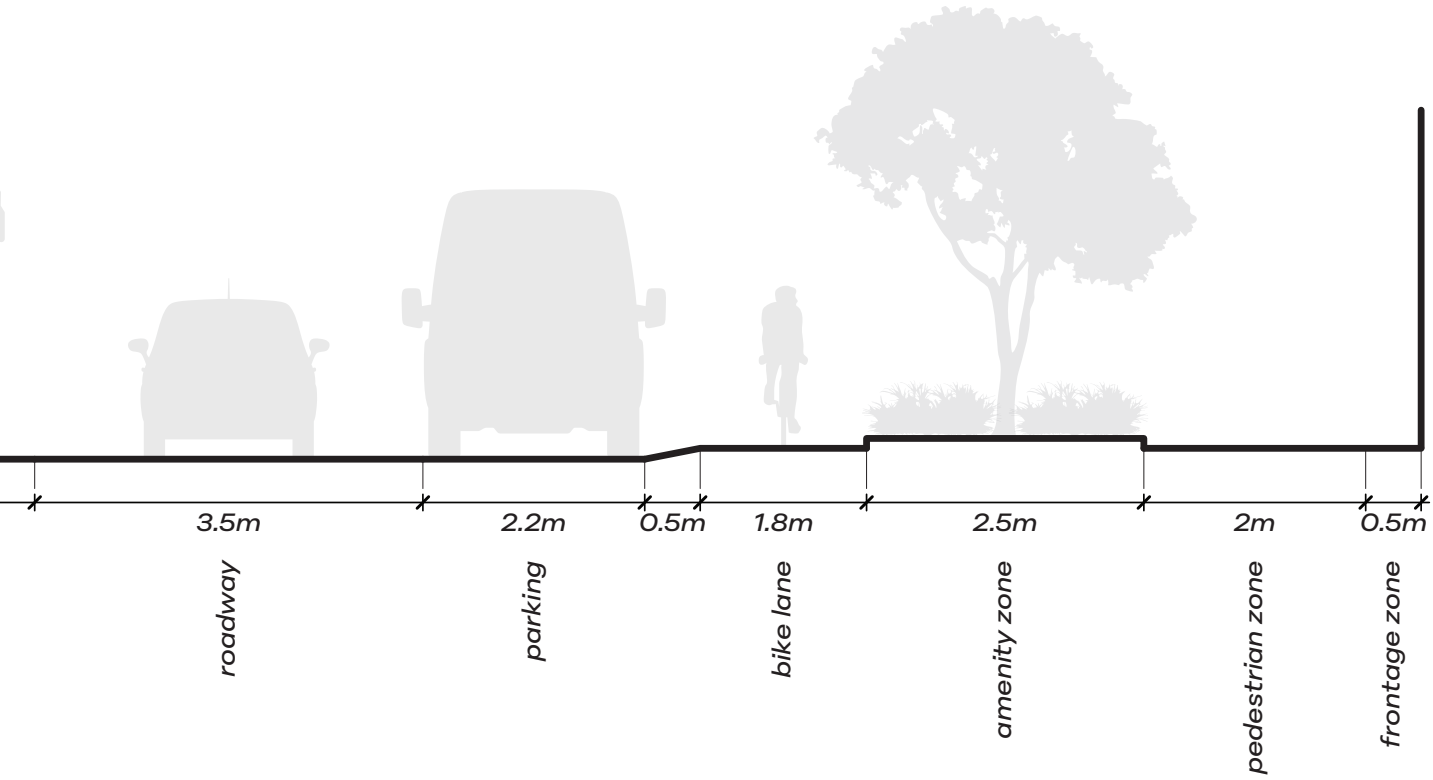


Fig. 29 SmartVMC Transit Square

VMC Typical Street Section







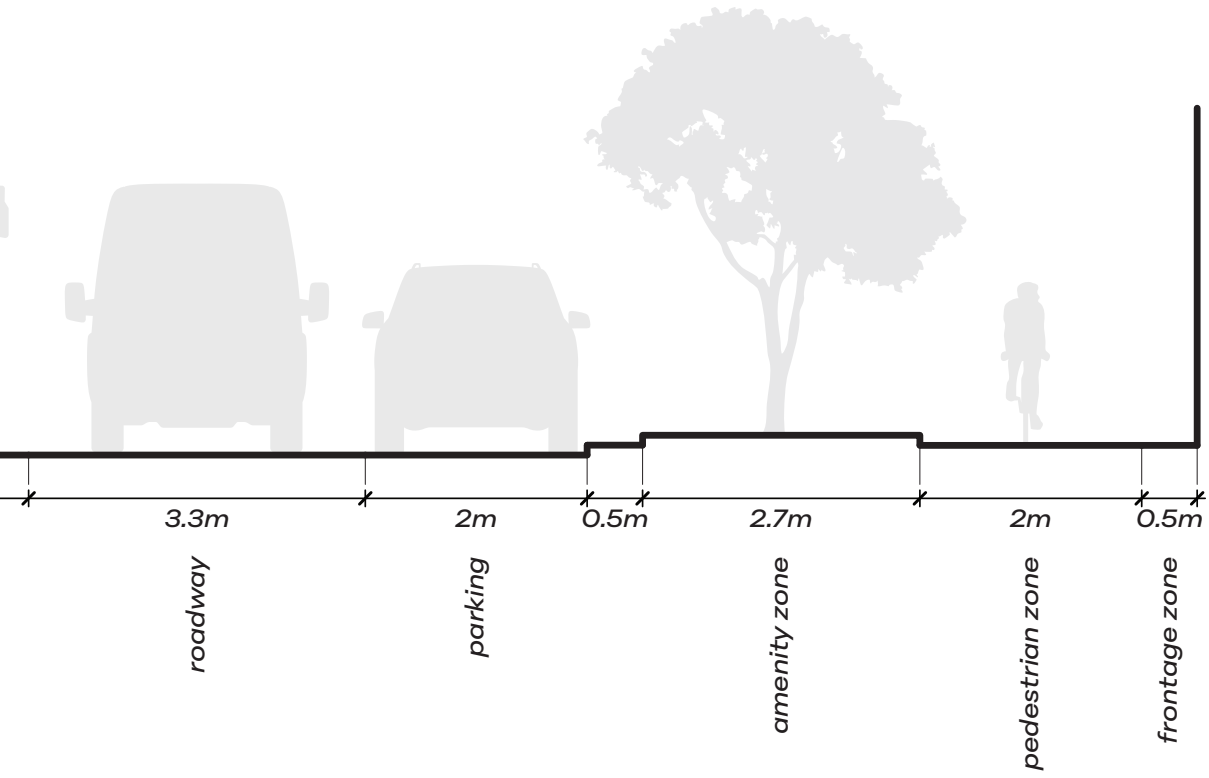


Fig. 30 VMC Typical Street Sections

1.3.4 Cambridge SmartCentre Redevelopment Proposal

The Cambridge SmartCentre is the largest in SmartCentres® REIT's portfolio. It includes 44 retail towers on 275,200 square meters (68 acres) of land area[23]. Major anchors include Walmart, Best Buy, Staples, Michaels, Winners, and Old Navy. Parking is exclusively surface parking, with over 3,760 spots in total, exceeding the city's requirement of 5 spaces per 100 square meters of gross leasable area[24]. The site sits on the periphery of a dense commercial and light industrial area, located at the intersection of Hespeler and Pinebush Road, adjacent to Highway 401.

Due to the popularity of online shopping and the COVID-19 pandemic, the site has become increasingly underused, reaching 30 percent retail vacancy[25]. Identified in 2020 as a part of *Project 512*, the Cambridge SmartCentre is set to undergo a massive transformation into a high-density mixed-use community hub featuring residential, retail, and office space overlooking Highway 401. The development will include seniors' homes, townhomes, market-rate rentals, condos, and various retail and office spaces. The proposal aims to construct up to 10,000 residential units, achieving a population of roughly 20,000[26], "creating a dynamic community that caters to a diverse population"[27].

However, SmartCentres® REIT has used a Minister's Zoning Order (MZO) to fast track the approval process for the Cambridge SmartCentre intensification project. With the issuance of the MZO, SmartCentres® REIT has been permitted to develop the Cambridge location into a district of dense, high-rise apartment buildings. Since the announcement, many have questioned who the project is for and does it belong in Cambridge:

> *"The amount of housing is not the issue; it's the exact spot it's situated; and how it's planned... The housing could certainly be helpful; but if improperly planned, it will lead to congestion, and under-serviced neighbourhood."*[28]
>
> *- UrbanToronto Member, Northern Light*

23 SmartCentres REIT, *Cambridge SmartCentre Brochure.*

24 City of Cambridge, "City of Cambridge Zoning Bylaw."

25 SmartCentres REIT, *Cambridge SmartCentre Brochure.*

26 UrbanToronto, "SmartCentres Cambridge Redevelopment."

27 Tiwari, "SmartCentres Cambridge Redevelopment."

28 UrbanToronto, "SmartCentres Cambridge Redevelopment."

The current proposal is expected to exceed anticipated growth targets by roughly twice what is set by the City of Cambridge (10,000 more people by 2031)[29]. This increase in density will place roughly 15 percent of Cambridge's population on a single site. SmartCentres® REIT has stood firm on the scale of their development using provincial policies as basis for redevelopment, stating that "this significant new community will help address demand for housing located strategically around the Greater Golden Horseshoe Area"[30]. Although, these guidelines set targets that municipalities cannot easily facilitate. For the Cambridge SmartCentre proposal, this misalignment can be seen in the anticipated population of the project compared to what is expected by the city.

The way SmartCentres® REIT is transforming their sites prioritizes profitability rather than creating sustainable and livable communities based on municipal desires. Their methods of redevelopment can lead to various issues, such as commercial displacement, gentrification, and connectivity issues. The use of MZOs to fast track the approval process and bypass public consultation, will contribute to disconnected developments that do not reflect the desires of the surrounding community. Retrofitting these power centres into overly dense developments can create problems with social isolation, sustainability, and increased car dependency, leading to the creation of edge cities.

Because the redevelopment of the Cambridge SmartCentre was approved through an MZO[31], the proposal transforms the site into an overly dense community on the periphery of the urban centre. The mix of housing and density that is being introduced to the site raises questions who is the intended target demographic and whether it adequately responds to the needs of the community. As SmartCentres® REIT moves forward with the transformation of the Cambridge SmartCentre, this site will serve as a case study to explore alternative development strategies that prioritize the creation of sustainable, livable neighbourhoods to better reflect the needs of the community.

29 Chen, *Cambridge Population Targets,* 153.

30 Lamelza, "SmartCentres Gets Approval for Massive Mixed-Use Development."

31 Trust, "SmartCentres Receives Approval for City of Cambridge Minister's Zoning Order."

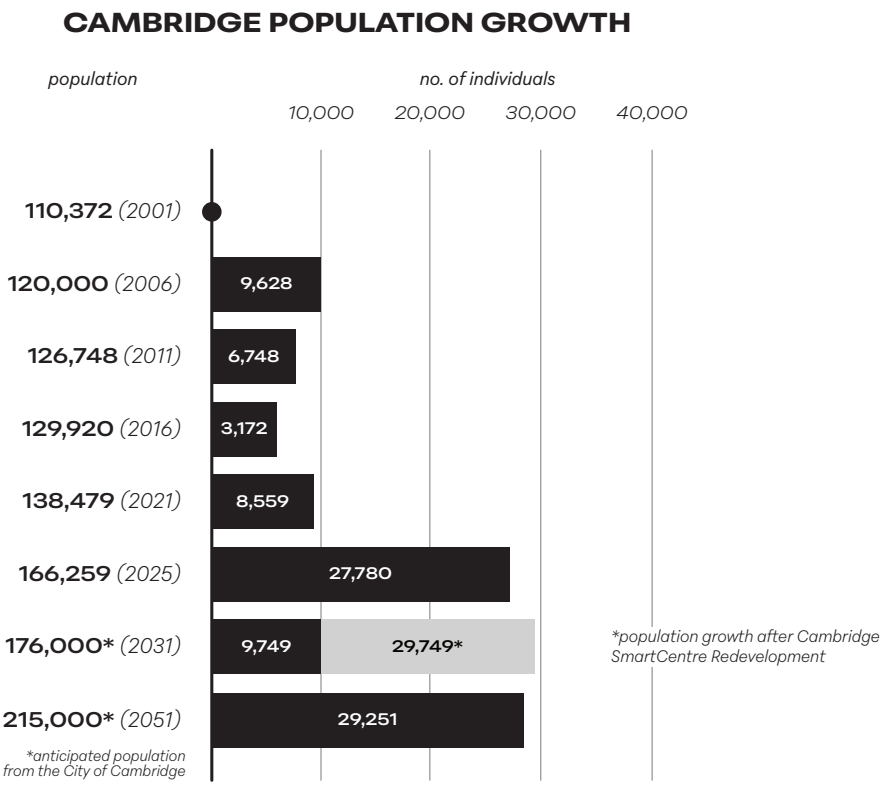




Fig. 31 Cambridge Population Growth



Fig. 32 Cambridge SmartCentre Redevelopment Aerial Render

Ch.2: **Land-Use Analysis**

2.1 Housing Crisis in Ontario

The Greater Golden Horseshoe (GGH) is home to over 10 million people[33], the equivalent to one-third of Canada's population, and roughly 4.9 million jobs, which are expected to increase by 50 percent in the next 30 years[34]. The projected growth of the GGH will continue to put strain on the housing market, as the housing supply is already limited. This lack of available housing can be contributed to pre-existing shortages combined with an increase in population in addition to government legislation preventing urban boundary expansion. To restore the housing supply, the Canadian Mortgage and Housing Corporation (CMHC) has stated that Canada needs to build 3.5 million homes by 2030[35]. While this strategy will help relieve pressure of the housing crisis, it will increase the strain on available developable land within municipal boundaries and proposals will trigger many regulatory hurdles.

Developers have been pressuring the provincial government for more land to be introduced into urban boundaries by opening Ontario's Greenbelt for development. The Greenbelt protects undeveloped land, such as farmland, forests, wetlands, and watersheds, from urban expansion to preserve agricultural and natural spaces[36]. In 2022, the Ontario government announced that roughly 3,000 hectares (7,400 acres) would be removed from the protections of the Greenbelt Plan for residential development[37]. However, in 2023, it was noted by Auditor General Bonnie Lysyk that 92 percent of the removed area were parcels directly pointed out by two prominent developers[38].

Although there is a need for more land, it is important to consider where the land is located and if it has the necessary infrastructure to facilitate residential development. Rather than expanding into greenfield land, research suggests that there is an abundance of land within urban boundaries that could be used to supplement land supply, often referred to as brownfield land. This land is typically zoned and used for commercial or industrial uses but has become vacant or underutilized.

33 Province of Ontario, "Planning Transportation for the Greater Golden Horseshoe."

34 Ibid.

35 CMHC, *Housing Market Information - Canada's Housing Supply Shortages: Estimating What Is Needed to Solve Canada's Housing Affordability Crisis by 2030*, 5.

36 Province of Ontario, "Ontario's Greenbelt."

37 Lysyk, *Special Report on Changes to the Greenbelt*, 7.

38 Ibid, 8.

2.2 **The Need for Shovel-Ready Land**

The term "Shovel-Ready Land", or development-ready land, is defined as land ready to be built on with appropriate zoning and servicing infrastructure already in place[39]. Meaning the zoning of the site must be approved for residential uses, and the servicing (i.e. sewer and water infrastructure) must be readily available. Outlined by Dr. Frank Clayton and David Amborski's report: *The Importance of Shovel-Ready Land Inventory to Increase the Greater Golden Horseshoe's Supply of New Housing Faster*, this definition was derived from the 2020 Provincial Planning Statement's (PPS) definition of short-term land: land suitably zoned to facilitate residential intensifications and redevelopment on land in draft approved and registered plans[40]. The report states that it would be impossible to increase the supply of new housing without ensuring sufficient shovel-ready sites are available to meet Ontario's projected home building targets[41], however, Clayton and Amborski outline that the province's 1.5-million-unit target from 2021 to 2031 would increase the existing shortage of shovel-ready land.

To meet this demand, developers are eager to increase land in urban boundaries. However, other planners, like the Regional Planning Commissioners of Ontario (RPCO), believe that there is an adequate amount of land designated, or in the development approval phase to accommodate the 1.5-million-unit target. Their analysis calculates its available land inventory based on approved and proposed housing units in development in the GGH region[42]. These projects include registered plans for subdivisions with no permits in place, approved and proposed subdivision plans, and Minister Zoning Orders. Although, the land dedicated for these projects lacks the servicing infrastructure needed to facilitate residential development immediately, therefore, not qualifying as shovel-ready land. Despite what the RCPO has stated, Ontario is facing a shovel-ready land shortage.

> *"Consequently, economists argue that the relevant supply to consider is land that has been approved and serviced for new housing. This is the relevant land supply for short-term housing production. Much of the "designated land" is years away from obtaining servicing allocations and obtaining subdivision approvals."*[43]
>
> *- Professor David Amborski*

39 Clayton and Amborski, *Expanding Housing Supply and Improving Housing Affordability in the GGH Are Pipedreams Without an Ample Inventory of Shovel-Ready Sites*, 5.

40 Ibid, 5.

41 Ibid, 3.

42 Ibid, 5.

43 Amborski, *Affordable Housing and Land Supply Issues in the Greater Toronto Area (GTA)*, 2.

An opportunity to increase the shovel-ready land supply would be to consider the redevelopment of power centre sites. These parcels have the necessary infrastructure, such as water, sewer, and storm systems, needed for residential development, thus making them shovel-ready, although they are lacking the required zoning to facilitate such development.

2.3 Power Centre Land Potential

By definition, brownfield land is previously developed land that abandoned, vacant, or underutilized, often situated in urban and suburban landscapes[44]. One type of brownfield land that exists across Ontario is the regional or suburban power centre. Power centre sites are commonly used for large-format commercial, but are becoming less productive over time.

Regional power centres, like SmartCentres, are abundant across the Canadian suburban landscape. Defined as an open-air shopping centre including various big box and minor retailers surrounded by large parking lots, power centres often serve no other purpose beyond retail, becoming vacant outside of operating hours[45]. Typically zoned for commercial uses, these locations are an example of how brownfield conditions may exist outside of traditional industrial context. As online shopping has shifted retail habits, the demand for big-box, car-oriented shopping districts has reduced causing many of these sites to see increased retail vacancies, increasing the underutilization of the area. Their vast parking lots sit empty for much of the day, and single-storey buildings occupy the land inefficiently. Although portions of these sites remain occupied, much of the landscape still functions as a brownfield site, consuming valuable urban land without providing much environmental, social, or economic benefit.

Since the power centres already have extensive civil infrastructure, such as water, sewer, and storm systems, on site, they can also be considered as shovel-ready. This combination of brownfield potential with development

44 Province of Ontario, "Brownfields Redevelopment."

45 Neptis Foundation, "Power Retail."

readiness provides an opportunity for intensification without outward expansion. Redeveloping these parcels into mixed-use neighbourhoods, can introduce housing, optimized commercial space, and amenities, in addition to public open and green space in the places that currently prioritize cars and single purpose retail. These development proposals will enable municipalities to increase density and further accommodate growth without pushing development into greenfield and agricultural lands, thus helping to control urban sprawl and providing protection to land beyond the urban boundary.

However, for the redevelopment of these sites, there still needs to be amendments to municipal zoning bylaw to enable the redevelopment of brownfield land into mixed-use residential developments.

2.4 Land-Use Legislation in Ontario

2.4.1 Current Legislation

Below is an overview of the Government of Ontario's current land-use legislation. These acts and policies have been implemented to increase and expedite development in the Greater Golden Horseshoe area, an urban region centred around the Greater Toronto Area located at the western end of Lake Ontario. These acts and policies, like the *Planning Act* (1990), *Places to Grow Act* (2006), and the *Provincial Planning Statemen*t (2024) promote high-density development and intensification in urban growth centres throughout the GGH. Additionally, the introduction of Minister's Zoning Orders has increased the construction of high-density developments in the area. However, this legislation does not provide municipalities with tools to quickly adapt their zoning bylaws and land-use regulation to respond to the desires of the province. Instead, landowners and developers are relying on MZOs to change zoning to support Ontario's development targets.

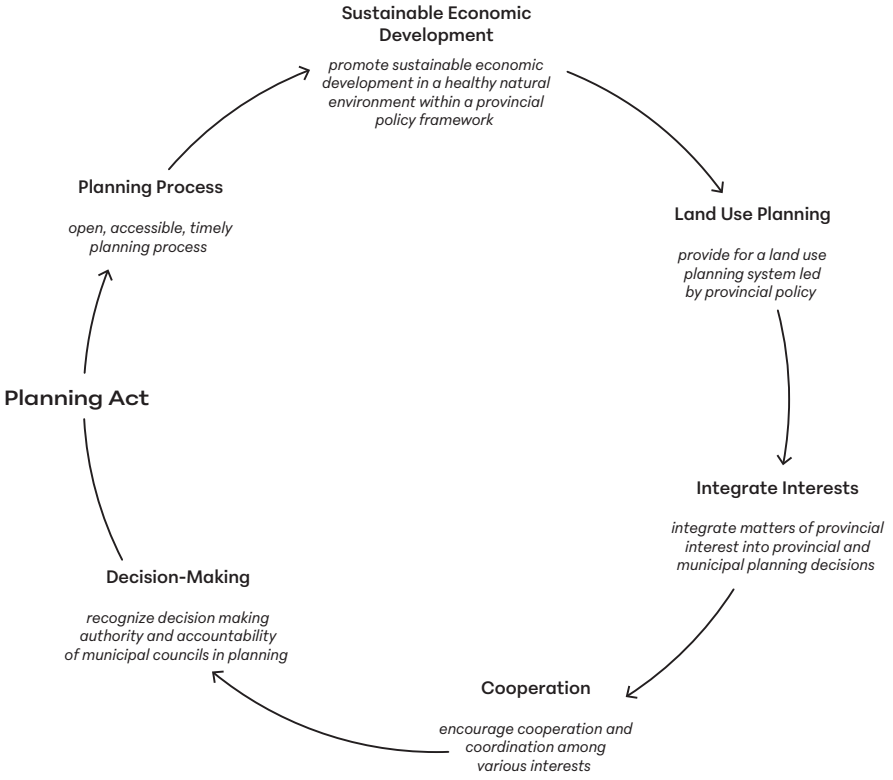


Fig. 33 Planning Act Legislation

Planning Act (1990)

The Planning Act of Ontario is the basis of provincial legislation governing land use planning. It sets ground rules for land development and establishes municipal jurisdiction for planning decisions[46]. The Act provides a foundation for other legislation, such as the *Places to Grow Act* and the *Greenbelt Act*.

The purpose of the Planning Act is to:

- *"Promote sustainable economic growth in a healthy environment within a provincial policy*
- *Provide a system for land use planning led by provincial policy*
- *Encourage co-operation and coordination among various interests*
- *Recognize the decision-making authority and accountability of municipal councils in planning decisions by requiring that all decisions shall be consistent with the Provincial Policy Statement when decision-makers exercise planning authority or provide advice on planning matters*
- *Integrate matters of provincial interest into provincial and municipal planning"*[47]

46 Province of Ontario, "Planning Act, R.S.O. 1990, c. P.13."

47 Ibid.

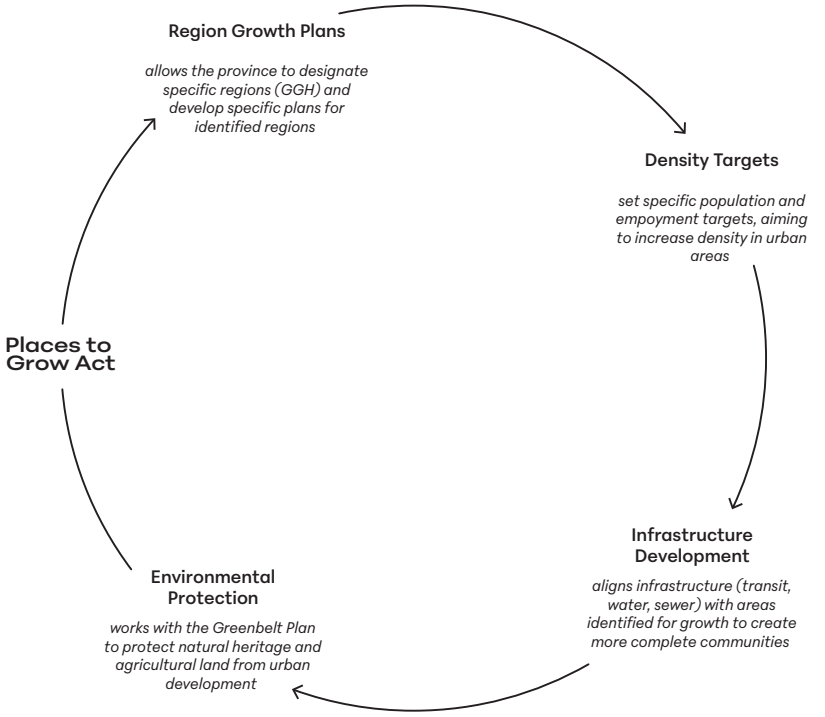


Fig. 34 Places to Grow Act Legislation

Places to Grow Act (2005)

The Places to Grow Act was established to direct urban growth to existing built-up areas, rather than expanding outwards. The Act prioritizes growth within the Greater Golden Horseshoe to ensure economic prosperity, protection of the environment, and emphasis on a high quality of life[48]. As of 2024, the Places to Grow Act has been revoked and replaced by Ontario's *Provincial Planning Statement*.

The purpose of the Places to Grow Act is to:

- *"Enable decisions about growth to be made in ways that sustain robust economy, building strong communities, and promote a healthy environment and a culture of conservation*
- *To promote a rational and balanced approach to decisions about growth that builds on community priorities, strengths and opportunities, and make efficient use of infrastructure*
- *To enable planning for growth in a manner that reflects a broad geographical perspective and is integrated across natural and municipal boundaries*
- *To ensure that a long-term vision and long-term goals guide decision-making about growth and provide for the coordination of growth policies among all levels of government"*[49]

48 Province of Ontario, "A Place to Grow Act."

49 Province of Ontario, "Places to Grow Act, 2005, S.O. 2005, c. 13."

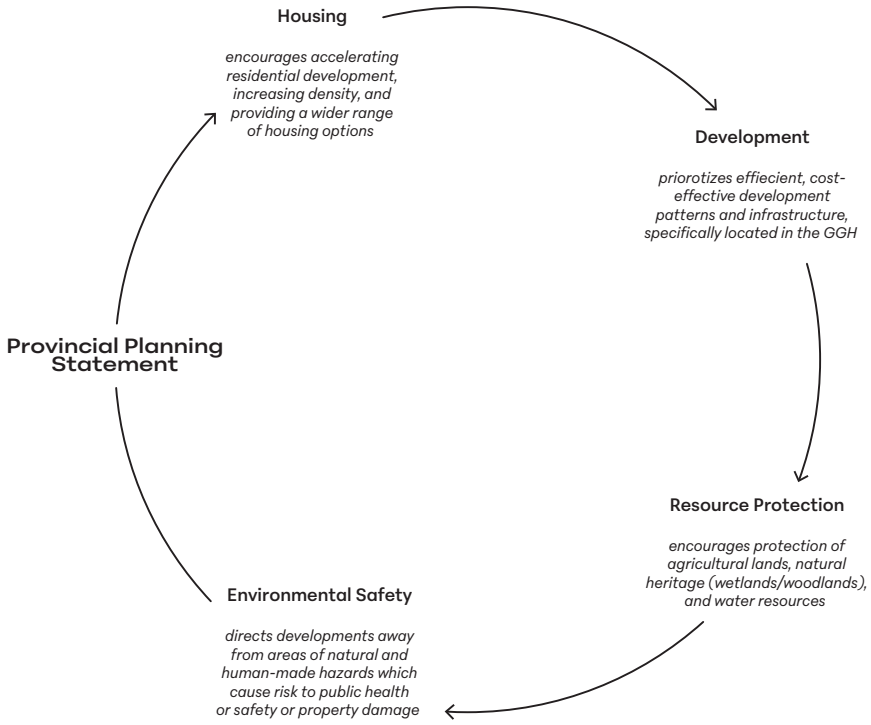


Fig. 35 Provincial Planning Statement Legislation

Provincial Planning Statement (2024)

The 2024 Provincial Planning Statement merges the previous 2020 statement and the *Places to Grow Act* (2005) to increase development[50]. The statement's primary focus is on increasing housing supply by requiring municipalities to maintain a 20-to-30-year land supply that prioritizes high-density, mixed-use development near transit and redefines employment areas to exclude retail and industrial uses[51].

The purpose of the Provincal Planning Statement is to:

- "*Plan for and support development, and increase the housing supply across the province*
- *Align development with infrastructure to build a strong and competitive economy that is investment-ready*
- *Foster the long-term viability of rural areas*
- *Protect agricultural lands, the environment, public health and safety*"[52]

50 Overland LLP, "The Provincial Planning Statement, 2024 - Summary of Key Changes."

51 *Provincial Planning Statement 2024*, 2024, 6.

52 Ibid.

More Homes Built Faster Act (2022)

The More Homes Built Faster Act, or Bill 23, is a legislative package passed by the Ontario government in 2022. Its primary goal is to address the province's housing supply crisis by accelerating development to help build 1.5 million new homes by 2030[53]. The bill aims to achieve this goal through major changes to planning and conservation legislation. Since its introduction, the bill has received heavy criticism from the Chiefs of Ontario, stating that "Bill 23 will inevitably harm Ontario's environmental heritage and weaken land and water environmental protection", as the act has taken away authority from local conservation authorities to protect sensitive environmental landscapes[54].

The purpose of the More Homes Built Faster Act is to:

- *"Address the missing middle*
- *Build more homes near transit*
- *Support the growth and standardization of affordable and rental housing*
- *Freeze, reduce, and exempt fees for building attainable, affordable and non-profit housing*
- *Streamline bureaucratic processes to get more homes built faster*
- *Improve the Ontario Land Tribunal to support building more homes faster*
- *Creating a new attainable housing program*
- *Protect Ontario homebuyers from unethical developers*
- *Take action to crack down on land speculation*
- *Improve Ontario's heritage and growth planning*
- *Call for Federal action on GST/HST*
- *Promote fairness to support affordable and other rental housing*
- *Help homebuyers and renters: address vacant homes*
- *Strengthen the non-resident speculation tax*
- *Promote sustainable building practices"*[55]

53 Province of Ontario, "More Homes Built Faster Act, 2022."

54 Benson, "Chiefs of Ontario and First Nations Oppose Bill 23."

55 Province of Ontario, "More Homes Built Faster Act, 2022."

Municipal Land-Use Regulation

Unique to every municipality, typically, municipal land-use regulation dictates how property can be developed, dividing areas into specific zones to control building heights, permitted uses, and community growth. These enforceable bylaws implement broader provincial planning policies to balance housing supply, infrastructure, and environmental protection[56].

Regulatory frameworks governing municipal land use:

- *"Official Plans: Responsible for the implementation of the Planning Act, policies in the PPS, and provincial plans. They additionally outline the municipalities goals, objectives, and policies for managing and directing physical change and its effects on social, economic, built, and natural environment of the community.*
- *Secondary Plans: Provide more specific policies for a particular area of the municipality, like a downtown area.*
- *Zoning Bylaws: Dictate how lands may be used, including types, scale, locations, and uses of buildings and structures that may be built. Bylaws outlined detailed requirements such as setback distances, minimum lot areas, maximum building heights, and the amount of parking spaces that must be provided"*[26]

56 Province of Ontario, "Zoning Bylaws."

57 Office of the Auditor General of Ontario, "Performance Audit: Minister's Zoning Orders," 110.

Minister's Zoning Orders

Derived from section 47 of the *Planning Act*, Minister's Zoning Orders, or MZOs, allow the Minister of Affairs and Housing to directly create, change or override existing requirements for development outlined in municipal zoning bylaws[58]. The issuance of an MZO allows developers to bypass municipal planning and public consolation approval processes[59]. Enhanced MZOs, a type of MZO introduced in 2020, can also be used to add or remove affordable housing requirements[60].

Historically, an MZO could be issued:

- *"With respect to land that was not covered by an Official Plan or zoning bylaw had to conform to Official Plans (where one was in effect) in special circumstances where a provincial interest must be protected until municipal zoning bylaws can be amended to provide adequate safeguards;*
- *in parts of Northern Ontario without a municipal government where new growth must be controlled; and*
- *to impose controls in areas where lack of adequate municipal regulations could cause problems owing to pressure for growth"*[61]

Recently, there has been an increase in landowners, developers, municipalities, and other ministries requesting MZOs to change existing zoning. In the 20-year period from 1999 to 2018, 27 MZOs were issued. Most orders were for agricultural and environmental conservation or in areas without a municipal organization, and two for small residential developments[62]. However, in the 5-year period from 2019 to 2023, 114 zoning orders were issued. The purpose of roughly half (58) of the MZOs made were to support residential projects, and only one for environmental conservation[63].

58 Province of Ontario, "Zoning Order Framework."

59 Office of the Auditor General of Ontario, "Performance Audit: Minister's Zoning Orders," 8.

60 Ibid, 8.

61 Ibid, 8.

62 Ibid, 10.

63 Ibid, 10.

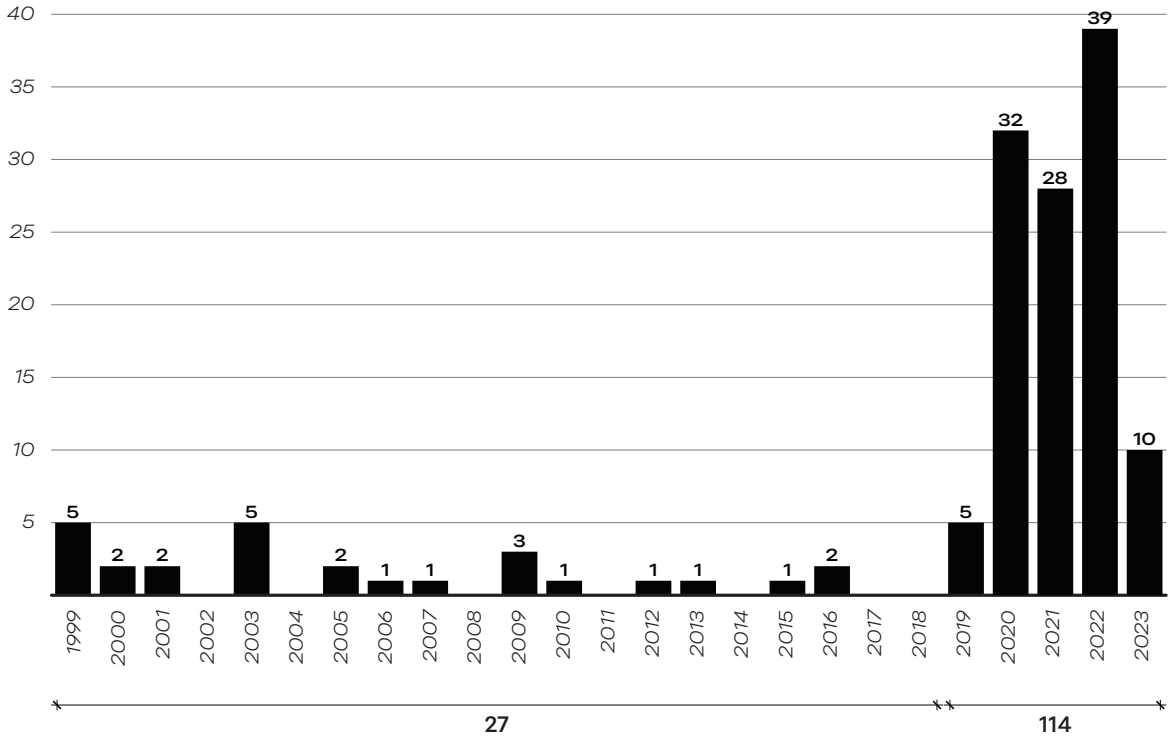


Fig. 36 Minister's Zoning Order's Issued, 1999-2023

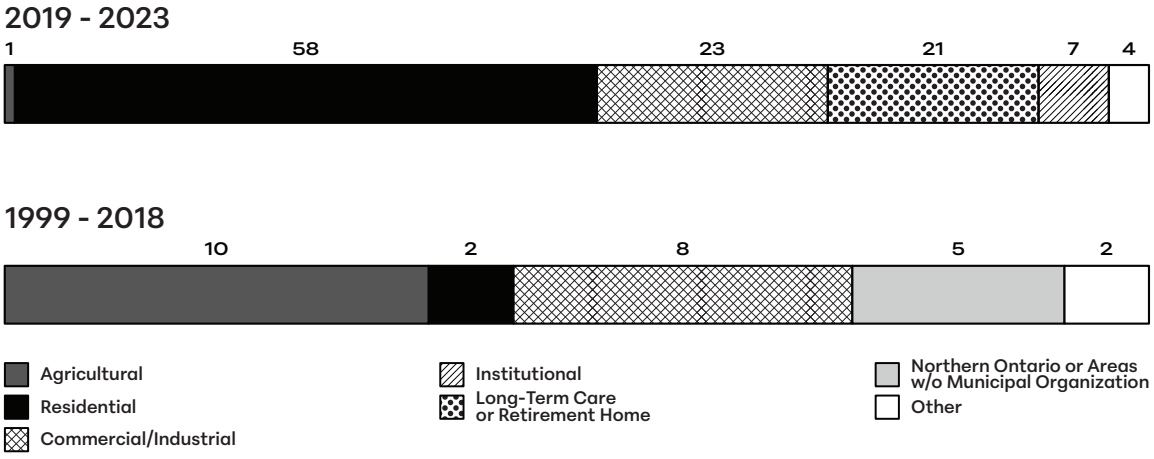


Fig. 37 Minister's Zoning Order's Issued, by Primary Purpose

2.4.2 A Change in Land-Use Regulation

Research shows that housing can be delivered faster when local zoning regulations permit a broader range of uses; specifically, through more inclusionary and flexible zoning policies in employment and light industrial areas[64]. In many municipalities, existing zoning bylaws restrict these lands for commercial, industrial, and institutional uses, prohibiting residential and mixed-use development. These lands are typically restricted as employment lands play a crucial role in supporting economic stability and job creation. As a result, there has been an increase in landowners and developers relying on MZOs to override local planning policies to expedite housing projects with 58 orders being issued from 2019 to 2023[65].

Employment areas require careful consideration when redeveloping them for something other than commercial and industrial uses. Municipalities have commonly protected this land because they are often transformed into higher-value residential or commercial uses, resulting in the displacement of employment land to locations farther away from urban centres. To prevent this, changes to zoning bylaws should focus on underutilized employment lands and locations with existing civil infrastructure and public transportation that can accommodate mixed-use development without undermining municipal objectives.

Amending municipal zoning bylaws to allow for residential and mixed-use development in appropriate employment areas– sites facing increase underutilization and vacancy, would help reduce the dependence on MZOs while increasing opportunities for housing development on already serviced urban land. Specific changes should address exclusionary zoning practices; land use zoning regulations that limit the types of development permitted in certain areas. Under current zoning regulation, land designated for commercial and industrial uses generally prohibit residential uses, even when they are located near transit, services, and employment centres. These regulations are typically in place to prevent land-use conflicts, protect public health, and ensure municipalities have enough space meet local economic goals. However, these restrictions limit municipalities' ability to respond to housing demand and make efficient use of available land.

By increasing flexibility in local zoning frameworks, municipalities can encourage livable and complete communities that integrate diverse housing types,

64 Katyal, *Housing Crisis in the Golden Horseshoe: Addressing Affordability and Accessibility*, 3.

65 Office of the Auditor General of Ontario, "Performance Audit: Minister's Zoning Orders," 10.

employment opportunities, and services. Allowing residential and mixed-use development in appropriate employment areas will increase housing opportunities, support more efficient land use, reduce urban boundary expansion, and lessen the reliance on MZOs. By updating zoning regulations, housing supply can be increased while balancing the need to preserve employment lands and promote sustainable urban development.

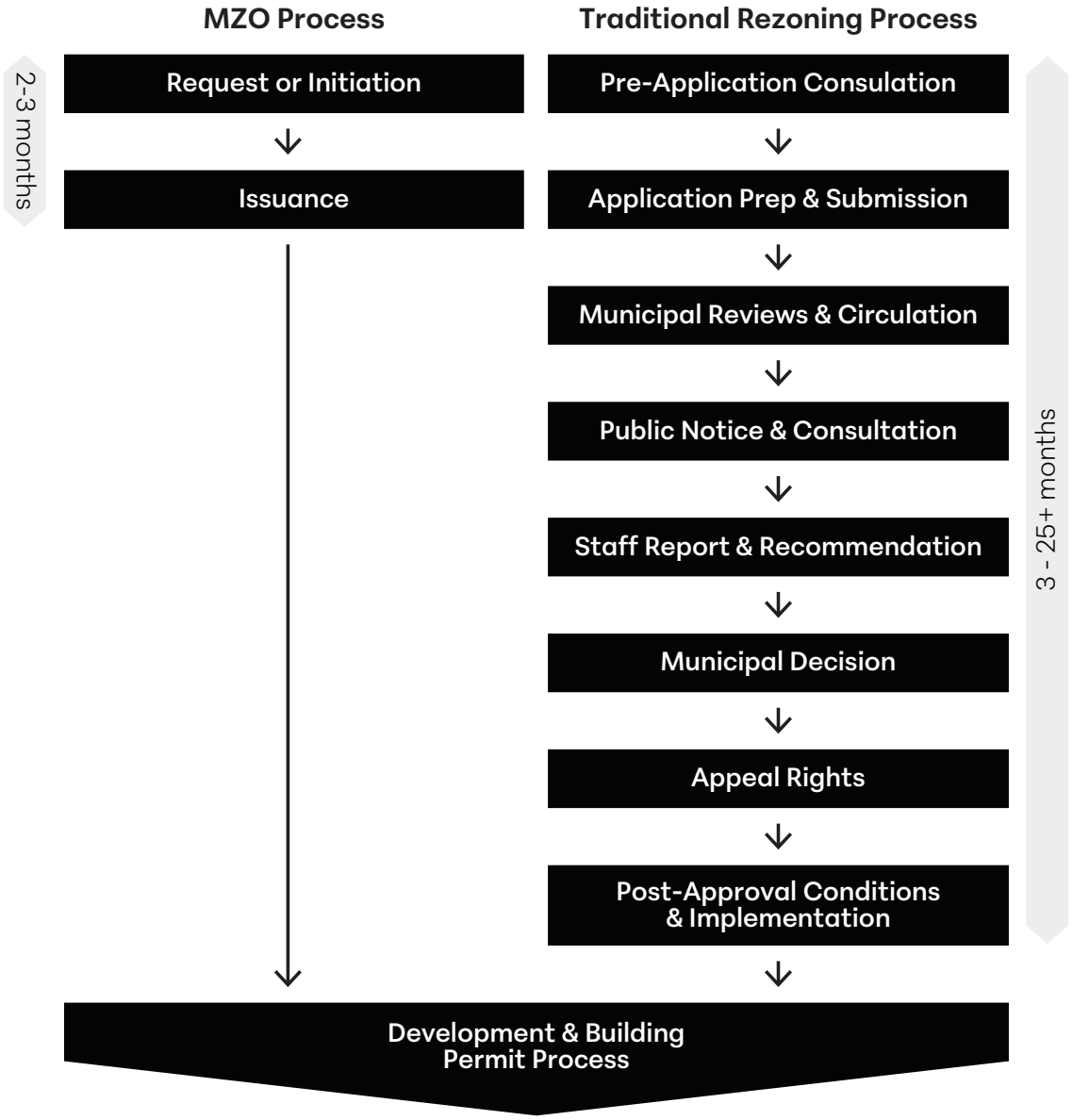


Fig. 38 Rezoning Process Diagram

Ch.3: **Sustainability in Urban Development**

Using the three pillars of sustainability for urban development as a framework for research, the following section provides an insight into how sustainability can be incorporated into urban development.

3.1 Three Pillars of Sustainability for Sustainable Development

First introduced by Edward Barbier in 1987, the approach identifies three systems as basic to any process of development: the environmental system, the economic system, and the social system. Arguing that the "the general objective of sustainable economic development, then, is to maximize the goals all these systems through an adaptive process of trade-offs"[66]. Maximizing the goals for a single system does not result in overall sustainability, because the other systems are ignored[67]. For example, if achieving greater efficiency and equity in economic systems may cause accidental environmental and social impacts that undermine ecological and social systems[68].

66 Barbier, "The Concept of Sustainable Economic Development," 104.

67 Holmberg, *Policies for a Small Planet: From the International Institute for Environment and Developmen*t, 24.

68 Barbier and Burgess, "The Sustainable Development Goals and the Systems Approach to Sustainability."

Environmental Sustainability



Environmental sustainability should promote the improvement and preservation of natural resources and environment to improve human welfare for future generations. Through practices and policies, present needs must be met without compromising the availability of resources in the future.

Social Sustainability



Social Sustainability should maintain and improve the well-being of a community over time. It focuses on the development of programs, initiatives, and organizations that ensures that everyone has access to basic needs, healthcare, education, and fair opportunities.

Economic Sustainability



Economic Sustainability aims to support long-term financial growth. As a result, the concept works to provide all people with the resources necessary to live a satisfying life, like affordable housing, sufficient salaries, access to childcare, and regular access to transportation[69].

69 "What Are the Three Pillars of Sustainable Development?"

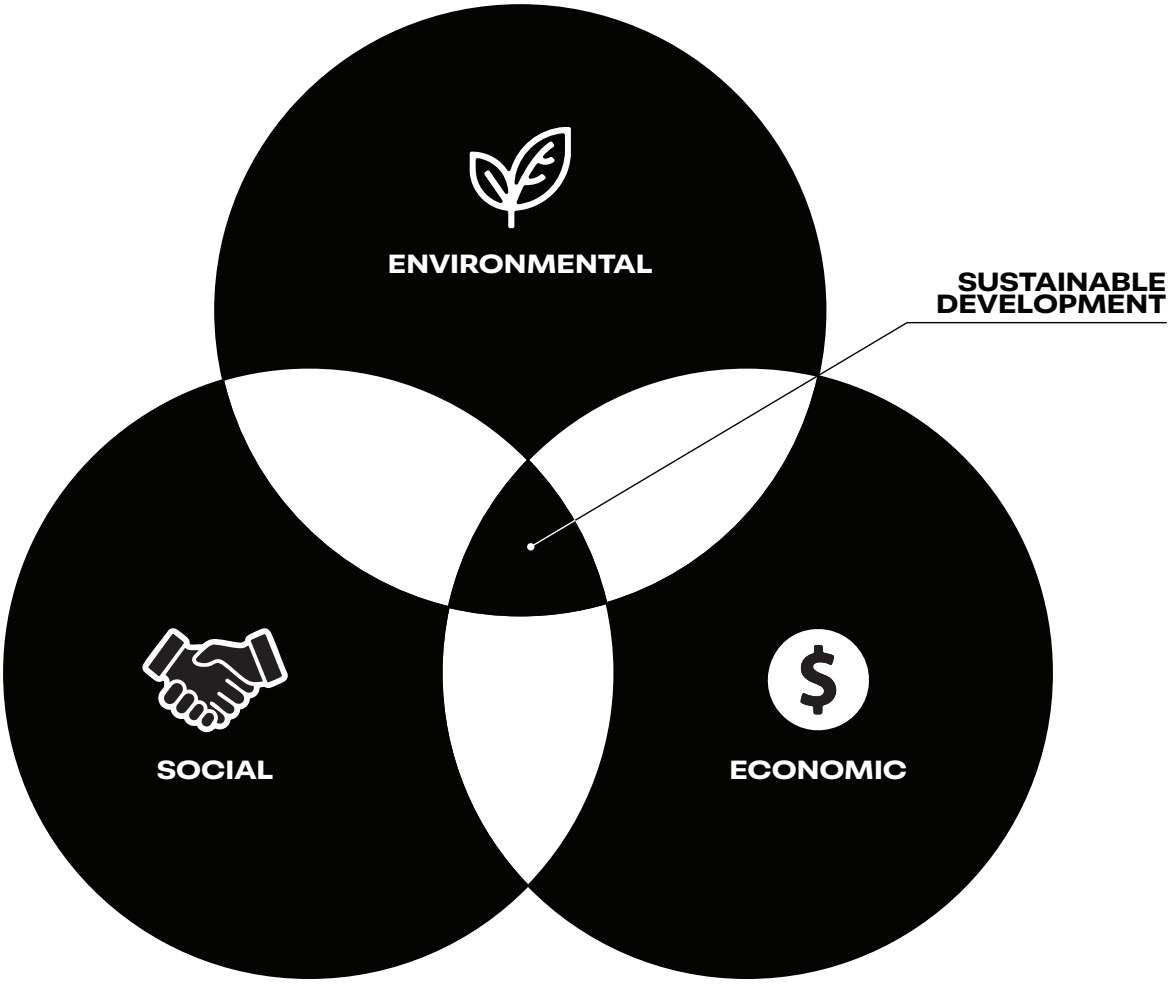


Fig. 39 Three Pillars of Sustainability

In 2015, the General Assembly of the United Nations (UN) formally adopted "The 2030 Agenda for Sustainable Development", providing a framework for the "peace and prosperity for people and the planet, now and into the future"[70]. This agreement outlines 17 Sustainable Development Goals (SDG) with 169 associated targets, agreed upon by the United Nations Member States. The SDGs "aim for a combination of economic development, environmental sustainability, and social inclusion"[71], thus requiring developments to embrace a wide range of targets.

The three pillars of sustainability provide a theoretical framework that outlines the requirements needed to ensure environmental health, social equity, and economic vitality all thrive to create a livable and complete community. Through analyzing urban design and redevelopment projects by asking whether they have achieved overall sustainability by prioritizing at least two of the three pillars. This benchmark creates a comparative framework for identifying methods and strategies that work in real world conditions.

Environmental sustainability will be assessed through outcomes that reduce car dependence, lower operational carbon, improve stormwater maintenance, urban heat mitigation, and improve biodiversity and resilient green infrastructure.

Social sustainability will be assessed through outcomes that improve adequate and affordable housing, public space quality, accessibility, health and wellbeing, and walkability.

Economic sustainability will be assessed through outcomes that improve long-term viability, such as adequate land use, local job access, feasibility, and the ability to sustain amenities and maintenance over time.

Using this framework, each urban design project will be analyzed to determine which methods are most transferrable to the redevelopment of power centres into complete, livable neighbourhoods.

70 United Nations, "Transforming Our World: The 2030 Agenda for Sustainable Development."

71 Ibid.

Ch.4: **Design Strategies & Considerations**

Using Multi-Objective Optimization as a decision-making process that allows for the development of multiple design solutions. This approach will be used for the exploration of trade-offs between key objectives, like density, livability, and sustainability, to reveal how different design approaches can influence redevelopment outcomes that align with broader community goals. The following section investigates alternative urban design strategies from successful international redevelopment projects that emphasized sustainability and livability in the development of area. These approaches will be used to explore alternative solutions for the Cambridge SmartCentre through various iterations of the site.

Currently, the redevelopment of power centres often prioritizes maximizing density, land value, and economic return. Using the tower-and-podium model, residential buildings are often organized around wide, car-oriented streets networks. The design of these right-or-ways reinforces vehicle dependency, reduces pedestrian comfort, and limits opportunities to create human-oriented public realm. As a result, public green and open spaces are often fragmented by roadways, weakening the connectivity between pedestrian areas. Across many suburban landscapes, these approaches have become standardized, relying on density and vehicle circulation as main drivers for redevelopment.

The typical tower-and-podium model has emerged as a popular strategy in response to redevelopment that maximizes urban density[72]. However, the approach can lead to the creation of edge cities and often fail to meet broader spatial qualities. Although the tower-and-podium approach can achieve growth targets, it limits the number of development possibilities for a site by promoting a standardized urban form rather than respond to its unique context and potential.

By developing and comparing multiple alternative solutions for the Cambridge SmartCentre location, alternative design strategies and considerations will be used to prioritize sustainability and livability. Rather than creating a single outcome, a range of possibilities will be explored that respond to competing spatial, environmental, and social objectives.

72 Yeung, "Podium–Tower Urbanism in Southeast Asia."

4.1 Multi-Objective Optimization

Multi-Objective Optimization (MOO) is a mathematical process that aims to answer a problem by creating a solution through an iterative process. Rather than producing a single best solution, MOO creates a set of solutions that provides the best trade-off between competing objectives[73]. In the context of this thesis, the MOO approach provides a theoretical framework for the systemic design methodology. It allows for multiple redevelopment scenarios for the Cambridge SmartCentre site to be compared by identifying sets of solutions that balance density, livability, and the environment. This will reveal which design moves promote the most ideal developments, allowing those involved in the development process to reconsider what should be prioritized to accomplish a desired outcome. By shifting the process from a single optimized scheme to exploring various alternatives, Multi-Objective Optimization structures the decision-making process and clarifies how competing priorities can be reconciled through design.

73 Purdue University, "Multi-Objective Optimization."

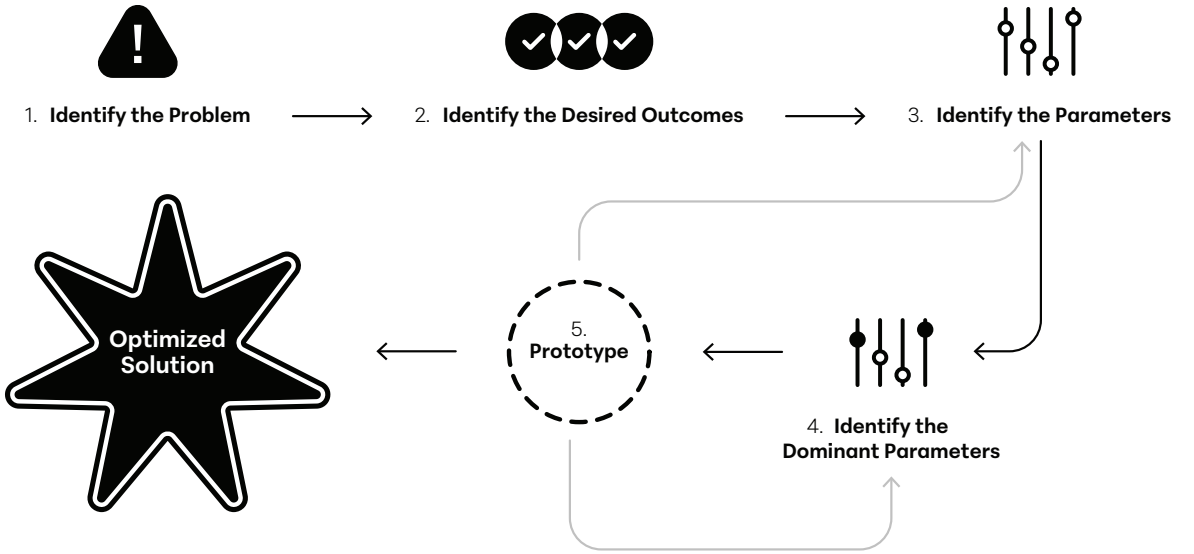


Fig. 40 Multi-Objective Optimization Process

4.2 **Precedent Analysis**

By investigating precedents, this analysis extracts strategies from international design projects that were successful in encouraging the environmental, social, and economic sustainability of the area. These methods provide insight into approaches that should be used to transform the Cambridge SmartCentre into a sustainable, livable community. Each project was selected on the basis that it promotes at least two of the three pillars of sustainability and has received a high livability rating from residents. The projects included in the analysis are Vauban, Germany, Bo01, Malmo, Sweden, and Porta Nuova, Milan, Italy.

4.2.1 **Vauban, Freiburg, Germany**



Vauban, Germany, once the site of old French Military barracks, was redeveloped with goals supporting social and ecological cohesion[74]. The development of the district was coordinated by various social groups, called Baugruppen, to ensure a successful revitalization of the area. From initial community consultation, it was clear that the reduction of private vehicle traffic was important to future residents, prompting the creation of a car-free district. The incorporation of a central avenue which acts as the main vehicle and light rail corridor, "play streets", and the implementation of policies that made it inconvenient to operate a vehicle. The change in policy allowed the neighbourhood to reduce speed limits to a walking pace (5km/h) on local roadways and 30km/h on the central corridor[75]. These strategies have enabled Vauban to succeed in creating a car-free district.

With the final master plan being derived from the original layout of the military barracks, the urban planners developed "play streets" which branch off from the central roadway. These streets create seven neighbourhoods framed by four to five storey residential buildings built around narrow (~5 meters) U-shaped streets[76]. These areas are restricted to traffic and parking, only allowing delivery and service vehicles, which must be driven at a walking pace. Additionally, these neighbourhoods are connected through a series of 5 resident designed parks. These natural areas act as spaces for play and recreation, but they also provide visual connections to the landscape beyond the district, as well as corridors to bring in cooling breezes from the south[77].

74 Ramos, Vauban Sustainable Urban District, 1.

75 Ibid, 7.

76 Coates, "The Sustainable Urban District of Vauban in Freiburg, Germany," 269.

77 Ibid, 270.

To enforce Vauban's "car-free" policies, every trip made within the district can be made on foot or by bike. The organization of the streets uses the principle of "filtered permeability", seen through a fused grid street layout, making it easier to attend to everyday needs by walking or biking, rather than relying on the use of a car[78]. The residential streets of Vauban are designed to be just wide enough for a vehicle to make drop-offs and deliveries, if necessary. However, these vehicles can only travel up to 5km/h. Through implementation of policy and the careful consideration of community needs, Vauban has become the European capital of environmentalism and sustainable architecture and urban design[79].

78 Coates, "The Sustainable Urban District of Vauban in Freiburg, Germany," 275.

79 Ibid, 265.



Fig. 41 Vauban, Freiburg, Germany Map

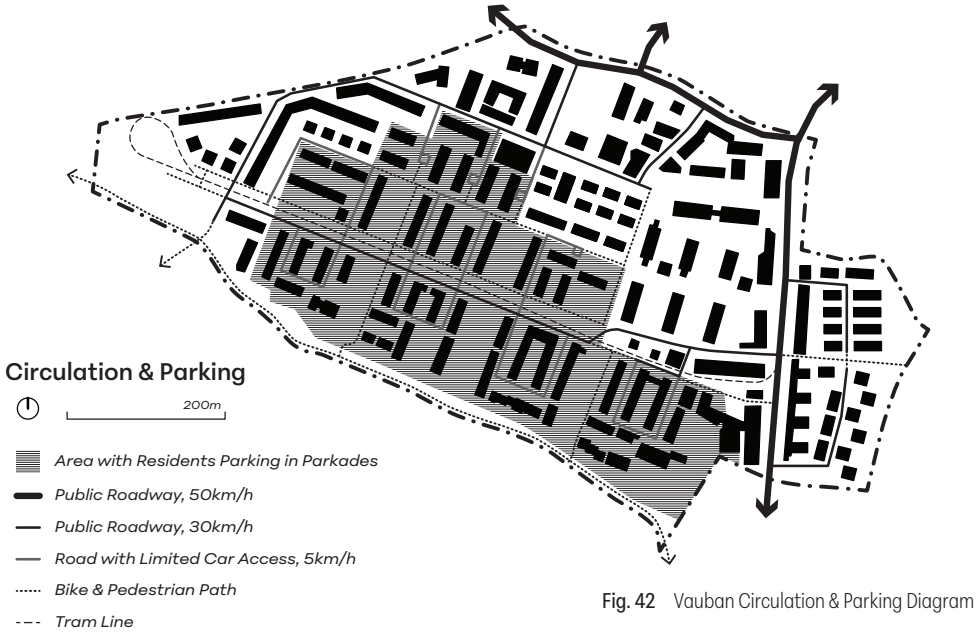


Fig. 42 Vauban Circulation & Parking Diagram

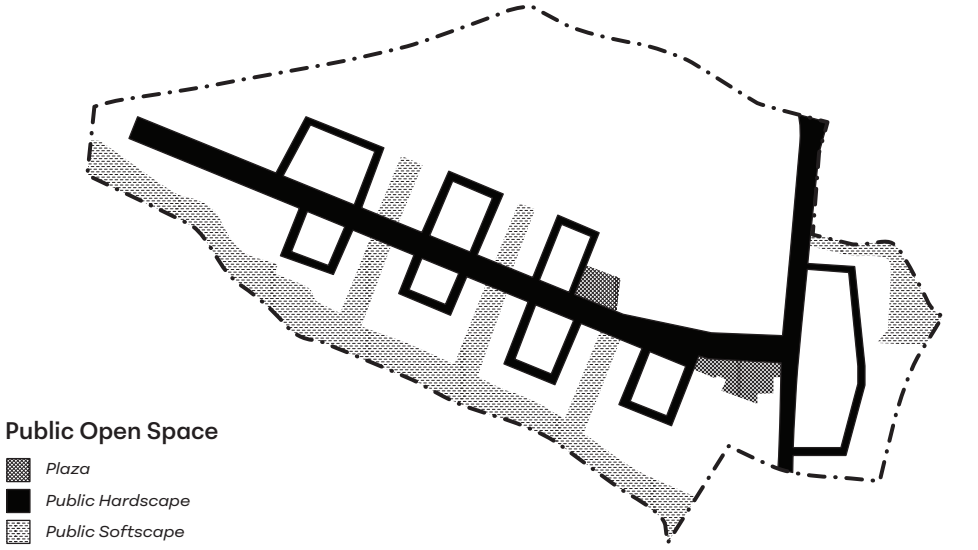
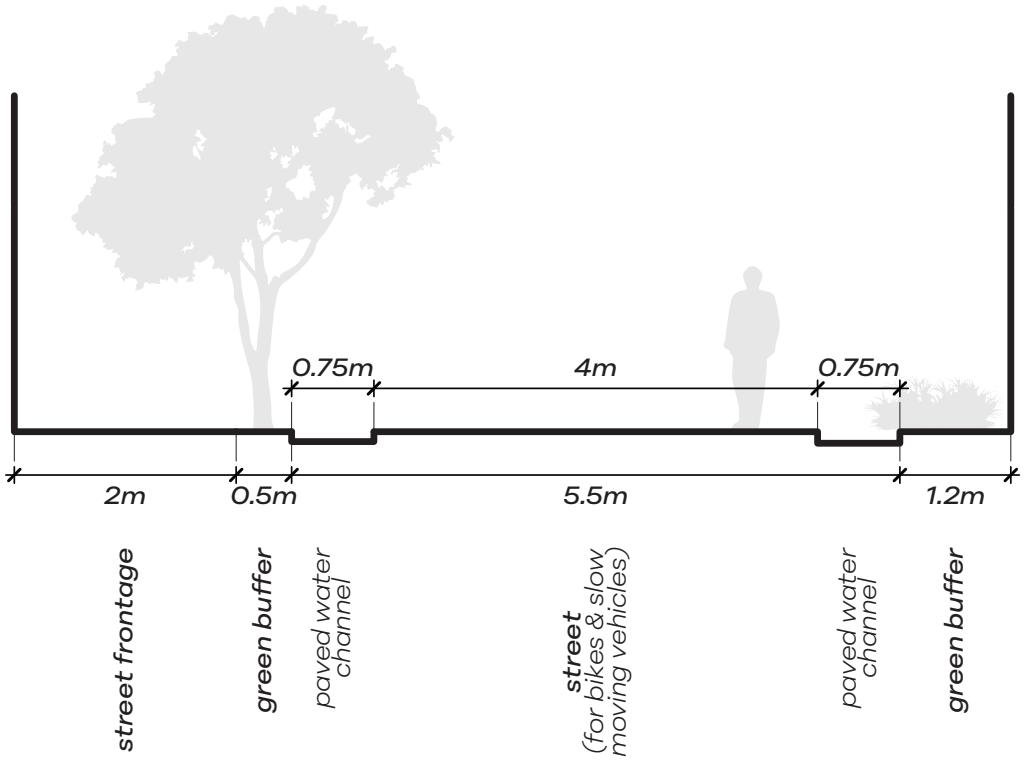


Fig. 43 Vauban Public Open Space Diagram



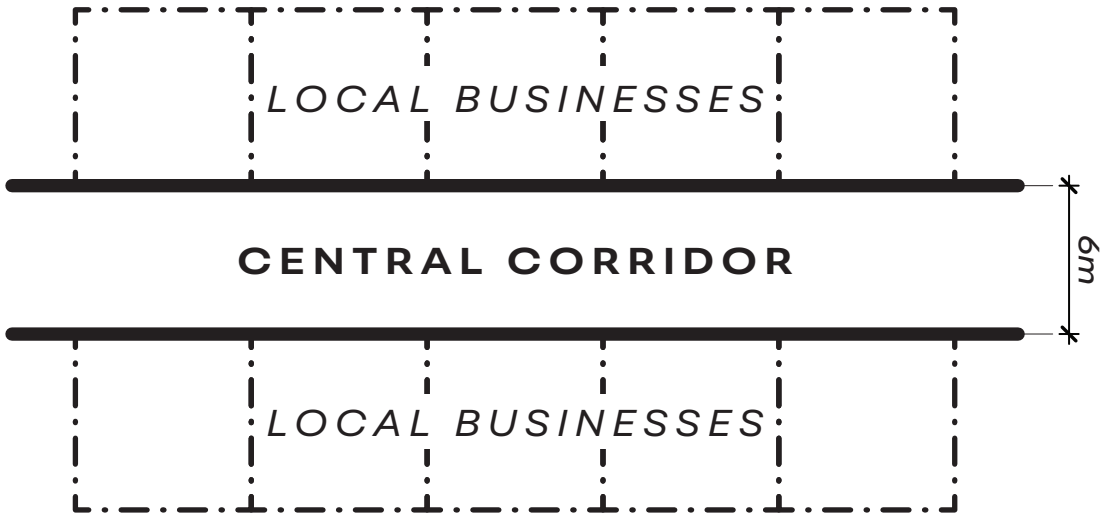
Fig. 44 Vauban Housing Typologies Diagram

Strategies



Typical Street Section

Fig. 45 Vauban Typical Street Section



Central Corridor

Fig. 46 Central Corridor Diagram

The central corridor, Vaubanallee, in Vauban follows the same layout as the old military garrison. The avenue connects the district to the main highway and light rail corridor that connects residents to the center of Freiburg. The light rail line in Vauban runs down the corridor and is set in a grass swale to muffle sounds and contribute to the overall ecology of the site. The corridor is used for local vehicle traffic as well as pedestrian and bike paths that run along the length of the street and is lined with local businesses on both sides. The street limits car speeds to 30km/h rather than the usual 50km/h[80].

80 Coates, "The Sustainable Urban District of Vauban in Freiburg, Germany."

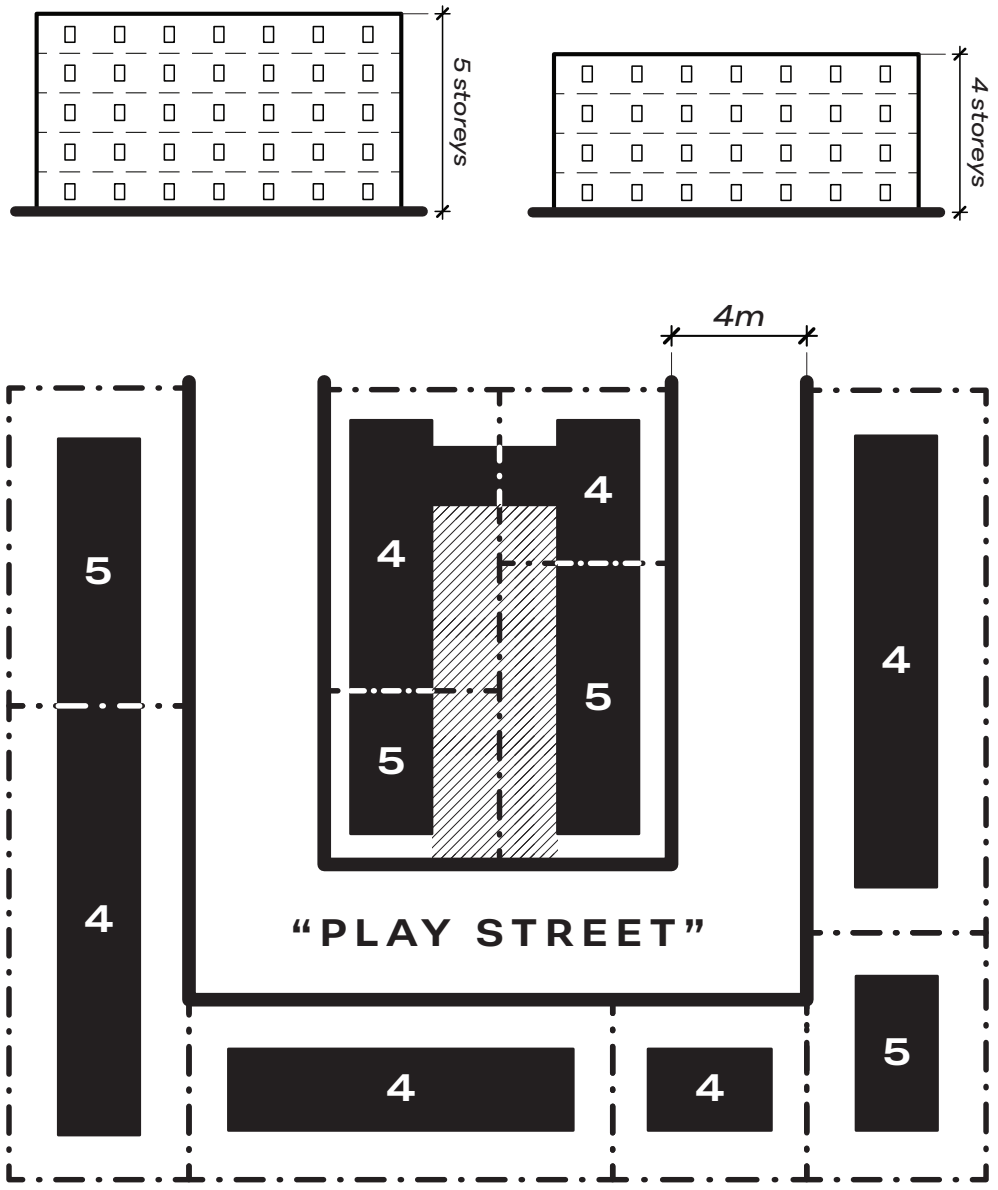


Fig. 47 Play Street Diagram

Play Streets

Seven neighbourhoods in Vauban are framed by four to five storey housing blocks built around narrow U-shaped "play streets", which are restricted to traffic and parking. Each cluster includes a central courtyard that is accessible by all residents[81].

81 Coates, "The Sustainable Urban District of Vauban in Freiburg, Germany."

4.2.2 Bo01, Western Harbour, Malmö, Sweden

The Western Harbour, or Bo01, of Malmö, Sweden was redeveloped as part of an international housing exhibition in 2001[82]. What was once an industrial port, has developed into a mixed-use residential neighbourhood, adjacent to historic centre of Malmö. The original ambition of the project according to Klas Tham, the principal exhibition architect of Bo01 was "to offer an urban structure that is sufficiently robust, to meet the demands of an uncertain future (the network structure of block city and clear borders between the public and private spaces), to provide the conditions for the essence of the city, the meeting between different people and cultures, to come about gradually (the small-scale property division of the plan, its range of different residential environments), to let cars get through, but on the terms of the pedestrians, to provide the conditions of a city environment which, over and above empathy and comprehensibility, also offers a wealth of information, mystery, surprises, and many unique and promising urban spaces"[83].

With the aim of showing that high-quality architecture provides better conditions for long-term sustainability of buildings and cities, as well as the ambitions stated by Klas Tham, the designers prioritized a well-balanced mix of housing and green areas that encourage social cohesion[84]. This desire to ensure opportunities of human interaction, is seen through the development of "eco-villages", pedestrian streets, and building height hierarchy. Bo01 is organized around a unique grid that creates open spaces in the interior of the site at a human scale[85]. The implementation of "eco-villages" or Flagghusen was focused on creating safety and security for all, by planning and designing designated meeting spaces for residents in smaller residential blocks[86].

The master plan of the Bo01 project establishes a rhythm for the slower pace of pedestrians and cyclists[87]. Majority of the streets in the Western Harbour district are restricted to car access. Pedestrian streets were designed at various scales to create a mix of public spaces, some being as narrow as 2 meters. Variations of the street grid, as well as designing taller buildings (six storeys) on the western side of the site protect inner areas from severe weather, while also providing different opportunities to approach and explore the district[88]. The interior of the project is designed to encourage social interaction by creating an intricate network of pathways of various size that allow for informal

82 McCollum, "Bo01 - City of Tomorrow."

83 Ibid.

84 Salat, "Quality Program Malmö, Sweden."

85 Ibid.

86 The City of Malmö – Environmental Department, "Western Harbour Guide," 7.

87 Salat, "Quality Program Malmö, Sweden."

88 Ibid.

and formal spaces to be established in-between buildings[89]. The Western Harbour redevelopment project provides a holistic approach to sustainability. The environment of the neighbourhood creates a well-balanced mix of open space and areas for human interaction, while maintaining the environmental landscape of the harbour.

89 Salat, "Quality Program Malmö, Sweden."

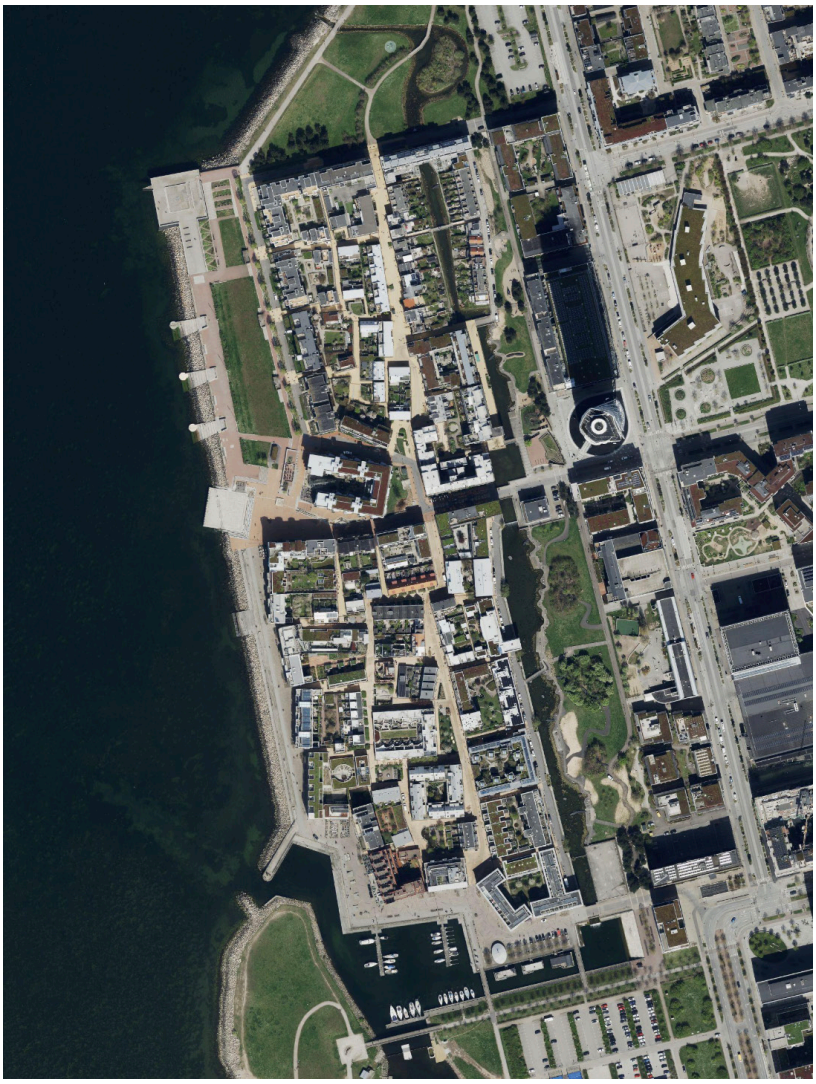


Fig. 48 Bo01, Western Harbour, Sweden Map



Fig. 49 Bo01 Circulation Diagram

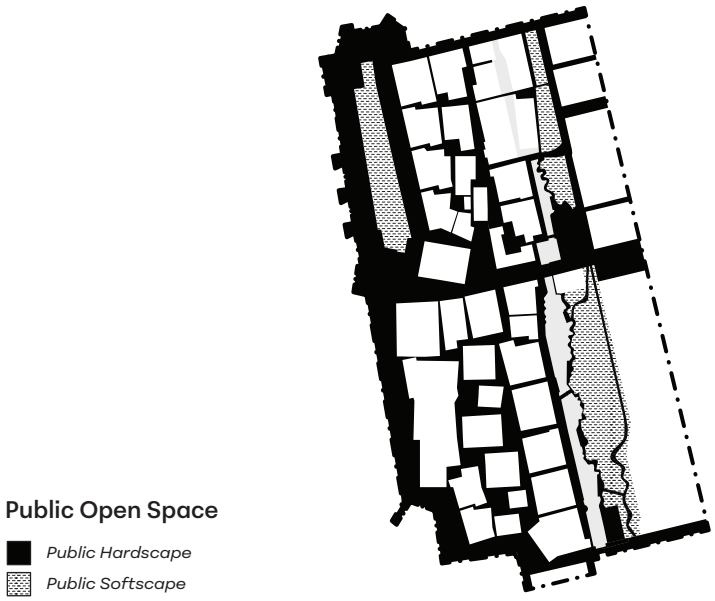


Fig. 50 Bo01 Public Open Space Diagram

Strategies

Common Pedestrian Street

Pedestrian Street with Softscape



Typical Street Section

Fig. 51 Bo01 Pedestrian Street Sections

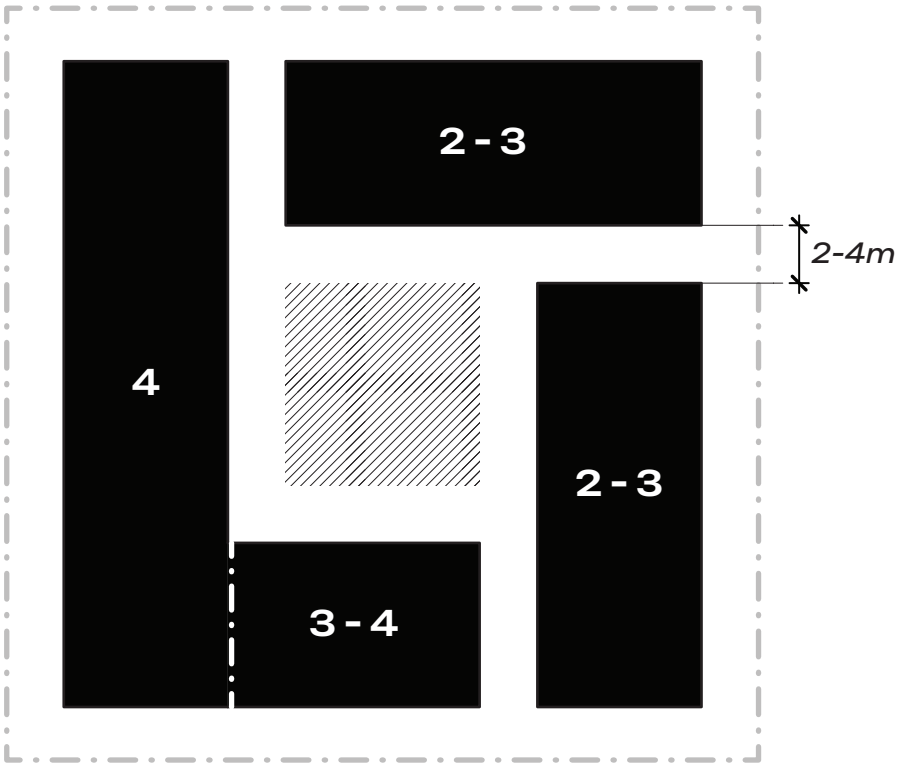


Fig. 52 Flagghusen Diagram

Flagghusen

The Flagghusen area (south-western neighbourhood) consists of a total of 16 apartment buildings (more than 600 units) that include both rental and cooperative apartments. Before the area was built, dialogue was started between future residents and the developer where they were invited to participate in the planning of the region from the beginning. The architecture, layout, quality of issues, and the environmental adaptation was discussed with an unprejudiced approach to develop the best solutions. There was focus on creating safety and security for the residents by planning and designing meeting places for residents[90].

90 The City of Malmö – Environmental Department, "Western Harbour Guide," 7.

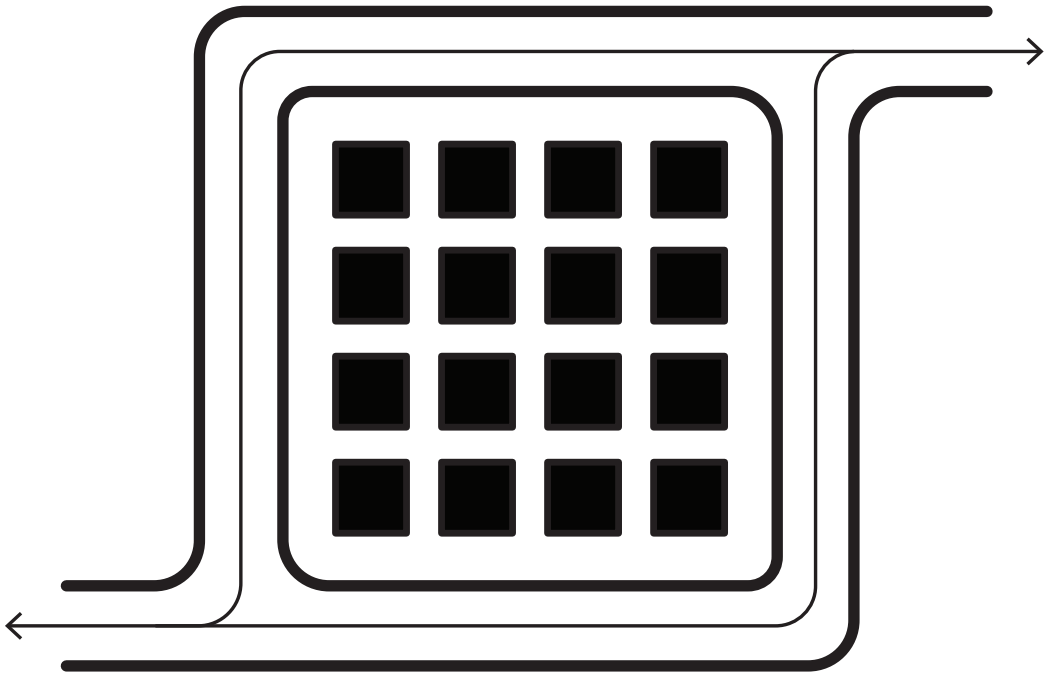


Fig. 53 Outer Ring Road Diagram

Outer Ring Road

Because Bo01 was developed with restricted car access, a road is located around the perimeter of the site; however, this street also has limited car access[91].

91 "Bo01 Malmo - ULI Development Case Study."

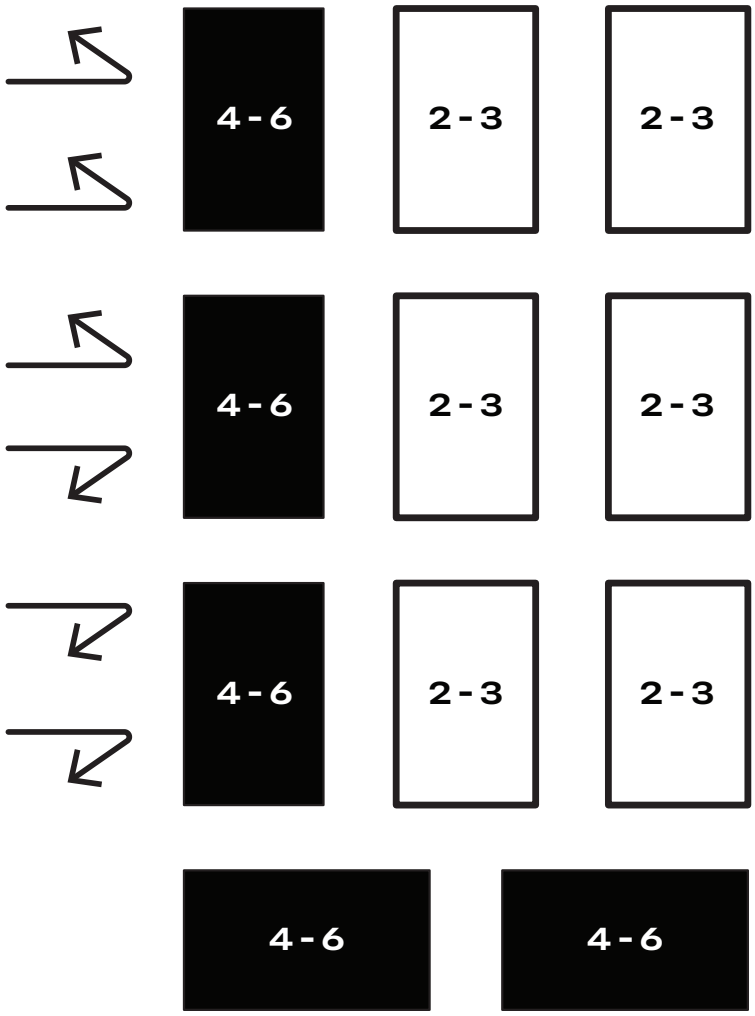


Fig. 54 Taller Perimeter Buildings Diagram

Taller Perimeter Buildings

The master plan of the Western Harbour was developed to incorporate larger, six-storey buildings along the waterfront promenade to the west. These buildings are tall enough to provide shelter from the western winds, protecting the smaller scale buildings at the center[92].

92 "Bo01 Malmo - ULI Development Case Study."

4.2.3 **Porta Nuova, Milan, Italy**

Once a railway station that was demolished in 1960s, the site of Porta Nuova had gone unused for decades, slowly becoming an unsafe space for pedestrians, despite being near Milan's city centre[93]. The redevelopment of the site successfully transformed a large, abandoned brownfield area into a vast green, civic centre. The goal of Porta Nuova's revitalization was to reunite three adjacent neighbourhoods through the creation of vibrant urban spaces. The developers strived to create a space at human scale, rooted in landscape-driven densification[94].

93 "The Value of the Porta Nuova Urban Regeneration."

94 Lucy Anna Scott, "Porta Nuova - ULI Development Case Study."

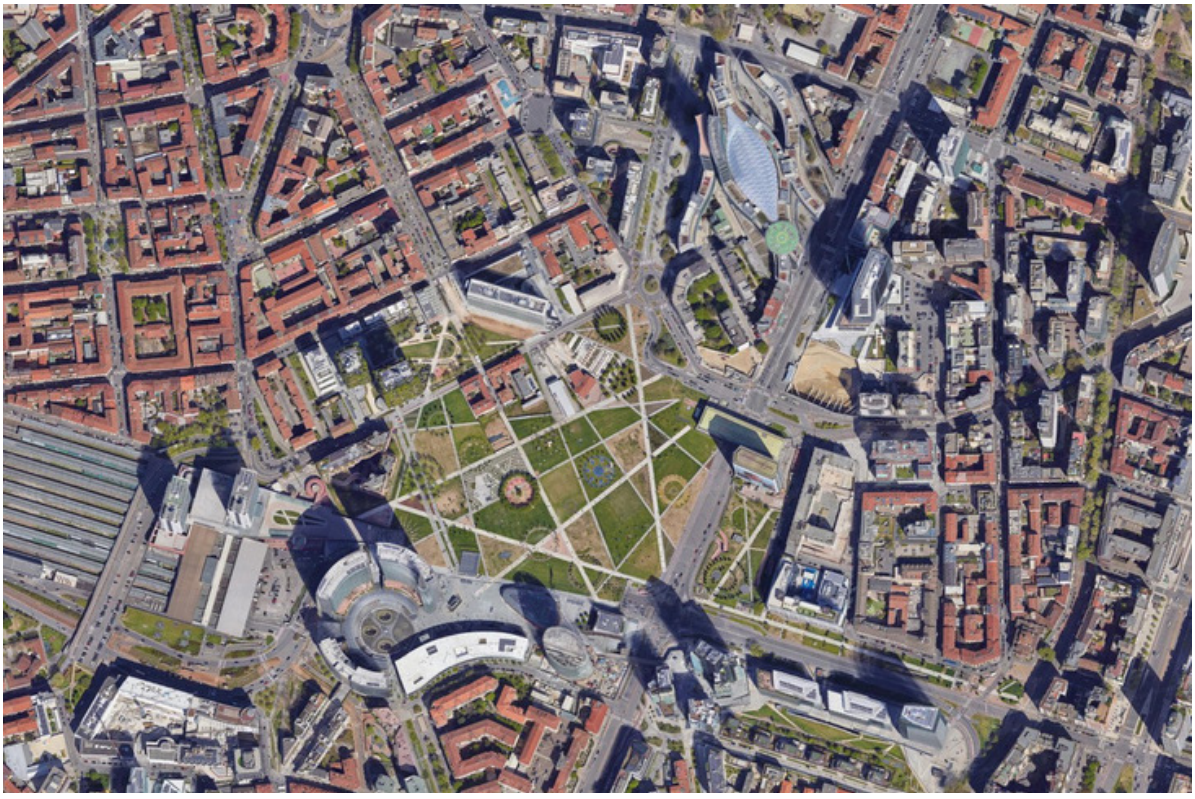


Fig. 55 Porta Nuova, Milan, Italy

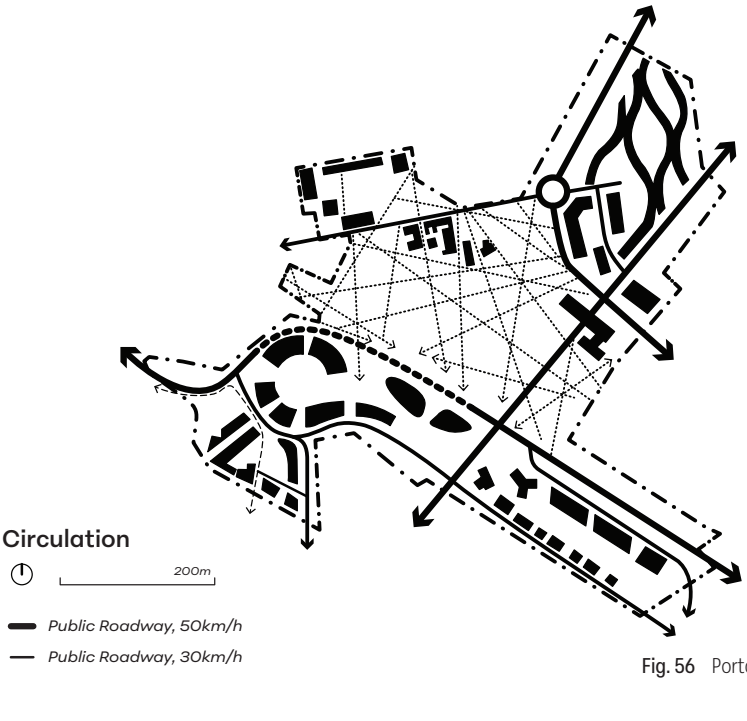


Fig. 56 Porta Nuova Circulation Diagram

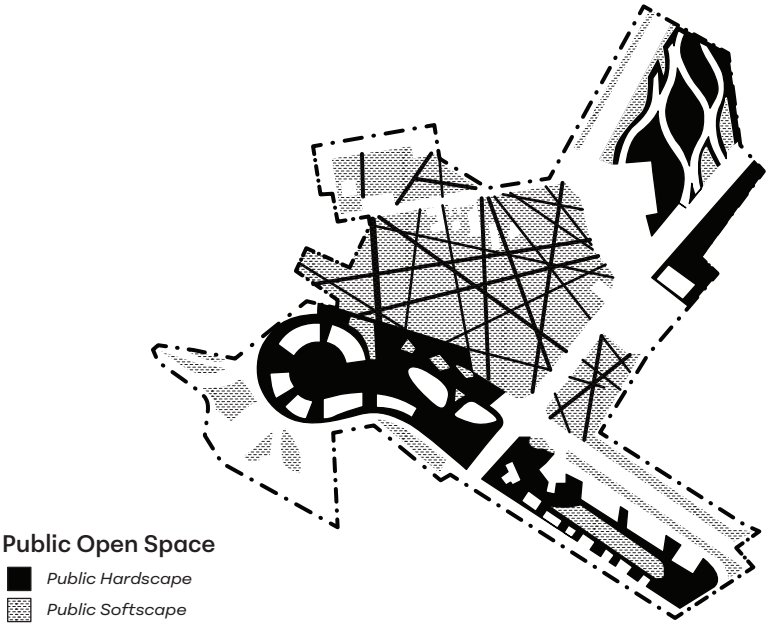


Fig. 57 Porta Nuova Public Open Space Diagram

Strategies

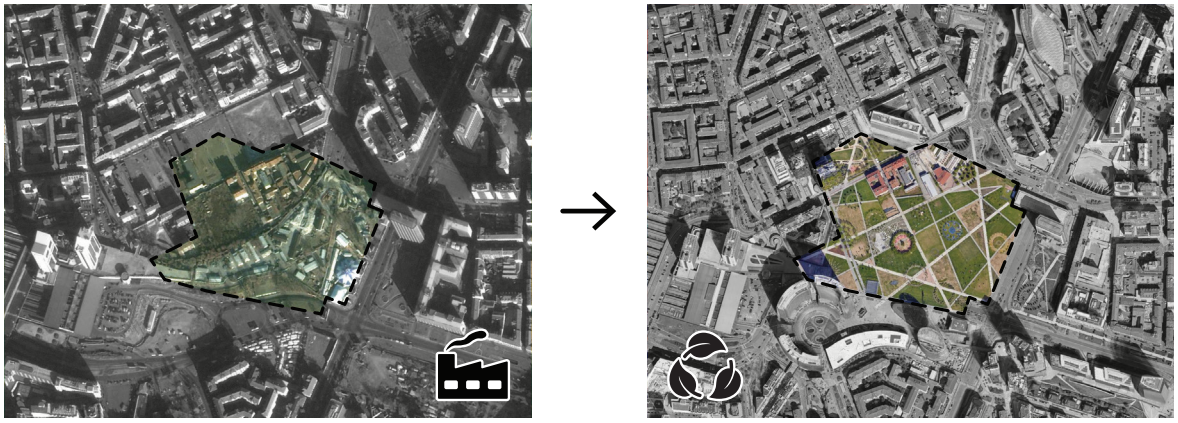


Fig. 58 Brownfield to Greenfield Diagram

Brownfield to Greenfield

With sustainability being a central focus of Porta Nuova, the project was able to evolve from a brownfield to a greenfield. After the construction of a tunnel to reduce traffic, the area was able to increase the amount of green space from 2,000 square meters to 10,000 square meters[95]. The additional green space was designed to encourage "slow mobility" (walking and biking) throughout the site. Additionally, the increased green area reduced Porta Nuova's urban heat island effect from 39-44°C to 31-35°C on average, as well as increasing the biodiversity of the area[96].

95 "The Value of the Porta Nuova Urban Regeneration," 10.

96 Ibid, 11.

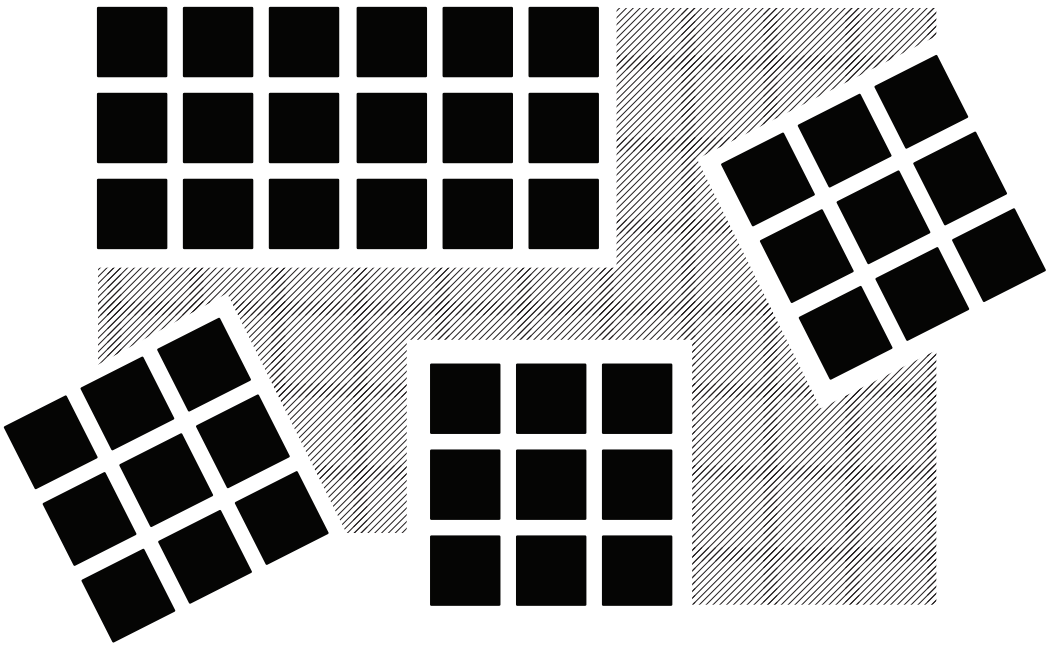


Fig. 59 Seamless Pedestrian Space Diagram

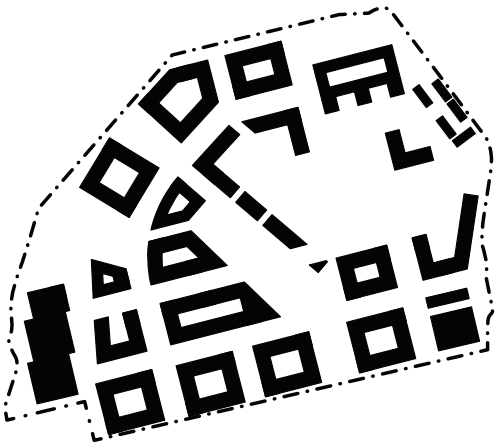
Seamless Pedestrian Space

An important design principle to the developers when designing Porta Nuova was putting people at the center of the design, with the key objective of reconnecting neighbourhoods through a high-quality pedestrian space[97]. By reserving over 50 percent (170,000 square meters) to pedestrian public space, the arrangement of uses around these spaces was crucial to reconnecting to surrounding neighbourhoods. The green space and connections were designed first, then followed by buildings[98].

97 Lucy Anna Scott, "Porta Nuova - ULI Development Case Study," 7.

98 Ibid, 3.

Precedent Comparison



CAMBRIDGE SMARTCENTRE REDEVELOPMENT

Cambridge, Ontario

275,200m²

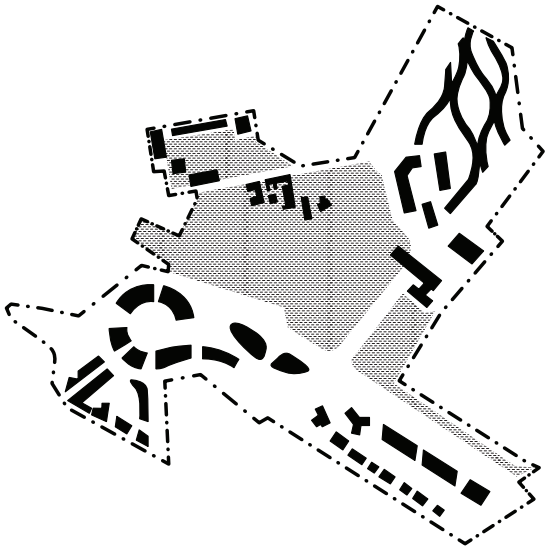
20,000 people

41% dedicated to building footprints

112,832m²

33% dedicated to streets/surface parking

90,816m²



PORTA NUOVA

Milan, Italy

290,000m²

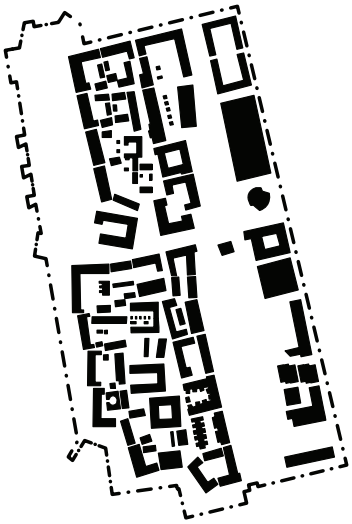
50,000 people

41% dedicated to building footprints

120,000m²

20% dedicated to streets/surface parking

35,000m²



WESTERN HARBOUR

Malmo, Sweden

180,000m²

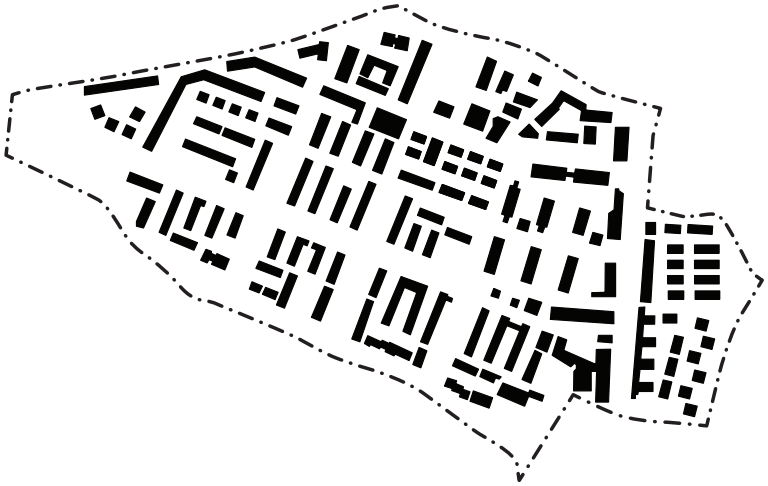
2,343 people

34% dedicated to building footprints

60,000m²

28% dedicated to streets/surface parking

80,000m²



VAUBAN

Freiburg, Germany

410,000m²

5,500 people

19% dedicated to building footprints

79,000m²

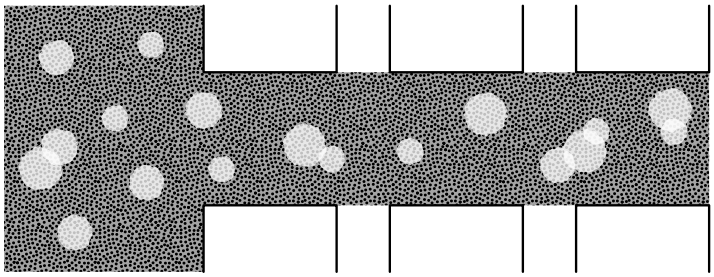
11% dedicated to streets/surface parking

42,622m²

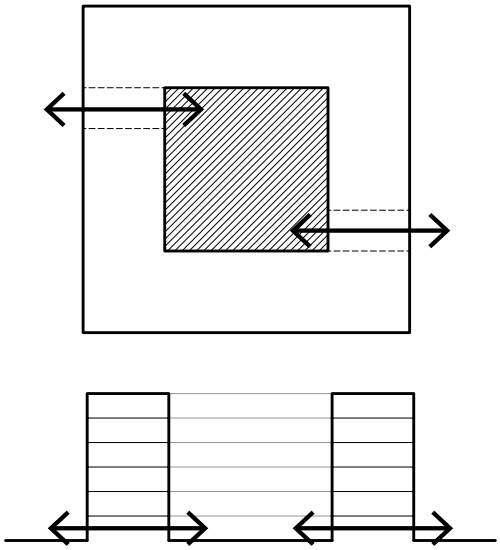
Fig. 60 Precedent Comparison Diagram

4.2.4 **Common Strategies**

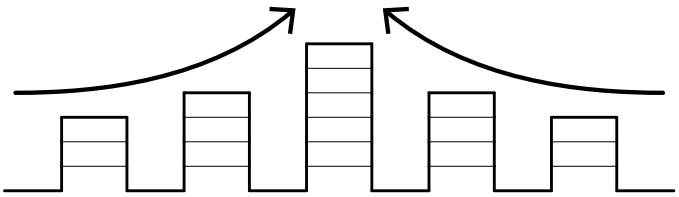
Various additional strategies were identified from commonalities found during previous precedent analysis.



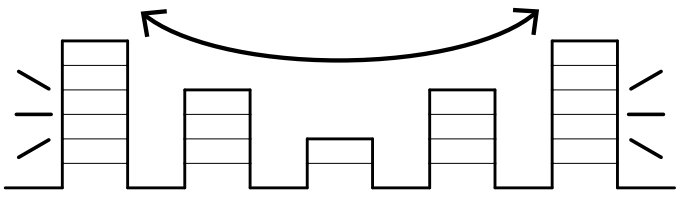
Continuous Green Space
To create interconnected pathways and preserve nature



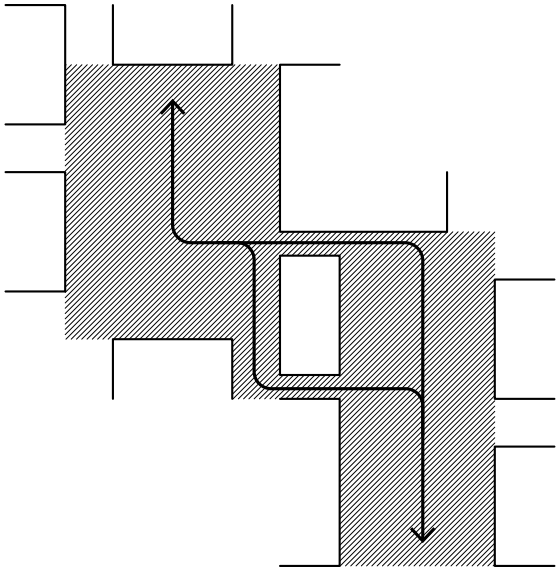
Enclosed Blocks
To create intimate, semi-public courtyards



Short Perimeter Buildings
To protect views



Tall Perimeter Buildings
To block noise and wind



Connected Open Space
To create pedestrian networks

Fig. 61 Common Strategies Diagrams

These urban design projects and their strategies will provide groundwork for the redevelopment of the Cambridge SmartCentre. The strategies used in the precedents present alternative methods to the transformation of the site that promote varying levels of sustainability and livability. Different combinations of these strategies, although adapted, will be used to investigate alternative futures for the site that encourages sustainability and livability, but also increases residential density on the Cambridge SmartCentre.

4.3 **Design Approaches**

In addition to the strategies extracted from the exemplary precedents analysed in the previously, other urban design principles outlined by urban design theorists, such as Jane Jacobs and Jan Gehl, will be used. These references emphasize that livability cannot be achieved through a single feature, but through the balance of street life, land use, and public realm design at the human scale. Like the three pillars of sustainability approach, multiple aspects must be considered to achieve livability. However, unlike the three pillars, livability focuses on immediate, every day, quality of life within a community, rather than long-term goals.

These approaches ensure that livability and human-scaled design are integrated in the redevelopment of the site rather than added as an afterthought. They provide insight into which strategies can be explored on the site to support sustainability, social belonging, and ease of access to essentials. The use of precedent-based methods and urban design theory form a set of alternative strategies to provide a framework for redevelopment. A combined set of design elements and strategies will guide the transformation of the Cambridge SmartCentre into an area that integrates diverse housing types, reliable transportation, and local amenities that allow people to thrive, socialize, and access essential services within walking distance.

The following diagrams illustrate the methods that will be integrated onto the Cambridge SmartCentre site. Through a series of iterations seen in Chapter 5.

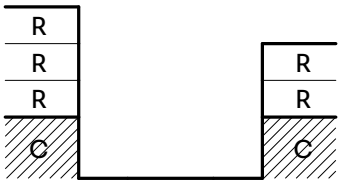
4.3.1 **Jane Jacobs**

Jane Jacobs revolutionized urban planning through her 1961 book, *The Death and Life of Great American Cities*, becoming one of the most famous urbanists of all time[99]. She resisted traditional auto-centric planning philosophies, instead advocating for cities as places for people not cars. Jacobs focused on the topic of human well-being and interconnectedness, as well as the safety and economic vitality of cities[100].

99 Culdesac, "Anatomy of a Good Neighborhood, According to Jane Jacobs."

100 Holm, "Jane Jacobs, Key Principles for Building Better Cities."

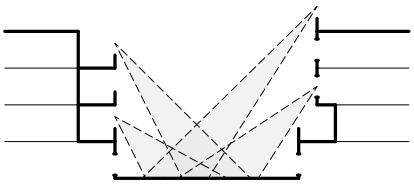
Jacobs' Core Concepts



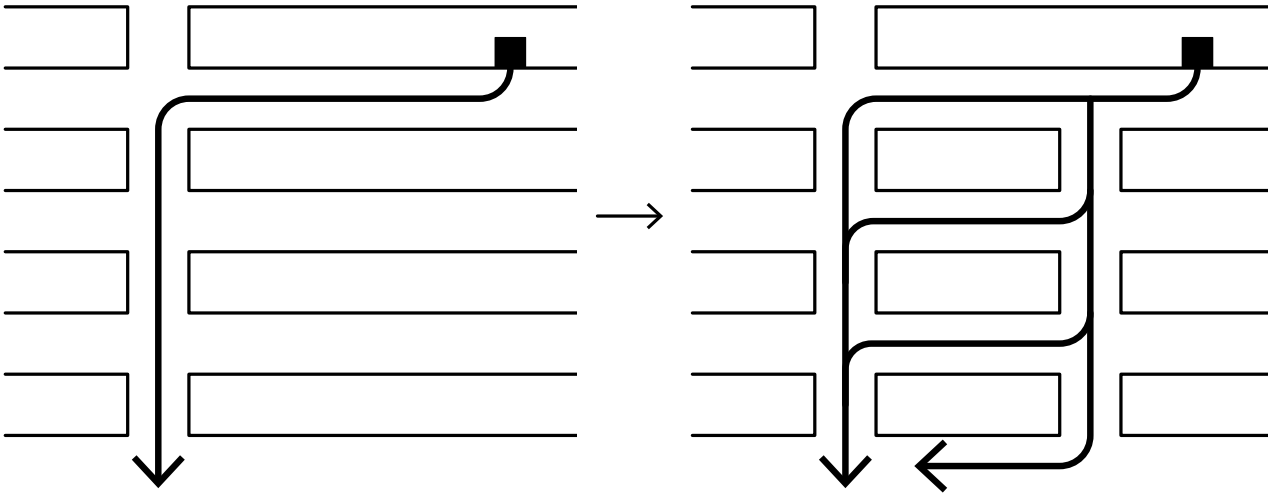
Mixed-Use Developments



Active Ground Floors



"Eyes on the Street"



Permeable Blocks

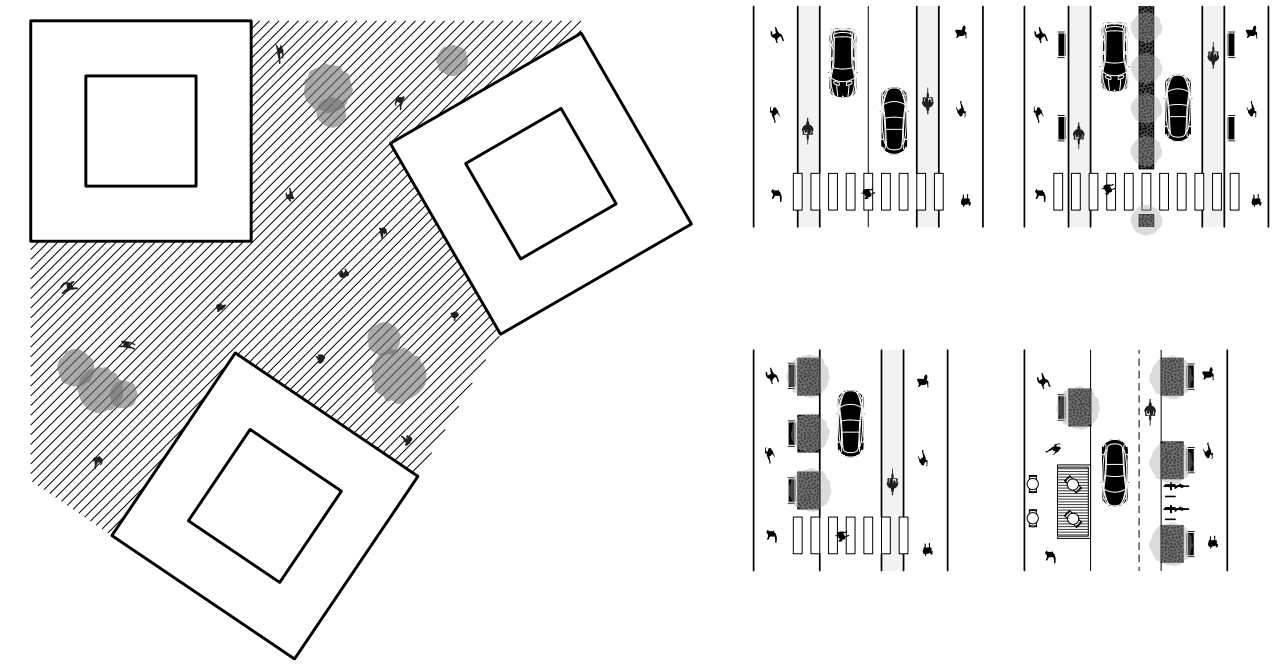
Fig. 62 Jacobs' Concept Diagrams

4.3.2 **Jan Gehl**

Jan Gehl influenced urban design through his books, *Life Between Buildings* (1971) and *Public Spaces, Public Life* (1996) he pioneered the movement of design spaces for people. Throughout his career he advocated for improving the quality of urban life by adjusting urban design toward pedestrians and cyclists. Gehl states that "creating cities for cars, is like building a house but putting all the energy into designing the corridors and ignoring the lounge, kitchen, bedroom, and bathrooms, where life goes on"[101].

101 Dickinson, "CityChanger Jan Gehl."

Gehl Core Concepts



Life Between Buildings

Pedestrian Friendly Streets

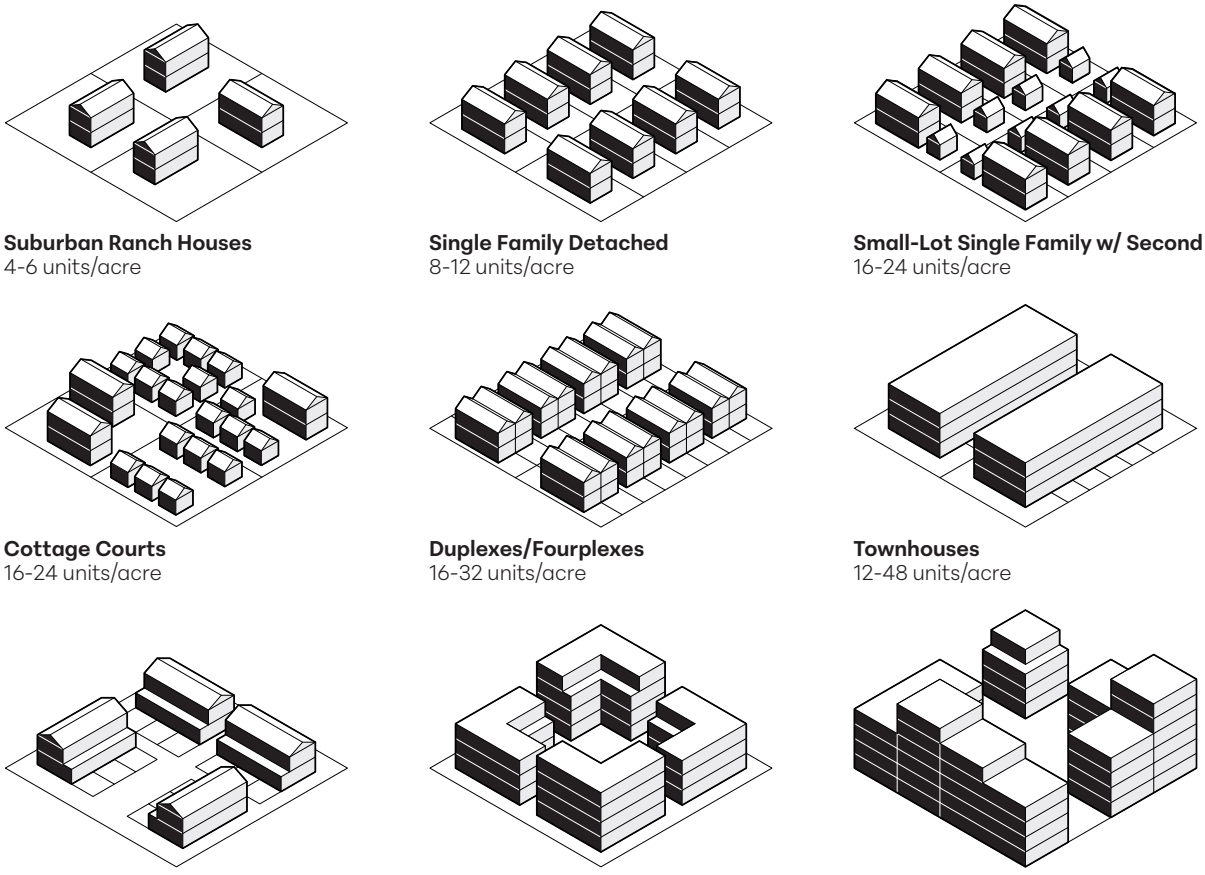
Fig. 63 Gehl Concept Diagrams

4.4 **Primary Design Considerations**

Eleven design considerations will be incorporated in the redevelopment of the Cambridge SmartCentre to prioritize sustainability and livability on site. These priorities were identified based off common objectives across the precedents discussed earlier. Specifically, ones that improved the overall environmental health, social cohesion, and long-term viability of the neighbourhood. Each element highlights what spatial, programmatic, and infrastructural strategies were included on the site and how they can be used in combination to transform a single-use commercial site into a livable neighbourhood.

The following illustrations demonstrate the components of each primary design consideration.

1. Types of Residential Density



Suburban Ranch Houses
4-6 units/acre

Single Family Detached
8-12 units/acre

Small-Lot Single Family w/ Second Units
16-24 units/acre

Cottage Courts
16-24 units/acre

Duplexes/Fourplexes
16-32 units/acre

Townhouses
12-48 units/acre

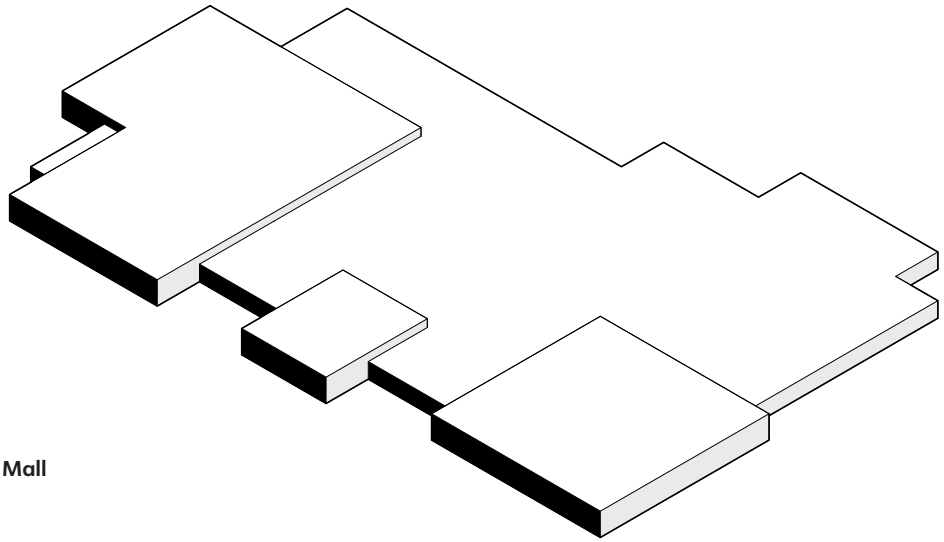
Cohousing Block
20-50 units/acre

Garden Apartments
20-60 units/acre

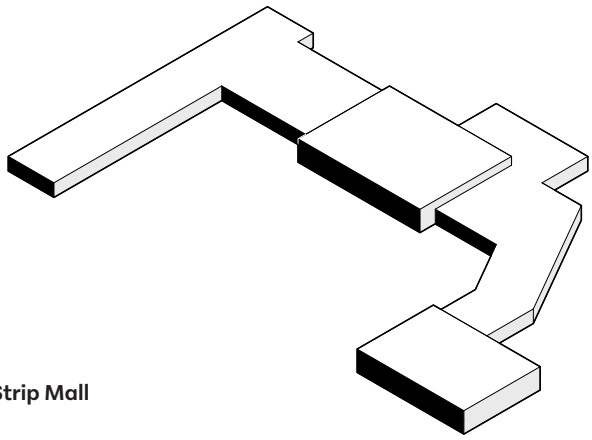
Mid-Rise Apartments
40-200 units/acre

Fig. 64 Types of Residential Density Diagram

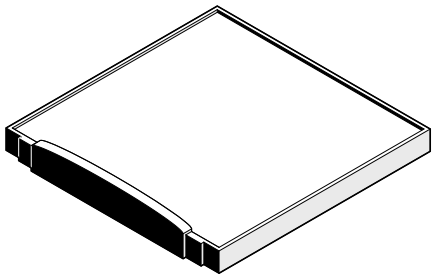
2. Types of Commercial Density



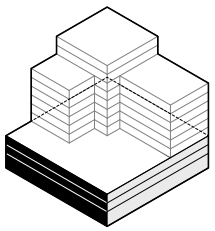
Mall



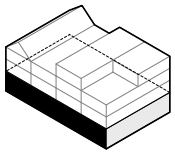
Strip Mall



Big Box Store



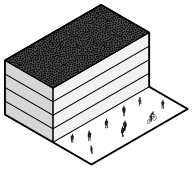
Podium



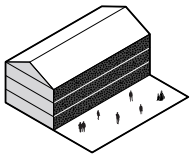
Ground Floor

Fig. 65 Types of Commercial Desnity Diagram

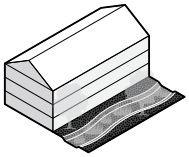
3. Types of Green Space



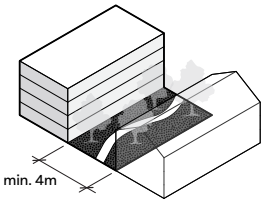
Green Roof
No Footprint



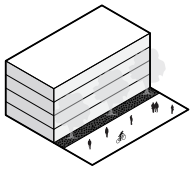
Green Wall
No Footprint



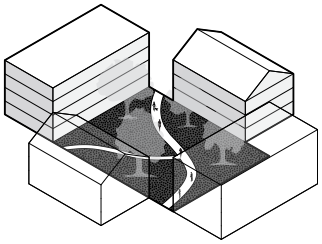
Bioswale
Small Footprint



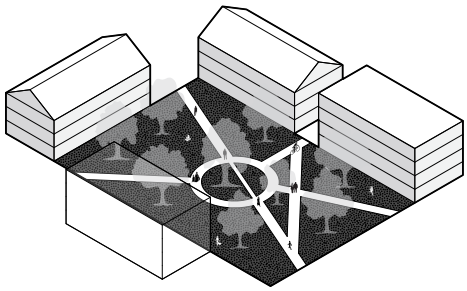
Alley
Small Footprint



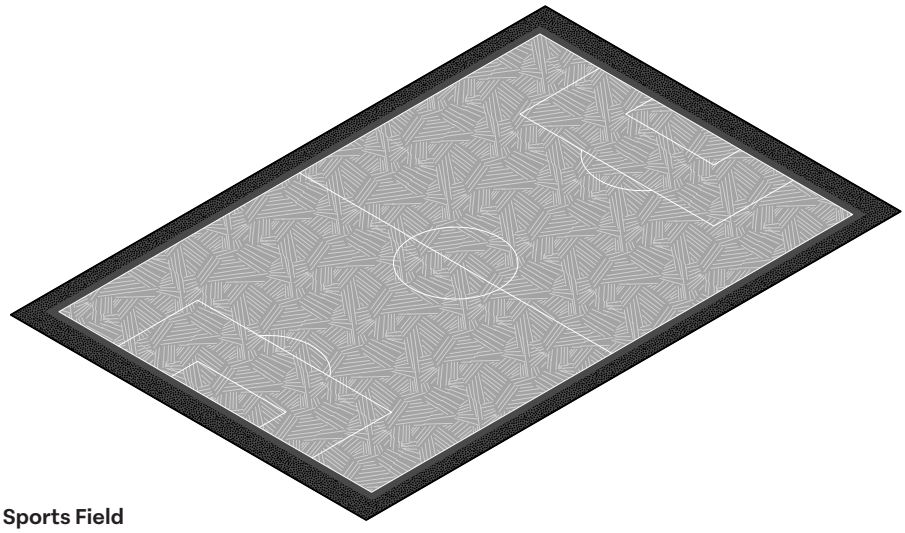
Noise Buffer/ Buffer
Small Footprint



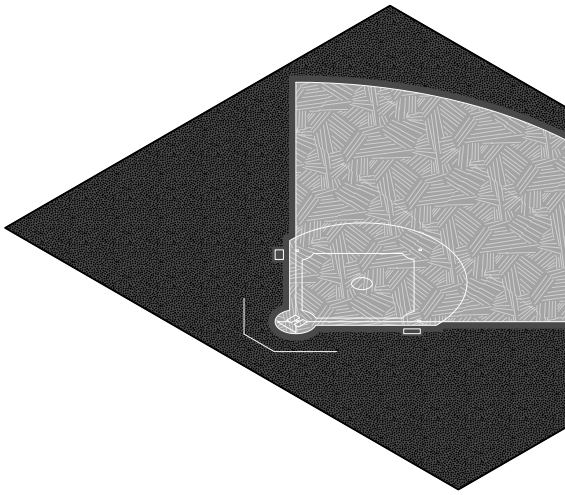
Courtyard
Medium Footprint

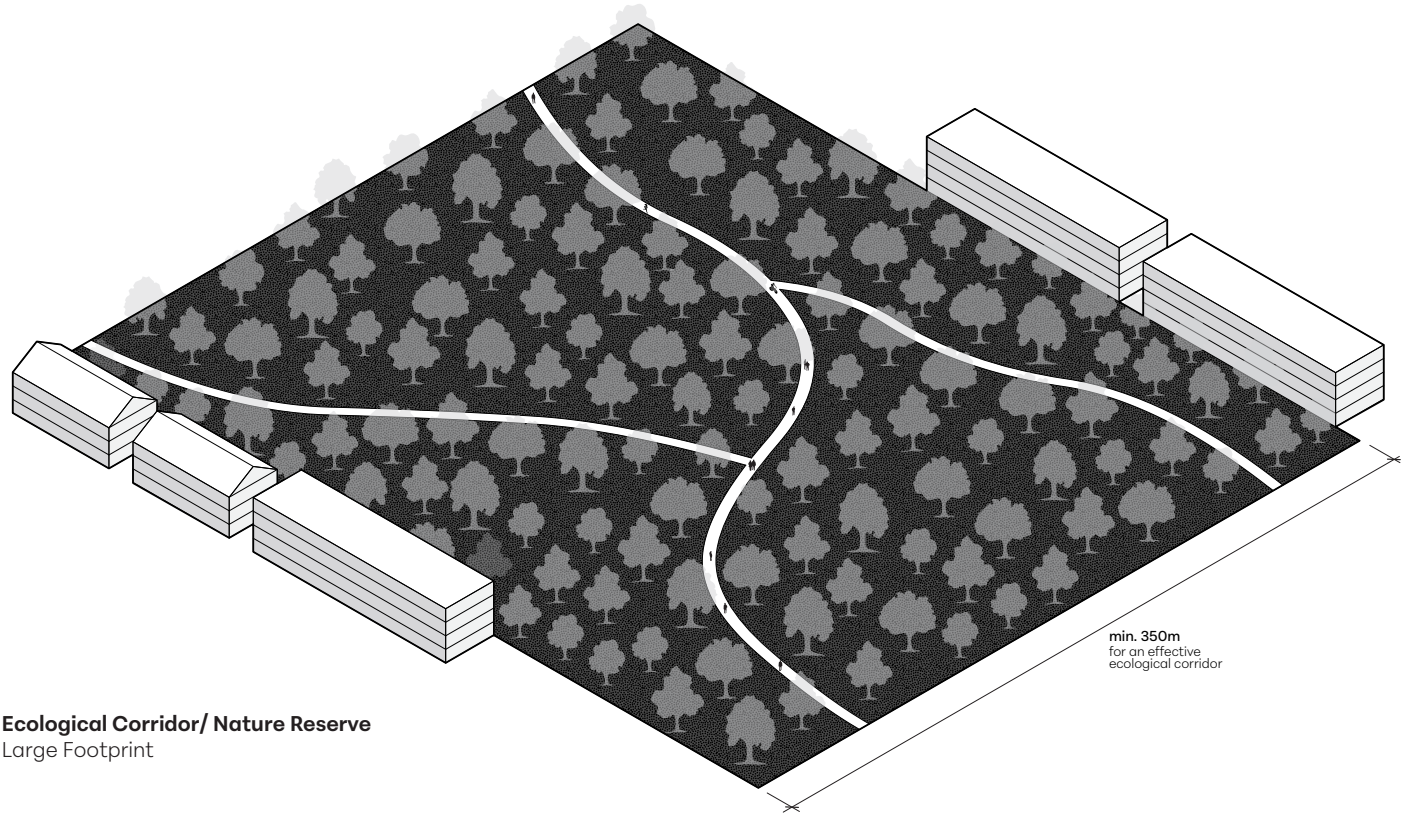


Neighbourhood Park
Medium Footprint

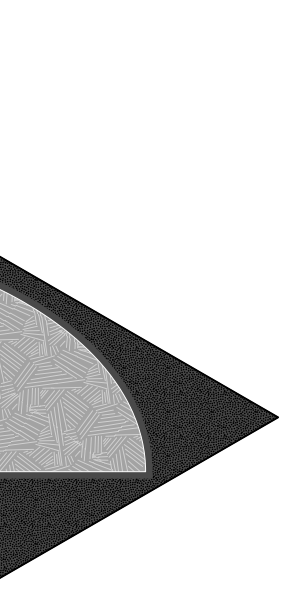


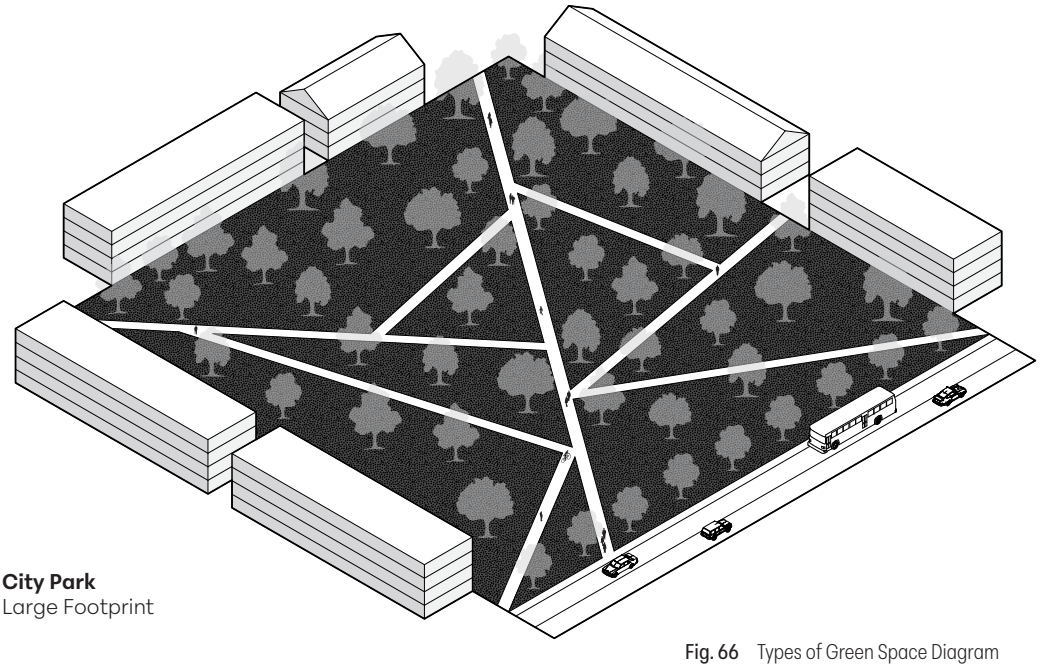
Sports Field
Large Footprint





Ecological Corridor/ Nature Reserve
Large Footprint

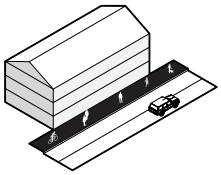




City Park
Large Footprint

Fig. 66 Types of Green Space Diagram

4. Types of Open Space



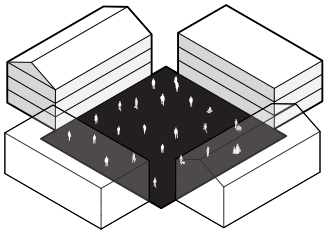
Sidewalk
Low Footprint



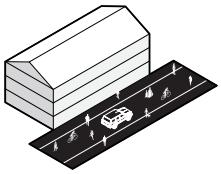
Playground
Low Footprint



Path
Low Footprint

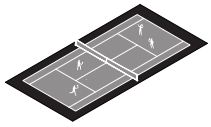


Piazza
Medium Footprint



Civic Street
Medium Footprint

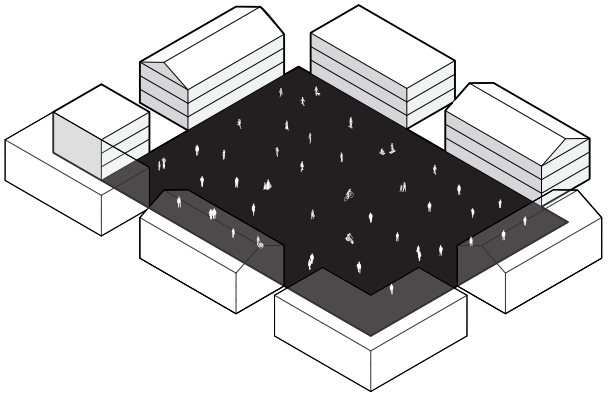




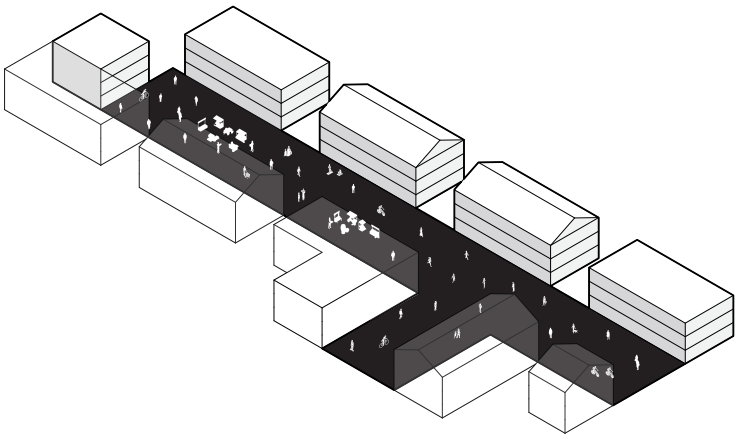
Sports Court
Medium Footprint



Skateboard Park
Medium Footprint

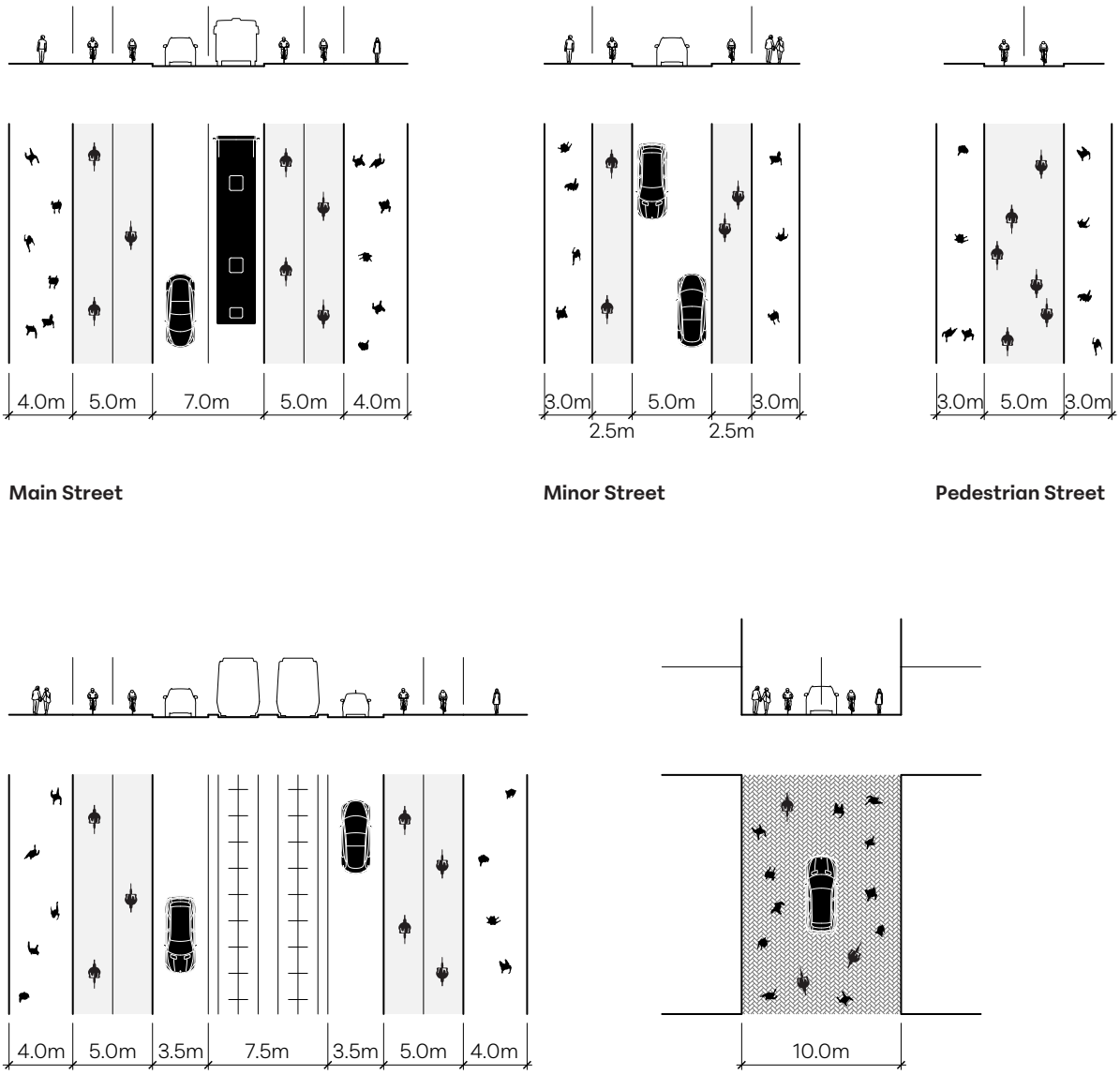


Civic Square
Large Footprint



Pedestrian Street
Large Footprint

Fig. 67 Types of Open Space Diagram



Main Street

Minor Street

Pedestrian Street

Transit Street

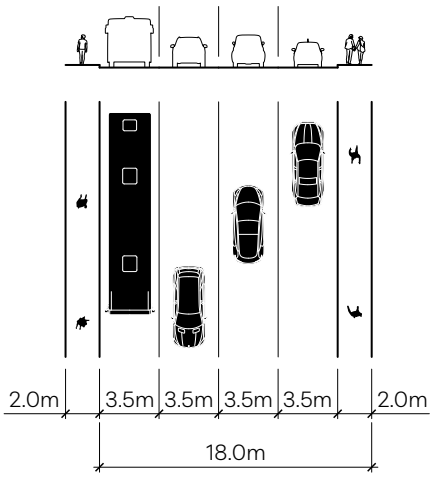
Civic Street

Fig. 68 Green Mobility Diagram

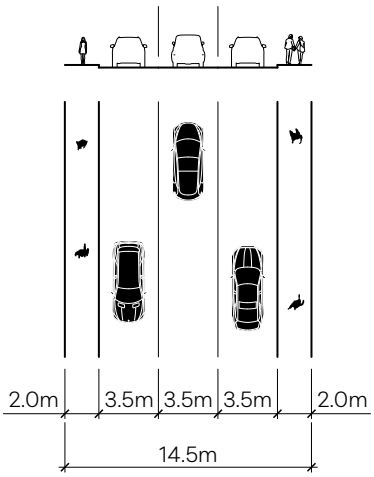
Private Vehicle Infrastructure

Right-of-Way

Maintain

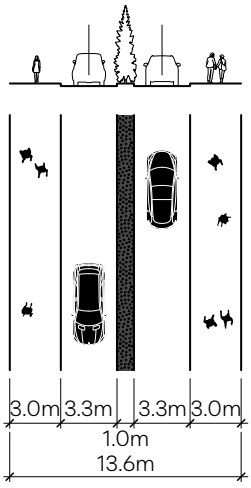


Main Street
40km/h

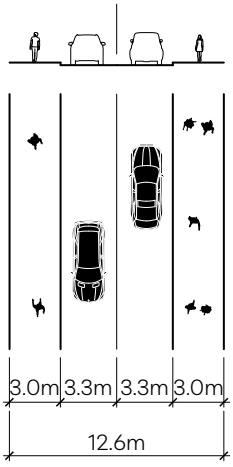


Minor Street
40km/h

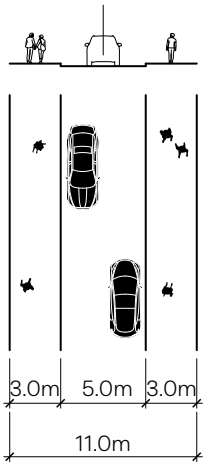
Minimize



Main Street
30km/h



Minor Street
30km/h



Local Street
5-10km/h

Fig. 69 Private Vehicle Infrastructure Diagram

The primary design considerations and strategies illustrated above will be used in to create various iterations of potential futures for the Cambridge SmartCentre. Combinations of these approaches will be used to test multiple outcomes of the site that encourage the transformation of the site into a community that integrates residential density, reliable transportation, and local amenities, and access essential services within walking distance.

Ch.5: **Cambridge SmartCentre Transformations**

The following pages contain design options for the Cambridge SmartCentre site. They take strategies and approaches described above to explore alternative futures for the site that integrates diverse housing types, public open and green space, and alternative transportation methods.

5.1 **Understanding the Site**

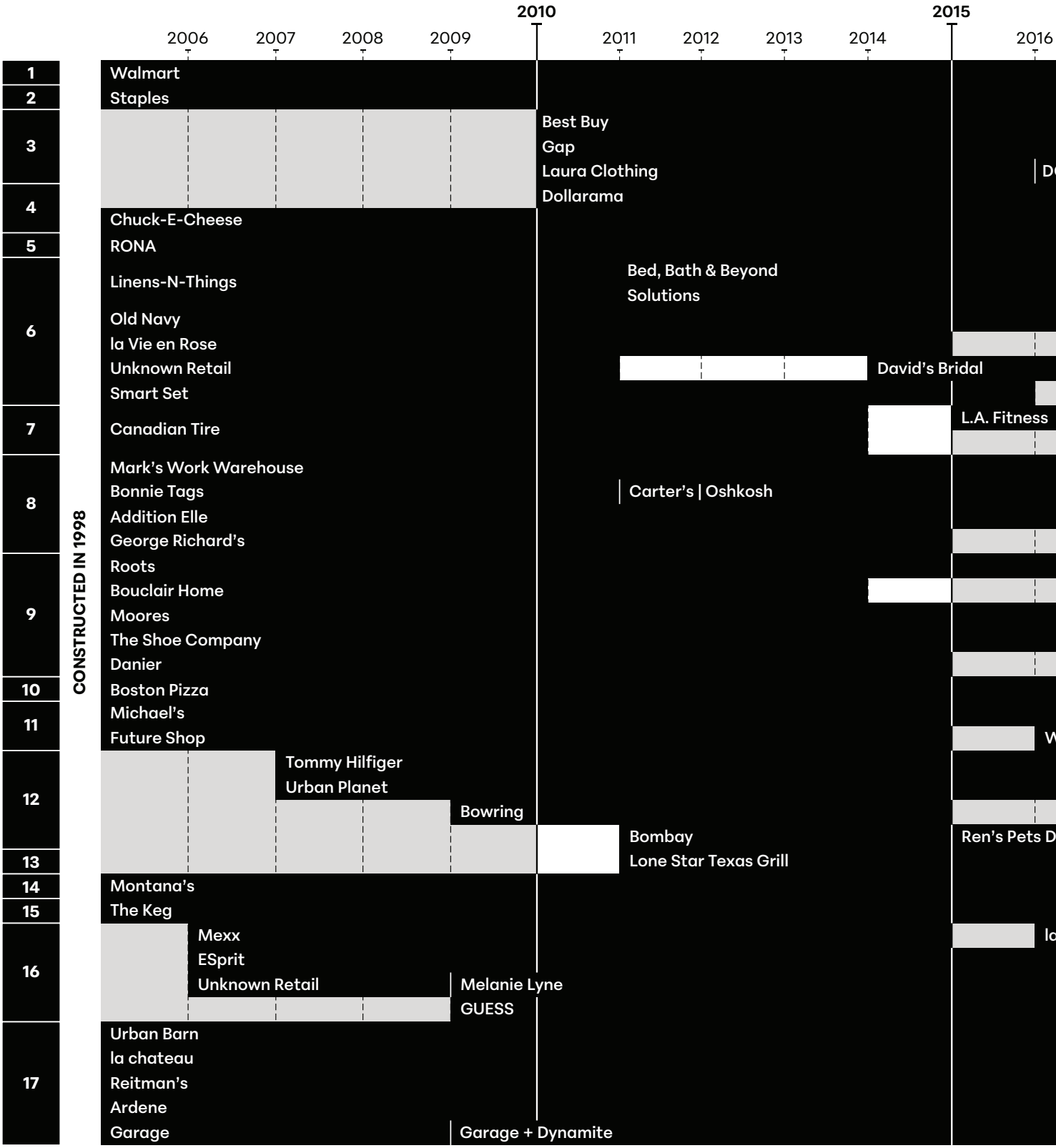
As the Cambridge SmartCentre is facing redevelopment into a high-density, mixed-use district, it is important to understand the current condition of the site. Due to the reduced need for in-person shopping and the COVID-19 pandemic, the site is facing increased retail vacancy. However, many of these buildings are still occupied by discount retailers. These stores still serve lower-income individuals and families, as well as providing employment opportunities for many people. Therefore, most design iterations will aim at preserving majority of the commercial buildings. However, due to the simple structural design of the existing big-box retail, constructing residential units above them is not feasible without extensive renovations.

Other urban issues regarding the site are a lack of public open space, low walkability, and underused and vast parking for most days of the week. The site is currently underserviced by public transportation, requiring many shoppers to access the site by car. However, there is the possibility of an LRT stop to be constructed near the SmartCentre. Additionally, there is little to no nature on the site, with planting strips providing some landscaping to the site.



Fig. 70 Cambridge SmartCentre Map

Cambridge SmartCentre Occupancy Timeline



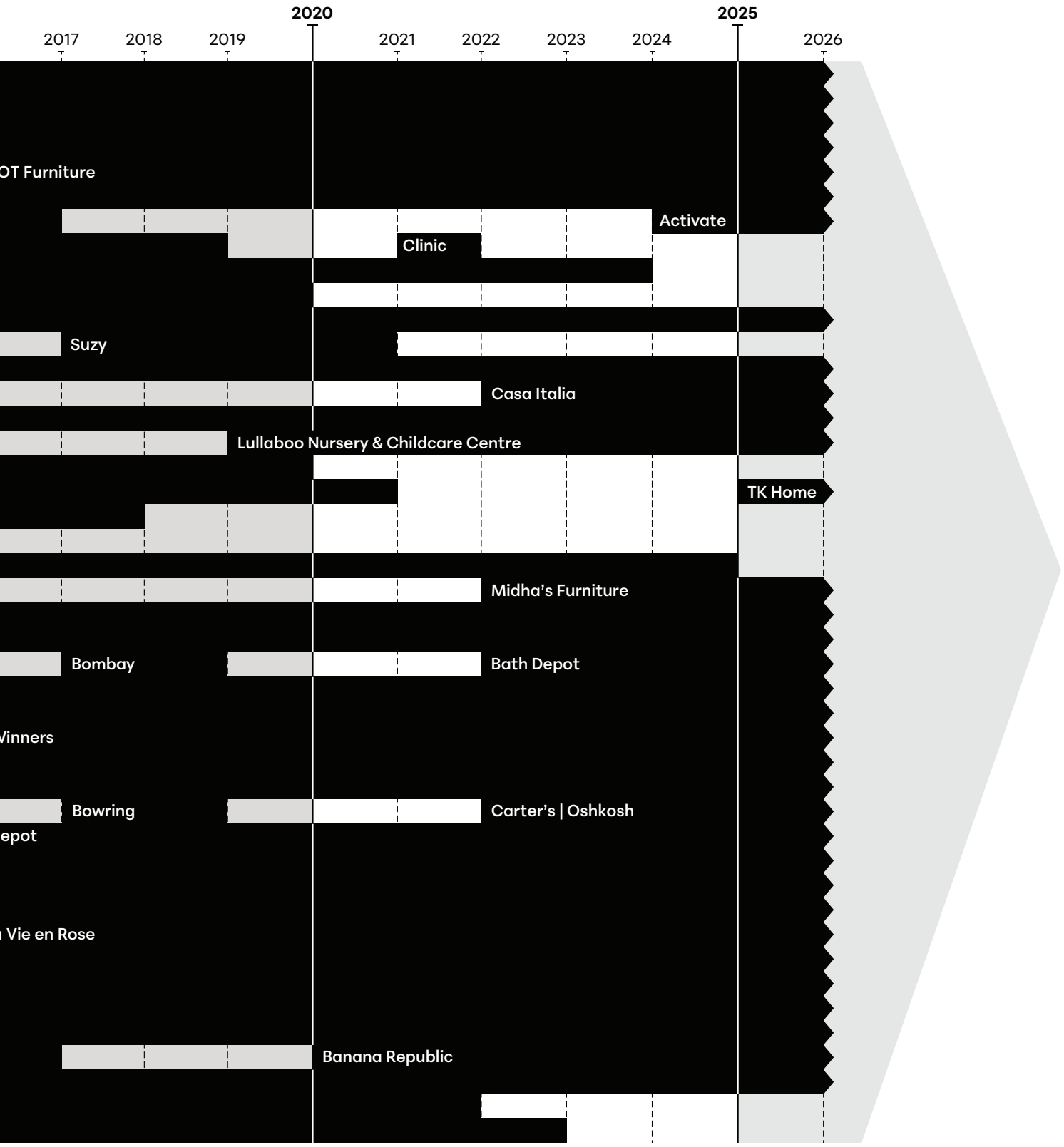
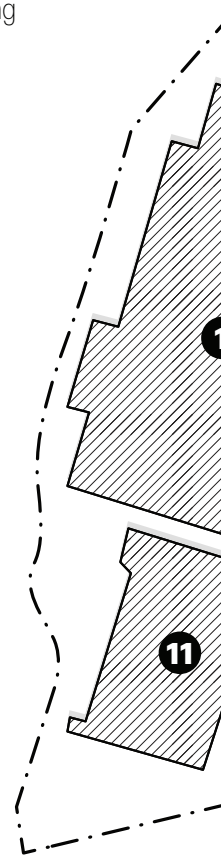


Fig. 71 Occupancy Timeline

Cambridge SmartCentre 2026 Occupancy Plan

1:2500

1	Walmart	Department
2	Staples	Office Supply
3	Best Buy	Electronics
	Gap	Clothing
	DOT Furniture	Furniture
4	Dollarama	Dollar Store
	Activate	Entertainment
5	Vacant *(~11,612m²)*	
6	Vacant *(~2,276m²)*	
	Vacant *(~1,022m²)*	
	Old Navy	Clothing
	Vacant *(~929m2)*	
	David's Bridal	Bridal
	Casa Italia	Furniture
7	L.A. Fitness	Gym
	Lullaboo Nursery & Childcare Centre	Daycare
8	Vacant *(~13,000m²)*	
	Vacant *(~771m²)*	
	Vacant *(~669m²)*	
	Vacant *(687m²)*	
9	Vacant *(~660m²)*	
	Midha's Furniture Gallery	Furniture
	Moores	Clothing
	The Shoe Company	Shoes
	Bath Depot	Bath Supply
10	Boston Pizza	Restaurant
11	Michael's	Arts & Crafts
	Winners	Department
12	Tommy Hilfiger	Clothing
	Urban Planet	Clothing
	Carter's | Oshkosh	Clothing
	Ren's Pets	Pet Supply
13	Lone Star Texas Grill	Restaurant
14	Montana's	Restaurant
15	The Keg	Restaurant
16	La Vie en Rose	Clothing
	Maurices	Clothing
	Melanie Lyne	Clothing
	GUESS	Clothing
	Urban Barn	Furniture
17	Banana Republic	Clothing
	Reitmans	Clothing
	Vacant *(622m²)*	
	Vacant *(669m²)*	



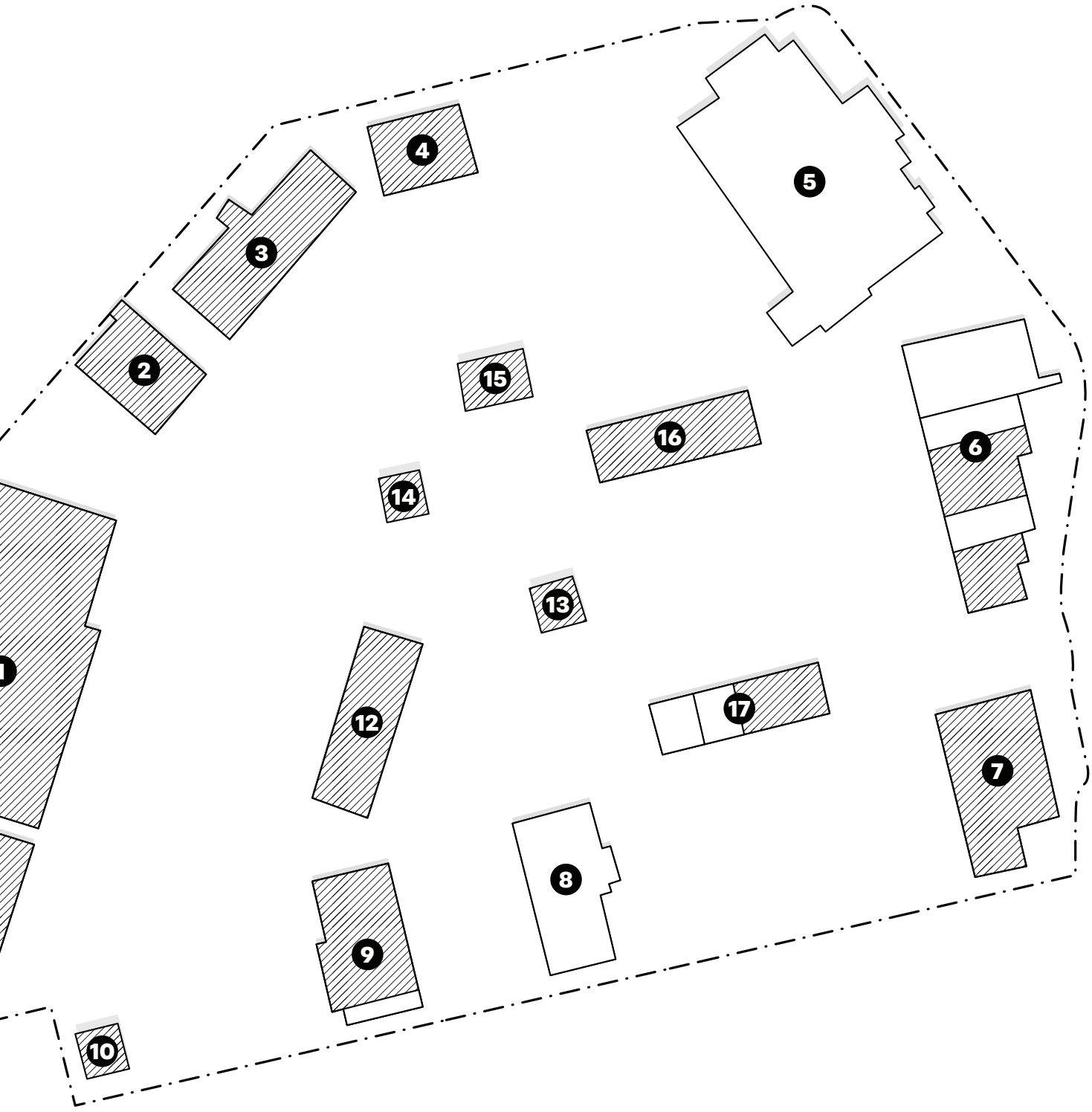


Fig. 72 2026 Occupancy Plan

5.2 **Design Conditions & Responses**

The inclusion of residential to a predominantly commercial area, while maintaining existing infrastructure to support retail uses, many potential conditions emerge. Below illustrates what conditions are created and how new residential development interfaces with existing commercial buildings.

Conditions

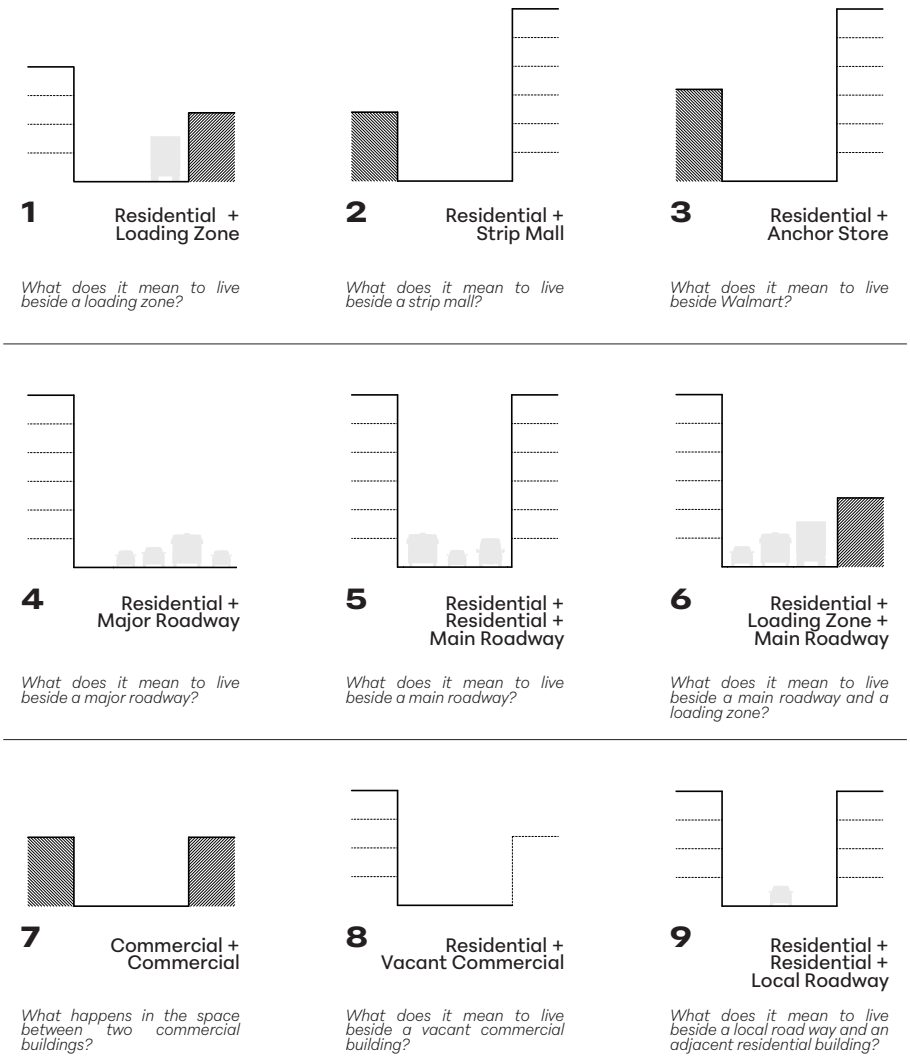
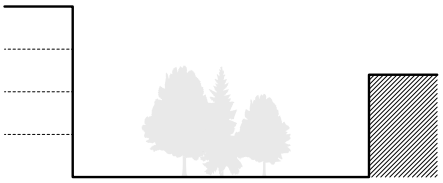


Fig. 73 Design Conditions

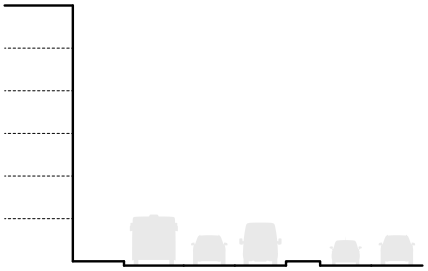
Responses



Green Buffer

1 Residential + Loading Zone

7 Commercial + Commercial

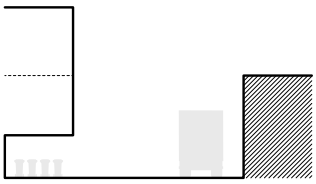


Taller Building near busy street or store

2 Residential + Strip Mall

3 Residential + Anchor Store

4 Residential + Major Roadway

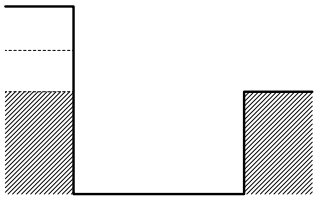


Back of House near Loading Zone

1 Residential + Loading Zone

6 Residential + Loading Zone + Main Roadway

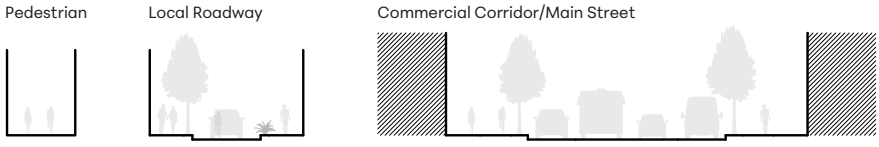
8 Residential + Vacant Commercial



Reinforce Commercial

2 Residential + Strip Mall

3 Residential + Anchor Store



Street Usage/Heirarchy/Traffic Levels

5 Residential + Residential + Main Roadway

9 Residential + Residential + Local Roadway

Fig. 74 Design Responses

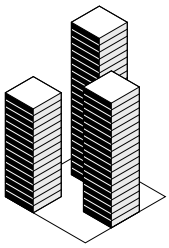
5.3 Site Transformations

The following seventeen design options explore alternative futures for the Cambridge SmartCentre. Each iteration uses a different combination of strategies and considerations to test how various levels of density, housing types, and green and open space can be developed on site.

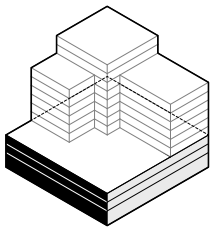
The New Edge City

Based on SmartCentres® REIT's proposal for the Cambridge SmartCentre, The New Edge City demolishes all existing retail buildings and replacing them with high-density residential tower-and-podium developments, supplemented by lower-density townhouse units. This approach represents a complete transformation of the site that prioritizes the economic gain of SmartCentres® REIT.

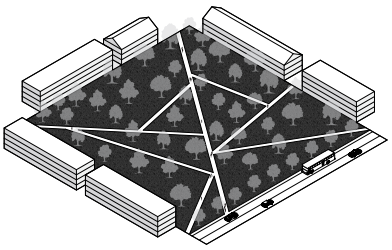
Considerations



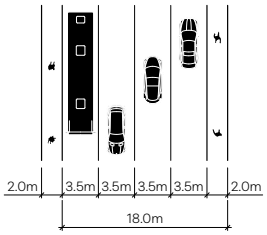
High-Rise



Commercial Podium

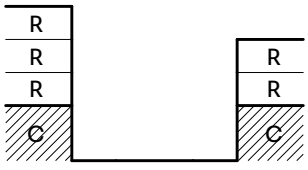


City Park



Existing Street Widths

Strategies



Mixed-Use Development



Fig. 75 The New Edge City Site Plan

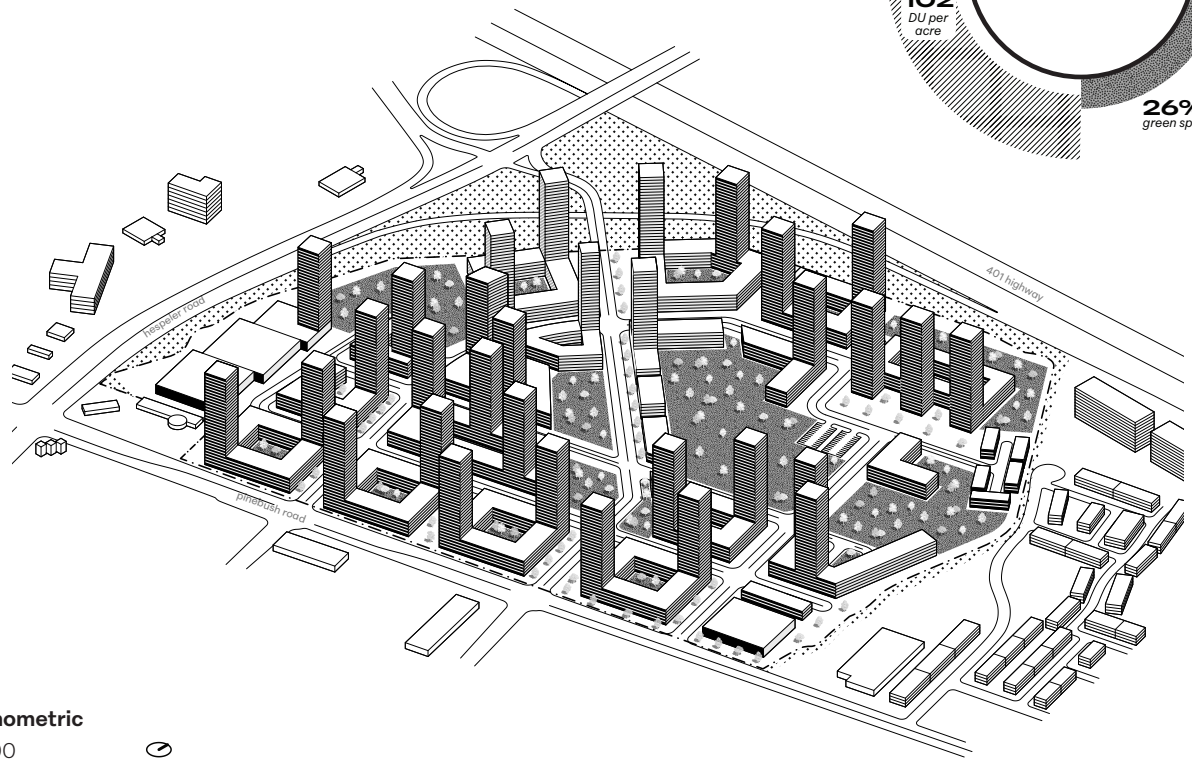
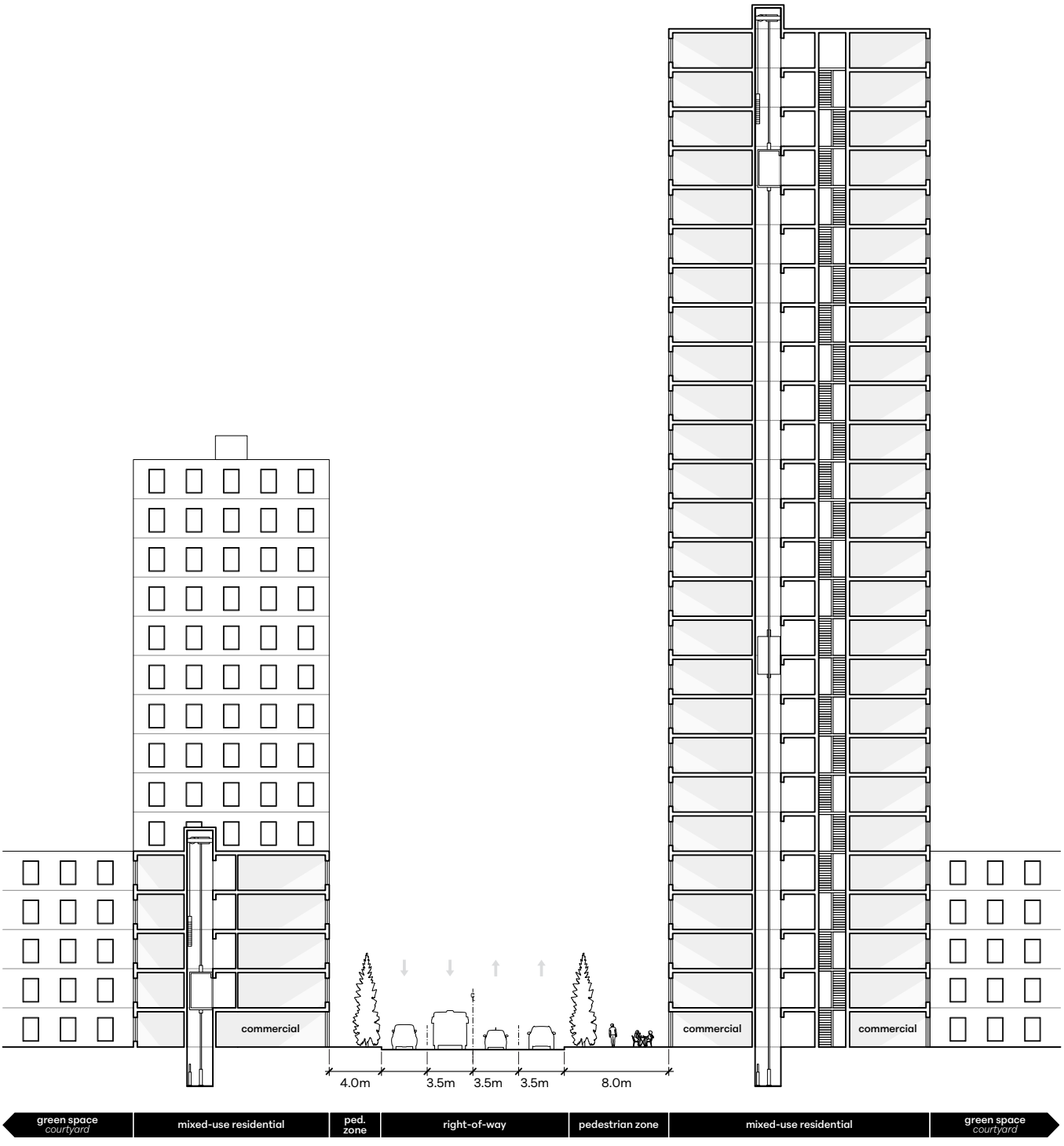
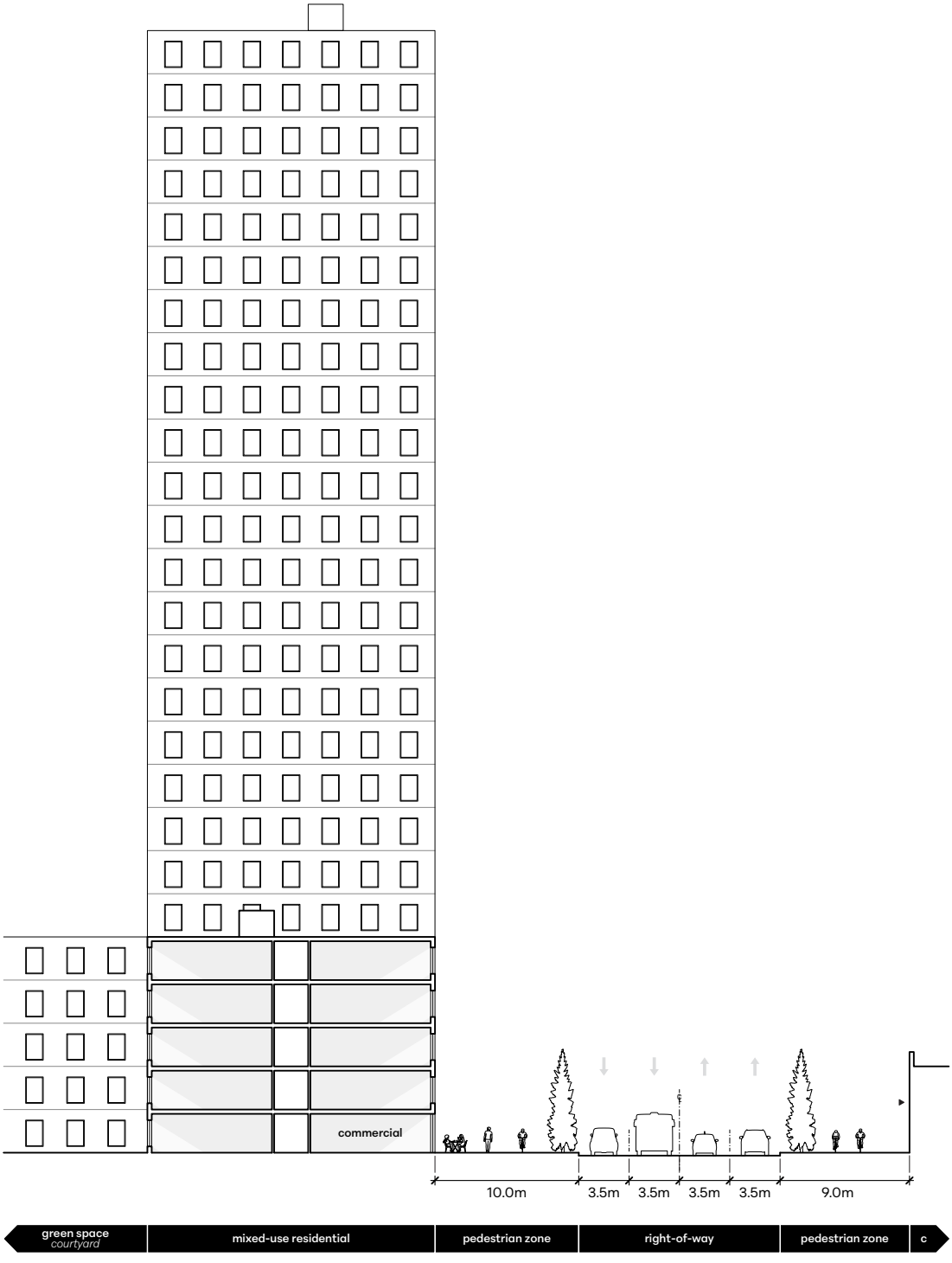


Fig. 76 The New Edge City Axonometric



1:250

Fig. 77 NE/SW Section



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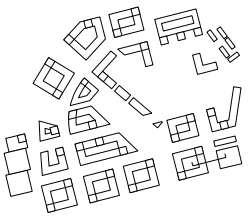
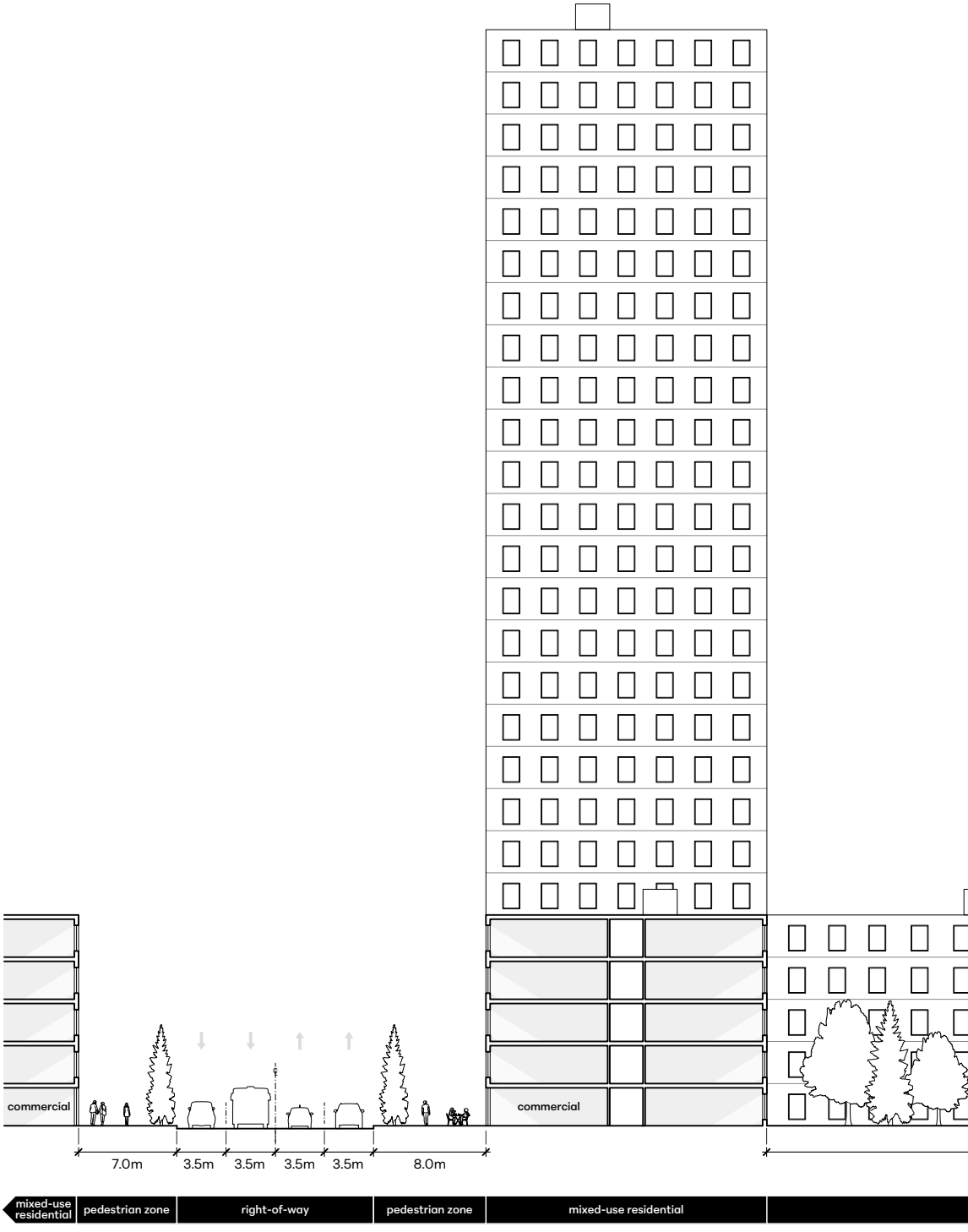
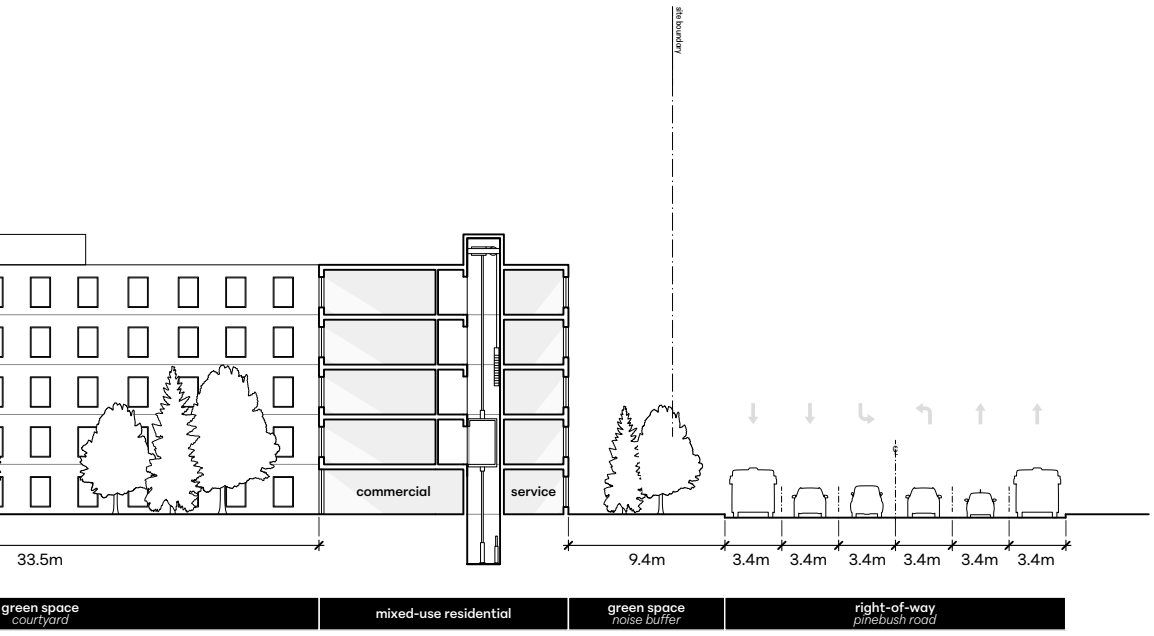


Fig. 78 E/W Section


commercial
commercial
7.0m
3.5m
3.5m
3.5m
3.5m
8.0m
mixed-use residential
pedestrian zone
right-of-way
pedestrian zone
mixed-use residential



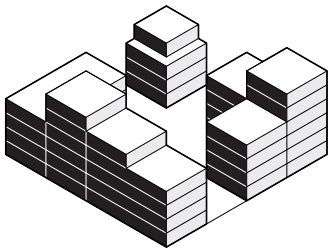
1:250

Fig. 79 Pinebush Road Site Section

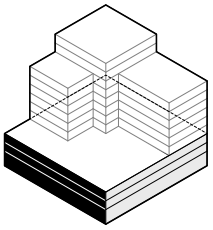
The Urban Village

The Urban Village explores a site design that retains all existing commercial buildings and roadways. To accommodate new development, all existing surface parking lots would be redeveloped with mixed-use residential buildings.

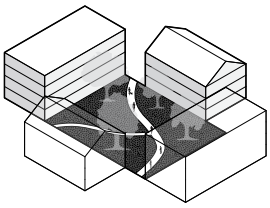
Considerations



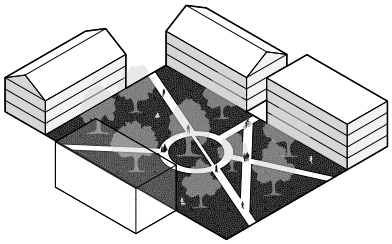
Mid-Rise



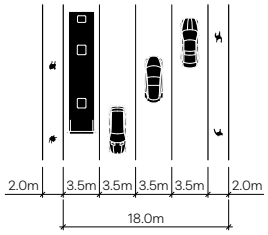
Commercial Podium

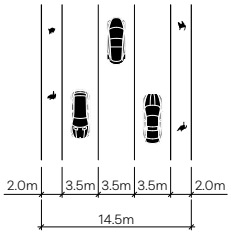


Courtyard



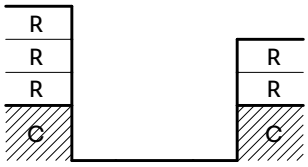
Neighbourhood Park



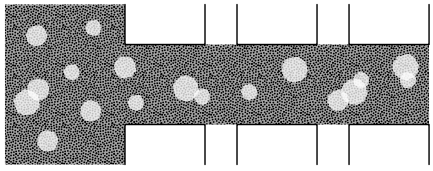


Existing Street Widths

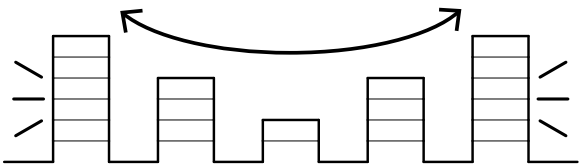
Strategies



Mixed-Use Development



Continuous Green Space



Taller Perimeter Buildings



Fig. 80 The Urban Village Site Plan

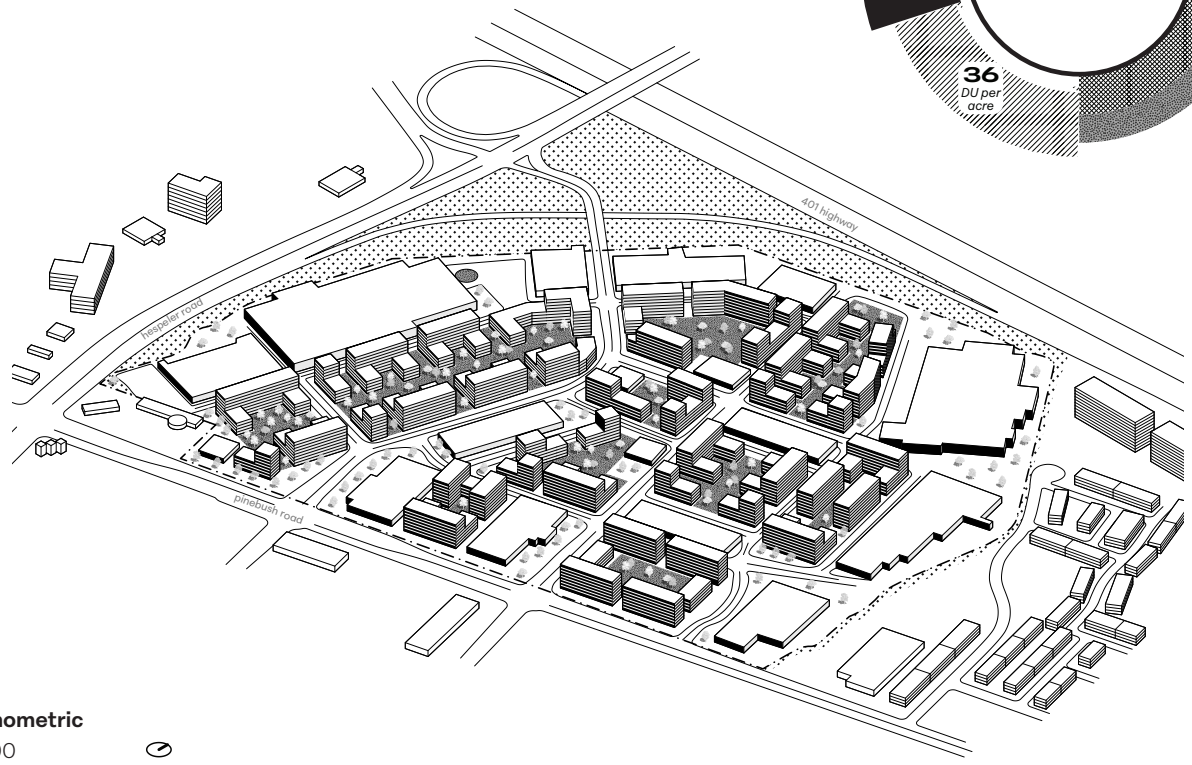
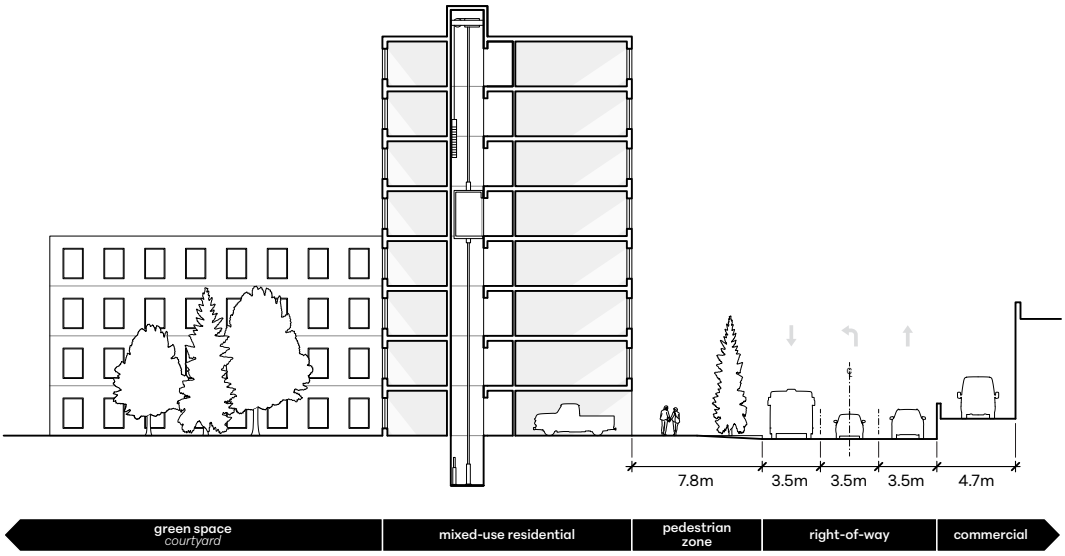


Fig. 81 The Urban Village Axonometric



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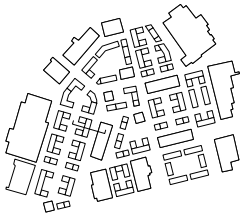
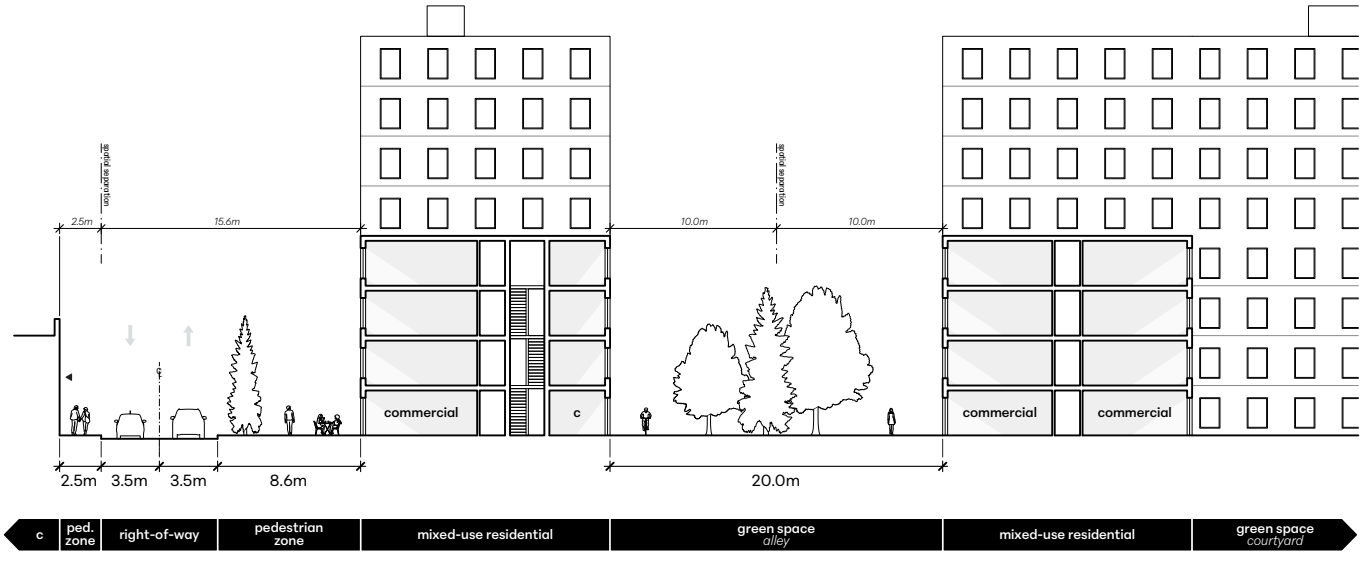


Fig. 82 NW/SE Section



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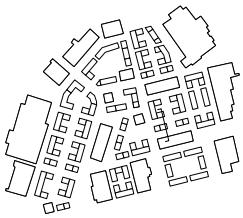
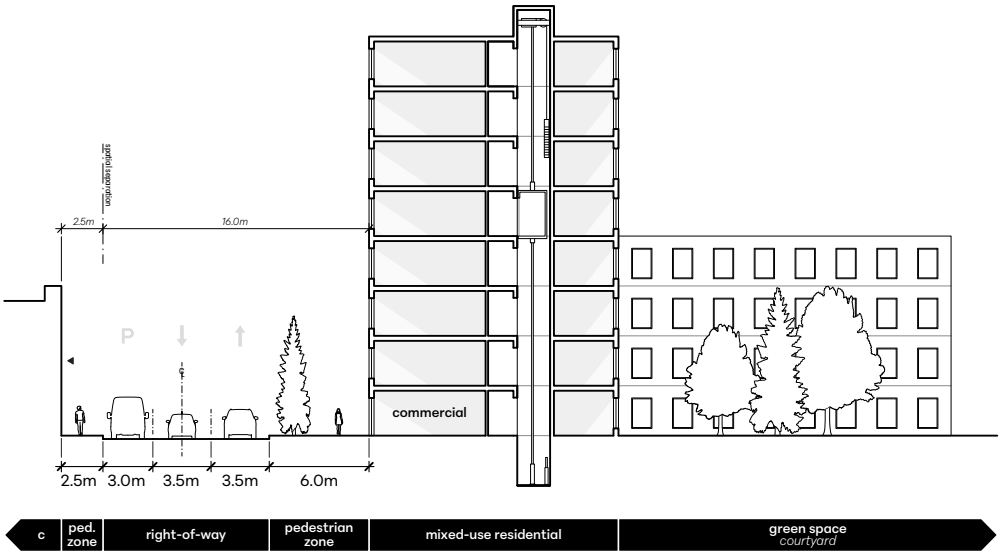


Fig. 83 N/S Section



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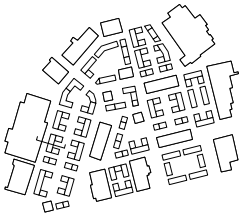
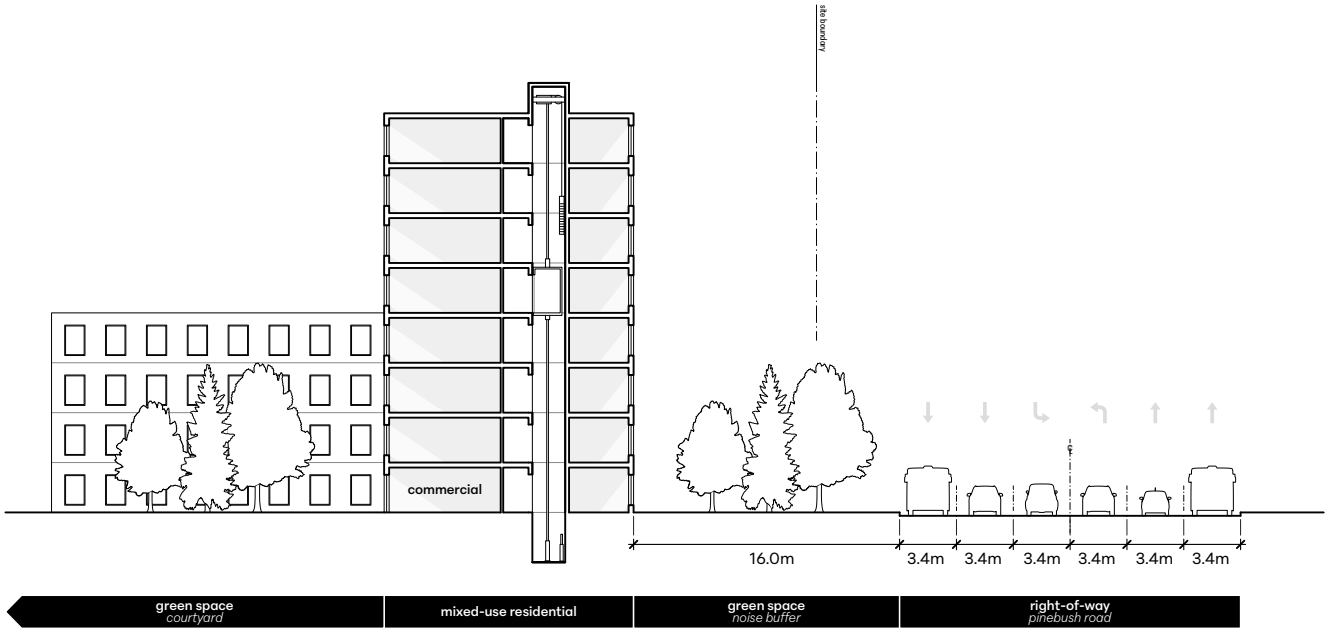


Fig. 84 E/W Section



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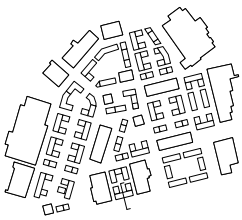


Fig. 85 Pinebush Road Section



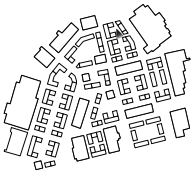
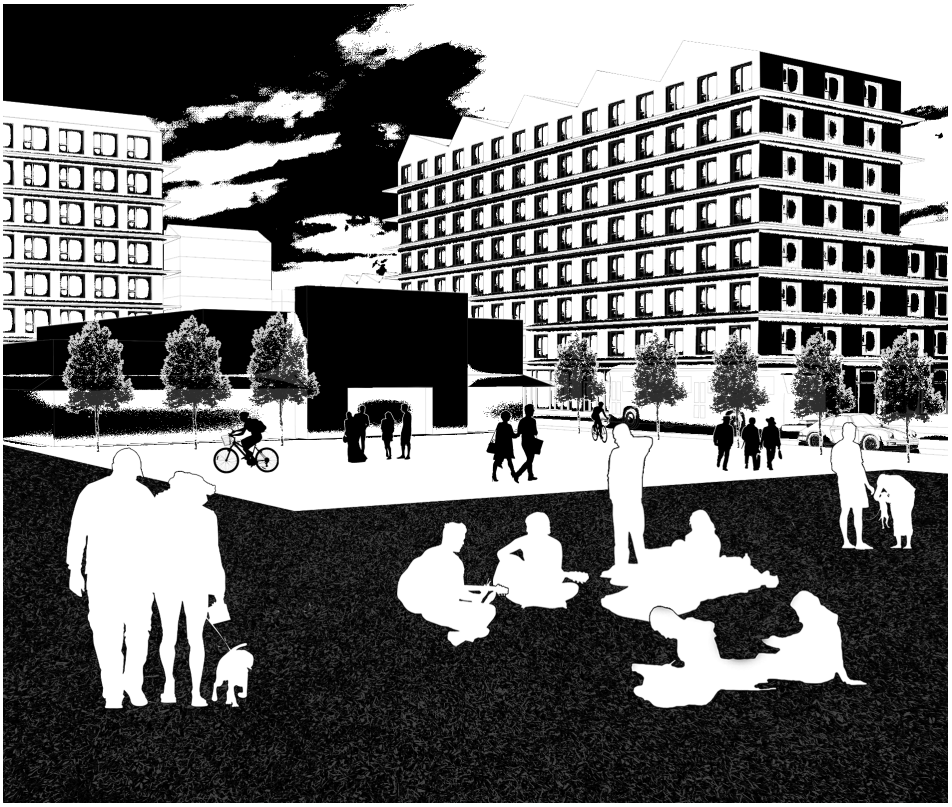


Illustration of continuous courtyard space.

Fig. 86 Courtyard Vignette



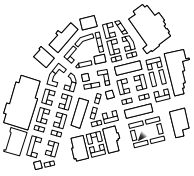
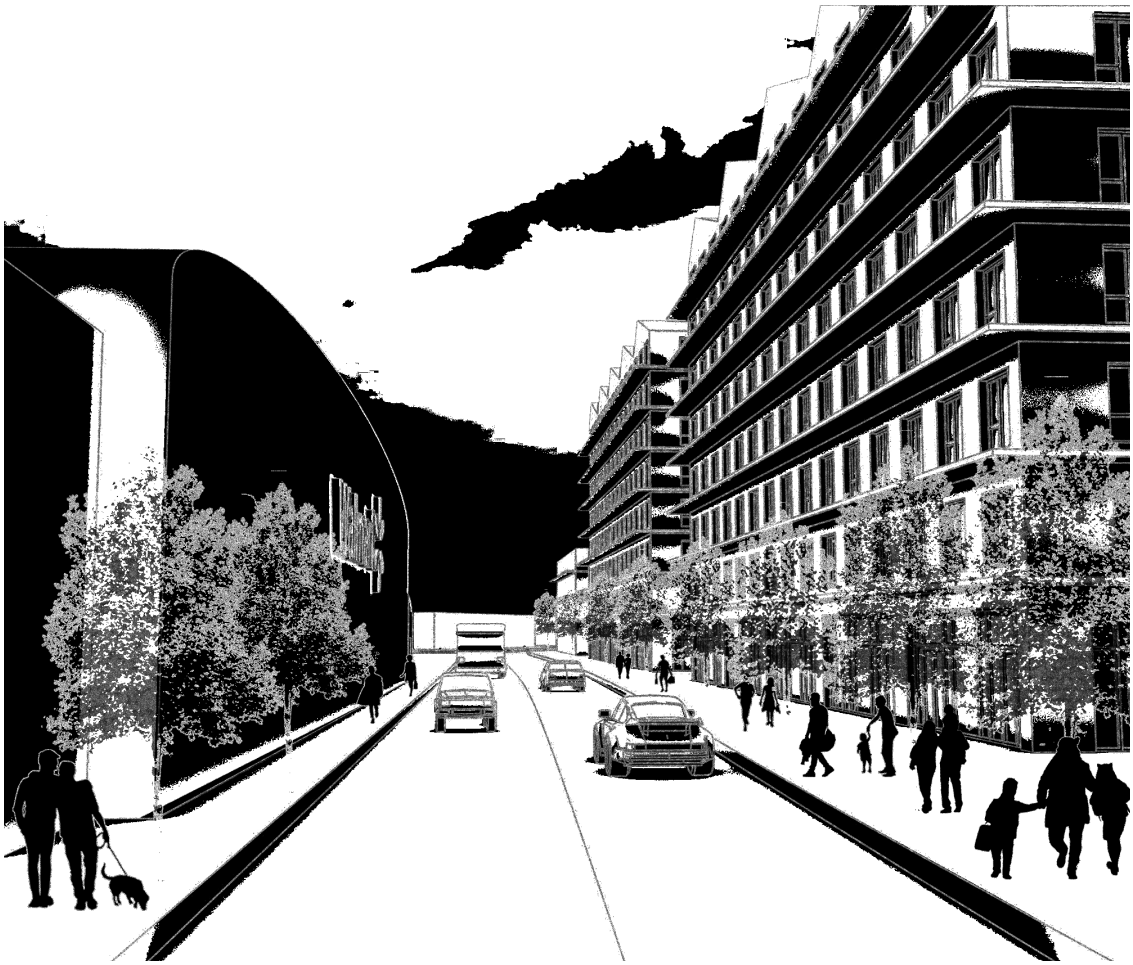


Illustration of pubic open and green space adjacent to an existing retailer.

Fig. 87 Open & Green Space Vignette



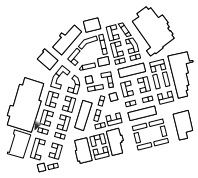


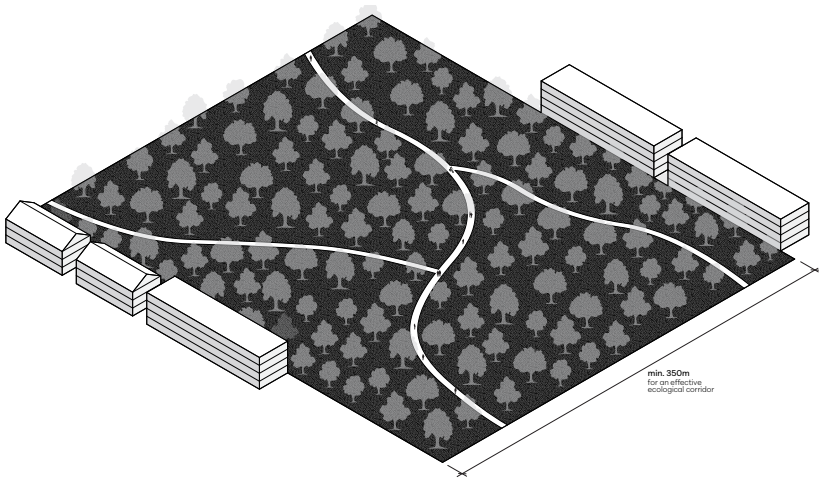
Illustration of relationship between Walmart and adjacent residential buildings.

Fig. 88 Walmart Right-of-Way Vignette

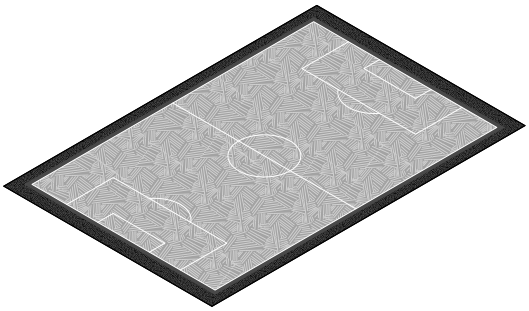
The Park

To reconsider the site's future use, The Park explores a redevelopment concept that transforms the property into a park and outdoor recreation destination. While all existing retail buildings are retained, the surface parking lots are replaced with a large park and various sports courts and fields. This approach significantly increases the site's green space while preserving its commercial infrastructure.

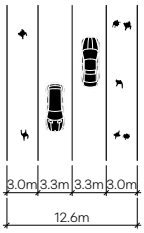
Considerations



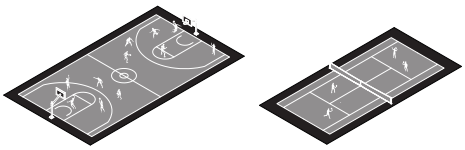
Ecological Corridor/ Nature Reserve



Sports Fields

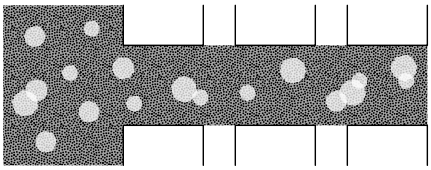


Minimized Street Widths

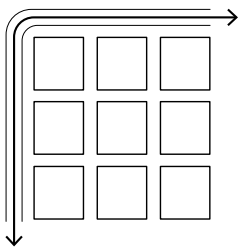


Sports Courts

Strategies



Continuous Green Space

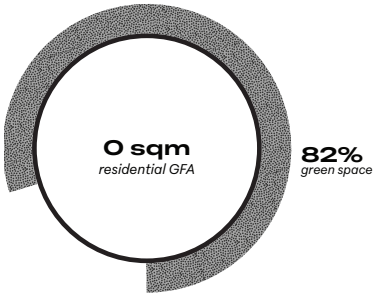


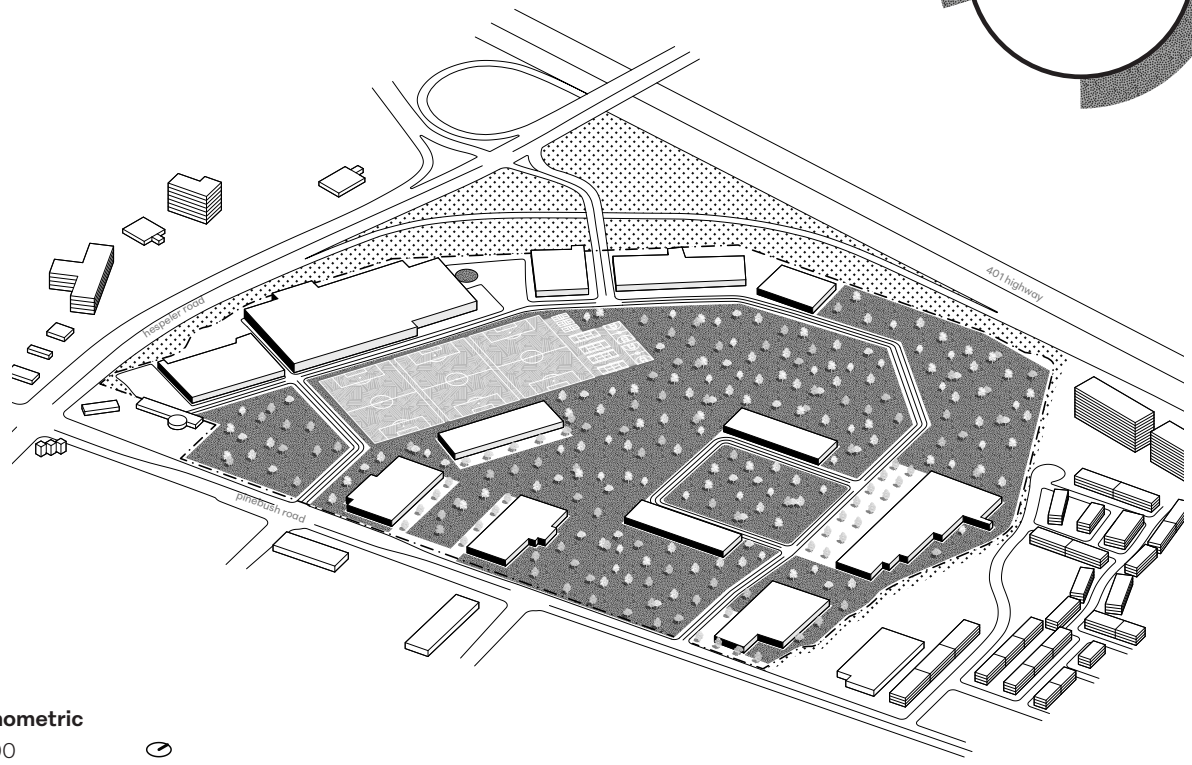
Outer Ring Road



Site Plan
1:2500

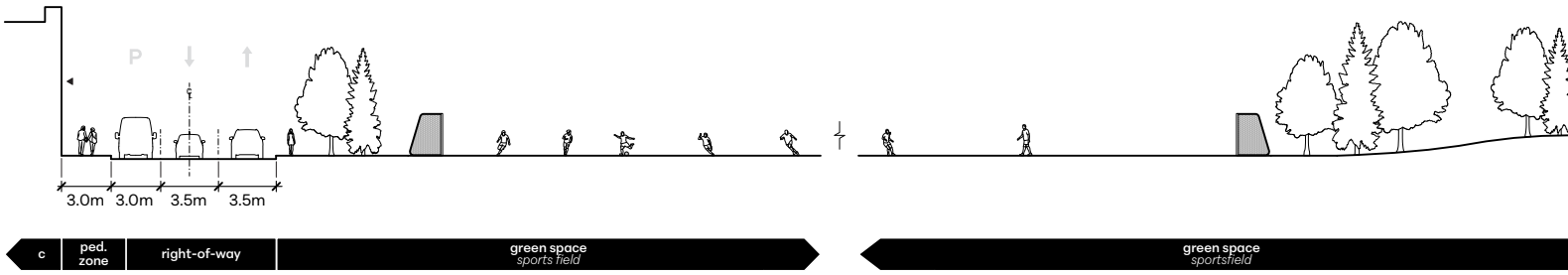
Fig. 89 The Park Site Plan





Axonometric
1:2500

Fig. 90 The Park Axonometric


P
3.0m
3.0m
3.5m
3.5m
c
ped. zone
right-of-way
green space
sports field
green space
sportsfield

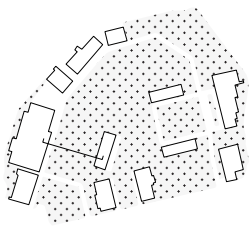
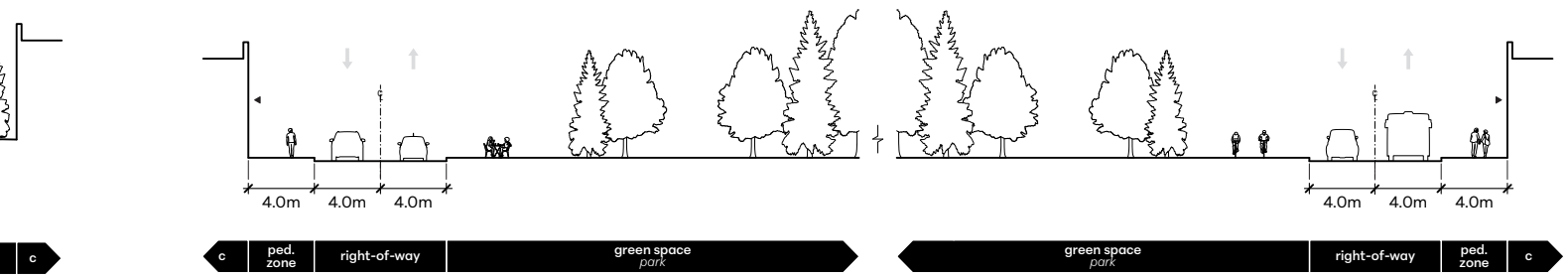


Fig. 91 E/W



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V Section

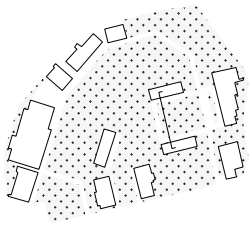
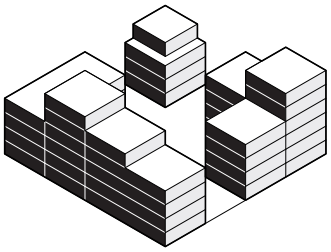


Fig. 92 N/S Section

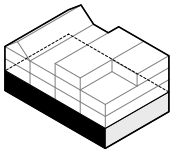
The Village in the Park

The Village in the Park redevelops most of the existing parking lots into green space while incorporating mid-rise residential buildings adjacent to the existing retail areas. This approach reflects the principle of creating a livable mixed-use community by ensuring residents have convenient, walkable access to everyday amenities and services.

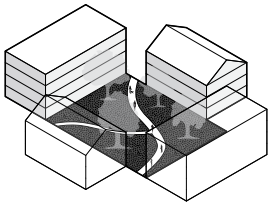
Considerations



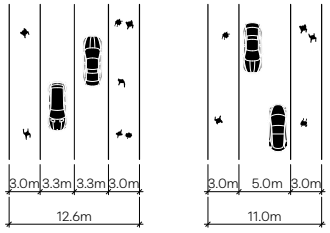
Mid-Rise



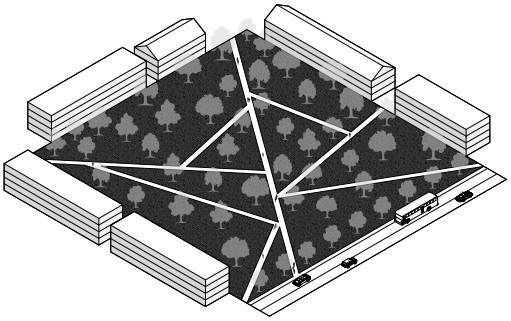
Commercial Floor



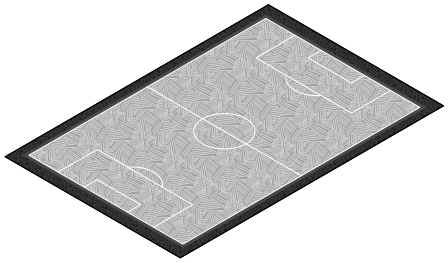
Courtyard



Minimized Street Widths

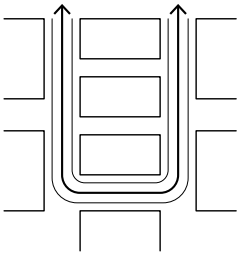


City Park

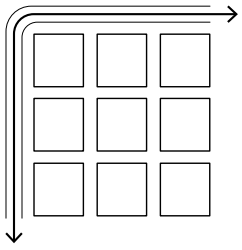


Sports Fields

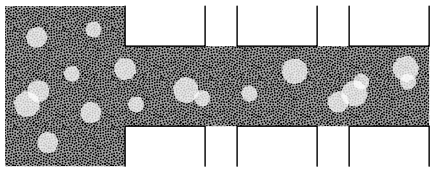
Strategies



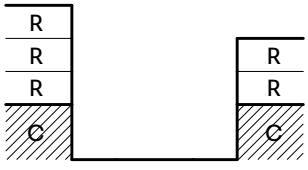
Play Streets



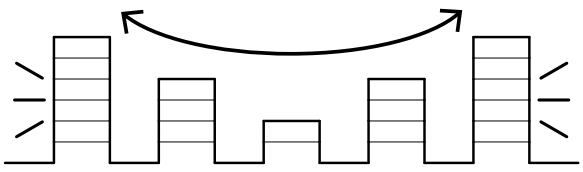
Outer Ring Road



Continuous Green Space



Mixed-Use Development



Taller Perimeter Buildings



Fig. 93 The Village in the Park Site Plan

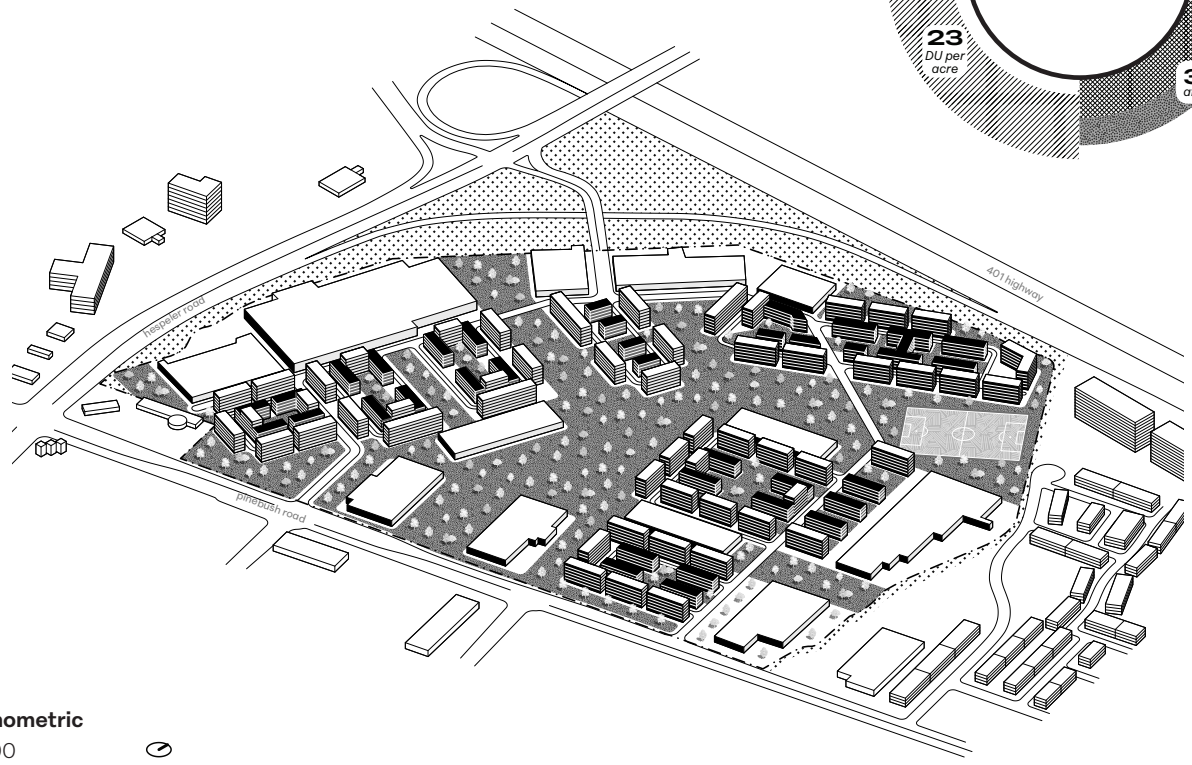
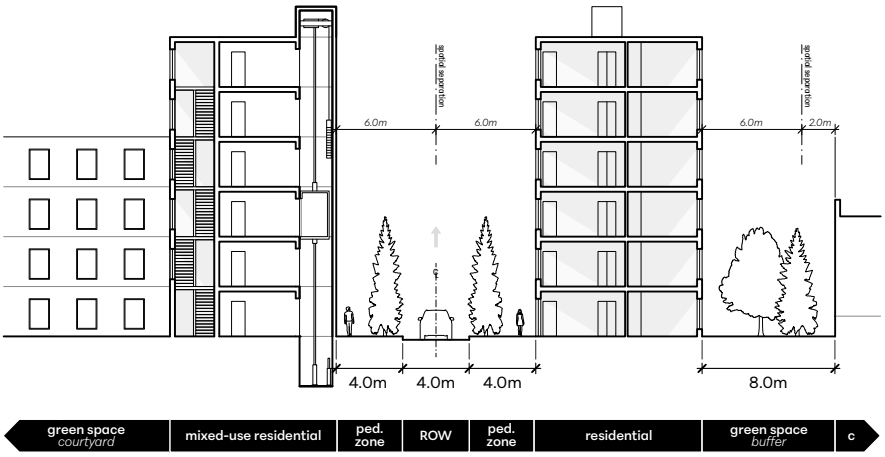


Fig. 94 The Village in the Park Axonometric



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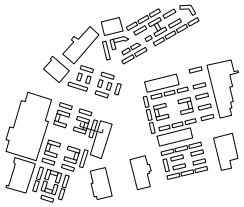
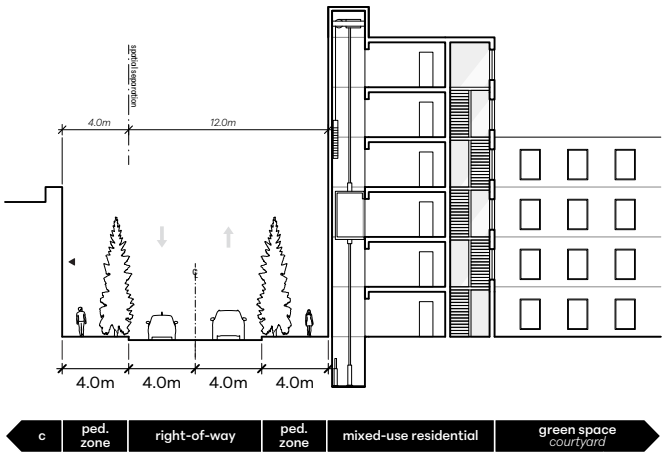
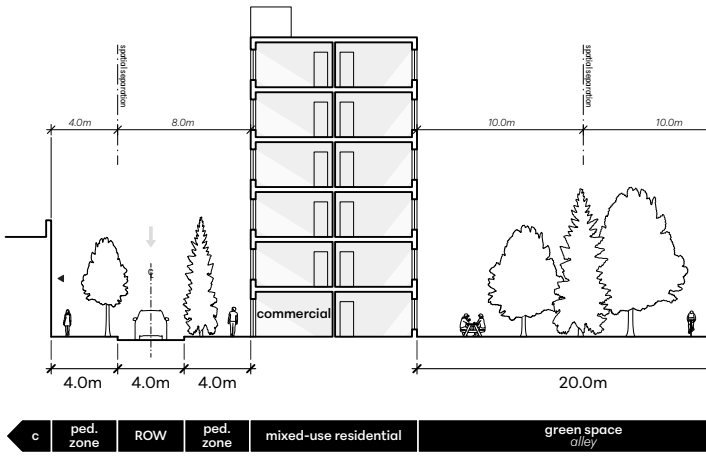


Fig. 95 E/W Section A





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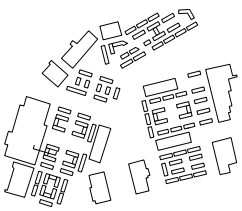


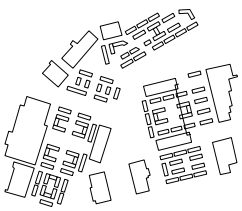
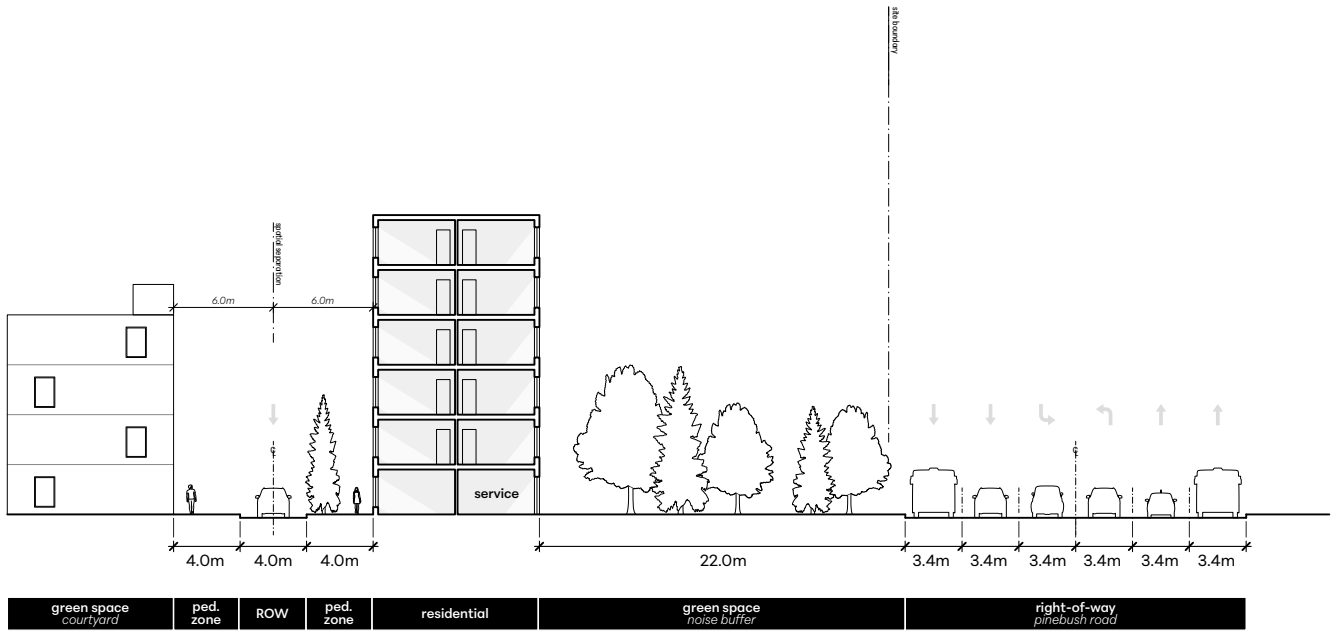


Fig. 96 E/W Section B



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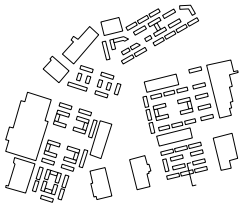

Fig. 97 Pinebush Road Section

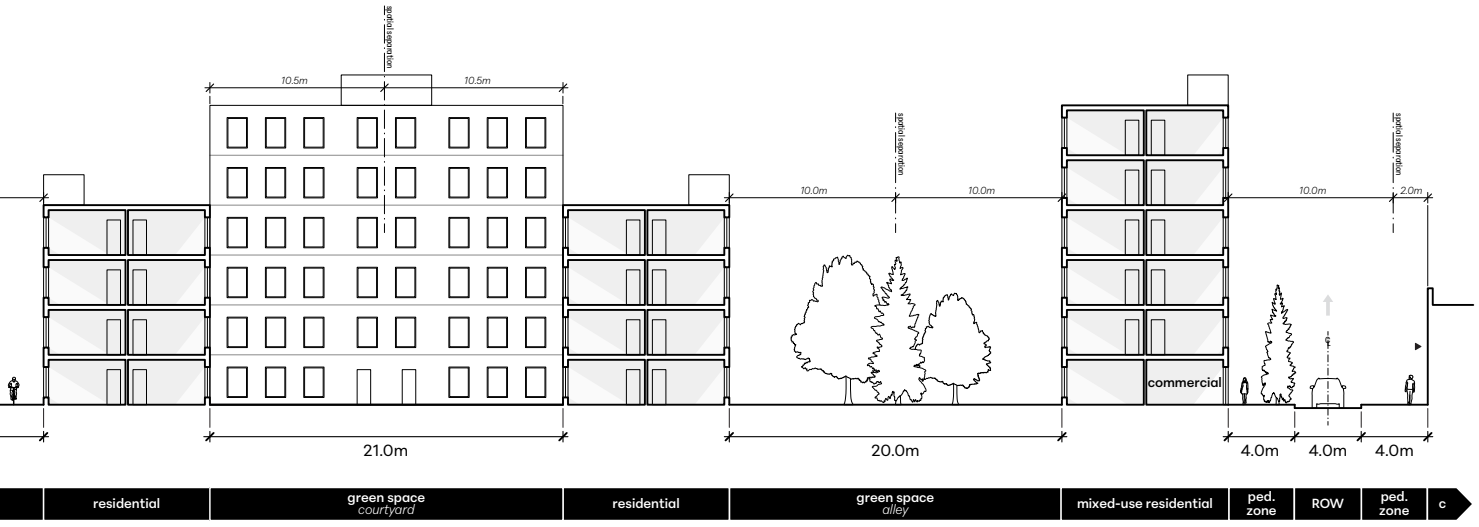

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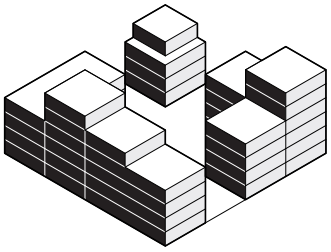
Fig. 98 N/S Section

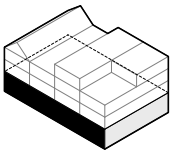
The Mid-Rise District

To increase access to the Cambridge SmartCentre, The Mid-Rise District integrates a potential LRT expansion onto the site. The site design retains most of the existing retail spaces, however, the buildings used for food service (i.e. Montana's, The Keg, and Boston Pizza) and the vacant RONA building have been removed to provide more space for mixed-use residential development. Vehicle circulation paths, although maintained, rights-of-way widths have been reduced to calm traffic.

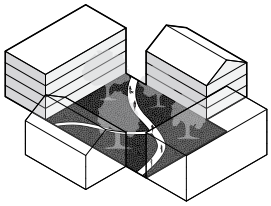
Considerations



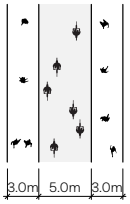
Mid-Rise



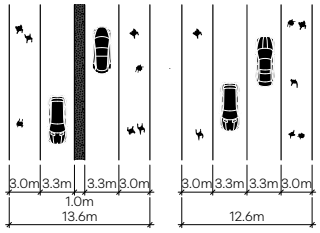
Commercial Floor



Courtyard

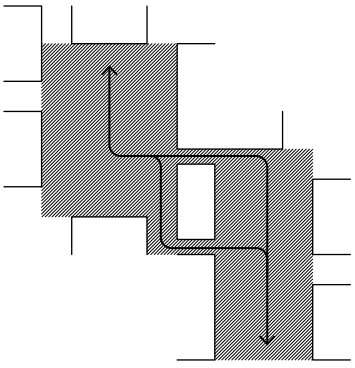


Pedestrian ROWs

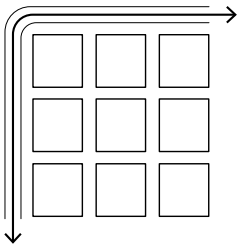


Minimized Street Widths

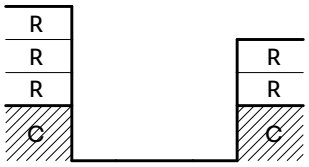
Strategies



Continuous Green Space



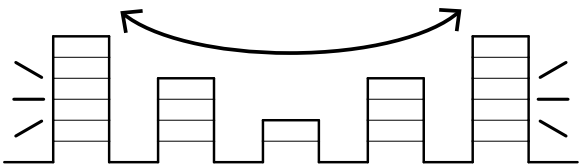
Outer Ring Road



Mixed-Use Development



Active Ground Floors



Taller Perimeter Buildings

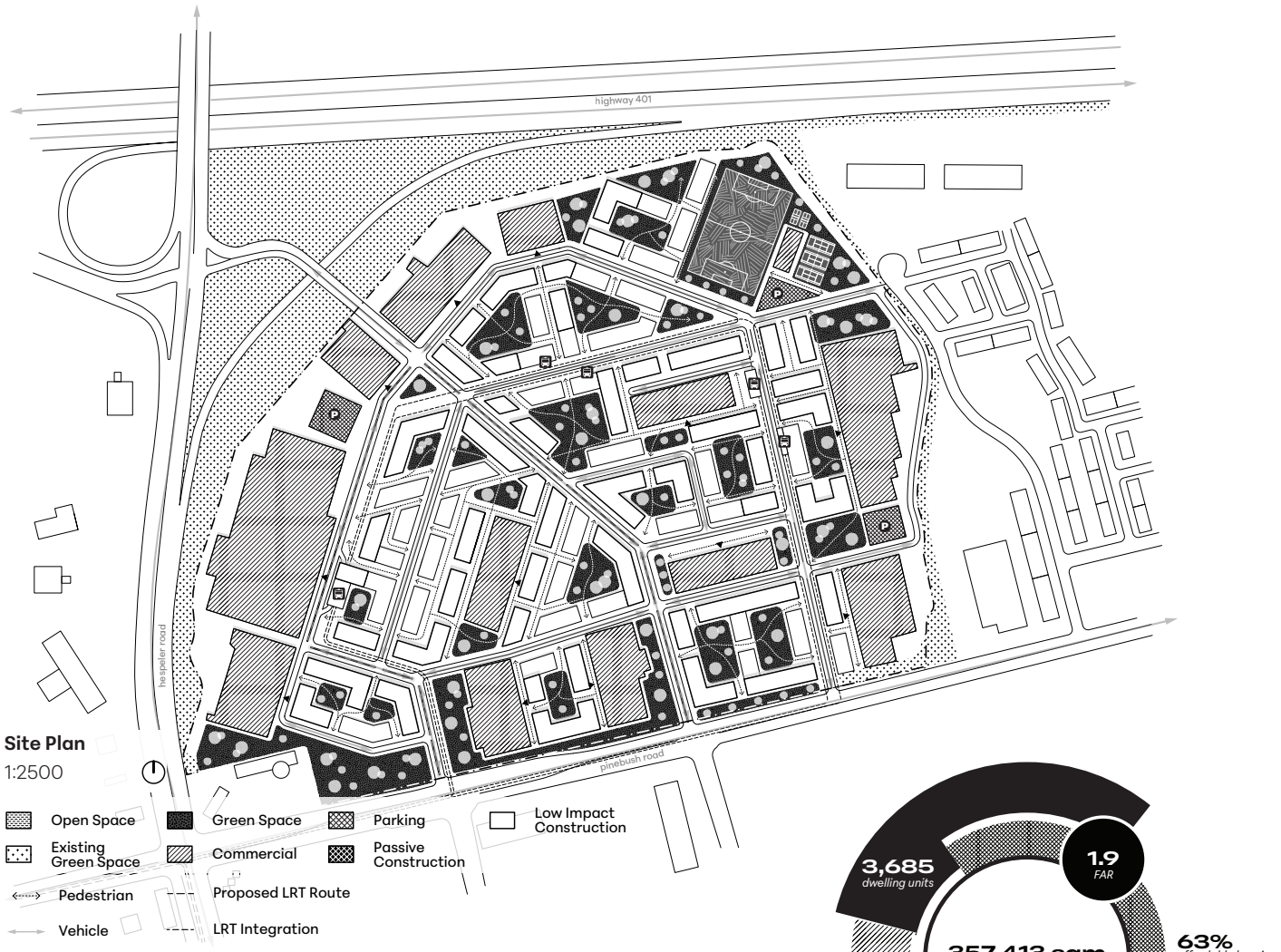


Fig. 99 The Mid-Rise District Site Plan

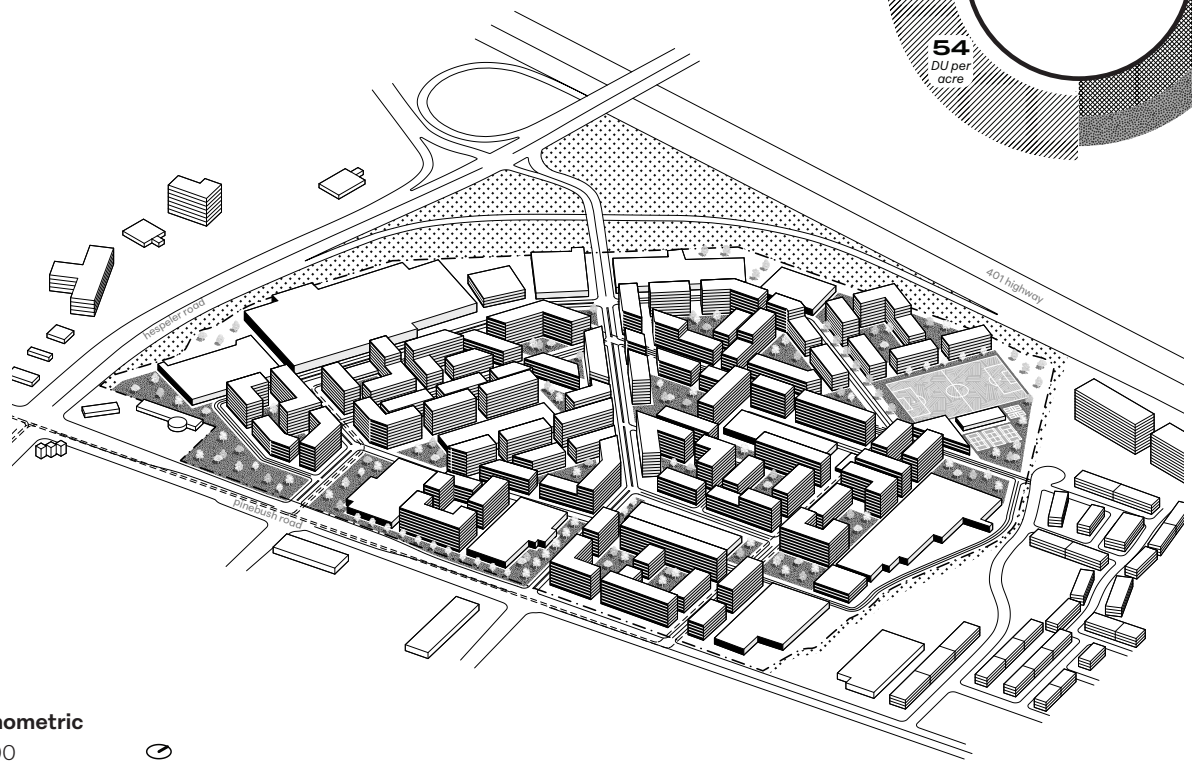
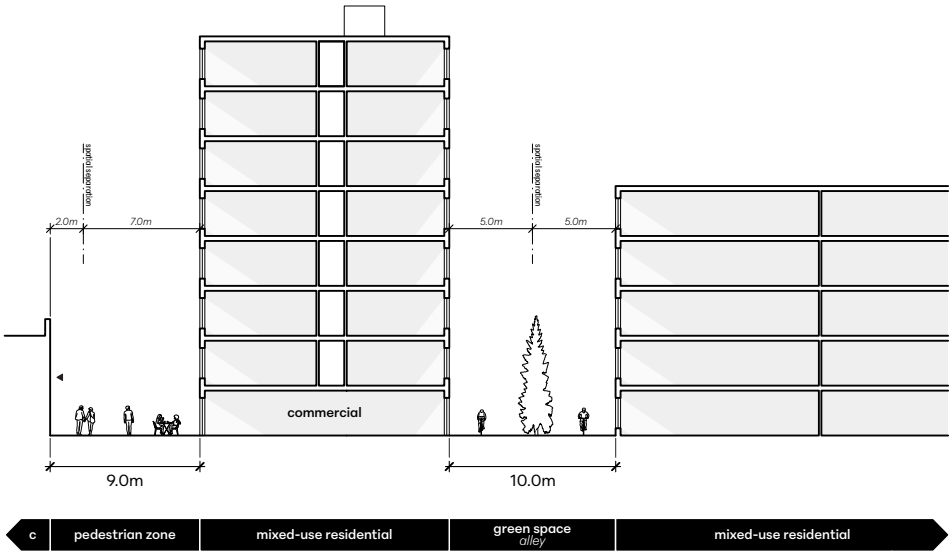


Fig. 100 Mid-Rise District Axonometric



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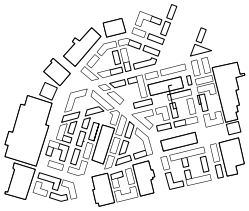
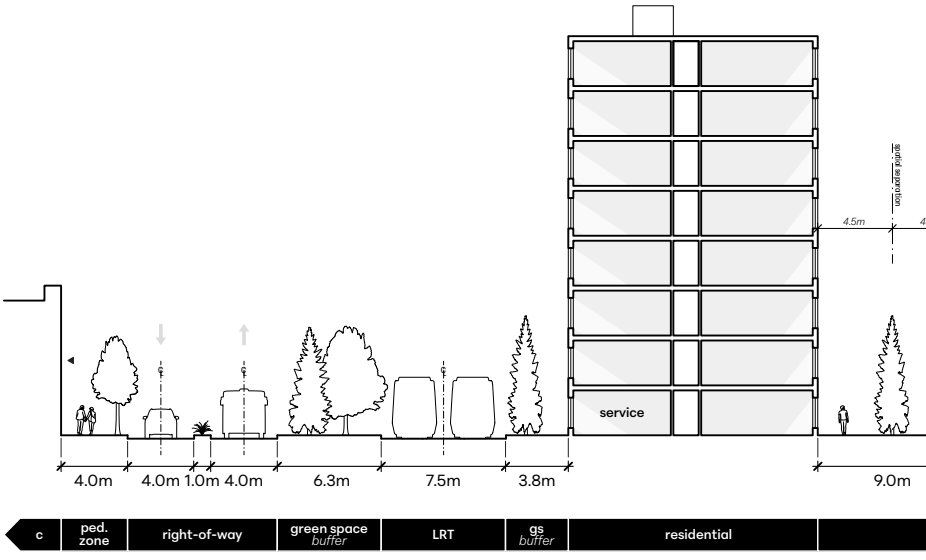
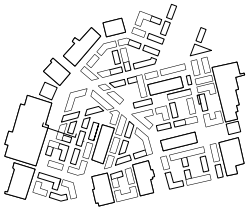
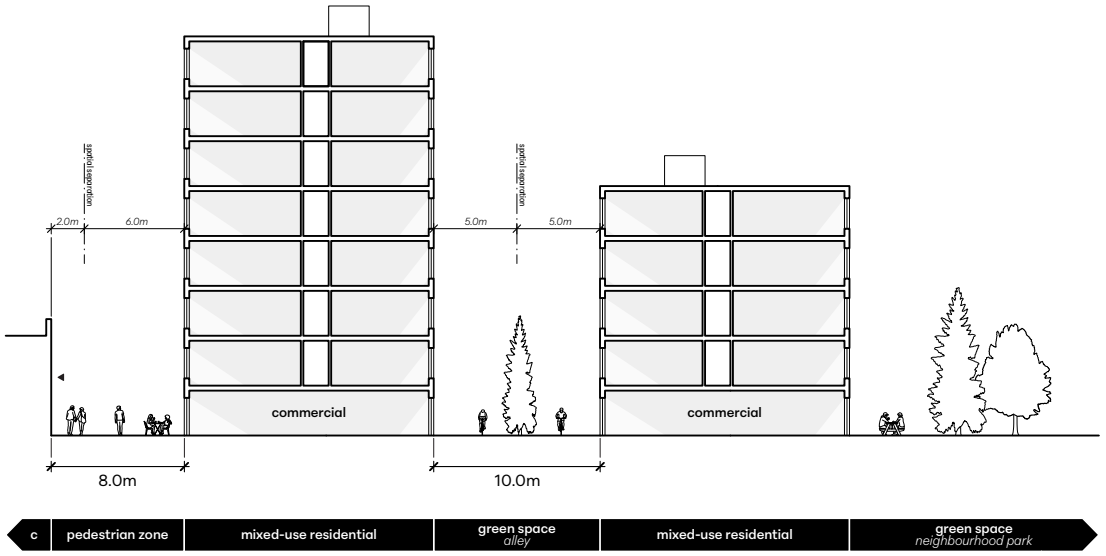


Fig. 101 N/S Section







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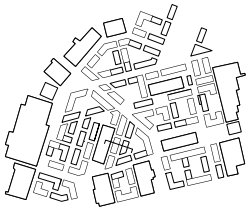

Fig. 102 E/W Section A

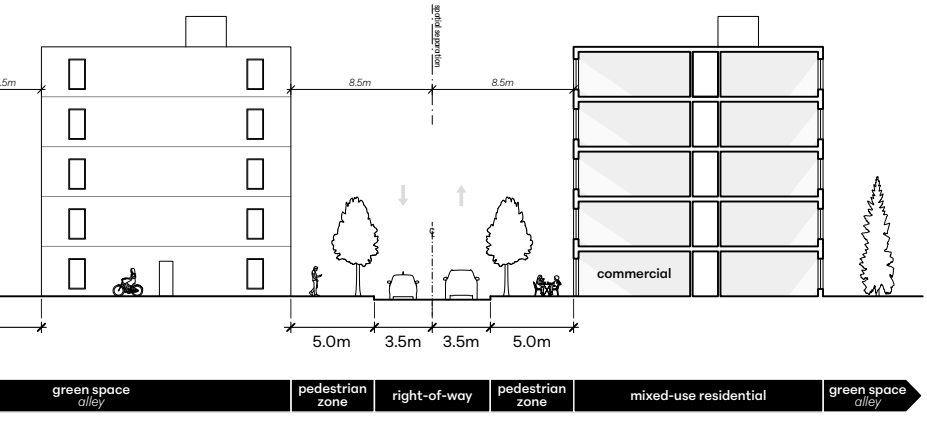

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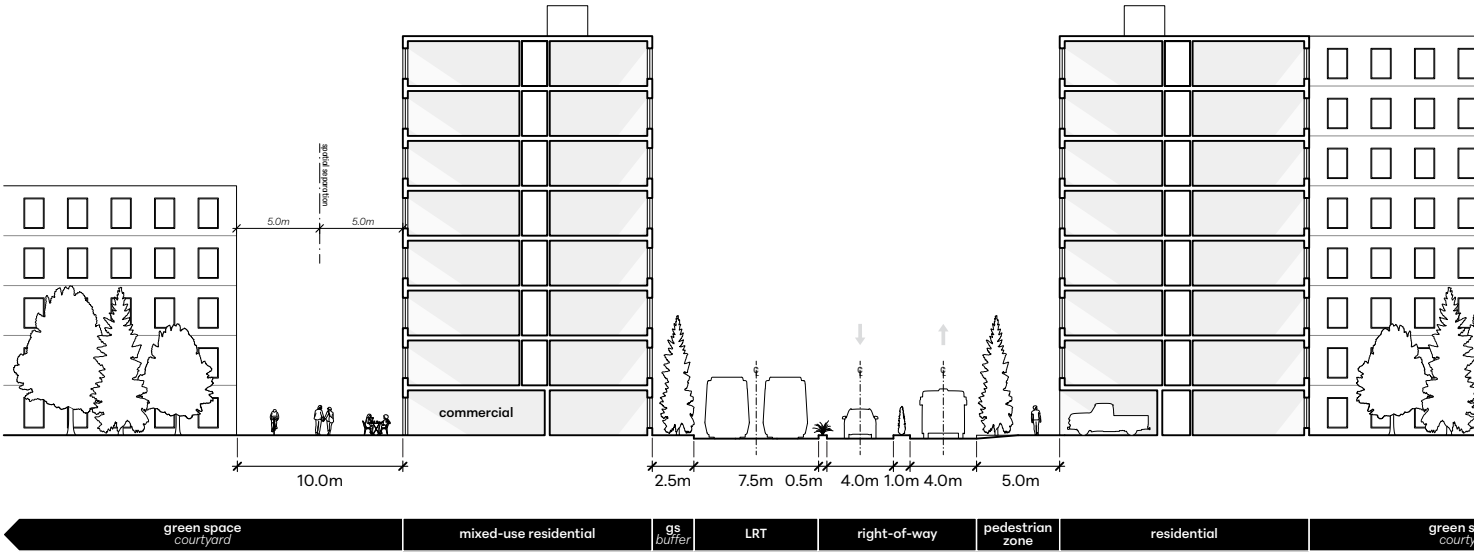
Fig. 103 E/W Section B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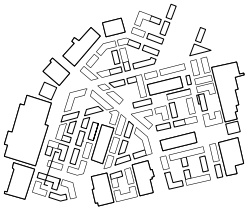
green space
courtyard
mixed-use residential
gs
buffer
LRT
right-of-way
pedestrian zone
residential



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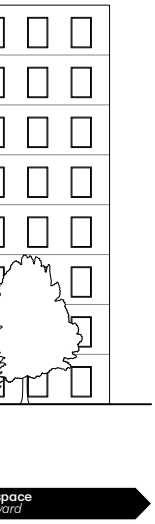

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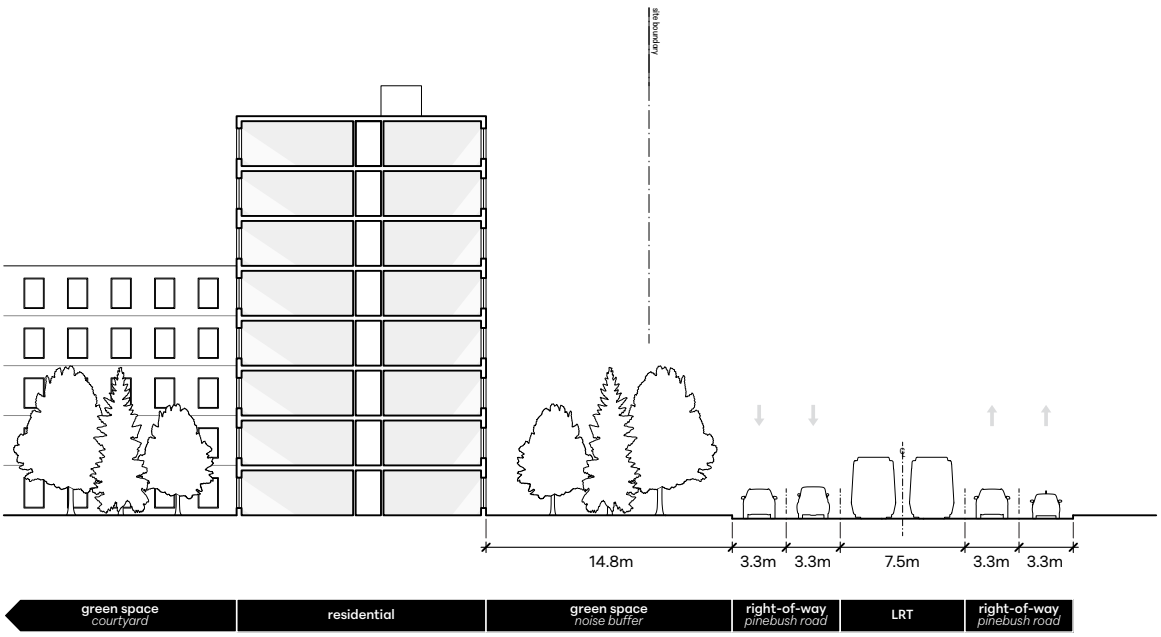
104 NW/SE Section



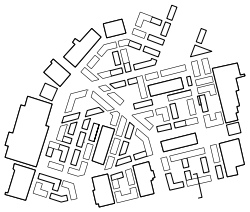


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Fig. 105 Pinebush Road Section



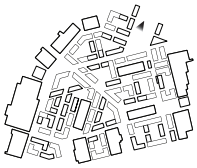
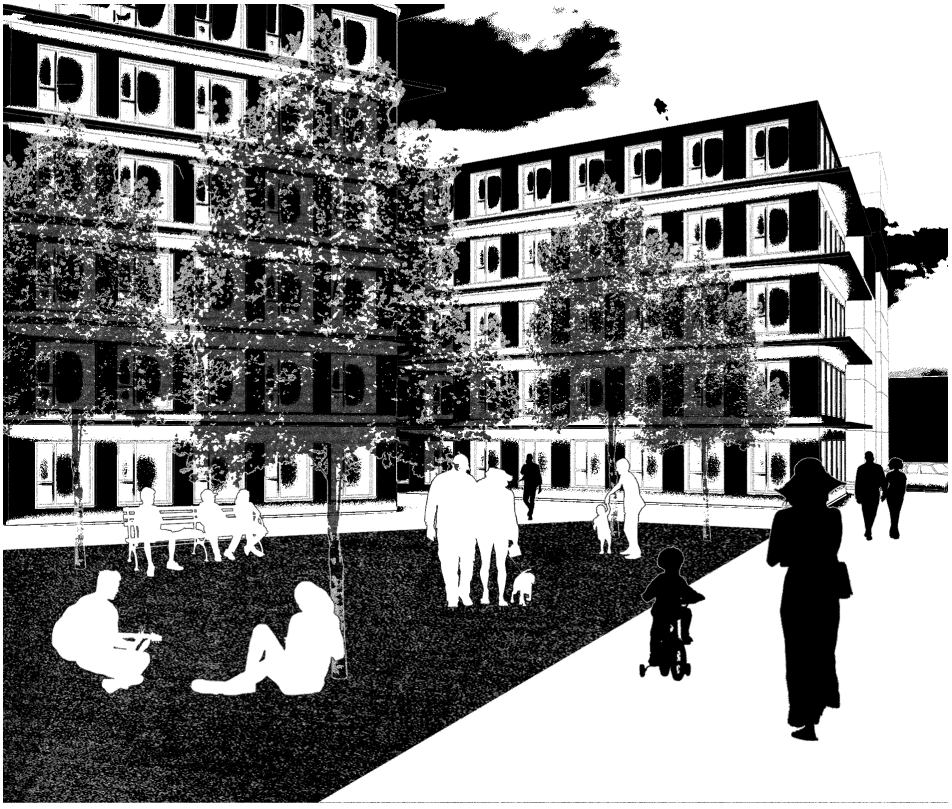


Illustration of public sports fields and the integration of the LRT adjacent to new residential buildings.

Fig. 106 Sports Field Vignette



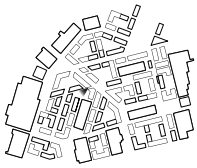
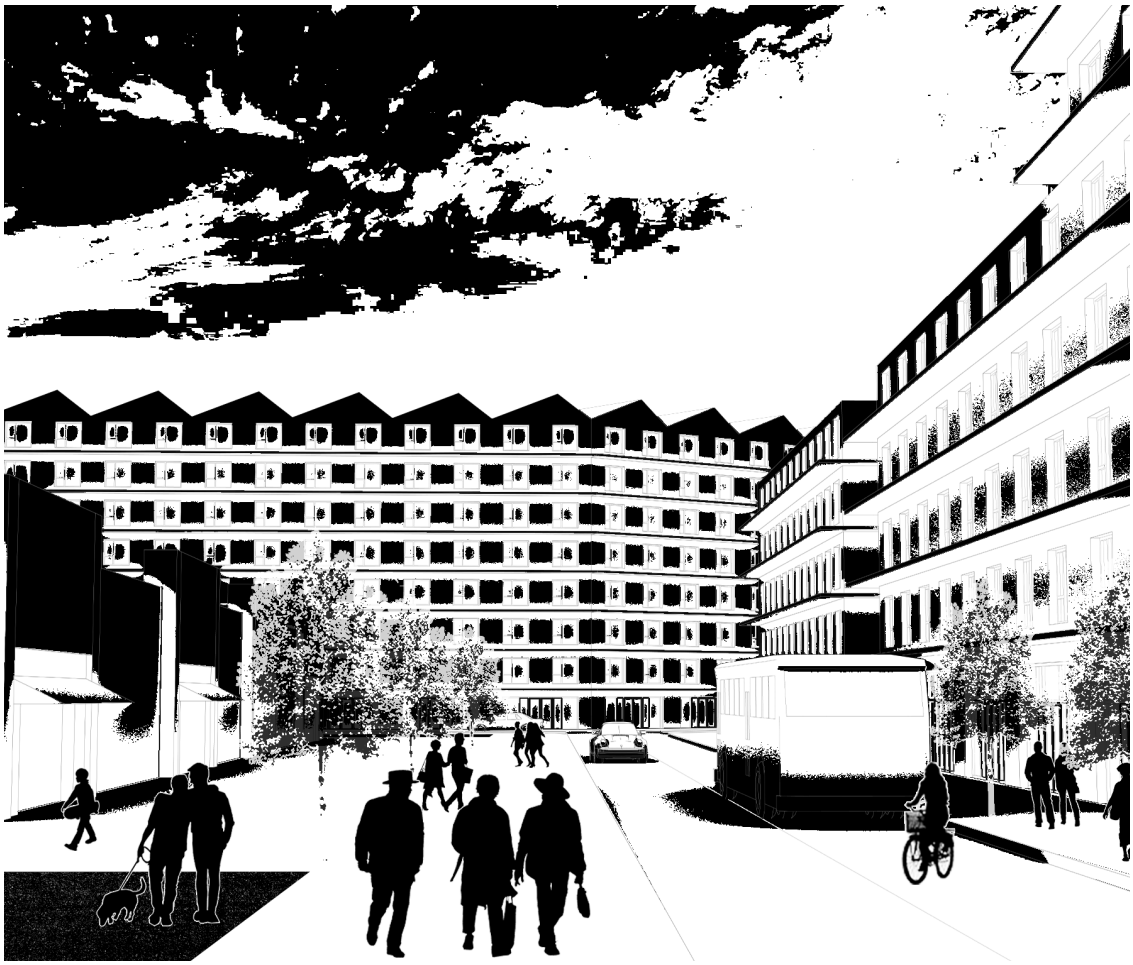


Illustration of interior courtyard space.

Fig. 107 Courtyard Vignette



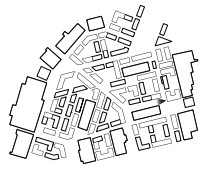


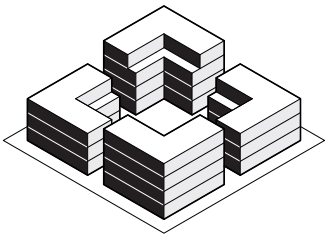
Illustration of expanded pedestrian space and reduced vehicle right-of-way adjacent to an existing retailer.

Fig. 108 Local Right-of-Way Vignette

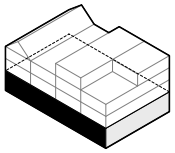
The Green Mobility Village

To promote alternative transportation methods, The Green Mobility Village integrates a proposed LRT expansion along with a network of pedestrian-oriented streets. To enhance livability, garden apartment developments are strategically located adjacent to existing commercial buildings, providing residents with immediate access to amenities and services.

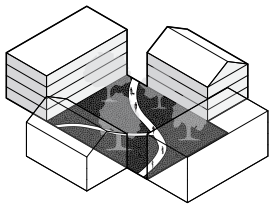
Considerations



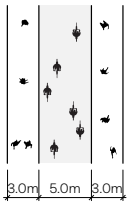
Garden Apartments



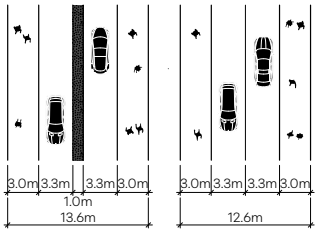
Commercial Floor



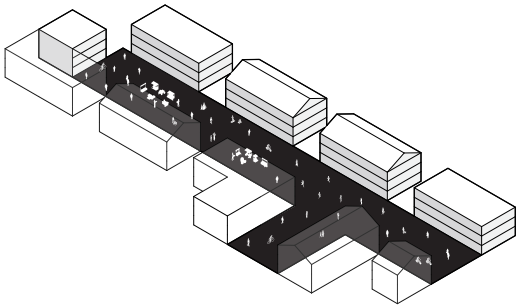
Courtyard



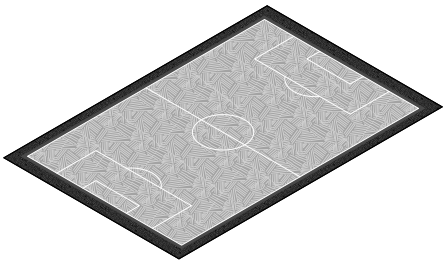
Pedestrian ROWs



Minimized Street Widths

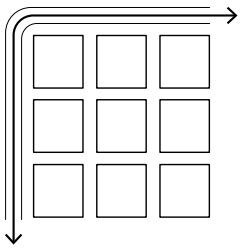


Pedestrian Streets

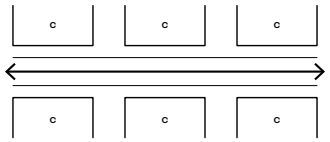


Sports Fields

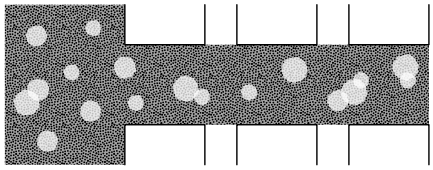
Strategies



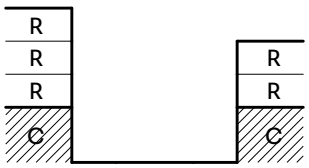
Outer Ring Road



Central Corridor



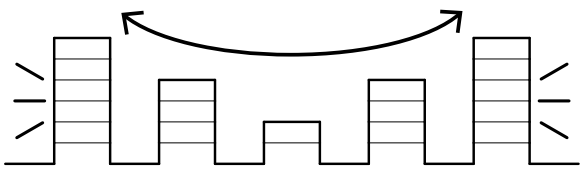
Continuous Green Space



Mixed-Use Development



Active Ground Floors



Taller Perimeter Buildings

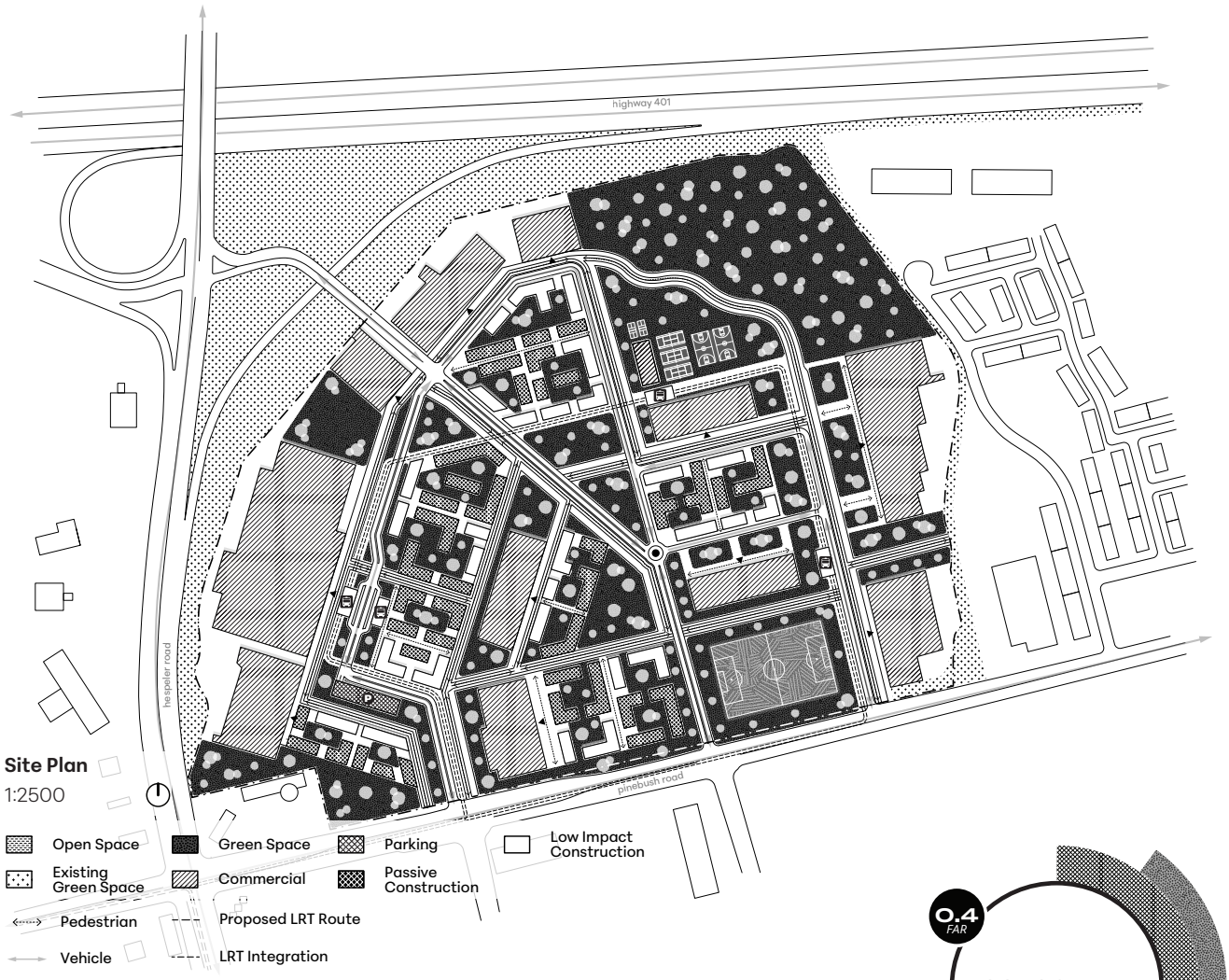
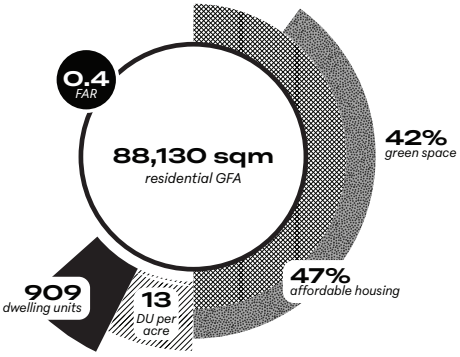


Fig. 109 The Green Mobility Village Site Plan



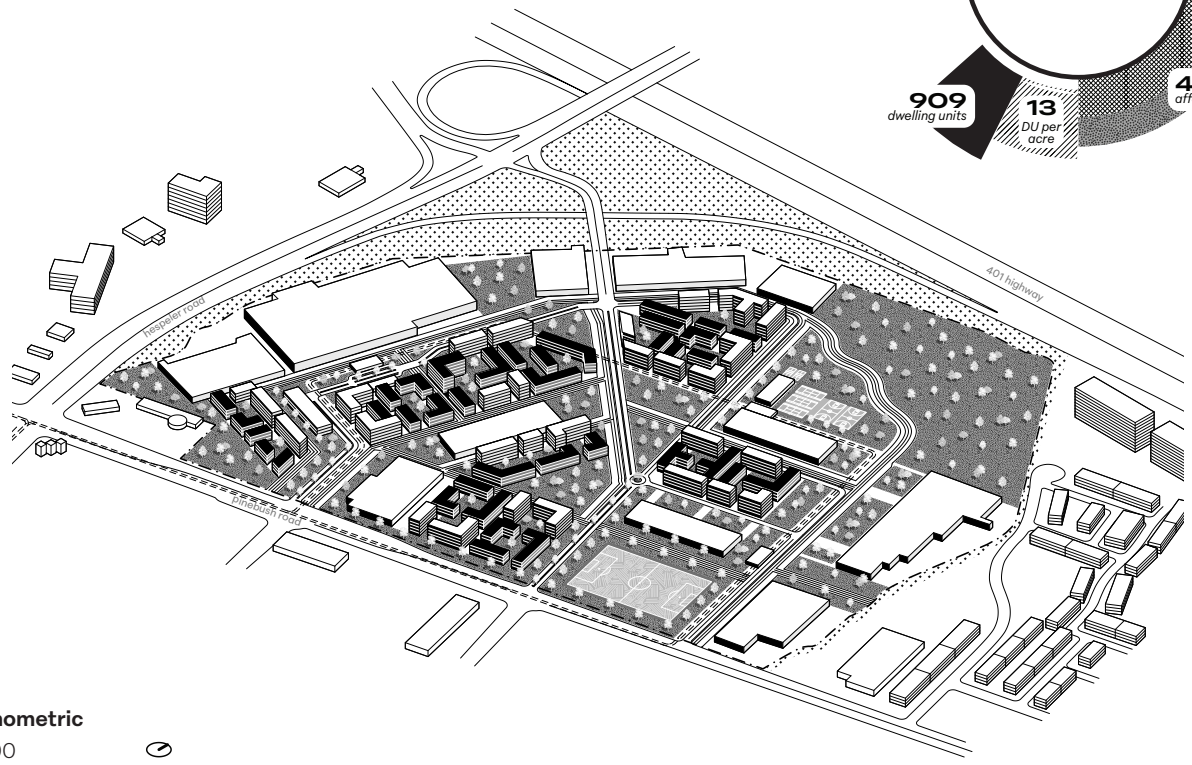
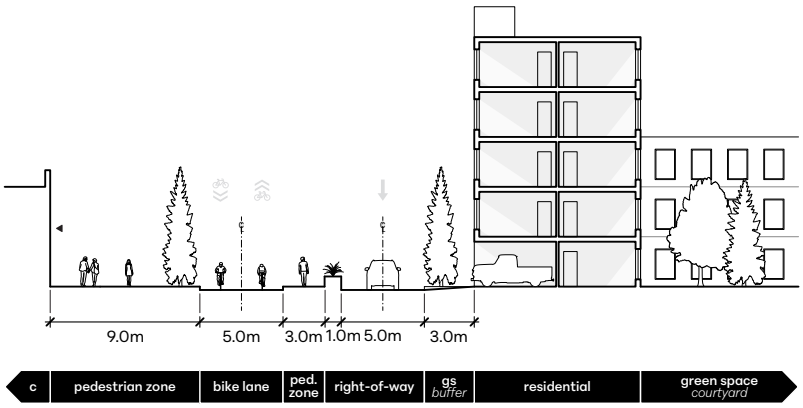


Fig. 110 The Green Mobility Village Axonometric



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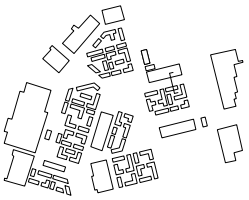
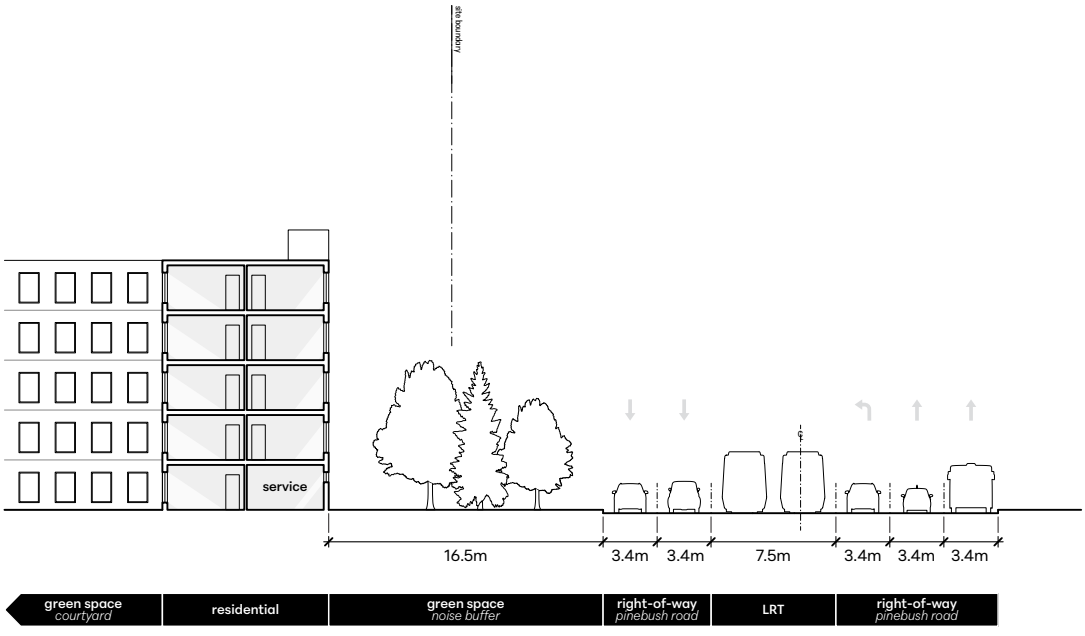


Fig. 111 N/S Section A



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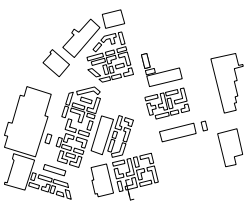
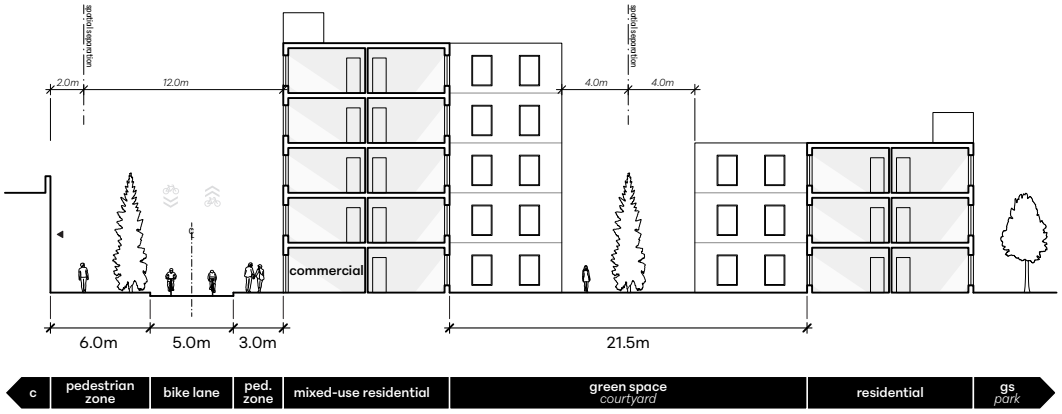


Fig. 112 Pinebrush Road Section



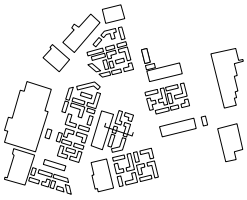


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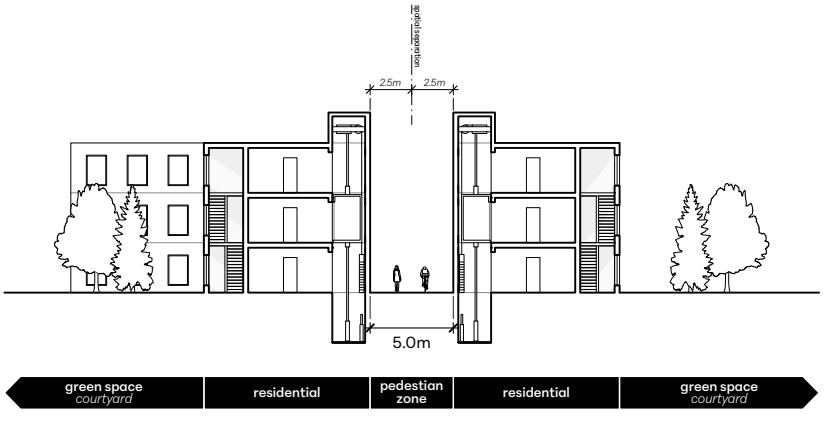
Fig. 113 E/W Section A



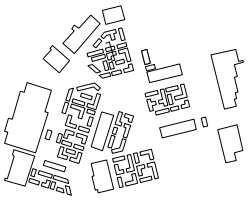


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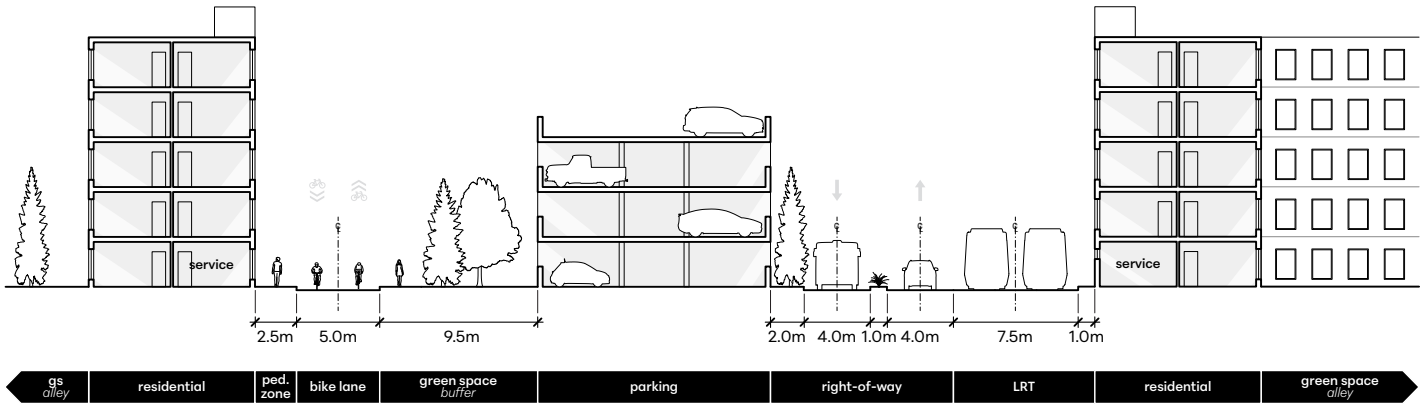
Fig. 114 N/S Section B



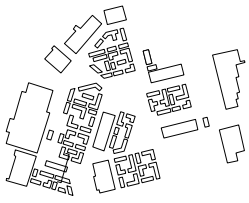


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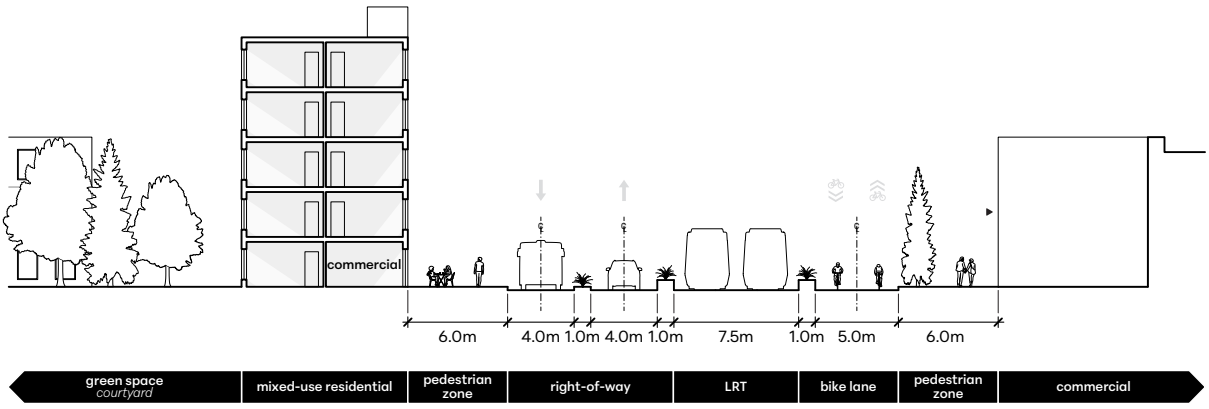
Fig. 115 NE/SW Section



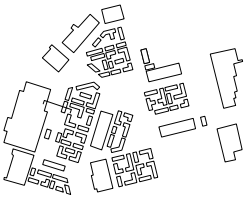


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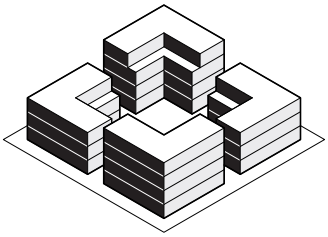
Fig. 116 E/W Section B

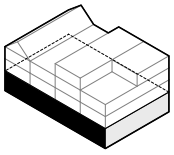
The Pedestrian Village

Similar to the previous option, The Pedestrian Village integrates a LRT expansion, however, the primary circulation routes for the site are dedicated to pedestrian routes, with the only circulation for vehicles located on the perimeter of the site. The site design maintains most of the existing commercial space, although, unlike the previous solution, the amount of residential density is increased.

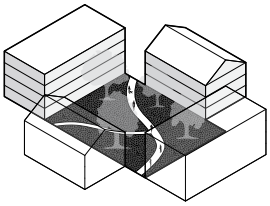
Considerations



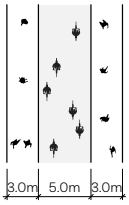
Garden Apartments



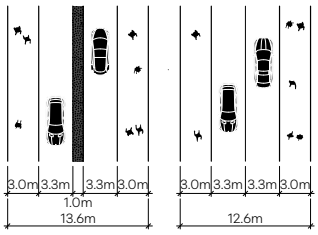
Commercial Floor



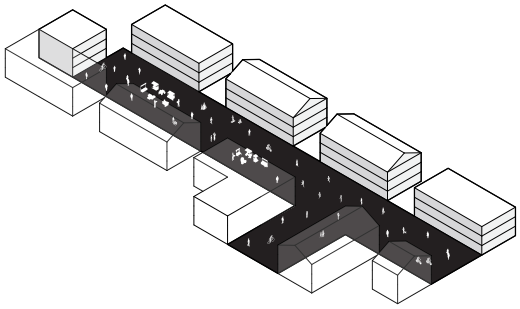
Courtyard



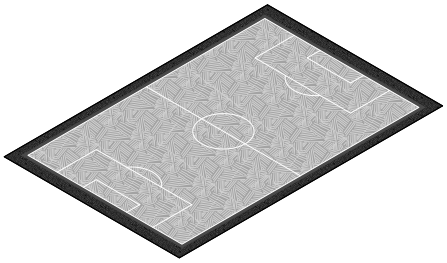
Pedestrian ROWs



Minimized Street Widths

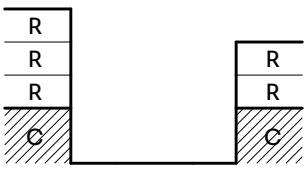


Pedestrian Streets

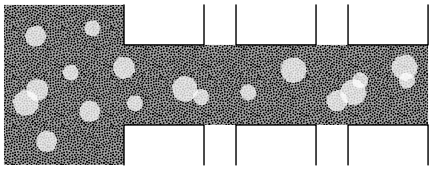


Sports Fields

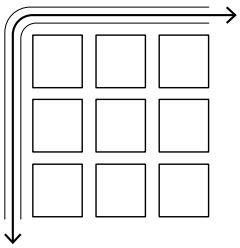
Strategies



Mixed-Use Development

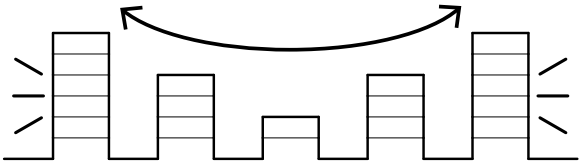


Continuous Green Space





Active Ground Floors

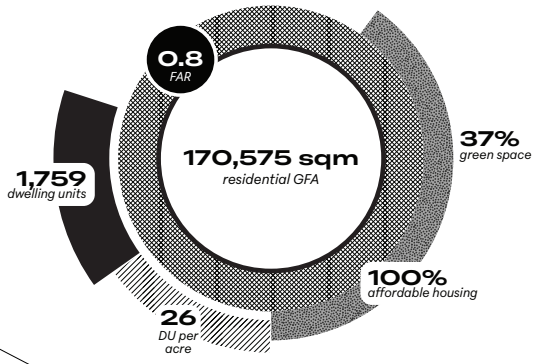


Taller Perimeter Buildings

Outer Ring Road



Fig. 117 The Pedestrian Village Site Plan



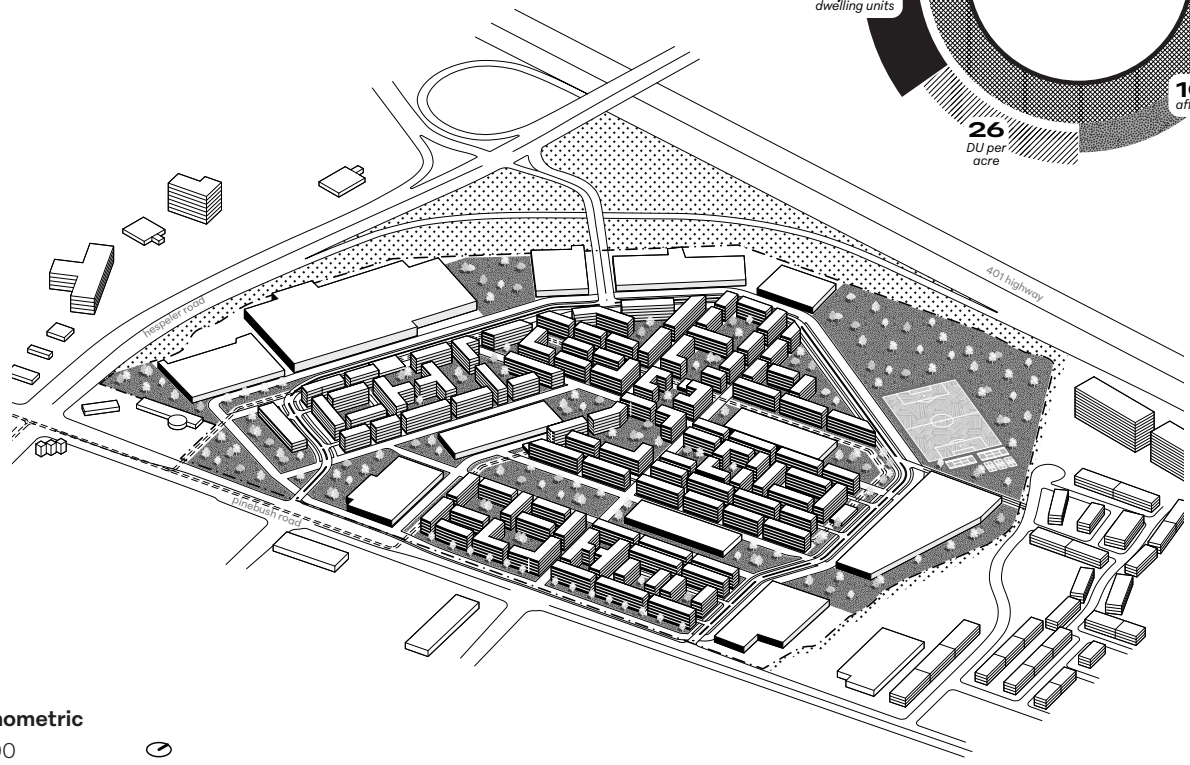
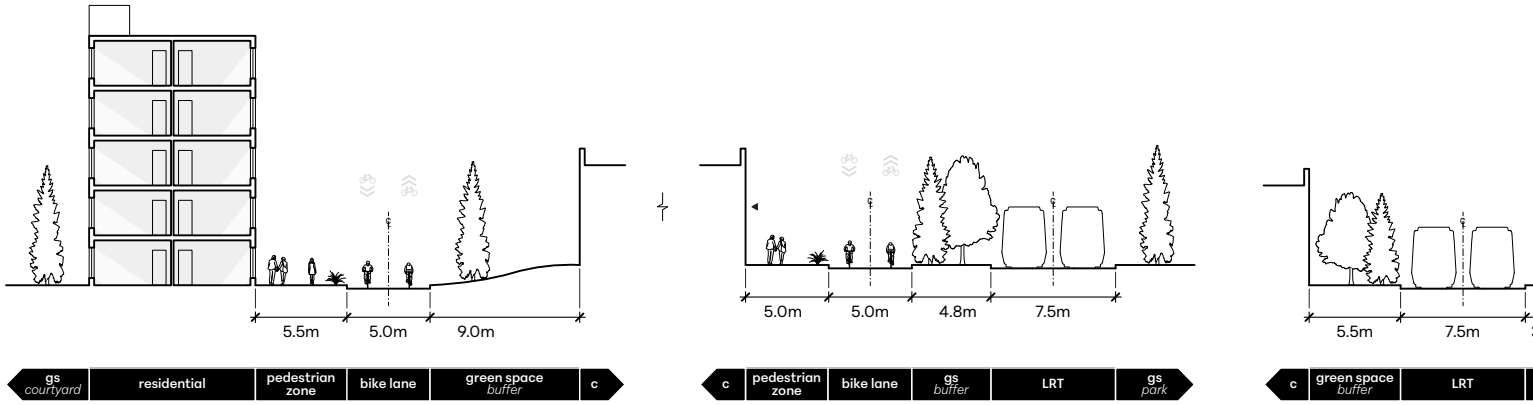


Fig. 118 The Pedestrian Village Axonometric



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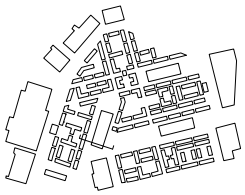


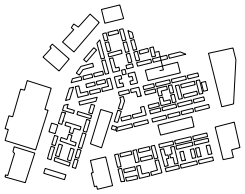
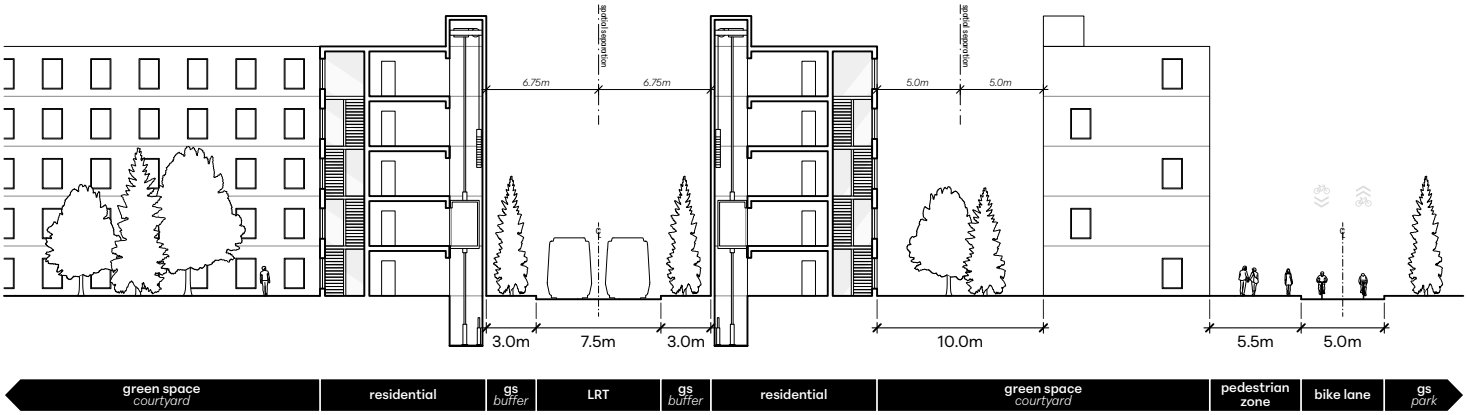


Fig. 119 E/W Section A



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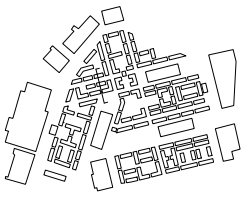
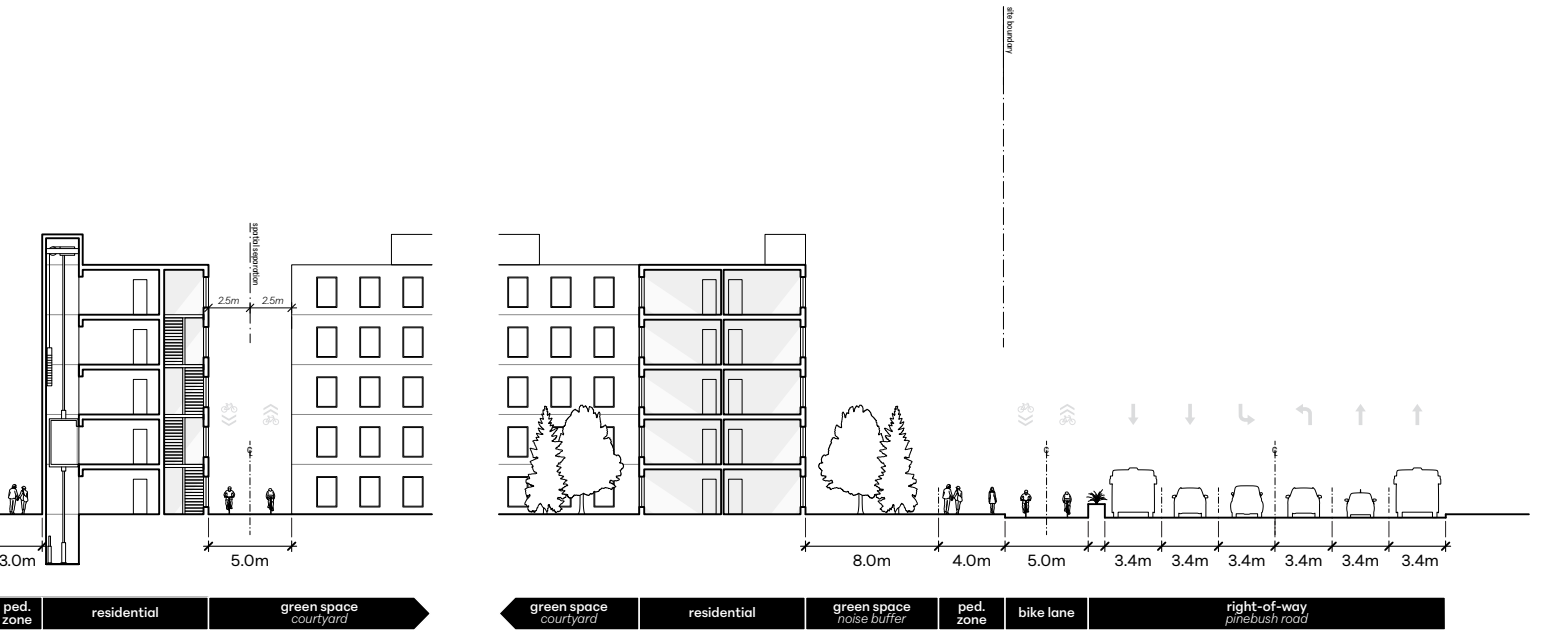


Fig. 120 N/S Section A



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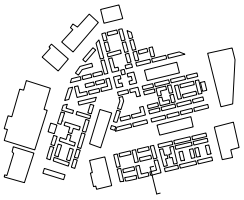
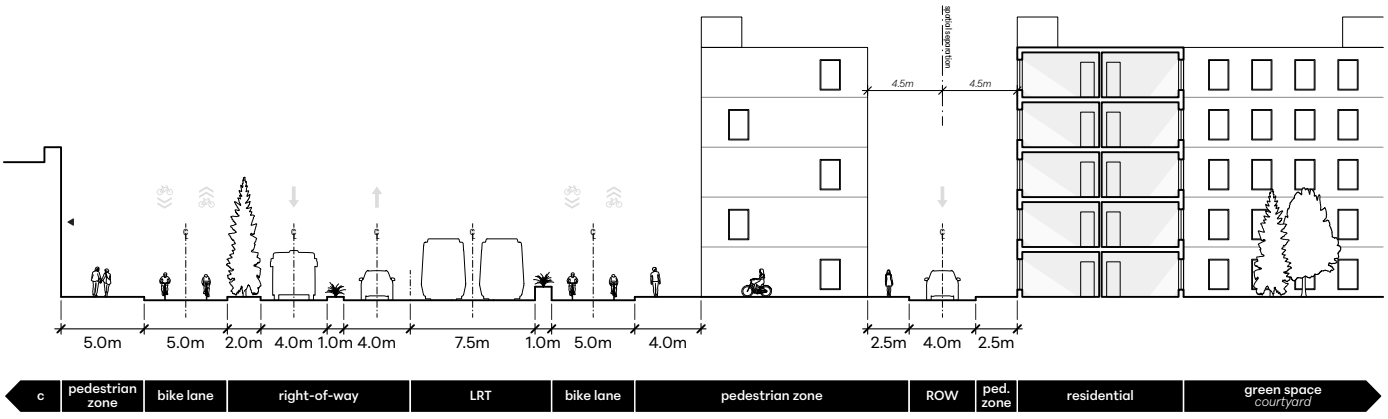


Fig. 121 N/S Section B

Fig. 122 Pinebush Road Section



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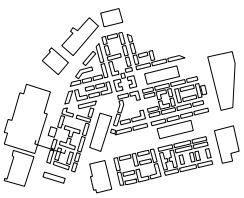
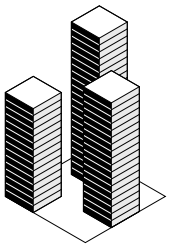


Fig. 123 E/W Section B

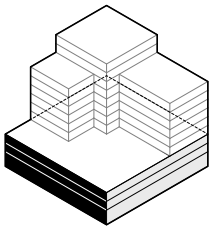
The Giga-City

To explore the limits of intensification, The Giga-City maximizes residential density. Similar to the proposed Cambridge SmartCentre redevelopment, most of the existing retail buildings are demolished and replaced with high-density tower-and-podium developments. However, unlike the original proposal, this option retains the site's primary commercial anchor, Walmart, maintaining access to a key retail destination.

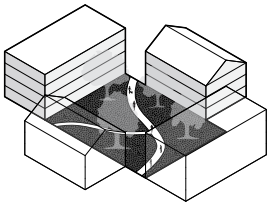
Considerations



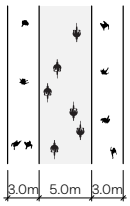
High-Rise



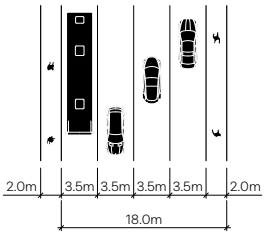
Commercial Podium



Courtyard

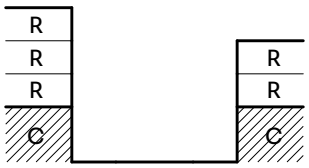


Pedestrian ROWs

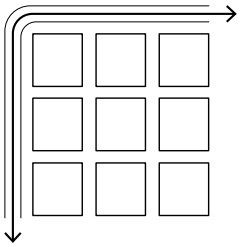


Existing Street Widths

Strategies



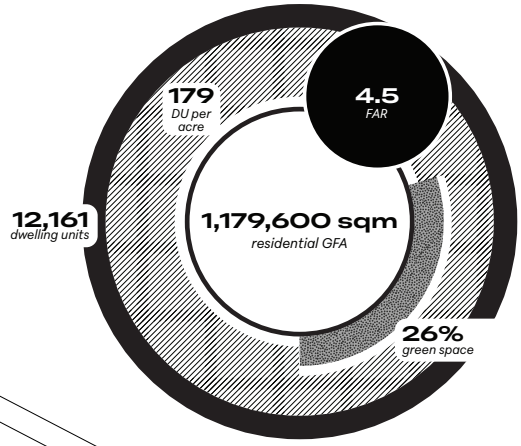
Mixed-Use Development



Outer Ring Road



Fig. 124 The Giga-City Site Plan



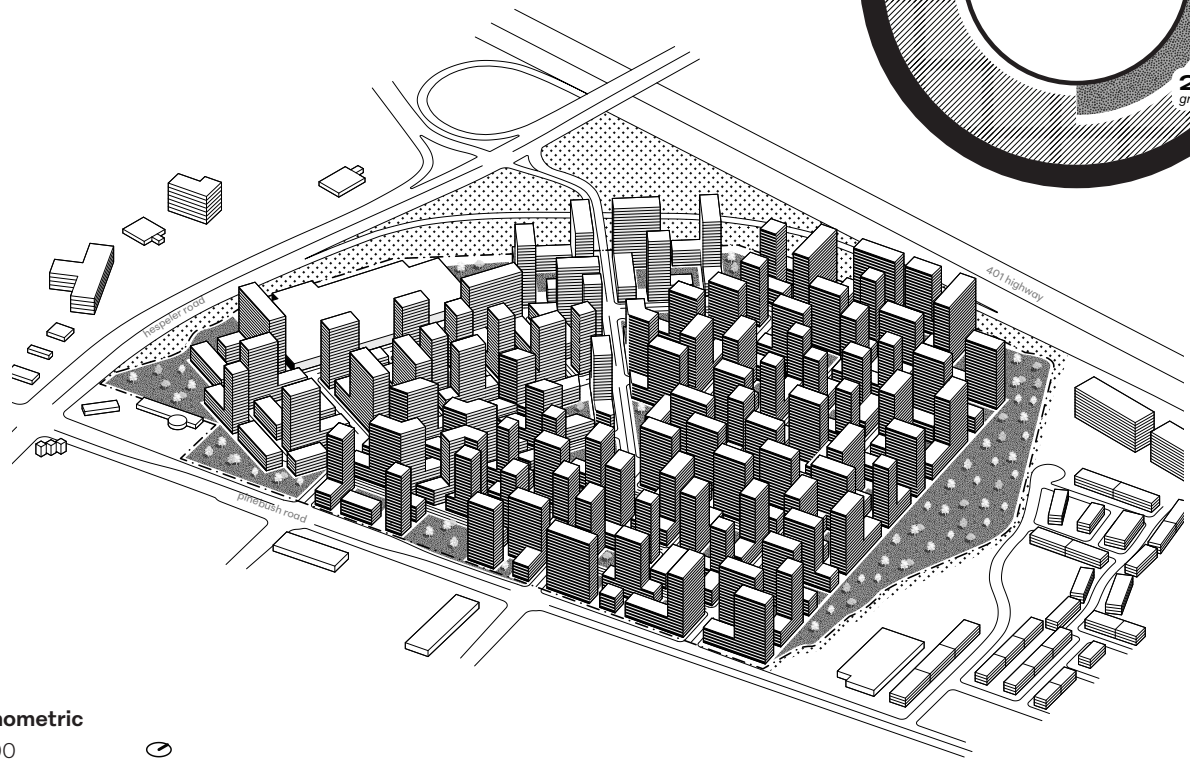
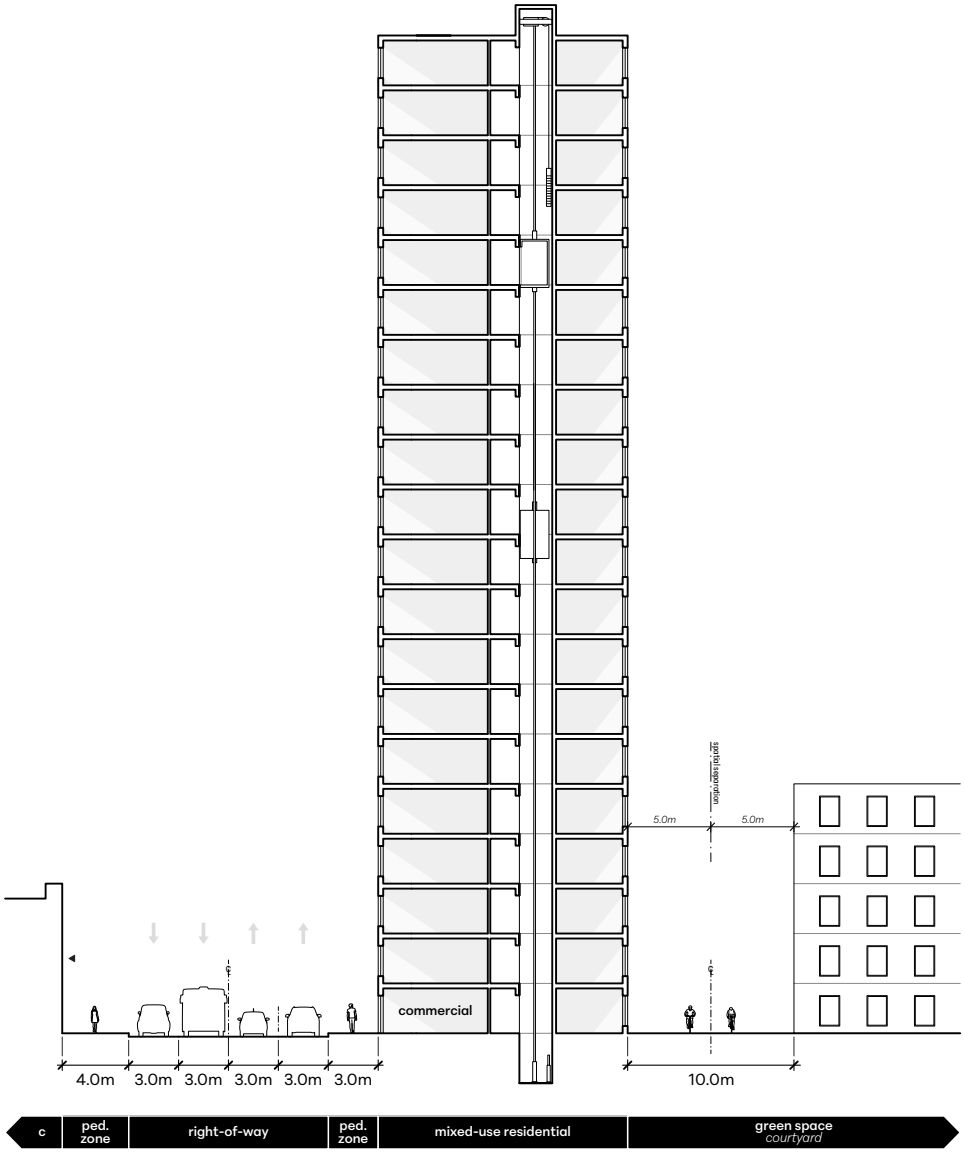
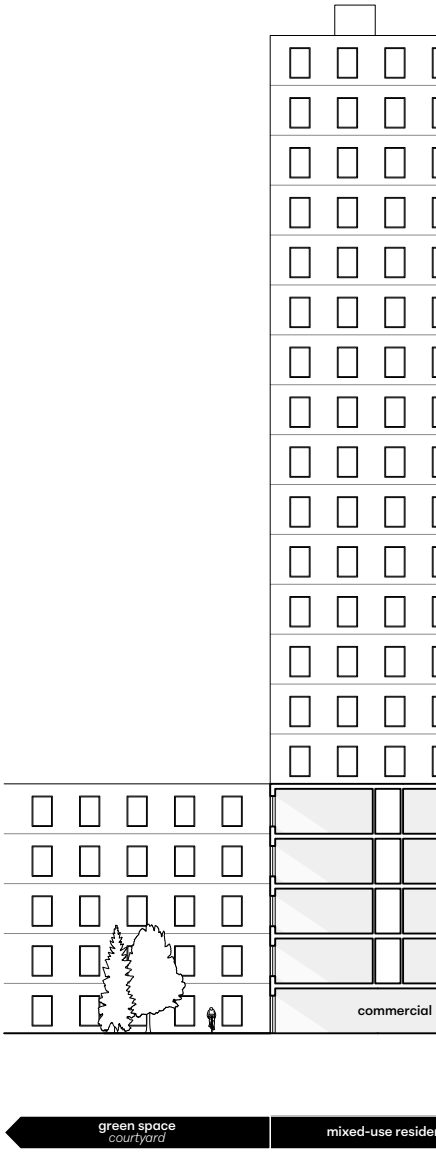


Fig. 125 The Giga-City Axonometric





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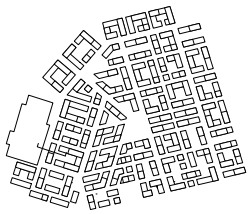

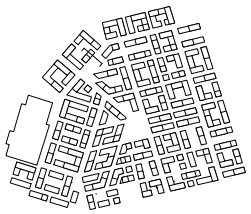

Fig. 126 E/W Section A

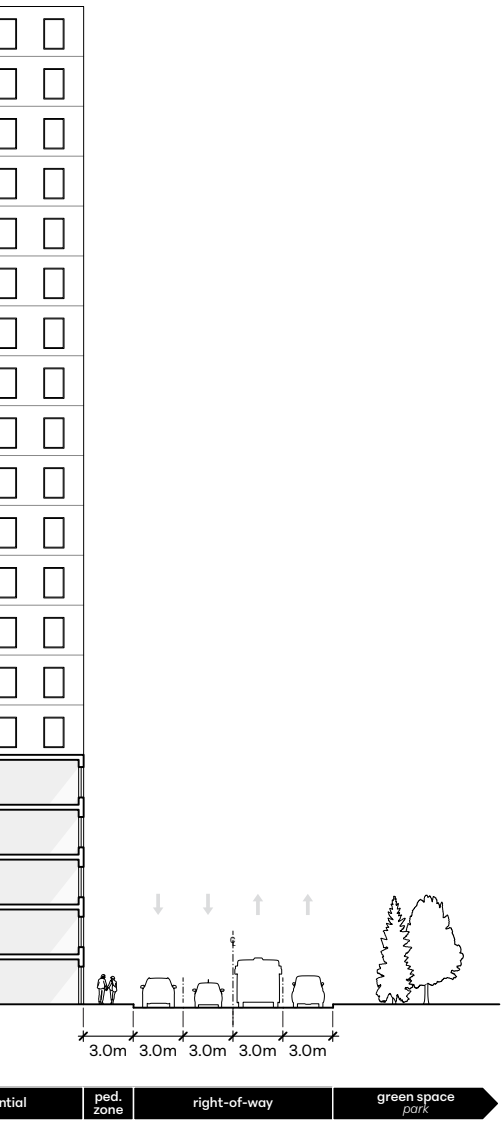

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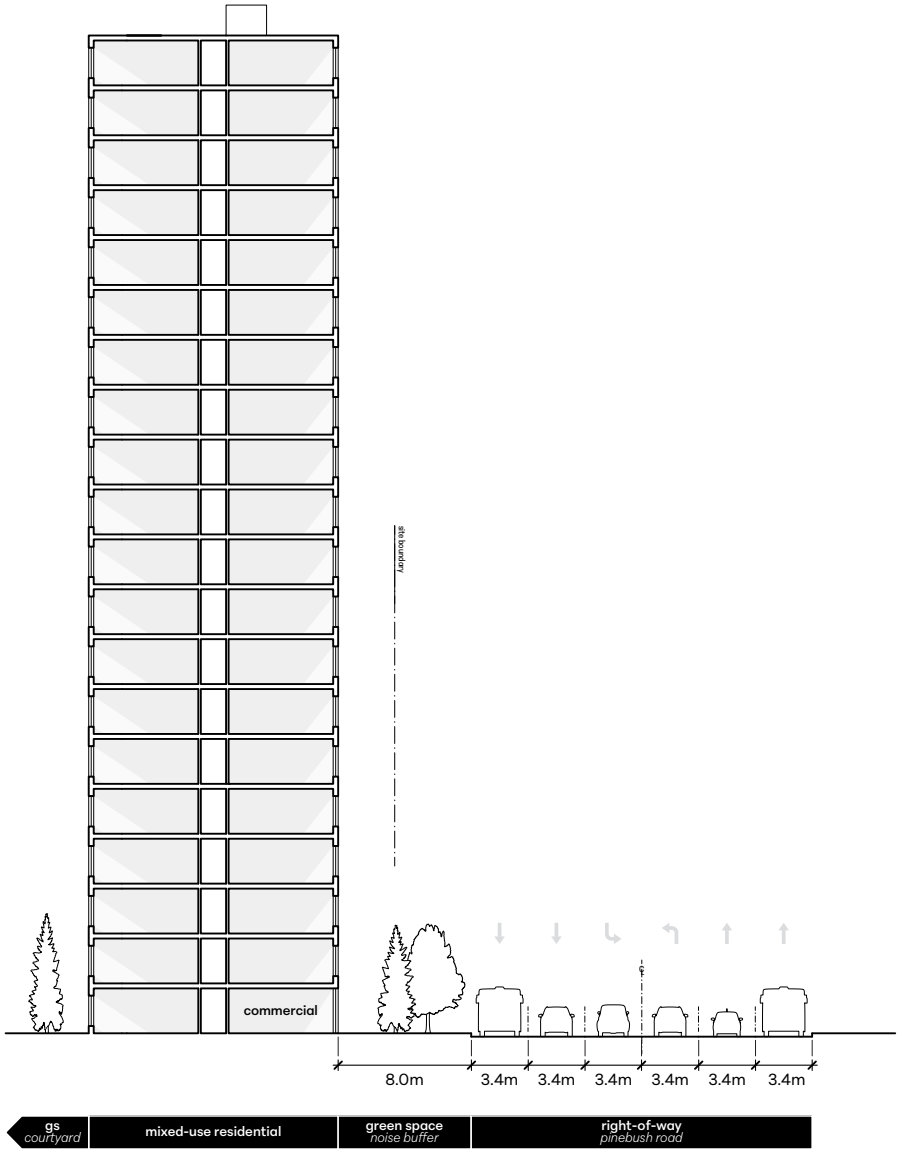
Fig. 127 NW/SE Section



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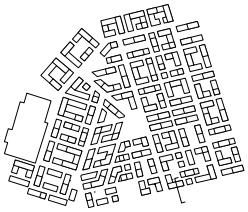
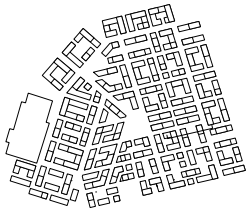


Fig. 128 Pinebush Road Section


6.75m
6.75m
commercial
commercial
3.0m
3.5m
3.5m
3.0m
30.
green space
courtyard
mixed-use residential
ped. zone
right-of-way
ped. zone
mixed-use residential
green



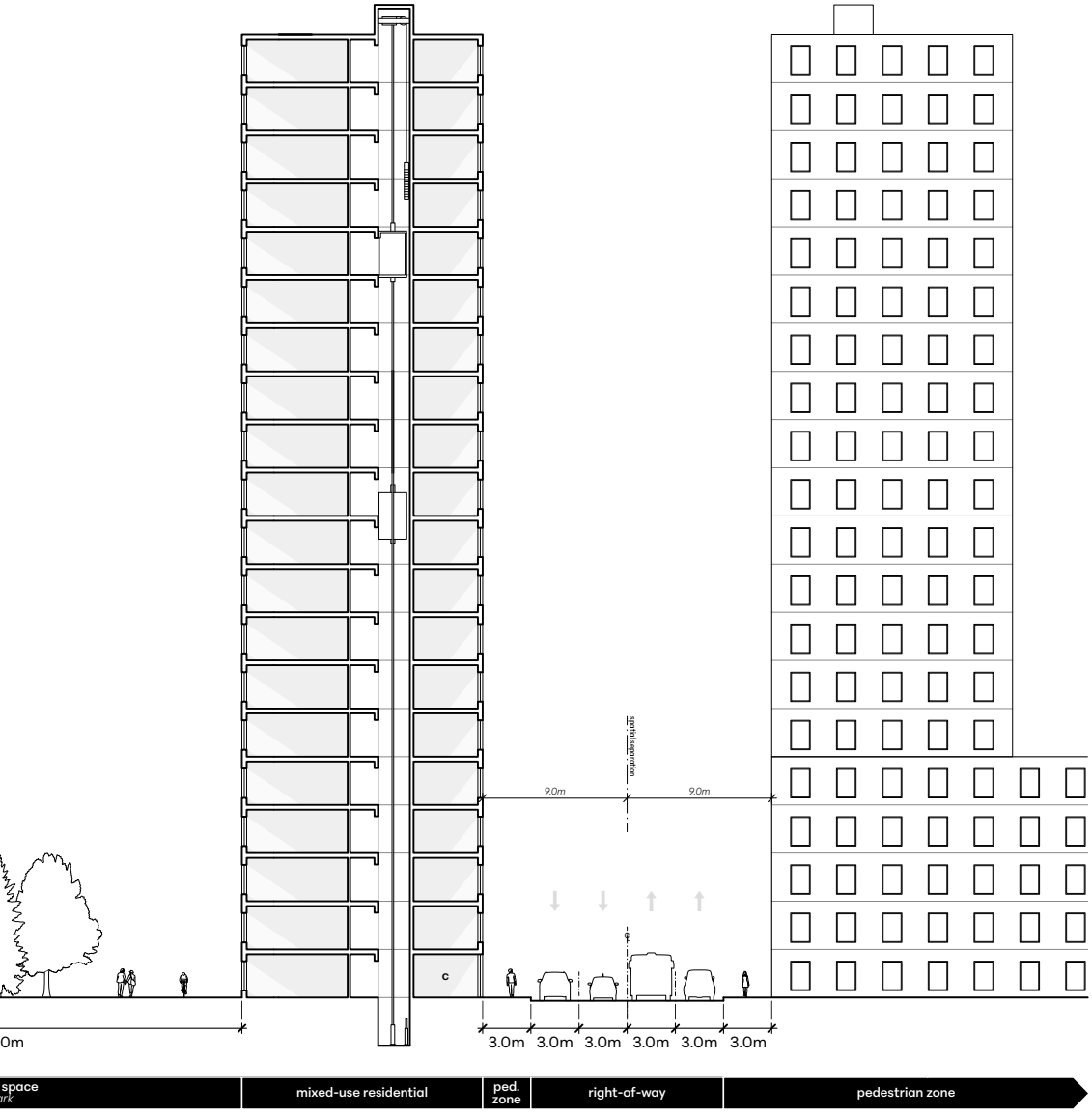


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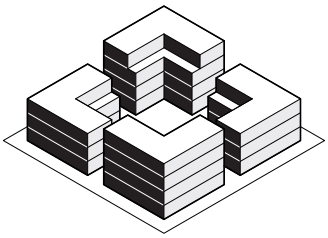
Fig. 129 E/W Section B

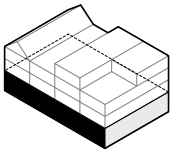
The Courtyard Village

Similar to The Village in the Park, the site integrates alternative transportation methods, like the LRT and pedestrian streets, as well as decreases vehicle circulation routes to help calm traffic and reduce traffic speeds. To increase the site's civic space, all residential buildings are organized around shared courtyards, while interconnected green spaces are distributed throughout the development to create a network of green open space.

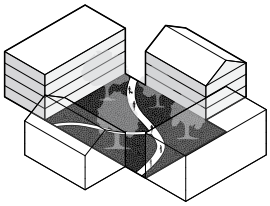
Considerations



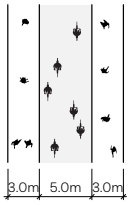
Garden Apartments



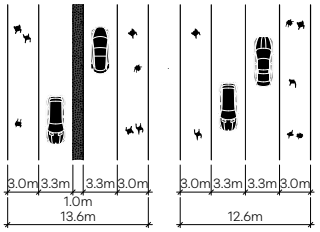
Commercial Floor



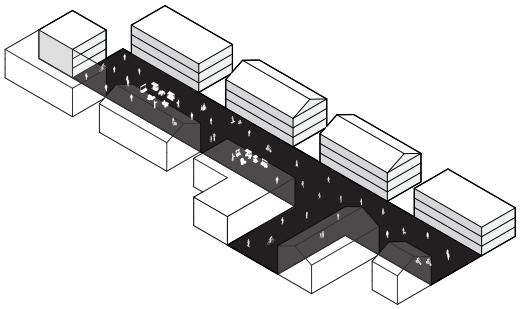
Courtyard



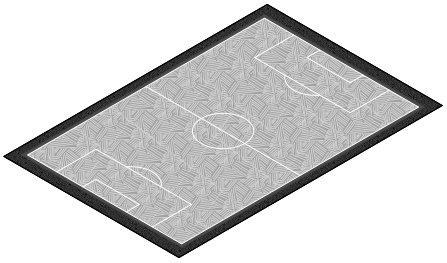
Pedestrian ROWs



Minimized Street Widths

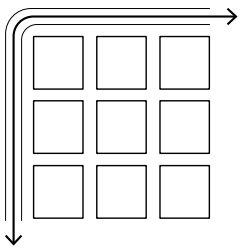


Pedestrian Streets

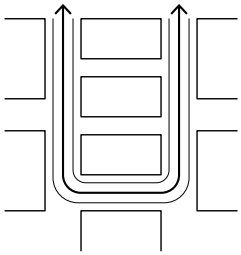


Sports Fields

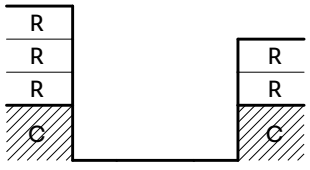
Strategies



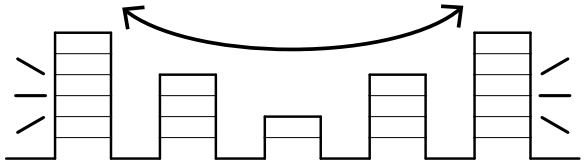
Outer Ring Road



Play Streets



Mixed-Use Development



Taller Perimeter Buildings



Active Ground Floors

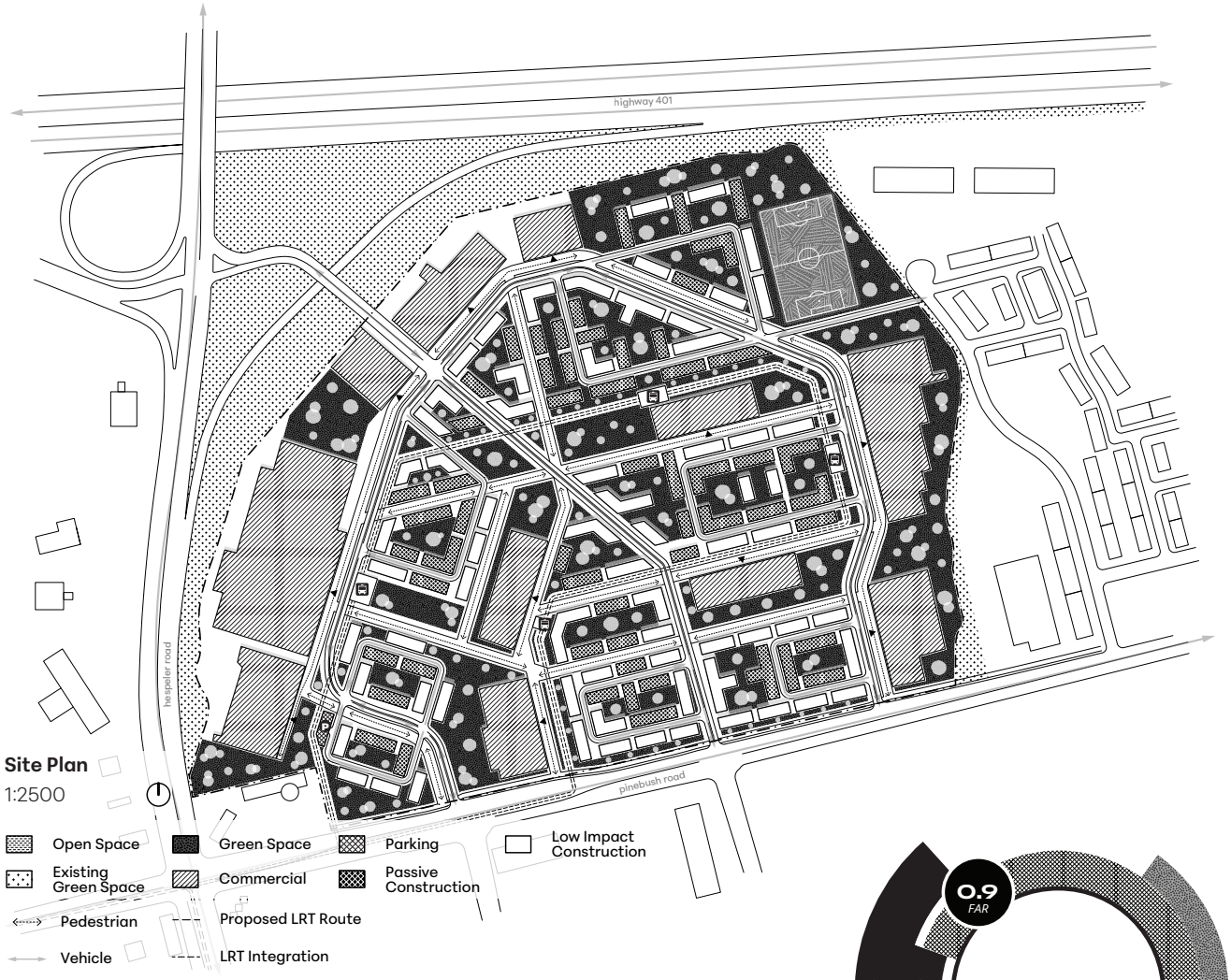
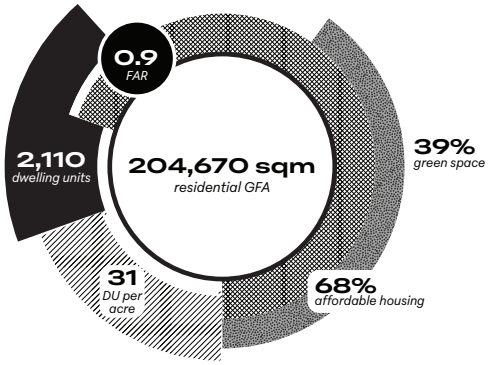


Fig. 130 The Courtyard Village Site Plan



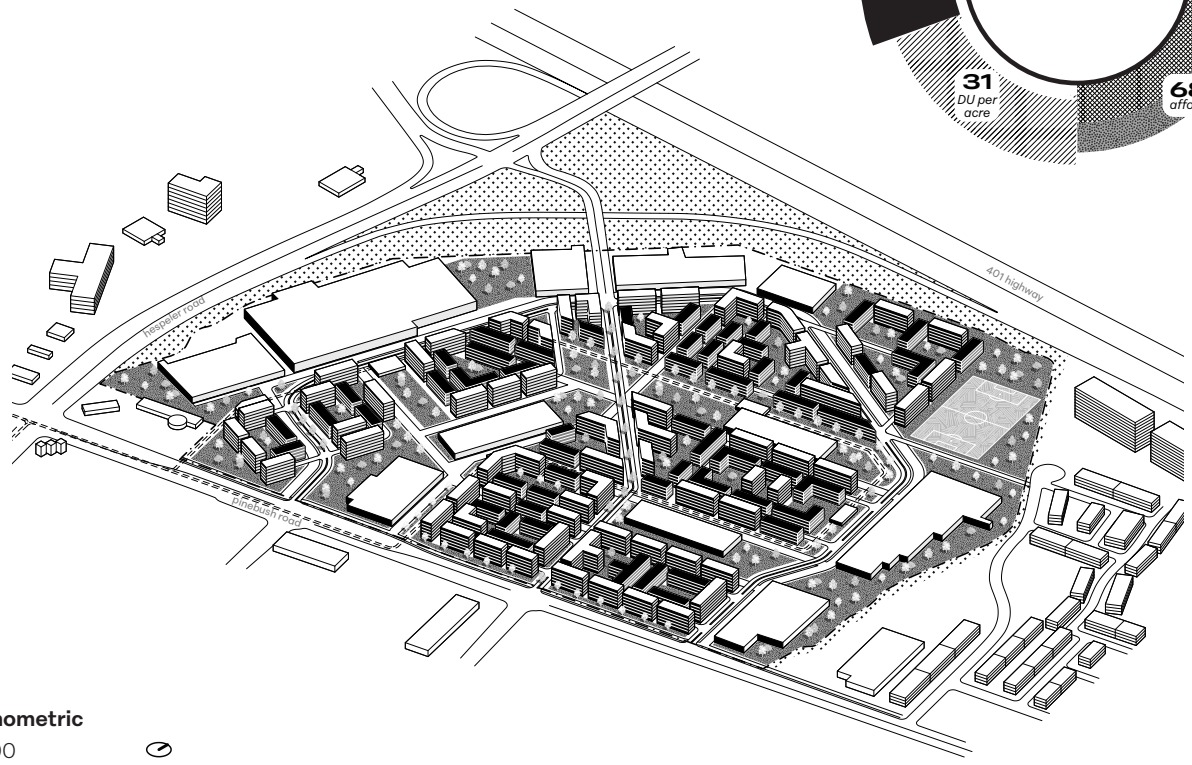
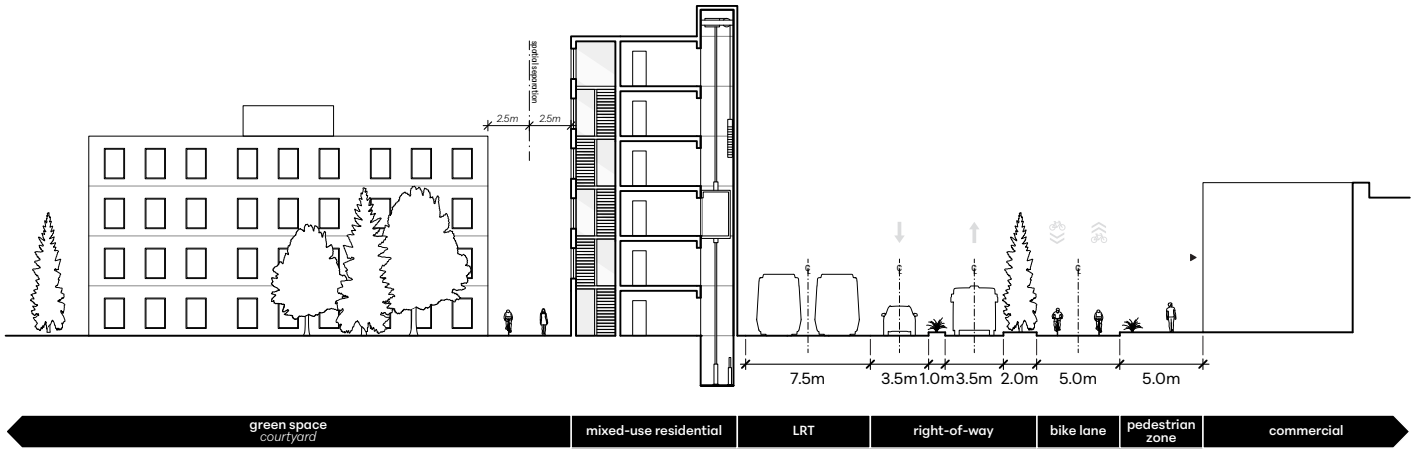


Fig. 131 The Courtyard Village Axonometric



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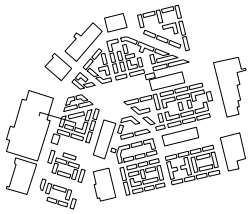
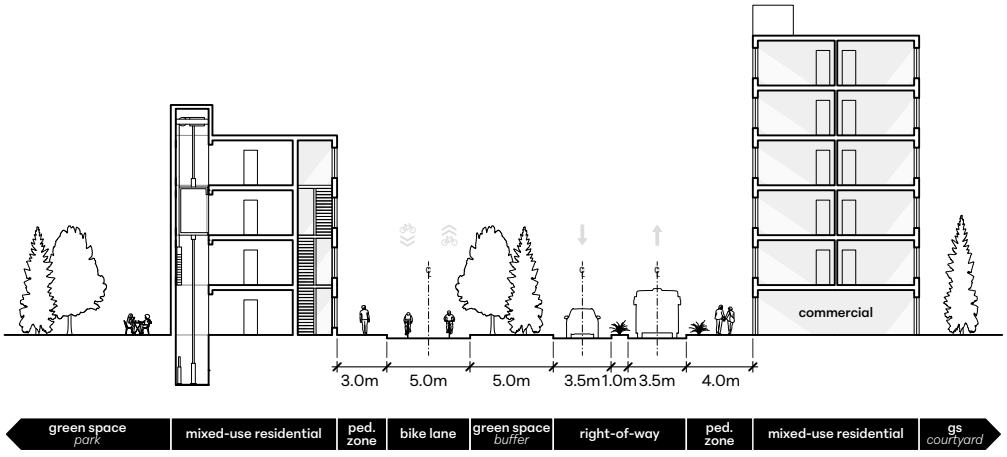


Fig. 132 E/W Section A



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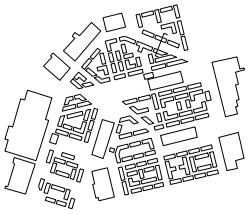
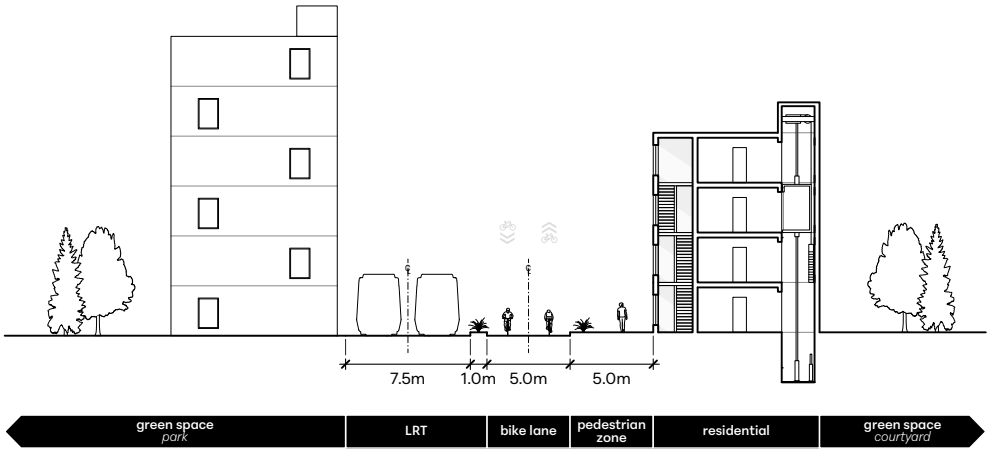


Fig. 133 NE/SW Section



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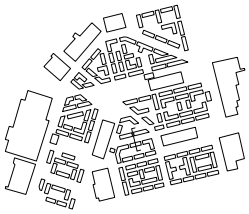
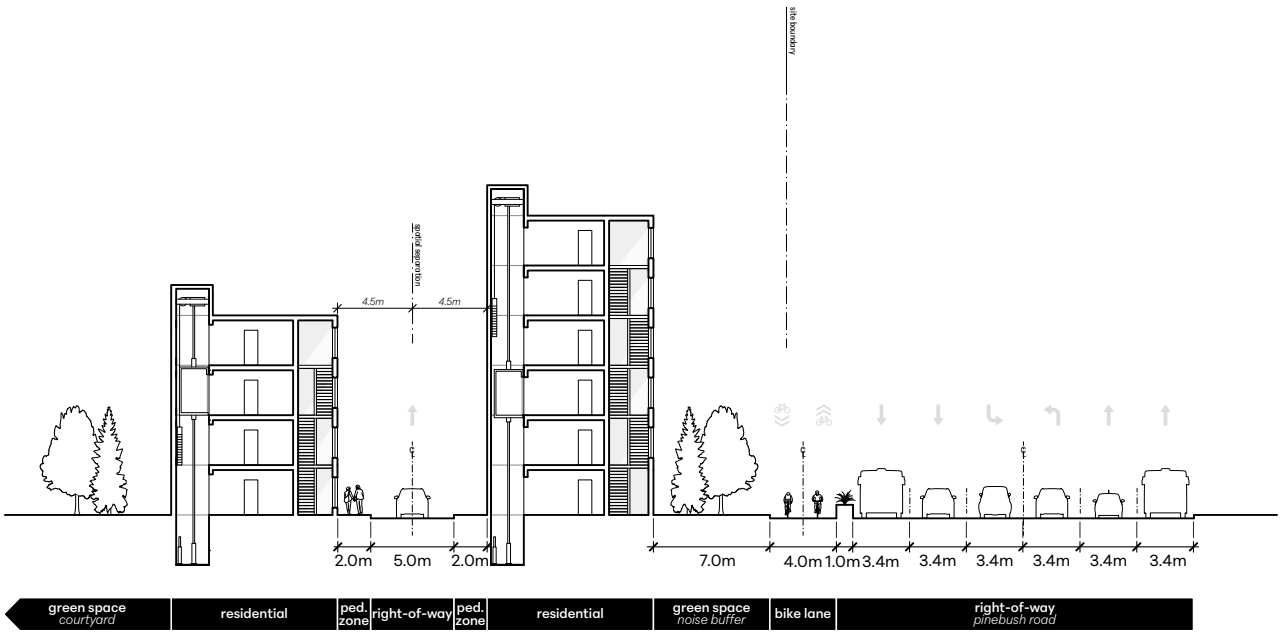


Fig. 134 N/S Section



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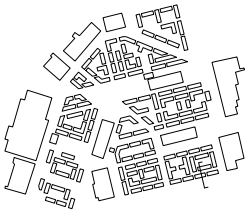
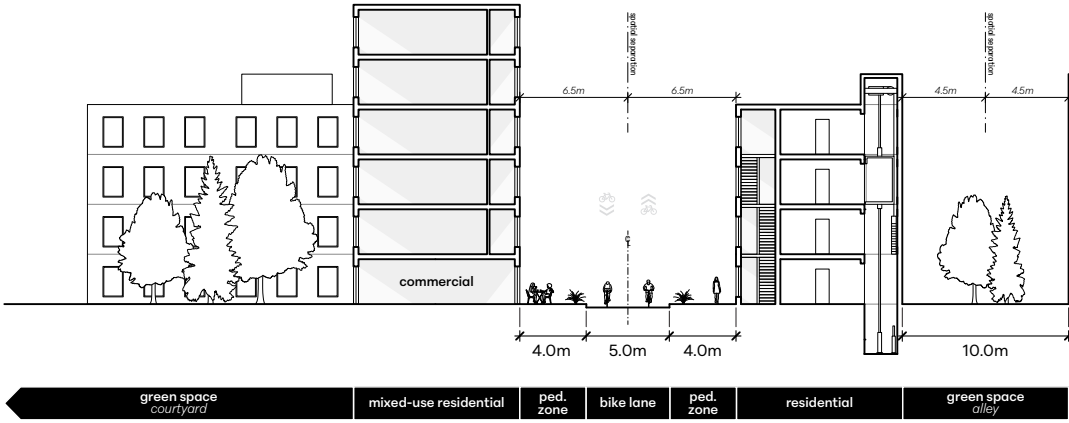
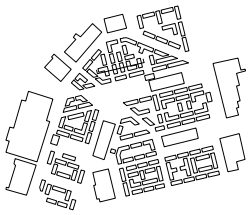
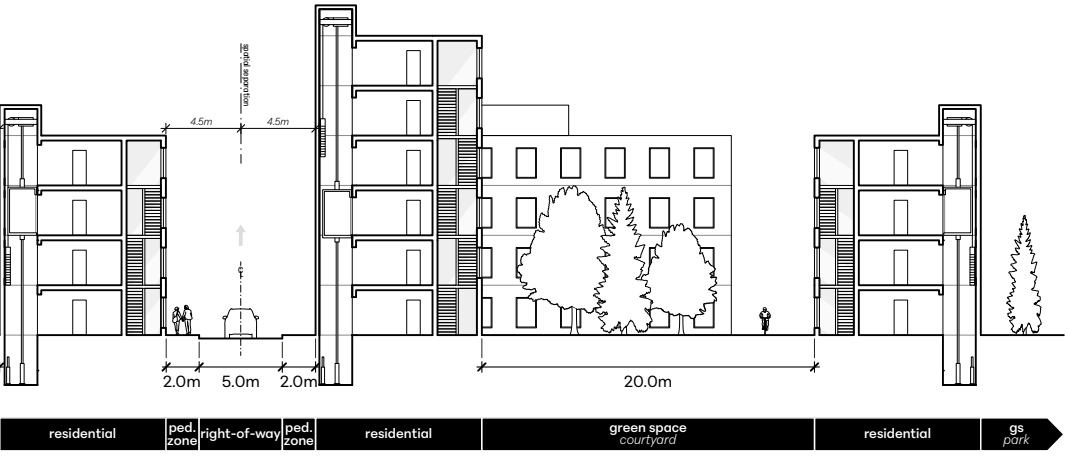


Fig. 135 Pinebush Road Section

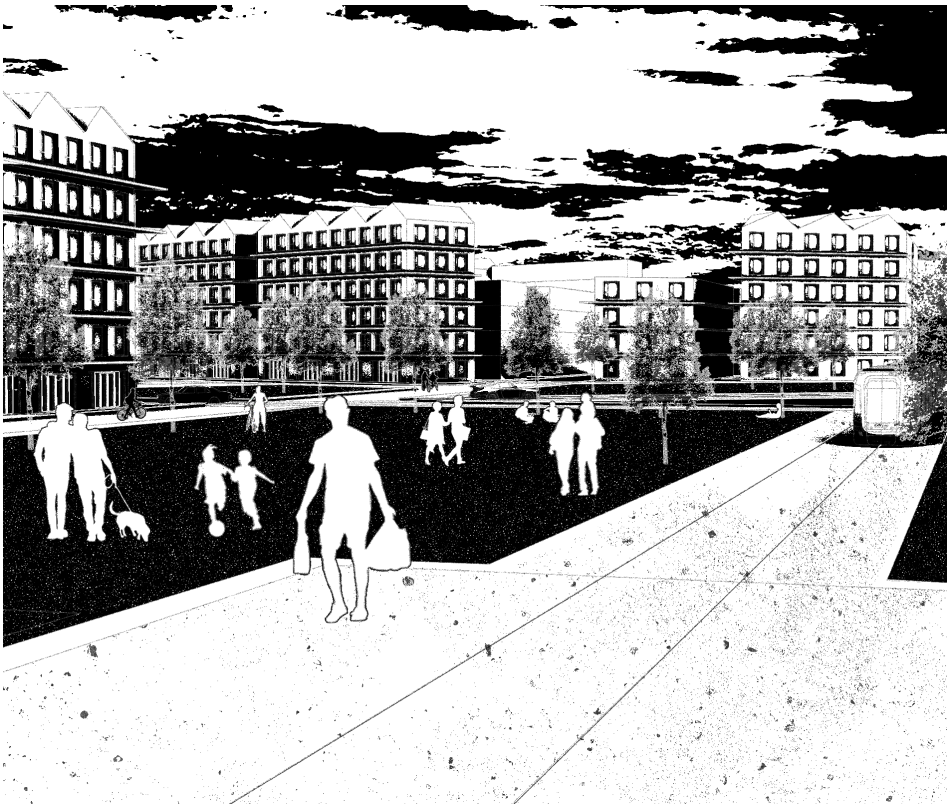

property boundary
property boundary
6.5m
6.5m
4.5m
4.5m
commercial
4.0m
5.0m
4.0m
10.0m
green space
courtyard
mixed-use residential
ped. zone
bike lane
ped. zone
residential
green space
alley





1:250

Fig. 136 E/W Section B



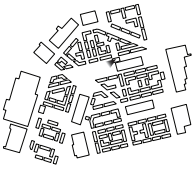
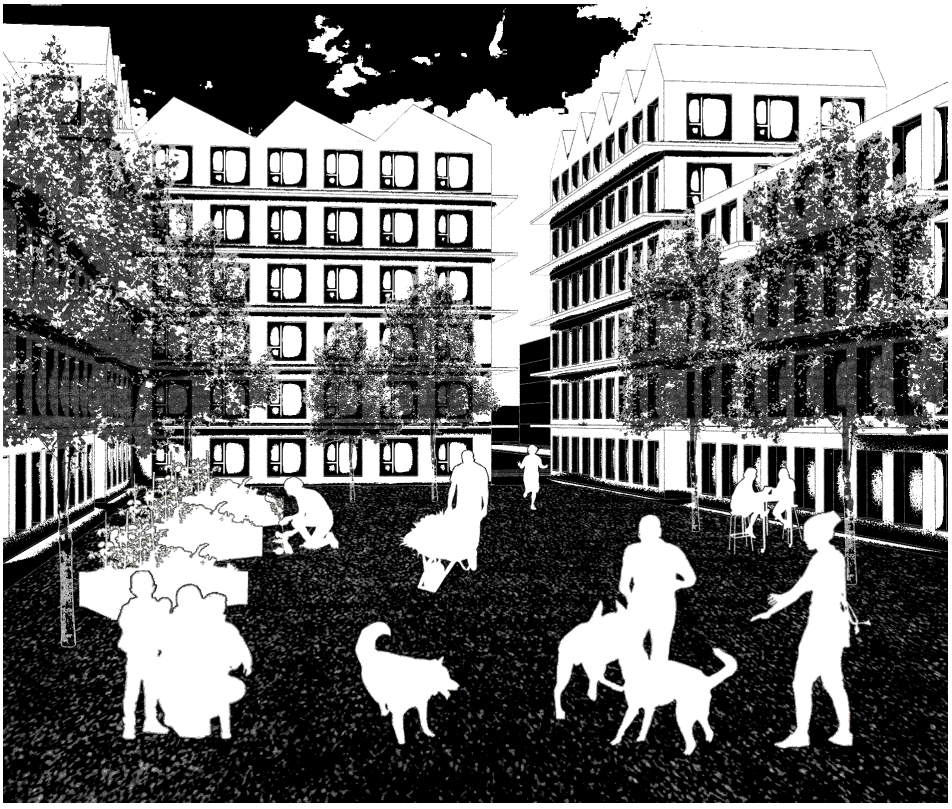


Illustration of public green space near an LRT stop, immediately accessible to adjacent residential buildings.

Fig. 137 LRT Stop Vignette



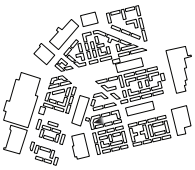


Illustration of one of the various semi-public courtyards located throughout the site.

Fig. 138 Courtyard Vignette



Illustration of pedestrian circulation paths and city park near new residential buildings and the existing Walmart.

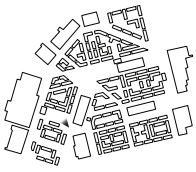
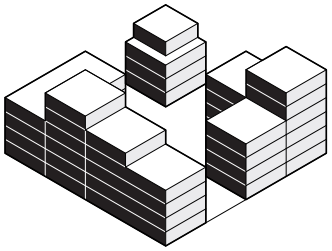


Fig. 139 City Park Vignette

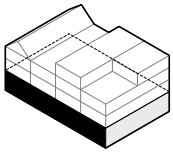
The Green Village District

Inspired by the urban design principles of Vauban, Germany, The Green Village District creates a continuous network of green spaces that permeates the site. The proposed LRT serves as the primary mode of access, while vehicular traffic is concentrated along a central spine road with smaller local streets branching outward to provide access to the surrounding residential neighbourhoods. The approach prioritizes sustainable mobility while enhancing the sites overall livability.

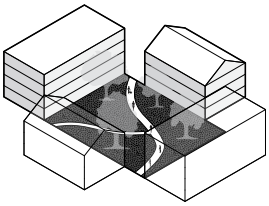
Considerations



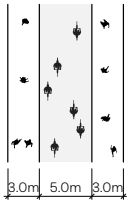
Mid-Rise



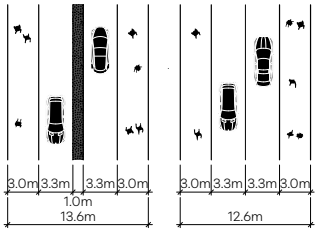
Commercial Floor



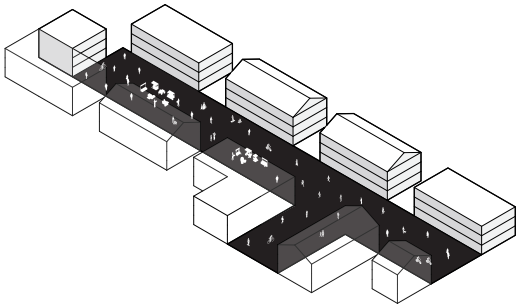
Courtyard



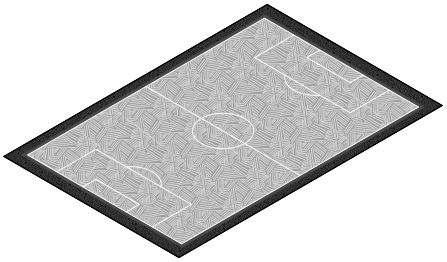
Pedestrian ROWs



Minimized Street Widths

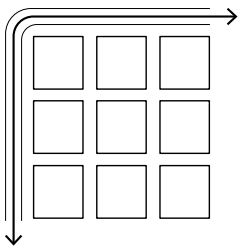


Pedestrian Streets

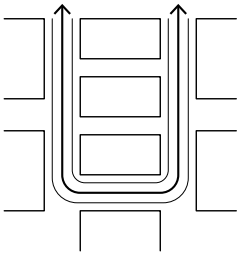


Sports Fields

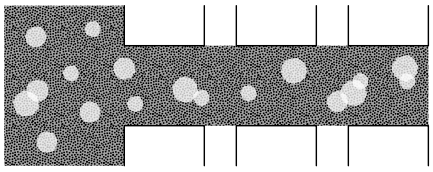
Strategies



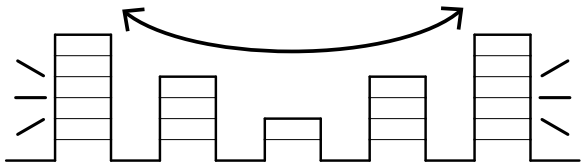
Outer Ring Road



Play Streets



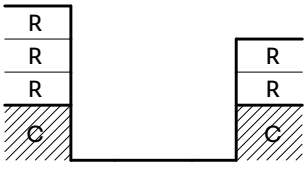
Continuous Green Space



Taller Perimeter Buildings



Active Ground Floors



Mixed-Use Development



Fig. 140 The Green Village District Site Plan

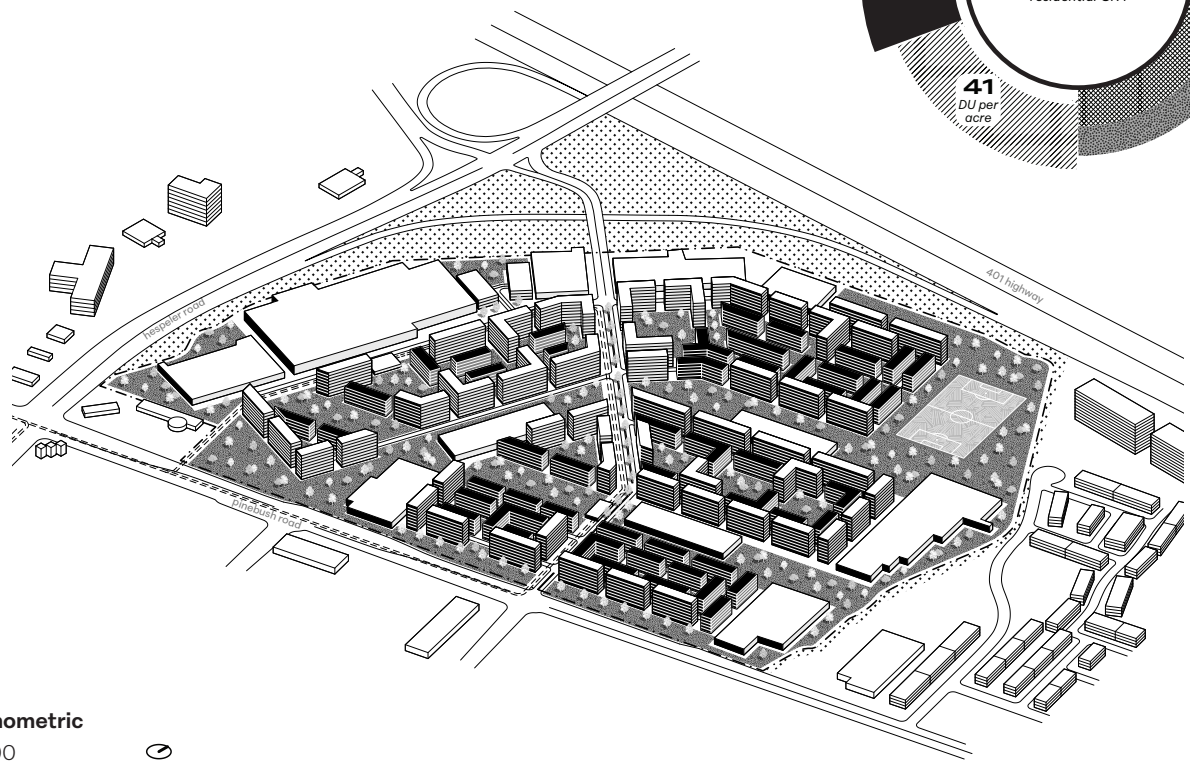
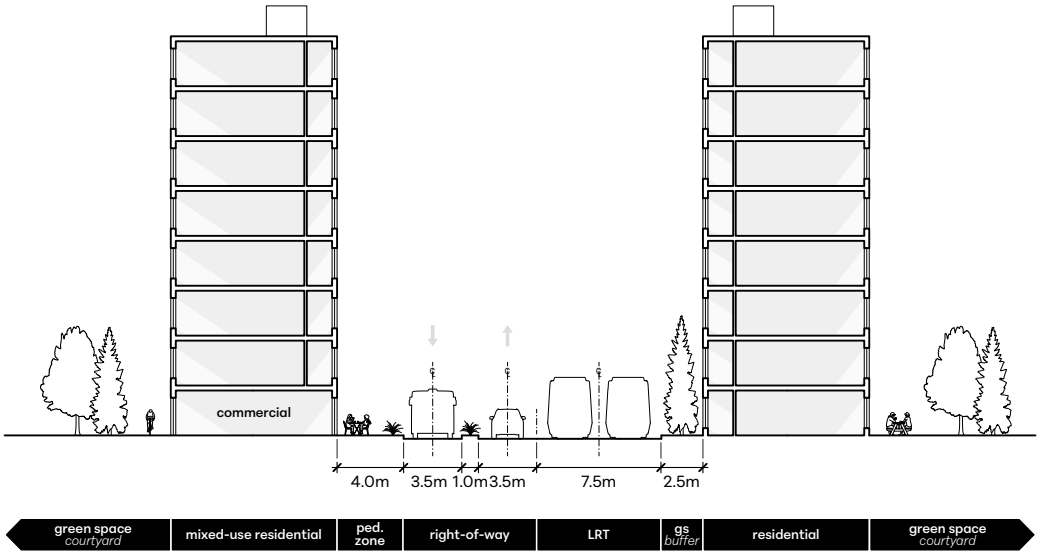


Fig. 141 The Green Village District Axonometric



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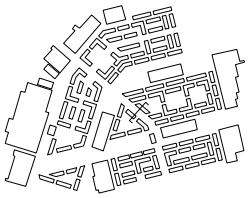
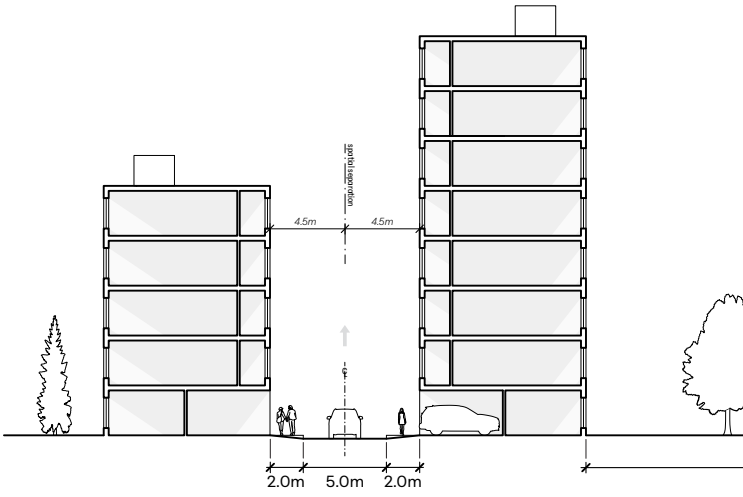
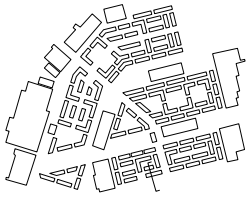
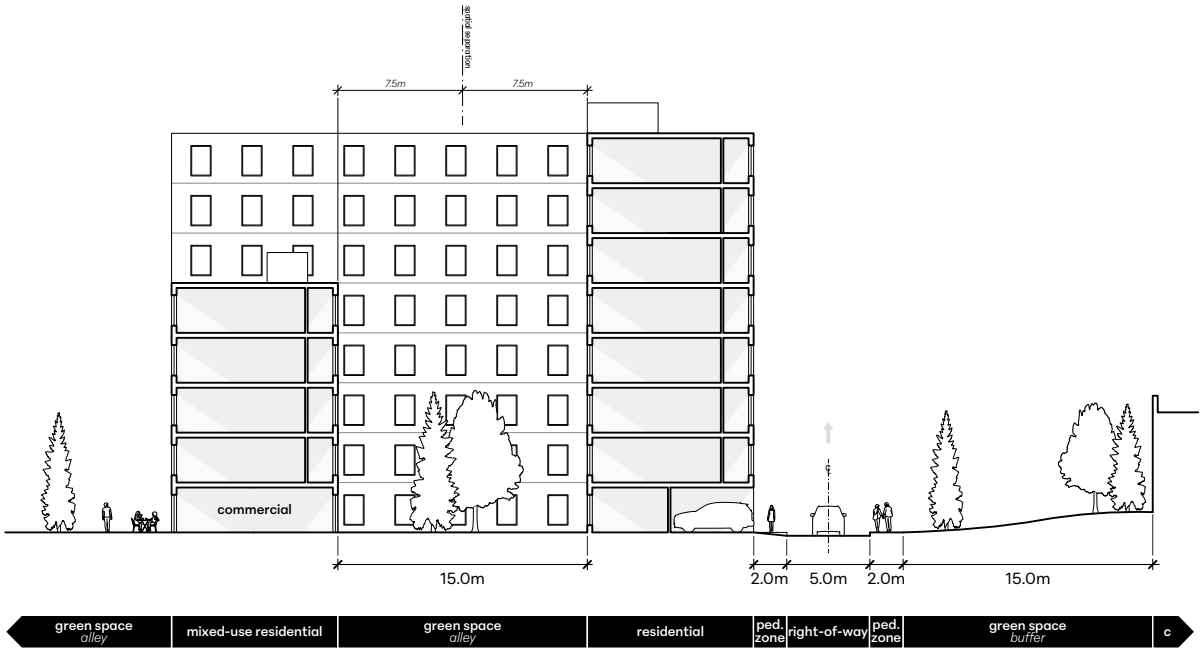


Fig. 142 NE/SW Section







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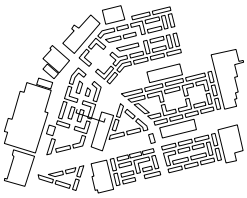

Fig. 143 E/W Section

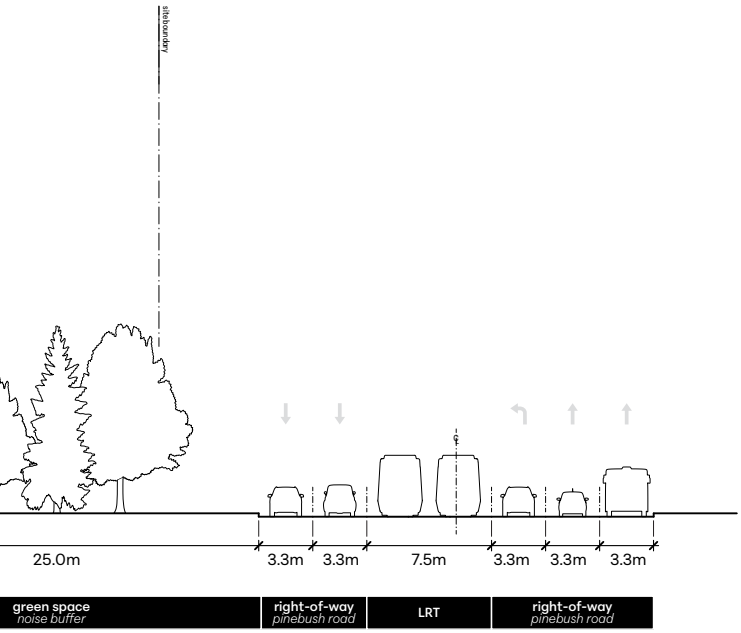

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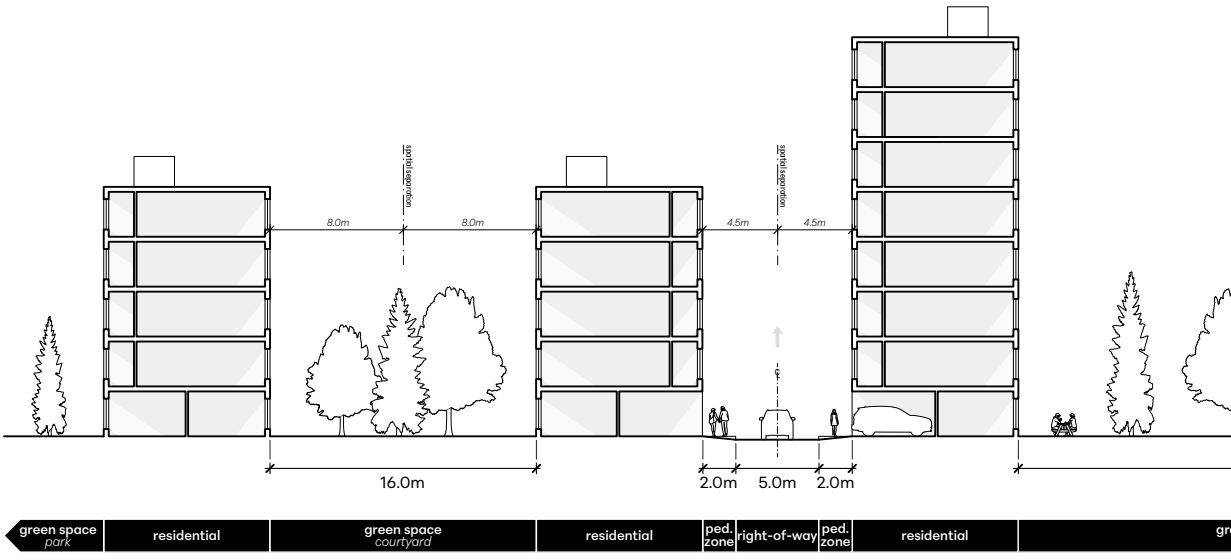
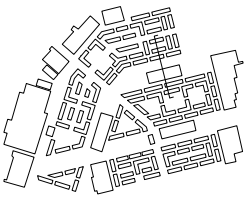
Fig. 144 Pinebush Road Section


8.0m
8.0m
4.5m
4.5m
16.0m
2.0m
5.0m
2.0m
green space
park
residential
green space
courtyard
residential
ped.
zone
right-of-way
ped.
zone
residential



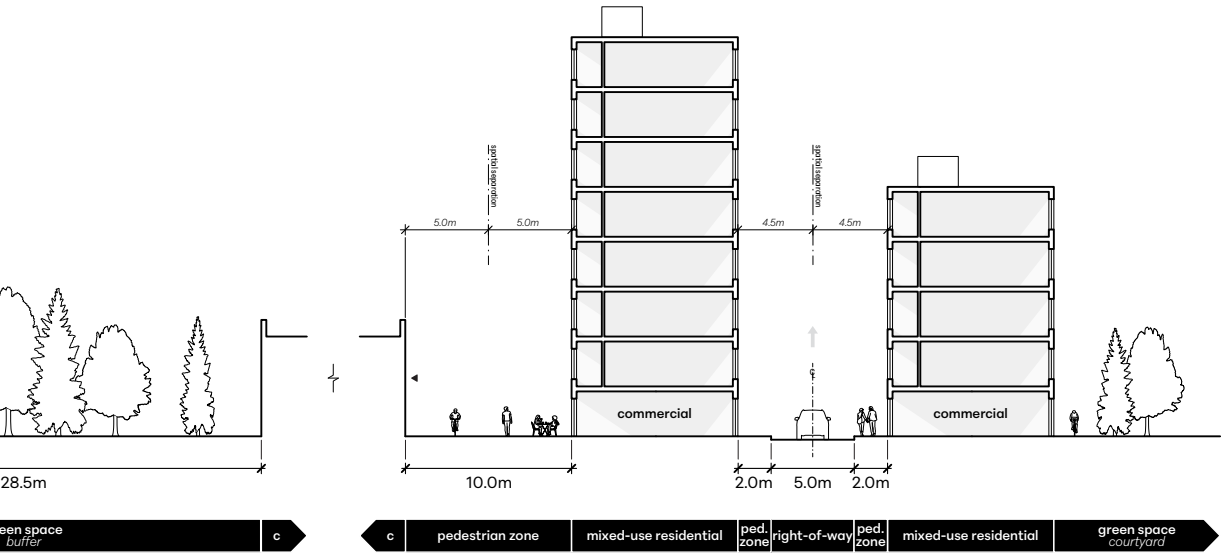


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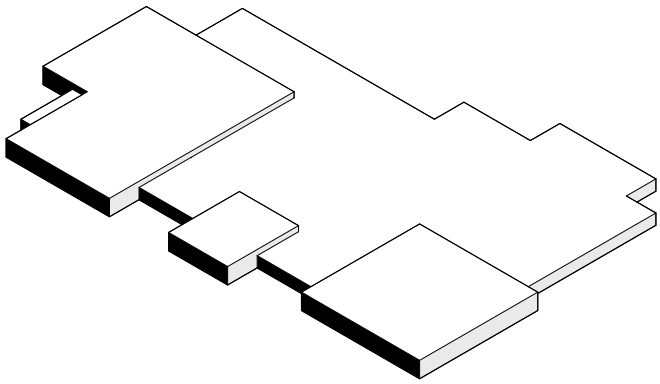
Fig. 145 N/S Section

The Mall

The Mall explores the site's potential to be redevelopment into a traditional shopping mall, reimagining the existing retail centre as a more consolidated commercial destination.

Considerations



Shopping Mall

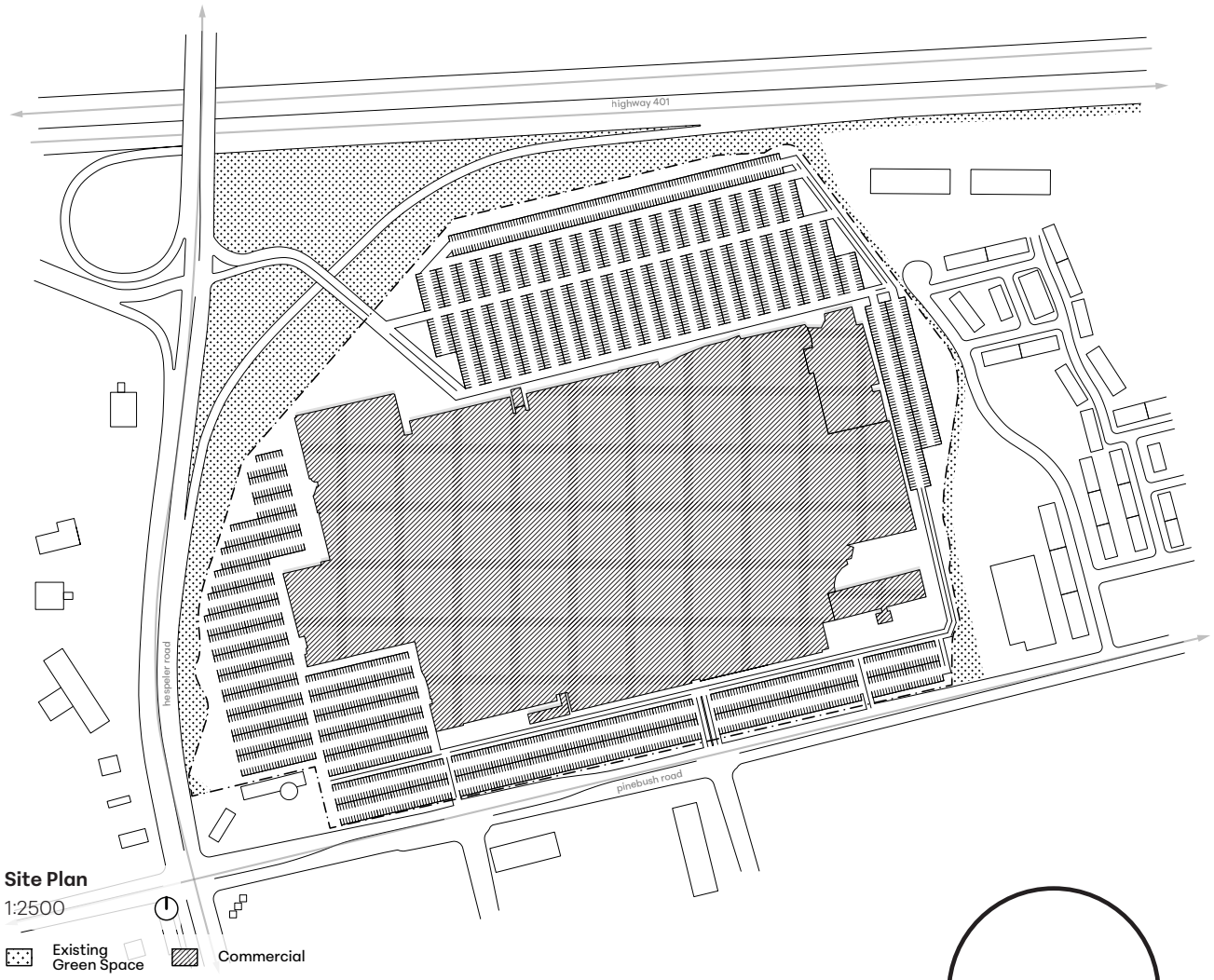


Fig. 146 The Mall Site Plan

0 sqm
residential GFA

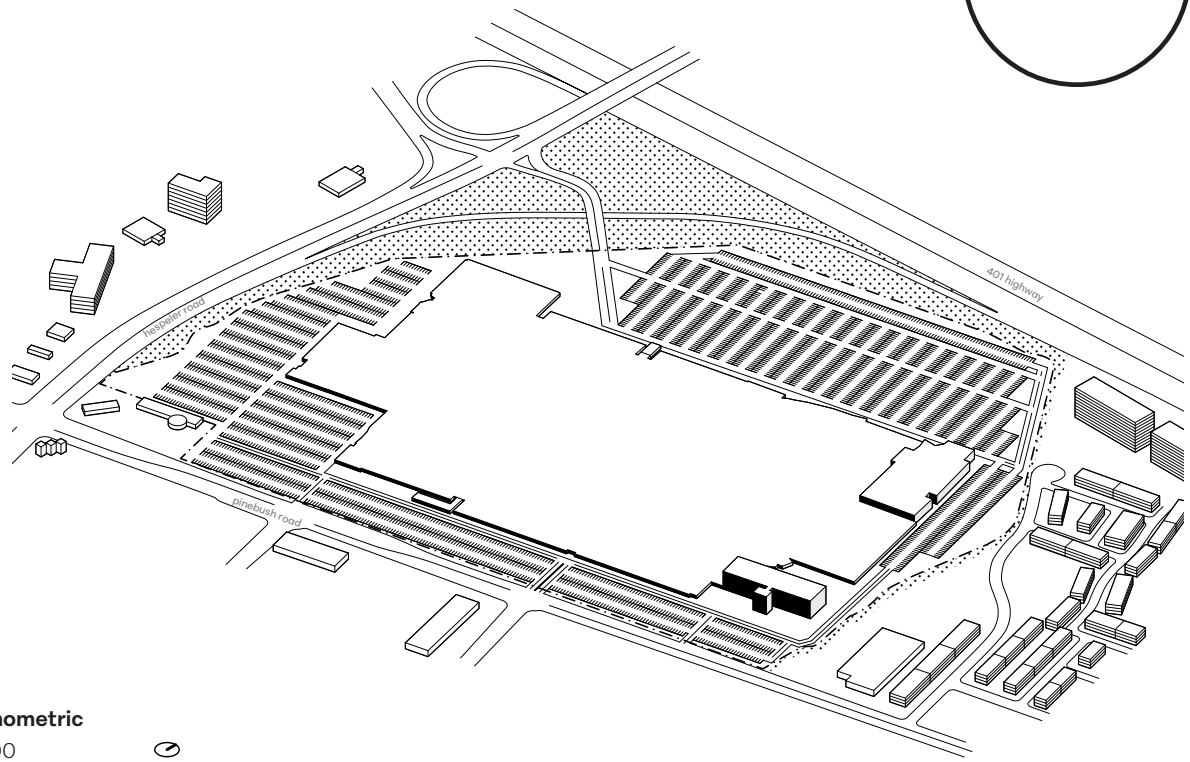
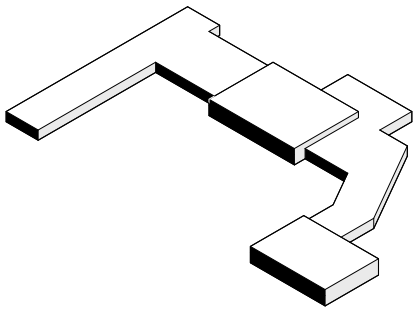


Fig. 147 The Mall Axonometric

The Strip Mall Corridor

Similar to the previous option, the site is transformed to reflect the urban design of Hespeler Road, reimagining the existing retail centre into a series of strip malls.

Considerations



Strip Mall



Fig. 148 The Strip Mall Corridor Site Plan

0 sqm
residential GFA

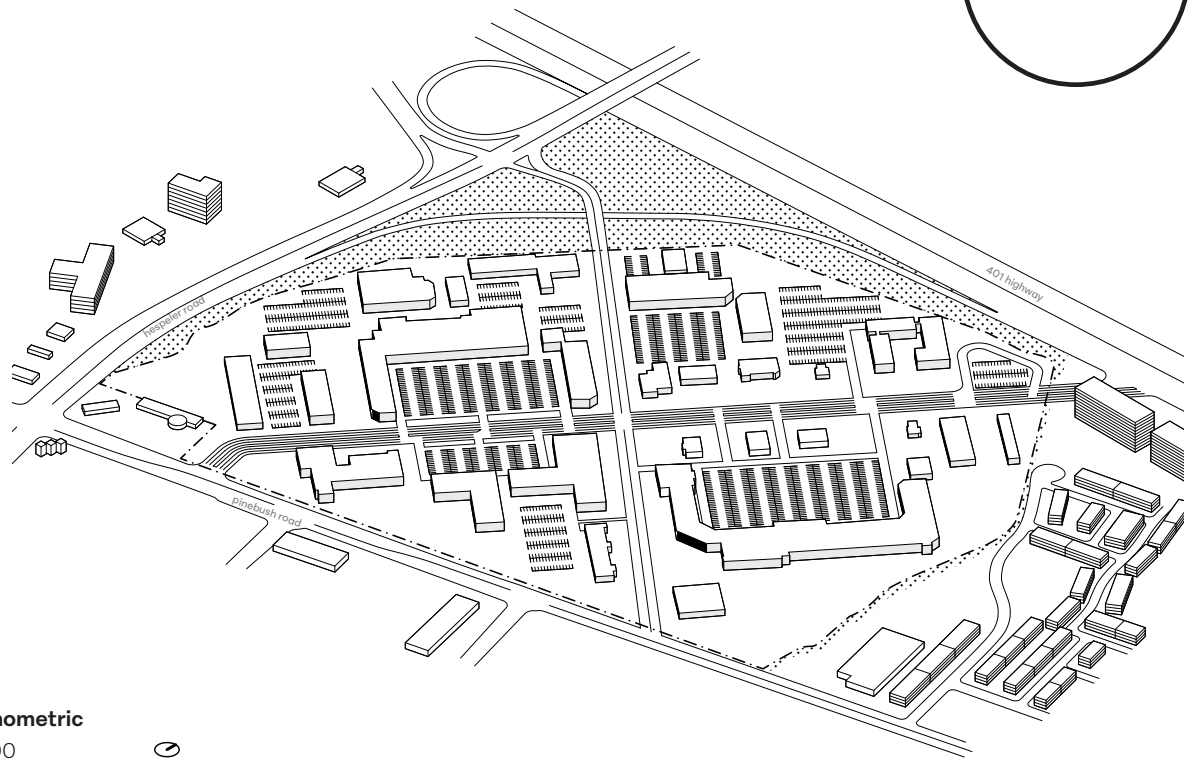
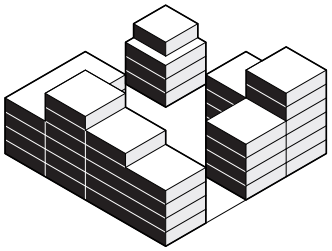


Fig. 149 The Strip Mall Corridor Axonometric

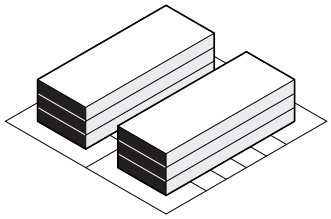
The Byker Wall District

Inspired by the radical urban design approach of the Byker Wall in Newcastle, UK, majority of the residential density is located on the perimeter of the site in a single residential building. However, this option requires all existing retail to be demolished and replaces them with various lower-density townhomes.

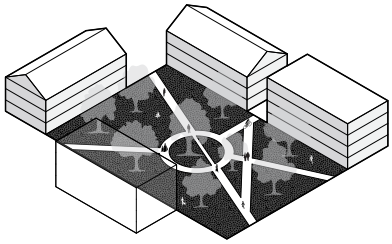
Considerations



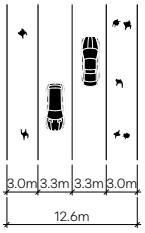
Mid-Rise



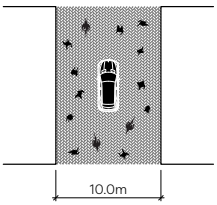
Townhouses



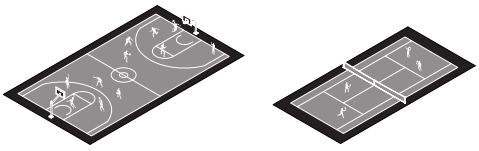
Neighbourhood Parks



Minimized Street Widths

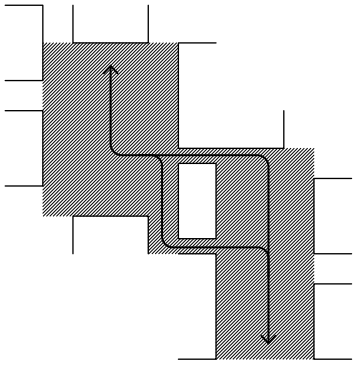


Civic Streets

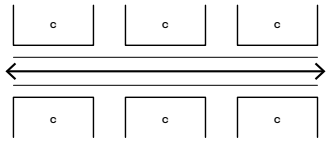


Sports Courts

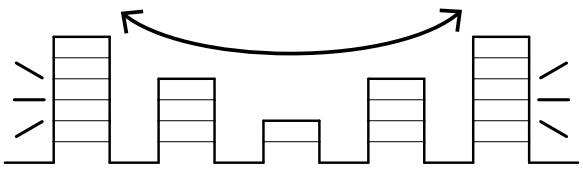
Strategies



Continuous Green Space



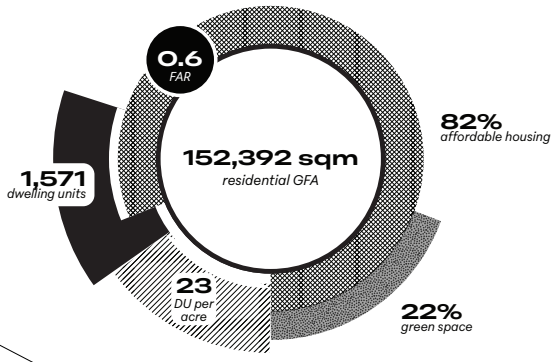
Central Corridor



Taller Perimeter Buildings



Fig. 150 The Byker Wall District Site Plan



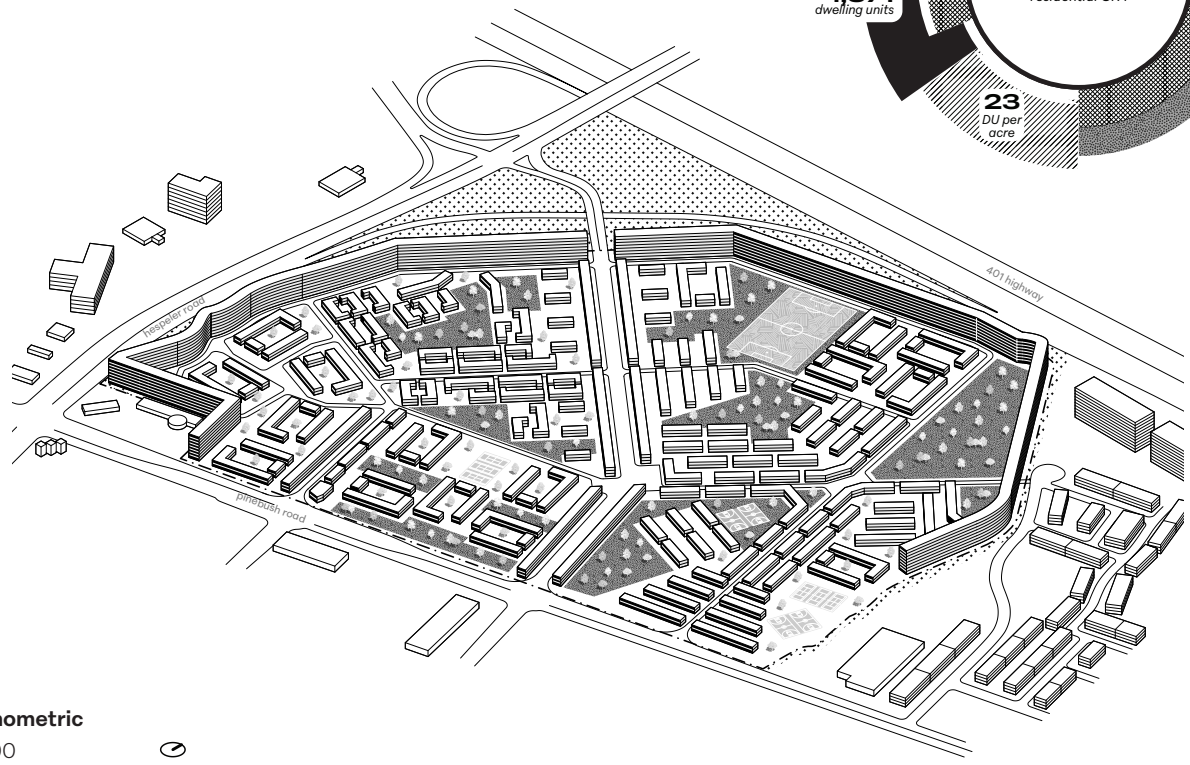
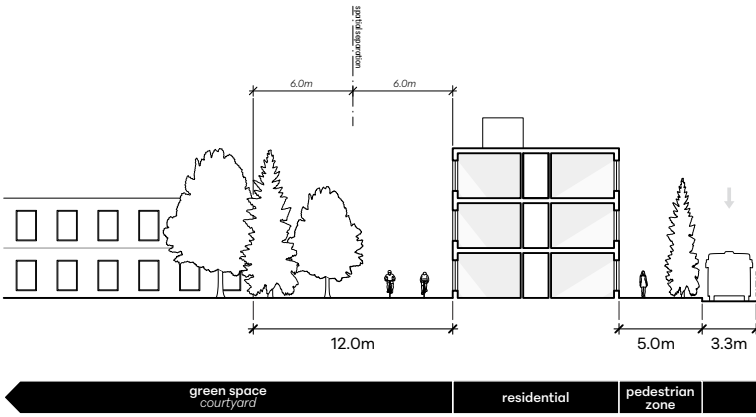
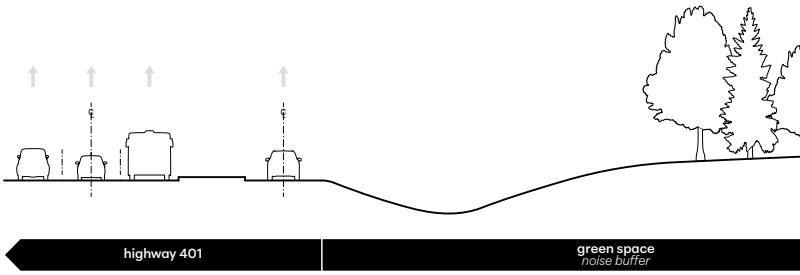


Fig. 151 The Byker Wall District Axonometric


6.0m
6.0m
12.0m
5.0m
3.3m
green space
courtyard
residential
pedestrian
zone




highway 401
green space
noise buffer



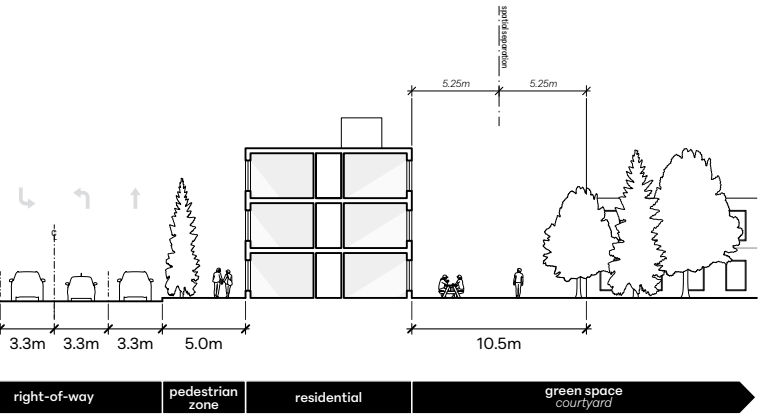


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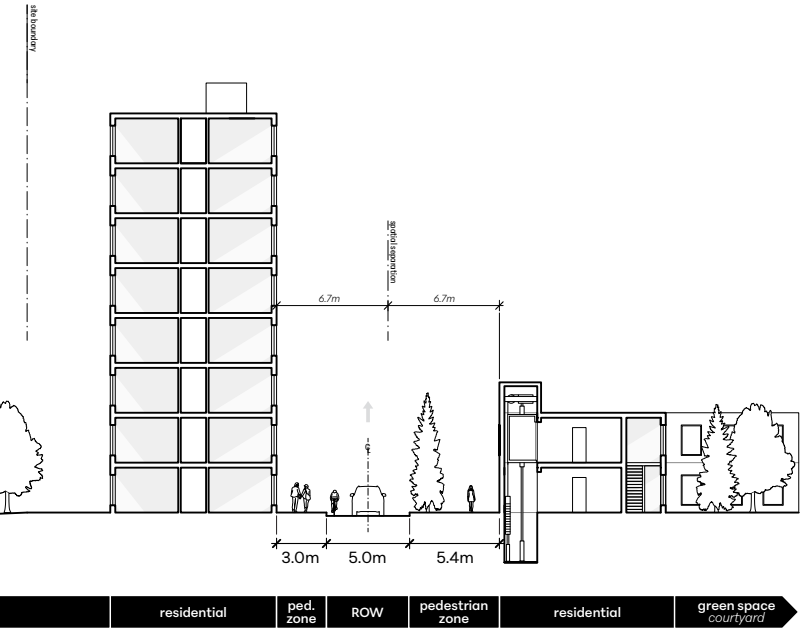
Fig. 152 N/S Section



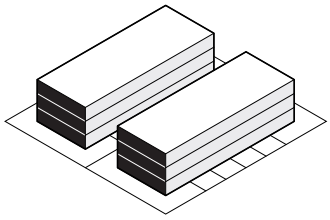
1:250

Fig. 153 NE/SW Section

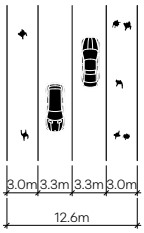
The Urban Farm

The Urban Farm reimagines the site into an urban farm to increase local food production and improve food security. Lower-density townhouse developments are incorporated to introduce residential uses to the site. Much of the existing retail landscape is preserved by retaining the site's anchor stores, creating a balanced mix of commercial, residential, and agricultural uses.

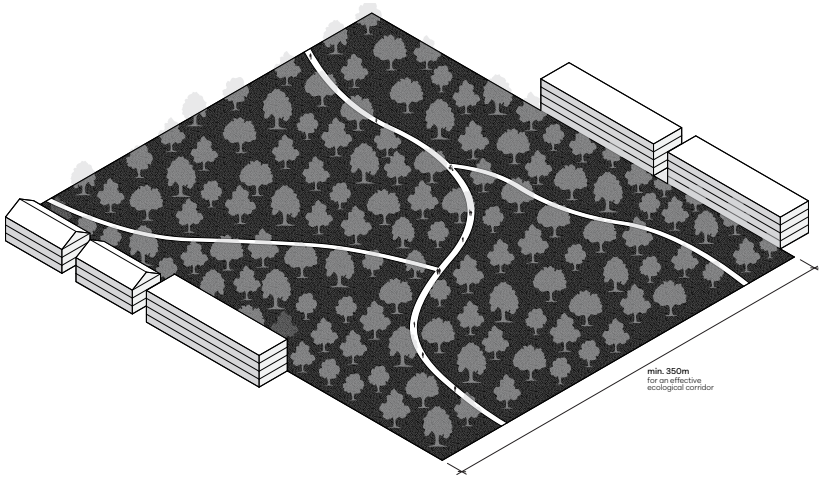
Considerations



Townhouses

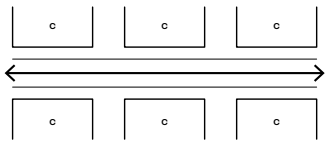


Minimized Street Widths

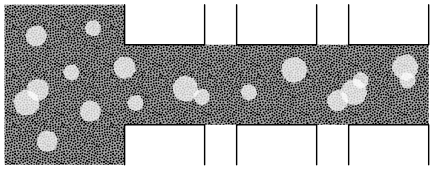


Ecological Corridor/ Nature Reserve

Strategies



Central Corridor



Continuous Green Space

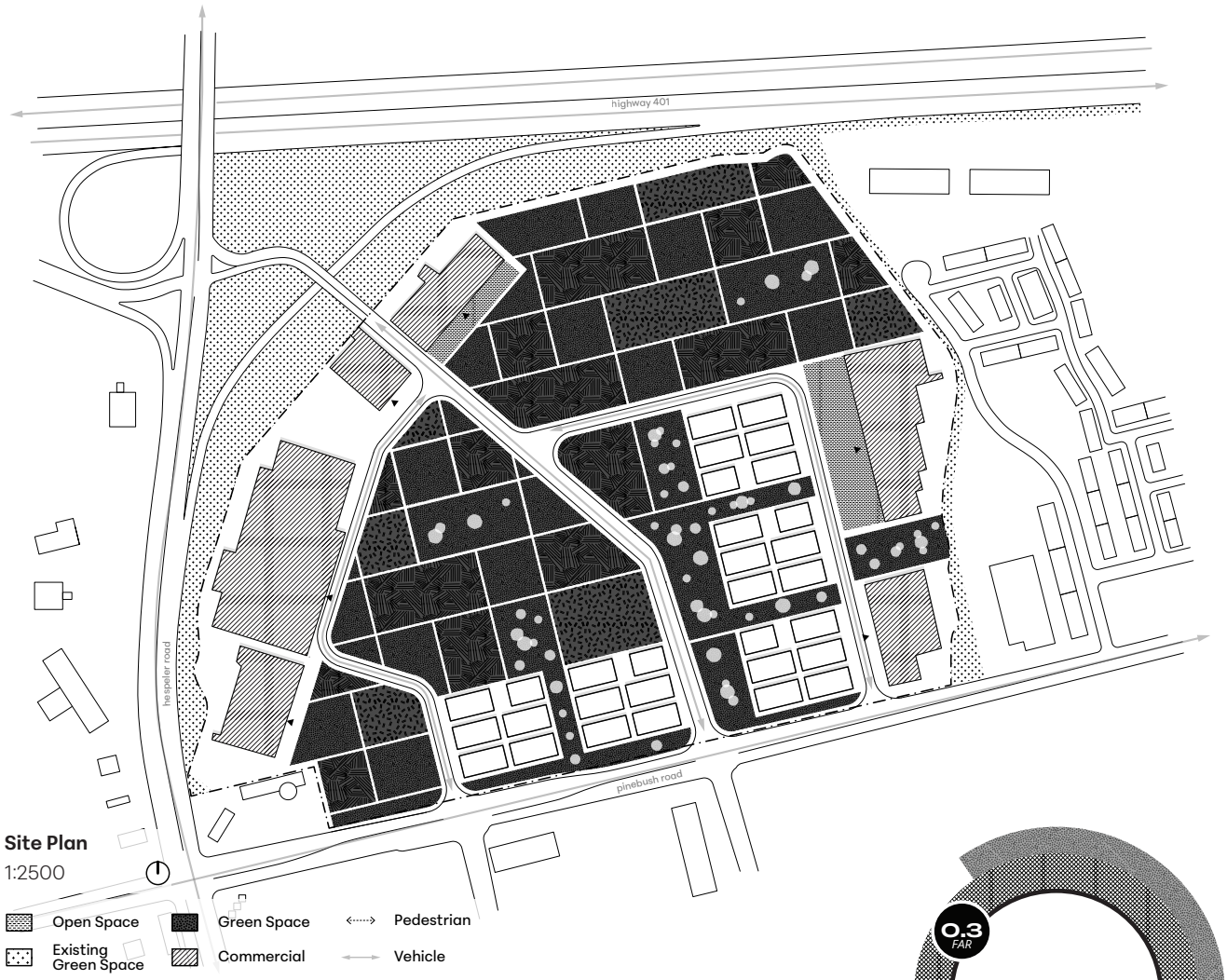


Fig. 154 The Urban Farm Site Plan

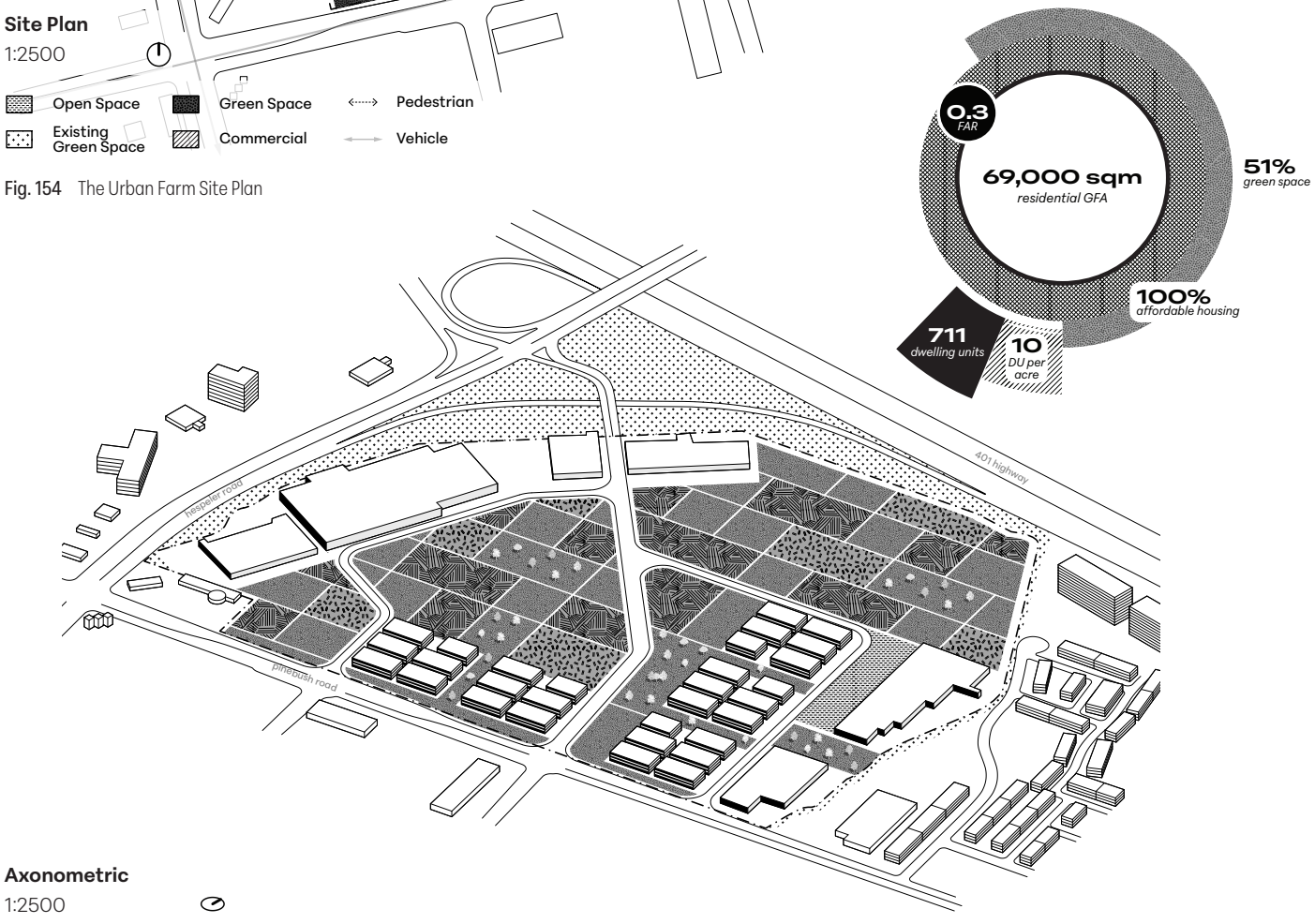
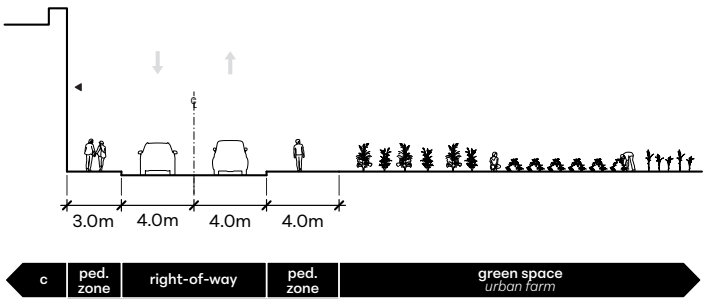
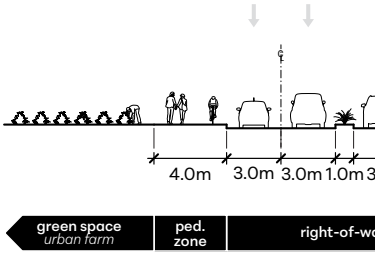


Fig. 155 The Urban Farm Axonometric





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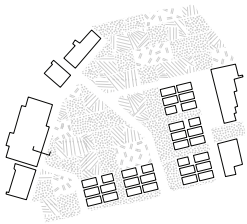


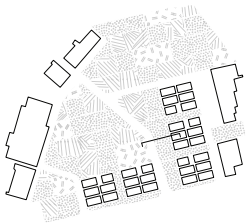
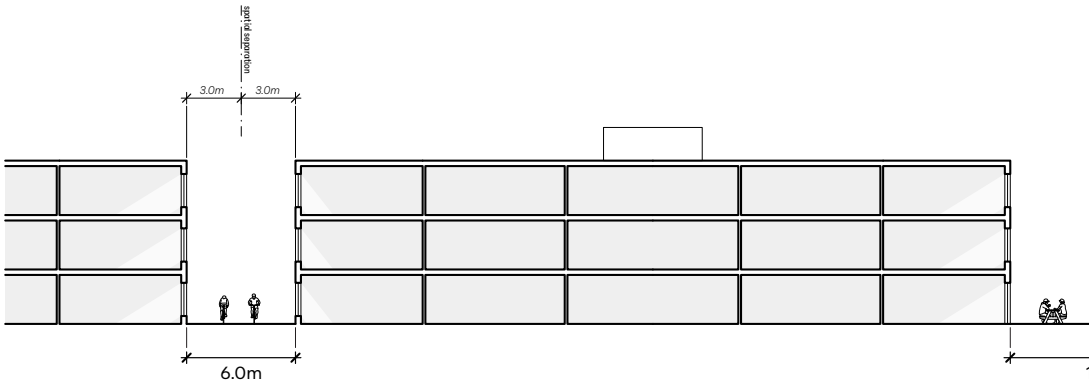
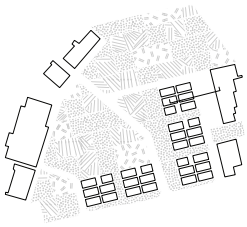


Fig. 156 NW/SE Section





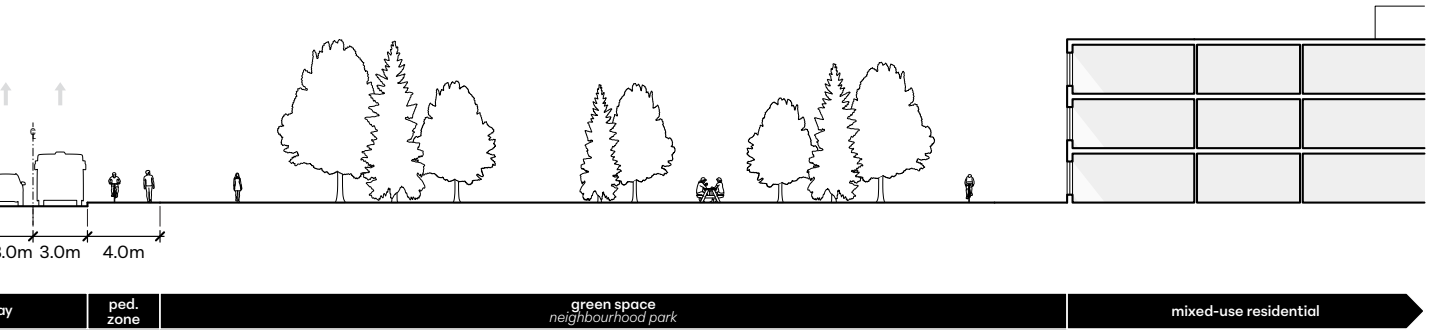


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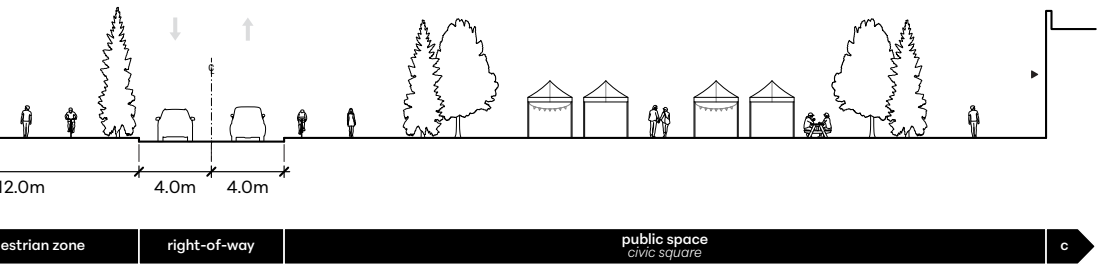
Fig. 157 E/W Section A



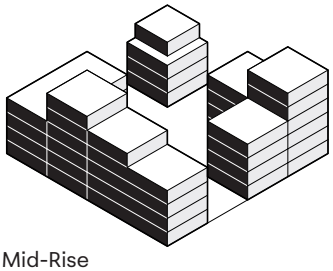
1:250

Fig. 158 E/W Section B

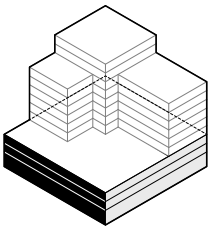
The False Creek District

Inspired by the principles of Southeast False Creek, Vancouver, BC, The False Creek District introduces residential density and public open space to the site. By removing vacant or underused retail buildings, mixed-use residential development is concentrated within the interior of the site. Similar to the False Creek model, the design organizes the site into a series of permeable blocks to create an interconnected pedestrian network to improve overall walkability and bikeability.

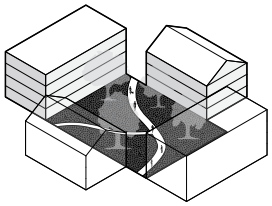
Considerations



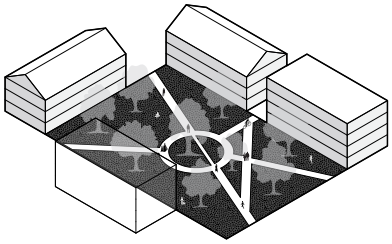
Mid-Rise



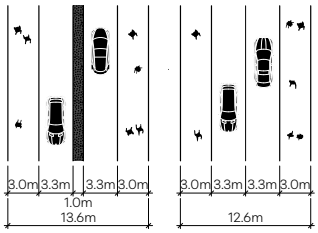
Commercial Podium



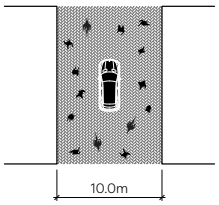
Courtyard



Neighbourhood Park

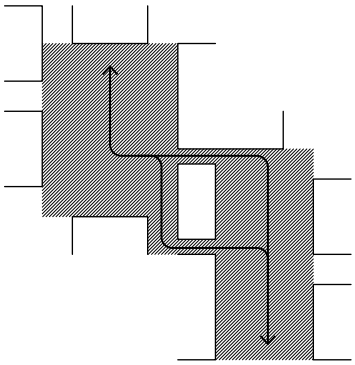


Minimized Street Widths



Civic Streets

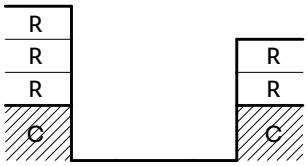
Strategies



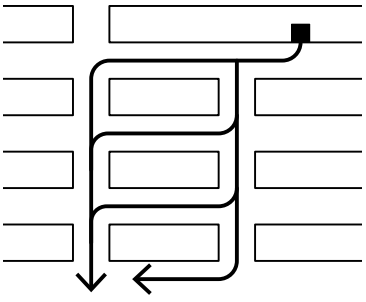
Connected Open Space



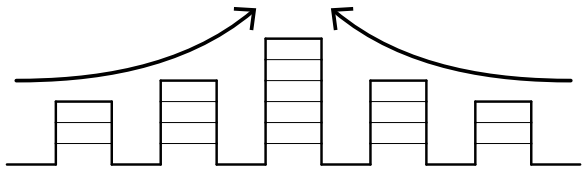
Active Ground Floors



Mixed-Use Development



Permeable Blocks



Smaller Perimeter Buildings

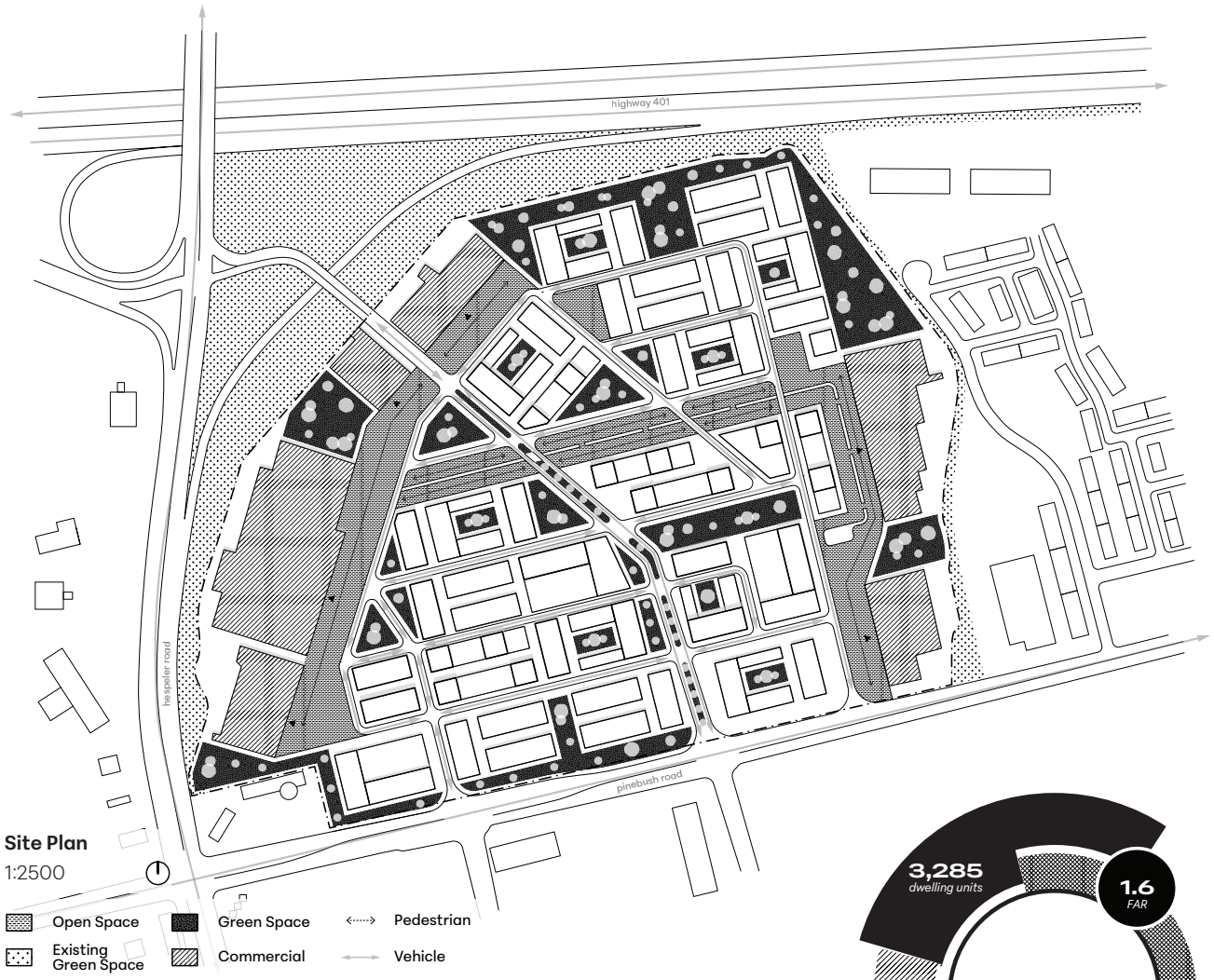
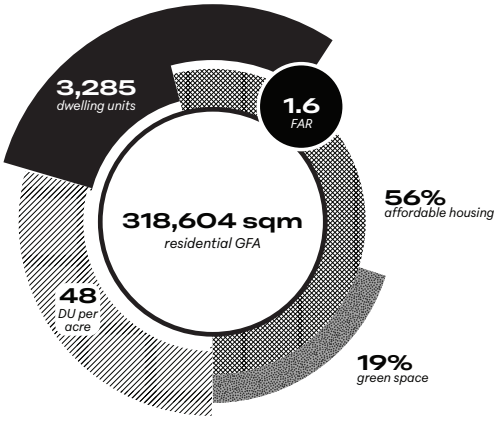


Fig. 159 The False Creek District Site Plan



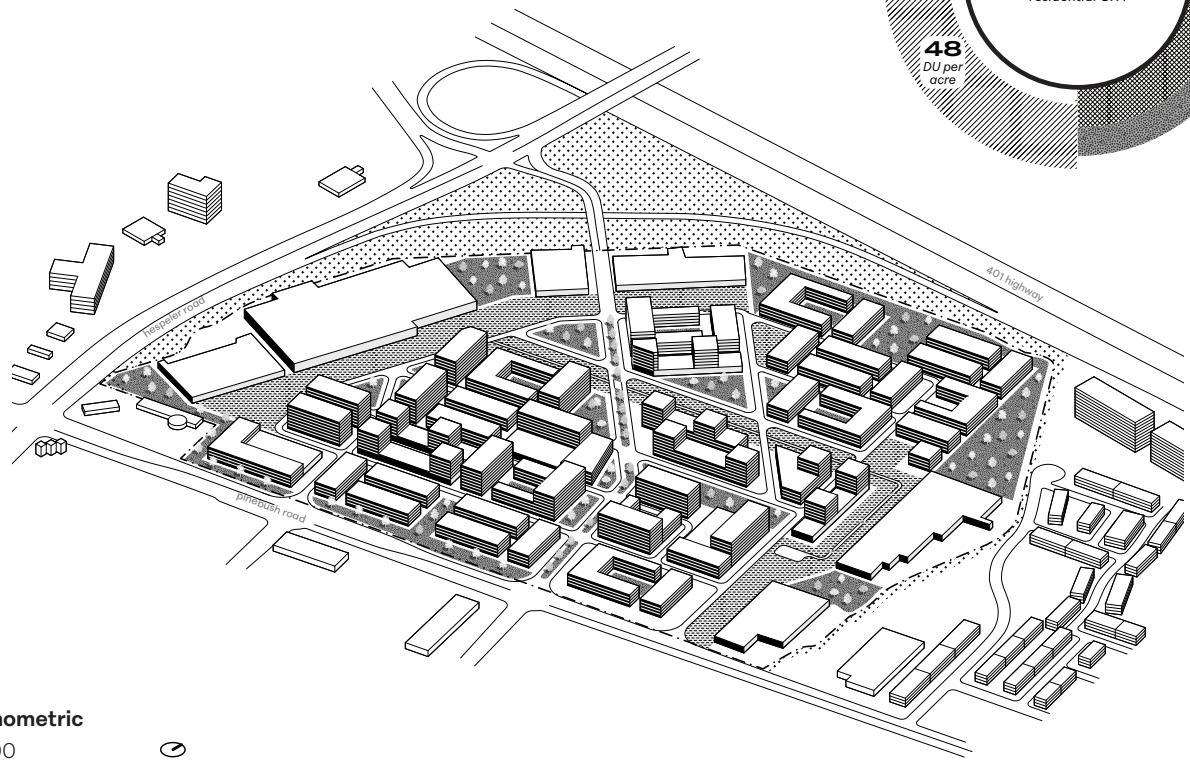
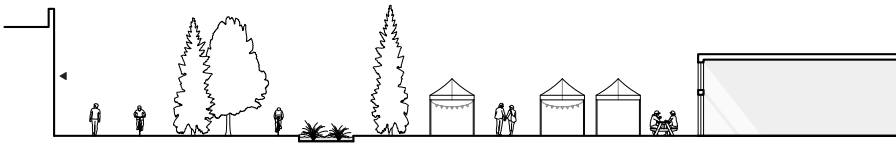
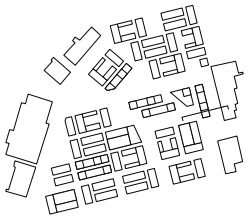
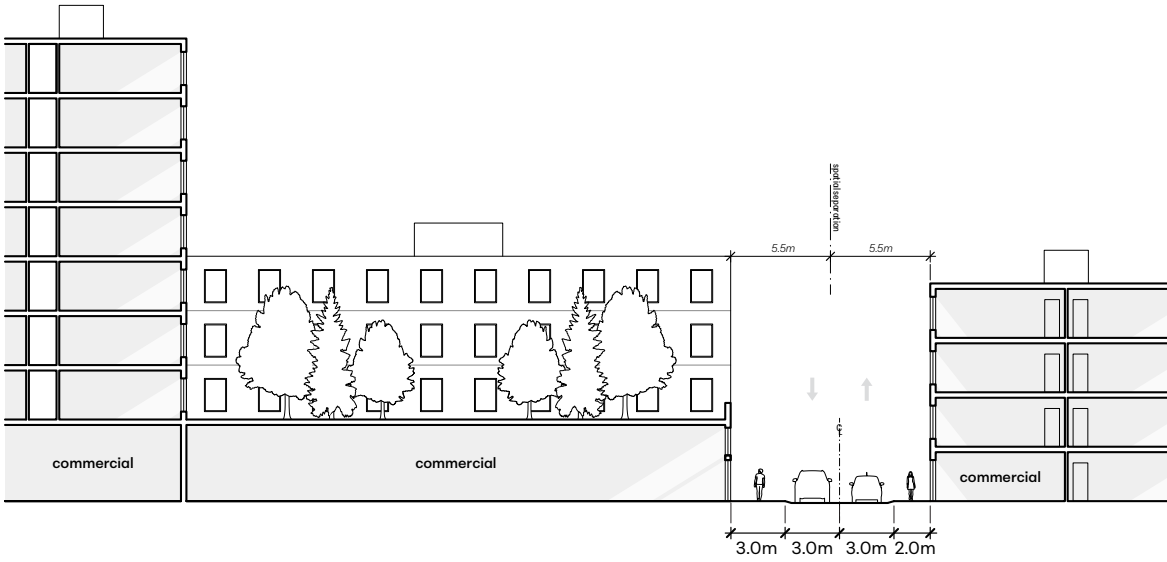


Fig. 160 The False Creek District Axonometric

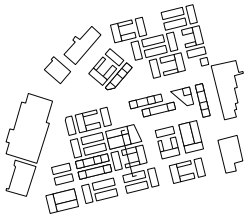


c | open space *civic square* | commer





mixed-use residential | ped. zone | right-of-way | ped. zone | mixed-use residential



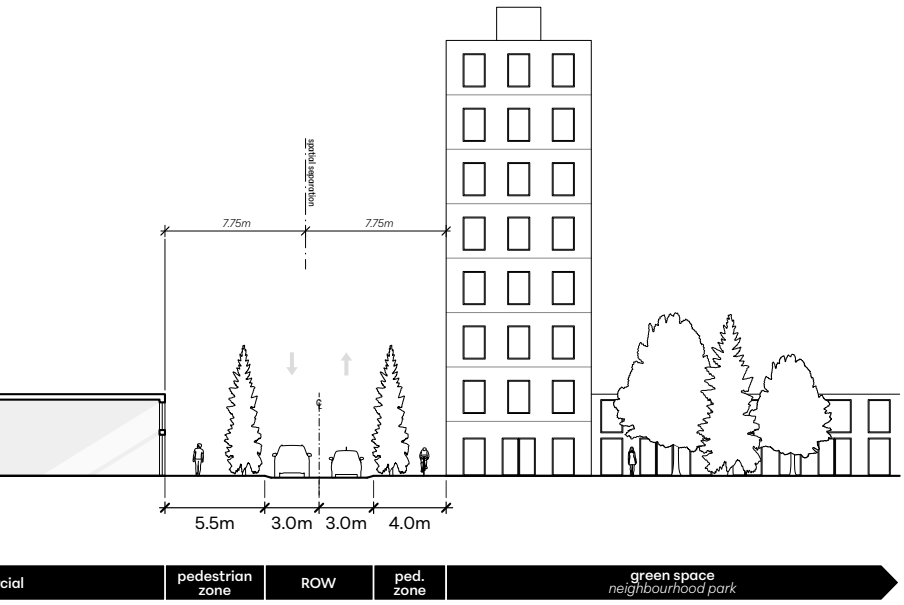


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Fig. 161 E/W Section

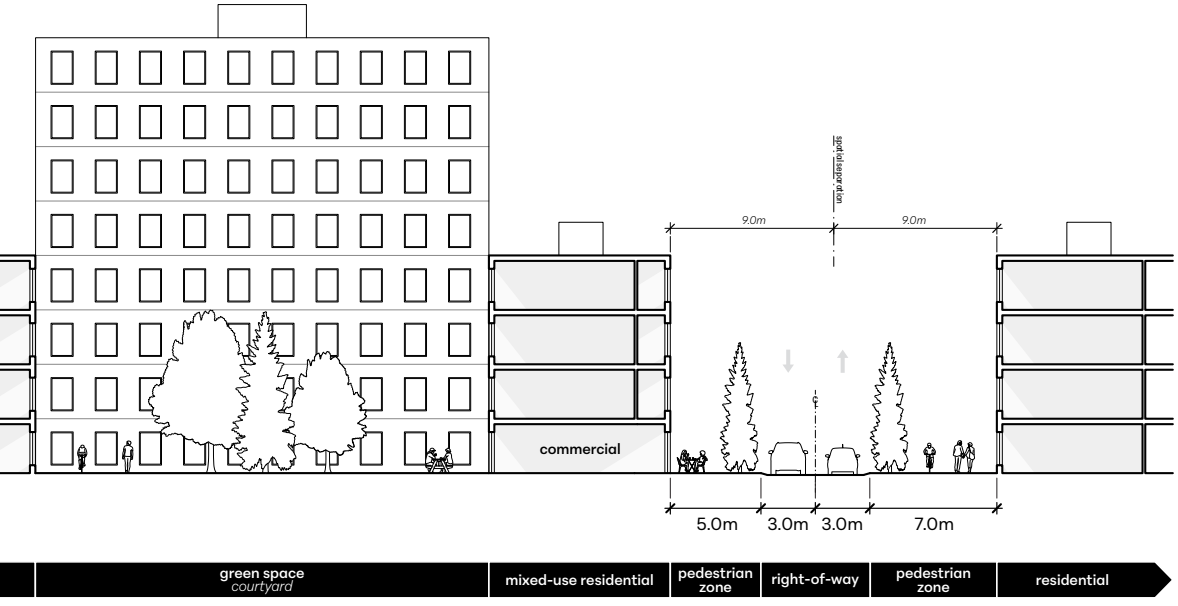

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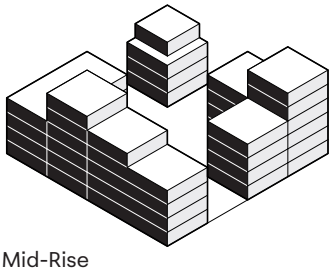
Fig. 162 N/S Section

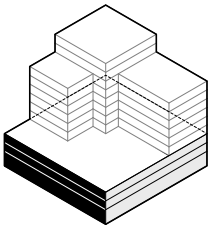
The Permeable District

Similar to the previous option, The Permeable District organizes the site into a series of permeable blocks to create an interconnected pedestrian network. However, primary access is provided through a proposed LRT integration, with all vehicle traffic concentrated along a single route. Residential development is arranged around shared courtyards, while green corridor permeates through the site to create a network of green and open space.

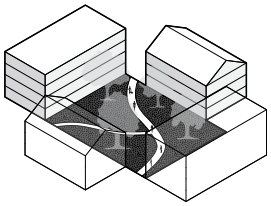
Considerations



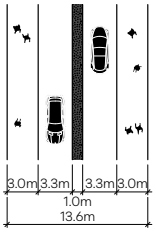
Mid-Rise



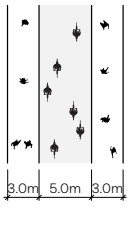
Commercial Podium



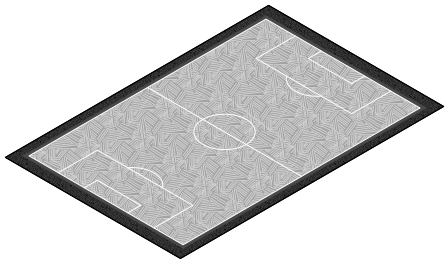
Courtyard



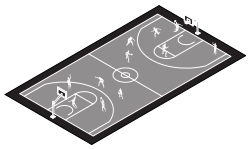
Minimized Street Widths

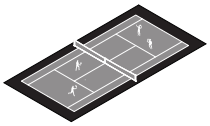


Pedestrian ROWs



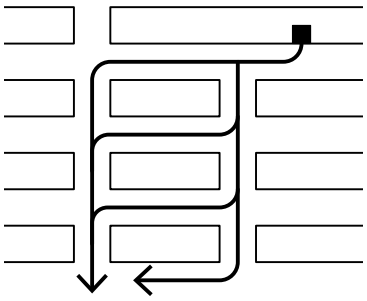
Sports Fields



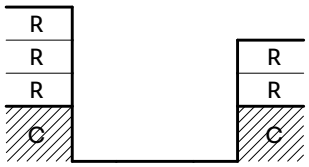


Sports Courts

Strategies



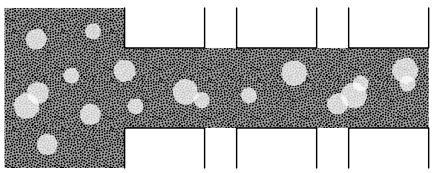
Permeable Blocks



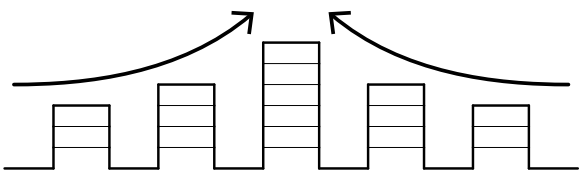
Mixed-Use Development



Active Ground Floors



Continuous Green Space



Shorter Perimeter Buildings

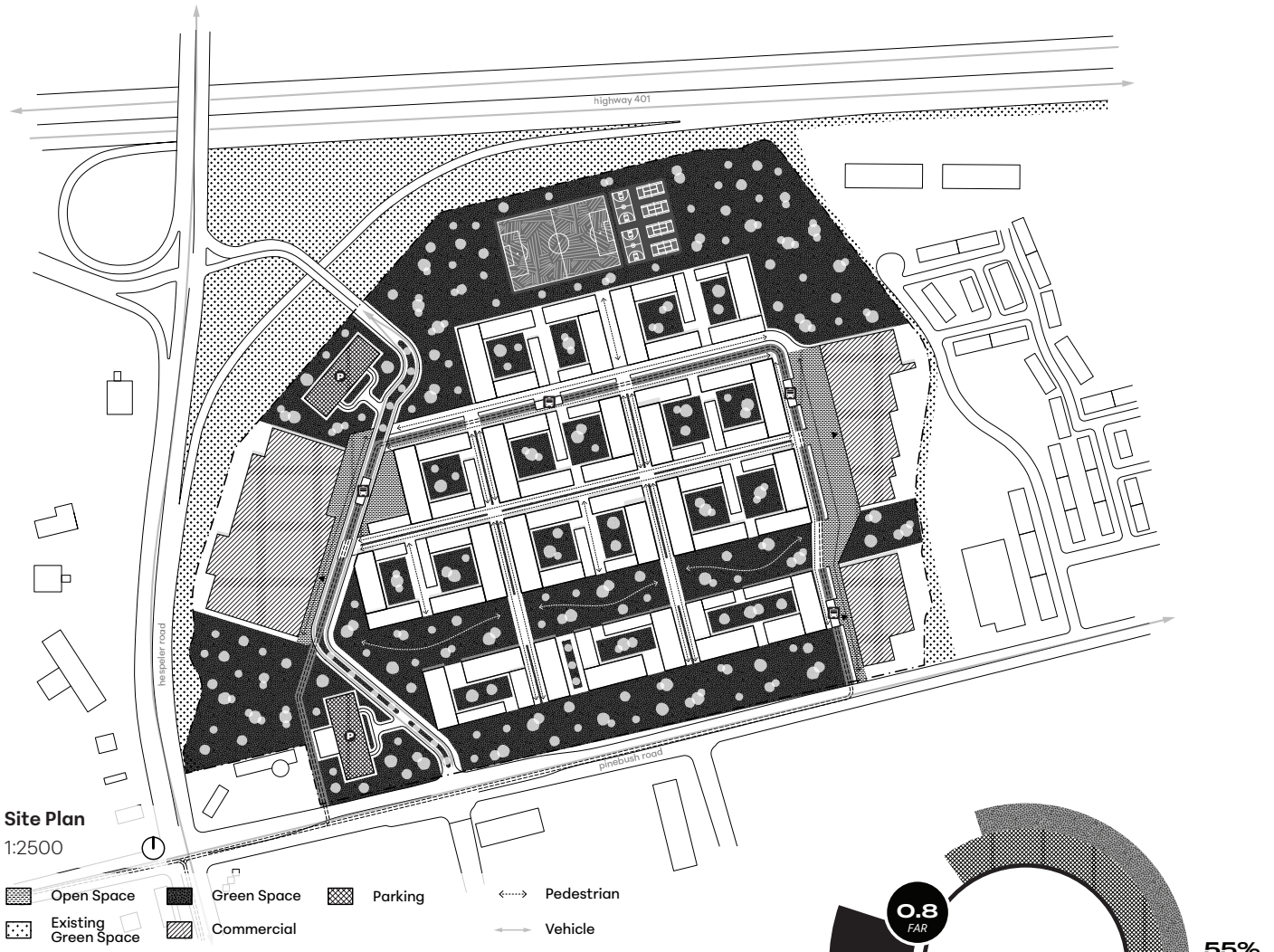
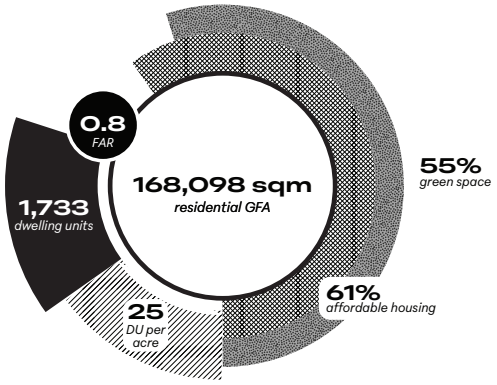


Fig. 163 The Permeable District Site Plan



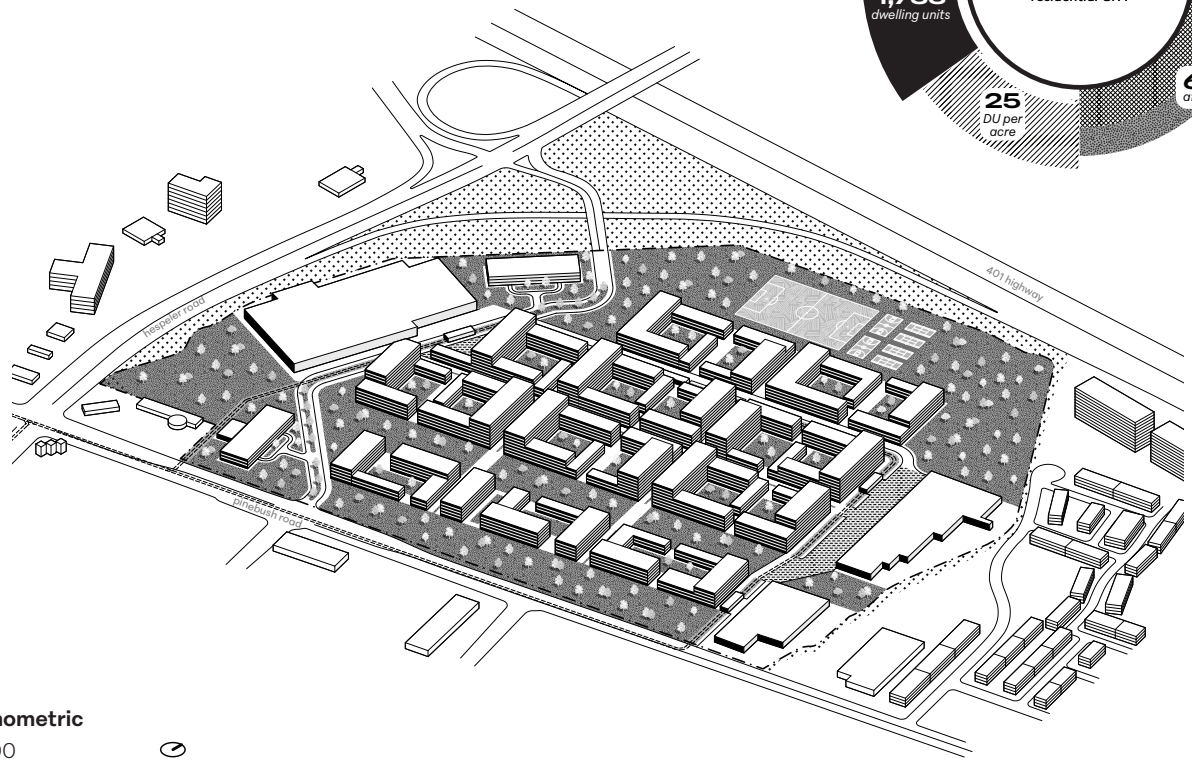
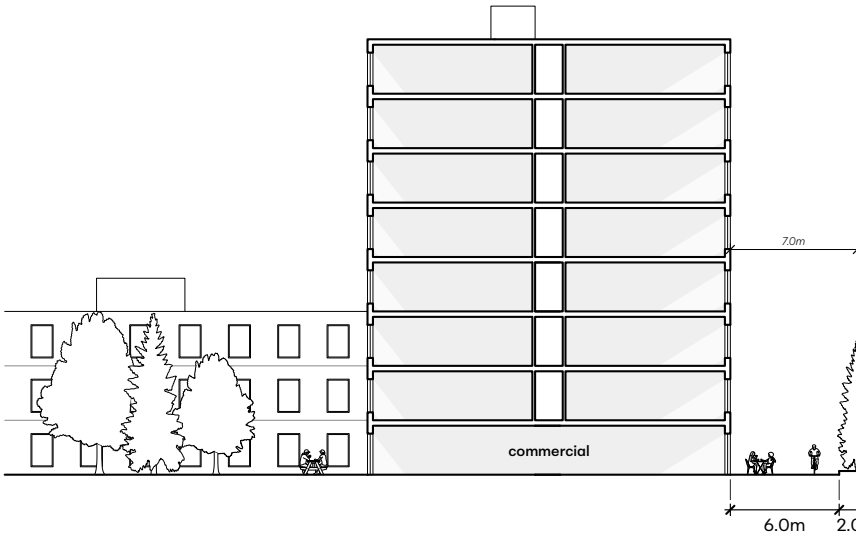
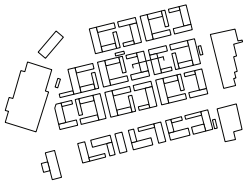
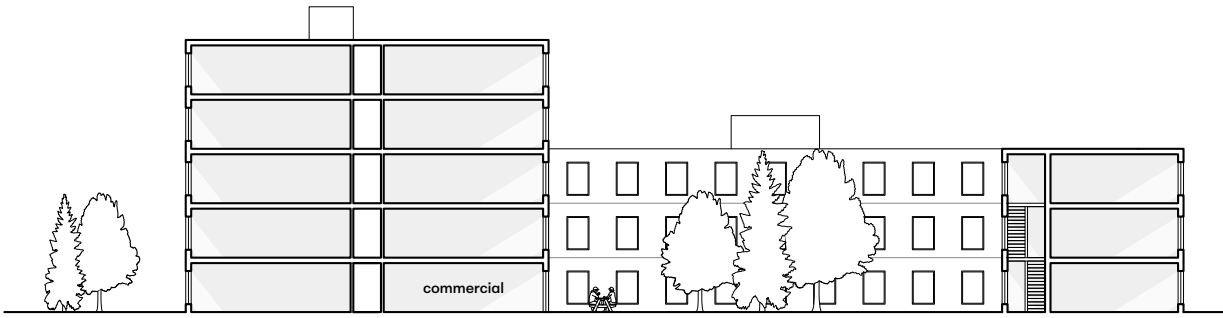
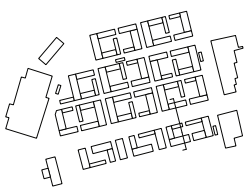


Fig. 164 The Permeable District Axonometric


7.0m
commercial
6.0m
2.0
green space
courtyard
mixed-use residential
pedestr




commercial
green space
ecological corridor
mixed-use residential
green space
courtyard
residential



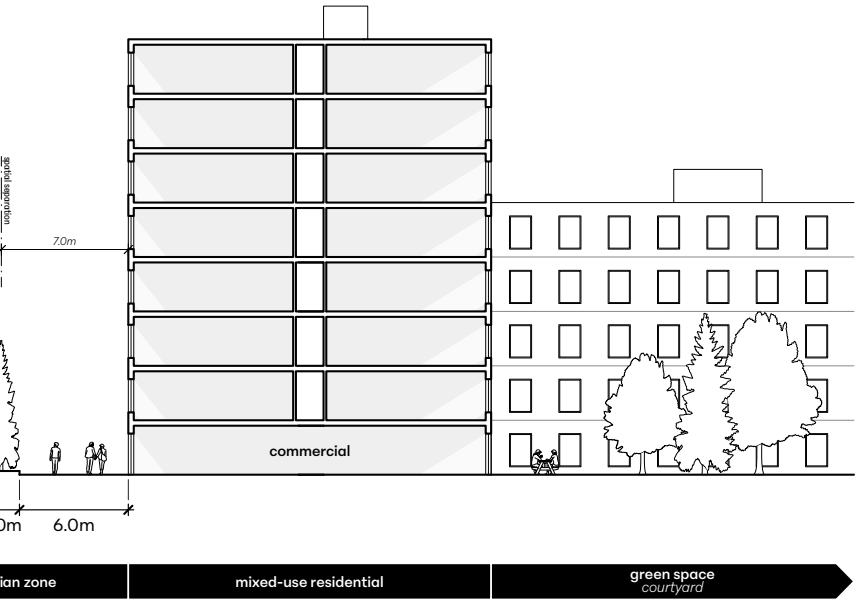


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Fig. 165 E/W Section A

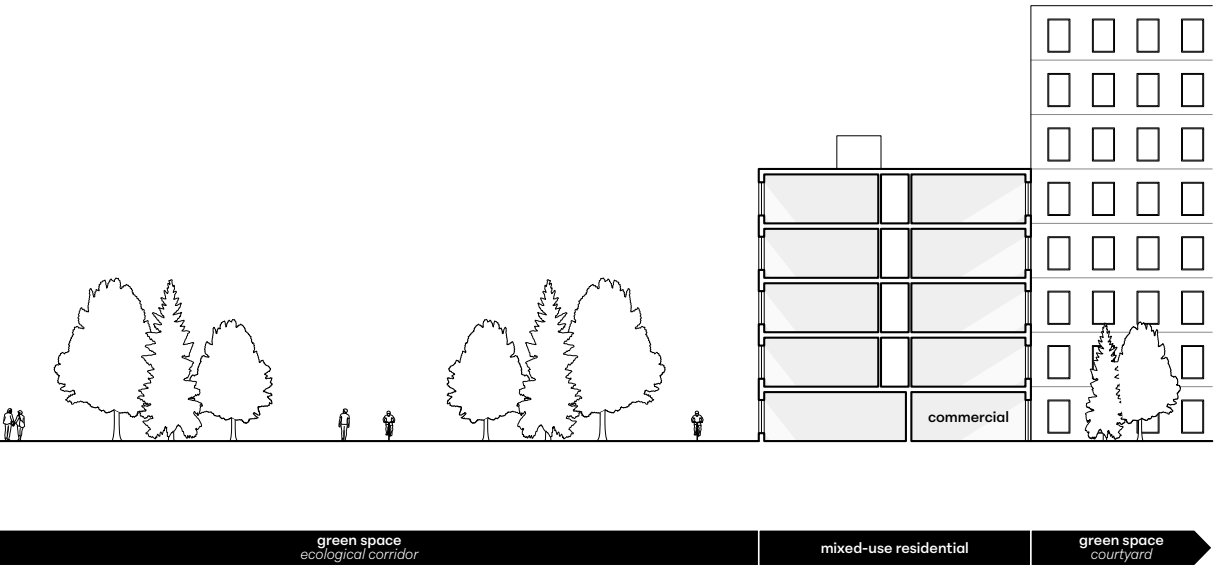

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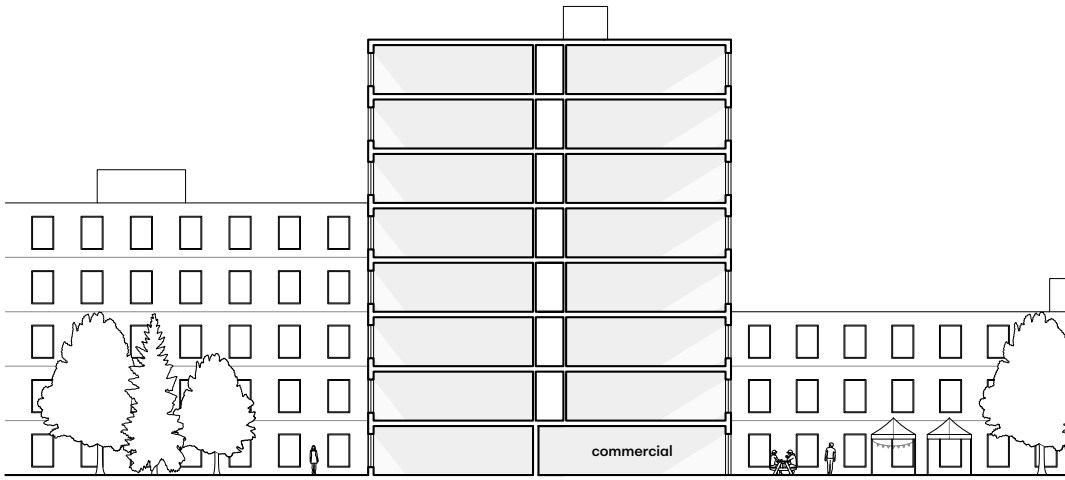
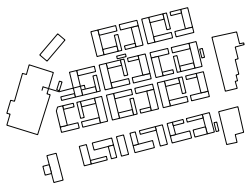
Fig. 166 N/S Section


commercial


green space
courtyard
mixed-use residential



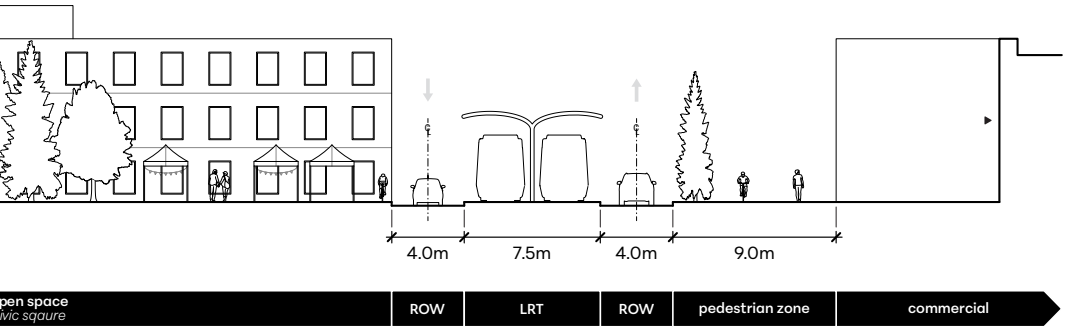


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Fig. 167 E/W Section B



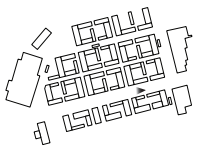
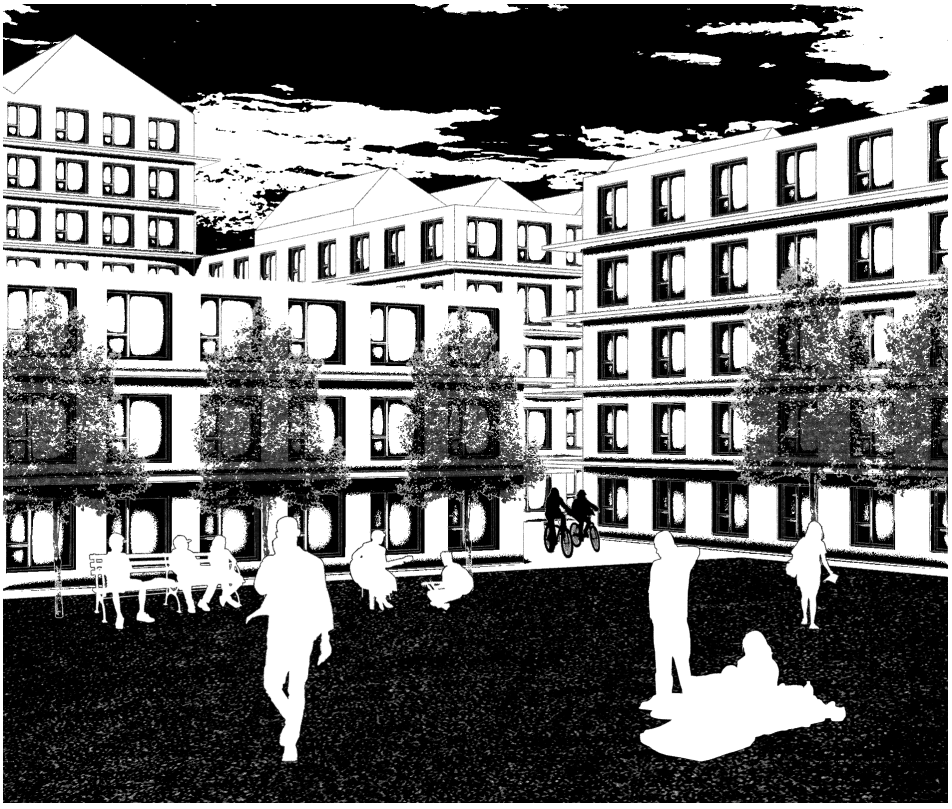


Illustration of green corridor immediately accessible by the nearby residential blocks.

Fig. 168 Green Corridor Vignette



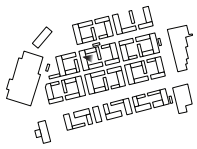


Illustration of one of the various semi-public courtyards located throughout the site.

Fig. 169 Courtyard Vignette



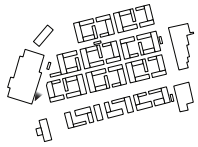


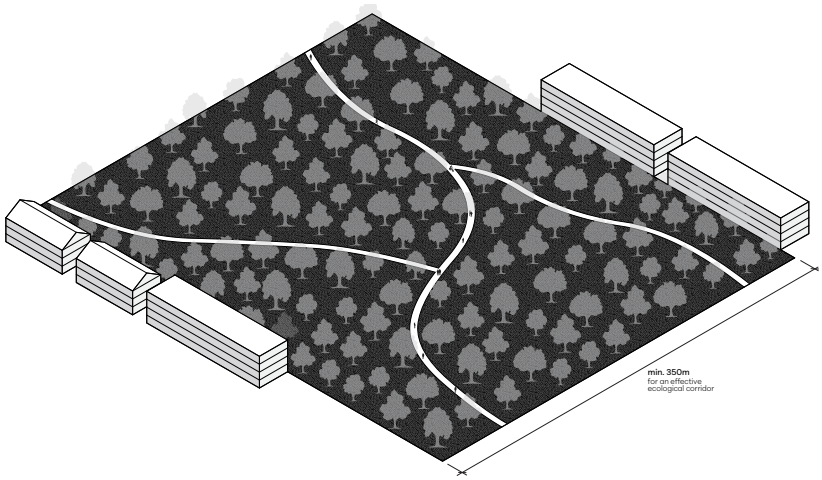
Illustration of expanded pedestrian space and reduced right-of-ways with the integration of the LRT adjacent to mixed-use residential blocks and the existing Walmart.

Fig. 170 Walmart Right-of-Way Vignette

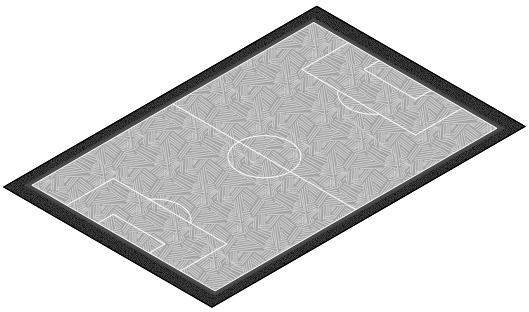
The Byker Wall in the Park

Combining strategies from The Park and The Byker Wall District, The Byker Wall in the Park explores a redevelopment concept that transforms the property into a park and outdoor recreation destination but also increasing density. Like the Byker Wall in Newcastle, all the residential units are located on the periphery of the site to allow for green space and recreational amenities to be concentrated at the center.

Considerations



Ecological Corridor/ Nature Reserve



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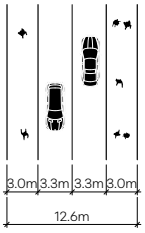
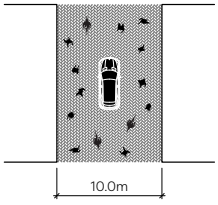
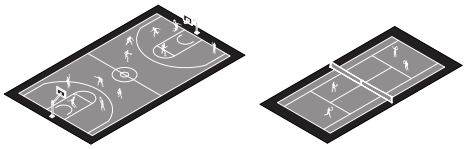


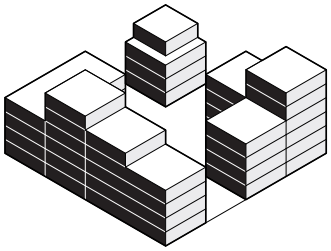
Minimized
Street Widths



Civic Streets

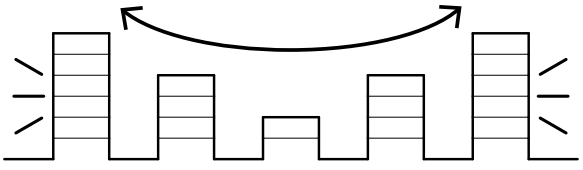


Sports Courts

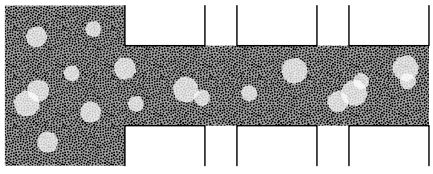


Mid-Rise

Strategies



Taller Perimeter Buildings



Continuous Green Space

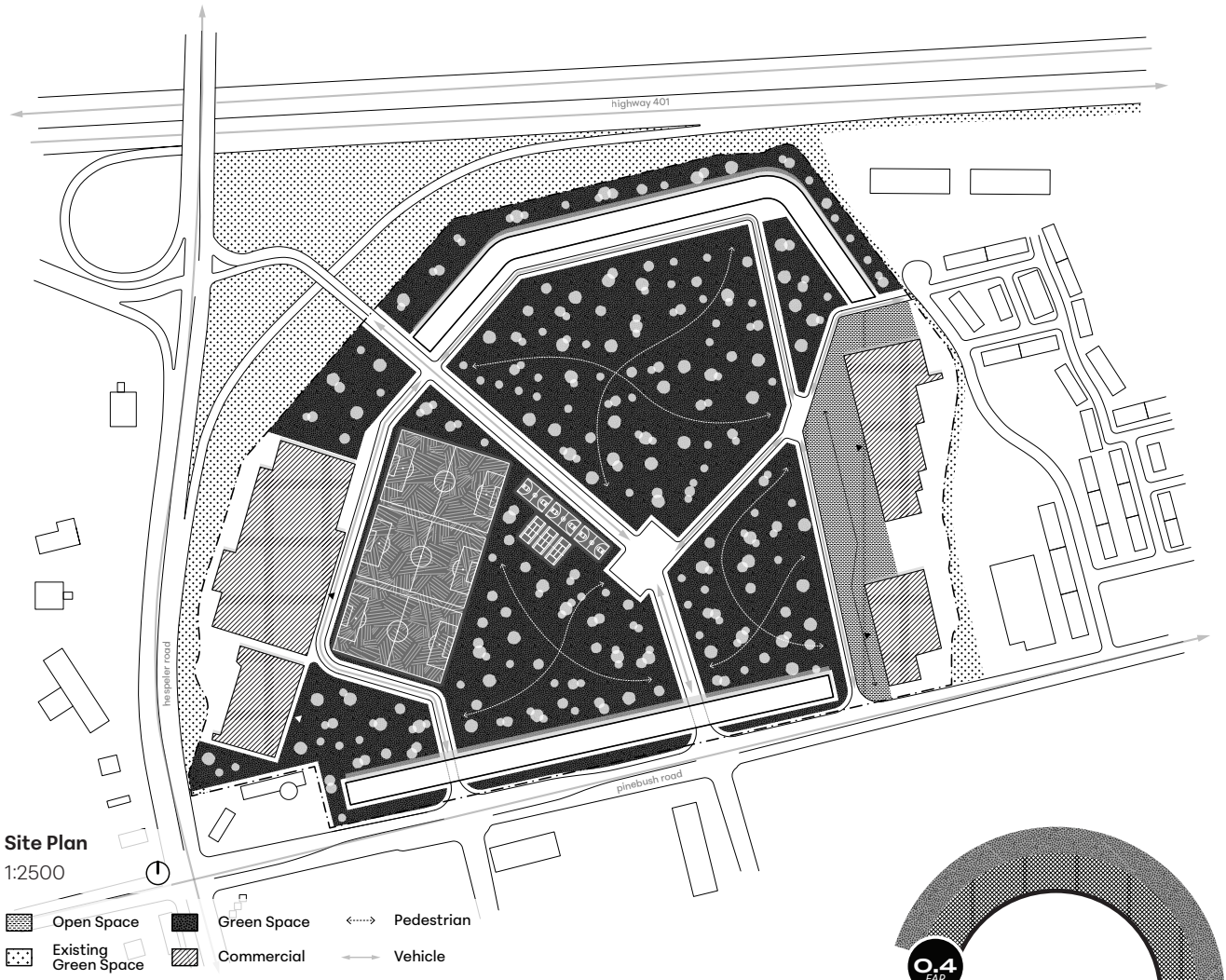
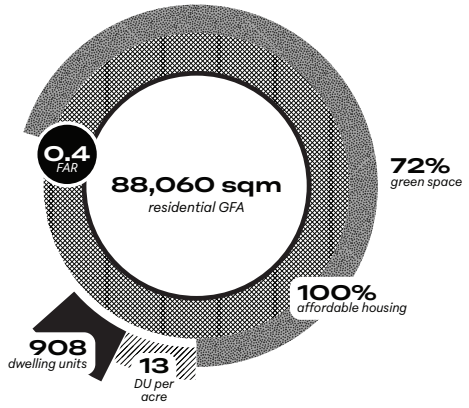


Fig. 171 The Byker Wall in the Park Site Plan



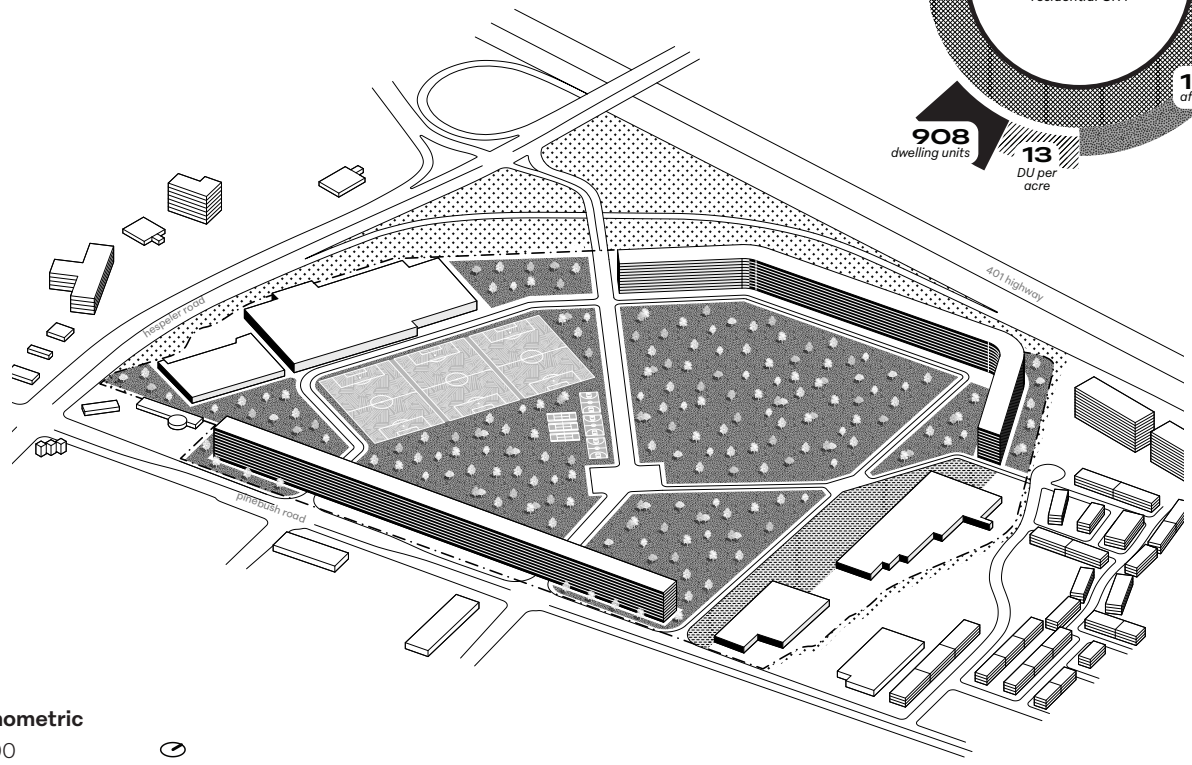
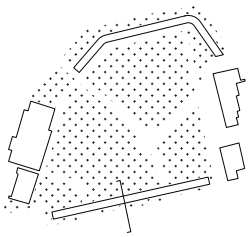
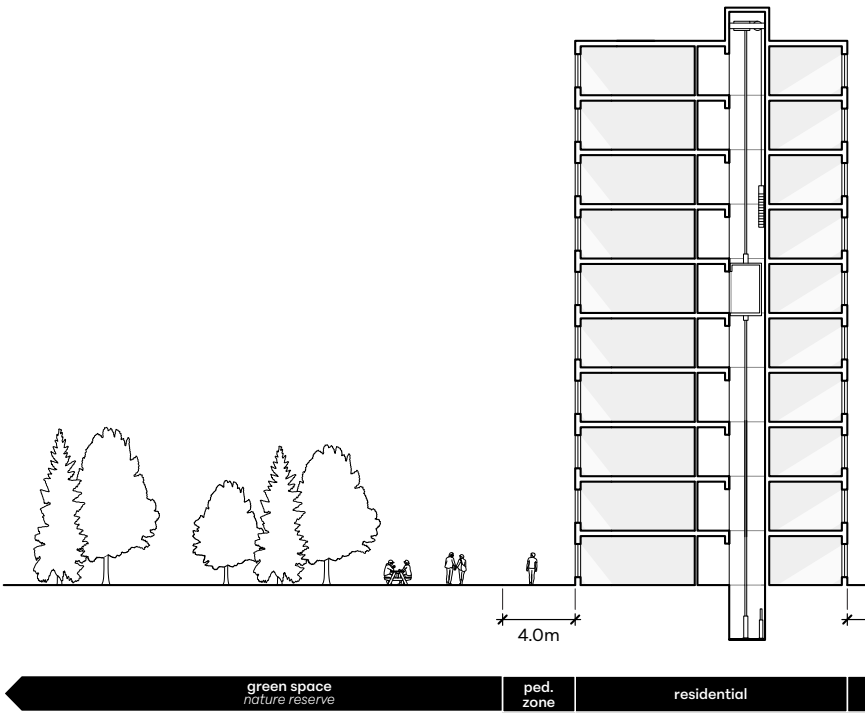
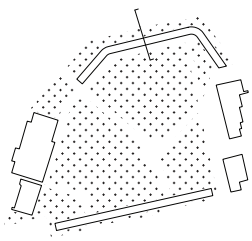
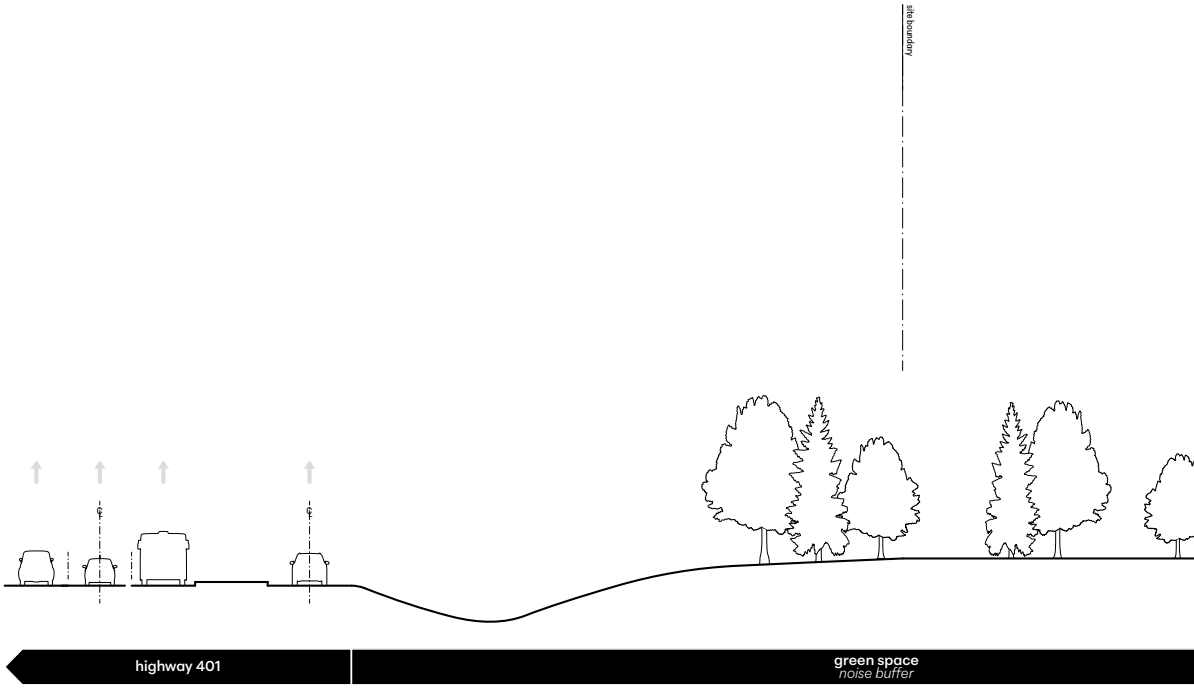


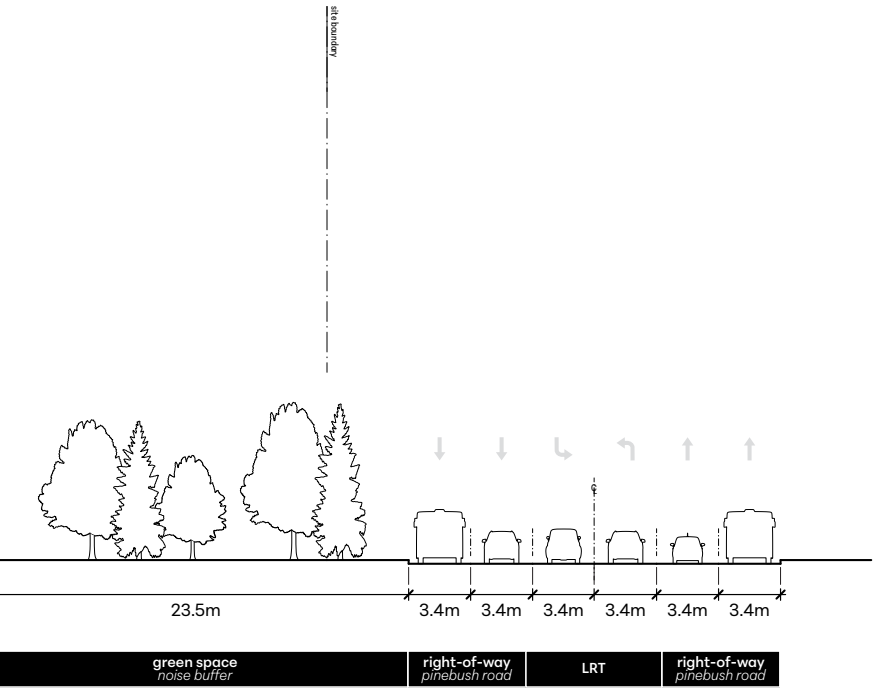
Fig. 172 The Byker Wall in the Park Axonometric




4.0m
green space
nature reserve
ped.
zone
residential




site boundary
highway 401
green space
noise buffer



1:250

Fig. 173 Pinebush Road Section

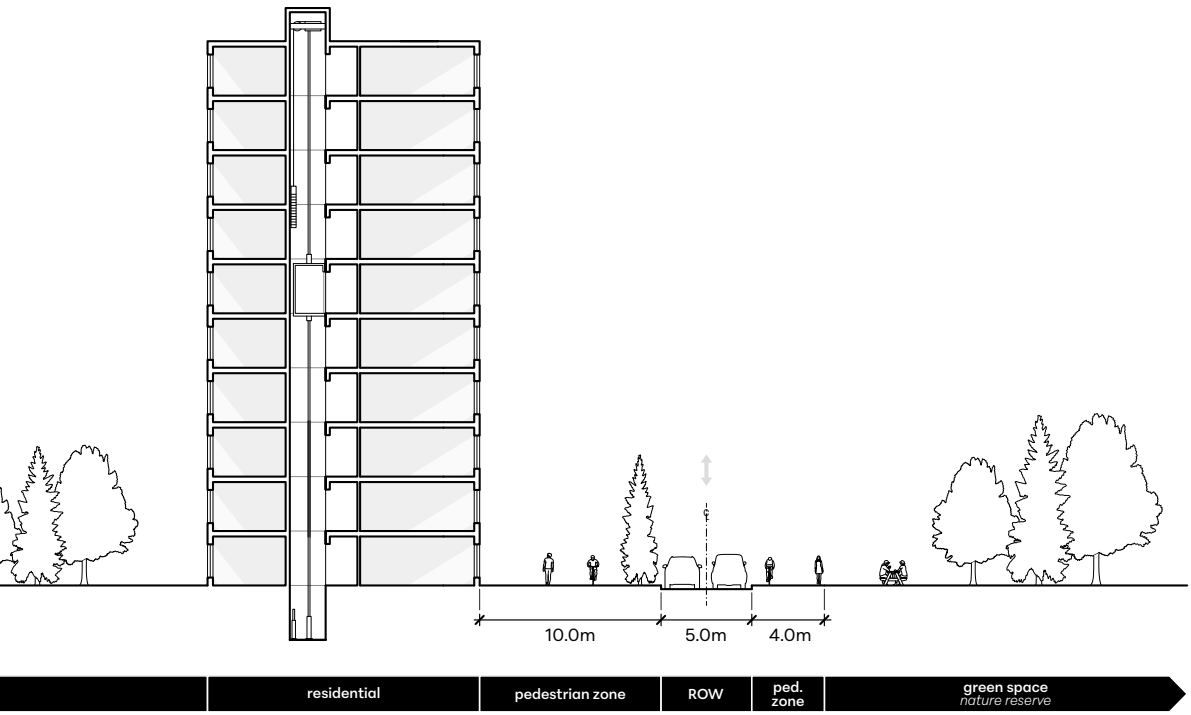


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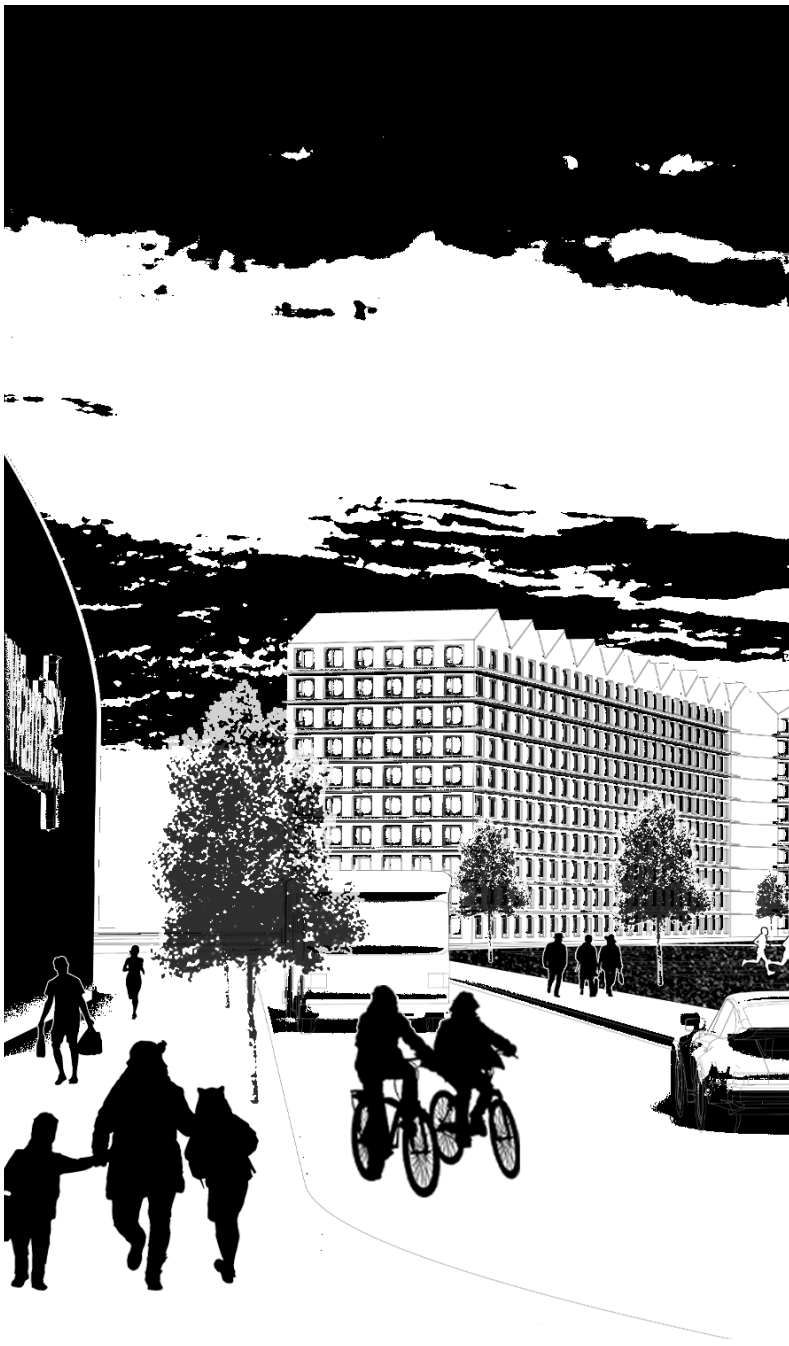
Fig. 174 N/S Section



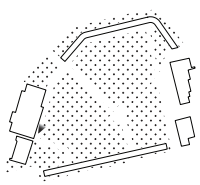
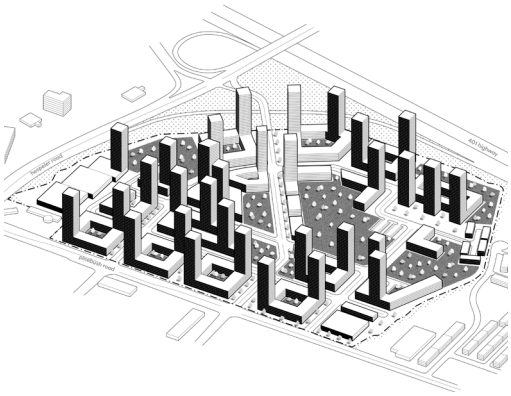


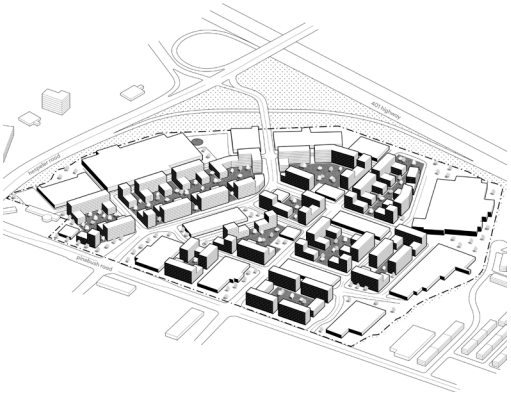


Illustration of the increased pedestrian and green space adjacent to a reduced vehicle right-of-way.

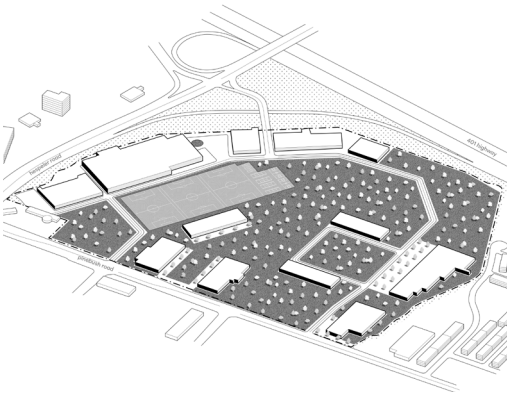
Fig. 175 Walmart Right-of-Way Vignette



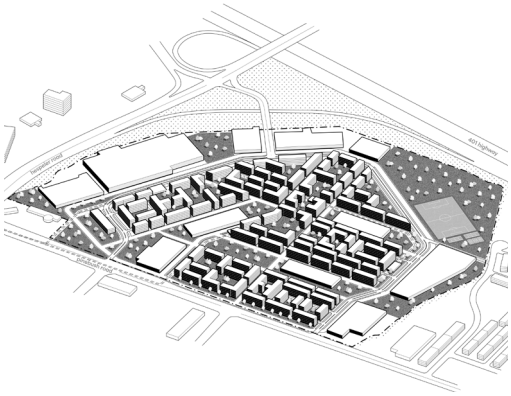
The New Edge City



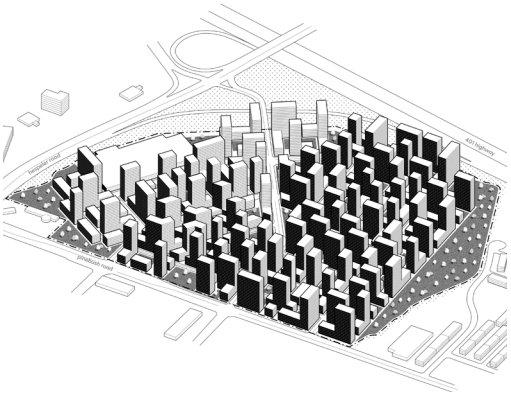
The Urban Village



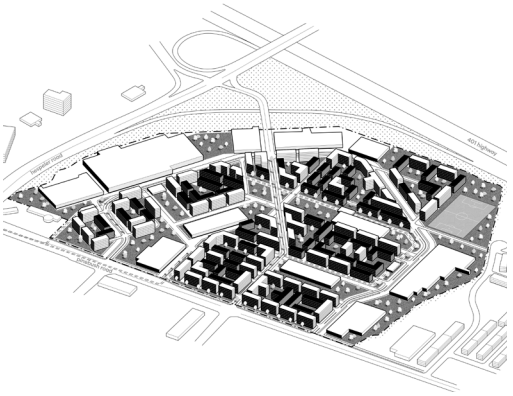
The Park



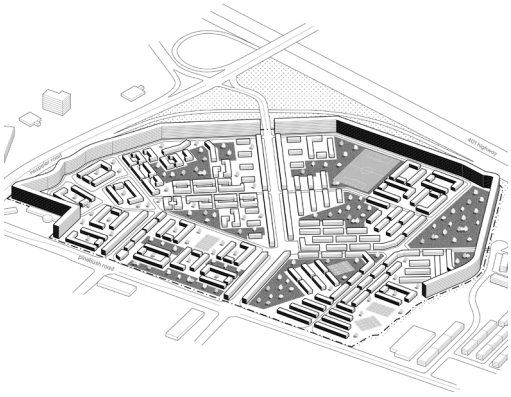
The Pedestrian Village



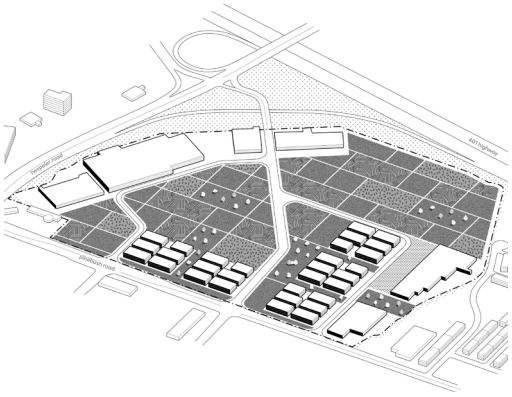
The Giga-City



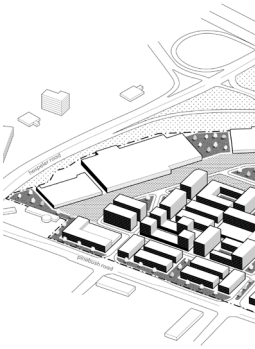
The Courtyard Village



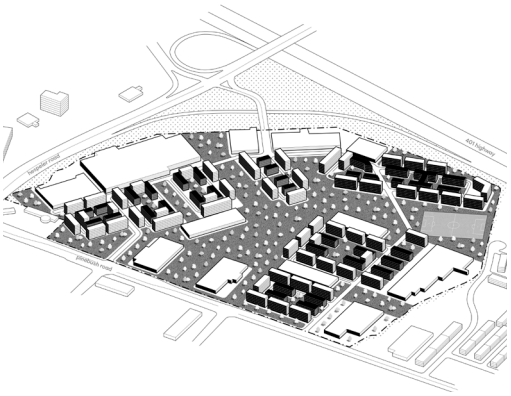
The Byker Wall District



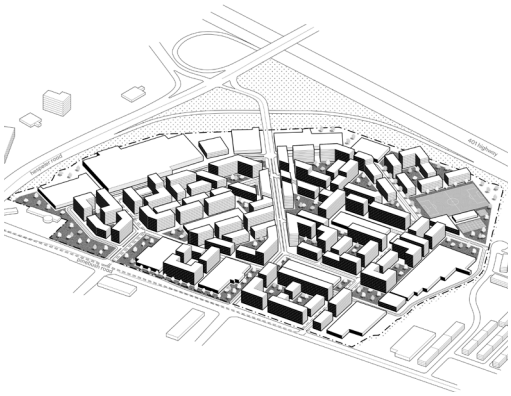
The Urban Farm



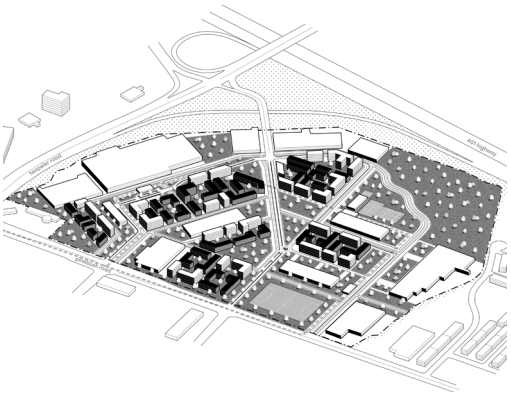
The False Creek District



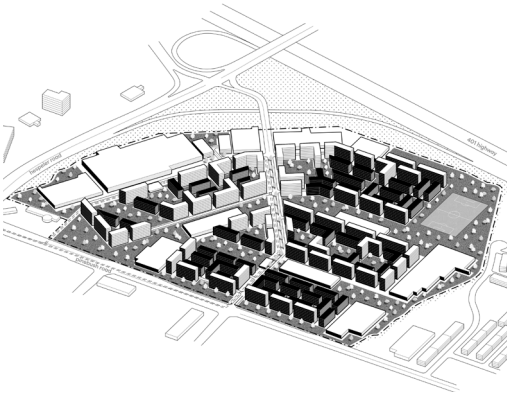
The Village in the Park



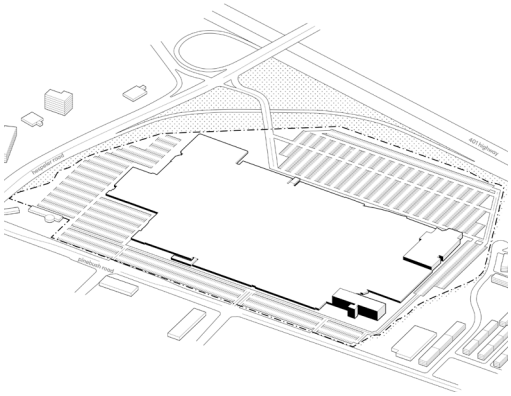
The Mid-Rise District



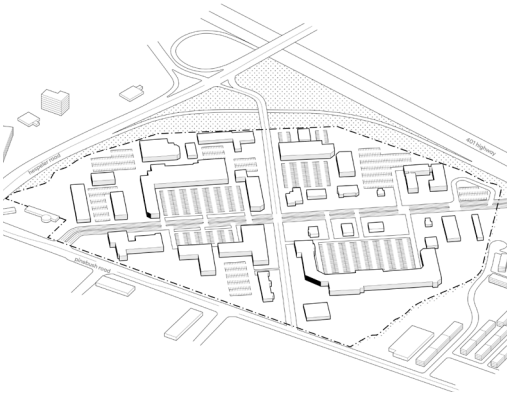
The Green Mobility District



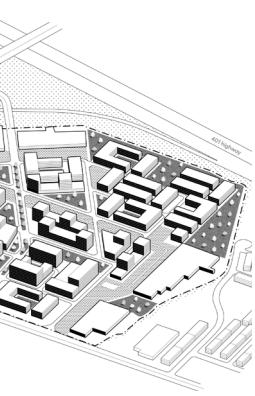
The Green Village District

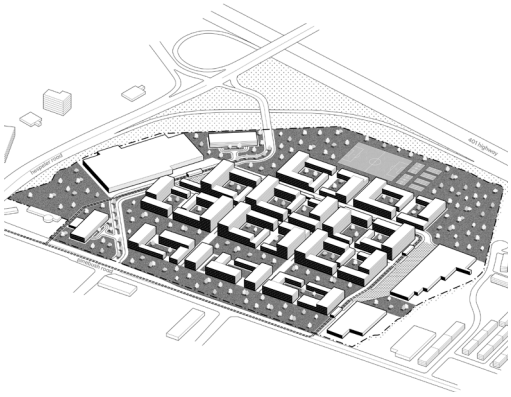


The Mall

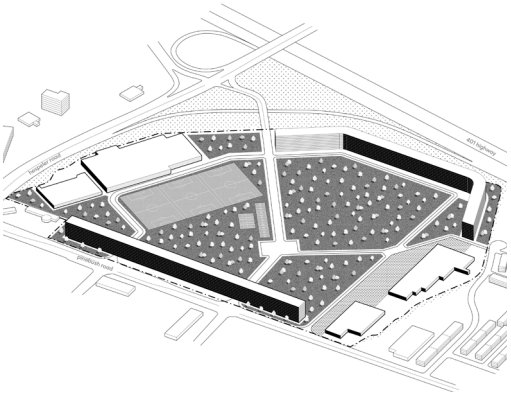


The Strip Mall Corridor

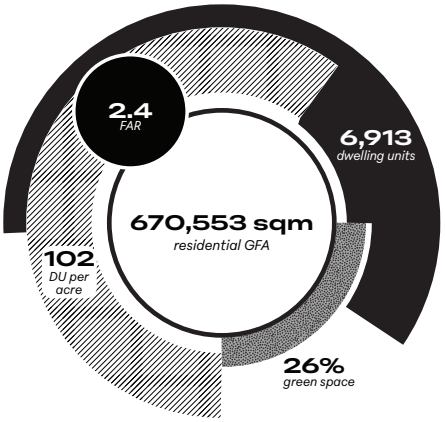




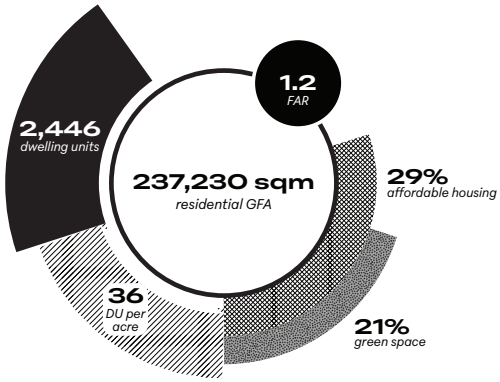
The Permeable District



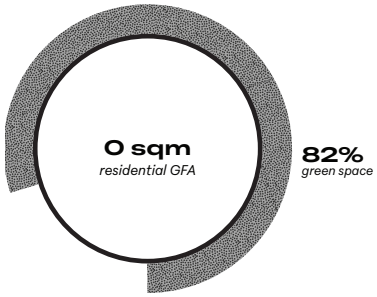
The Byker Wall in the Park



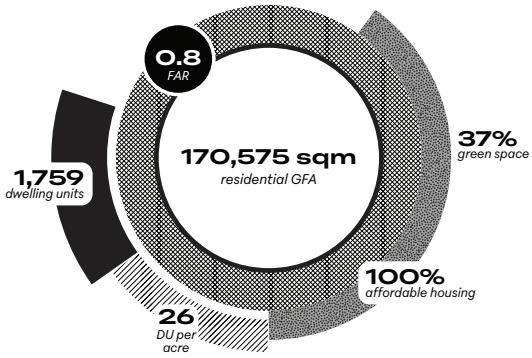
The New Edge City



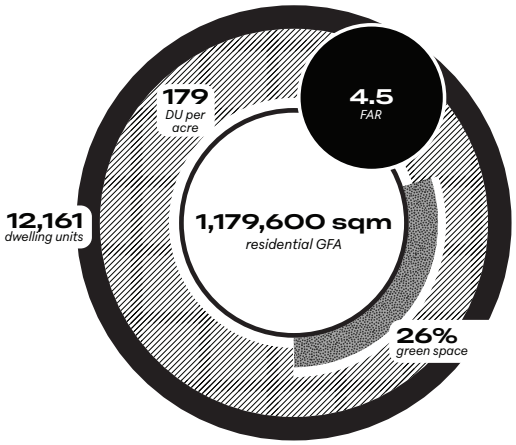
The Urban Village



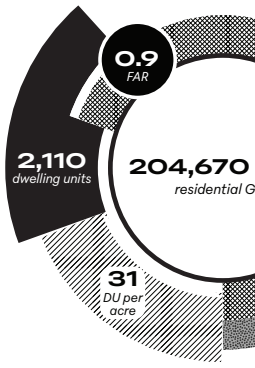
The Park



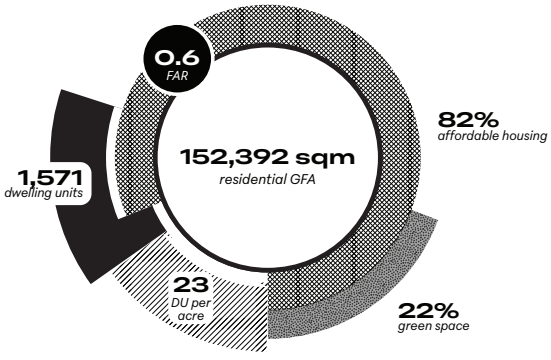
The Pedestrian Village



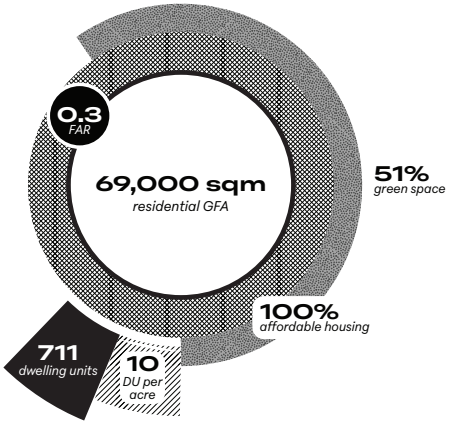
The Giga-City



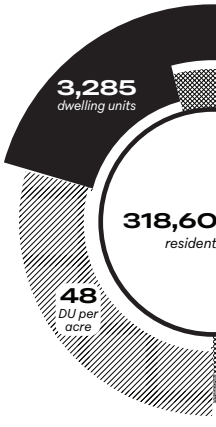
The Courtyard Village



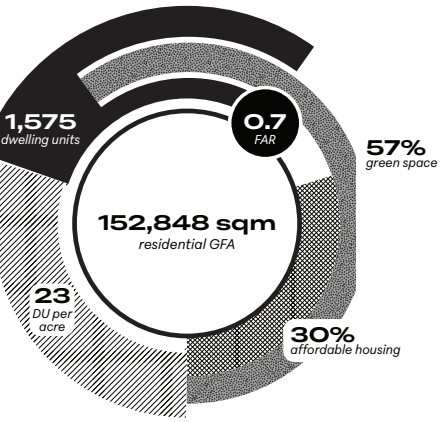
The Byker Wall District



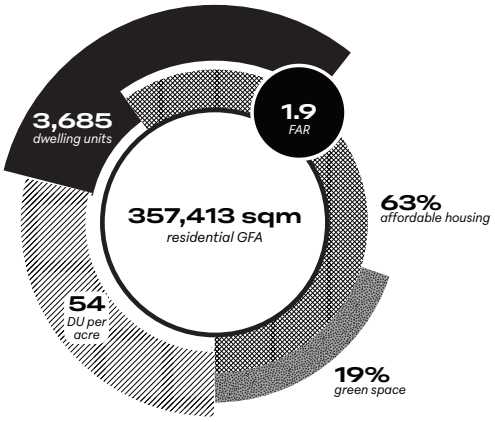
The Urban Farm



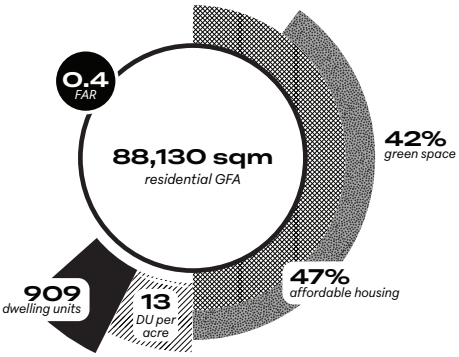
The False Creek Distri



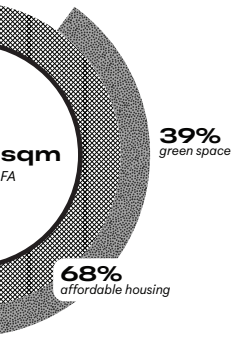
e Village in the Park

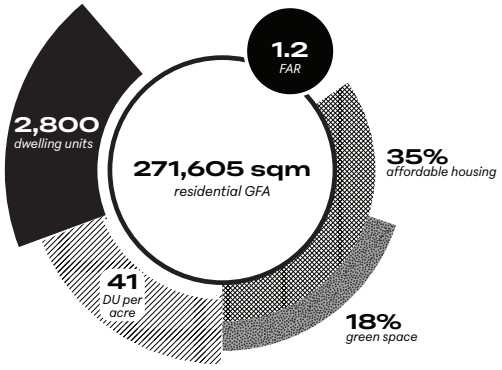


The Mid-Rise District



The Green Mobility District





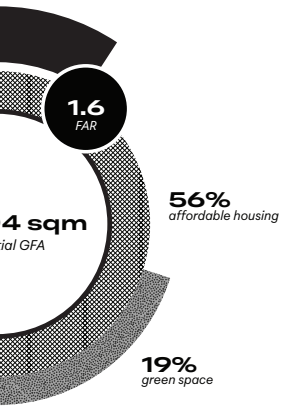
The Green Village District



The Mall



The Strip Mall Corridor



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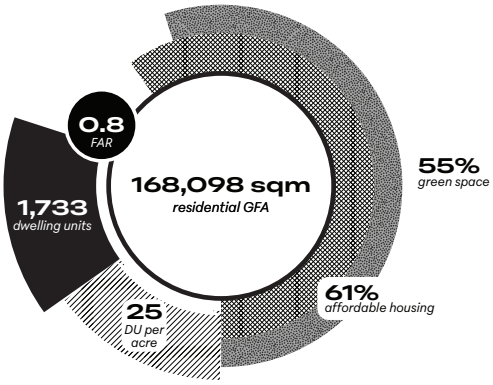
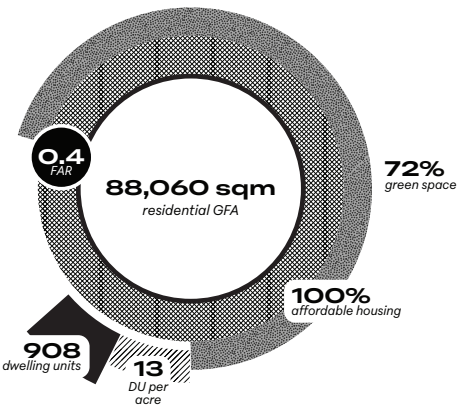


The Permeable District



The Byker Wall in the Park

5.4 Transformations of Other Sites

While primarily focused on the development of scenarios for just one site, the Cambridge SmartCentre contained several typical conditions that can be found across other SmartCentre sites in Ontario. Common conditions include increased retail vacancy, underutilized parking lots, and distance from urban centres. Based on the size of SmartCentres® REIT's portfolio, there is potential to transform multiple sites using the ideas explored previously. To demonstrate how the strategies would be applied to different locations, three iterations will be tested on the Guelph and Hamilton locations.



Fig. 176 Guelph SmartCentre Map

The Hamilton and Guelph SmartCentres were chosen because they share similar land-use conditions to the Cambridge SmartCentre. Both locations are primarily dedicated to vehicle circulation and surface parking; however, they are much smaller than the Cambridge location, presenting a unique challenge in transforming the sites using similar methodologies. Other sites were considered, like Milton, Waterloo, and Kitchener, but these properties are not solely owned by SmartCentres® REIT.

The following options take three of the solutions from above and translate the methodologies to the Hamilton and Guelph SmartCentres.

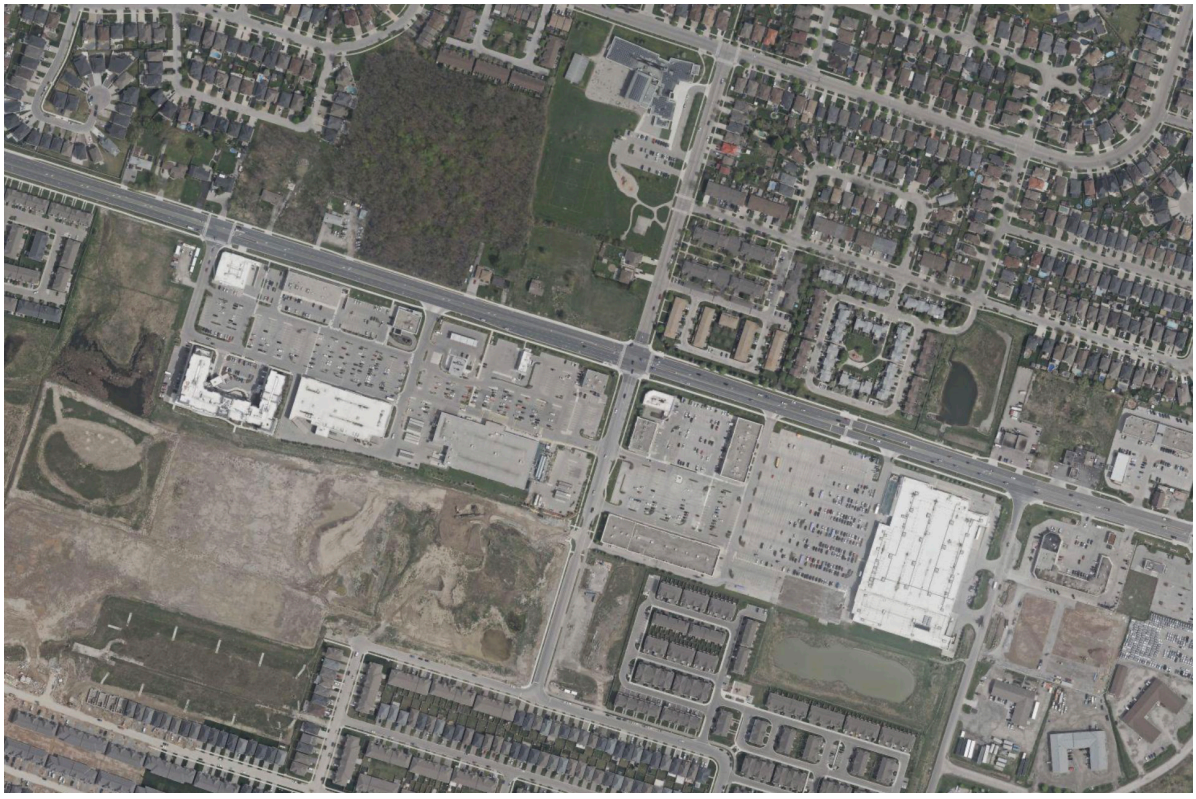


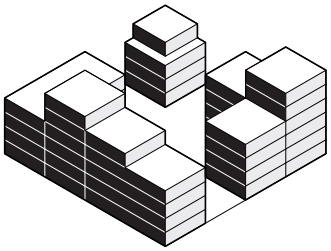
Fig. 177 Hamilton SmartCentre Map

5.4.1 **Guelph SmartCentre**

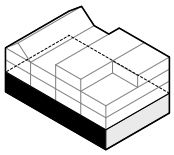
Option 1

Based on *The Mid-Rise District*, all retail buildings have been maintained. Vehicle circulation paths have been reduced to calm traffic and provide more space for mixed-use residential development.

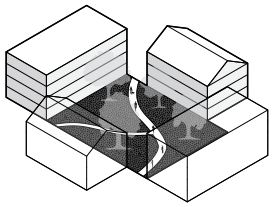
Considerations



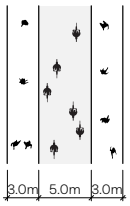
Mid-Rise



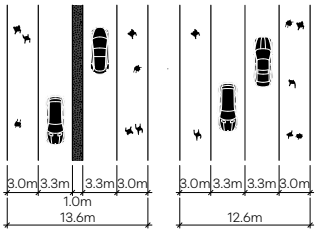
Commercial Floor



Courtyard

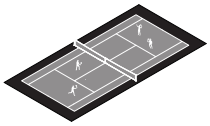


Pedestrian ROWs



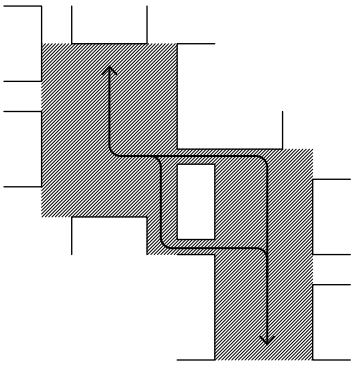
Minimized Street Widths



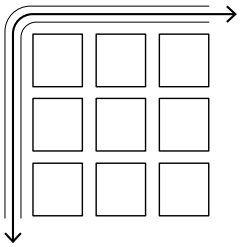


Sports Courts

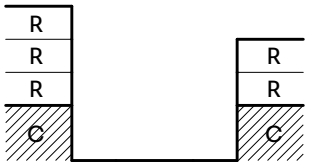
Strategies



Connected Open Space



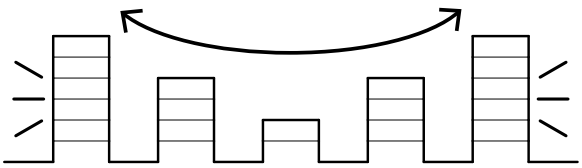
Outer Ring Road



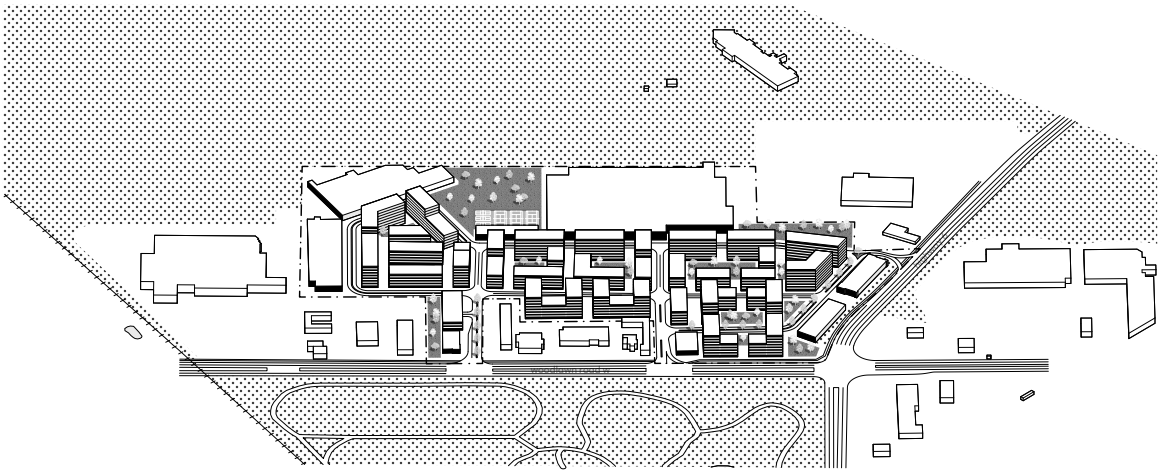
Mixed-Use Development



Active Ground Floors

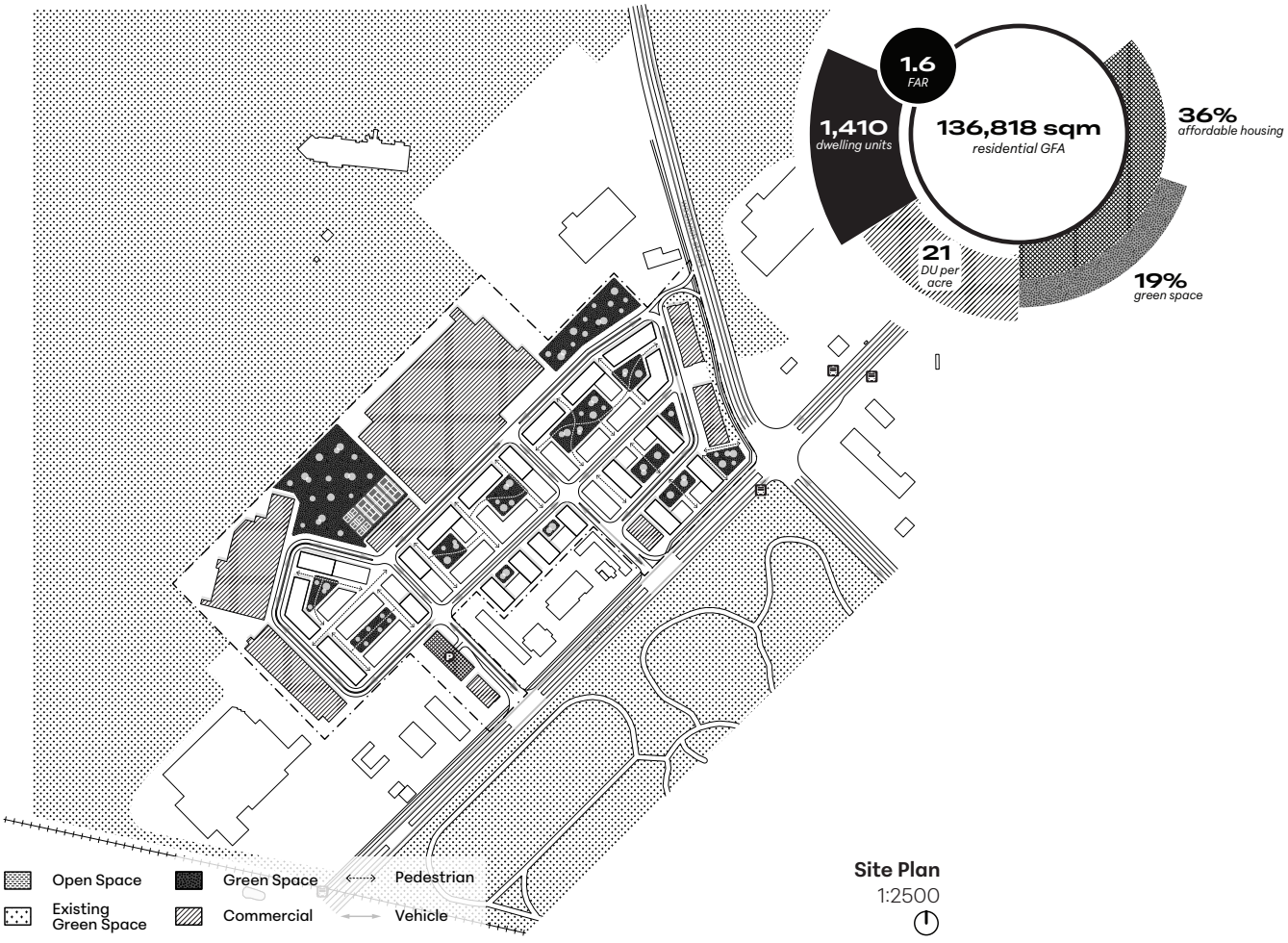


Taller Perimeter Buildings



Axonometric
1:2500

Fig. 178 Guelph Option 1 Axonometric



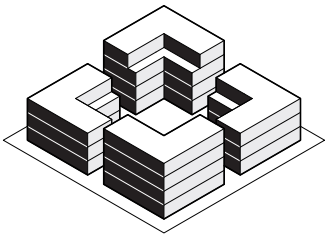
Site Plan
1:2500

Fig. 179 Guelph Option 1 Site Plan

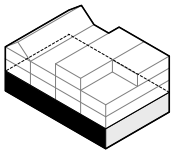
Option 2

Based on *The Courtyard Village*, the site integrates alternative transportation methods, such as pedestrian-oriented streets, as well as decreases vehicle circulation routes to help calm traffic and reduce speeds. To increase the site's civic space, all residential buildings are organized around shared courtyards, while interconnected green spaces are distributed throughout the development to create a network of green open space.

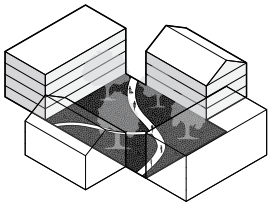
Considerations



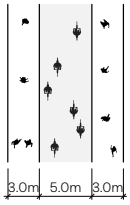
Garden Apartments



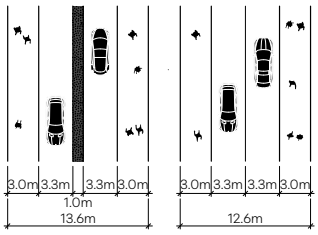
Commercial Floor



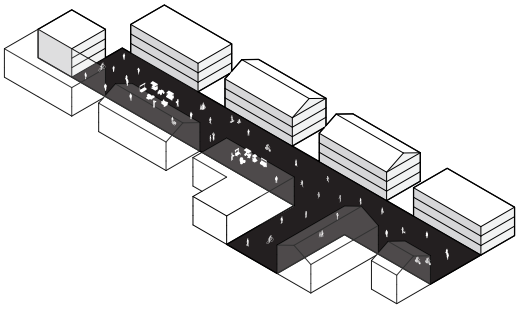
Courtyard



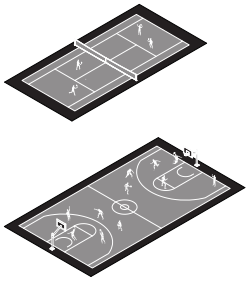
Pedestrian ROWs



Minimized Street Widths

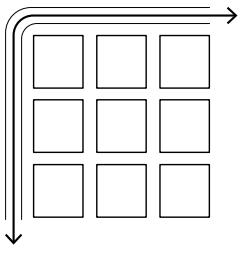


Pedestrian Streets

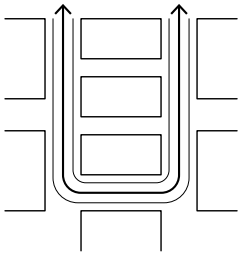


Sports Courts

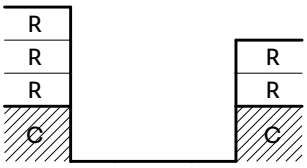
Strategies



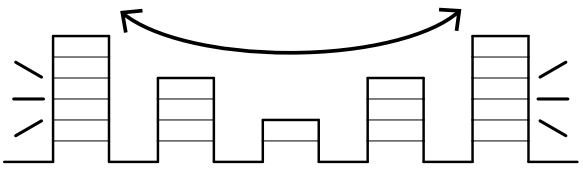
Outer Ring Road



Play Streets



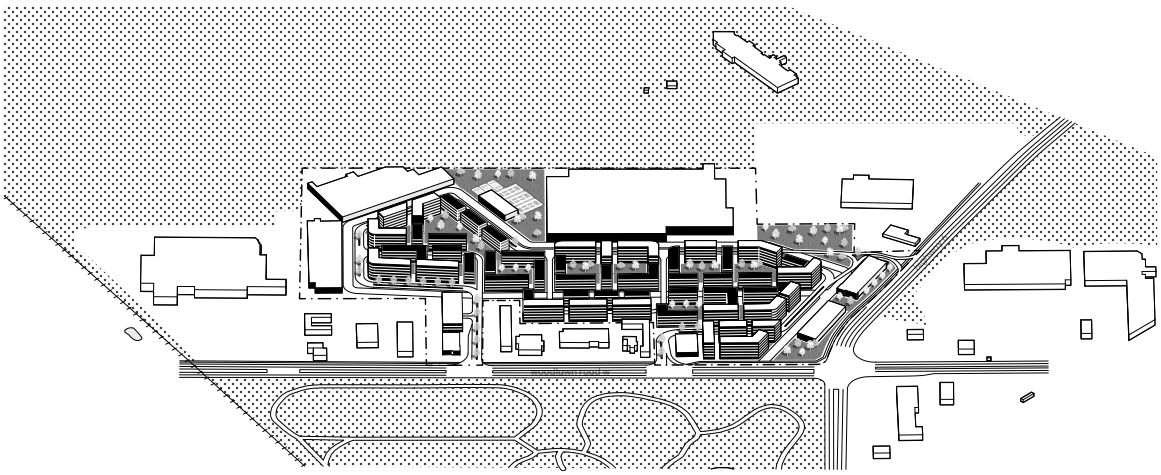
Mixed-Use Development



Taller Perimeter Buildings

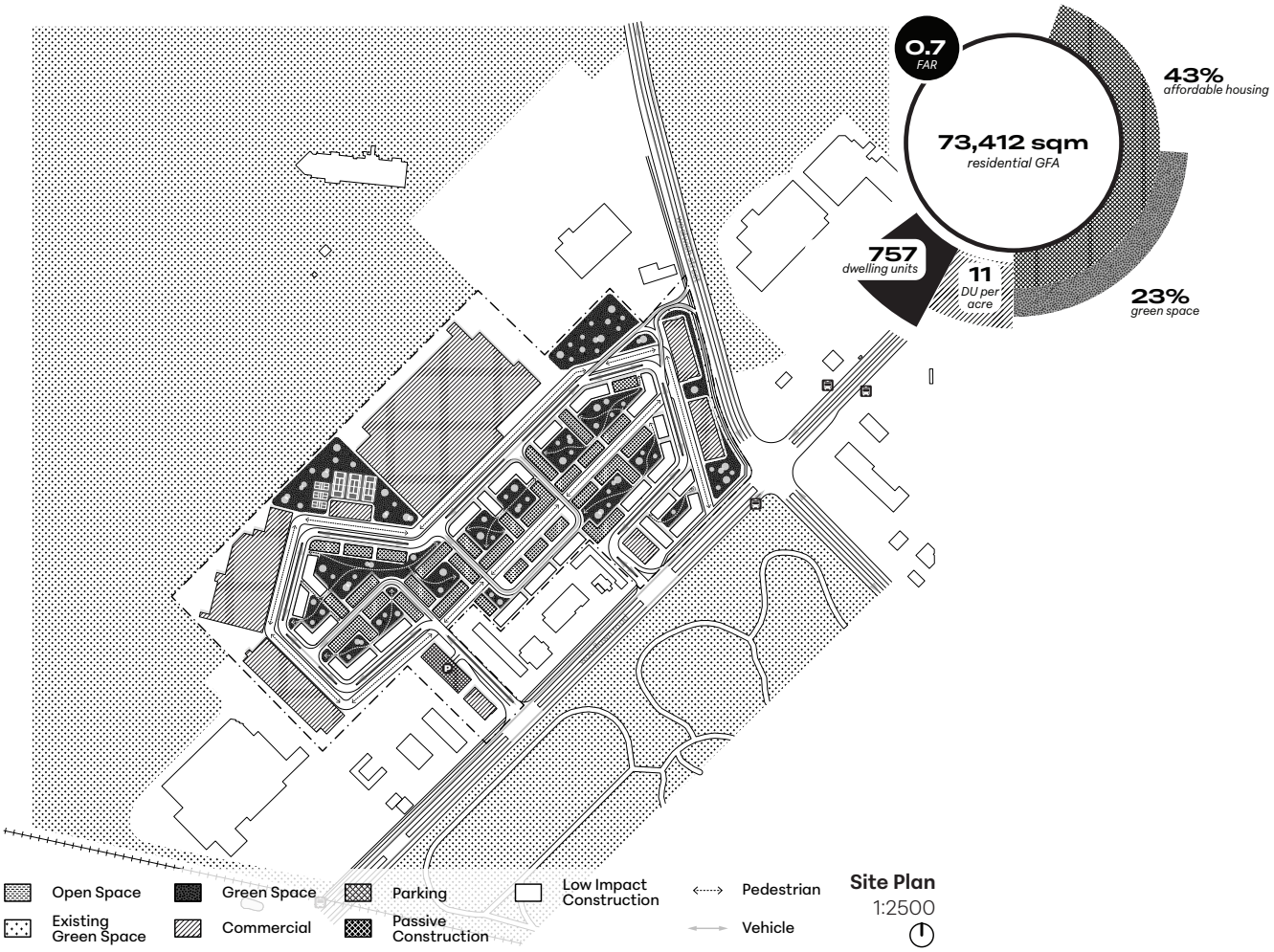


Active Ground Floors



Axonometric
1:2500

Fig. 180 Guelph Option 2 Axonometric

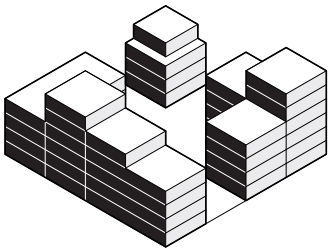


Site Plan
1:2500

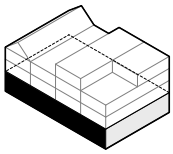
Fig. 181 Guelph Option 2 Site Plan

Option 3

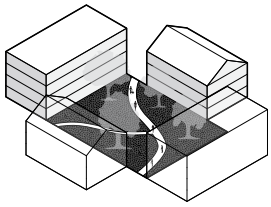
Based on *The Green Village District*, as well as the urban design principles of Vauban, Germany, this option creates a continuous network of green spaces that permeates the site. The primary mode of access is concentrated along a central spine road with smaller local streets branching outward to provide access to the surrounding residential neighbourhoods. The approach prioritizes sustainable mobility while enhancing the sites overall livability.



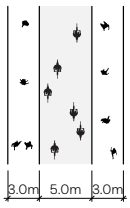
Mid-Rise



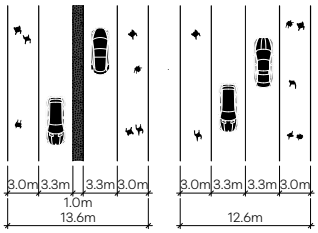
Commercial Floor



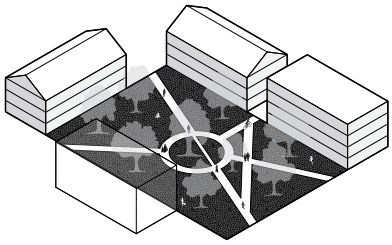
Courtyard



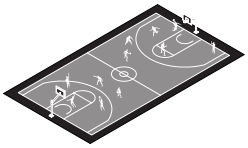
Pedestrian ROWs

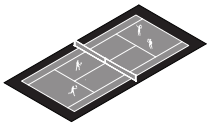


Minimized Street Widths



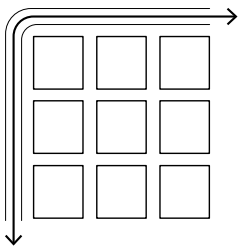
City Park



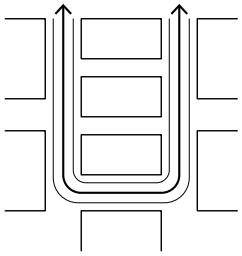


Sports Courts

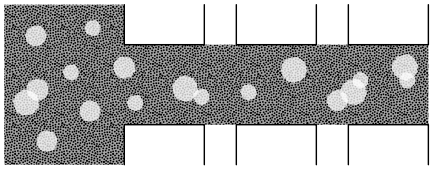
Strategies



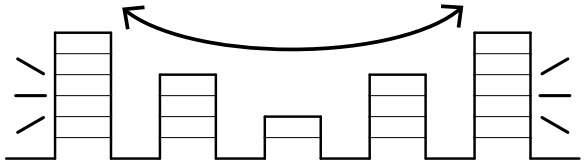
Outer Ring Road



Play Streets



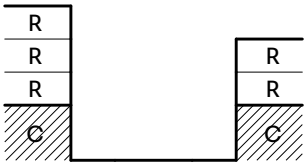
Continuous Green Space



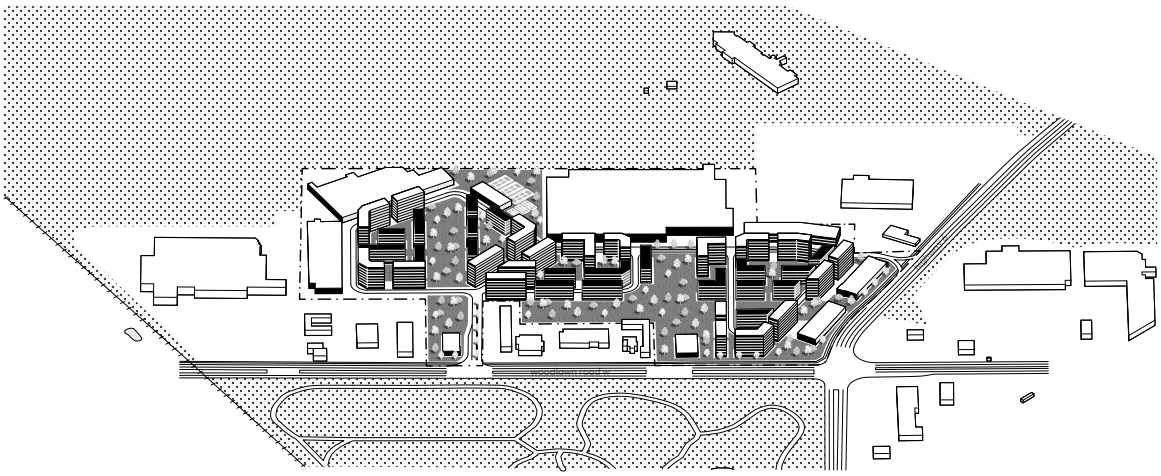
Taller Perimeter Buildings



Active Ground Floors

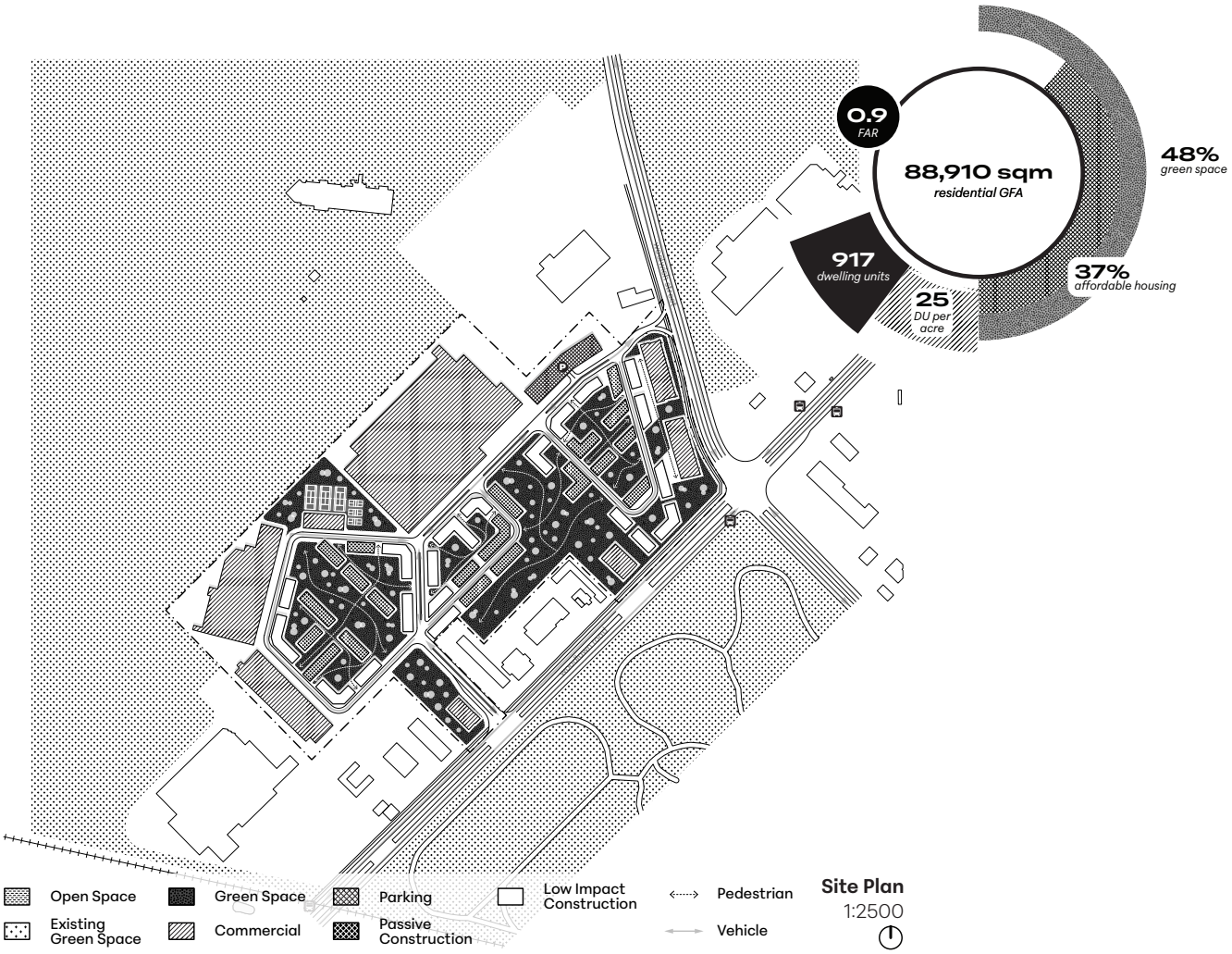


Mixed-Use Development



Axonometric
1:2500

Fig. 182 Guelph Option 3 Axonometric



Site Plan
1:2500

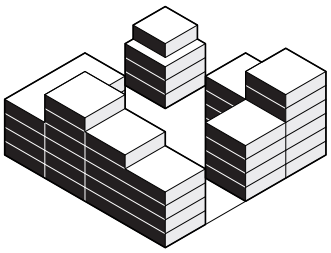
Fig. 183 Guelph Option 3 Site Plan

5.4.2 **Hamilton SmartCentre**

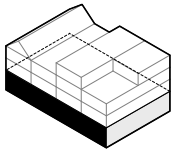
Option 1

Based on *The Mid-Rise District*, all retail buildings have been maintained. Vehicle circulation paths have been reduced to calm traffic and provide more space for mixed-use residential development.

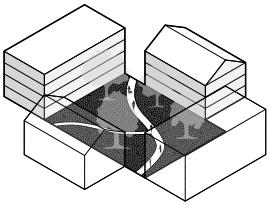
Considerations



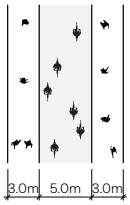
Mid-Rise



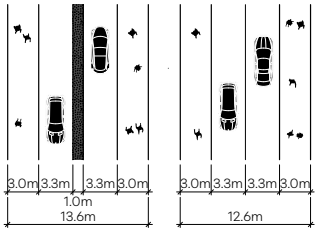
Commercial Floor



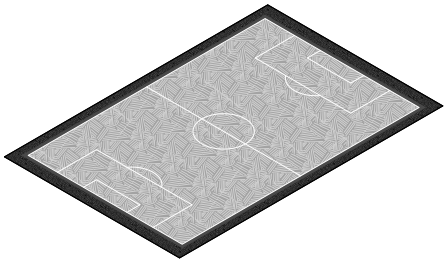
Courtyard



Pedestrian ROWs

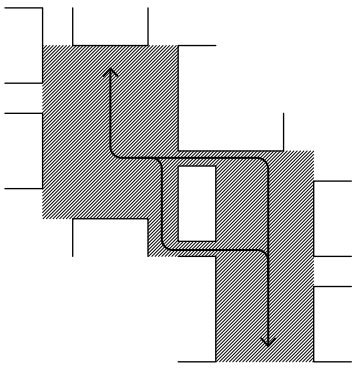


Minimized Street Widths

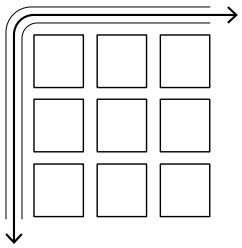


Sports Fields

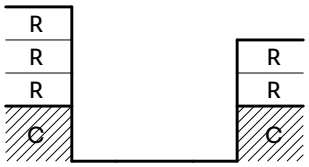
Strategies



Connected Open Space



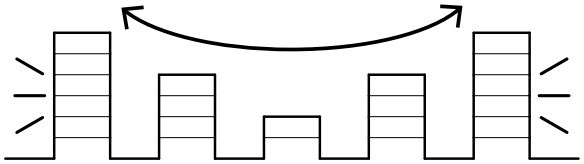
Outer Ring Road



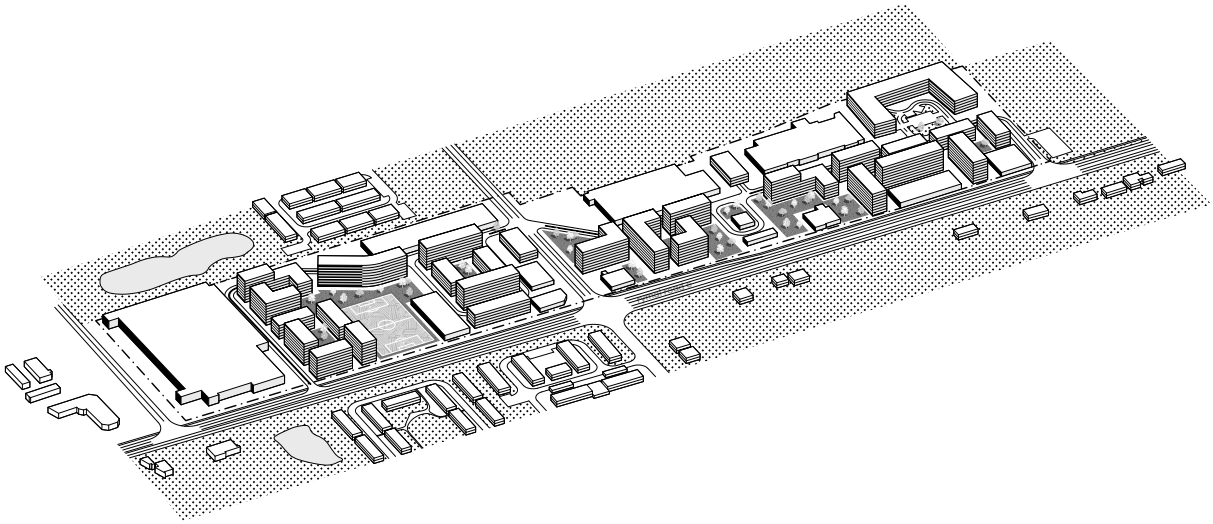
Mixed-Use Development



Active Ground Floors

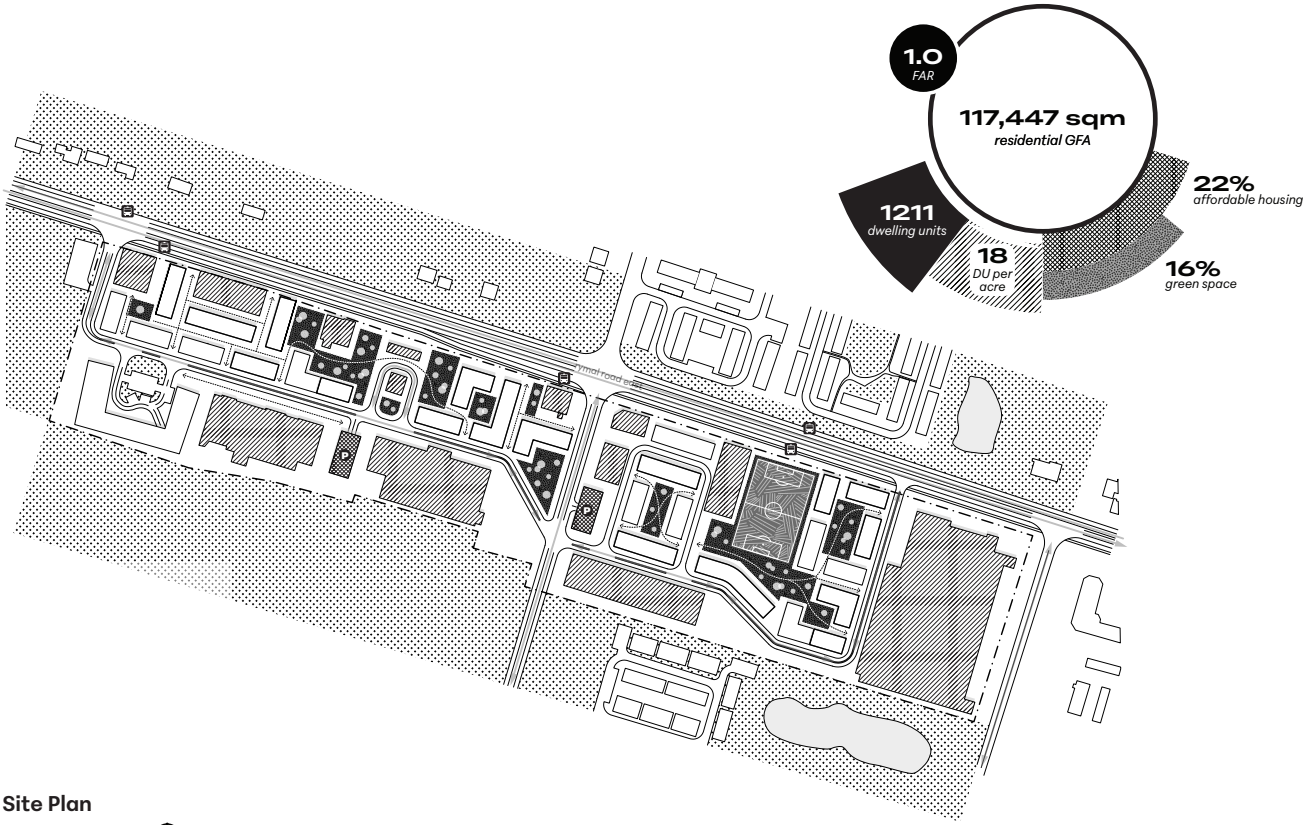


Taller Perimeter Buildings



Axonometric
1:2500

Fig. 184 Hamilton Option 1 Axonometric



Site Plan
1:2500

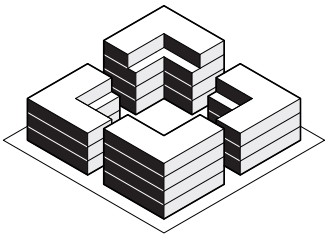
Open Space
Green Space
Parking
Pedestrian
Existing Green Space
Commercial
Vehicle

Fig. 185 Hamilton Option 1 Site Plan

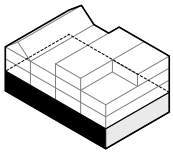
Option 2

Based on *The Courtyard Village*, the site integrates alternative transportation methods, such as pedestrian-oriented streets, as well as decreases vehicle circulation routes to help calm traffic and reduce speeds. To increase the site's civic space, all residential buildings are organized around shared courtyards, while interconnected green spaces are distributed throughout the development to create a network of green open space.

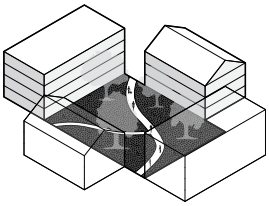
Considerations



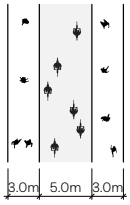
Garden Apartments



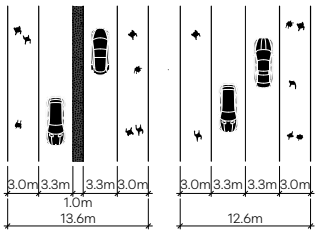
Commercial Floor



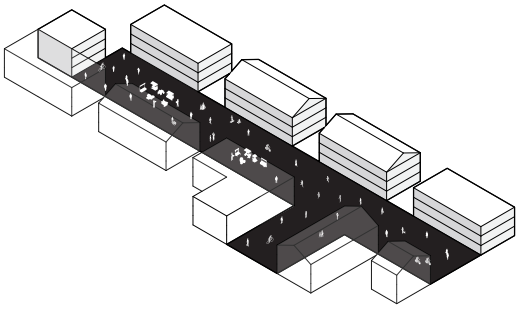
Courtyard



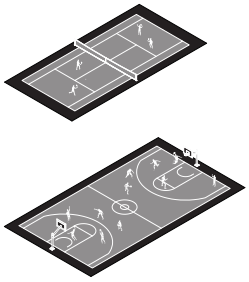
Pedestrian ROWs



Minimized Street Widths

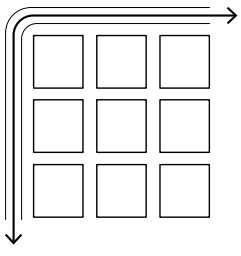


Pedestrian Streets

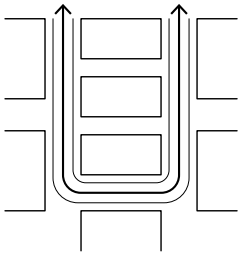


Sports Courts

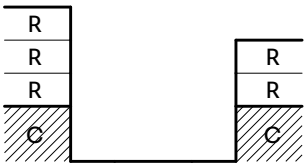
Strategies



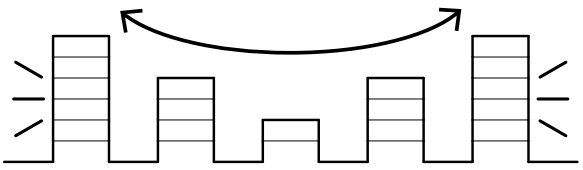
Outer Ring Road



Play Streets



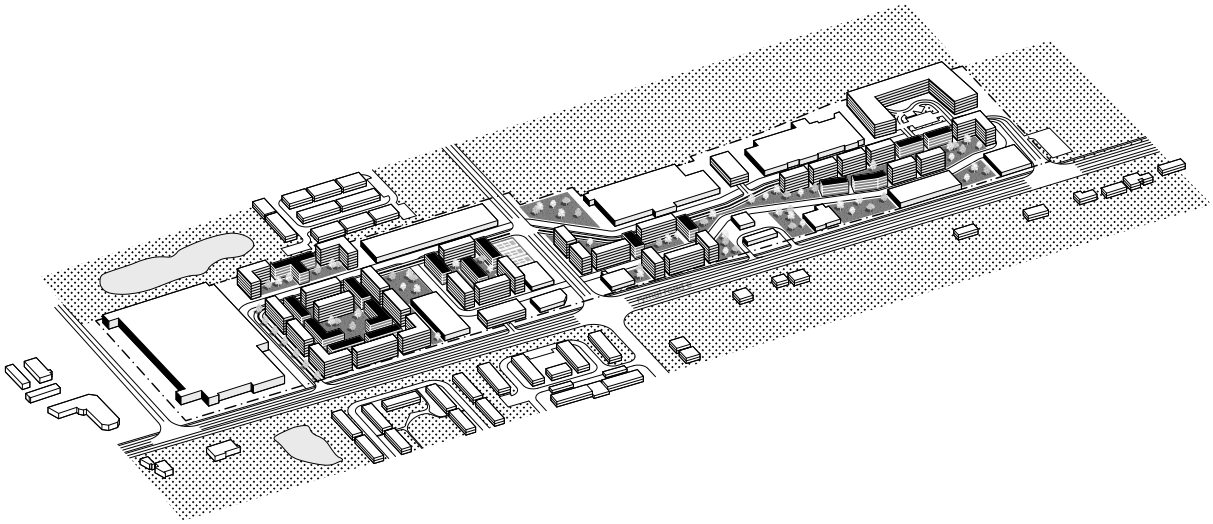
Mixed-Use Development



Taller Perimeter Buildings

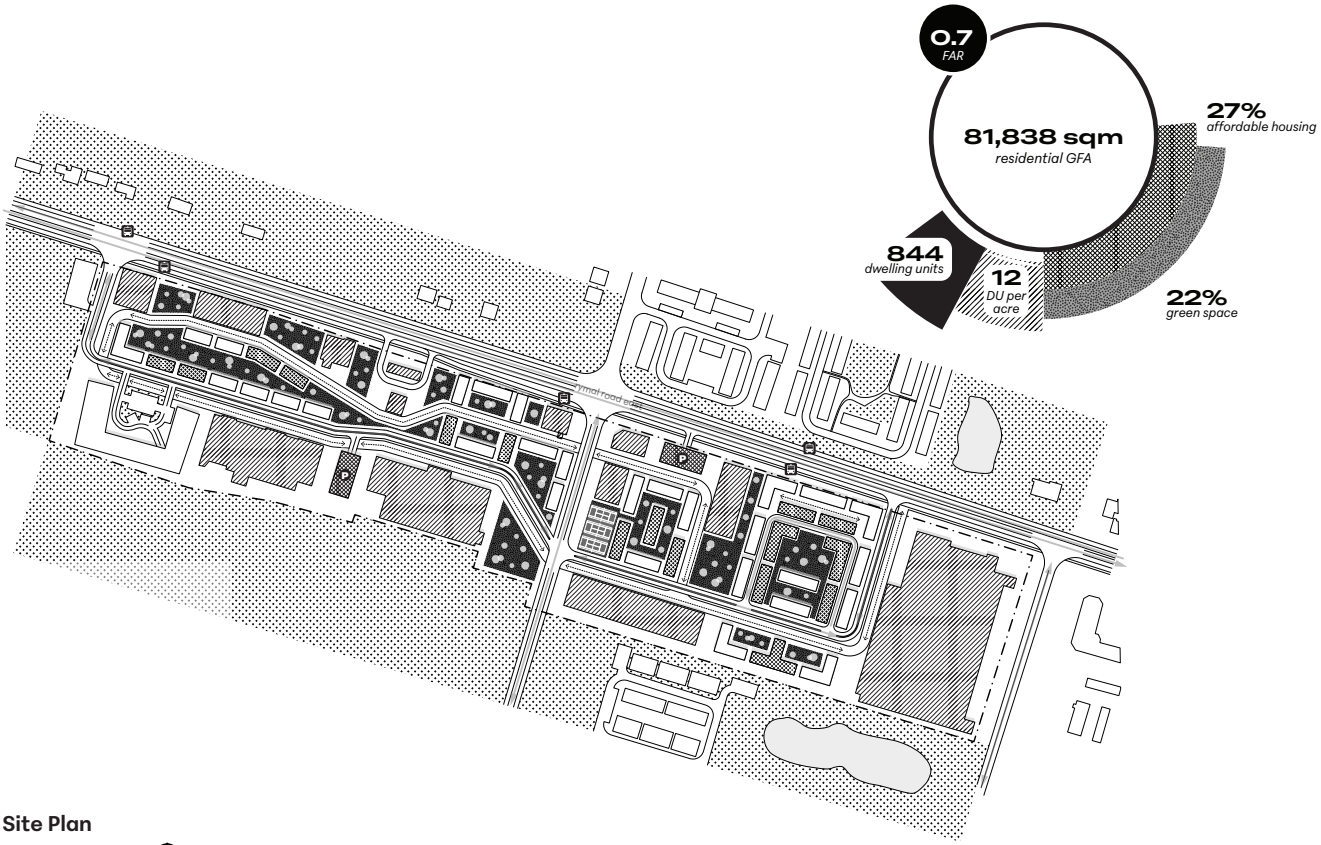


Active Ground Floors



Axonometric
1:2500

Fig. 186 Hamilton Option 2 Axonometric



Site Plan
1:2500

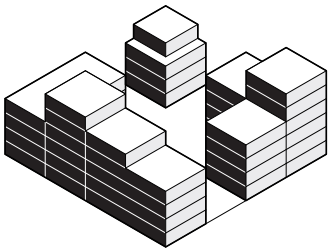
Open Space
Green Space
Parking
Low Impact Construction
Pedestrian
Existing Green Space
Commercial
Passive Construction
Vehicle

Fig. 187 Hamilton Option 2 Site Plan

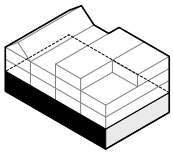
Option 3

Based on *The Green Village District*, as well as the urban design principles of Vauban, Germany, this option creates a continuous network of green spaces that permeates the site. The primary mode of access is concentrated along a central spine road with smaller local streets branching outward to provide access to the surrounding residential neighbourhoods. The approach prioritizes sustainable mobility while enhancing the sites overall livability.

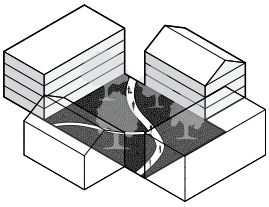
Considerations



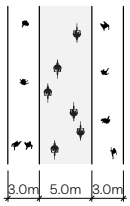
Mid-Rise



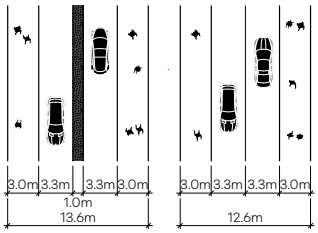
Commercial Floor



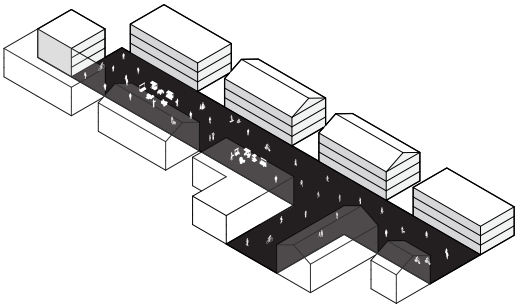
Courtyard



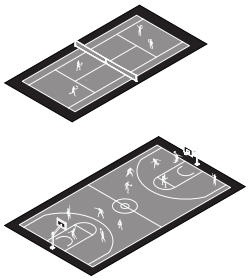
Pedestrian ROWs



Minimized Street Widths

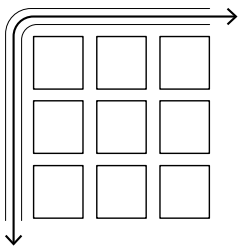


Pedestrian Streets

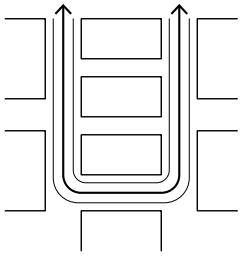


Sports Courts

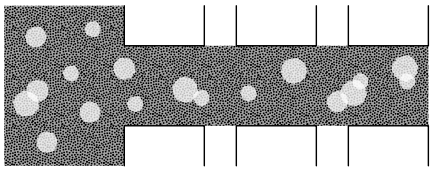
Strategies



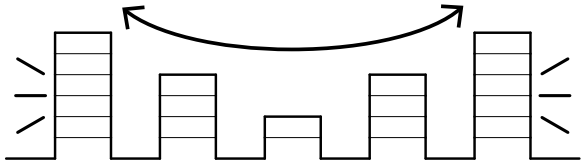
Outer Ring Road



Play Streets



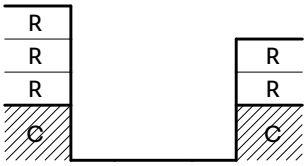
Continuous Green Space



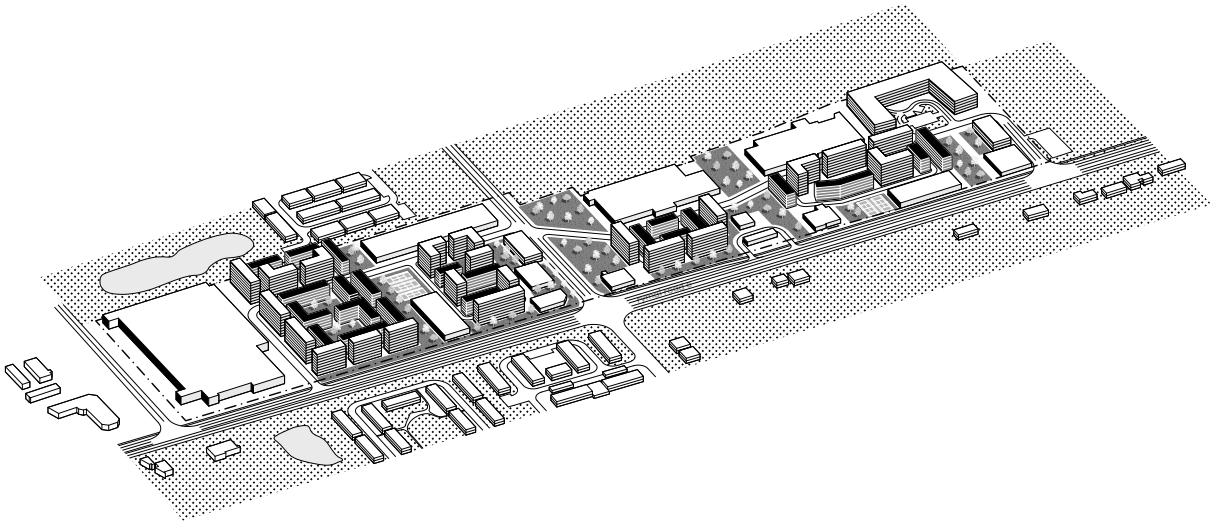
Taller Perimeter Buildings



Active Ground Floors

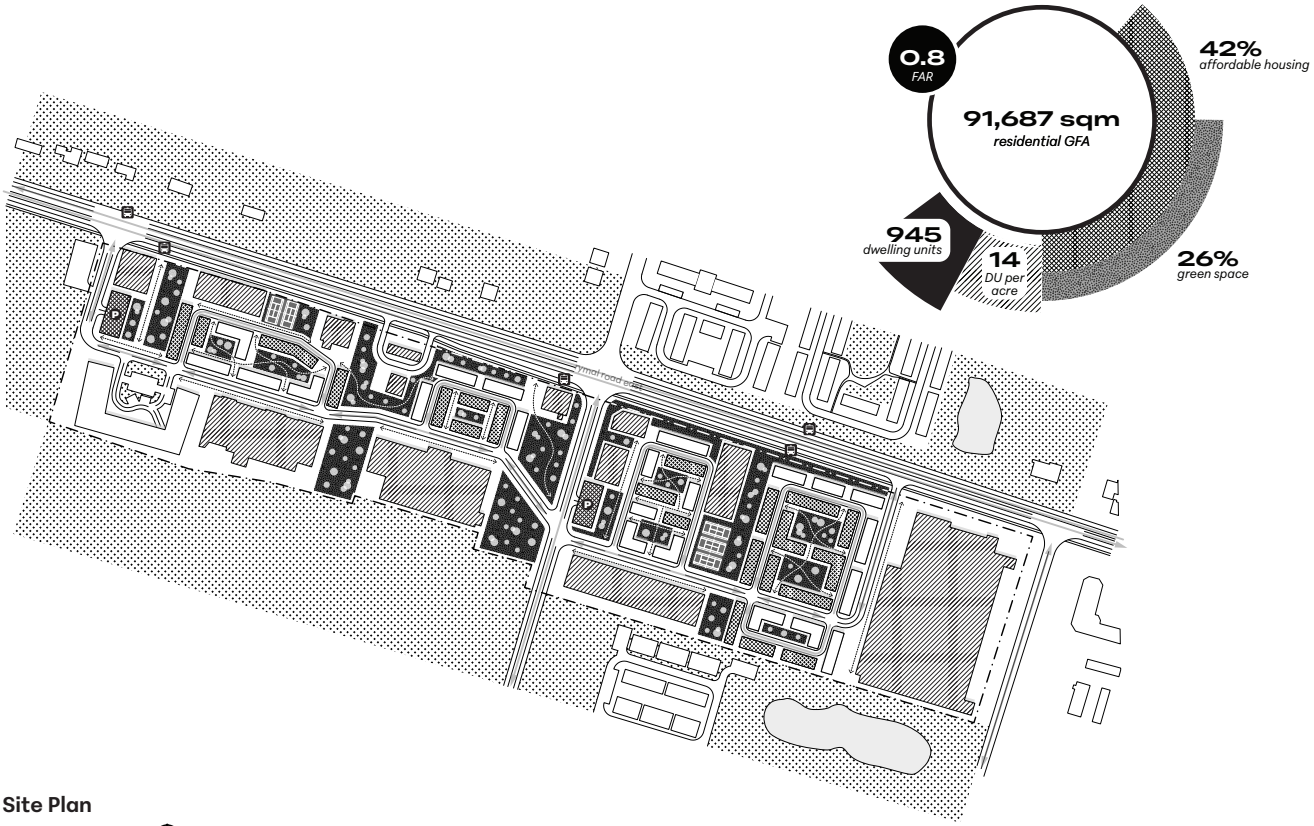


Mixed-Use Development



Axonometric
1:2500

Fig. 188 Hamilton Option 3 Axonometric



Site Plan
1:2500

Open Space
Green Space
Parking
Low Impact Construction
Pedestrian
Existing Green Space
Commercial
Passive Construction
Vehicle

Fig. 189 Hamilton Option 3 Site Plan

Conclusion

The purpose of this thesis has been to explore how underutilized power centre sites could be transformed into sustainable, livable, and complete communities. This objective was pursued using strategies extracted from successful redevelopment projects that prioritize sustainability, walkability, and human-oriented design. Using the Cambridge SmartCentre as a case study, these approaches demonstrated how the redevelopment of power centre sites can challenge conventional development trends primarily driven by density and profit.

In Chapter 5, a series of seventeen design transformations were presented to demonstrate how the redevelopment of underutilized power centre sites can challenge typical development norms. Although some outcomes are more ambitious than others, this exercise revealed if we look beyond conventional development strategies, there are various opportunities to increase residential density on site while encouraging the creation of sustainable, livable, and complete communities.

Under current development trends, *The New Edge City* option presents itself as the most appropriate. However, as previously discussed, this outcome creates an overly dense district on the periphery of the urban centre, which can lead to the emergence of an edge city, furthering issues with connectivity and social isolation.

The more abstract options: *The Park, The Giga-City, The Mall, The Strip Mall Corridor, The Byker Wall District, The Urban Farm*, and *The Byker Wall in the Park*, are seen as outliers as they are heavily weighted to individual design strategies, rather than seeking a balance between various design alternatives.

Driven by a solely density-based approach, *The Giga-City* and *The Byker Wall District* transforms the site into a residential rich area, with minimal green space. Similar to *The New Edge City* outcome, *The Giga-City* creates a high-density city district on the site following the traditional tower-and-podium development model. *The Byker Wall District* places majority of the residential density on the perimeter of the site in a single building, supplemented by various smaller townhouse blocks. Both options are significant for maximizing density however they lack the fundamentals of a livable community.

The Park and *The Urban Farm* transformations explore opportunities to turn the site into urban parks with little to no housing. *The Mall* and *The Strip Mall Corridor* transform the site into different commercial opportunities absent of residential or green space. Similarly, *The Byker Wall in the Park* incorporates a large amount of green space, however, residential density is concentrated on the periphery of the site in two unique structures.

Of the seventeen alternative development transformations presented, nine can be interpreted as balanced urban environments that are sustainable, livable, and complete communities. The options that best demonstrate this are: *The Urban Village, The Village in the Park, The Mid-Rise District, The Green Mobility Village, The Pedestrian Village, The Courtyard Village, The Green Village District, The False Creek District*, and *The Permeable District*. These developments incorporate medium density, multi-family buildings that provide reasonable accommodation near employment opportunities. To create sustainable, livable, and complete communities, the developments include immediate access to public open and green space, generous and safe pedestrian routes, and access to alternative modes of transportation, resulting in reduced vehicle circulation routes. From an urban design perspective these transformations are seen as the most balanced community outcomes.

Despite the insights provided in these outcomes, it must be acknowledged that the feasibility of the designs needs to satisfy several conditions, such as return on investment, community approval, and affordability. For the redevelopment of underutilized power centre sites to achieve these objectives, a serious shift in priorities at the municipal and provincial levels is required.

At the provincial level, a comprehensive urban design framework should be developed to guide the transformation of poorly utilized brownfield land into complete communities. Rather than focusing solely on land-use change, this framework needs to establish design approaches, similar to the strategies explored in the nine balanced environments, that promote walkability, human-scaled design, diverse housing types, and access to public green and open space and employment opportunities. The framework should provide guidance for municipalities to align local planning policies and development standards with these objectives.

At the municipal level, zoning bylaws should become more flexible to permit mixed-use residential development

on underutilized brownfield land. Increased zoning flexibility would reduce the reliance on MZOs to facilitate land-use changes while allowing municipalities to more effectively respond to community needs. The reduction of MZO use would require developer proposals to go through traditional approval and public consultation processes. Additionally, municipalities should introduce incentives, such as expedited approval processes and charge reductions, to encourage the development of sustainable and complete communities.

To further expand this study, research could investigate how local and provincial government could design a framework to support the redevelopment of power centre sites into sustainable, livable, and complete communities. Continued investigation into opportunities for the transformation of other underutilized or brownfield lands will also increase land supply within urban boundaries for residential development. Further examination into how these governing bodies can integrate more flexible zoning and various tools to guide developers into creating location specific developments on power centre sites may also provide valuable insights.

Overall, the redevelopment of SmartCentres and other power centre sites should be guided by urban design principles that create sustainable, livable, and complete communities, rather than increasing density and profit. Municipal planning policies should encourage flexible land-use zoning that support mixed-use development, employment opportunities, and access to everyday amenities within walking distance. By combining adaptable zoning with a comprehensive provincial urban design framework, the redevelopment of underutilized power centre sites can provide significant opportunity to deliver housing while creating sustainable and complete communities that reduce vehicle dependence, make more efficient use of existing infrastructure, and limit urban boundary expansion.

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Appendix

MZO vs. Traditional Rezoning Approval Process Key Differences

	MZO (Minister's Zoning Order)	Traditional Rezoning Process
Decision Maker	Minister of Municipal Affairs and Housing (sole discretion)	Local Municipal Council or Committee of Adjustment
Timeline	Weeks of instantly "with a stroke of a pen"	3 to 25+ months depending on the complexity of the application
Public Consultation	None required by the Planning Act prior to issuance	Mandatory public notices, community meetings, and open council meetings
Appeals	None permitted; decisions are final and cannot be appealed	Can be appealed to the Ontario Land Tribunal (OLT) by citizens or developers
Provincial & Official Plans	Can override or bypass existing provincial policies and local Official Plans	Must strictly conform to local Official Plans and Provincial Policy Statements

Fig. A MZO vs. Traditional Rezoning Approval Process

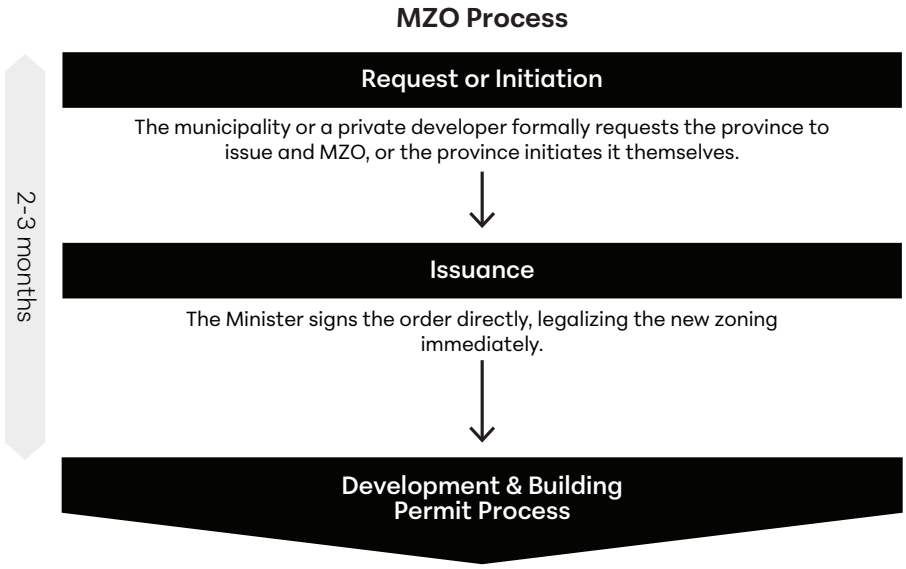

Fig. B MZO Approval Process

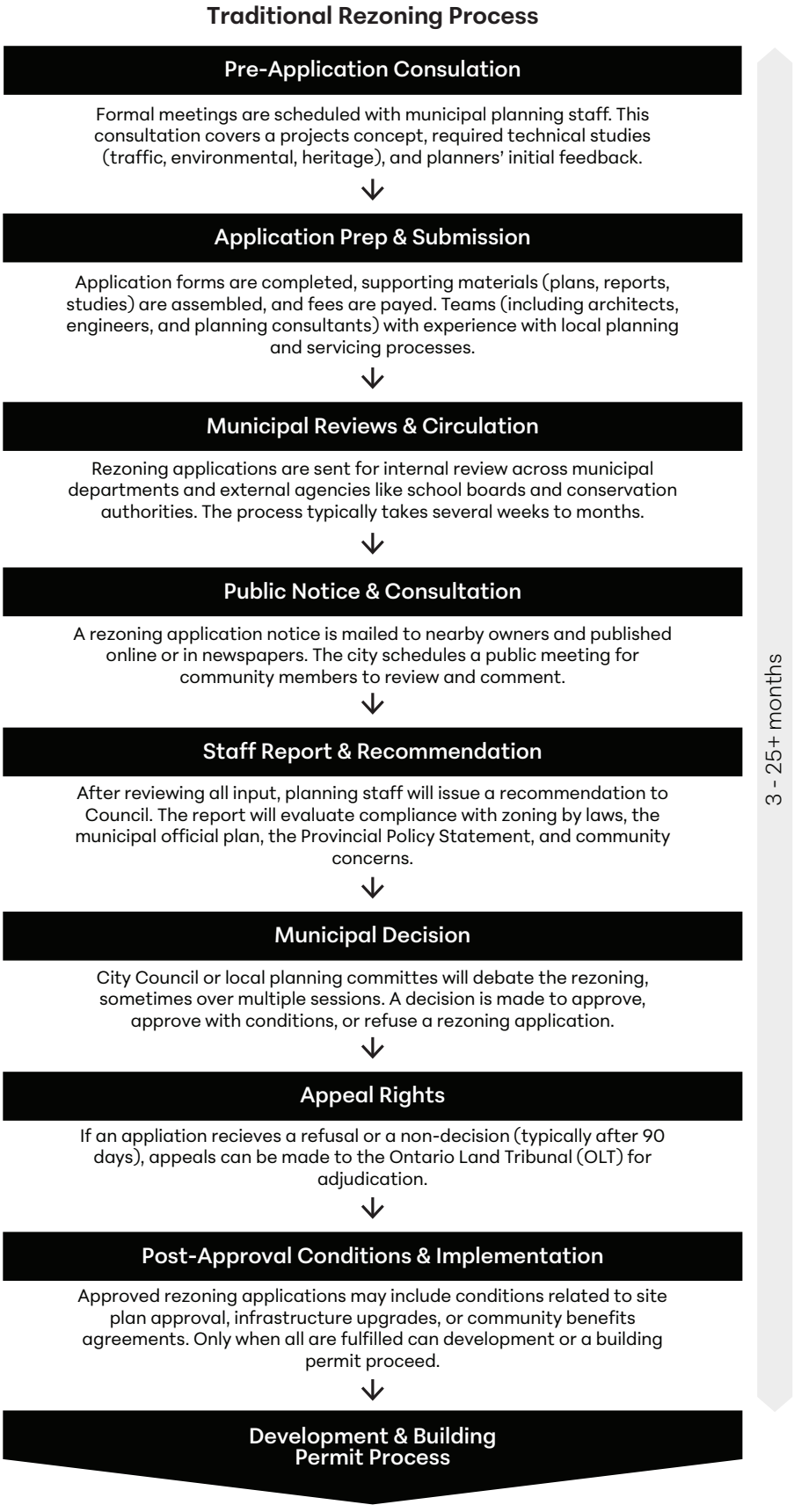

Fig. C Traditional Rezoning Approval Process

Glossary

Big Box Store: also referred to as: superstore, megastore, or category killer, is a large standalone retail building, exceeding 50,000 square feet (4,600 meters). Typically, part of a chain, these stores offer a variety of heavily discounted goods. Examples are Walmart and Home Depot.

Brownfield Land: previously developed, commercial or industrial land that is currently abandoned, vacant, or underused.

Edge City: an urban node at the edge, but not contiguous with established cities.

Employment Land/Area: specific urban areas designated by municipal governments in their official plans for business and economic activities.

Green Space; greenspace: a vegetated area adjacent to an urban area, usually includes, but not limited to nature reserves, ecological corridors, bioswales, outdoor sports fields, and parks.

Greater Golden Horseshoe: centred on Toronto, the Greater Golden Horseshoe is a densely populated and heavily urbanized region in Southern Ontario.

High-Density: a concentration of a large number of people, housing units, or activities within a relatively small geographic area.

Livability: an urban system that contributes to the physical, social, and mental wellbeing and personal development of all residents.

Low-Density: a lower concentration of residential units, people, or jobs spread across a given area.

Medium-Density: middle-sized or cluster development that situates itself between single-family suburbs and large multi-storey buildings.

Open Space: an area of land adjacent to an urban area without human-built structures, includes public parks, gardens, squares, and playgrounds.

Power Centre: also known as a big-box centre; a shopping centre with typically 23,000 to 56,000 square meters of gross leasable area, usually containing 3 or more anchor tenants and various small retailers with a high parking ratio.

Real Estate Investment Trust: a company that owns, operates, and finances income-producing real estate.

Shovel-Ready Land: land that includes the necessary infrastructure, such as water, sewer, and storm systems and zoning requirements needed for residential developments.

SmartCentre: *noun* a large, Walmart-anchored, single-use plot of land, typically dedicated to retail usage.

Sustainable Development Goals: also known as the Global Goals, the 17 interconnected goals cover social, environmental, and economic challenges. Adopted in 2015 by the United Nations, the goals represent a universal call to end poverty, protect the planet, and ensure peace and prosperity for all by 2030.