Upstream Neighbourhoods:
Preventative Architecture to Resist Social Decay

by

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CONTENTS

ABSTRACT

Health disparities and social inequities exist in every society, and architecture is well positioned to impact these issues for improved population health. Using the social determinants of health as a framework for architectural program, this thesis demonstrates the translation of health policy into the built environment, creating neighbourhoods that resist social decay. Vulnerable populations are identified via strategic mapping using population profiles, and it is argued that meeting accessibility needs within these communities maintains the social stability of the population, therefore improving the overall health of the neighbourhood. Wallace Heights within Halifax, Nova Scotia has been identified as a vulnerable neighbourhood based on its population profile, put at even greater risk of poor health outcomes due to its inaccessibility to essential services. The design aims to create social sustainability through multi-use programming based on changing population needs, ranging from health services to food access, that address the social determinants of health.

GLOSSARY OF TERMS

Upstream health care: Interventions that aim to improve health challenges and socioeconomic disparities before they occur or worsen. These interventions often involve policy changes and foster equity.

Social determinants of health: A range of socioeconomic factors that influence individual and population health, such as income and gender. Each determinant has a specific role, however all interplay to impact health and well-being across the lifespan.

Vulnerable population: In the context of this thesis, a group or neighbourhood that is socially and/or economically deprived, who without intervention, are at risk of seeing further deprivation and poor health outcomes.

Equity: The distribution of resources to ensure disadvantaged populations are given a fair opportunity at positive health outcomes. Equity is the absence of avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, or geographically.

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CHAPTER 1: INTRODUCTION

Vulnerable populations are defined as groups who face significant socioeconomic and health disparities, generally categorized into fourteen social determinants of health. The greater the disparity, the greater the risk of developing poor health outcomes. These populations, families, and individuals see their vulnerability increased even further by their circumstances and environment, creating social decay and ultimately poor health outcomes across the spectrum of wellbeing. Upstream health care aims to address these disparities, reduce them, and prevent poor health through the creation of equity. [1]

Upstream Interventions

Upstream refers to the idea of preventing a problem before it actually develops, rather than treating an existing issue.[2] Ensuring individuals have access to essential services such as healthy food and education, in turn influences their physical health and ability to get a job, which influences their ability to have a sustainable income and prevent chronic illness. Investment in upstream interventions has been shown to decrease economic burden and strain on the health care system. Oftentimes, upstream interventions help to enforce equity, which in the socioeconomic sense is the creation of fairness through elimination of barriers

1. Juha Mikkonen, *The Social Determinants of Health: The Canadian Facts*, ed. Dennis Raphael (Toronto: York University, 2010), 5-6.
2. Ali Shaver (City Planner) in discussion with the author, October 2016.

to essential experiences and services.[3] An example of this can be as simple as providing bursaries to low-income children so that they can afford a post-secondary education, or installing a wheelchair ramp in a clinic so all patients can easily access the service.

The Social Determinants of Health

Specifically, these include health services, early childhood experience, social safety net, food security, housing, social exclusion/inclusion, education, income, job security, gender, working conditions, race, aboriginal status, and disability.[4] Each determinant of health sits on a scale, with one end being the advantaged and the other, disadvantaged (Fig. 1). These determinants can be further split into two tiers: Access or Identity, with the former five speaking to Access (access to affordable food sources), and the latter nine to Identity (gender, race).[5] Those with greater disparities between an advantaged population and their own circumstance are the most vulnerable, and therefore at greater risk of poor health outcomes. By addressing the vulnerable from an upstream perspective, barriers can be removed and populations can shift up the scale towards advantage and equity.[6]

IDENTITY

SOCIAL EXCLUSION

EDUCATION

INCOME

JOB SECURITY

GENDER

WORKING CONDITION

RACE

ABORIGINAL STATUS

DISABILITY

ACCESS

HEALTH SERVICES

EARLY CHILDHOOD

SOCIAL SAFETY NET

FOOD INSECURITY

HOUSING

Figure 1. The Social Determinants of Health separated into 'Identity' and 'Access'.

3. Holly D'Angelo-Scott, *Population Health Status Report Part I.* (Understanding Communities Unit: Capital District Health Authority, 2014), 1-5.

4. Mikkonen, *The Social Determinants of Health*, 5-45.

5. Erin Christian et al., *Community Profile: Dartmouth/ Southeastern Community Health Network 1* (Capital Health Community Clinical Services/Health System Planning Group, 2014), 7-26.

6. Mikkonen, *The Social Determinants of Health*, 1-2.

Position

Currently, ideas around how architecture can influence and reflect upstream health policy only exist in states of basic awareness and theory; it is clear that something needs to be done, but this has yet to be translated into the built environment. Our surroundings impact our health in just as significant a way as biology and nutrition, and accessibility to basic necessities and social structure influence us just the same. However, structure and urban planning does not often account for how these social determinants of health factor into our lives, such as seeing high-rise condominium parks becoming food deserts and low-income housing with poor proximity to health clinics and social gathering spaces.[7]

Thesis Question

How can we re-imagine residential neighbourhoods in order to create equitable environments to reduce disparities that cause poor health outcomes in order to prevent future social decay?

Intention

This thesis aims to show how one can translate the knowledge of upstream health policy into the built environment to create neighbourhoods that foster positive health outcomes, specifically in those communities that are most vulnerable to developing poor health. Given a parameter of density and size, certain programmatic elements must exist in order for

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7.   Aziza Mahamoud et al., *Housing and Health: Examining the Links* (Toronto: Wellesley Institute, 2012), 1-3.
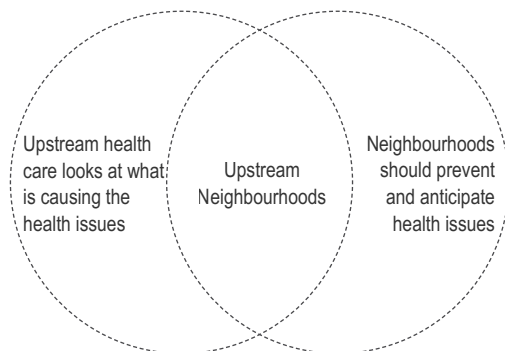
Figure 2. Diagram depicting the cross-disciplinary approach of this thesis.

the community to achieve this goal and resist social decay.[8] These elements will be translated from the social determinants of health into a series of buildings at the neighbourhood core. The neighbourhood becomes a place of education, social interaction, service, and support as well as a physical connection between the unit and the surrounding communities.

We must have a stake in policy going forward that ensures built environments are designed with the holistic human experience in mind, for the current state as well as for the future. How can architecture prepare for the impact of gentrification and fluctuating demographics? Small but important policy shifts can have a significant impact on the health of not only individuals, but the community as whole.[9] This thesis will explore how these social determinants, and social equity, affect our lives, and how urban planning within neighbourhoods can be used as a response to inequities in these areas. As such, our environment is a direct reflection of our health. By outlining what is required to be healthy, we can see the same translation of thought into our environments.[10]

8. Richard George Rogers, *Cities for a Small Planet*, edited by Philip Gumuchdjian. (London: London: Faber and Faber, 1997), 5-11.

9. D'Angelo-Scott, *Population Health Status Report*, 6-11.

10. Isabelle Anguelovski, *Neighborhood as Refuge: Community Reconstruction, Place Remaking, and Environmental Justice in the City*, ed. by Ebooks Corporation (Cambridge, Massachusetts: The MIT Press, 2014), 195-219.

CHAPTER 2: CONTEXT

Social Conditions

Who is at Risk

Social nuances play a significant role in determining how we might best meet the needs of both individuals and communities within our urban planning efforts. In order to seriously impact the social determinants of health, we cannot neglect the reality that there is a level of privilege in the city atmosphere with those who can afford the amenities and transportation, in stark contrast to the socioeconomically disadvantaged who rely on the city, but may not always be able to fully experience nor benefit from what it has to offer[11].

Furthermore, the living environment in should evolve with the population, shifting with changing needs in an upstream fashion based on the social determinants, such as creation of areas for social inclusion and education centres. By addressing the disparities of underprivileged communities through the promotion of community gathering and adaptable, sustainable living environments we can create upstream neighbourhoods that will resist future social decay.[12]

11. David Harvey, "The Right to the City," in *International Journal of Urban and Regional Research* 27, no. 4 (2003) : 939-941.
12. Mikkonen, *The Social Determinants of Health*. 1-5.

Why they are at Risk

Vulnerable neighbourhoods are more at risk of developing vulnerable populations.[13] Sustainability and adaptability through changing needs allows for residents to access the services they require should different social or economic situations arise. Richard Rogers speaks to the sustainability, arguing that the modern world is changing faster than the buildings around it.[14] We can also translate this to mean that the infrastructure tying the modern world together is resistant to equity, as even if a community is vibrant and lacks disparities, socioeconomic declines can happen. By not providing the necessary support services, these vulnerable neighbourhoods do not act as a support to its residents. The sustainability of the neighbourhood relies on its ability to fluctuate to the changing identity of its inhabitants.

Living Conditions

There is an extensive body of academic, policy-related, and community based literature that describes the powerful nature of housing and the environment as a social determinant of population health. The relationship between poor mental and physical health is well-documented. Efforts have been made through health policy addressing overcrowding and poor living conditions that have made a positive impact on population health worldwide.[15] This knowledge speaks to the health of the environment based on

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13. Ibid., 1-5.
14. Rogers, *Cities for a Small Planet, 71.*
15. Mahamoud et al., *Housing and Health*, 3.

environmental factors that lead to such issues as asthma, some cancers, obesity, and others. However, health and environment go beyond housing, and in fact lend themselves to the neighbourhood as a whole.[16]

The health of a neighbourhood is based on more than the ability to provide safe, suitable housing for its residents. When the relationship to certain services and amenities are very poor in many neighbourhoods, creating car dependence for access to food, health services, and social networks, the residents suffer.[17] Neighbourhoods as they currently exist are not providing critical services and supports that all individuals need to socially sustain present and future generations. Even more so, low income individuals and families are already at immediate risk for poor health outcomes.[18] Economically, not every neighbourhood can have a community college, a health clinic, and a community centre, but the neighbourhood can foster accessibility to these services in neighbouring communities or provide temporary infrastructure for mobile services to come to the neighbourhood.

16. Anguelovski, *Neighborhood as Refuge*, 46-48.
17. Harvey, *The Right to the City*, 5.
18. D'Angelo-Scott, *Population Health Status Report*, 5.

CHAPTER 3: ACTION

Opportunities for Change

Architectural Discourse

It is time we consider how we can foster change within vulnerable communities through built interventions and decrease these disparities. As architects, we have the ability to work with three perspectives to come to this shift and create a homeostasis: those of the community member, the building designer, and the urban planner, each of which are needed to develop an environment that reflects the needs of the community while realistically planning for those needs they may not immediately see. Adapting space to positively impact the social determinants of health will effect eventual policy change that ensures these issues are considered within all existing and future community developments.[19]

Neighbourhoods for Prevention

New developments and existing neighbourhoods without networks become vulnerable over time, failing to resist social decay.[20] Economic changes or resident turnover pose different needs and circumstances, in turn shifting the purpose of the built environment. For example, a large condominium complex may be built among other similar buildings full of individuals and families with vehicles and no challenges of

19. Erin Leonard (Senior Epidemiologist) in discussion with the author, October 2016.
20. Liam Kavanagh, *Social Sustainability and High Density Development*. (Brisbane: Planning Acquisitions and Development Pty Ltd, 2009), 4.

access to necessities. As the social determinants of health are universal, a neighbourhood that aims to reduce disparities becomes a neighbourhood that is adaptable to changing needs and anticipates social decay in any population. Vulnerable neighbourhoods are already deficient in terms of service equity, and it is well documented that changing our environments can change our health.[21] However, the challenge arises when people cannot simply change where they live. Therefore, we must challenge how environments are developed to ensure the resistance to social decay.

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21. Anguelovski, *Neighborhood as Refuge*, 47.

CHAPTER 4: APPLICATION OF THEORY

Halifax, Nova Scotia

As an application of the theory, Halifax, Nova Scotia will be used a test site for determining where vulnerable populations live, as well as the accessibility issues that they possess.

Translation of Social Determinants of Health

The social determinants of health can be divided into two categories: identity and access. Those indicators categorized as identifiers are mostly unchanging, however, those indicators such as education or disability can be offset through the accessibility to essential services (Fig. 3). The key to preventing poor health outcomes is acknowledging the existence of these disparities and acting to mitigate them before further health challenges develop. For instance, if someone is living in poor housing conditions but has good overall health, the upstream approach is to identify that the poor housing condition can affect your health, and to prevent negative outcomes the housing situation needs to be addressed.[22]

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22. Mikkonen, *The Social Determinants of Health,* 29-31.

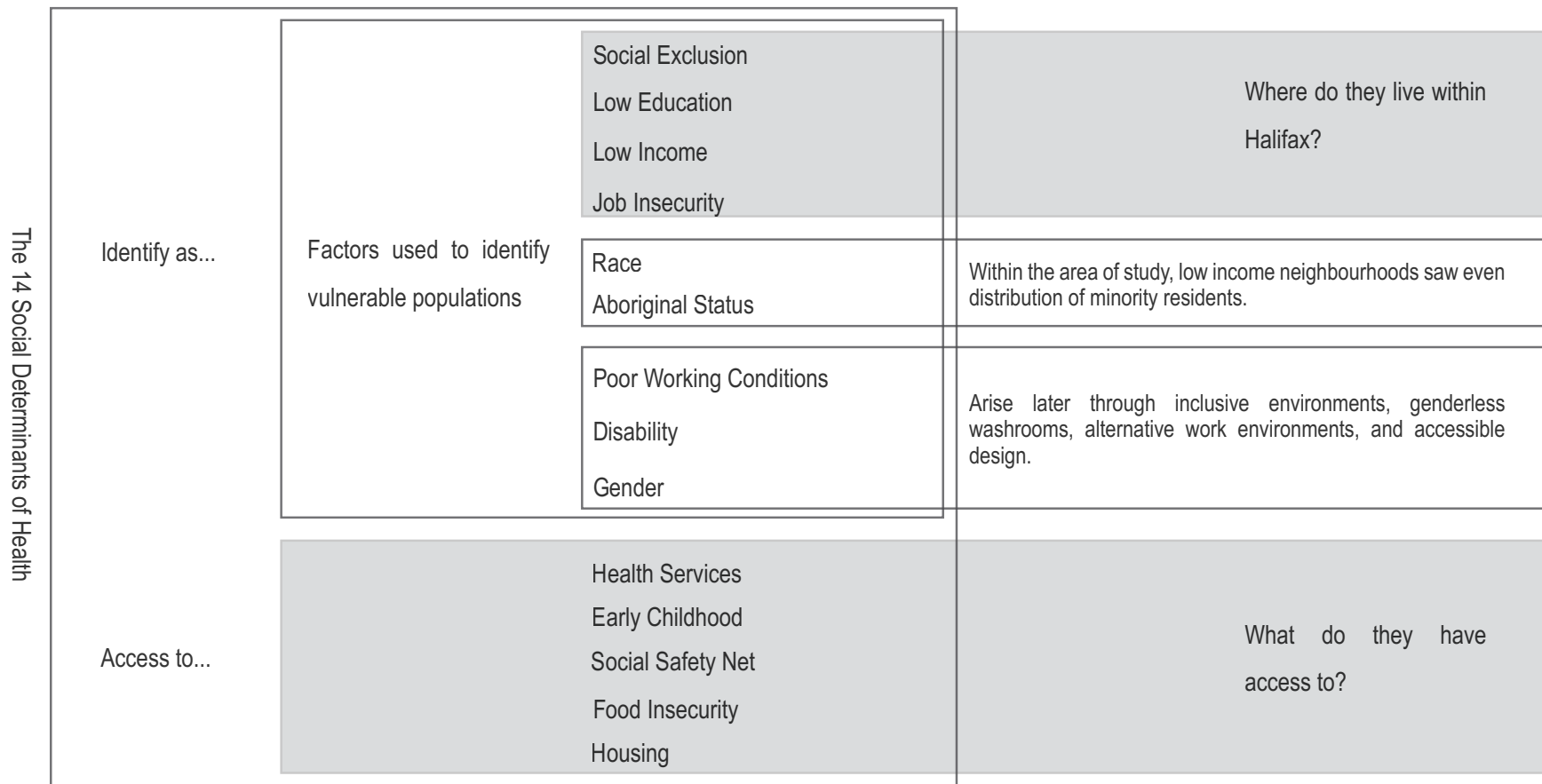| Identify as... | Factors used to identify vulnerable populations | Social Exclusion
Low Education
Low Income
Job Insecurity | Where do they live within Halifax? |
		Race Aboriginal Status	Within the area of study, low income neighbourhoods saw even distribution of minority residents.
		Poor Working Conditions Disability Gender	Arise later through inclusive environments, genderless washrooms, alternative work environments, and accessible design.
Access to...		Health Services Early Childhood Social Safety Net Food Insecurity Housing	What do they have access to?

Figure 3. The 14 Social Determinants of Health as it pertains to the context of Halifax, Nova Scotia.

Identity

The community profiles have been developed through the Population Health Status Report to inform community-based programs within the Capital Health district of the provincial health authority for an evidence-based approach to future planning at the local level. The profiles cover indicators of health, demographics, analysis, and future trends within each community health network, with a focus on material and social deprivation. Social deprivation refers to areas that have high rates of single parents or individuals living alone identifying, which identifies those who are socially excluded. Material deprivation refers to inability to procure employment, including access to a vehicle and access to education. Health Network 1 & 2 covers the Halifax peninsula as well as Dartmouth, the key areas of interest for understanding the urban residential neighbourhoods.[23] By addressing each of the identifiers of the Population Health Status Report, it is clear where the most vulnerable populations are living. These identifiers are difficult to change, and if accessibility to certain essential services does not exist, they will lead to poor health outcomes.

The following maps represent the identification of a vulnerable population (Fig. 4-8). However, each on there own does not deem a population at risk, but the existence of multiple factors creates a more vulnerable profile which is indicative of a vulnerable population.

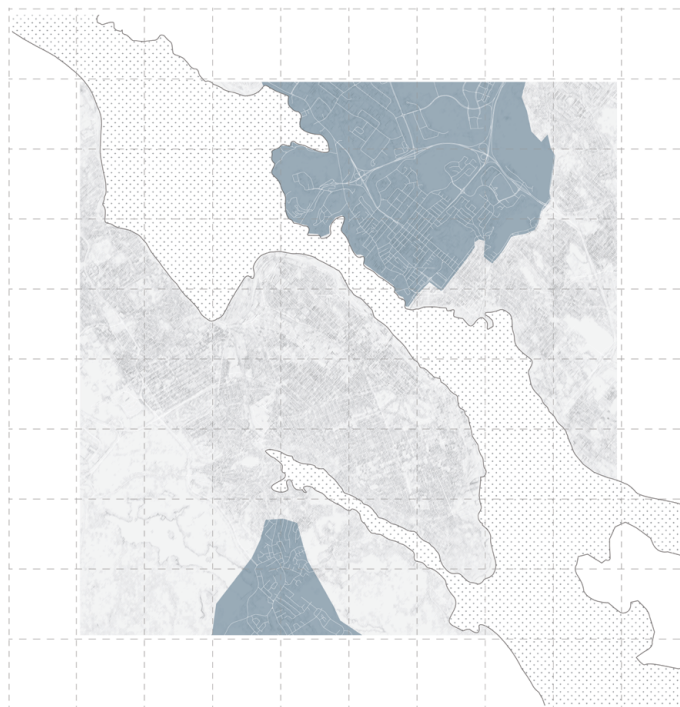23. Christian et al., *Community Profile*, 1-26.

Figure 4. Map outlining areas that show highest levels of social deprivation within Halifax based on the Community Profile. Base maps for above and following maps from GIS.
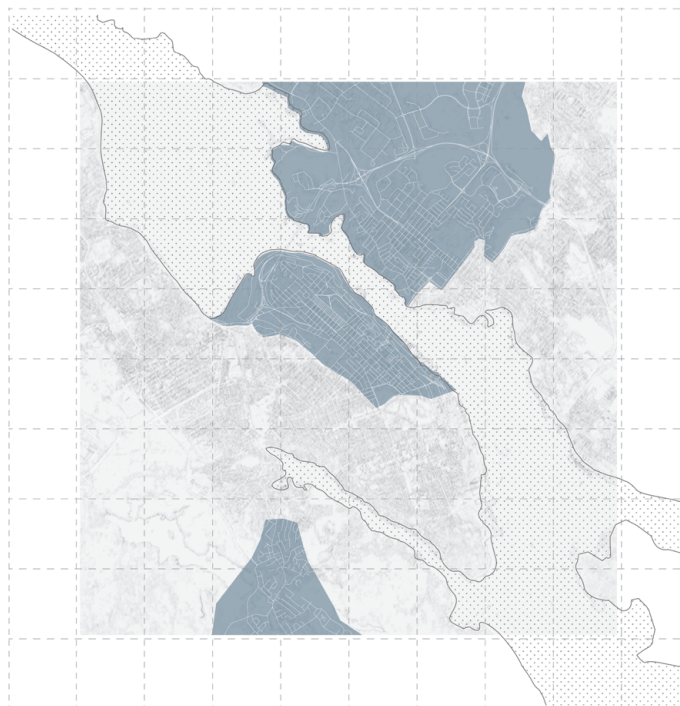

Figure 5. Map outlining areas that show highest levels of material deprivation within Halifax based on the Community Profile.
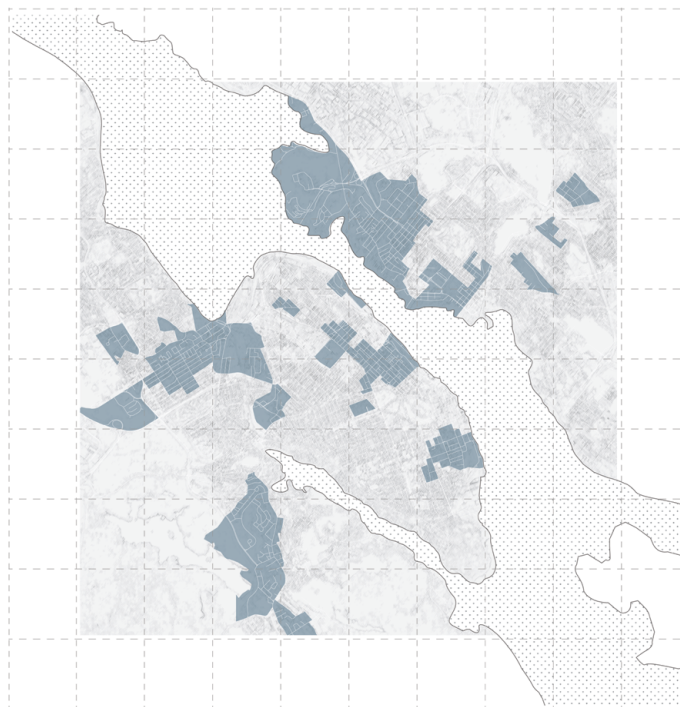
Figure 6. Map outlining areas that show highest levels of social deprivation within Halifax based on the Community Profile.
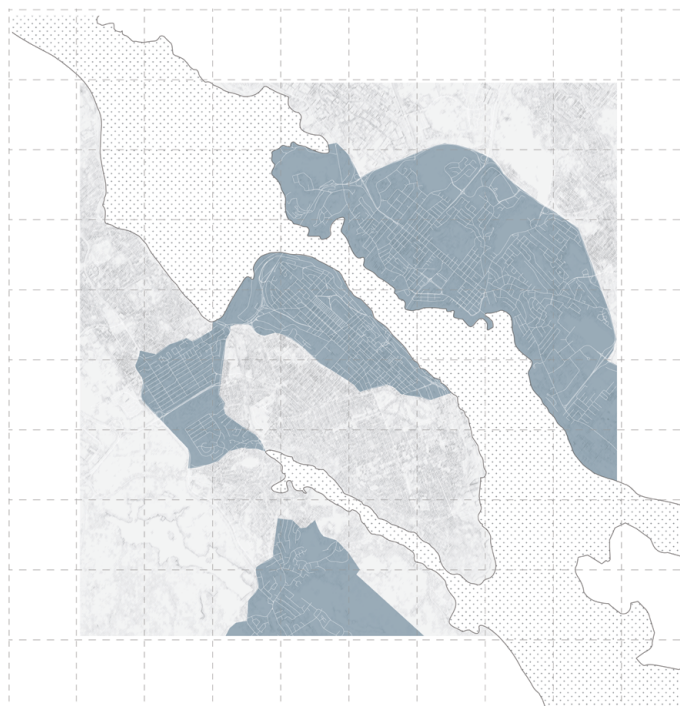

Figure 7. Map outlining areas that show highest levels of material deprivation within Halifax based on the Community Profile.
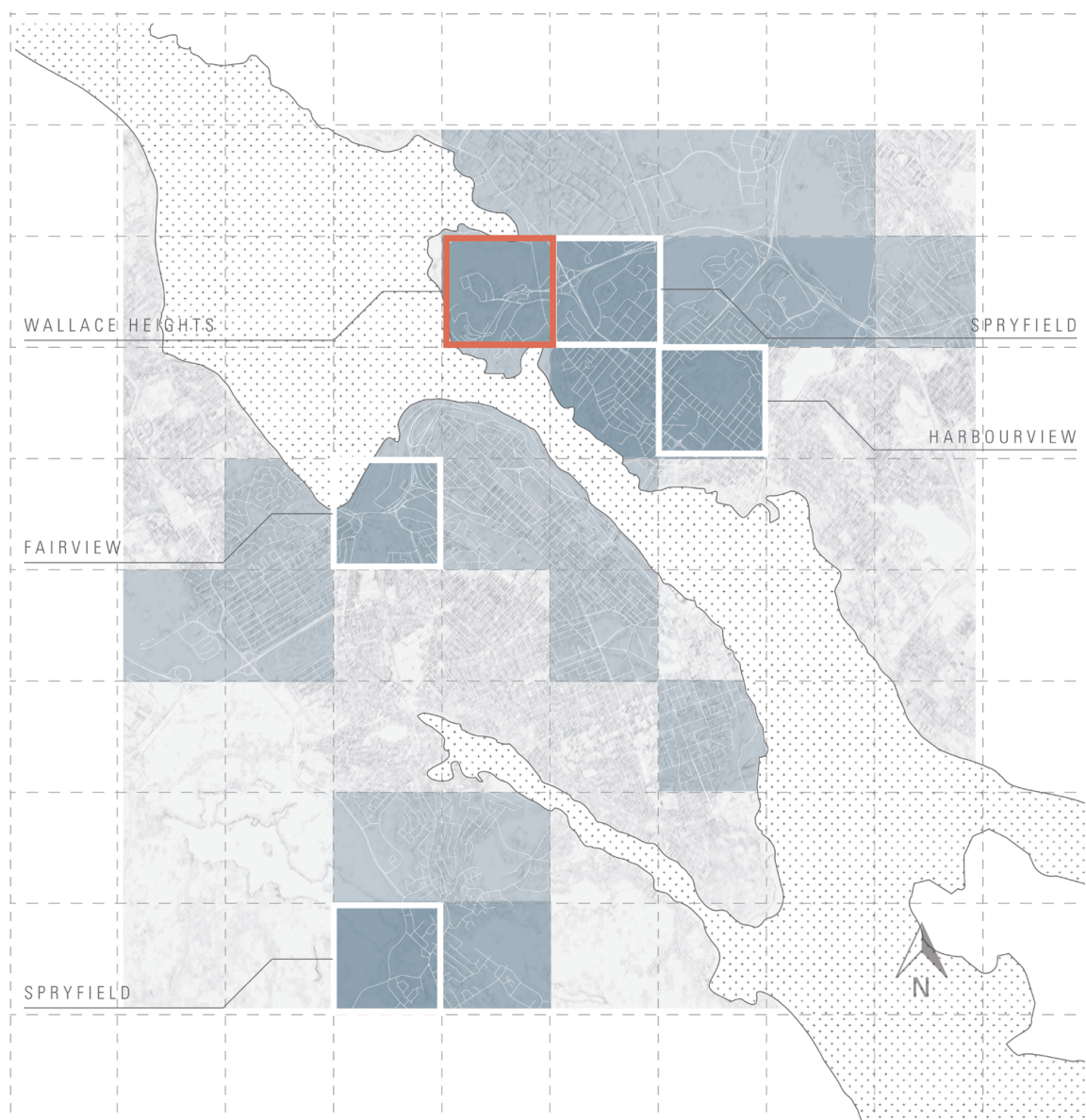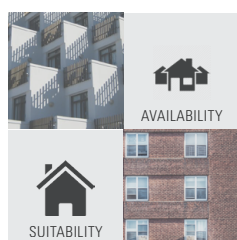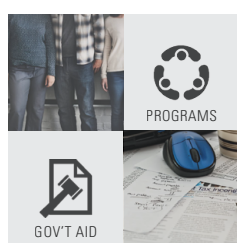
Figure 8. Map outlining areas that show the most vulnerable populations (darkest) within Halifax as indicated by the layering of the 'Identity' factors of the Social Determinants of Health. A summary of the previous maps based on the Community Profile.
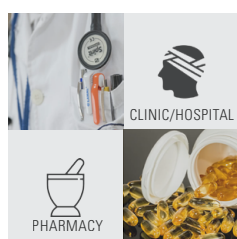
Early Childhood

Housing

Social Safety Net

Food Security

Health Services

Figure 9. Programmatic themes translated from the Social Determinants of Health deemed accessibility issues; from Pexels.

Access

The access to health services, early childhood development, social safety net, food, and health services are crucial to supporting a vulnerable population.

Those communities are outlined by low income status, social deprivation, access to services, and all include transportation infrastructure that impedes active transportation (single access roads, infrastructure that isolates neighbourhoods, et cetera). We can look to Kevin Lynch's studies on the scope of the neighbourhood based on different demographics to map services nodes, infrastructure impediments, and the access to the essential needs that foster healthy lives.[24]

By translating these (Fig. 9) into programmatic themes the communities outlined can be mapped to show their accessibility to necessary services.

Wallace Heights has been identified as the least accessible to crucial services and is the basis of further site studies for programmatic elements that the community needs (Fig. 10-14). For clarification, Wallace Heights is the neighbourhood, the specific housing development that encompasses all of Wallace Heights is Ocean Breeze Estates which is operated by Universal Realty Group. For simplicity the neighbourhood will be referred to as Wallace Heights.

24. Kevin Lynch, *The Image of the City*, ed. by Joint Center for Urban Studies. (Cambridge, Mass: MIT Press, 1960), 108-112.

Figure 10. The 'Access' of the neighbourhood of Fairview. Icons in grey are not found within the neighbourhood; base map from GIS.

Figure 11. The 'Access' of the neighbourhood of Wallace Heights.

Figure 12. The 'Access' of the neighbourhood of Highfield Park.

Figure 13. The 'Access' of the neighbourhood of Rockingstone Heights.

Figure 14. The 'Access' of the neighbourhood of Harbourview.

CHAPTER 5: SITE STUDIES

Current Linkages

Wallace Heights shares common inequities seen in most low income housing developments as well as potential issues in many neighbourhoods that have a high density of housing yet lack services, public spaces, and social opportunities as well as have a high dependence on car infrastructure. It is geographically isolated with a single road for access, lacks active transportation, and residents rely heavily on vehicles (Fig. 15). Without a car, access to appropriate health services is poor at best. Current bus routes fail at providing access to the essential services in surrounding communities. The following map (Fig. 16) shows the relationship of Wallace Heights to the points it needs access to, and given its reliability on the surrounding communities the existing transit infrastructure does not provide adequate links. Commuting times are limited to peak hours and all day service routes do not relate to the most active areas of service.

Other modes of transportation, such as walking, are impeded by noncontinuous pedestrian walkways and multi-lane roads and highways. These issues aside, the distance to each of these neighbourhoods by foot surpasses the accessible distance of a ten-minute walking radius. [25]

Figure 15. Car dominant lifestyle within Wallace Heights does not have active transportation in mind.

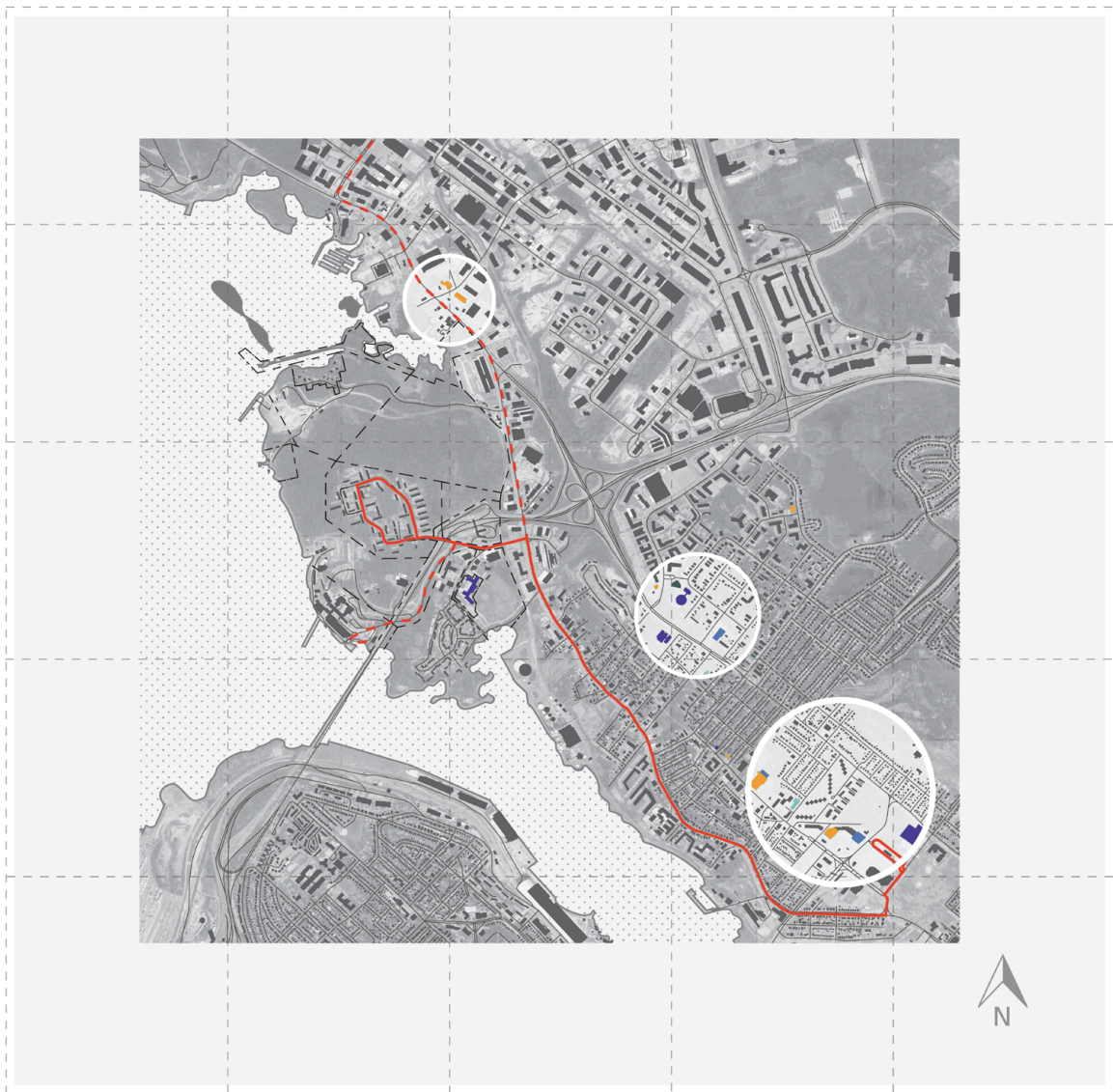25. Rogers, *Cities for a Small Planet, 122.*

Figure 16. Transit linkage to surrounding areas of services are not aligned with the access needs of Wallace Heights to which the transit is supposed to service; base map from GIS, aerial imagery from Google.

Dependence

Given what Wallace Heights needs to maintain the health of its population, and the challenges in accessing necessary services either by foot or transit, certain services need to be brought to the community.

Though access to the surrounding neighbourhoods is poor, Wallace Heights does possess some services innately. In order to tap into these existing resources, infrastructure suitable to receiving mobile services must be developed would allow for a sustainable method of bringing those services into Wallace Heights without creating the liability of permanence

The following map outlines the type of services that currently exist in the surrounding areas (Fig. 17).

Figure 17. Proximity to surrounding neighbourhoods and the services they offer to Wallace Heights; base map from GIS, aerial imagery from Google.

Wallace Heights

Access

The impact of these poor neighbourhood linkages creates a strain on the resident when trying to access these services. Currently Wallace Heights satisfies, in part, two of the ten programmatic accessibility needs for vulnerable populations, as it relates to the needs translated previously (Fig. 9).

Housing supply is limited to three and four bedroom multi-storey units with comparable rent costs (Fig. 18). These units were built in the 1960's and few updates to functionality of the space have been addressed. They lack accessibility from the sidewalk to the front door, and that continues on through the interior with split entries, bedrooms on upper levels, and narrow hallways.

The neighbourhood is laid out as a series of 397 row houses that form interior courtyards off the main streets.[26] These courtyards are made up primarily of parking lots, but have several grassed lawns (Fig. 19). Currently underused, these courtyards are cut off from the other units and lack access from some of the housing units. Several of these courtyards have play equipment for younger children but lack diversity of use for all ages.

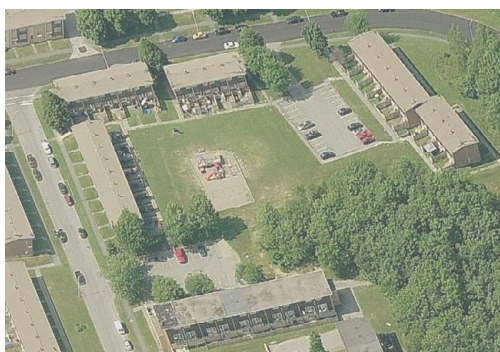Figure 18. The available housing consists of 3 and 4 bedrooms, 2-3 level units.

Figure 19. Informal outdoor spaces consist of underused courtyards with play equipment, as well parking lots; from Bing.

26. Corey Barton (Residential Property Manager of Ocean Breeze), e-mail message to author, January 23, 2017.

3 1 %

< HIGH SCHOOL

23% high school or equivalent
47% post secondary

4 1 %

SALES & SERVICE

20% work in transport and
equipment operations

2 7 %

RELY ON TRANSIT

55% drive to work (passenger or driver)

1 3 %

WORK FROM HOME

7 2 %

HOUSED AFFORDABLE

28% of residents spend greater than 30% of
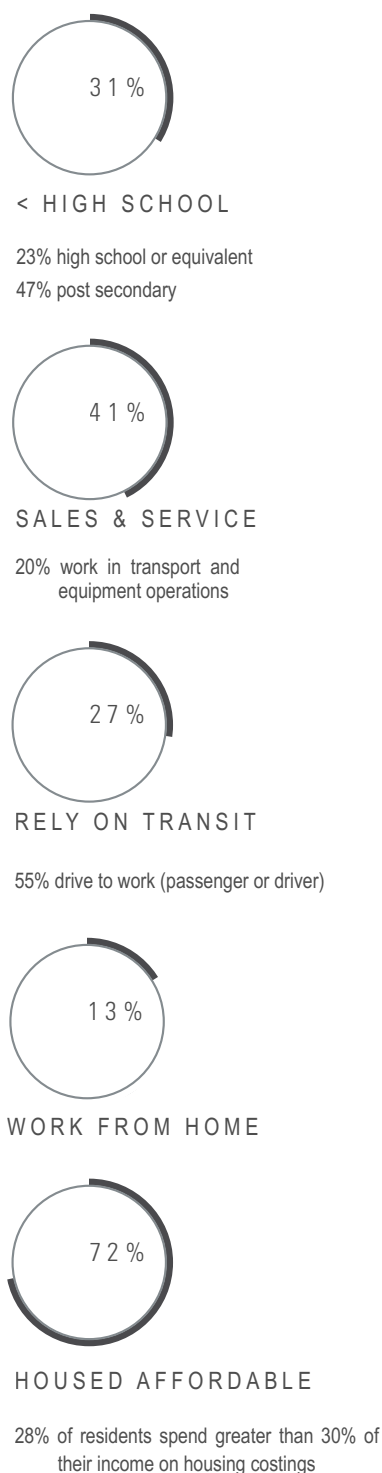their income on housing costings

Figure 20. Identity of Wallace Heights based on
Statistics Canada's 2011 National Housing Survey.

Identity

Looking closer at the identity of Wallace Heights we can begin to see the specific statistics that are related to the vulnerability of the population (Fig. 20). Currently there are 1100 residents within the development.[27]

Thirty-percent of individuals living in the neighbourhood have less than a high school education, while over fifty-percent of the population have no more than a high school diploma or equivalent.[28] Given the level of education, many of individuals work in the sales and service industry, relying heavily on transit to get to and from work. The adjacent industrial park of Burnside is host to many of the sales and service jobs this community depends on.

The affordability of the neighbourhood is poor, with twenty-eight-percent of residents living beyond their means for shelter costs. To live affordable would be to spend less than thirty-percent of household income on housing.[29]

27. Corey Barton (Residential Property Manager of Ocean Breeze), e-mail message to author, January 23, 2017.

28. "2011 National Housing Survey," *Statistics Canada*, accessed September 30, 2016, http://www12.statcan. gc.ca/nhs-enm/2011/dp-pd/prof/index.cfm?Lang=E.

29. Mikkonen, *The Social Determinants of Health,* 29.

HEALTH
CLINIC

Car access for dropping
off supplies
Private examination
room (150 sq.ft.)
Washroom, sink facility

MOBILE NURSE

250 SQ.FT.

DIVERSE
HOUSING

Single bedroom,
accessible units
Kitchen and washroom
facility
Proximity to parking
Live-Work ability

~500
SQ.FT.

SUPPORT
PROGRAMS

Private office space for
sensitive meetings
Group space for 15-25
(Support groups, classes)
Group space for 30-50)
(Community event space)

MOBILE
FACILITATOR

150 SQ.FT.
750 SQ.FT.
1200 SQ.FT.

~1000
SQ.FT.

~1500
SQ.FT.

CHILDCARE

30 sq.ft. per child, 25
child daycare
Washroom, sink facility
Ground floor, accessible
to outdoor play area

750 SQ.FT.

FOOD MARKET

Kitchen facility
Ground floor, accessible
design
Truck access for food
delivery

MOBILE MARKET

1200 SQ.FT.

Figure 21. Building requirements for each program.

CHAPTER 6: DESIGN

Program

Programmatic themes were translated from the social determinants of health in conjunction with the Population Health Status Report, which aims to identify where vulnerable populations are living within Halifax and the amenities that they would require access to.[30]

In response to the needs of Wallace Heights, seven programs will be developed. These programs include a health clinic, a daycare, a community support space, a food market, and diverse housing (Fig. 21).

These programs will be separated into three different sizes of building situated within the neighbourhood. Multi-use will allow for changing programs during seasonal or weekly time frames as well as potential future trends of the community profile.

Health Clinic

A health clinic is a key need to any community.[31] The existence of a clinic both serves as a place for promotion of services that residents can access, as well as for prevention, such as space for flu clinics.

In order to maintain suitability of the program, differing mobile facilitators would inhabit the space at different times. For instance, a mobile nurse might administer services while also assessing other services the
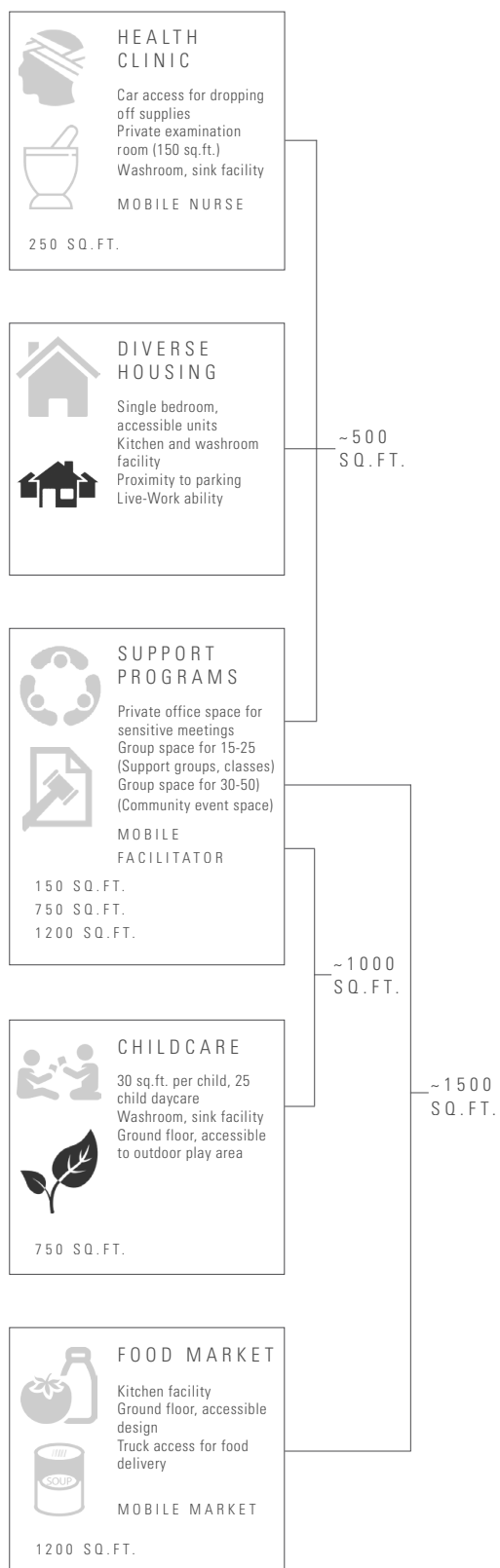
30. Christian et al., *Community Profile*, 1-26.
31. Christina Elgee (Public Health Nurse) in discussion with the author, August 2016.

residents could benefit from, working to bring those facilitators (such as a pediatrician or psychologist) on a scheduled basis.[32]

Mobile nurses require access by car to drop off supplies, so proximity to parking lots as well as accessible design is crucial to the functionality of the space.[33]

Diverse Housing

As stated, current housing is not accessible in design nor does it allow for alternative programming. Having live-work capability creates job security by allowing for the changing needs of its inhabitants. The floor plan allows for division of space with sliding doors to accommodate either a private meeting space, or a bedroom off the more public areas of the building.

Support Programs

Access to certain programs is essential, however awareness that services exist is equally crucial.[34] In low income areas, visibility of supports such as addiction services, employment availability, and education, helps persuade the user to drop in under impulse, as well as notifies the residents that these services are available and accessible to them should they ever be required.

Space for a diversity of support programs allows for private meetings, as well as larger groups to

32. Christina Elgee (Public Health Nurse) in discussion with the author, August 2016.

33. Ibid.

34. Mikkonen, *The Social Determinants of Health,* 1-5.

convene on common issues and be able to network within the community. Access to a facilitator provides professional advice, but providing the opportunity to meet other residents in similar socio-economic situations facilitates a greater sense of belonging and support within the community.[35]

Childcare

Early childhood development is crucial to the upbringing of children into society. Positive social and educational experiences at a young age are known to impact the future growth of the child.[36] Education not only refers to formal teaching within schools, but also learning to socialize with others as well as interact within society.

Access to childcare addresses the needs of the child, and provides resources for working parents. There are a number of residents within Wallace Heights who are single parents. Even in dual parent households, the luxury of a stay-at-home parent is not financially viable for those with low incomes.[37]

Food Market

There are many food deserts within Halifax, and especially within the community of Dartmouth North.[38] Currently there is only one supermarket in Dartmouth North, inaccessible by walking, to the neighbourhood of Wallace Heights. In the summer of 2016, Halifax

35. Anguelovski, *Neighborhood as Refuge*, 30-45.
36. Mikkonen, *The Social Determinants of Health,* 23-25.
37. Ibid., 12-14.
38. Ali Shaver (City Planner) in discussion with the author, October 2016.

Current Movement

Re-linking the Community

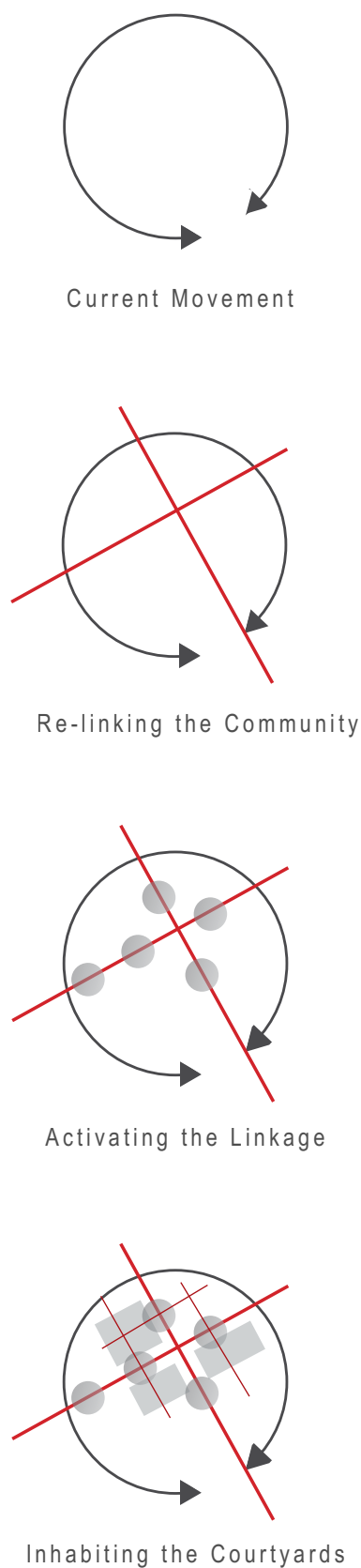Activating the Linkage

Inhabiting the Courtyards

Figure 22. Site constraints.

Regional Municipality, in conjunctions with the Health Authority, initiated a Mobile Food Market, a fresh food service that travels to different communities on a bi-weekly schedule. A city bus is used as a transport but also for the market to set up. This service works quite well in the summer months, however, interior space is required for the mobile food market to function in the winter months.[39] In Wallace Heights, as well as other communities it visits, there is little to no interior space for the market to set up within.

Site Constraints

The movement around Wallace Heights is primarily linear in that the community is not linked (Fig. 22). As a theme, linking at the scale of the site by dissecting the central forested area is key. The forest currently lacks any informal or formal pathways and creates a barrier within the neighbourhood. As it stands, the forest is hard to negotiate and would be even more difficult to navigate as a child trying to access the playground (Fig. 23).

39. Ali Shaver (City Planner) in discussion with the author, October 2016.

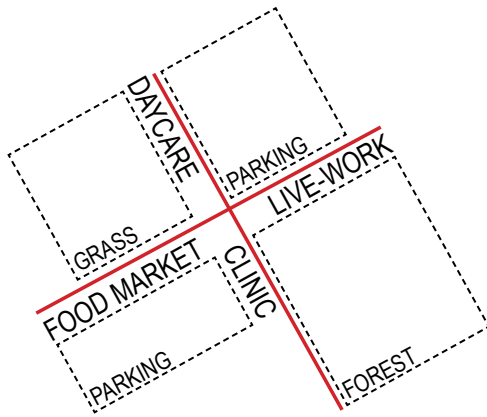Figure 23. Approach to the site; aerial imagery from Google.

Figure 24. Placement of program along the path.

Placement of Program

Programs are situated on the site based on the courtyards the buildings sit adjacent to. The market requires vehicle access via the parking lots, as well as having access to the grassed courtyard for a community garden. The daycare primarily needs unobstructed access to the playground situated within the grassed courtyard while the live-work housing requires working space and truck access for supplies and shipments. The health clinics also requires vehicle access for dropping off supplies (Fig. 24).

Sequence of Build

The building aims to reconnect the community by concentrating the new community supports in one location. The building links the community while providing the programmatic spaces along these linkages. The first move is to cross the site in two directions in order to bring better pedestrian access to the site. By introducing a series of paths, one encourages movement into the site (Fig. 25).

As a primary facilitator of program, a series of service cores would populate the path system (Fig. 26). These service cores house kitchen and washroom facilities as well as general electrical and water hook up needs for the adjacent courtyards. The electrical and plumbing would be run through the path system as a way of tying together all of the service cores. Each core can be accessed off the path, as a passing resident, or from the courtyard as a mobile facilitator or user. The mobile facilitator requires vehicular access

(such as the mobile nurse or the food truck) to drop off necessary equipment and supplies.

The primary components of the path and the service cores allows servicing of the exterior courtyards. To develop the spaces further, a modular system of floors and walls would create interior space adjacent to the service cores (Fig. 27). These spaces allow for flexibility of programming as well as growth through modular design.
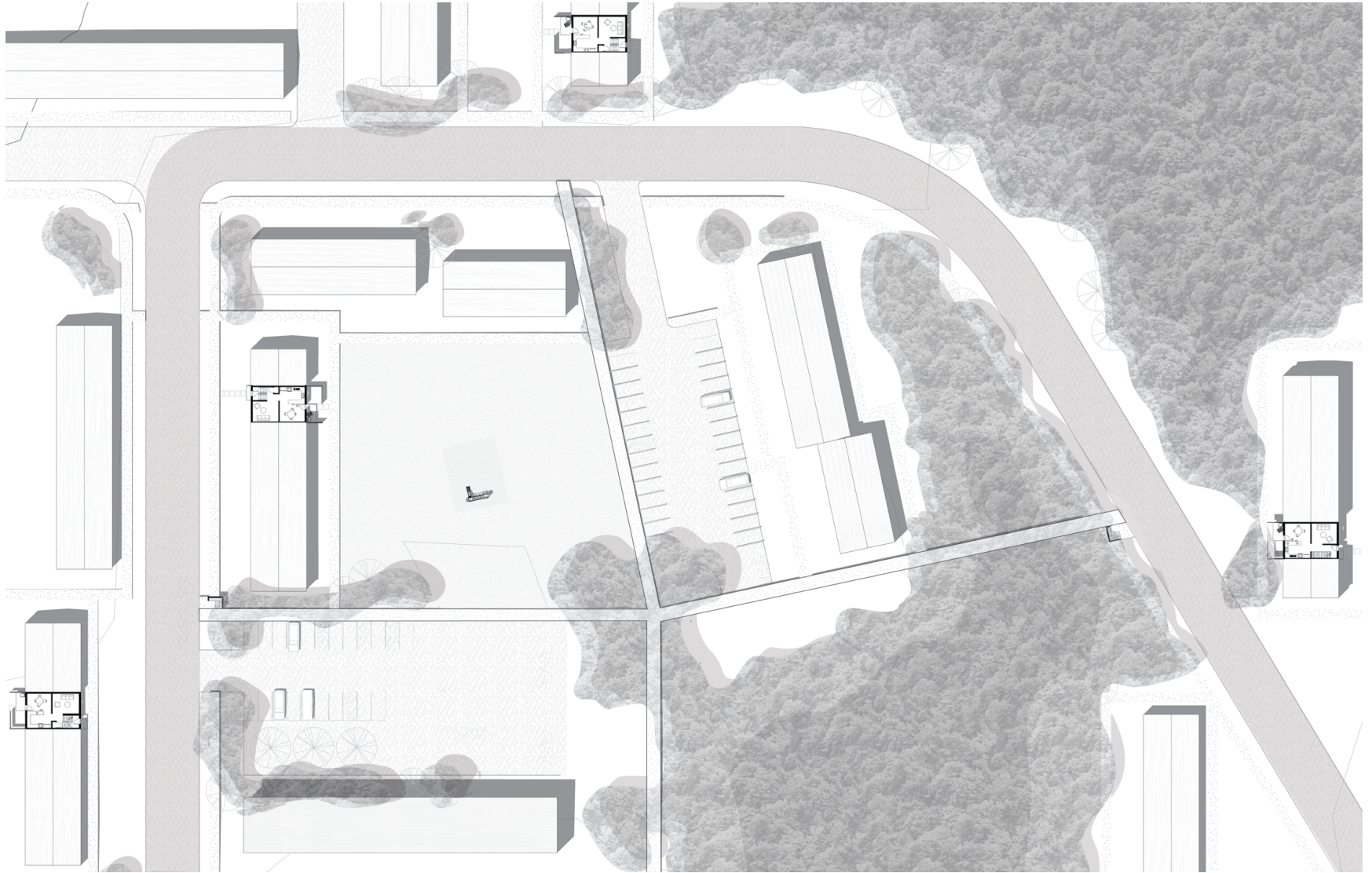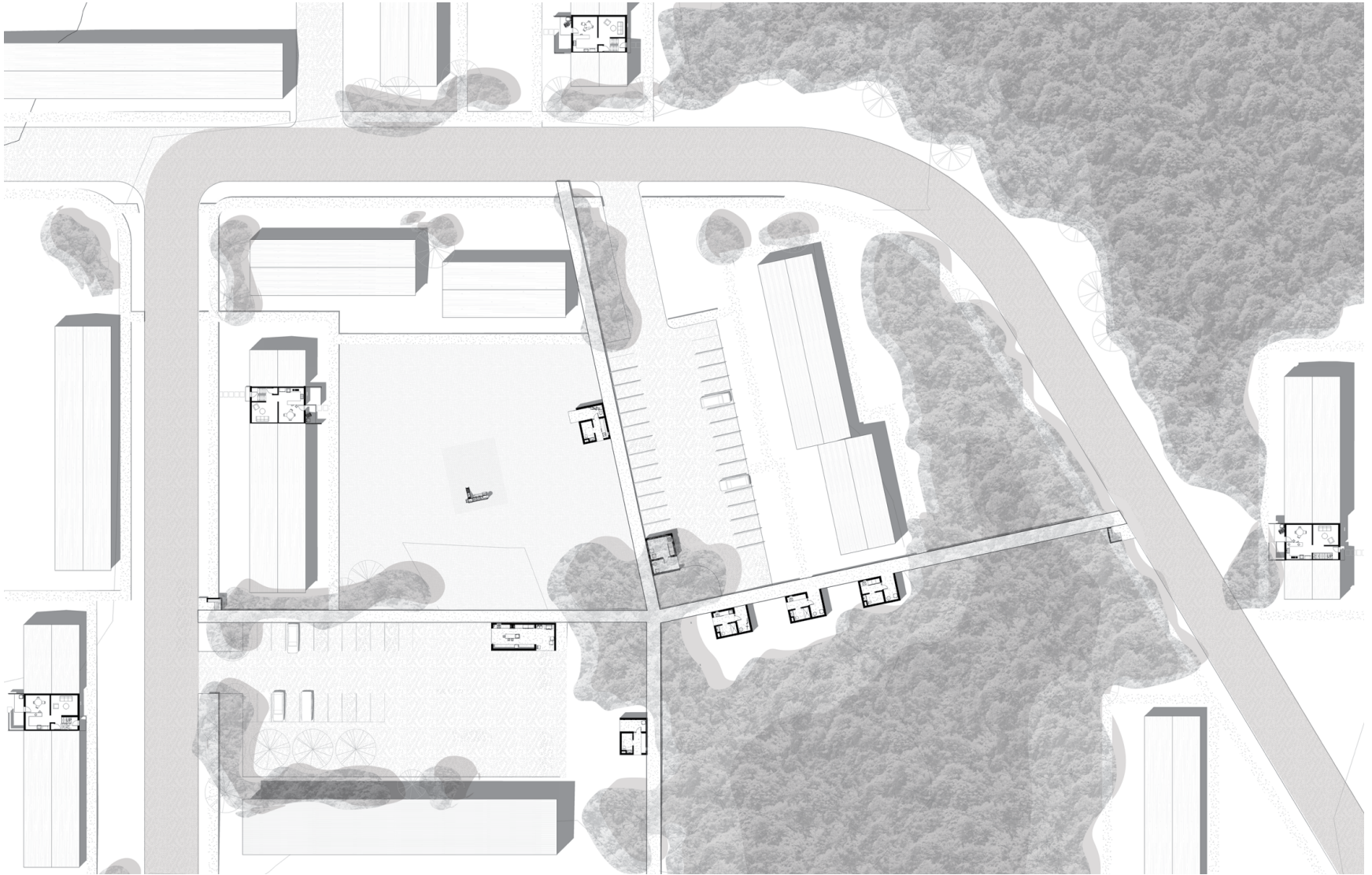
Figure 25. Path system.
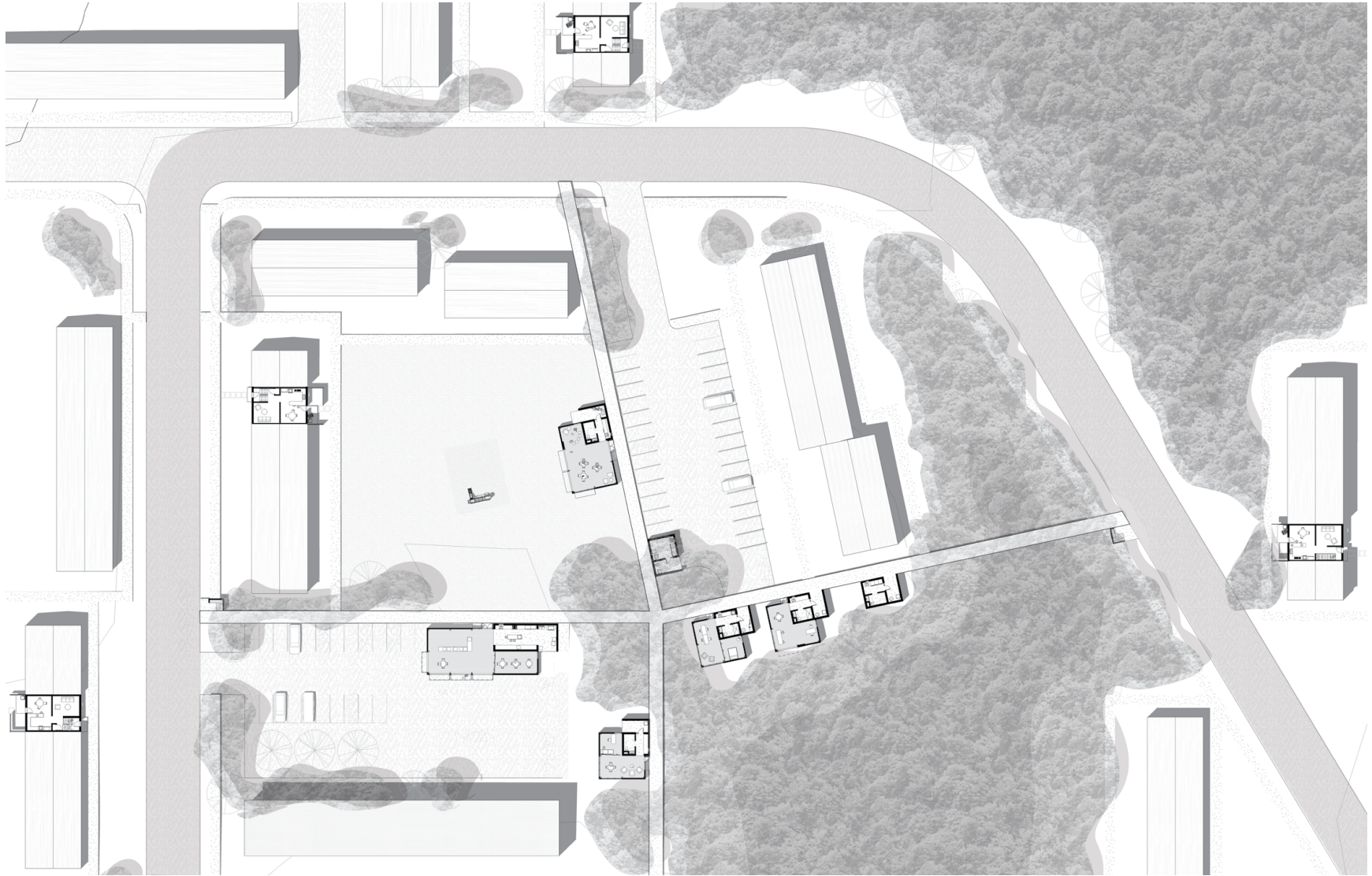
Figure 26. Service cores.

Figure 27. Flexible modular space for programming.

Modular Design

As upstream health care aims to anticipate change and address future issues before they happen, the architecture of an upstream neighbourhood must adapt to these changes and fluctuating needs in order to maintain relevance and functionality.

By creating a system of modular wall units that come to the site prefabricated, the size of the building can grow and shrink as the changing program or inhabitants fluctuate (Fig. 28).

A series of steel columns on concrete footings accept the modular units. By using only footings, new columns can be introduced at a later date should the program grow, or they can be removed should they no longer need the space.

The units would come as a series of doors, wood panels, or a combination of both to accommodate the needs of the program. Large opening windows would adorn the southern sides of the building allowing the program to spill out into the adjacent courtyard during the summer months. The wood units break off the glass to enclose the northern facades as well as private spaces within the building. Should more solid walls or glass doors be appropriate, the units can be interchanged to suit the nature of the program.

Roof

Wood Clad Unit

Overhead Glass Door

Metal Glazing Unit

Concrete Service Core

Path
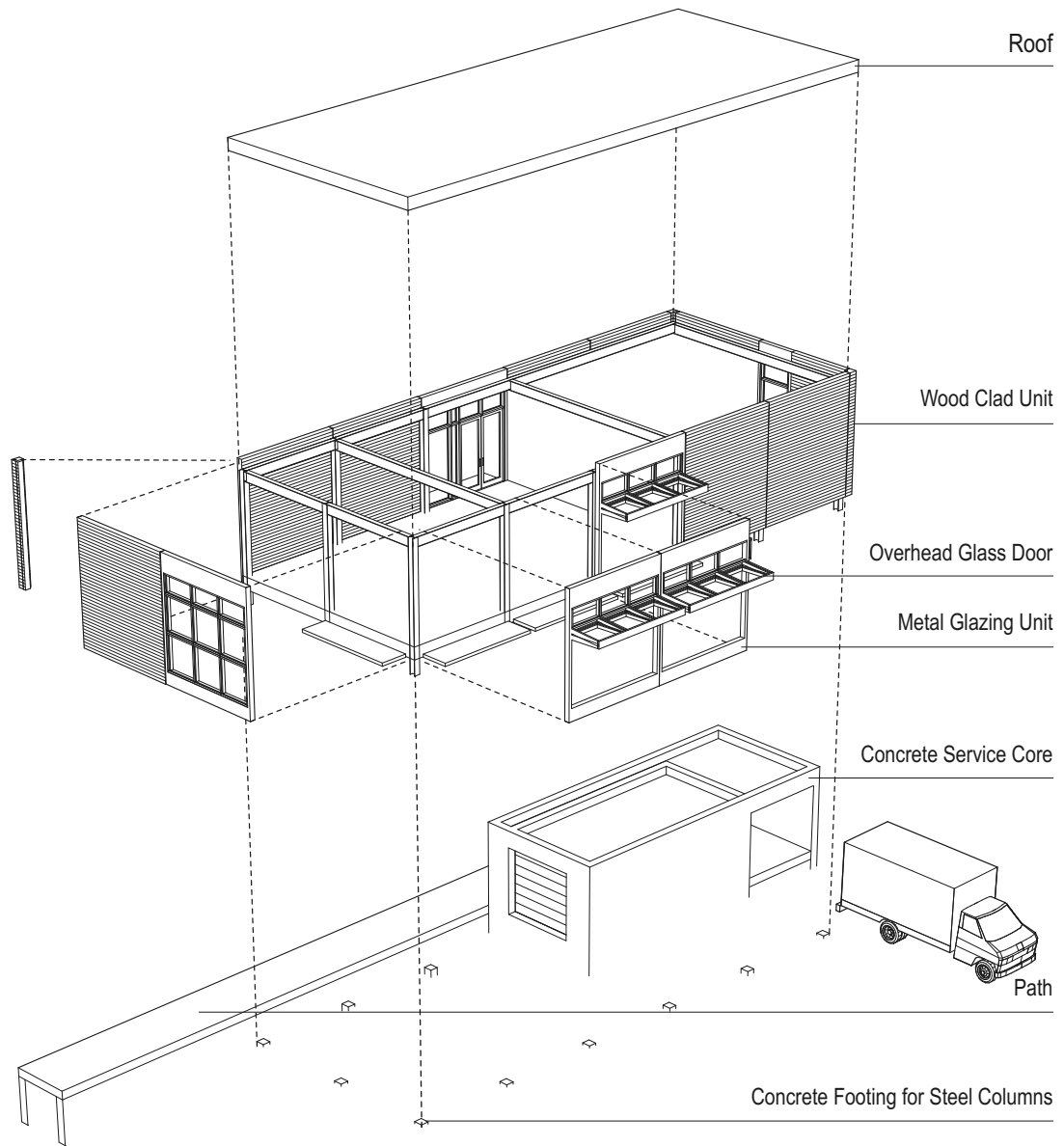
Concrete Footing for Steel Columns

Figure 28. Modular design allows for flexibility of space size, as well facade suitability for different future programs should more or less glass be required.

Activating the Courtyards

In dissecting the site by the path, four distinct courtyards emerge as ideal areas for multi-use programming. As a means of access, but also a means of overflow, the program of the adjacent building can both be served by the courtyard (truck and pedestrian access) as well as serve as usable space for the programming. Based on the adjacent programming, the courtyards encourage use (Fig. 29). For instance the daycare activates the adjacent lawn, creating protected indoor space as well as washroom facilities for children and parents convening outside (Fig. 30-31).

DAYCARE

BUS STOP

LIVE-WORK HOUSING

LAUNDRY

BUS STOP
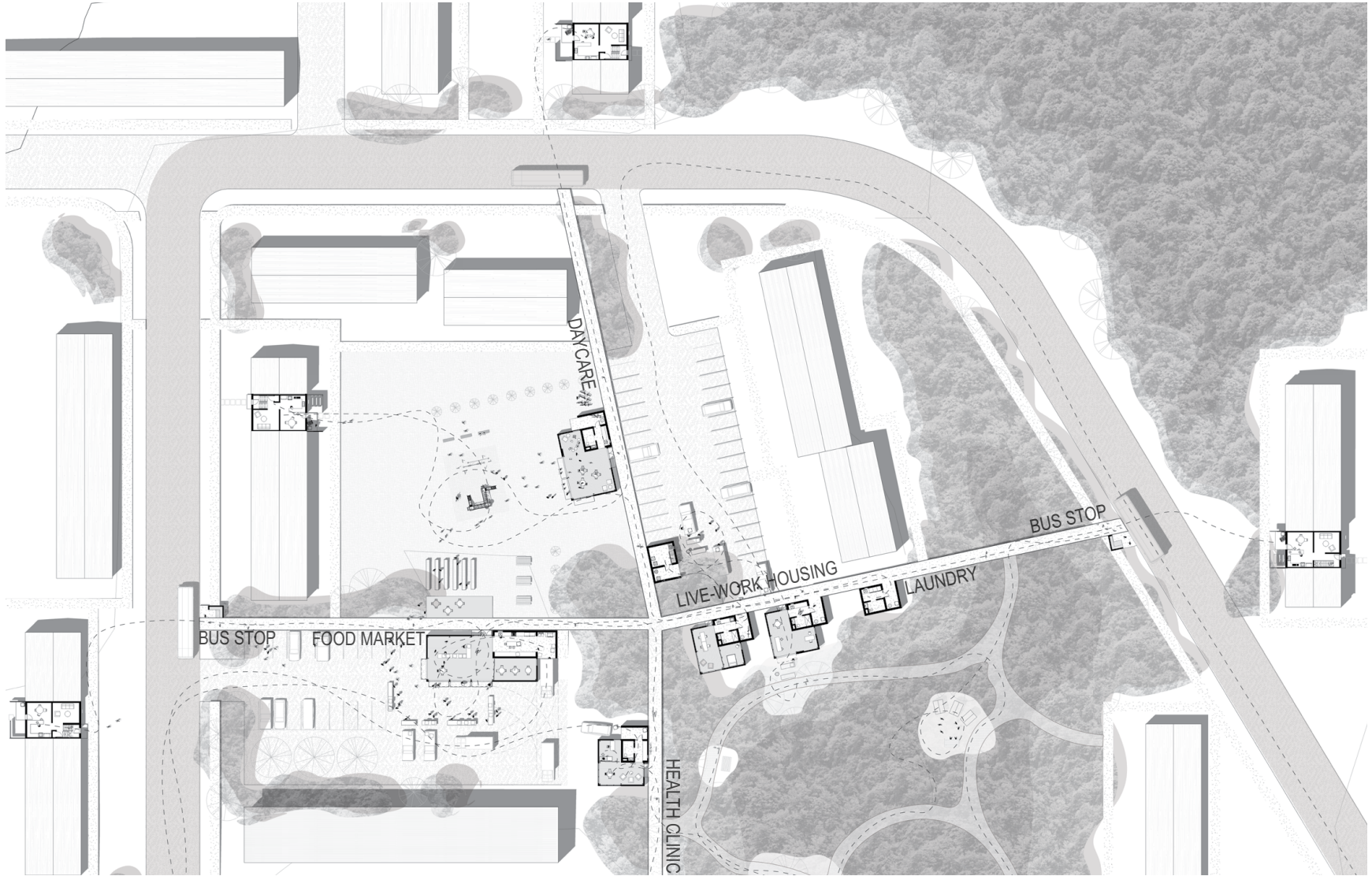
FOOD MARKET

HEALTH CLINIC

Figure 29. Activating the courtyards.

Figure 30. Activating the Courtyard - Daycare

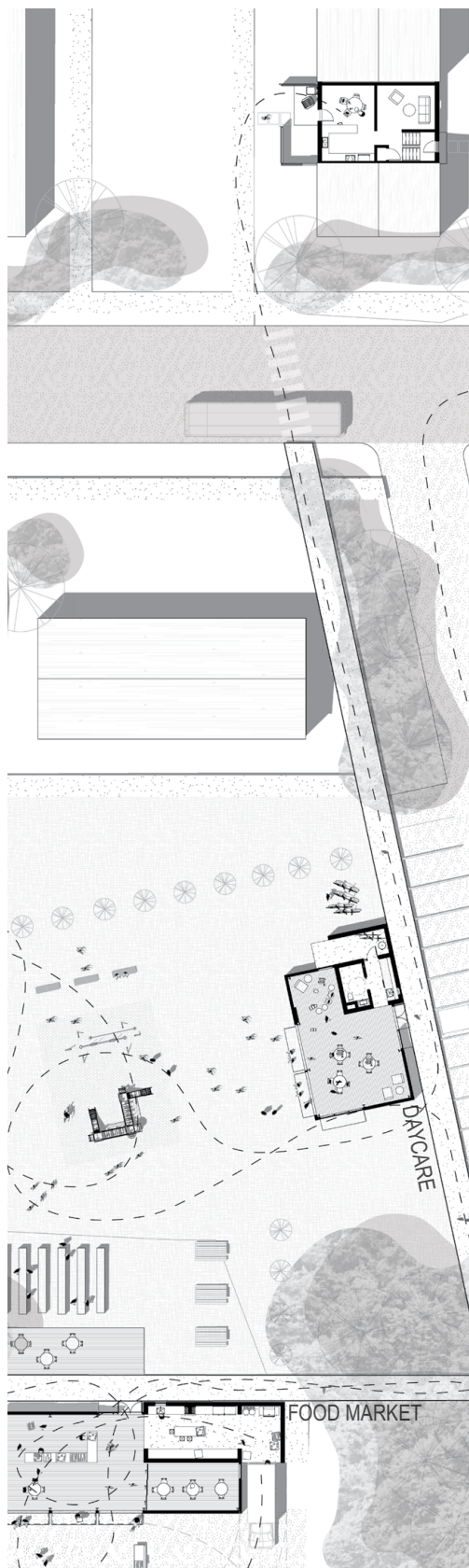Figure 31. Activating the Courtyard - Food Market

Figure 32. Neighbourhood narrative.

Neighbourhood Narratives

To understand the typical movement through the site as a resident of Wallace Heights, a series of narratives were developed relating to various conversations that were had with current residents. All identities have been changed and demographics adjusted to maintain anonymity.

The Individual Narratives

The Car-less Household

As previously discussed, many residents work within the sales and service industry.[40] While these individuals rely on access to the local transit system to get to work, many have families at home who also depend on the transit system for running errands and taking their children to school or daycare (Fig. 32).

As the programs that they need access to become available in their community, residents can develop networks in their neighbourhood to find others in similar situations as paths cross. Residents with different needs can find support through sharing of resources.

The Baker

Unaware of any other small businesses in their neighbourhood, they rely on their own knowledge to develop their brand and product. Seeking out booths in local Saturday markets in the city, they become disconnected from their community. By selling in their

40. "2011 National Housing Survey," *Statistics Canada*, accessed September 30, 2016, http://www12.statcan. gc.ca/nhs-enm/2011/dp-pd/prof/index.cfm?Lang=E.

own neighbourhood at the weekly market, they meet other small business owners and share knowledge, fostering a sense of community.

The Crafter

Little support is found within the neighbourhood for growing their online business, however, a place to sell and interact with other community members to share knowledge of the trade will help build a local client base. This again helps foster the sense of belonging and community.

The Single Parent

Taking their children to daycare becomes a lengthy and expensive process. By interacting with the neighbourhood, they find other individuals in similar life situations. Knowing there are people around them, as well as support services, becomes pivotal in maintaining the health of their household.

The Linked Narrative

As the single parent takes their children to daycare, they pass by the mobile health nurse on their way into the office. These short interactions become the moments when awareness of services is created and questions are asked that may otherwise not have been. Awareness of service becomes the first step in seeking out the service (Fig. 33). The mobile nurse drops into the food market and collects information through observation and conversation, and from there can help decide what programs their community might benefit from. The boy scouts on Saturdays camp in the

Figure 33. By introducing services within the neighbourhood, the act of observation creates awareness within the community should they ever require them.

adjacent forest but learn new skills from the carpenter housed in the live-work residences nearby (Fig. 34-35).

By understanding the daily lives of the residents, one can trace their routines. By expanding their home to encompass more than just their space between the front door and their car, people begin to meet their neighbours. As community interaction grows, their identity grows (Fig. 36).

WORK YARD

LIVE-WORK HOUSING

LAUNDRY
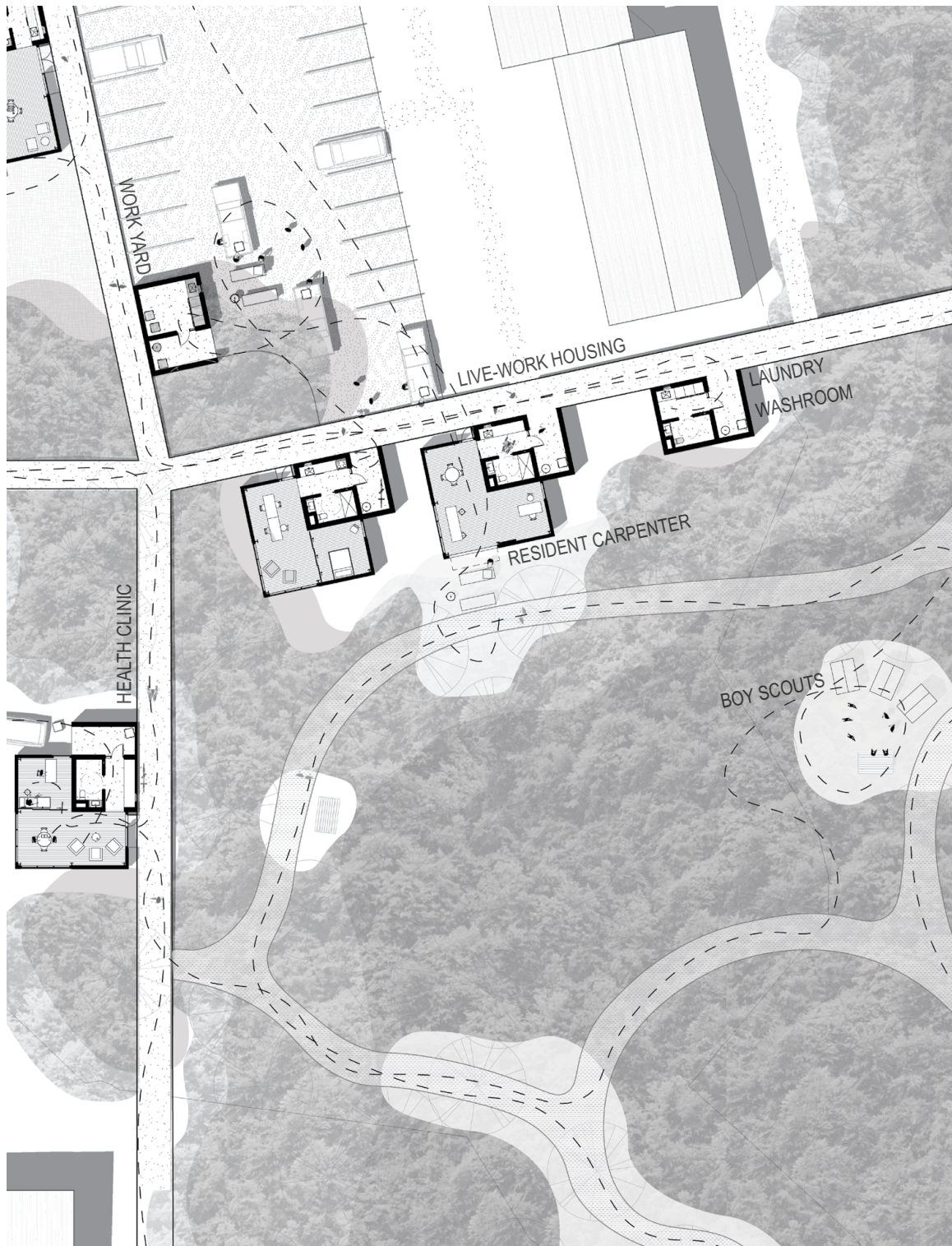WASHROOM

RESIDENT CARPENTER

HEALTH CLINIC

BOY SCOUTS

Figure 34. Activating the forest and making it a usable and approach part of the site, programs such as the local boy scouts club could inhabit, improving early childhood development through exploration while being in proximity to other means of learning, such as the local carpenter working nearby.
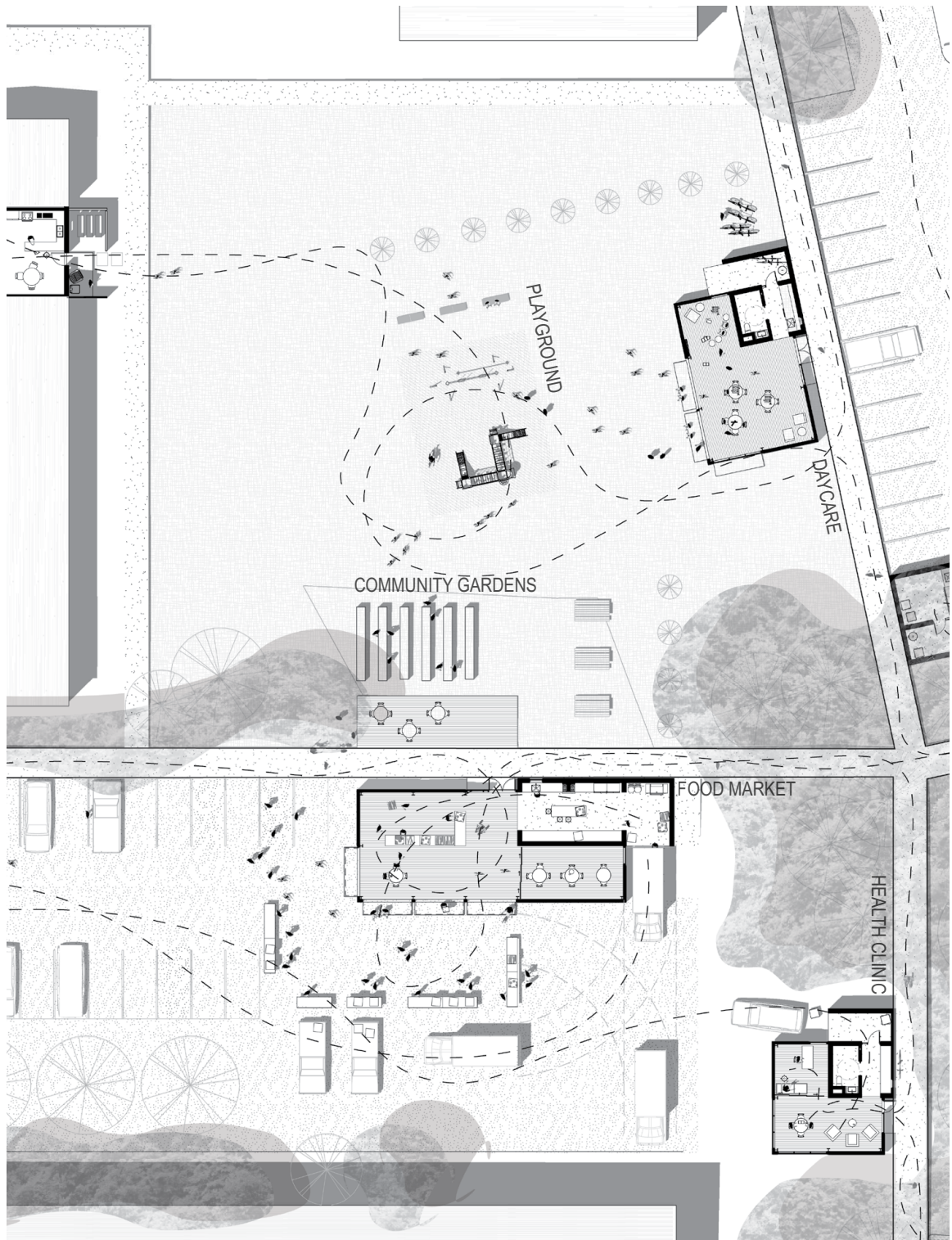
Figure 35. The program not only activates the courtyards by letting it influence new activities (such as a community garden off the food market building or an upgraded playground off the daycare) but cross-programming begins to knit together different demographics of people.

Figure 36. As the community identity becomes more linked and holistic, the buildings can then begin to express this identity as a reminder of place.

CHAPTER 7: CONCLUSION

Re-Assessment of Neighbourhood Conditions

Current assessment of the disparities in the Wallace Heights neighbourhood is compared to the proposed model, showing how active transportation is a key aspect of healthy neighbourhoods. The reality is that even if a neighbourhood is vibrant now, this does not mean it will remain so in the future. By creating resilient environments that are supportive during economic downturns or changing population demographics, neighbourhoods can remain healthy environments that resist social decay.[41]

By allowing for flexibility of program during socio-economic changes, and the ability to accommodate a range of supports, a community can become resistant to social decay even if they are identified as being a vulnerable population. Preventative measures such as this can support the changing needs of a population through upstream health care techniques.[42]

Anticipating Change

As we develop the ability to understand what local trends cause future health issues, we can also anticipate how our built environment needs to change to follow and adapt (Fig. 37). The architecture anticipates change through a typology that allows for future infill along the path or expansion of current buildings. Should a
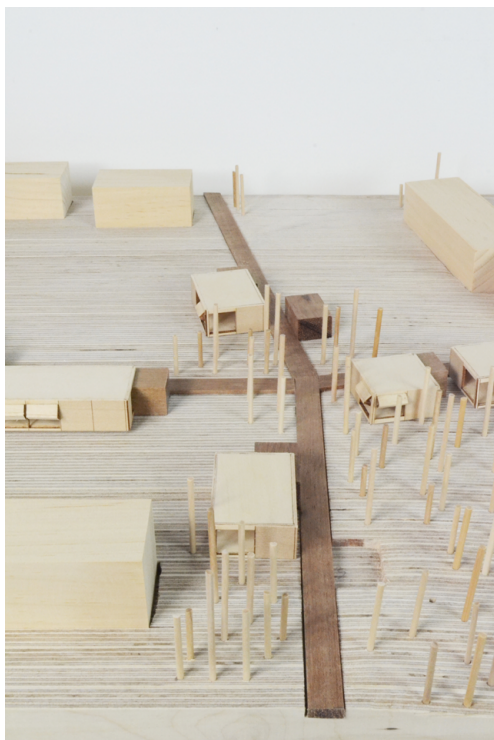

Figure 37. As the neighbourhood changes, the plan allows for additional buildings to populate the path should future growth require it.

41. Ali Shaver (City Planner) in discussion with the author, October 2016.

42. D'Angelo-Scott, *Population Health Status Report*, 6-11.

FAIRVIEW

WALLACE HEIGHTS
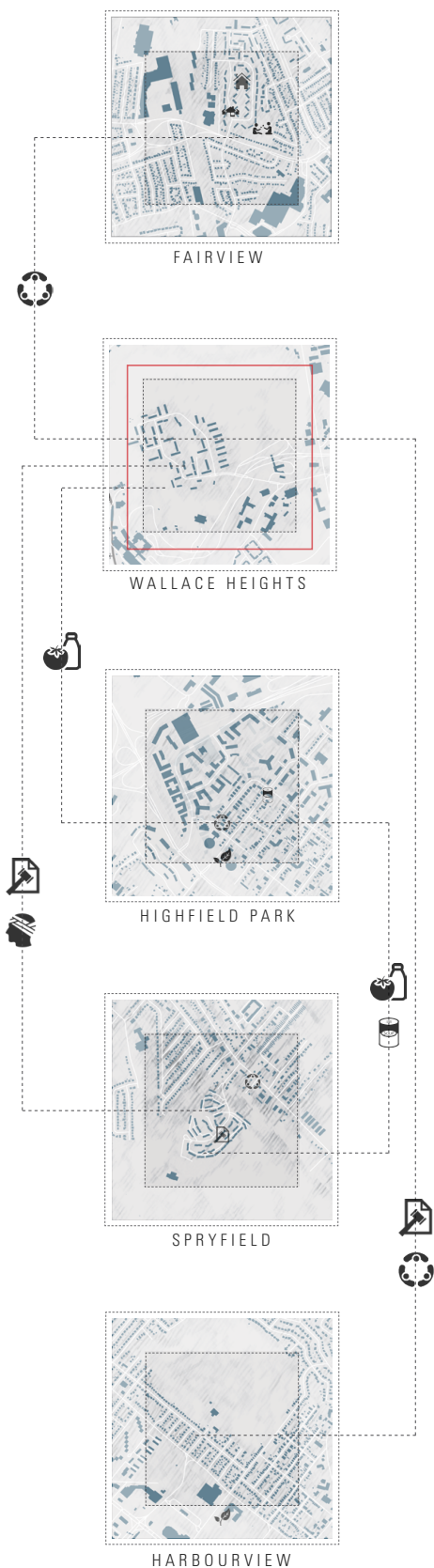
HIGHFIELD PARK

SPRYFIELD

HARBOURVIEW

Figure 38. Supporting other vulnerable neighbourhoods.

new development emerge or the transit system make certain programming unnecessary, the modular system can be adapted or moved to another community that is facing negative change within their neighbourhood (Fig. 38).

Development of a Neighbourhood Planning Policy

A Neighbourhood Planning Policy would act as a framework for what neighbourhoods need to be socially sustainable and create preventative environments that resist social decay and poor health.[43] It must be understood that future social decay of seemingly healthy/vibrant neighbourhoods can happen without proper infrastructure to prevent it.[44] Vulnerable communities are more at risk and require more immediate intervention, however any community can suffer from poor health from economic downturns or community transitions. Equitable transportation addresses many social determinants of health, and regulating future neighbourhood developments, we can mandate a new minimum standard for urban planning requirements that fosters health promotion.

43. Christina Elgee (Public Health Nurse) in discussion with author, August 2016.

44. D'Angelo-Scott, *Population Health Status Report*, 6-11.

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