

**Reforming Refuse:  
Designing a Community Recycling Centre  
for Halifax's North End**

by

Caitlin Wordsworth

Submitted in partial fulfilment of the requirements  
for the degree of Master of Architecture

at

Dalhousie University  
Halifax, Nova Scotia  
July 2014

© Copyright by Caitlin Wordsworth, 2014

# CONTENTS

Abstract .....	iv
Acknowledgements .....	v
Chapter 1: Introduction .....	1
Thesis Question .....	1
Approach .....	1
Recycling in the City: A Short History .....	2
The Rise of Household Trash .....	4
Modern Times .....	6
Rubbish Theory .....	8
The Benefits & Drawbacks of Recycling .....	12
Criticism of the Recycling Approach: Thinking Holistically About Waste Reduction and the Inclusion the Three R's .....	14
Current Patterns of Recycling .....	17
Waste on the Margins: A Critical Look at the Physical Structures of Recycling .....	20
The Architecture of Recycling in Halifax .....	24
A New Type of Depot .....	30
Rethinking Urban Infrastructure .....	31
The Proposal .....	36
Program .....	36
Architectural Characteristics .....	37
Chapter 2: The Site, The Street, The City .....	39
Chapter 3: Design .....	48
The Recycling Depot .....	53

The Education Centre .....	59
Outdoor Space.....	67
Chapter 4: Conclusion.....	69
References .....	70

## **ABSTRACT**

Set in Halifax, Nova Scotia, this thesis proposes a design for a new kind of urban recycling facility—one that integrates the processes of recycling with a program of public education and recreation. Using a centrally located vacant lot in the north end of the city, the work explores the question of how a recycling depot can engage with its surrounding community to promote recycling and reuse.

As is the case in many urban centres, recycling facilities in Halifax are largely peripheral—existing within the city on back alleys, and as major industrial facilities on the fringe of the urban core. Despite a comprehensive recycling program, improper disposal of recyclable materials is a problem in the city, while dealing with the growing municipal waste load is a mounting concern.

This thesis aims to address the issue of how a recycling depot—an industrial building type—can bridge the gap between the warehouse floor and daily life of city residents to become a place of community learning and engagement, drawing emphasis to recycling behaviour in its community.

## **ACKNOWLEDGEMENTS**

To my committee, Cristina Verissimo and Steve Parcell, thank you for your guidance and clear vision throughout this endeavour. Your laser-like intelligence and thoughtful commentary has helped shape this project into a thesis.

I am indebted to everyone in studio who has pushed me throughout the past four years. Nuala, Max, and Lukas, I've been honoured to start and end this process with you.

To Amber and Kai, I am grateful for your incredible help and support, especially toward the end when it counted most. And Brent, thank you for your wizard help with the bottle wall. All of these things have meant a great deal.

Lastly, to Araminta, I am indebted a lifetime of correcting my dodgy proofreading and answering my cries for help. Thank you.

## CHAPTER 1: INTRODUCTION

### Thesis Question

How can a recycling facility engage with its surrounding community to promote a culture of recycling and reuse?

### Approach

Recycling is a public process. Over the last several decades, it has joined the ranks of running water, electricity, and garbage disposal as a standard municipal service. Today, recycling is crucial to the functioning of most cities.

This paper examines how changes made to the physical structures of recycling, through architectural design and consideration of site, can better integrate a community with both the ramifications of and the potential inherent in the waste it produces—and in doing so, to promote the concept of recycling as a process worthy of neighbourhood interest.

The work is an attempt to reconsider recycling facilities as they now exist in urban centres, specifically examining conditions in Halifax's north end. The research takes the form of a series of investigations:

into the history of recycling;

into the existing recycling systems and structures within Halifax;

into the benefits and criticisms of recycling as a system;

into the historical relationships between infrastructural projects and North American cities;

and lastly, into reevaluating the larger cultural conception of what is waste.

These investigations have served as fuel to direct the design proposal for a community-oriented recycling depot.



A French rag-picker investigates a newfangled device—a household trash can. The cans were implemented by Parisien authorities in 1884 (Geniaux c.1885)

### Recycling in the City: A Short History

But the rags, the refuse—these I will not inventory but allow, in the only way possible, to come into their own: by making use of them (Benjamin 1982)

Recycling is not a new process. Animal manure and plant compost have been applied to crops—even urban ones—since the days of early agriculture. From the *gleaners* in France who gathered the waste left behind by harvesters, to the bottle and rag collectors of Industrial age American cities, behaviours of scavenging, reuse, and repurposing have long been a part of human activity.

For several centuries, recycling was an activity that took place without top-down intervention. Until recently, large-scale materials recycling was a guerrilla service enacted by independent groups. Rag pickers, scavengers, and second-hand bottle dealers formed a cornerstone of the North American economy as freshly as the early 20<sup>th</sup> century (Pichtel 2005, 127).

Scavenger communities lived underneath the dumps by the Hudson River in New York. They sorted through city trash collecting items with resale value including rags and bones (Riis 1890)



Within homes, informal recycling was the norm. Before the latter part of the nineteenth century, domestic activities did not produce much waste. Goods were typically bought in bulk, and had minimal packaging. Most families did not even own bins designated for garbage, but instead used whatever disposal receptacles were on hand—often errant cardboard boxes (Strasser 1992, 10).

From the 1930s into the 1960s, manufacturers of cloth bags for flour and animal feed produced sacks made of fabric printed for reuse. The Bemis Company advertised here, made bags in about a thousand different patterns (Strasser 1999)







Dustpans made from old license plates, maker unknown, Patzcuaro, Mexico (Cerny and Serif 2002)

Overall material scarcity cogently encouraged a dedicated culture of reuse. Possessions tended to move in closed loops—the ends of dead products going into the creation of new versions of themselves. Scraps were fed to household chickens or pigs, who in turn created more food. Clothing was repaired or turned into shoddy for new clothing. Broken items were commonly taken to a handyman or specialty repairman. If unfixable, their parts were often kept to be used elsewhere.



Pig in a basement on Mott Street, New York City. Pigs and turkeys, in particular, were widely accepted as useful scavengers in preindustrial America (Strasser 1999)

### **The Rise of Household Trash**

From the late 19<sup>th</sup> century, population growth, urbanization, and the rise of mass production have meant for more waste. With the emergence of product packaging in the 20<sup>th</sup> century, household refuse began to climb significantly.



An early example of disposable plastic packaging, 1950s  
Outdoor Girl Talc (Knight 2008)

Packaging of goods offered producers an unprecedented control over product quality, shelf life, and price, and meant that brands could be widely advertised for the first time on items themselves (Strasser 1992, 17).

This was also the first time that disposable products—items intended to be thrown out after a single use—emerged. Paper cuffs and collars became popular, as did Gillette's first disposable razor. The advent of aluminum foil and cellophane plastic wrap dates to the early 1900s (Strasser 1992,18).

The culture of thrift and reuse that emerged from the scarce means of the past was largely supplanted in the era of mass production and mass distribution by a culture with a veneration of newness and disposability, touted as markers of efficiency and progress.



Automobile Graveyard near Easton, Pa., 1935. Photograph by Walker Evans (Strasser 1999)



The city of Racine, Wisconsin instigated municipal recycling in 1974. It was one of the first American cities to do this (Melosi 1981)

## Modern Times

Modern recycling has its roots in the 1960s, a time of increased awareness of public health and growing environmental consciousness. The initial recycling programs functioned with a “waste diversion” model that largely remains in use today. This involved the physical separation of recyclable materials from the main stream of trash. In this typical recycling process, select materials are gathered, separated, processed, and sold to secondary markets where they are re-purposed into various useful new forms.

However, in the 1960s, without markets already established to buy and reuse the materials, many of the separated goods simply wound up at a landfill. Several recycling programs of this era failed, due in part to the reluctance of manufacturers to develop technological processes to manage the recycled materials.



A side-loading municipal refuse truck from '70s had the capability to reach over cars at the curb. Bellaire, Texas (Melosi 1981)

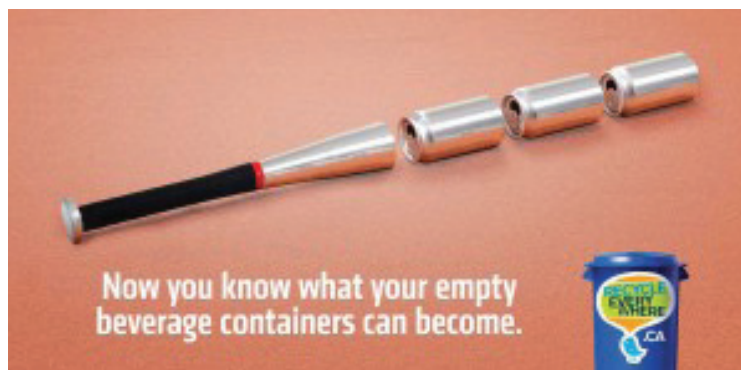
By the 1980s, environmental concerns were revived: a decline in landfill space, awareness of ozone depletion, and

news of washups of medical wastes harkened the renewed unease. Landfills prompted protest. Many older dump sites were being closed down, while new ones were subject to substantial permitting and regulatory hurdles (Pichtel 2005, 127). As a result of this push-back, landfills became harder to create and maintain, and the general cost of municipal waste disposal began to rise dramatically. Not surprisingly, there was increased interest in recycling by the public, municipalities, and governments.

Today, recycling is a more viable both economically and logistically. Markets dedicated to secondary materials have emerged, and represent a growing percentage of total production. In some of the most common processes, plastic bottles are spun into thread for carpets and polar fleece sweaters and polyfill insulation, glass is melted down and reformed, while rubber tires are reincarnated as road paving, construction fill, and the soles of new shoes (Pichtel 2005, 155-156). Many common items are composed of recycled or partially recycled matter.



Public awareness adverts from a Canadian initiative illustrate some common items that are made from recycled material (Recycle Everywhere 2014)



## **Rubbish Theory**

In his book *Rubbish Theory*, author Michael Thompson proposes that waste is a *dynamic* social construction. Items can move both in and out of the category of trash. What we consider to be waste has changed over time. The items we keep out of the “trash” stream of our waste has similarly evolved. With this in mind, we must ask ourselves some pertinent questions: How do we consider refuse? What objects are not desired by some parts of our society, but desired by others? What do we choose to throw away and why? What is the true cost of disposal—beyond the price of a water bottle at a checkout counter? And, importantly, what behaviours of consumption does our society want to promote?

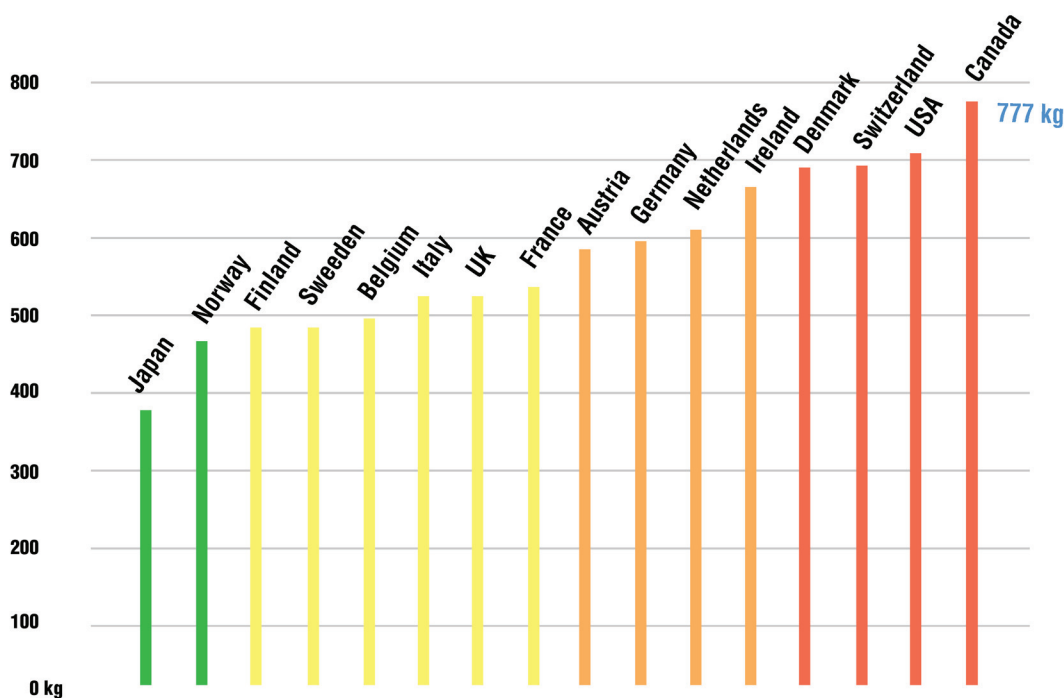
We now belong to a time in which mass production and mass consumption are the norm. Factory-line production has introduced a culture where it often makes more sense to purchase something new rather than to reuse or save an old item.

As we have become more affluent, we have characteristically produced more waste. “Class is an essential factor in the dynamic processes of reuse” (Strasser 1992, 9). Yet it is important to note that waste has not always been the norm—and to acknowledge the idea that waste is a cultural conception that varies widely from place to place.

In recent years, Canadians have begun to throw out more. The pace of domestic waste production in Canada now

outstrips that of any other developed nation, including America. In 2009, the average Canadian produced 777kg of waste, well above the average rate of 578kg found in 16 other developed countries, and nearly double that of the best-performing country, Japan at 377 kg (Conference Board of Canada 2013).

Canada's municipal waste generation has risen steadily for years. The increase is in part a result of urbanization, and an increase in revenue (a rise in gross domestic product is widely acknowledged to lead to increased consumption). However, in other countries such as Japan and Norway where the GDP is also high and rising, consumption and disposal rates are much lower than they are in Canada (Conference Board of Canada 2013).



Canadian municipal waste rates are the highest of developed countries at 777 kilograms of waste per capita. Data collected 2009 (Conference Board of Canada 2013)

At the household level, recycling makes a significant contribution to the overall production of waste in Canada. Residential households are responsible for nearly half of all refuse produced in the country (Statistics Canada 2012,15).

The importance of increasing residential recycling is something that the city of Halifax has formally recognized. In 2007, the Halifax Regional Majority (HRM) set a short-term waste goal to reduce waste to 300 kg per person per year by 2015 (Nova Scotia Environment Report on Solid Waste, 3). The eventual goal is to achieve “zero waste” in the city as “Nova Scotia aims to have one of the cleanest and most sustainable environments in the world by 2020” (Nova Scotia Environment Report on Solid Waste, 3).



Municipal waste disposal in Nova Scotia listed in kilograms per person per year. Nova Scotia is still shy of its 300kg goal (Nova Scotia Environment 2014)



Half of material sent to landfill in Halifax is recyclable (Community Stakeholder Committee 2007)

The main method the province has outlined to achieve the waste reduction is increasing the diversion of recyclable items, toxic materials, and organics from the main waste stream at the level of the individual and the household (Community Stakeholder Committee 2007, 9). This increased diversion happens in two ways: one, through the city providing infrastructure for recycling materials, increasing the total amount of materials that can be diverted from the waste stream, and two, through public compliance in the form of actually removing the items from personal waste.

While trash generation rates have gone down in Halifax in recent years, the city is still shy of reaching its 300 kg goal, and a fair distance from its zero waste ideal. Startlingly, a 2007 assessment noted that approximately 50% of residential refuse being sent to the municipal landfill is composed of recyclable material—either organics not separated for composting, or paper, and food and beverage containers (Community Stakeholder Committee 2007, 3).



Otter Lake Landfill is the resting place of Halifax's garbage (CBC News 2014)

This is disquieting in the context of recent issues with the city landfill site. The Otter Lake Waste Treatment and Processing Facility, located 15km out of the city, has recently been the subject of public furor. Originally slated to close in 2024, at present rates of disposal the facility will be forced to shut its doors much sooner—either that or renege on a contract with the local community dictating the size and height of the growing waste (CBC News 2014).



Residents in Blockhouse, a community on the south shore of Nova Scotia, protest a proposal for a new dump in their community (Zaccagna 2013)



### **The Benefits & Drawbacks of Recycling**

To understand the inspiration for this project, it is important to understand the benefits and drawbacks of recycling as a system.

In the context of the conservation of finite resources on a finite earth, recycling and reuse are crucial processes to promote. The environmental toll of one-directional consumption is obvious. This is particularly true in cities, where resource consumption and waste production are relatively high.

Recycling has a number of direct and indirect benefits. Directly, the repurposing of materials reduces the demand for virgin resources in production. This, in turn, lessens pressure on landfill space, decreases pollution, and results in the preservation of existing environments as fewer virgin materials need be harvested to meet consumer demand (StatsCan Recycling, 7).

In some cases, recycled goods are more efficient to produce than new materials as they require less energy to process (Williams 2002, 142). And for some materials, such as

aluminum, recycling establishes a stable domestic market where no local supply would otherwise exist (Pichtel 2005, 144).

The transience of recycled materials as they move from one use to another means that recycling facilities, the physical sites of recycling, are themselves involved in a process of continual reuse. Conversely, traditional garbage dumps can be observed as sites engaged in an ongoing process of being “used up”.

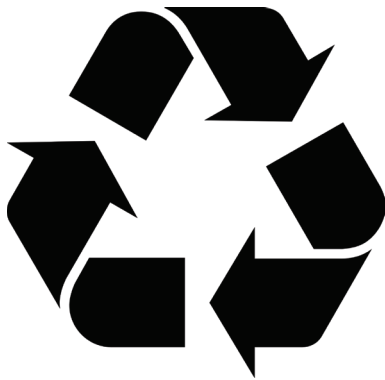
The benefits of successful recycling programs are tenable and calculable. Waste management poses a significant cost for municipalities. Collectively, Canadian municipalities spend more than 1.8 billion dollars a year on waste disposal (Statistics Canada 2010, 8).



Halifax's old landfill site, the Africville dump, was also located controversially close to residential land (Brooks 1965)

In Halifax, the average cost of collecting, separating and selling a tonne of recyclables is lower than that of gathering

and disposing a tonne of trash—though it is pertinent to note that for the most part neither is particularly profitable, and that the dollar amount gained varies by material. It is generally most savvy to reduce consumption as a whole. This concept, that the reduction of consumption is ultimately the most advantageous, is one that will arise again and again throughout this paper.



The three circulating arrows of the recycling symbol represent the three “R’s” of waste reduction

### **Criticism of the Recycling Approach: Thinking Holistically About Waste Reduction and the Inclusion of the Three R’s**

The significance of reducing waste in a finite world is indisputable. It takes both money and resources to create a product. And though we may throw something out, there is ultimately no true “away”, particularly with slow and non-degrading goods such as plastic. Once an item exists, it is ultimately here to stay, no matter how we dispose of it. Every “there” is someone else’s “here”.

The mantra of waste reduction—reduce-reuse-recycle—is three-tiered. The actions are listed by order of significance.

**Reduce**- to decrease the amount of energy or material one uses in a process, or to decrease the number of times one completes that process. For instance: buying food items in bulk reduces the overall amount of packaging required, while choosing to drink one cup of takeaway coffee a day instead of two offers reduction via volume of use

**Reuse** - to use an item for its original purpose for the second (or third, or fourth...) time. For instance: refilling an empty pop bottle

**Recycle** - the conversion of “waste” material into usable material, usually another product. For instance: aluminum window frames are manufactured into new pop containers, and plastic is shredded and converted into fabric

It is important to note that recycling is *last* in the series. It is not an infallible answer; it is only a means of more responsibly managing already existing products.

Recycling is sometimes mistaken as a means to justify consumption. This mentality can lead to a kind of entitled consumerism in which environmentally negative decisions (choosing to drink water packaged in bottles when tap water is readily available, using unnecessary disposal items, etc.) are justified by the fact that the items will be recycled later. However, it is important to recognize that recycling itself consumes energy and has an environmental impact: it only represents a slight advantage over throwing things away. Recycling is no fountain of continual renewal. Materials degrade each time they are processed, and for the vast majority, they can only be used once or twice before being incorporated into filler or secondary material. Aluminum, glass and steel are some of the few exceptions to this rule.

The carbon footprint involved in transporting goods from the curb to the processing facility, to the secondary goods market, and back into use, is a sizable one. The way that recycling markets operate at present assumes that reprocessing is outsourced to the highest bidder regardless of location. Consequently, materials undergoing recycling travel far and wide. Currently in Halifax, only the most



The recycling mentality needs to be fostered

rudimentary processing takes place locally. Materials are cleaned, sorted, compacted, and then sold. Plastic is outsourced to New Brunswick, metals and paper make their way to markets in central Canada and the US. Some materials, such as plastic bags, are surprisingly shipped to China. This global trajectory of recycled goods is little known, though it has far reaching consequences on the viability of recycling as a “green” system.

This being said, recycling is a better option than simply throwing goods away. Recycling processes are continually improving, requiring less energy input, better preserving the integrity of the materials being processed, and producing goods of higher quality.

Realistically, the only true way to reduce waste is to eliminate it at the source. Learning to consume less, choosing reusable items, and using recycling as a final option, are ultimately the only real ways to reduce waste.

It is important to promote a reduction of resource consumption and propagate a healthy culture of reuse, designing our products with longer lifespans, increasing expectations of quality, and adopting a culture of keeping and reusing items. We must assume a mentality that used materials can and must be better reformulated into new materials.

Locally, we need to encourage knowledge, awareness, and curiosity of recycling processes. Awareness is vital in

creating incremental changes in attitude and changes of behaviour.

### **Current Patterns of Recycling**

Over the last several decades, recycling has become more and more integrated into official city infrastructure. What was once an alternative service enacted by independent groups has transformed into a standard, municipally organized service. In most modern cities, it has become considered as a public service and seen alongside running water, electricity, and garbage disposal. In many cases it finds itself a beneficial community service and integral part of city functioning.



*Stop treating your recycling like garbage* reads one recycling awareness advert. Toronto, Canada. (Mortillaro 2013)

Stop treating your recycling like garbage.

Recycling as we know it is unique, however, in that more so than many other basic infrastructural services, its success as a system is deeply linked to the actions of individuals.

Most recycling programs, internationally and in Canada, operate by source separation: individual citizens recognize and physically separate recyclable goods from other waste at the initial point of disposal. The success of this model rests squarely on citizens' ability to recognize and separate recyclable goods from the rest of waste. Seen in this light, recycling can be understood as the sum product of myriad actions of city's residents—a choice made each time something is acquired/purchased and subsequently as it is about to be thrown out.



Source separation bins from around the world. Clockwise from top Budapest, Hungary, Germany, and Cairo, Egypt.



While some separation of recyclables from other trash can happen at a landfill, no technology capable of sorting waste as efficiently and accurately as the human hand yet exists. If all waste is mixed together, the sorting is a labour-intensive

process and accuracy of the separation declines. And human action, moreover, is both free and replete. The process of formal recycling thus emerges from human awareness and actions—actions governed by knowledge, habit, and education.

Seen in this light, it becomes clear that the success of formal recycling programs is tied to the general level of public education and care.

Basic source separation is familiar to most Canadians. Separate bins are provided for different categories of waste. Typically: paper is placed in one bin, compost in another, plastic, glass, and aluminum in a third, and garbage in the last. Similar separation systems are used in cities throughout the world, and while a simple element of recycling infrastructure, these bins reflect an essential truth about recycling programs: that they hinge on effective source separation by users.

Up until now, most recycling programs in Canada have included an element of public education. Literature is distributed door-to-door, print ads are posted, separate boxes for different wastes are provided to residents by city governments, and clearly marked bins that allow for source separation stand alongside garbage bins in most public places.

The city of Halifax has created the “What Goes Where?” campaign—complete with a website and some local advertisements—to inform city residents how to better



manage their recyclables. But with recycling rates in Halifax remaining lower than desired, it seems that a new approach to public education is in order.

### **Waste on the Margins: A Critical Look at the Physical Structures of Recycling**

In her book *Purity and Danger*, Mary Douglas posits that dirt is a social and cultural construct. What is considered dirty and messy can be almost entirely summarized by the concept of *matter out of place*.

Many cultural rituals are dedicated to purification—the removal of filth. Much of our attitude toward the treatment of dirt and by extension garbage (which we relate inherently to filth) is about the establishment of boundaries. These boundaries make some sense. In the practical regard they are about containing contamination. However the instinct to distance ourselves from waste matter has been taken to such an extreme so as to remove us from any connection to our waste disposal systems (Douglas 2002, 2-5). In the case of recycling, these boundaries have served to obscure the importance of the process and have failed to differentiate the importance of recyclables from other trash.

In most modern cities, the buildings that house recycling processes are industrial structures located on the margins, accessible to the public only by special permission. Located on what one urban planner and waste theorist, Kevin Lynch, has dubbed “backsides” —untended, subsidiary places on the fringes of our settlements (Lynch 1990, 27)—



The Otter Lake Waste Treatment and Processing Facility, Halifax's only active landfill, seen from above. Like many waste treatment facilities, it is located on the outskirts of the city (Municipal Group of Companies 2014)

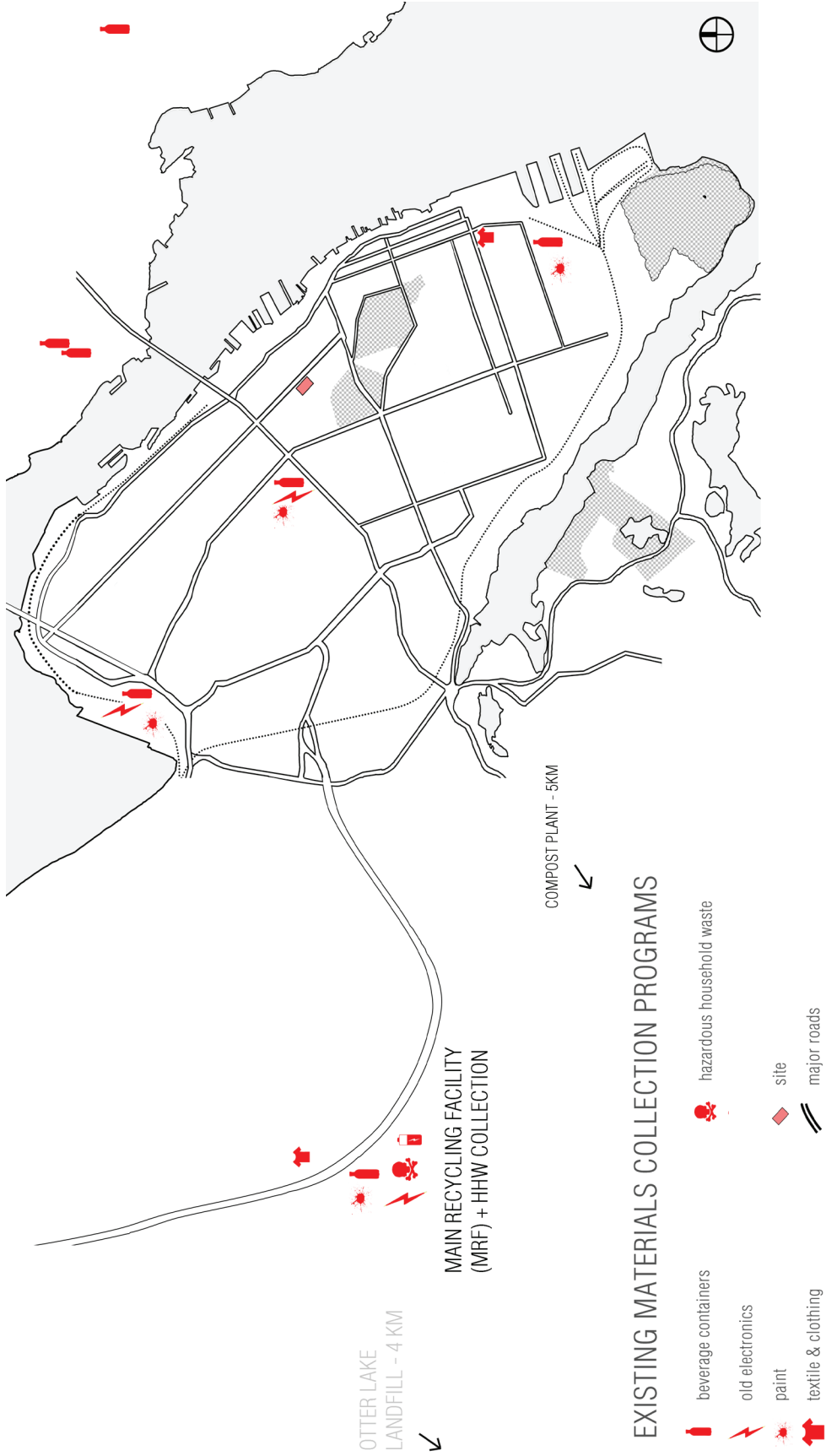
current recycling facilities cogently reflect and enforce a societal disconnection with recycling. These facilities are modeled much in the same way as garbage dumps, and put into effect an “out of sight, out of mind” mentality.

The current relationship to recycling contains a significant disjunction: while public participation is generally expected, public education is generally untended. There is a general understanding that recycling is good, but what it does and why it is important remains a mystery to many people. Its processes are largely unknown and are geographically separated from the daily life of city dwellers. In addition, disposal processes for many goods are inconvenient and/or are poorly advertised.

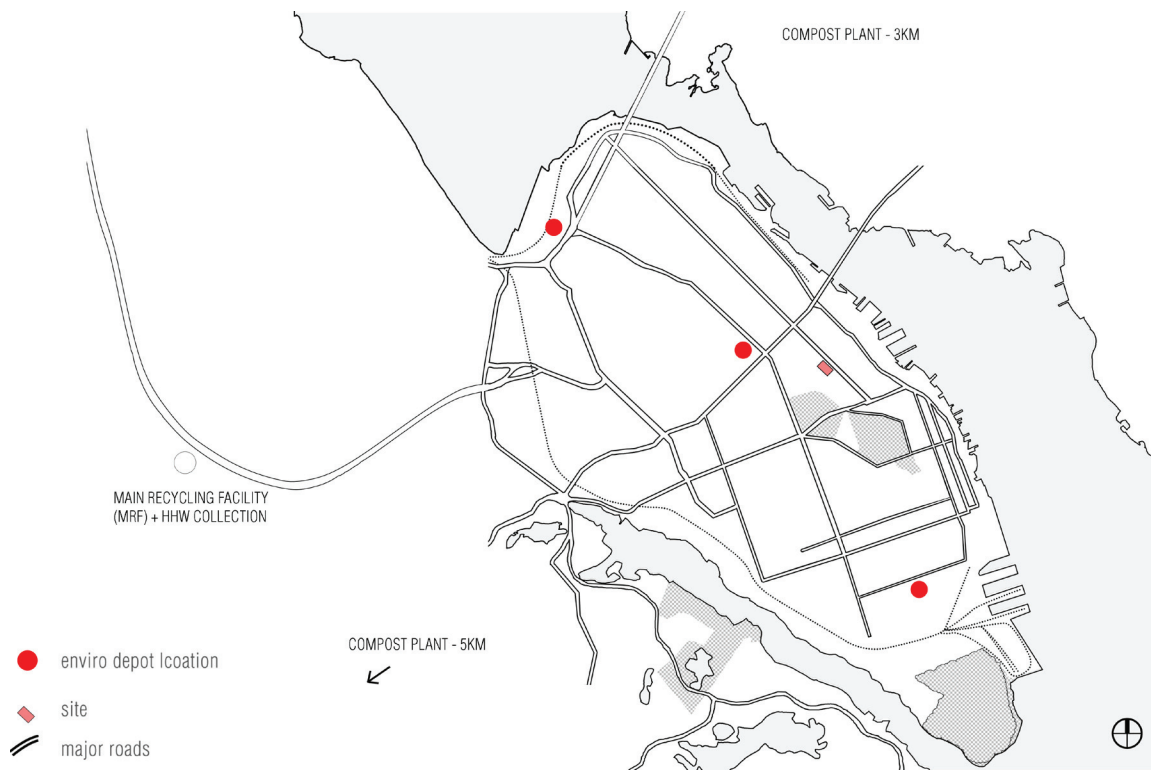
Considered partly as trash, and partly as resource, recyclables occupy an interesting position in the public

consciousness. For the most part they are treated akin to garbage—insalubrious items put out on the curb and taken away. Unlike other waste, however, recyclables possess the qualities of a resource—they can be bought and sold, and morphed into other useful objects. And unlike waste generation, recycling is a process that cities are actively trying to promote.

It is surprising then that recycling programs—which hinge on the designation of recyclables not as waste, but as a resource—treat recycling so similarly to garbage.



A map marking the existing materials collections programs servicing Halifax. The major facility for processing recyclables is located well outside the city, while the municipal landfill is still further. The sole facility for household hazardous waste collection is located at the main recycling facility (MRF), which is a 30 minute drive west of downtown



In Halifax, recycling and compost facilities are located outside of the city. Smaller recycling stations called enviro-depots are located within the city itself.

### The Architecture of Recycling in Halifax

In Halifax, an ambitious recycling program brought in place in the mid-1990s has resulted in a network of recycling facilities spread throughout the municipality. This network has thus far resulted in a significant increase in waste diverted from landfill.

The major facilities responsible for the increase in diversion—the materials recovery facility (MRF) for recyclables, two compost plants for organic waste, and a household hazardous waste depot—are positioned in the outlying industrial areas of the city due to their need for scale and the nature of the processes they facilitate. Smaller facilities dubbed “enviro-depots” are situated within the city and are meant to provide a more local recycling presence.

These depots are the focus of this work. They complement the standard collection of curb-side recyclables, and augment areas of the recycling program curb-side collection does not cover. At present, the depots—which are provincially run—primarily function to accept beverage containers as part of a refund program instigated to increase the return rate of beverage containers, a highly recyclable category. Additionally, some depots also provide services to accept old electronics and waste paint.

Most of the depots' business comes from neighbourhood bottle collectors—residents who scavenge curb-side recyclables, collecting beverage containers in order to collect the return refund. Many collectors operate by night, compiling large amounts of recyclables into shopping carts for easy transportation. A hallmark of recycling in the city—particularly in the economically diverse north end—the collectors are an integral part of the success of the bottle return program, and a near un-seen recycling force in the city.



A man gathers beverage containers for refund in Halifax

The combination of the poor conditions of the depots and the relative poverty of the bottle collectors (and thus little interest in improving conditions) has resulted in a divide between the depot structures and the neighbourhoods that surround them.

Two men who take their bottles to the enviro depot on Clifton St. in the north end of the city



A man collecting reusable goods with a cart on North St.



Ray, a man downtown who regularly collects beverage containers



Though located within urban neighbourhoods, the enviro depots are characterized by an industrial architecture. Opaque, windowless, warehouse-like facilities, they are not inviting or pleasant places to visit. They are sited in out-of-the-way alleys, arguably the urban equivalent of Kevin Lynch's "backsides". It is typical for neighbourhood residents to not know that they exist.

Conditions for both workers and visitors are far from glamorous: negligible natural light, with little ventilation except that provided by an open garage door, grubby, and without heat in winter.



Interior of the Clifton St. enviro depot in north end Halifax



Exterior of the Clifton St. enviro depot in the north end. It is surrounded by single family homes



Bayne St. enviro depot, located in the far north of the city



The Youth Live enviro depot in the south end on Mitchell St. is sandwiched between two homes





Cars line up outside the HHW depot. It is a small, portable, bunker-style structure (Pesklevis 2011)

Functionally, the current recycling facilities in Halifax present a major gap in programming. While the province has banned typical disposal of many common household materials (including electronics, appliances, household chemicals, and batteries), there is no adequate provision of places to responsibly dispose of them. Few sites in Nova Scotia accept many of the materials that are banned.

A single Household Hazardous Waste (HHW) Returns Depot is stationed on the outskirts of the Halifax, a 30 minute drive from downtown. Due to its location on the backside of the main municipal recycling plant, the HHW Depot can only be open when the recycling plant is not. It is only open every other Saturday for seven hours from 9 to 4pm.



Inside the HHW depot goods are separated into barrels (Pesklevis 2011)

### **A New Type of Depot**

Halifax's current recycling facilities seem to provide a service that presents some significant barriers to access—mainly that it is physically and visually cut off from the life of the city. In doing so, they fail to promote any understanding of the processes involved or of their importance. This removal from the public sphere represents a lost opportunity for social engagement, one that is a valuable opportunity if the city is committed to reducing its waste.

Much in the way a museum, or public institution elevates aspects of civic life, a recycling facility could provide a similar purpose, raising awareness of the importance of its fundamental function. Such a facility could become a place that raises economic, social, and environmental awareness of the importance of recycling. Doing so could increase participation in recycling programs, positively benefitting the community at large, while the building itself could have positive influence on its surroundings (Singer and Bregman 2007, 5).

It is possible to reframe the recycling facility as a community asset. To alter the typology of the recycling facility would alter public interaction with and conception of recycling, as well as change public access to it. Changing the physical buildings in which recycling takes place could alter the consideration of it as a public service.

If well-designed and thoughtfully executed, a community recycling facility has the potential to be a place of public

education and engagement. Such a centre could be a symbol of the evolving relationships to the environment we occupy, the role of consumption in our day-to-day lives, and the importance of recycling in our society.

Halifax, Nova Scotia, as home to an ambitious recycling program, and a city where issues regarding increased waste production and landfill use are critical, provides an appropriate case study to test these ideas.

### **Rethinking Urban Infrastructure**

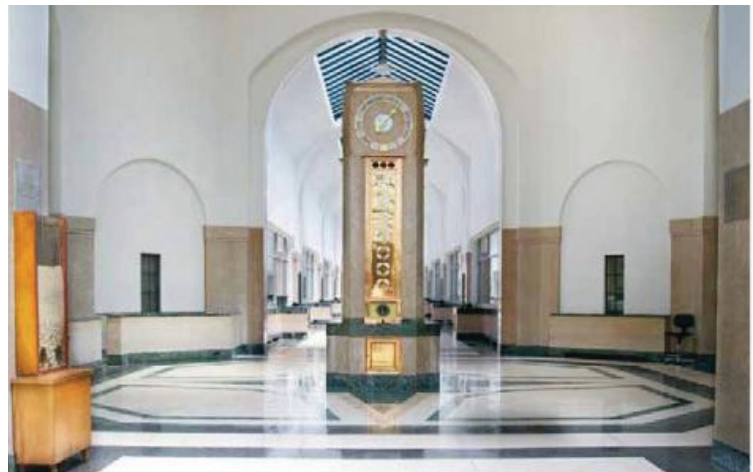
Infrastructure projects were once more commonly conceived as objects of civic pride and even of occasional monumental beauty. These projects, mainly belonging to the era of the early 20<sup>th</sup> century, positioned infrastructure facilities in central urban locations to act as a celebration of the services their structures would provide.

There are numerous historical examples of civic infrastructure facilities located within North American cities. Notable examples include R.C. Harris' palatial art deco water treatment plant in Toronto, described in the Michael Ondaatje novel *In the Skin of Lion*:

Harris had dreamed the marble walls, the copper-banded roofs....The architect Pomphrey modelled its entrance on a Byzantine city gate, and the inside of the building would be an image of the ideal city. The brass railings curved up three flights like an immaculate fiction (Ondaatje 1987)



The R.C. Harris Water Treatment Facility is located in “the Beaches”, a popular Toronto neighbourhood. The facility was opened in 1941 (Fairburn 2013, 178)



Right: Inside the rotunda of the water filtration building (Fairburn 2013, 180)

The Harris facility is located on the water in the downtown east side of the city, and is part of the surrounding neighbourhood.

Edmonton’s Rosedale Power Plant, nestled at the edge of a popular residential neighbourhood not far from the downtown core, is another historic example of a infrastructural building within a Canadian city.



Municipal Asphalt Plant in New York City's Upper East Side (Dolkart 2009, 184)

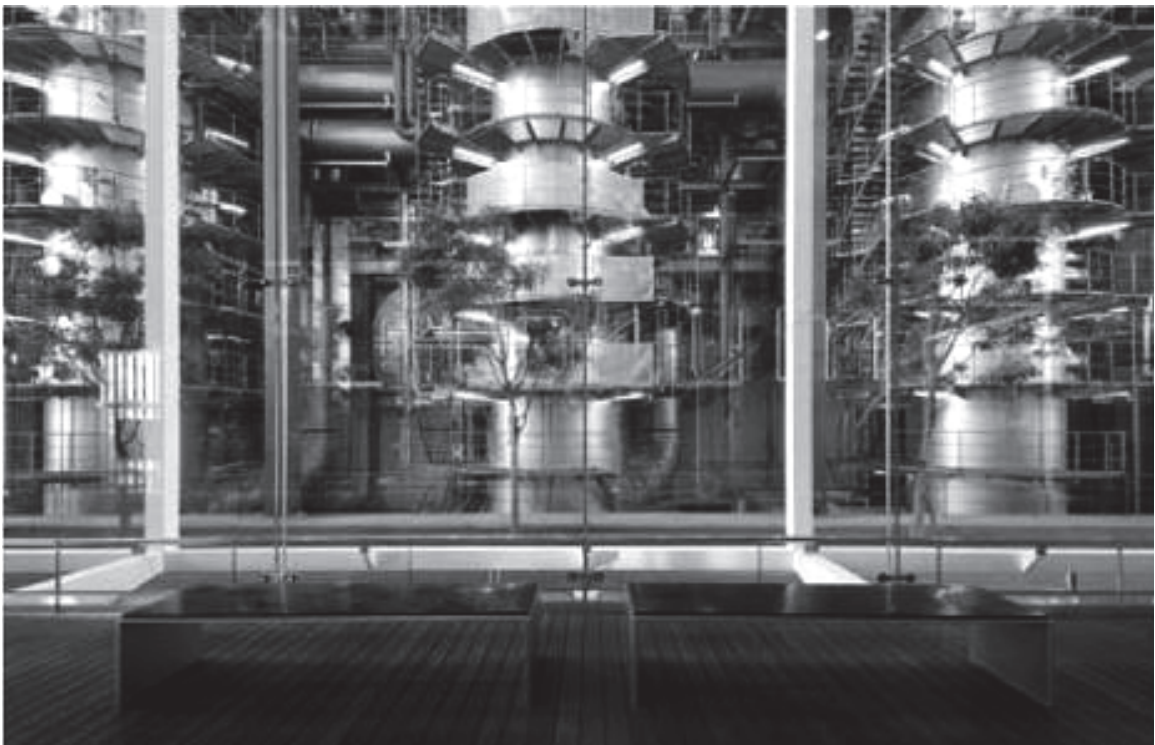
Further abroad, the distinctive parabolic arch of New York's Municipal Asphalt Plant remains a modernist infrastructure icon in the heart of its city.

These infrastructure facilities represent an industrial building language brought into the city. The structures present a kind of collage: industrial architecture cut-and-pasted into the urban landscape.

Though located within built-up areas, these facilities also present a disjunction with the city. In spite of their central location, they were not intended to be approachable. Instead, they were more like objects of display to be viewed with wonder; their operations concealed from view by heavy masonry.

More recently, the architecture of urban infrastructure projects has undergone a reformation. There is a trend of more public-friendly urban infrastructure--buildings that are not only located within public view, but are transparent and inviting, and reveal some of the processes undergone within. A few such radical projects have moved to position modern waste management facilities in urban areas.

The Hiroshima Waste-to-Energy-Plant, designed by one of the Japan's most well-known museum architects, Yoshio Taniguchi, invites visitors inside to learn about waste management. The design includes scenic views of the processes taking place inside. A 400 ft walkway draws visitors through the plant and connects a major boulevard on one side of the building to the waterfront on the other side.



View inside the Hiroshima Waste-to-Energy Plant (Brown 2014 108)



Rendering of the projected Waste-to-Energy Plant with ski slope designed by Bjarke Ingels Group (Brown 2014, 110)

Similarly, the Waste-to-Energy Plant with Ski Slope concocted by Bjarke Ingels combines trash incineration and electrical power generation, with a new public skiing facility serving the residents of Copenhagen (Brown 2014, 109-110).

These structures represent a significant departure from the old style of infrastructure in the city. They represent a move toward infrastructure designed to be public, as something that can be interacted with, and, become a part of the recreational activities of city residents. Rather than treating infrastructural facilities as industrial icons brought to the city core, these structures invite residents to make elements of city infrastructure a part of their day-to-day lives.



This work takes the idea of transforming infrastructure into a public asset and applies it to Halifax.

### **The Proposal**

This design proposes the redefinition of a recycling depot as a public building that celebrates the act of recycling, rather than hiding it away.

Offering recycling collection coupled with public space and integrated into a program that places a focus on both education and community engagement, the facility is conceived as a means of increasing awareness as to the direct and indirect benefits of recycling and the importance of re-establishing a culture of reuse.

This facility aims to bolster the existing recycling program, bridge gaps in the current set up, and reduce the existing barriers to access.

### **Program**

The program of the proposed facility includes:

- A recycling depot with expanded collection ability, accepting beverage containers, electronics, and paint as well as all materials designated Hazardous Household Waste—with access via collection truck, by car, by public transit, on foot, and with carts of recyclables

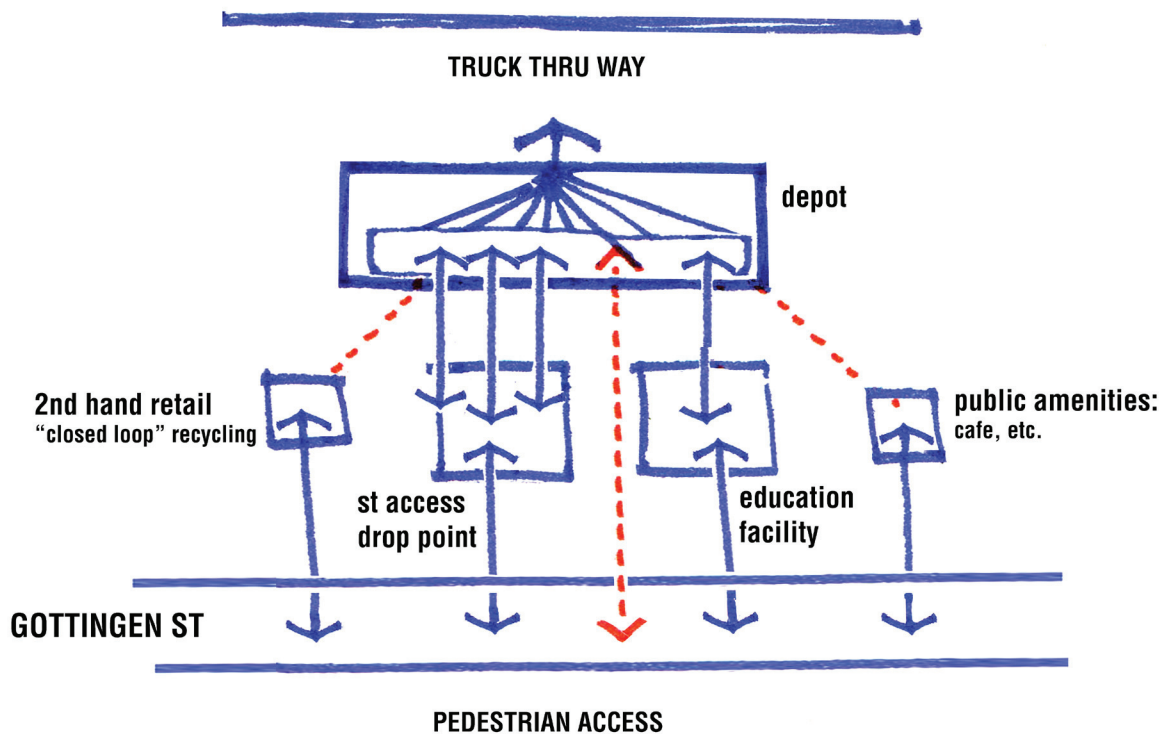
- An education facility with interactive exhibits illustrating the recycling processes to visitors—covering plastic, paper, metal, glass, organics composting, and household hazardous waste
- A sizeable public outdoor space along the street front at Gottingen St., the site of a weekly flea market in the summer months
- A thrift store for the collection and retail of secondhand household goods (clothing, furniture, electronics), to propagate a closed loop recycling model
- A cafe equipped with a rotating stock of 2nd hand furniture, that would also be available for purchase
- Facilities to enable the hands-on reuse of materials. enabling visitors to repurpose their own materials into other goods
- Labs and offices to serve building admin and depot employees

### **Architectural Characteristics**

In execution of this program, the design places particular emphasis on creating:

- A open, explicitly public, inviting design, at a site that is accessible to many different types of city residents

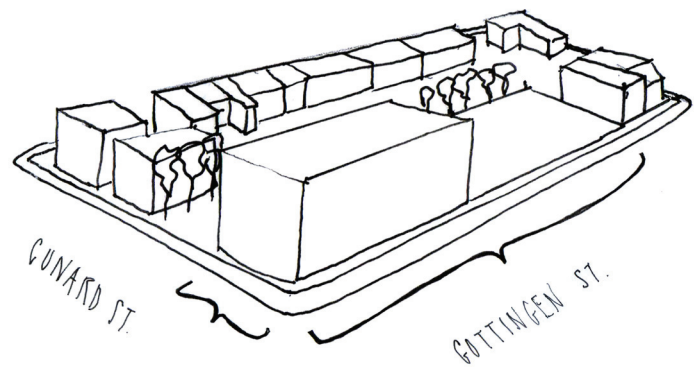
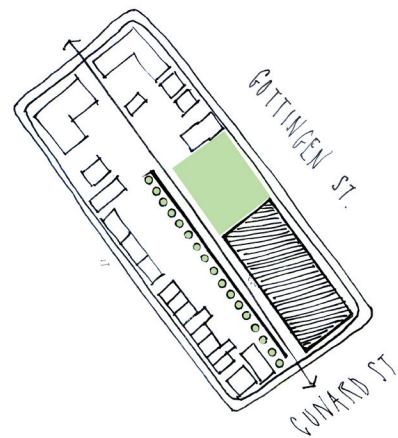
- A structure equipped with proper ventilation, central heating, and day-lighting in a clean environment
- Use of building materials wherever possible that are recycled or are highly recyclable
- Consideration of energy conservation in the design. Inclusion of a green roof to mitigate heating and cooling loads, rainwater collection, and incorporation of passive solar energy



An early sketch illustrating the approach to the layout of program in the project

## CHAPTER 2: THE SITE, THE STREET, THE CITY

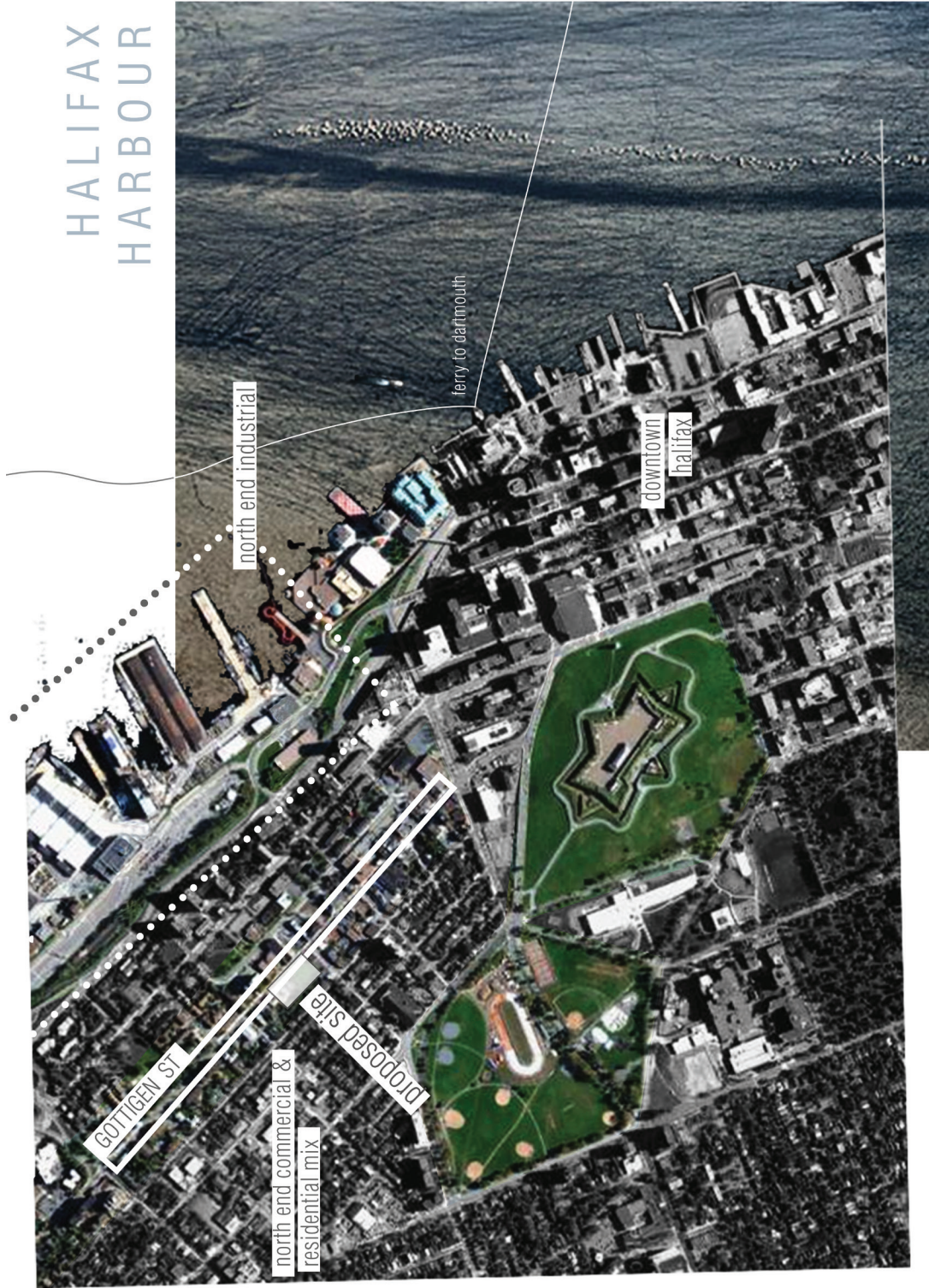
The site selected on which to test the ideas of this structure is a vacant lot in the economically diverse north end of the city. Located at the crossing of Gottingen St. and Cunard St., the site has dictated a number of physical parameters of the project.



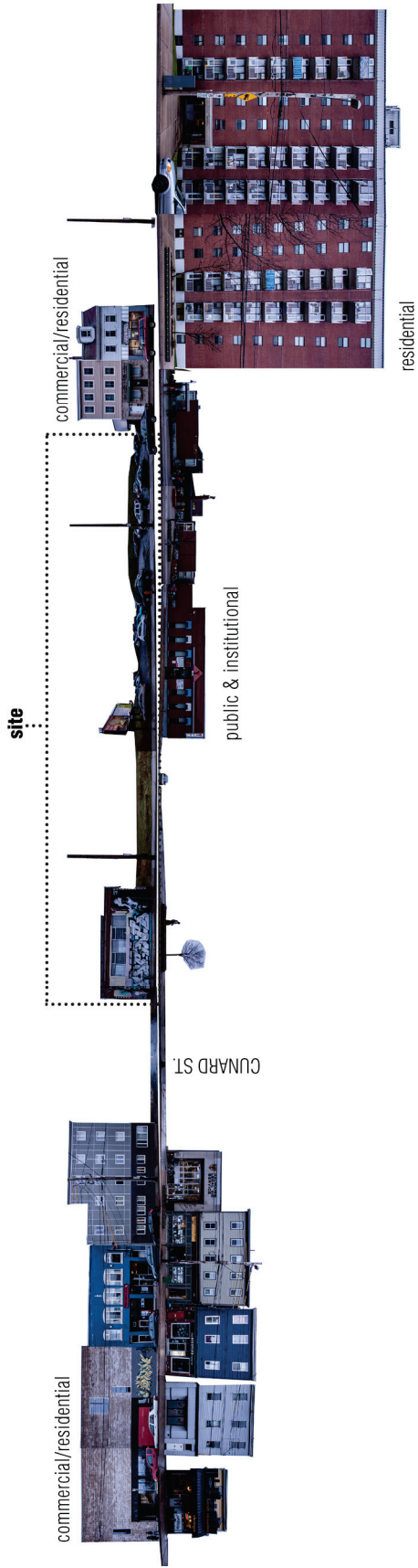
Some early sketches of the site and the city block at Cunard & Gottingen

Halifax's north end is an area characterized by a variety of residents and uses found in few other places in the city. Surrounded by residential land of widely ranging economic levels, it is part of densely occupied mixed-use neighbourhood.

# HALIFAX HARBOUR



Aerial view of Halifax pinpointing the location of Gottingen St. and the site within the city



Street level elevations of buildings along Gottingen Street. The site for the project is a grassy, vacant lot.

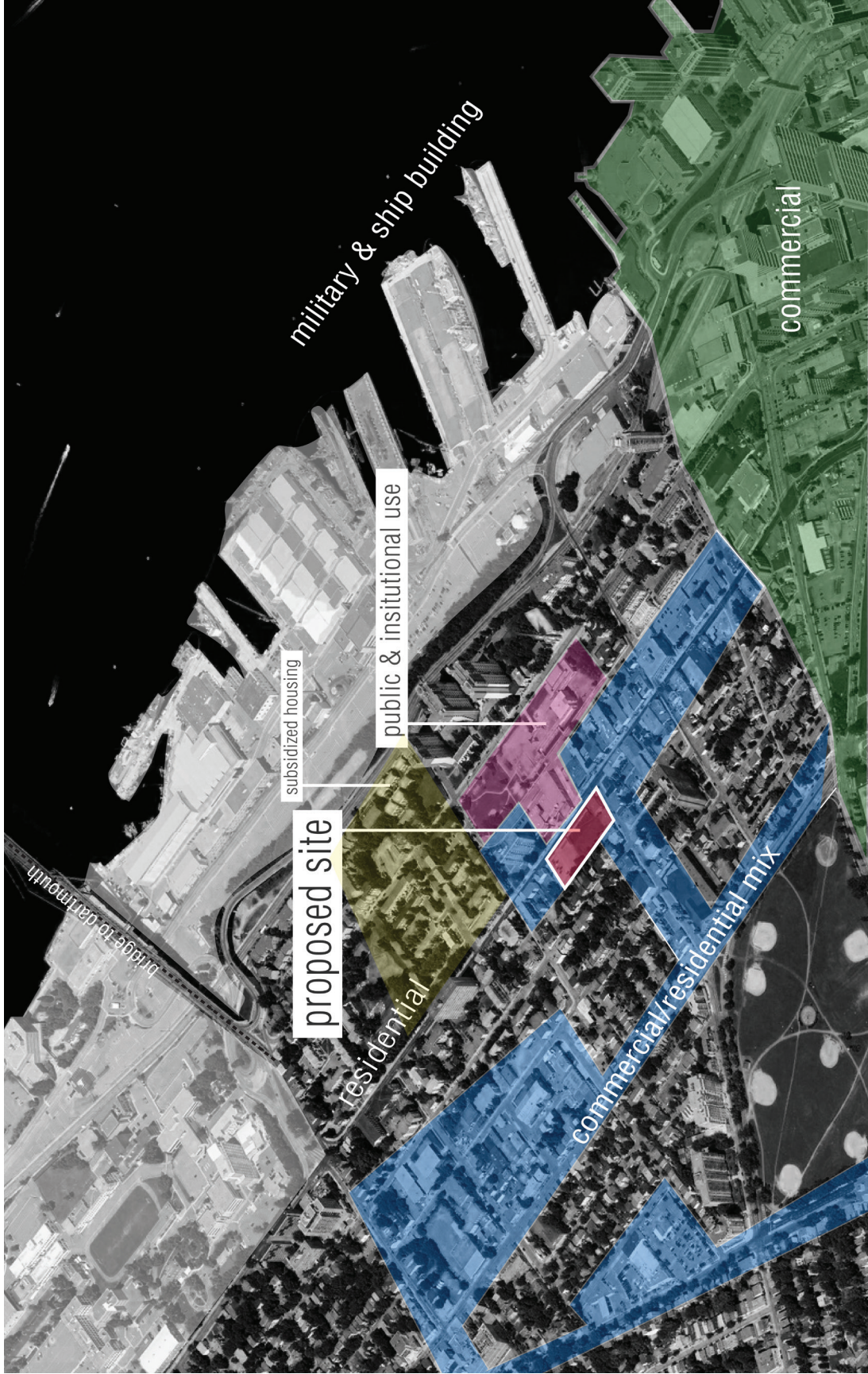
Gottingen St. is a major north-south artery, serviced by multiple routes of public transit. Much of its street frontage is dedicated to commercial use at the ground level, with residential use occupying one or two storeys above.

Gottingen was once a booming shopping street and a hub of activity in the city. However, the construction of the Cogswell Interchange essentially cut off circulation to the area, though it has remained a main point of access into Halifax. After the relocation of major retailers to the shopping centre on the outskirts of the city, the street went into decline and suffered decades of rotating vacancies.

In recent years, the street has seen an injection of life and activity with new industries springing up along its sides, housing developments both along the street and in the surrounding blocks, and a wave of small businesses moving in.

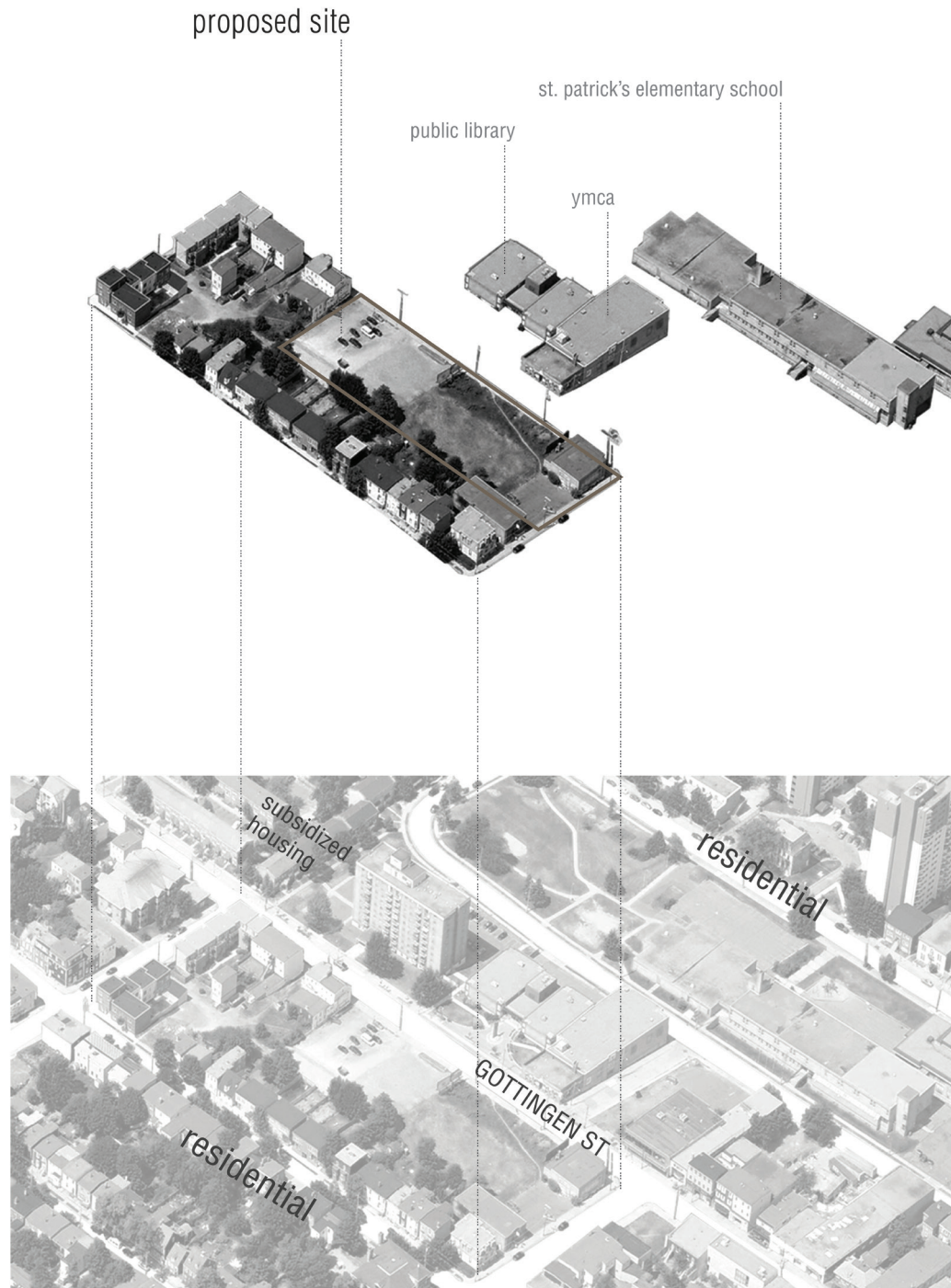
The site is located in the vicinity of other civic buildings. Across the street are a neighbourhood library and a YMCA. It is a well-connected spot, easily accessed by car, by bus, via truck, and on foot. It is a place often passed in the comings and goings of average Haligonians.

The lot measures approximately 5400 m<sup>2</sup> in size. It features a gentle slope from the northwest to the southeast corner, resulting in a differential of about 4 m. Formerly the site of Sobeys' grocery store, the site has now been vacant for a number of years.



Axonometric view of the site and the surrounding neighbourhoods





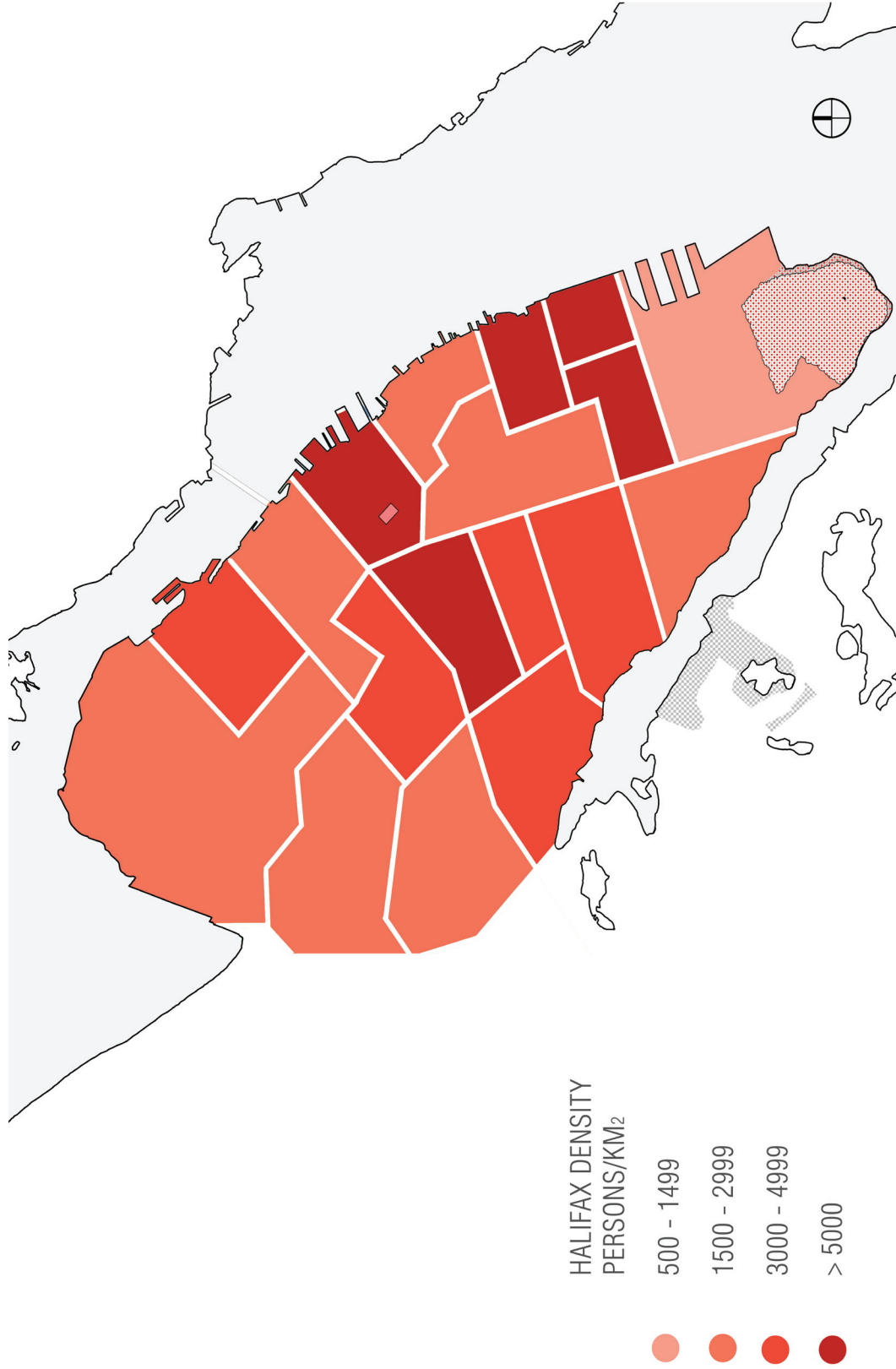
The site occupies the corner of a city block. It is opposite the neighbourhood library and the YMCA



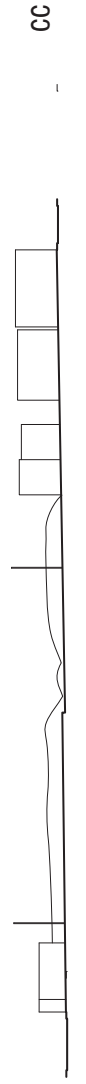
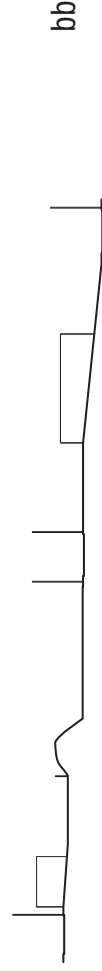
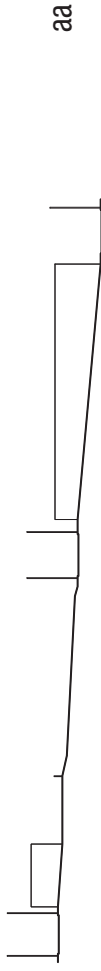
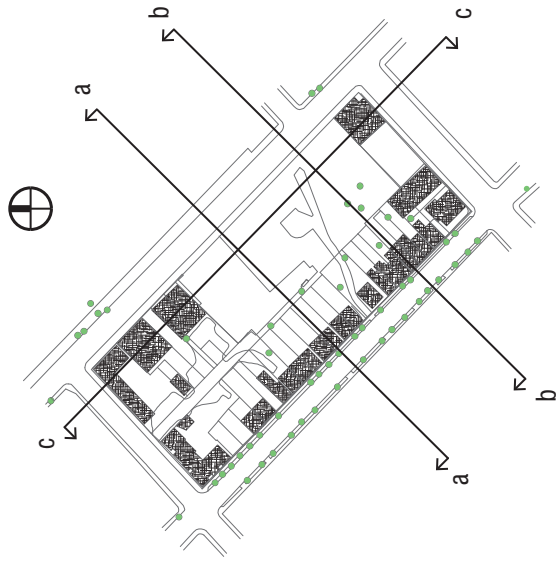
Map of major roads in the city in relation to the site



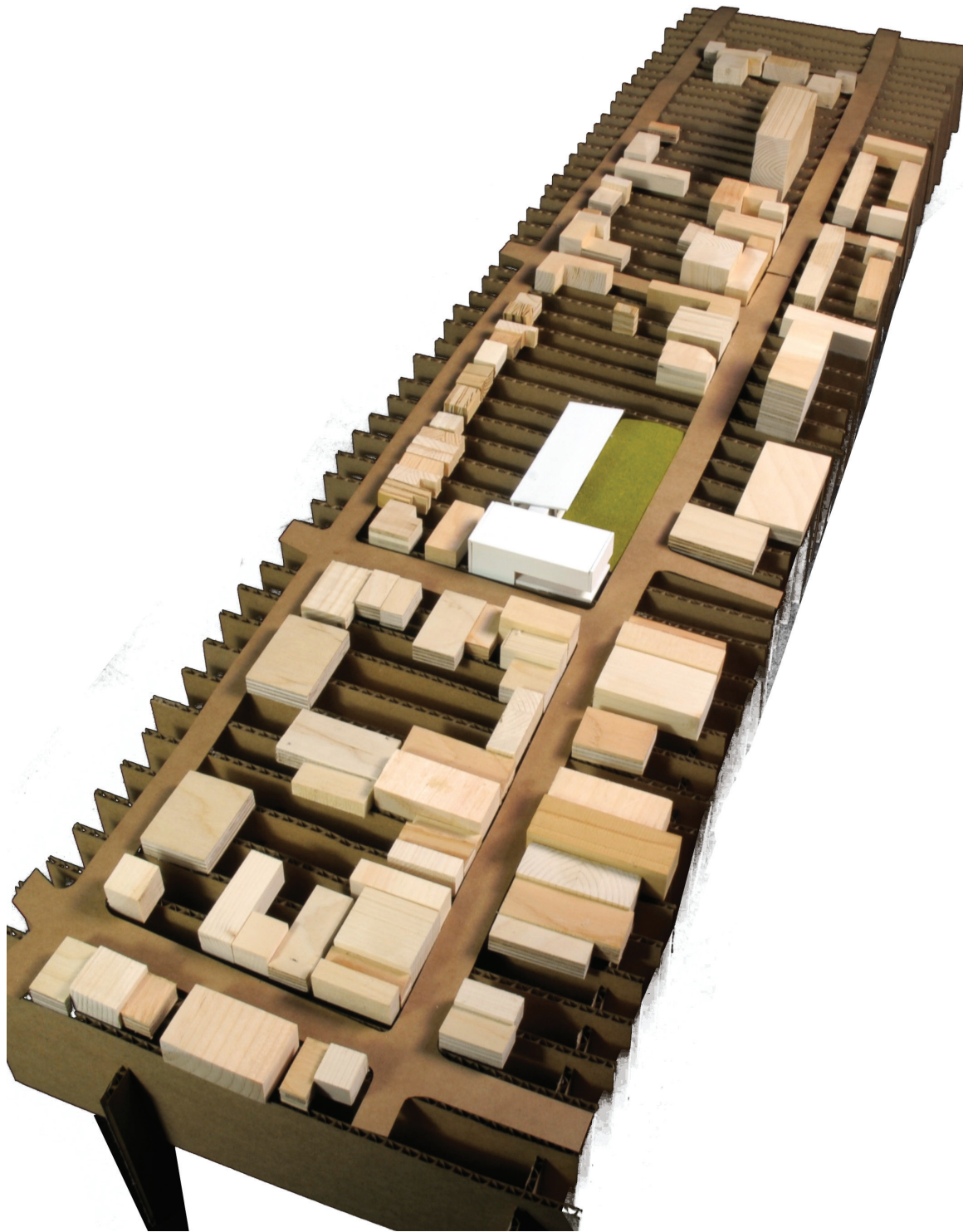
Map of routes travelled by city buses in relation to the site



HRM population density map. The site occupies one of the more densely occupied regions of the city



Plans and section drawings describing the slope of the site

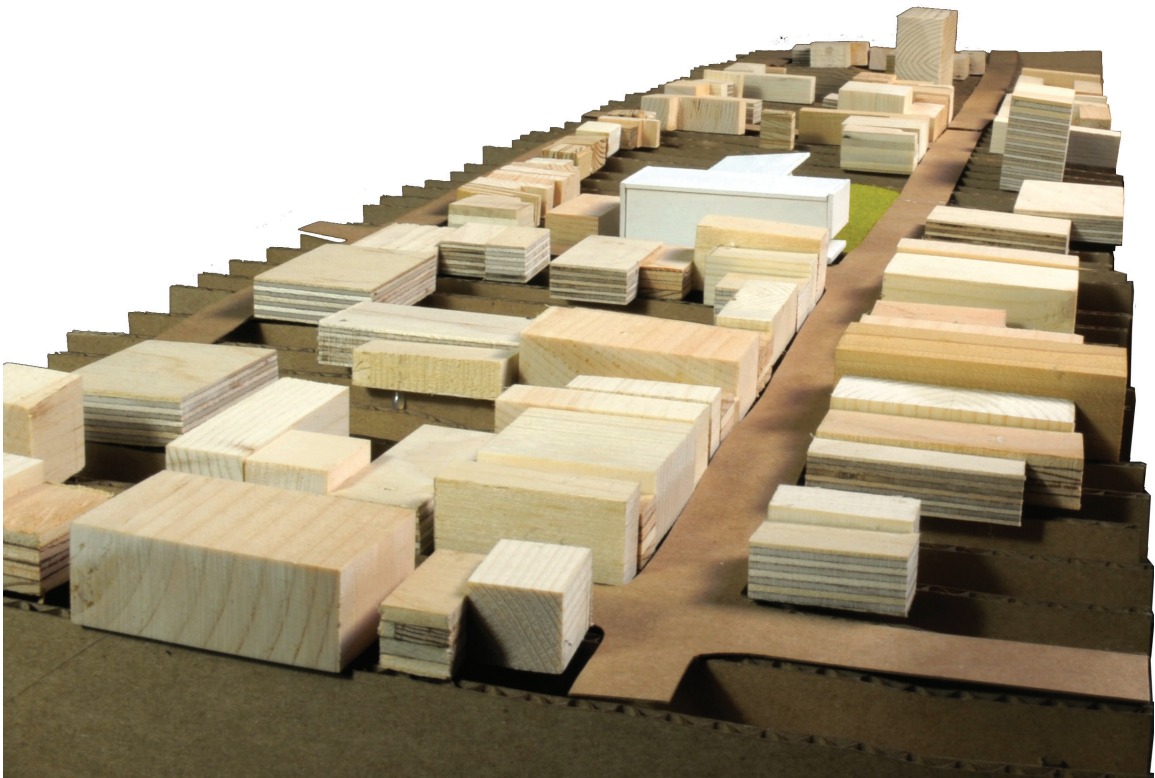


A model illustrating the relationship between the project and the surrounding neighbourhood.  
1:500 scale

## CHAPTER 3: DESIGN

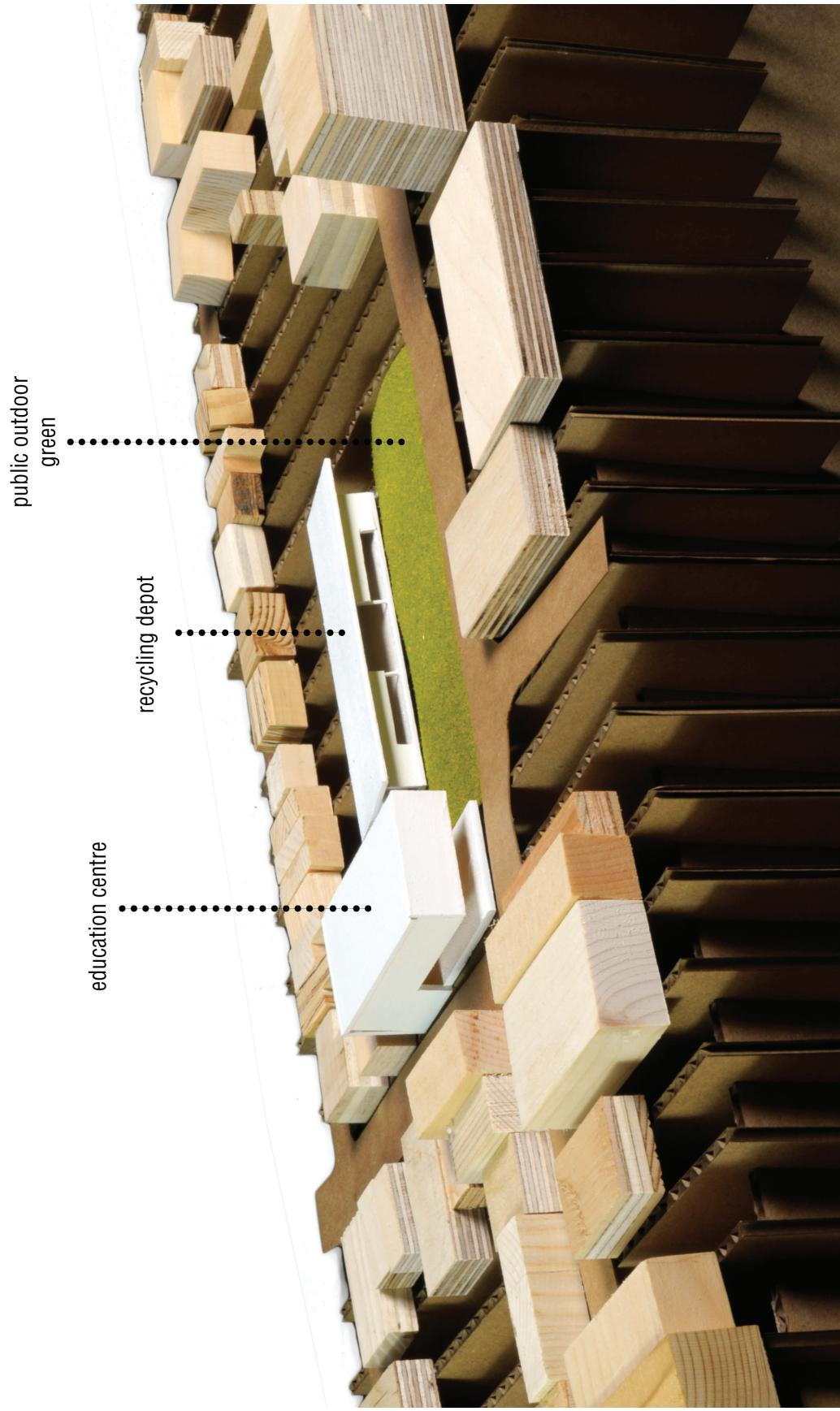
The design for the recycling facility is divided into three areas: a depot in which the recycling operations take place, an education centre providing a space for community learning and recycling-related activities, and an outdoor green connecting the two to the street.

Each of the three built forms places a particular emphasis on creating an open, explicitly public, inviting design accessible to different types of city residents. Collectively, the three emphasize the provision of recycling operations in an environment that is equipped with proper ventilation, central heating, and day-lighting.



Gottingen St. is the major axis of the project

For all, material selection is guided by the principles of recycling the project aims to promote. The buildings are constructed of recycled and highly recyclable materials and inside materials are creatively reused to illustrate recycling in action. The design of each building also offers consideration of energy consumption versus conservation.



The three areas of the project in context

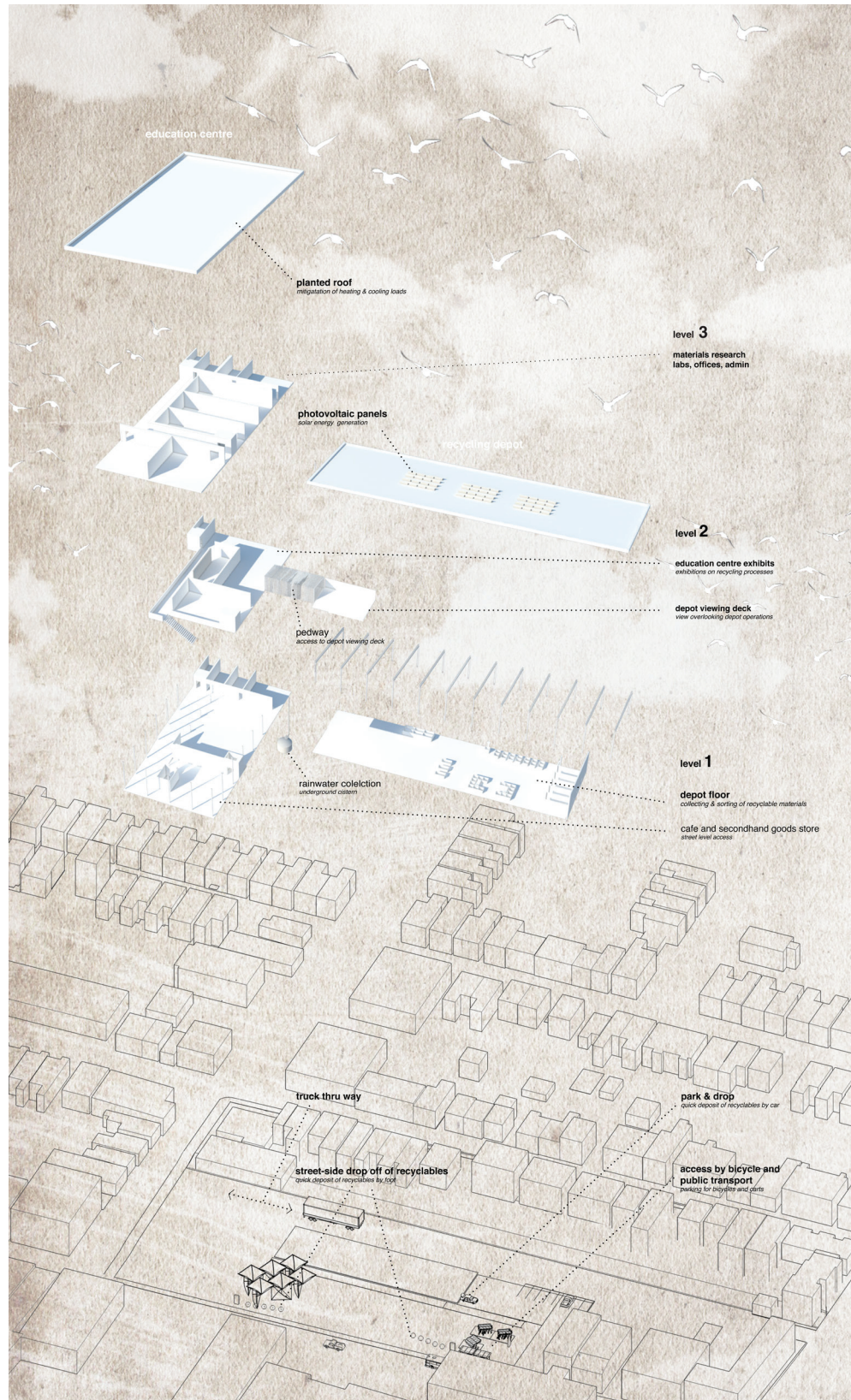




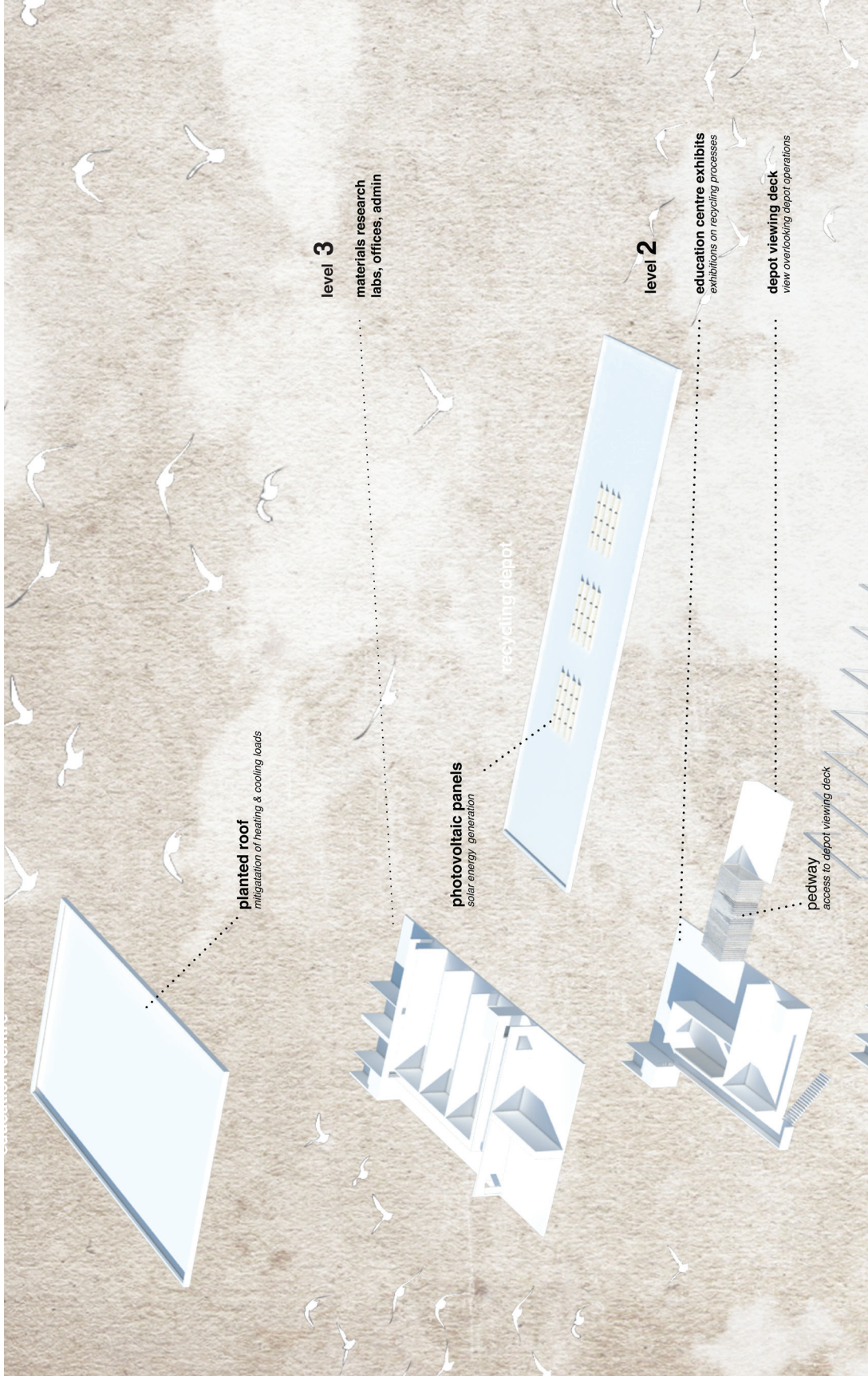
Exterior view of the project, looking south along Gottingen St.



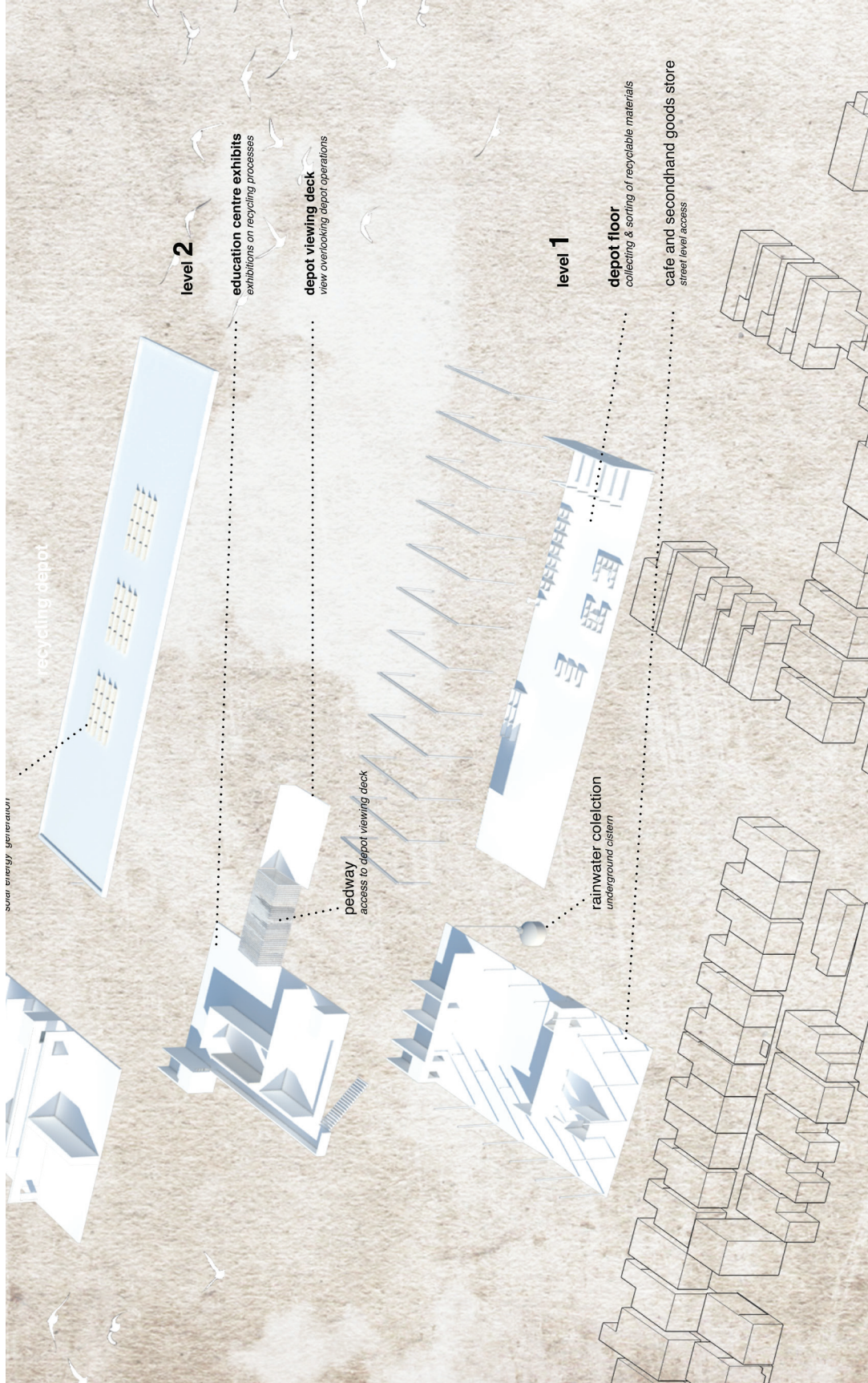
Materials used in the project are either recycled or highly recyclable



Exploded axonometric with a detailed breakdown of the various programmatic components of the design



Detail 1: Exploded axonometric



Detail 2: Exploded axonometric



Detail 3: Exploded axonometric



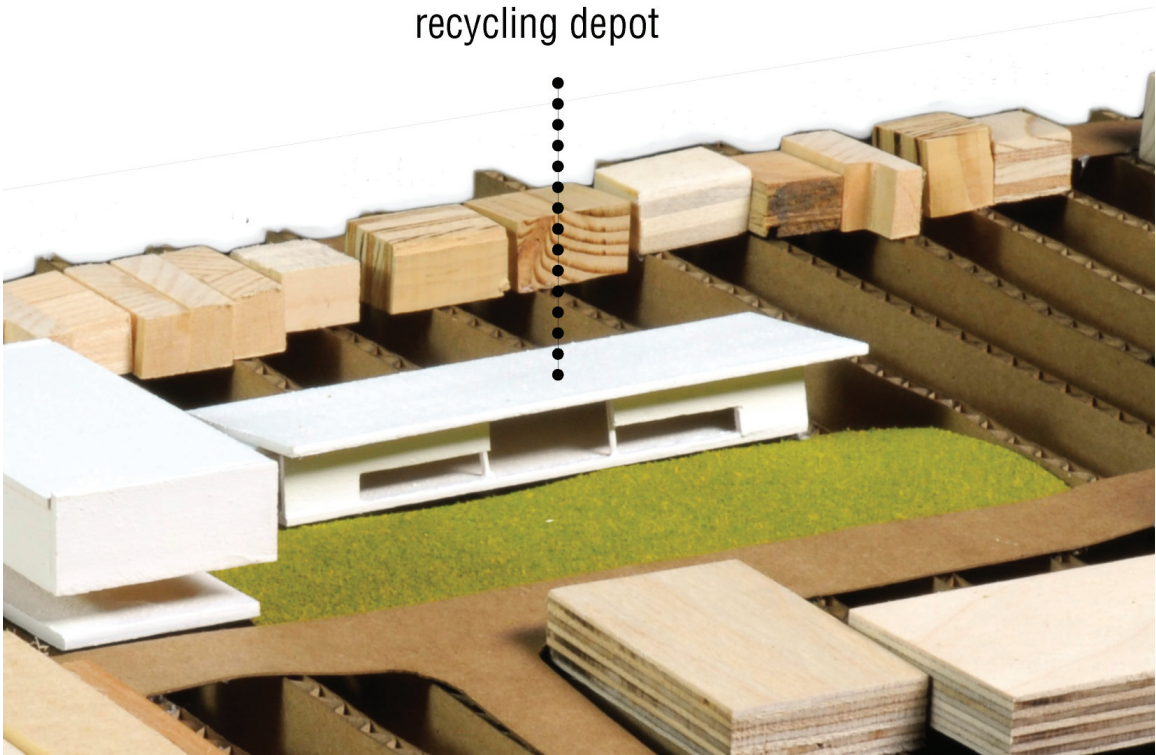
Roof plan of the project illustrating layout. Pedestrians, cyclists, cars, and patrons with carts enter via the street. Truck access is via a thru-way at the rear.

## The Recycling Depot

The first building, the recycling depot, is the site in which the recycling operations take place. Here, visitors looking to drop off their recycled goods, old furniture, or household hazardous waste can bring their items directly inside. At ground level, the depot is easily accessible by foot, by public transit, by car, and by bike. Residents with carts can easily wheel their goods directly inside for drop-off.

The depot floor is organized into different areas based on types of goods—with three separate but interconnected spaces for container returns, household hazardous waste, and secondhand goods.

recycling depot



The first area of the project



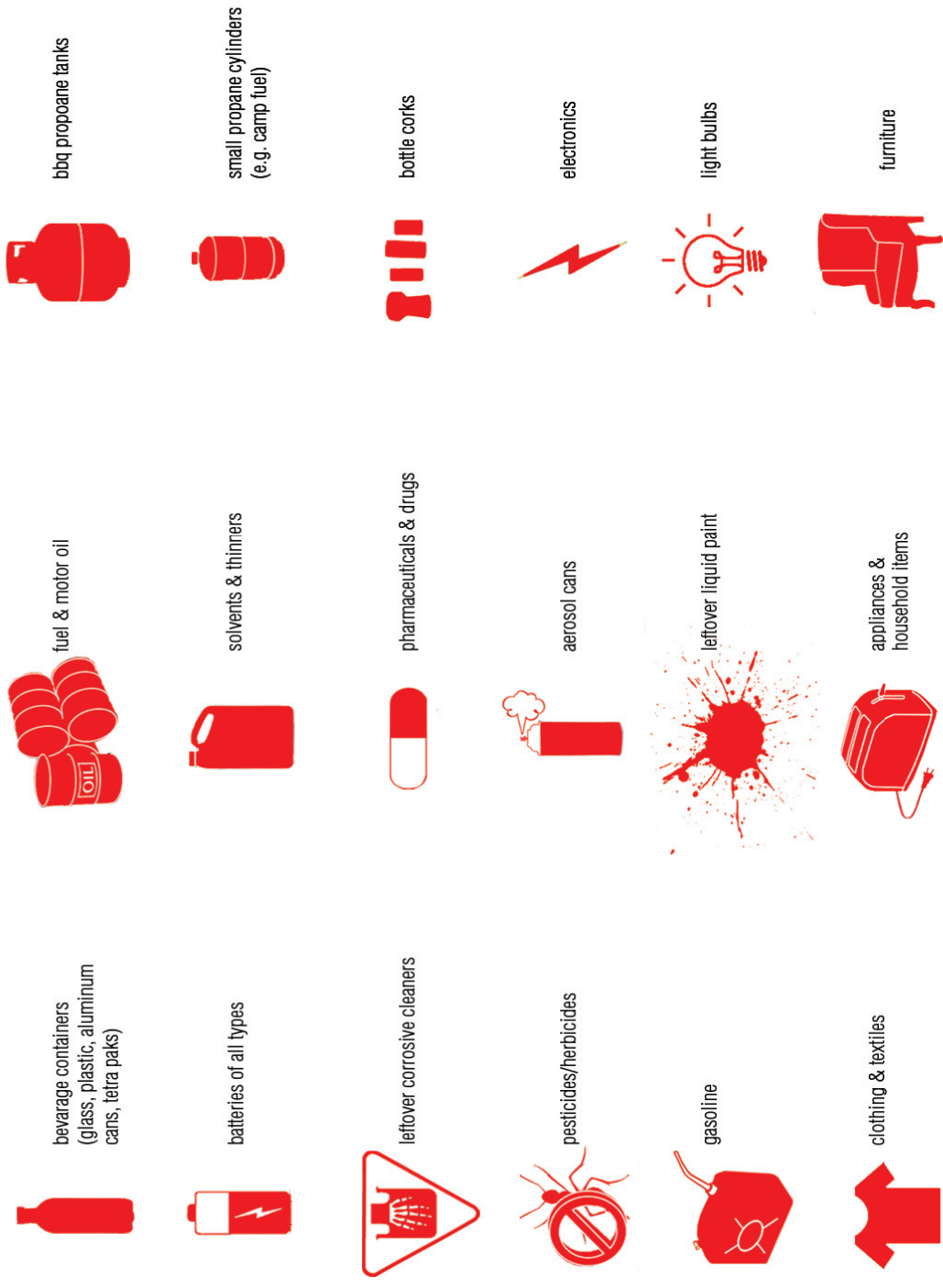
The building is constructed of a high-bay single storey steel structure. Day-lighting is provided from both sides. The structure is open, well-lit, and well-ventilated. The roof is outfitted with solar panels, providing enough power to generate electricity for the building's operations.

Rainwater drained from the roof is collected into a cistern to provide gray water for the building's washrooms and irrigation.

In terms of collection of goods, the depot provides expanded collection ability, accepting beverage containers, electronics, and paint as well as all materials designated Hazardous Household Waste.

At the north end of the depot, where the parking lot and the depot meet, is a park and drop area, where visitors can park and quickly and conveniently drop their materials off without having to enter the building.

A thru-way at the rear of the site allows for separate access to the depot via collection truck. This is the same thru way that was used when the site was home to grocery store in years past.



beverage containers  
(glass, plastic, aluminum  
cans, tetra paks)

batteries of all types

fuel & motor oil

solvents & thinners

bbq propane tanks

small propane cylinders  
(e.g. camp fuel)

leftover corrosive cleaners

pharmaceuticals & drugs

bottle corks

pesticides/herbicides

aerosol cans

electronics

gasoline

leftover liquid paint

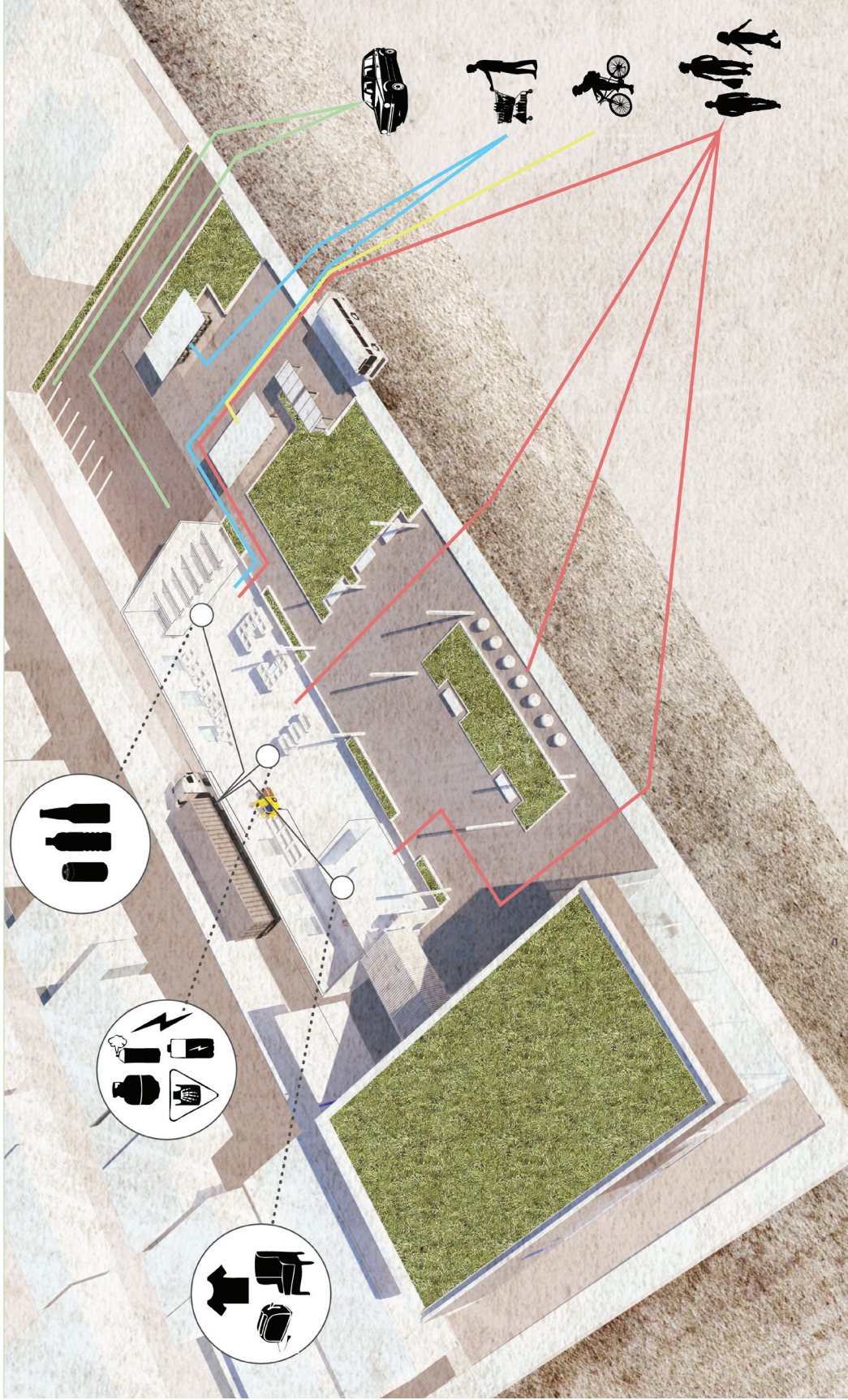
light bulbs

clothing & textiles

appliances &  
household items

furniture

Types of good accepted at the depot



The depot floor is organized into three areas for the collection of recyclables, household hazardous waste, and secondhand goods. Dropped off items exit the depot via truck at the rear. The depot is accessible via various means of transport.



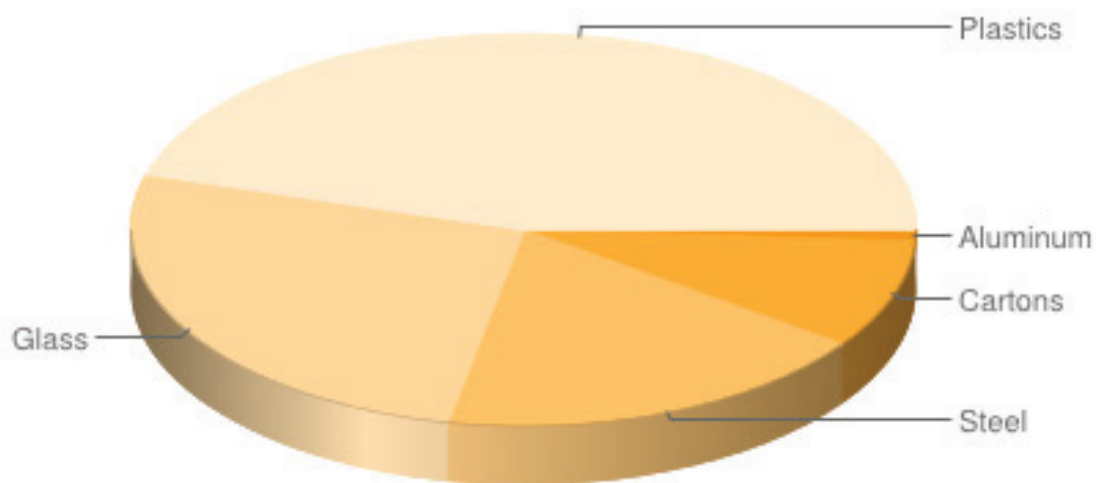
East-west section through the recycling depot describing the building's relationship to the slope of the site



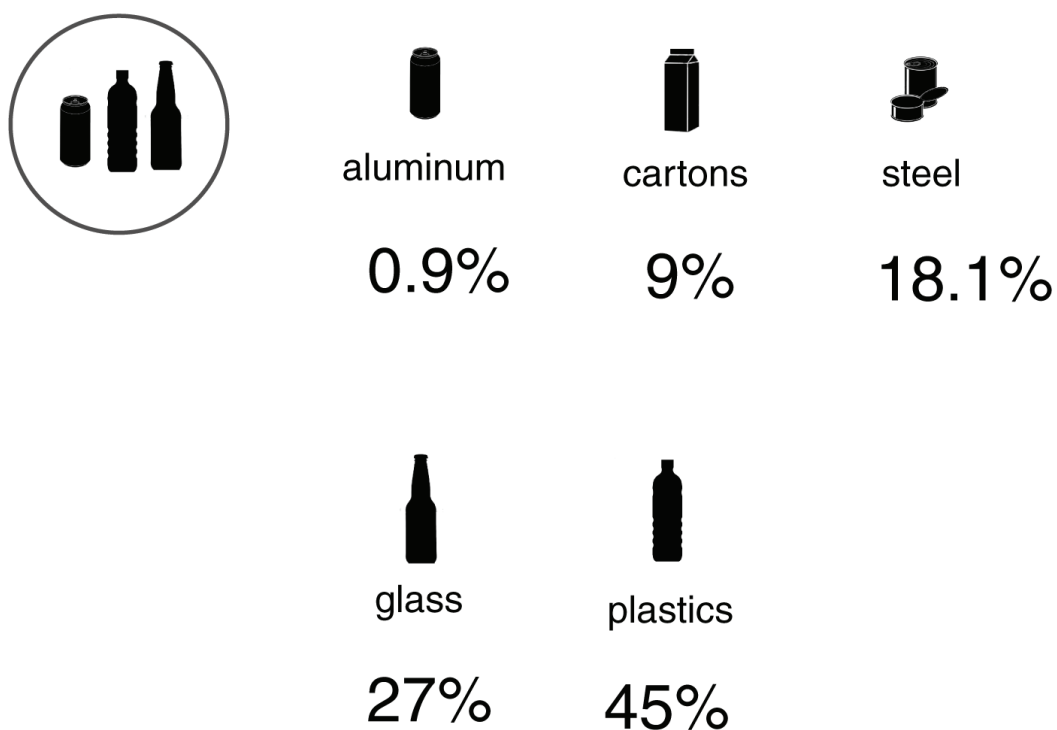
Detail 1 : East-west section through the recycling depot describing the building's relationship to the slope of the site



Detail 2: East-west section through the recycling depot describing the building's relationship to the slope of the site



Breakdown of goods managed by bottle depots in Halifax (Maesen 2014)



Amounts of various goods managed by bottle depots in Halifax (Maesen 2014)



 = 10 TONNES

  
aluminum

0.2%



= 48 TONNES

  
cartons

2%



= 480 TONNES

  
steel

4%



= 960 TONNES

  
glass

5.8%



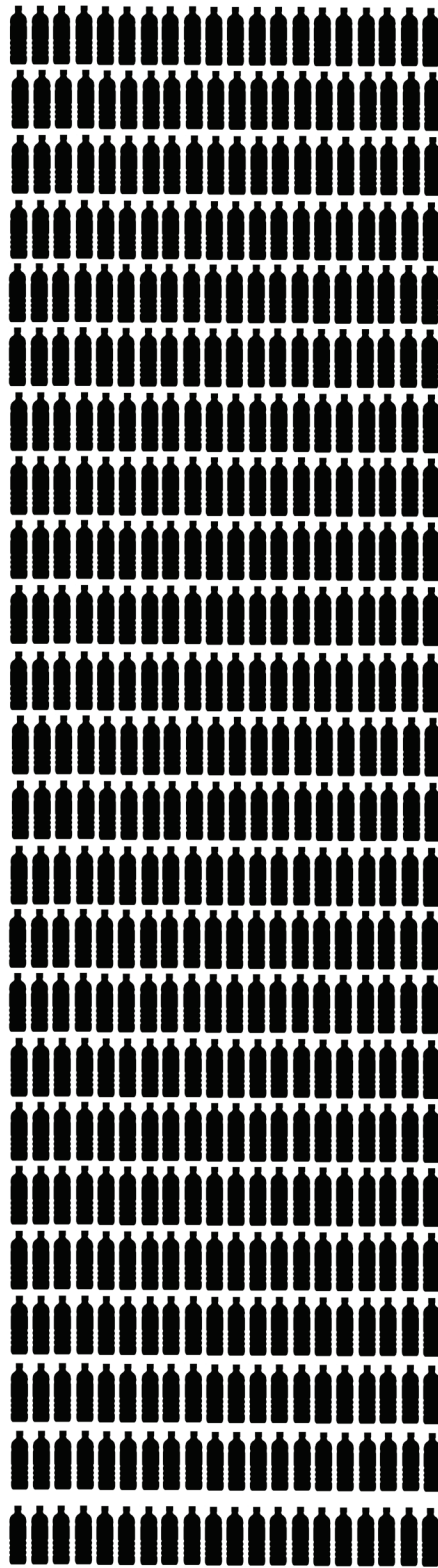
= 1392 TONNES

Amounts of various goods managed by bottle depots in Halifax as a proportion of the total annual recycling in the city (Maesen 2014)





10%



= 2400 TONNES

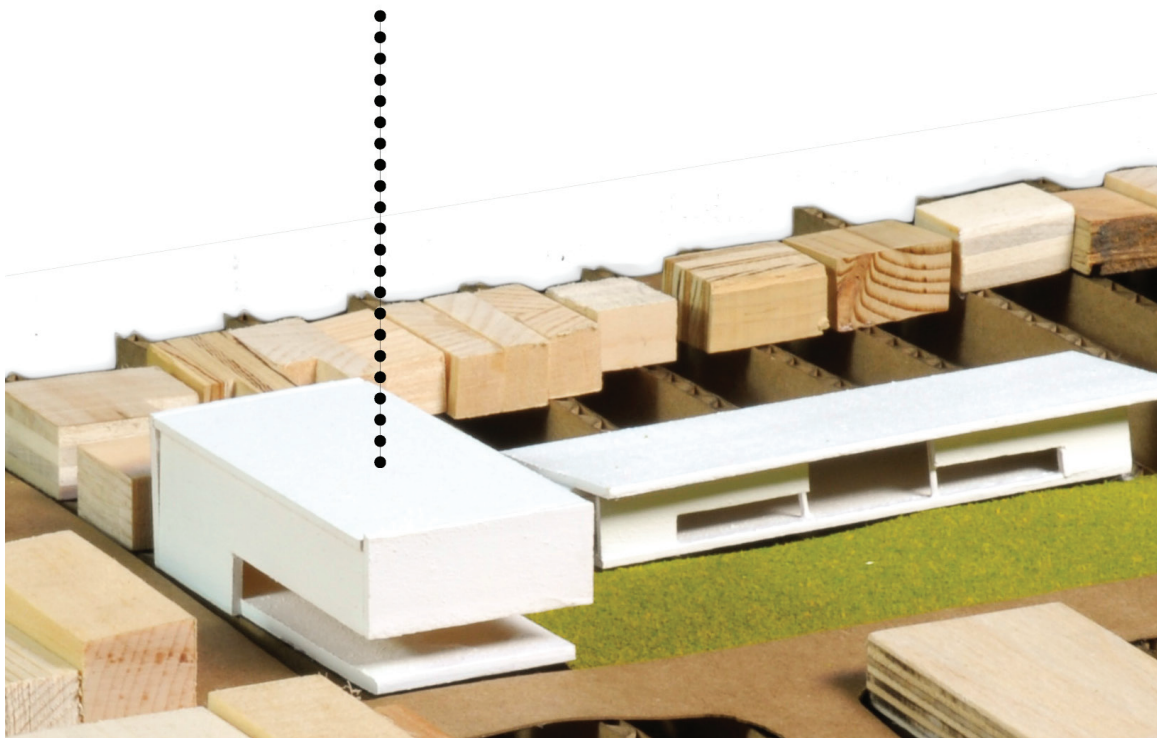
Amounts of various goods managed by bottle depots in Halifax as a proportion of the total annual recycling in the city (Maesen 2014)

## The Education Centre

The second structure in the design is of equal importance. It is the community building and education centre, the partner to the depot. The education centre is located at the corner of the lot.

Visitors entering the building at the corner come into a double height atrium. It is here where the visitor has the first taste of material reuse in the building with a wall clad in repurposed wood and the info desk which is a lightbox made from repurposed bottles. This desk serves as a lantern from the building exterior. Here in the atrium is a cafe equipped with a rotating stock of secondhand furniture, available to be purchased and taken home as visitors see fit.

education centre



The second area of the project

Beyond is an area dedicated to a secondhand goods thrift store for the retail of used goods such as clothing, furniture, and household items. The store can be seen and accessed from the sidewalk on Cunard street.

Leaving the ground floor, visitors can ascend to the second level to the education centre. Here visitors can tour through a series of interactive exhibits illustrating the recycling processes—covering plastic, paper, metal, glass, organics composting, and household hazardous waste. Each room of the exhibition features a creative reuse of recycled materials.

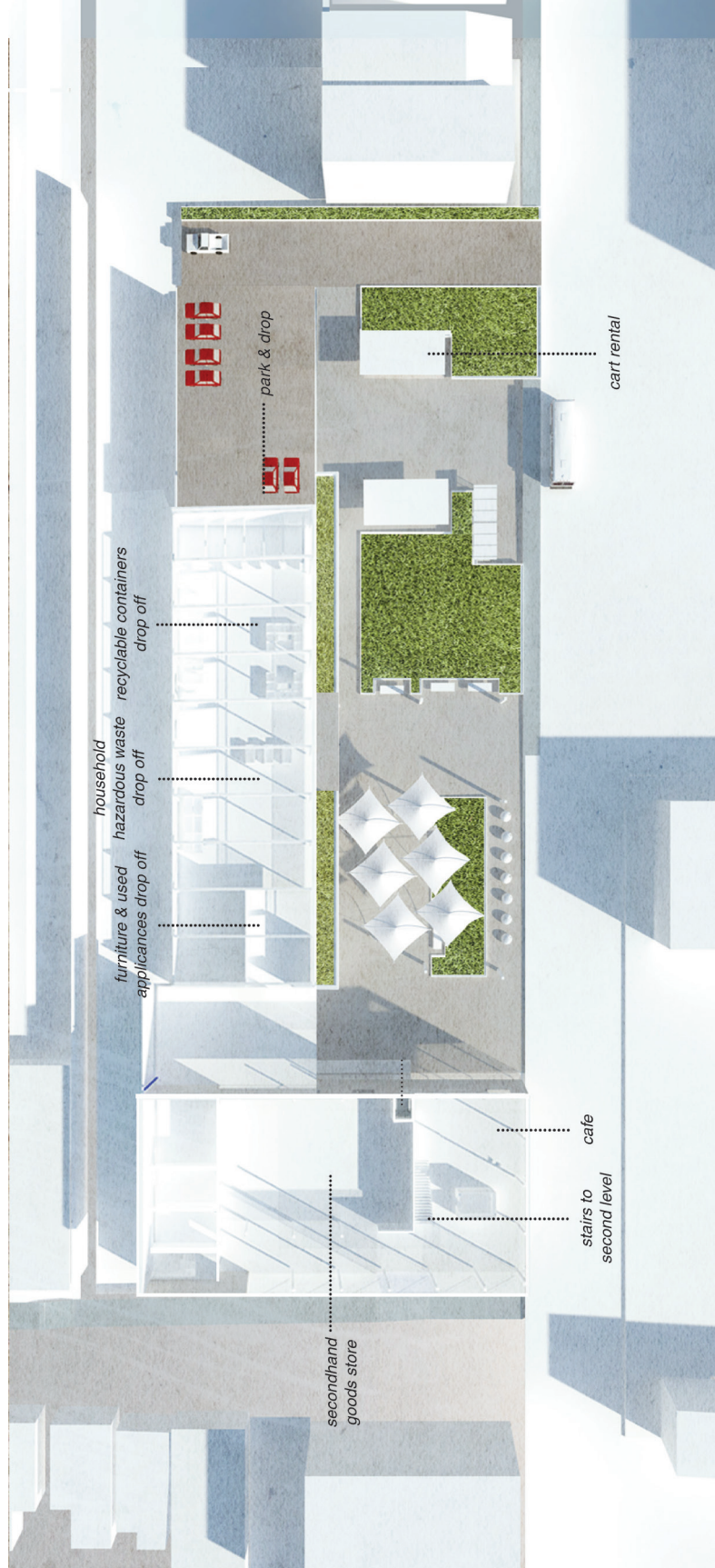
The exhibitions on the north side of the centre open onto a pedway which connects the otherwise separate education centre and depot. Crossing the pedway, visitors span the gap between the two buildings to enter a room suspended above the depot floor. This room offers visitors a clear view from above of the recycling process in action, while not disturbing operations on the depot floor.

Alongside the view, the room offers small scale recycling facilities which enable the visitor to repurpose materials first-hand. Here, a number of simple machines such as a shredder, a small plastic extruder, a rotation mould, paper making screens, and a device to tumble glass can be found. These facilities allow for visitors to bring old paper, plastics, and glass to repurpose. Scrap paper can be reformed into new paper; plastic can be spun into plastic thread or melted down and remoulded into other simple goods—new containers, or a lamp for instance; glass can be cut, tumbled, and formed into tiles. These facilities allow for the

hands-on reuse of materials, enabling visitors to repurpose their own refuse into other goods--and to do so within sight of the recycling depot's operations.

Above all this in the uppermost floor of the education centre are labs for small scale materials research as well as spaces for workers and building admin.

The roof of the building is a simple three inch planted roof to mitigate heating and cooling loads within.



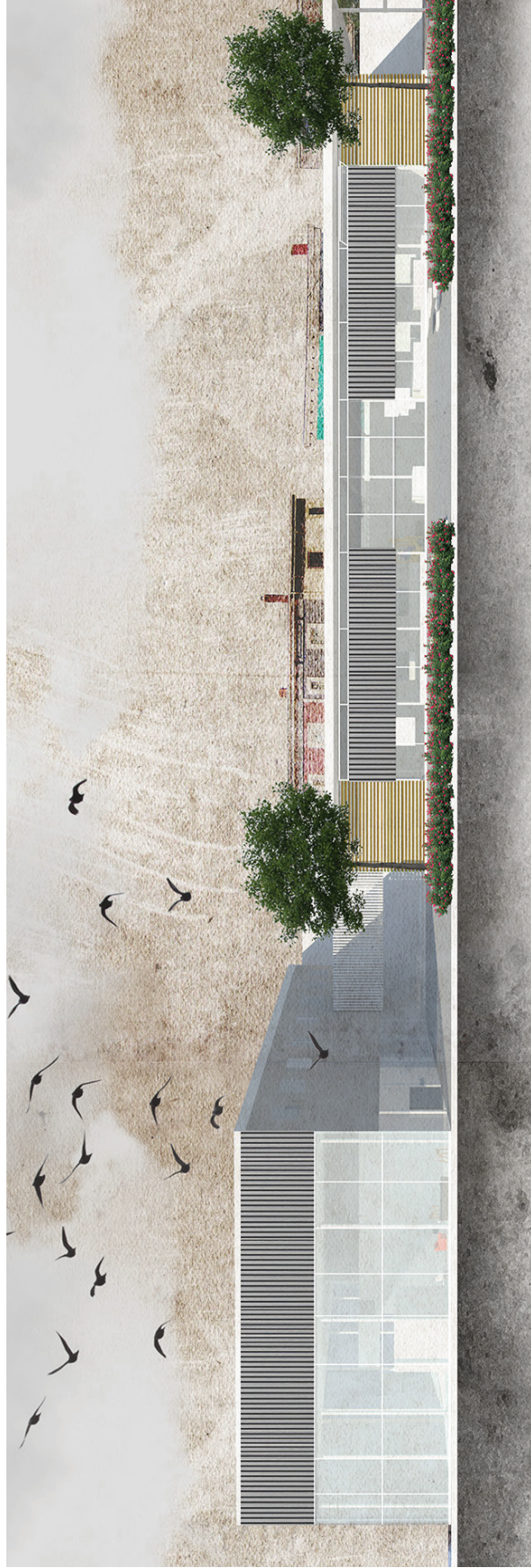
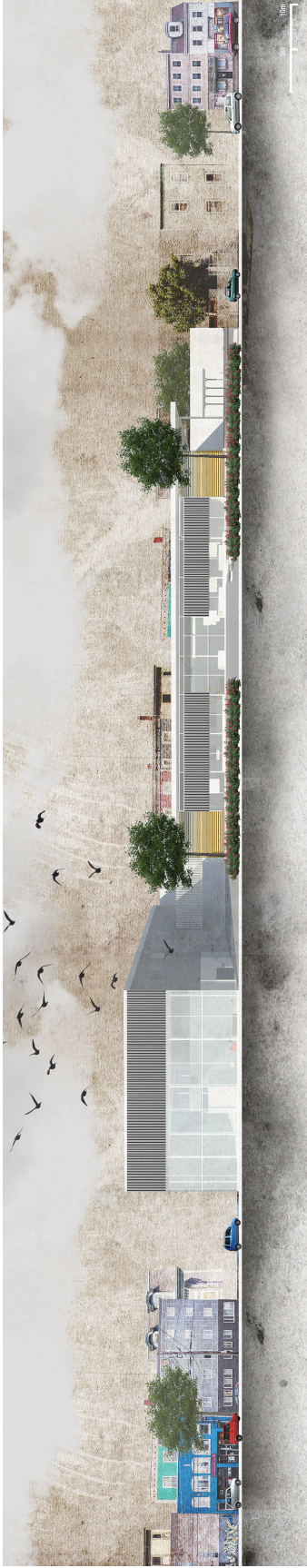
Ground floor plan



Second floor plan



Third floor plan



North-south elevation





North-south section through the project cutting through the pedway that connect the two buildings of the project

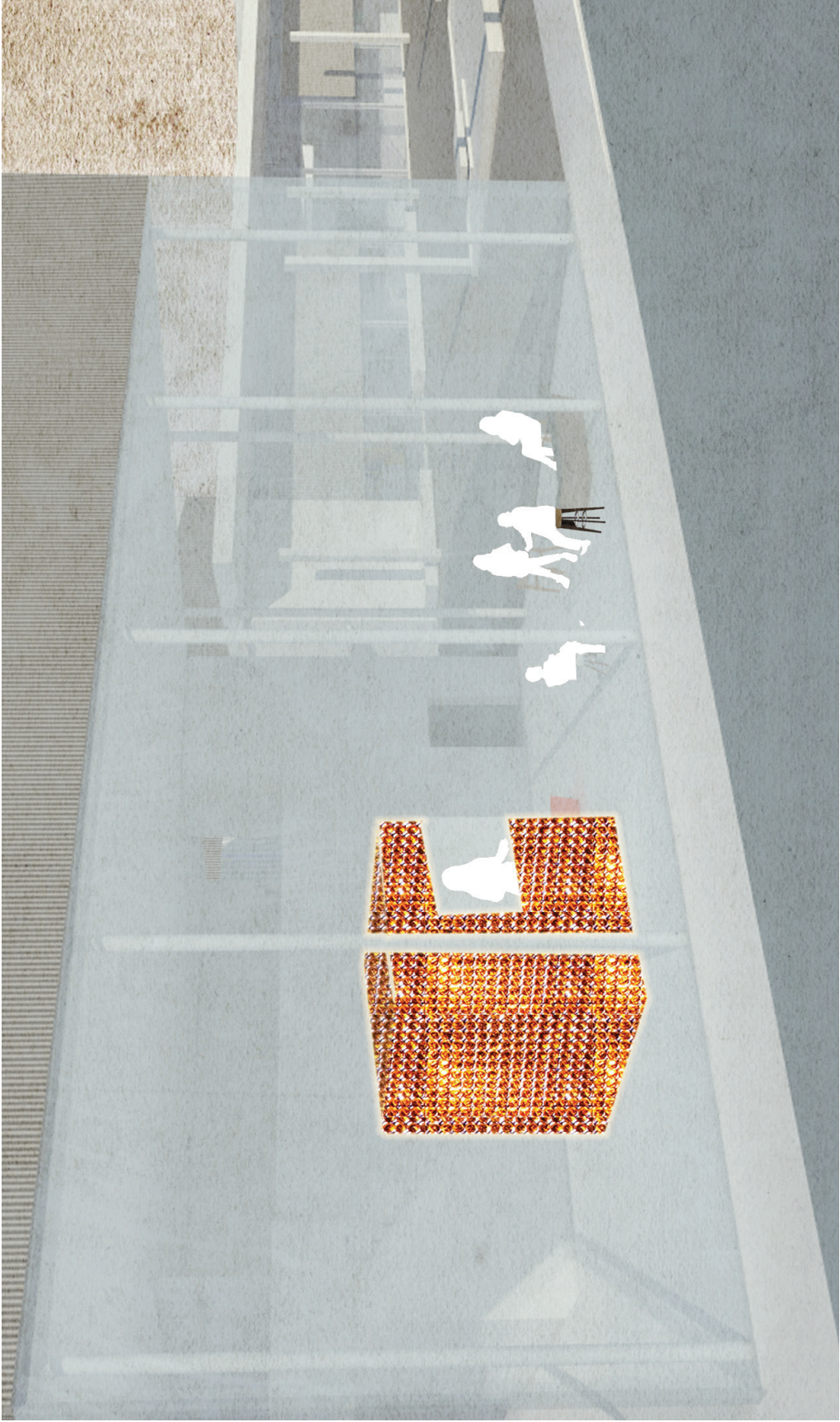


Detail1: North-south section through the project cutting through the pedway that connect the two buildings of the project

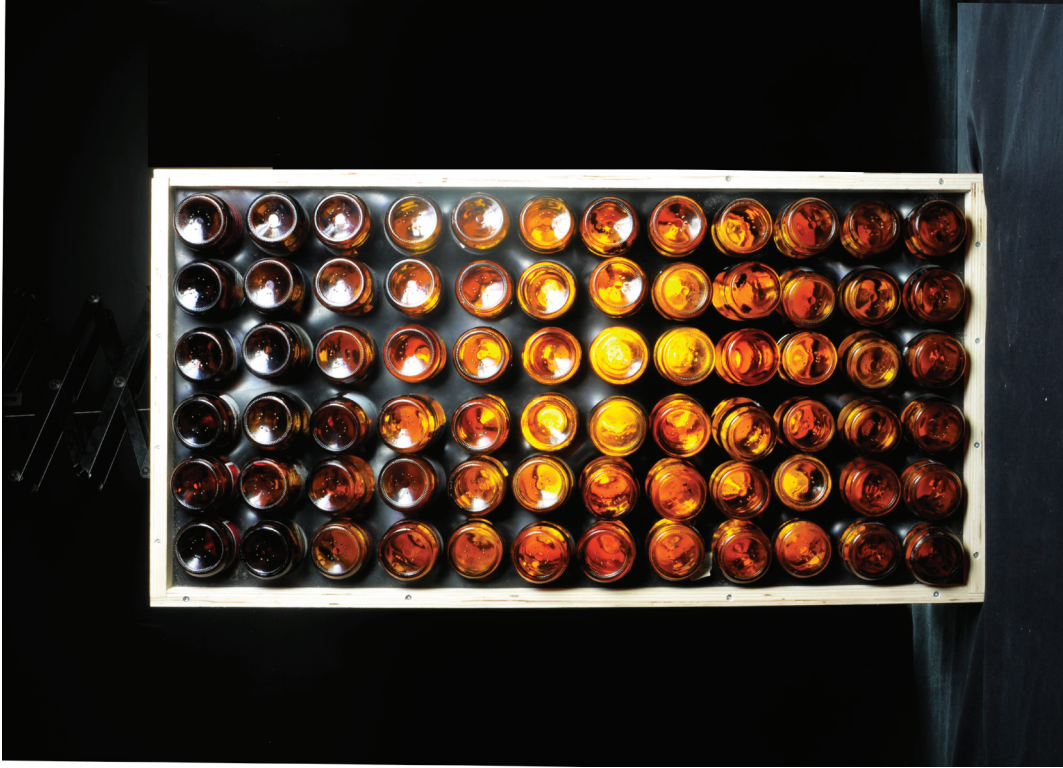


Detail 2: North-south section through the project cutting through the pedway that connect the two buildings of the project





Composed of reused glass bottles, the info desk in the atrium acts as a kind of lantern at the street level



Panel made of wood, rubber, and reused glass beer bottles. The model was created as a 1:1 test of ideas regarding material reuse. When lit from behind, the bottles transmit an amber glow.



The system is held together with a wooden frame.

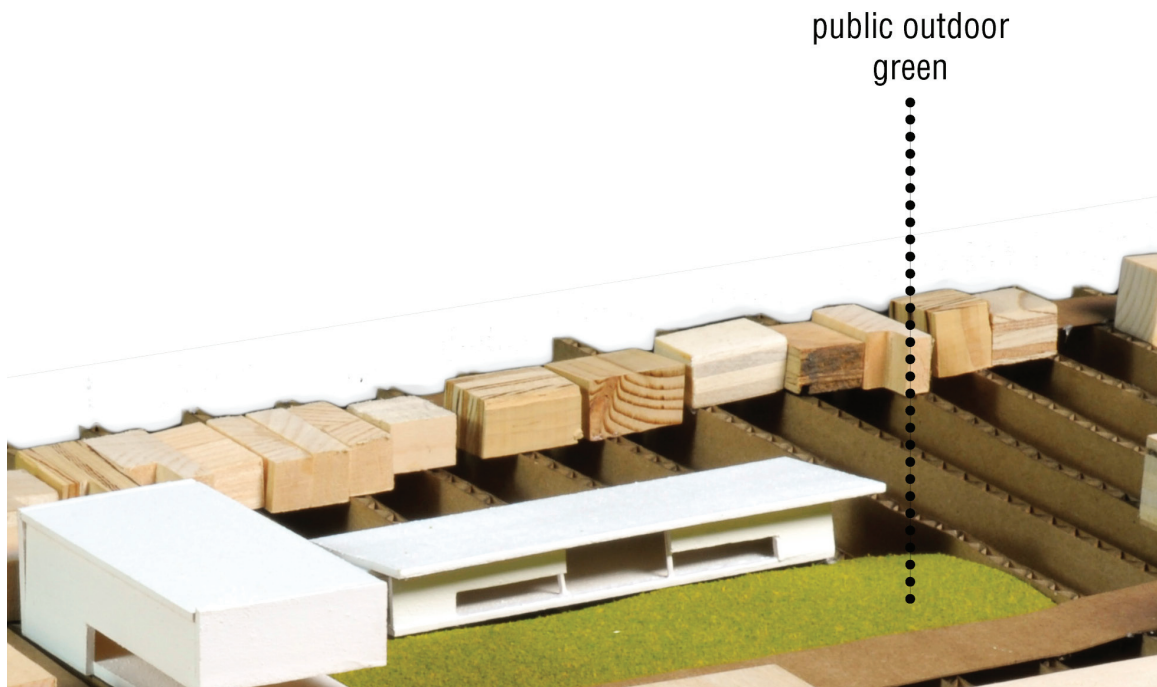
## Outdoor Space

Outside of both of these structures is the third space of the project: the outdoor green. This is a landscaped area that stretches along the street-front on Gottingen. It offers a public space in a rapidly developing area of the city.

It is a pleasant and inviting place to sit in chairs made from recycled materials, and features sculptures made of recycled goods.

The space provides an area for community gatherings, such as movie viewings and public lectures. It is the site of a weekly outdoor flea market in the summer months.

Along the street front is place for the quick deposit of recycled goods by foot. Areas are provided for bicycle parking and there is also a structure for the rental and storage of carts.



The third element of the project





View of the outdoor space along Gottingen St.



The outdoor space in action

## CHAPTER 4: CONCLUSION

The case of waste management and the architecture of recycling in Halifax represents a number of much larger issues regarding both the nature of our patterns of consumption and the role that building types play in the city.

The questions raised in the course of the work—particularly those pertaining to the legitimacy of promoting recycling at all, and the greater criticisms of the way recycling markets currently function—are ones that merit further examination.

From a broad perspective, the work of this book can be seen as the application of design as a problem-solving process.

The idea that architects and builders can affect change holds significant value. Systems, such as recycling are large and seemingly difficult to tackle—yet few situations are impervious to improvement.

## REFERENCES

- Benjamin, Walter. 1982. *The Arcades Project*. Cambridge, MA, Harvard University Press.
- Brooks, Bob. 1965. *Photographic Portrait of Africville in the 1960s*. Nova Scotia Archives. <http://www.gov.ns.ca/nsarm/virtual/africville/archives.asp?ID=3>.
- Brown, Hillary. 2014. *Next Generation Infrastructure: Principles for Post Industrial Public Works*. Washington, DC, Island Press.
- Busch, Jane C. 1983. "The Throwaway Ethic in America." PhD diss. University of Pennsylvania. <http://repository.upenn.edu/dissertations/AAI8315995>.
- CBC News. 2014 "Otter Lake Landfill Cost-Saving Changes 'Renege on Contract.'" *CBC News*, January 10. <http://www.cbc.ca/news/canada/nova-scotia/otter-lake-landfill-cost-saving-changes-renege-on-contract-1.2492645>.
- Cerny, Charlene and Suzanne Seriff. 2002. *Recycled, Re-seen: Folk Art from the Global Scrap Heap*. New York, Harry N. Abrams in association with the Museum of International Folk Art.
- Community Stakeholder Committee. 2007. *Executive summary: An Integrated Resource Management Strategy for Halifax County/Halifax/Dartmouth/Bedford*. Accessed February 22. <http://www.halifax.ca/wrms/documents/070213cow4.pdf>.
- Conference Board of Canada. 2013. *Municipal Waste Generation*. <http://www.conferenceboard.ca/hcp/details/environment/municipal-waste-generation.aspx>.
- Dolkart, Andrew. 2009. *Guide to New York City Landmarks*. Hoboken: John Wiley & Sons.
- Douglas, Mary. 2002. *Purity and Danger: An Analysis of Concepts of Pollution and Taboo*. New York: Routledge.
- Fairburn, Jane, M. 2013. *Along the Shore: Rediscovering Toronto's Waterfront Heritage*. Toronto: ECW Press.
- Geniaux, Paul. c. 1885. *Chiffonier*. Accessed July 14. <http://www.mheu.org/en/ragpickers/ragpickers-crisis.htm>.
- Knight, Sam. 2008. "Plastic: The Elephant in the Room." *Financial Times Weekend*, April 25/26.
- Lynch, Kevin. 1990. *Wasting Away*. San Francisco: Random House.
- Maessen, Marcel (Waste Resource Education Officer for HRM Solid Waste Resources), email message to author, May 23, 2014.
- Melosi, Martin V. 1981. *Garbage in the Cities: Refuse, Reform, and the Environment*. Pittsburgh: University of Pittsburgh Press.

- Mortillaro, Nicole. 2013. "Toronto Aims to Get More Condo and Apartment Dwellers Recycling." *Global News*, December 4. <http://globalnews.ca/news/1008874/toronto-blue-bin-recycling-program-a-challenge/>.
- Municipal Group of Companies. 2014. Otter Lake Waste Facility. Accessed July 7. <http://www.dexter.ca/projects/otter-lake-waste-facility>.
- Munro, A. 2010. *Recycling by Canadian Households, 2007*. Statistics Canada: Ottawa.
- Nova Scotia Environment. *Final Report on Nova Scotia's 1995 Solid Resource Management Strategy*. Accessed February 22. <https://www.gov.ns.ca/nse/waste/docs/SolidWasteStrategyFinalReport1995.pdf>.
- Nova Scotia Environment. 2014. *Statement of Mandate 2013-2014*. Accessed February 22 2014. <https://www.novascotia.ca/nse/dept/docs/NSE.Statement.of.Mandate.2013-2014.pdf>.
- Ondaatje, Michael. 1987. *In the Skin of a Lion*. Toronto: McClelland and Stewart.
- Pesklevis, Amber. 2011. "A Recycling Centre in Halifax: Integrating Waste and Community." M.Arch Thesis, Dalhousie University.
- Pichtel, John. 2005. *Waste Management Practices: Municipal, Hazardous, and Industrial*. Boca Raton: Taylor & Francis Group.
- Recycle Everywhere. 2014. Accessed July 15. <http://www.recycleeverywhere.ca/>.
- Riis, Jacob A. 1890. *Under the Dump at West 47th Street*. Accessed July 14. <http://collections.mcny.org/Explore/Highlights/Jacob%20A.%20Riis/>.
- Rossdale Regeneration. 2014. Accessed July 14. <http://rossdaleregeneration.ca/>.
- Singer, Michael, Ramon J. Cruz, and Jason Bregman. 2007. "Infrastructure and community: How can we live with what sustains us?" *Environmental Defense*. [http://www.edf.org/documents/7182\\_Infrastructure\\_and\\_Community.pdf](http://www.edf.org/documents/7182_Infrastructure_and_Community.pdf).
- Statistics Canada. 2005. *Human Activity and the Environment: Annual Statistics 2005*. Accessed June 15. <http://www.statcan.gc.ca/pub/16-201-x/16-201-x2005000-eng.pdf>.
- Statistics Canada. 2010. *Waste Management Industry Survey: Business and Government Sectors 2008*. Accessed June 19 2014. <http://www.statcan.gc.ca/pub/16f0023x/16f0023x2010001-eng.pdf>.
- Statistics Canada. 2012. *Human Activity and the Environment: Waste Management in Canada*. Accessed June 15 2014. <http://www.statcan.gc.ca/pub/16-201-x/16-201-x2012000-eng.pdf>.
- Strasser, Susan. 1999. *Waste and Want: A Social History of Trash*. New York: Henry Holt and Company.

- Strasser, Susan. 1992. *Waste and Want: The Other Side of Consumption*. Providence: Berg Publishers.
- Thompson, Michael. 1979. *Rubbish Theory: The Creation and Destruction of Value*. New York: Oxford University Press.
- Williams, P.T. 2002. "Emissions from Solid Waste Management Activities." In *Environmental and Health Impact of Solid Waste Management Activities*, edited by R.E. Hester and R.M. Harrison, 141-170, Cambridge: The Royal Society of Chemistry.
- Zaccagna, Remo. 2013. "Halifax Recycler Appeals Rejection." *Chronicle Herald*. June 27. <http://thechronicleherald.ca/business/1137936-halifax-recycler-appeals-rejection>.