

Intermodal Connections:
A Movement Oriented Approach to Placemaking in Downtown Sudbury

by

Jacob Zoldy

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APPROVED/APPROUVÉ

Thesis Examiners/Examineurs de thèse:

Ted Wilson
(Thesis Advisor / Directeur(trice) de thèse)

Shannon Bassett
(Thesis Second Reader / Deuxième lecteur(trice) de thèse)

Menna Agha
(External Examiner / Examineur(trice) externe)

Approved for the Office of Graduate Studies
Approuvé pour le Bureau des études supérieures
Tammy Eger, PhD
Vice-President, Research (Office of Graduate Studies)
Vice-rectrice à la recherche (Bureau des études supérieures)

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ABSTRACT

Key Words

Placemaking

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Movement

People

Urban

The urban fabric of the city is the product of its history of development. Each development in history can be seen to improve, revitalize and reshape the city through the definition and redefinition of places, and paths of movement. In the late nineteenth and early twentieth century, many cities in North America went through a transformation aiming for places in cities with taller, larger, more durable buildings made possible by new building technologies. In the mid-twentieth century, the automobile became a major influence on urban form, often involving extensive demolition and rebuilding of places to accommodate this emerging mode of movement. In the late twentieth century there has been a significant shift in the development of urban fabric. This shift has focused on modes of movement at the human scale, and the experience of places in the city more connected to the natural environment. This thesis examines how to revitalize the City of Greater Sudbury as a whole using intermodal connections, by creating new relationships between places and paths of movement, with an emphasis on human experience and nature as essential contributors to urban form. From this network of Intermodal Connections, architectural and urban placemaking strategies can be implemented with community-oriented programs to bring people back to the Downtown core.

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PREFACE

I want to begin this thesis by first acknowledging that I have been living and studying on the traditional lands of the Atikameksheng Anishnawbek people, and the area my thesis research focuses on also includes the traditional land of the Wahnapiatae First Nation.

I was not born and raised in Sudbury. I did not grow up in Northern Ontario. I was raised in the city of Newmarket in the Greater Toronto Area, and in a small cottage town called Eagle Lake in Haliburton County. While I was not brought up in the city itself, I grew up with stories of it. My parents in the 1980's both attended Laurentian University, my dad for engineering and my mother for nursing. They met while living in the Thorneloe University residence on the Laurentian campus, the same residence I lived in for several years when I first started school. When I decided to follow in their footsteps, I did not know what to expect. Many people warned me about the harsh living conditions of Northern Ontario and of the dark, desolate mining hub that is Sudbury. Some aspects of these rumors are true, you can still see most nights the red glow in the sky from the slag pouring. The winters may be cold, but the community is warm and inviting, full of people who can handle the elements and who work hard to make the city a nice place to live. What evolved over 6 years of school was a love for the City of Sudbury and the people that call it home.

1.0 INTRODUCTION

I have spent four years living in residence at the Laurentian University campus and commuting Downtown for school at the School of Architecture. In those four years I have heard many complaints and concerns about Downtown Sudbury from the perspective of main campus students. People were uneasy with traveling Downtown, many believe that the area was dangerous and undesirable. This perception of the city's core is shared not just with students living on campus, but with a large percentage of the population of Sudbury. There is a reasonable explanation to this sentiment.

Sudbury's Downtown is dying. The city continues to grow and expand but has left its Downtown behind. Big box retail locations have popped up around Sudbury, giant retail spaces surrounded by seas of vacant parking spaces only accessible by car. Shopping malls were created on either ends of the city in New Sudbury and Four Corners making the Downtown Elm Place Mall obsolete. Fast food chain restaurants line urban highways feeding the population like a conveyor belt, while local restaurants fight to stay operational in the city center. With continuous talk of the Downtown Sudbury community arena being relocated to the Kingsway, there seems to be very little faith from the city in its Downtown core.

One of the biggest problems today with Downtown Sudbury is the lack of community spaces and programs. Apart from the YMCA facility (which requires a membership for many of its programs) and the as of yet not operational Place des Arts, there are very few truly public community spaces. Nighttime is a different story as most of the night clubs and bars in the city are all located within 2 blocks of each other along Durham Street and Elgin Street. But during the day there is an obvious lack of activity. Most of the people you see walking on the street are either staff that work in the several office buildings or local businesses, architecture students and the unhoused population currently living in encampments and shelters Downtown. For many people in the city, if you don't work or live Downtown, you don't visit Downtown unless you want to go out for the night or you're catching a local sports game.

Another problem the Downtown faces today is homelessness, addiction, and crime. There has always been a large population of unhoused people in Downtown Sudbury. The Covid-19 pandemic amplified the problem. During the beginning of the outbreak job security and housing became diffi-

cult to maintain leaving many additional people to live on the streets, in encampments or in shelters. Downtown Sudbury is the location for most resources for the unhoused population including soup kitchens, shelters, health care and other local programs created to support this demographic. The community and city officials are generally supportive of the unhoused population. The Greater Sudbury Chief of Police states that "Mental health, homelessness and addiction are not the best served through enforcement."¹ Where the problem lies is that the city itself, the urban fabric, is lacking in public infrastructure and spaces at the human level. All it takes it one look at downtown, realizing that there are no benches for people to sit. No places to shelter from the sun or the elements. The urban fabric of the city does not care for people, and so people will treat the city with the same lack of care.

1 Angela Gemmill. "Despite perceptions, stats show downtown Sudbury is safe, police chief says." CBC Sudbury. Accessed April 2nd, 2022, <https://www.cbc.ca/news/canada/sudbury/sudbury-police-downtown-strategy-1.5393214>

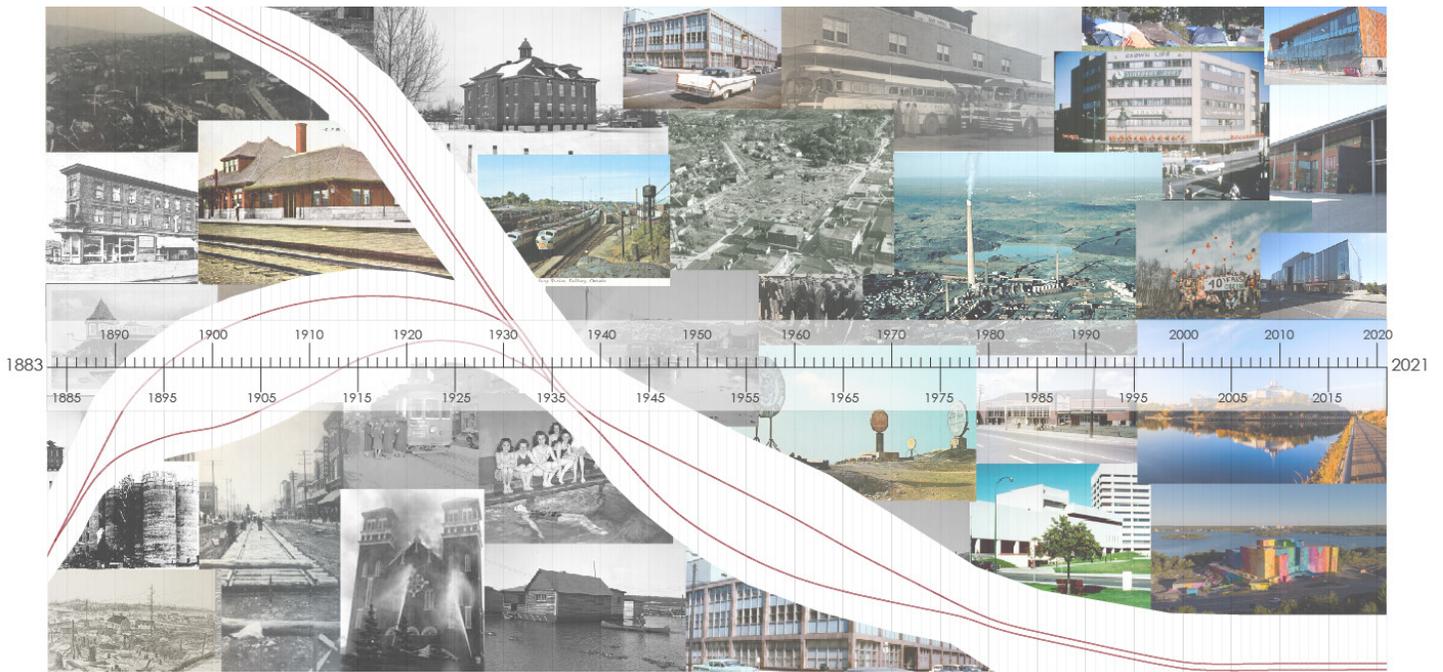


Figure 01 Graphic Timeline of the City of Sudbury

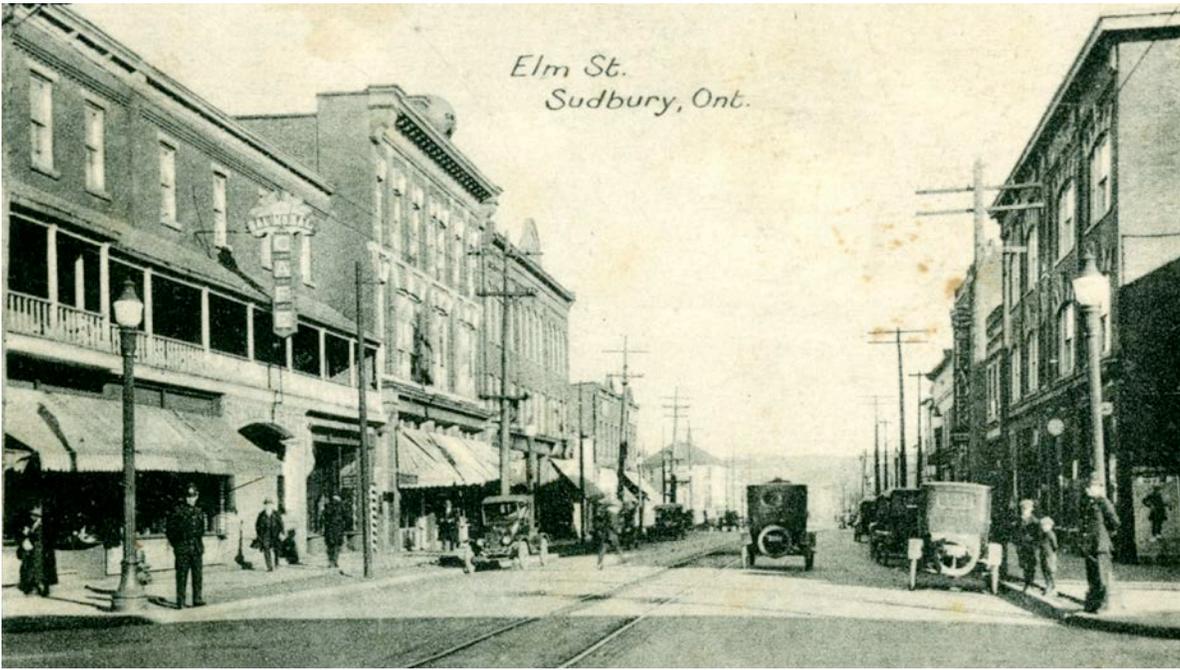


Figure 02 Elm St. Sudbury, Ont. Postcard



Figure 03 Elm Street. Sudbury, Ontario. Postcard
Image of looking down Elm street at the intersection of Durham street looking west.

Residents of Sudbury like to complain about the lack of parking spaces and the lack of accessibility for the urban core of their city. This is an interesting conversation because what most people do not realize is that there are too many parking spaces Downtown. The city has become a vast sea of 9 ft by 18ft spaces, occupied during the day and lying vacant at night. These have become very uncomfortable spaces for the pedestrian. The lots are populated on prime real estate in the city that could be better used for architectural interventions or as public spaces for the community. Every time there is a sporting event Downtown the community goes back to the discussion that we need more parking. The city does not need additional parking. It needs an alternative mode of transportation to compete with the automobile.

This leads to the question, how can movement (transit, human and natural) create a basis for placemaking at an architectural and urban scale to promote connection and density in the city of Greater Sudbury and its Downtown core?

2.0 PLACE

2.1 The North

2.2 Nickel City

2.3 Current and Future of Sudbury

What does the term “Place” mean? This is a question that has been asked many times in architecture classes. The dictionary gives various definitions for the term depending on the context. Place can be “a physical environment or space”, a physical surrounding or atmosphere.” It can be a particular region, location, building, or an occupied space.² These definitions are all correct in defining the term. Within the context of architecture, place takes on a larger meaning than the simple definition. “Place is a where dimension is formed by people’s relationship with physical settings, individual and group activities, and meanings.”³ The term encompasses specific geographic information, social, cultural, political, historic, economic, and environmental elements that make the place. To understand Sudbury as a place, we must analyse and understand the context that makes the city of Greater Sudbury what it is. This chapter begins with an analysis of the North or Northern Ontario and how the land was colonized throughout history, creating the communities known today. We then can look at the scale of the Nickel City, the creation of Sudbury as an urban space, through various industrial practices and the community that came from this. The development of Downtown Sudbury throughout time and the changes that it’s seen has lead into what we know today as the City of Greater Sudbury and specifically looking at the scale of Downtown Sudbury and its current and future infrastructure.

2 “Place.” Meriam Webster. Accessed March 23rd, 2022. <https://www.merriam-webster.com/dictionary/place>

3 Mina Najafi, Mustafa Kamal Bin Mohd Shariff. The concept of Place and Sense of Place in Architectural Studies. World Academy of Science, Engineering and Technology 56. 2011. 1100

2.1 THE NORTH

To understand Sudbury as a place, we must first recognize its position within the North. Northern Ontario is quite a unique area. Together, the North-eastern and Northwestern regions have a land area close to 800 thousand square kilometers, just over 88 percent of the 908 thousand square kilometres that make up the province of Ontario. While the region covers such a wide area, the population is only roughly 780 thousand, just under 6 percent of the population of the province. With a surface area per capita of roughly 1 square kilometer per person, Northern Ontario is seen by many as a natural landscape compared to the urban expanse of the south.

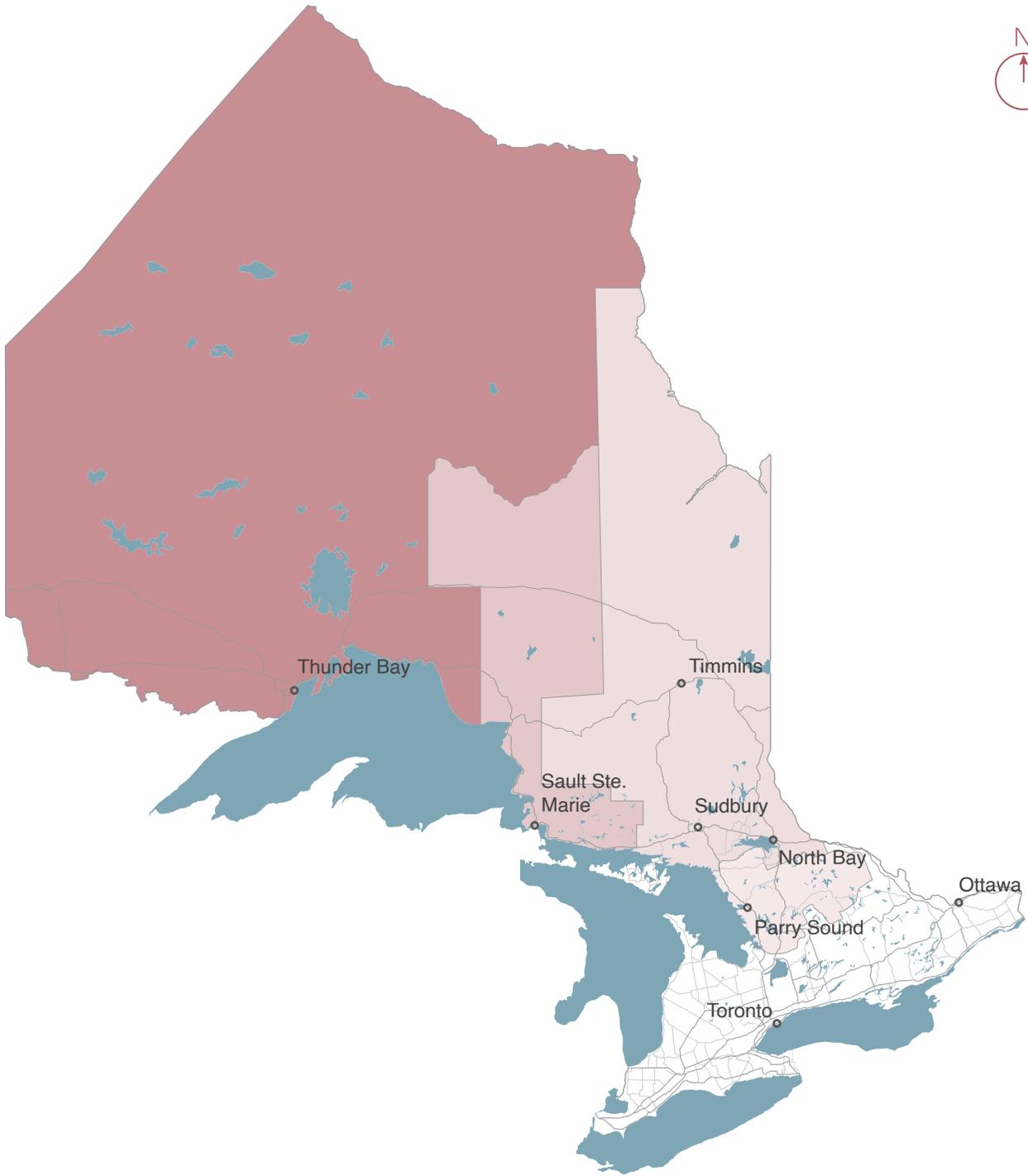
The history of the North begins with the original inhabitants, the Indigenous people. The land that makes up Northern Ontario was and continues to be the home of several Indigenous Nations. The region of Kapuskasing (Treaty 9) and Kenora (Treaty 3) are located on the traditional land of the Ojibway/Chippewa peoples. The region of North Bay (Robinson-Huron and Upper Canada Treaties) is located on the traditional land of the Nipissing First Nation Anishnabe. The region of Sault Ste. Marie (Robinson-Huron Treaty) and Thunder Bay is on the traditional land of the Anishnaabeg. Sudbury

(Robinson-Huron Treaty) is on the traditional land of Atikameksheng Anishnaabeg and Wanipatae First Nation. Finally, the area of Timmins (Treaty 9) is on the traditional land of the Ojibway/Chippewa, Oji-Cree, Mushkegowuk (Cree) and Algonquin people.⁴

Northern Ontario's history of development is directly related to the aims of the Canadian Government to claim and control the territory. The first settlements that were created in Northern Ontario were part of the trade system of European Nations which had come to "explore" and claim the land. Thunder Bay and Sault St Marie were small settlements or forts which had been constructed in strategic locations in Northern Ontario. These settlements provided locations for Europeans to trade and acquire the resources that Indigenous peoples had, specifically pelts and skins which were highly valuable in European markets. These settlements were strategic to create fortified positions in these territories to lay claim to the land from Indigenous peoples and the neighboring country of the United States which at the time was considered an enemy to the British and eventually Canada.⁵

4 "Traditional Territory Acknowledgements in Ontario." Ontario Federation of Labour Aboriginal Circle.

5 Deborah Cowen. "Following the infrastructures of empire: notes on cities, settler colonialism, and method." *Urban Geography*, 41:4, 469-486



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Figure 04 Map of Northern Ontario

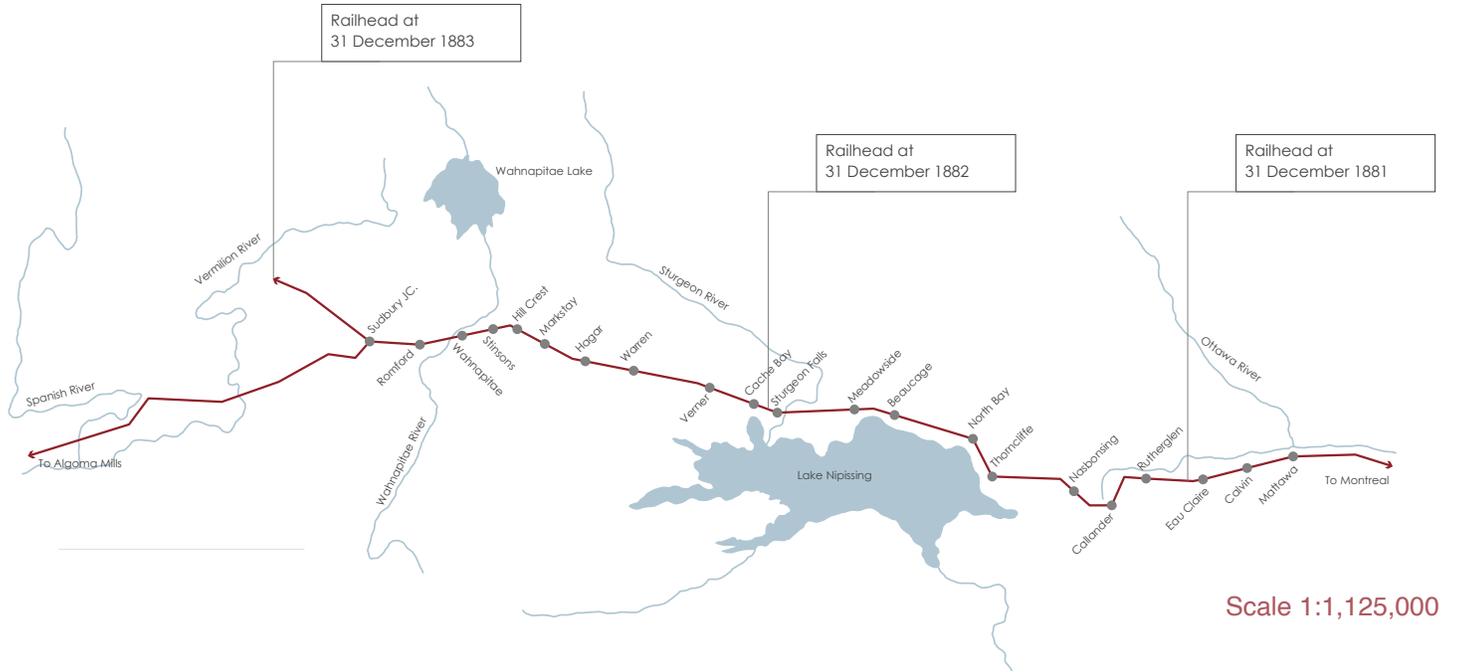


Figure 05 Canadian Pacific Railway Track Built 1881-83

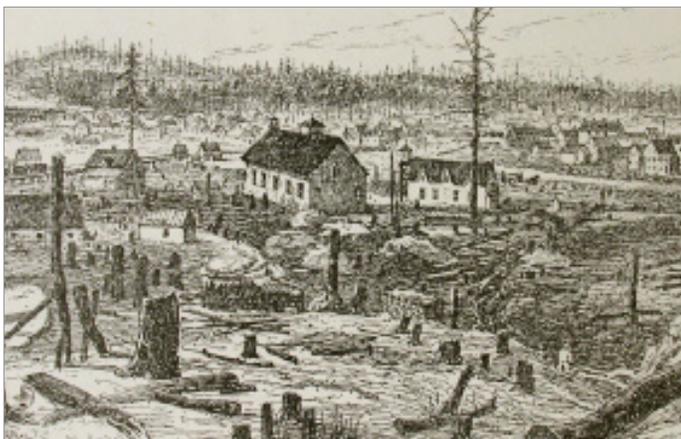


Figure 06 The Canadian Pacific Railway: Sudbury Junction, to Algoma and Gold Mines



Figure 07 An Early View of the Town of Sudbury circa 1894

The Canadian Pacific Railway began construction of a transcontinental rail infrastructure in the 1880's. The goal was to construct a rail line that would connect the city of Montreal, an established hub of Canada, to Port Moody on the outskirts of Vancouver, BC.⁶ The construction of this railway would take decades, and would aid the Canadian Government in the control, through infrastructure, of the land. The railway is a reminder of the western colonialist occupation of the territory of Northern Ontario. Railroad colonialism is a term used by Manu Karuka, the author of *Empire's Tracks* which reframes the history of the transcontinental railroad systems created in North America from the perspective of Indigenous peoples.⁷ The term railroad colonialism defines a historical process in which the infrastructure created "Enabled the circulation of colonial commodities throughout the imperial core, and even more importantly, they made the large-scale export of financial and industrial capital to the colonies a central feature of global capitalism."⁸

Industry, specifically the mining industry, has also played a formative role in the development of Northern Ontario. The logging industry originally had dominated in the early part of the nineteenth century, with several small settlements serving local timber operations. However, the forest industry required few permanent settlements with the cut-and run method of the practice.⁹ Mining on the other hand has shaped the area, with communities such as Timmins, Cobalt, Kirkland Lake, Elliot Lake and Sud-

bury, all being created around mining practices¹⁰. This industry has a direct relation with the narrative of Northern Ontario and its development of urban centers and continues to have an impact on the economy of these communities. These communities are dependant on "wildly fluctuating, mostly foreign, markets."¹¹ And they have "experienced the quintessential 'boom and bust' existence. Eras of rapid economic and population growth have been punctuated by sudden collapses, frequently of devastating severity, characterized by high unemployment, out-migration, and general business failure."¹² This industry, bad as it may be to the land that it imposes on, to the climate and climate change, and to the communities and people it has harmed, has created the landscape that we know today as Northern Ontario.

10 Ibid.

11 Ibid.

12 Ibid.



Figure 08 Slag Pour at Inco Mine

6 Britannica. "The Transcontinental Railway." Britannica. Accessed November 22nd, 2021. <https://www.britannica.com/place/Canada/The-transcontinental-railway>

7 Manu Karuka. *Empire's Tracks: Indigenous Nations, Chinese Workers, and the Transcontinental Railroad*. Oakland, California: University of California Press. 2019. 40

8 Manu Karuka. *Empire's Tracks: Indigenous Nations, Chinese Workers, and the Transcontinental Railroad*. Oakland, California: University of California Press. 2019. 40

9 Matt Bray. Ashley Thomson. *At the End of the Shift: Mines and Single-Industry Towns in Northern Ontario*. ix

2.2 NICKEL CITY

The Nickel City is a nickname given to the City of Sudbury for its role in industry and mining. Over 1.8 billion years ago a meteorite struck the earth leaving large deposits of copper, nickel, and platinum ore in a large crater.¹³ What we now call the Sudbury Basin, this crater shaped the natural landscape of the area of Greater Sudbury and has defined human interaction with the land. The Sudbury area has been the nickel capital of the world since the late 1800's.¹⁴ The development of the city and surrounding communities have a direct relationship to the industrial activities of the area.

The area was first populated in 1883 as a Canadian Pacific (CP) railway camp under the name *Sudbury Junction*.¹⁵ This original camp was located in the Downtown Sudbury area. As a rail camp it was a quickly constructed settlement of wood buildings with the essential needs of a camp. The buildings that were constructed consisted of boarding houses for the working class, a hospital, church, jail, and a telegraph building for communications.¹⁶ The camp

13 Olivia W. Saarien. *From Meteorite Impact to Constellation City: A historical Geography of Greater Sudbury*. Waterloo, Ontario: Wilfred Laurier University Press. 2013. 6

14 Natural Resources Canada and Ontario Geological Survey 2015. "Discovery Site of Sudbury Mining Camp, Greater Sudbury: Birthplace of a world-famous mining district." GeoTours Northern Ontario series. 1

15 Ray Thoms, and Kathy Pearsall. *Sudbury*. Erin, Ont: Boston Mills Press, 1994.

16 James Allen. "Survey of Sudbury 1884." C.P.R. Sudbury Historic Map Collection. Sudbury Public Library.

shown in Figure 09 was built beside the rail line and was surrounded by Nolan and Tion (which is now Junction) creeks. Analysing the historic maps of the original settlements, we can understand that the rivers played an important role in the decision to construct in this area. Being located close to a fresh water source is important for a camp site. River water is generally safer to drink as it is constantly moving giving bacteria less chance to grow. Once the construction of the rail had moved past the area, the population of the community fell from 1,200 to 300 as the workers moved to the next camp location.¹⁷ This rapid change would not last long however, with the discovery of metal ore in the Sudbury Basin. The discovery of this ore was made in 1883 during the construction of the railway, and within a year the first mining claims were created around the area.¹⁸ Many people moved to the region in search of employment in the mining industry, including a large working force of immigrants.¹⁹

Between the late 1800's and early 1900's the area saw massive growth in population and urban development. Mines quickly began populating the area around the Sudbury Basin, finding the richest soil on the border of the crater. The industrial revolution

17 Ray Thoms, and Kathy Pearsall. *Sudbury*. Erin, Ont: Boston Mills Press, 1994. 50

18 Ibid. 50

19 Ibid. 68

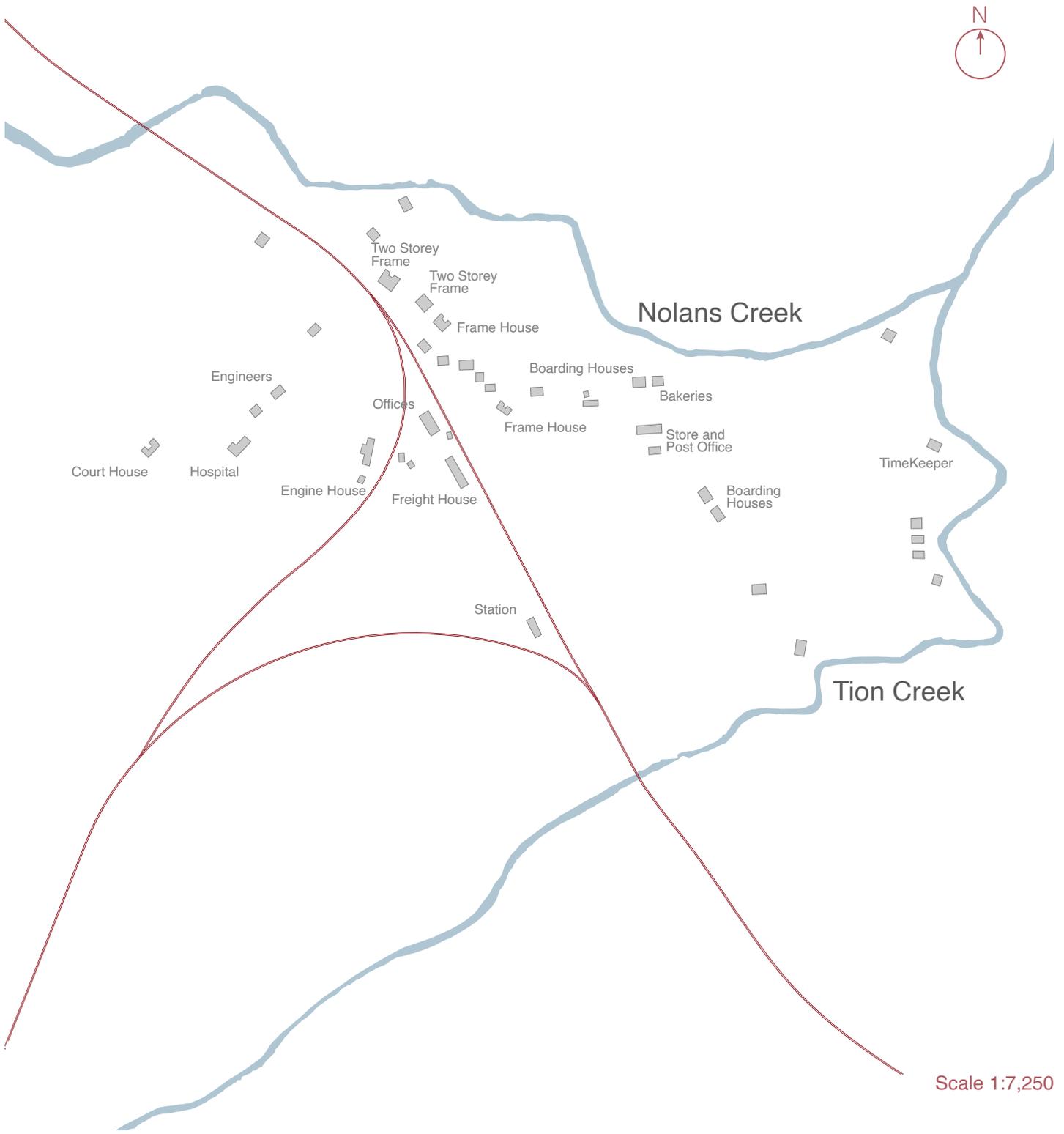


Figure 09 Sudbury Junction Plan: Survey of Sudbury 1884

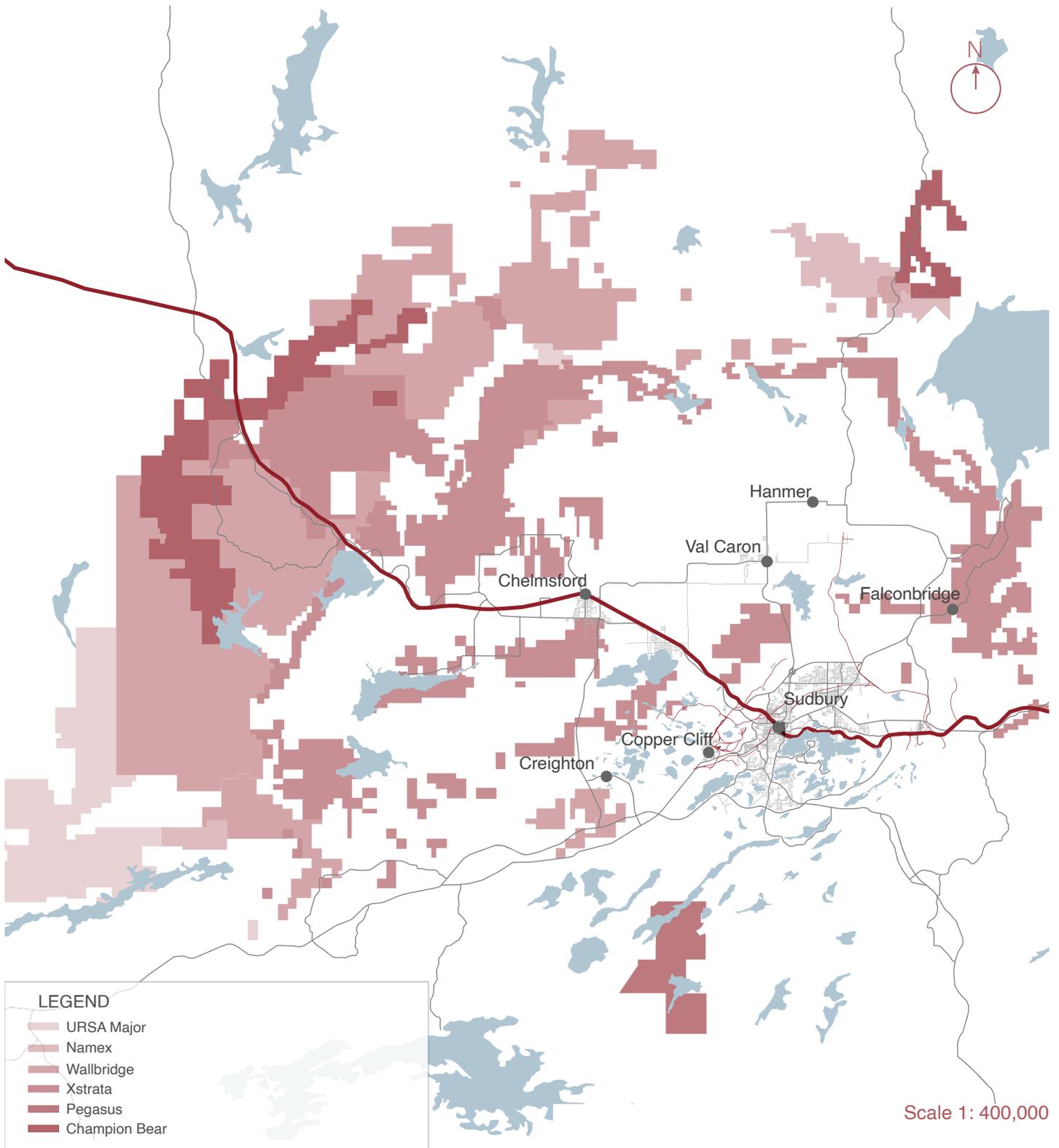


Figure 10 Sudbury Area Mining and Exploration Activity

that was taking place in western society kept the demand for ores and metals high. Nickel-steel alloys were experimented with in 1889, discovering the high-quality material of stainless steel. The demand for nickel continued to increase during the First World War, with the use of stainless steel in battleship armour plating for British and United States Navy. “By 1910, the Sudbury area was producing 80% of the world’s nickel.”²⁰ Mines located around the basin would create camps for the workers. These camps were small communities with boarding houses for workers and small houses constructed for families. Many of the camps were self sufficient having general stores, hospitals, schools, community centers and other amenities. As industry continued to grow, the camps would grow with it creating smaller communities around the city of Sudbury like Copper Cliff, Creighton, and Falconbridge. These communities would eventually become the surrounding towns we know today as the Greater Sudbury area. The city prospered during wartime but had to find and create new markets to continue extraction and production. In the 1920’s the automo-

20 Natural Resources Canada and Ontario Geological Survey 2015. “Discovery Site of Sudbury Mining Camp, Greater Sudbury: Birthplace of a world-famous mining district.” GeoTours Northern Ontario series. 1



Figure 11 Canada Creosoting Company on Copper Cliff Road in Sudbury, Ontario

bile industry was growing and could use the nickel that was extracted for nickel plating. The material was also used for household objects like kitchen hardware, cables, telephone, and radio devices. The Second World War picked up where the First left off in the context of extraction and production, creating a second wave of war-time industrial demand. In the post-war era of the mid-twentieth century there was a larger shift from war-production to industrial development. The late 40’s and 50’s was a period of urban development for all western society.²¹ There was a need for something to take over the wartime industry that had kept countries and specifically cities afloat. Cities became the target of industry, with the creation of taller buildings and advancement in construction technology.²² There was also the mass migration of the North American population to the newly created suburban community. Suburbs were being constructed around all major urban hubs, dividing the landscape into perfectly even lots and cookie cutter buildings were constructed in the masses.²³ To connect these suburbs to the urban

21 Jon C. Teaford. “Urban Renewal and its Aftermath.” *Housing Policy Debate*. 11:2. 2000. 443

22 Jon C. Teaford. “Urban Renewal and its Aftermath.” *Housing Policy Debate*. 11:2. 2000. 448

23 Charles Montgomery. *Happy City: Transforming Our*



Figure 12 Inco Smelter, The Sudbury Superstack

centers they were constructed around large investments in transportation infrastructure, namely roads and highways, prioritizing other forms of Industry that had taken part of the burden of wartime industry collapse, the automobile.²⁴

By the 1950's, Sudbury's population had grown from close to 2000 at the start of the century, to just over 42 thousand. The city was populated by people of British, French, Italian, Ukrainian, Polish, German, Finnish, and Chinese descent, and a small population of Indigenous peoples living within the city.²⁵ Many of these people were workers employed by industry. Neighborhoods had been developed over time to house this growing population with the Gatchell, Donovan and Borgia neighborhoods being constructed. The city of Sudbury became the center for the surrounding communities and the Downtown began evolving from a town to a city.

Lives Through Urban Planning. Anchor Canada a division of Penguin Random House. 2013. 75

24 Ibid. 74

25 Olivia W. Saarien. *From Meteorite Impact to Constellation City: A historical Geography of Greater Sudbury*. Waterloo, Ontario: Wilfred Laurier University Press. 2013. 73



Figure 13 Borgia Street Buisnesses

In the post-war era of the mid-twentieth century, there was the 'Urban Renewal Movement' within city planning, architecture, and other design professions that shape the urban fabric of our cities. This movement was thanks to the post-war industrial boom, which saw the creation of the suburb, the demolition of 'outdated' urban spaces and destruction of the "inner city", and the mass production of the automobile causing the expansion of highway infrastructure and the prioritization of the automobile within the urban fabric of cities. Activist and theorists like Jane Jacobs fought against this idea of urban renewal, which saw the destruction of heritage and community hubs to create new infrastructure.²⁶ This movement was widespread across North America, Sudbury being included. In the 1950's the city of Sudbury created their "Urban Renewal Project" the site being Downtown Sudbury.²⁷ This saw the destruction of the existing fabric of the city, and the removal of the Borgia Street neighborhood. This was a neighborhood inhabited by a marginalized community, with a large immigrant population. The neighborhood was demolished, and the urban fabric of

26 Jane Jacobs. *The Death and Life of Great American Cities*. Random House. 1961

27 Ray Thoms. Pearsall, K. *Sudbury*. Erin, Ont: Boston Mills Press. 1994.

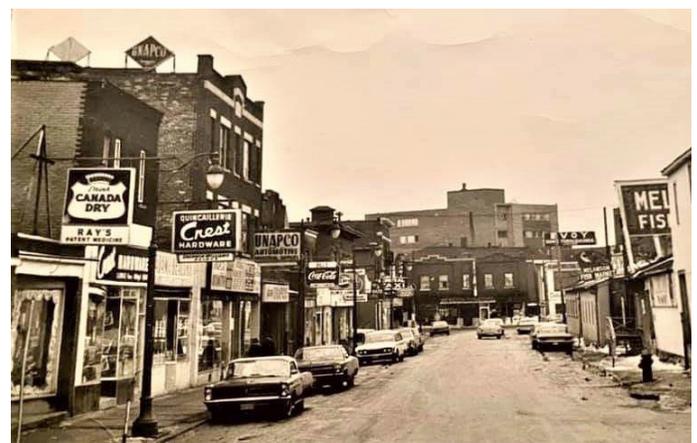


Figure 14 A View of Borgia Street in 1965

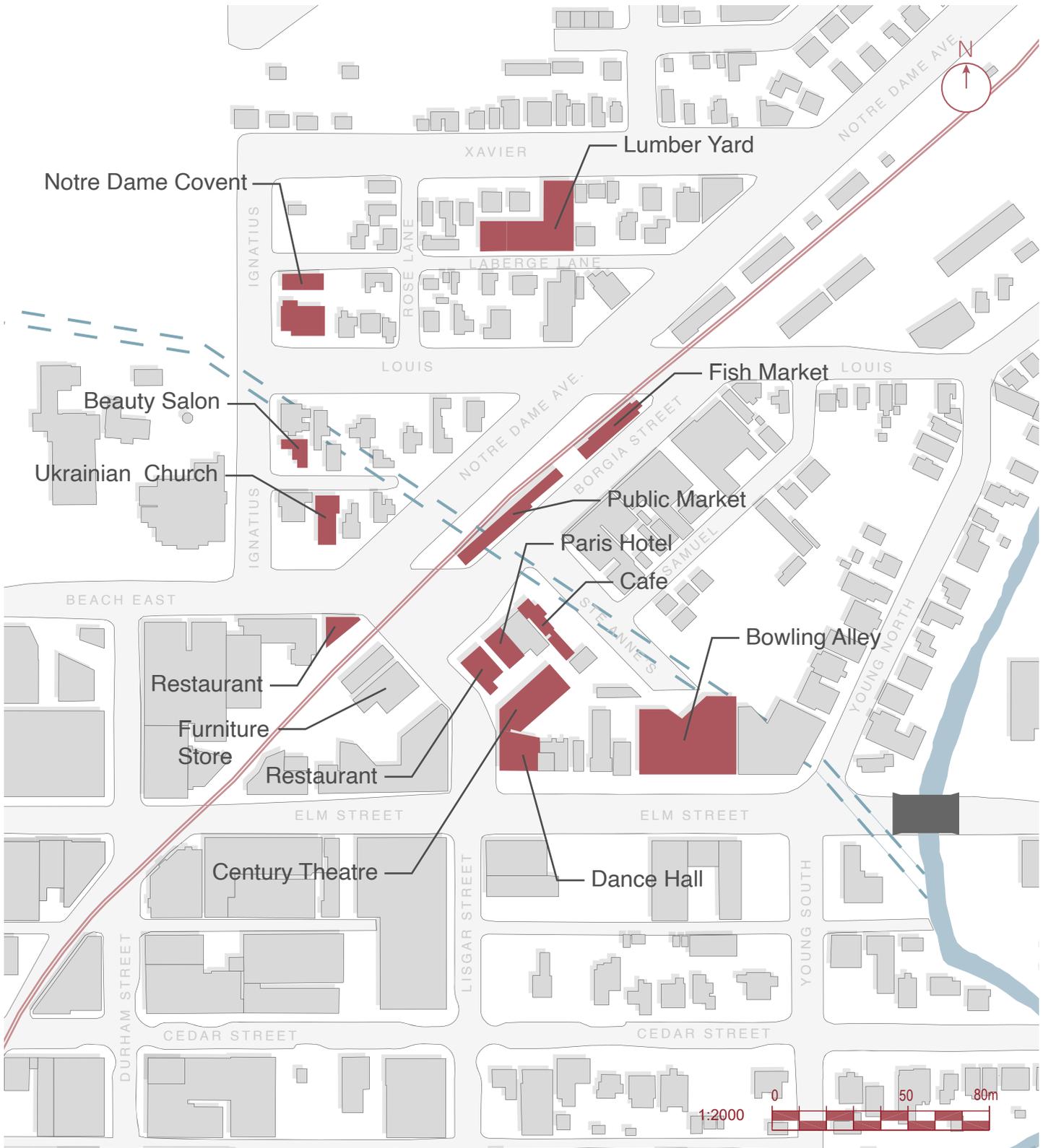


Figure 15 Borgia Street Neighborhood, Sudbury ON, 1957

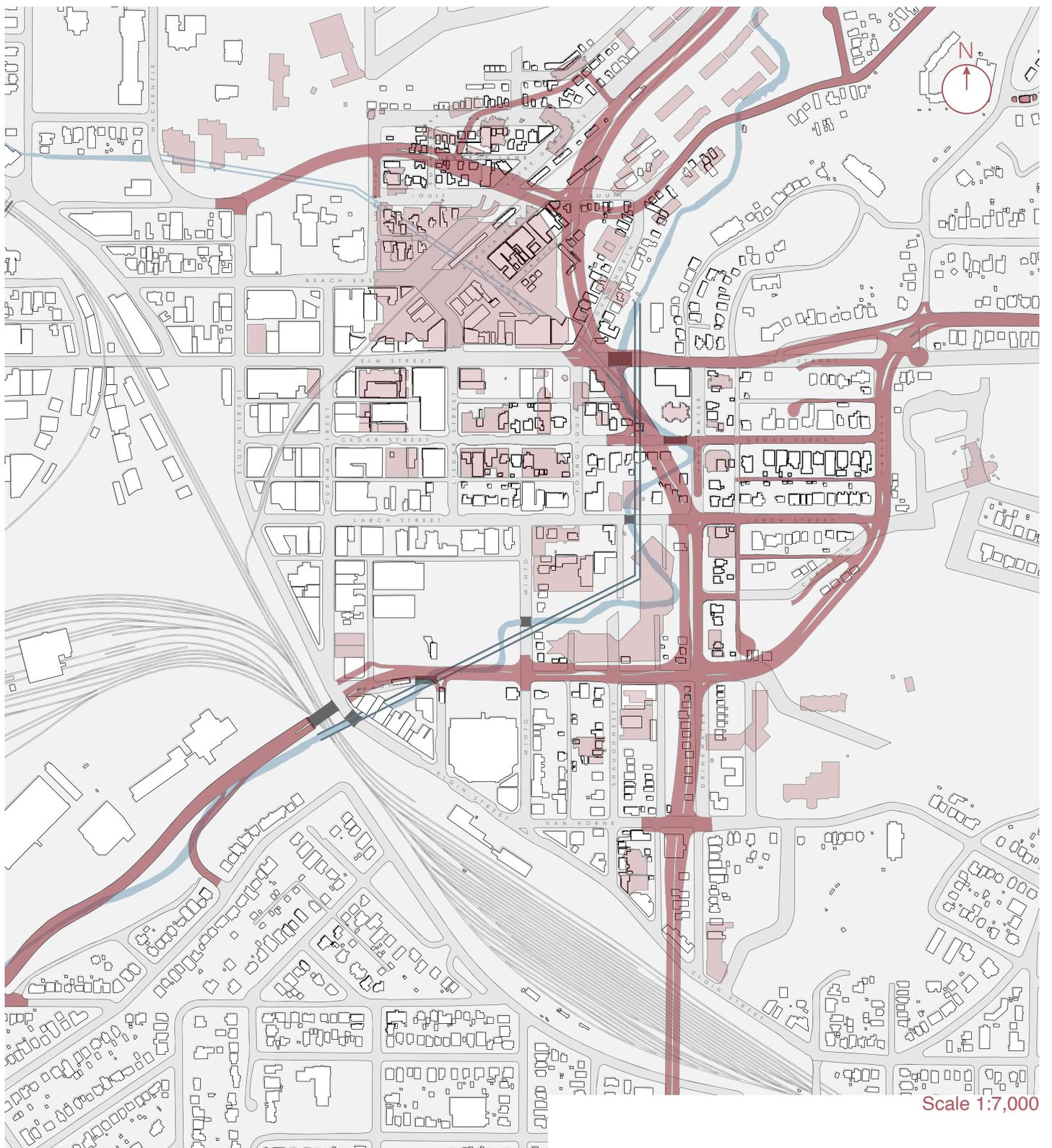


Figure 16 Urban Renewal Project Outline

the city was ripped apart, to design for the automobile. The Notre Dame Bypass was the priority of the project, connecting Paris Street to Notre Dame, and expanding this road system.²⁸ The Kingsway and Brady Street were also redesigned in this process, facilitating automotive movement through the city.²⁹ The Bridge of Nations was constructed to reconnect Downtown Sudbury to south of the rail corridor.³⁰ On the land where the Borgia Street community once was, a large new commerce center and shopping mall was created which is now Elm Place. This center over the years has declined as a retail hub of the city, as shopping centers continue to develop in New Sudbury and other locations on the city's perimeter. Tom Davies Square was eventually constructed in the 1970's in an attempt to create a new civic center that would rejuvenate the urban core. These spaces that replaced once historic buildings that shaped the community of Downtown, do very little to respond to

28 The Sudbury Planning Board. "City of Sudbury Borgia Area Urban Renewal Project Study: Site Analysis." City of Sudbury. April 1965. Sudbury Historic Map Collection. Sudbury Public Library.

29 Ibid.

30 The Sudbury Planning Board. "City of Sudbury Borgia Area Urban Renewal Project Study: Site Analysis." City of Sudbury. April 1965. Sudbury Historic Map Collection. Sudbury Public Library.



Figure 17 Removing the Borgia Street CP Rail

the community. The urban renewal project can be seen as a failed attempt, resulting in the demolition of communities, residential space, historic buildings, and the Nolan and Junction creeks in Downtown.

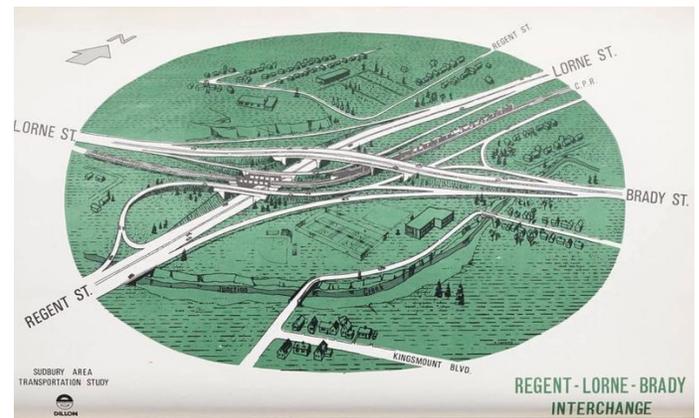


Figure 18 Regent, Lorne and Brady Interchange Conceptual Design

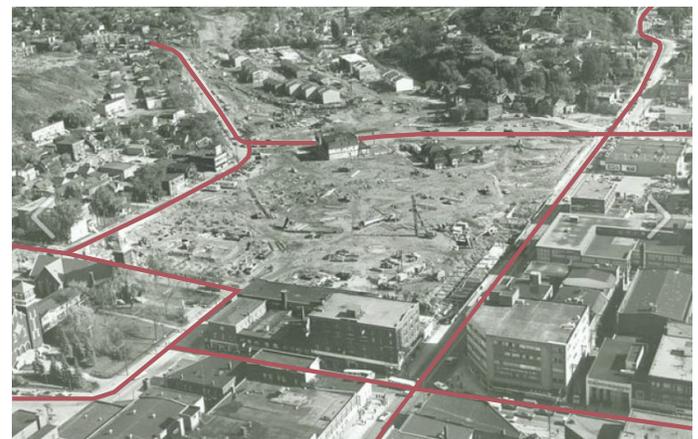


Figure 19 Urban Renewal Project Construction

2.3 SUDBURY CURRENT AND FUTURE

Today, Sudbury is the largest urban center in Northern Ontario. It is the capital of Northeastern Ontario and functions as the service hub for its 550,000 residents. Sudbury has grown considerably, and with the amalgamation of the municipality into the City of Greater Sudbury in 2001 the city now has a population of 164,000.³¹ The area continues to act as an industrial and mining hub of Canada but has expanded its story past that of industry. “The city has evolved into a dynamic and diverse regional capital that functions as the service hub for all northeastern Ontario.”³² The city continues to develop its cultural, political, economic, social and community narrative with the goal of becoming a more vibrant urban center.

The cities most iconic landmark continues to be the Vale Superstack, an industrial megastructure and second tallest free-standing structure in Canada that

³¹ Statistics Canada. “Census Profile, 2016 Census: Sudbury Population Centre.” Government of Canada. 2016

³² “History: About Greater Sudbury.” The City of Greater Sudbury. Accessed December 18th, 2021. [https://www.greater-sudbury.ca/live/about-greater-sudbury/history/#:~:text=The%20City%20of%20Greater%20Sudbury,for%20Sudbury%20\(November%201999\).](https://www.greater-sudbury.ca/live/about-greater-sudbury/history/#:~:text=The%20City%20of%20Greater%20Sudbury,for%20Sudbury%20(November%201999).)

has been a part of the Sudbury skyline for almost 50 years.³³ This landmark however will eventually be removed after it was taken out of service in 2020 and new more efficient 450-foot stacks were constructed.³⁴ The Superstack is not the only symbol of Industry that remains in the city of Sudbury. The city is known for its industrial heritage that continues to make up the urban narrative. The communities that were once mining camps created around the Sudbury Basin are part of the City of Greater Sudbury, acting as suburban developments. The railway which was the origin of the city continues to run through the heart of Sudbury, now only being used for industrial and freight purposes since the reduction of pedestrian rail in area in the 1990’s.³⁵ The Downtown core remains heavily impacted by the activities of the urban renewal project of the mid-twentieth century. Six lane by-passes create infrastructural barriers between Downtown and the surrounding neighborhoods. The Canadian Pacific Railyard continues to operate within the context of Downtown creating an island of Industry in the heart of the city. The urban core itself remains in pieces, with immense voids of parking lots where existing

³³ “About Vale: Superstack.” Vale S.A. Accessed April 18th, 2022. <http://www.vale.com/canada/en/aboutvale/communities/sudbury/pages/superstack.aspx>

³⁴ Ibid.

³⁵ “When VIA Rail was almost cut in half.” CBC Archives. Accessed October 20th, 2021. <https://www.cbc.ca/archives/when-via-rail-was-almost-cut-in-half-1.5272314>



Figure 20 View of Science North from Bell Park Walkway along Ramsey Lake



Figure 21 St. Joseph's Hospital Mural

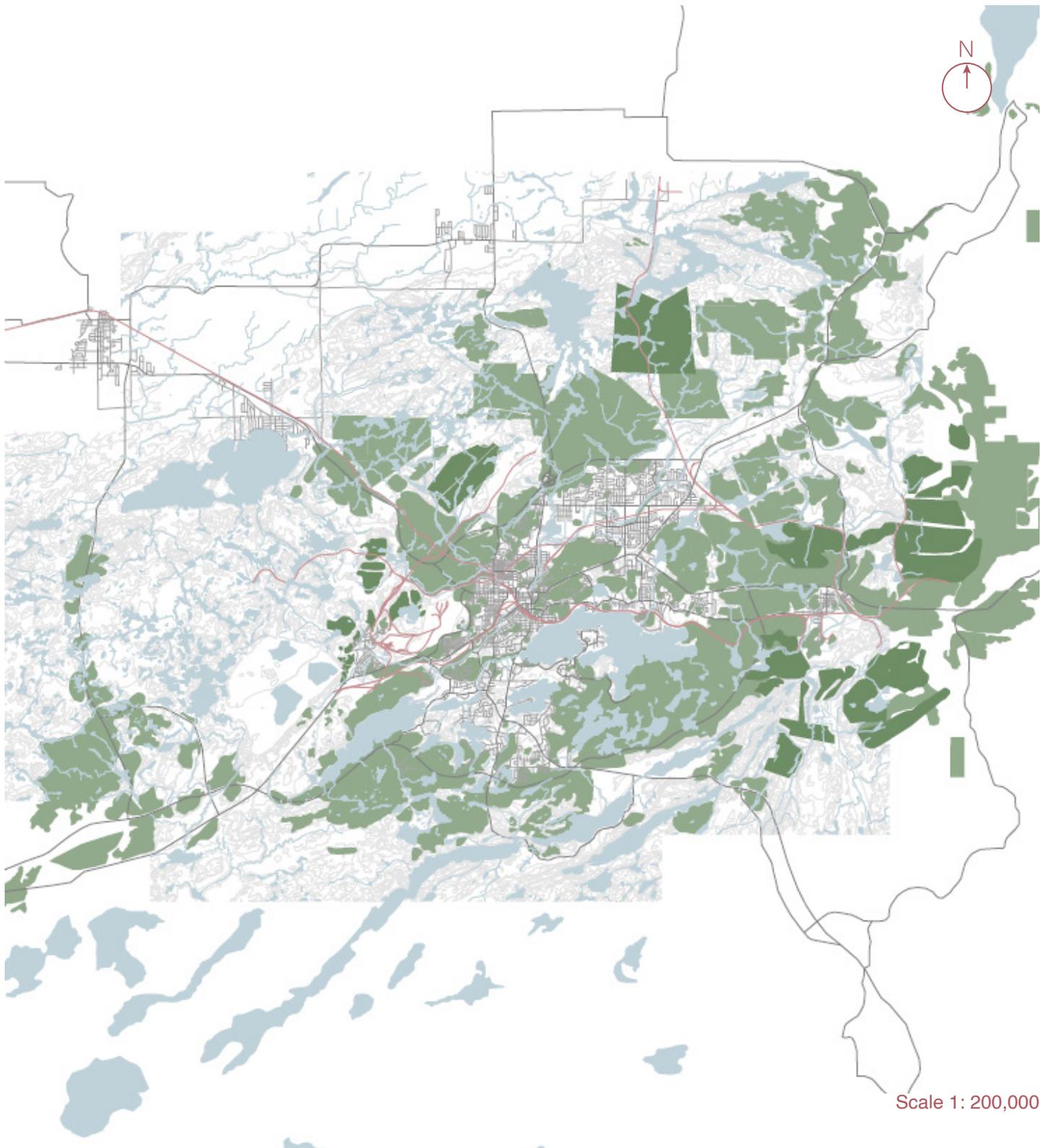


Figure 22 City of Greater Sudbury Regreening Map

buildings once stood, destroyed by the urban renewal movement to prioritize the automobile.

Sudbury's Industrial practices throughout the city's history has left scars on the landscape. "Early logging, forest fires and a century of mining activities resulted in a bleak landscape of black, scarred and barren rock, denuded forests and acidified lakes and streams."³⁶ In 1971 the Apollo 16 astronauts used the Sudbury Basin as a training space for the moon landing, with the barren landscape and lack of vegetation being an ideal location to mimic the terrain of the moon.³⁷ In 1978 the city began a regreening initiative aiming to bring back vegetation that had been killed off from acidic precipitation and heavy metal pollution, a result of open roasting pits and inadequate treatment of industrial emissions.³⁸ Over

³⁶ Nicola Ross. *Healing the Landscape: Celebrating Sudbury's Reclamation Story*. Sudbury, ON: Vegetation Enhancement Technical Advisory Committee, 2001. 8

³⁷ "50 years ago, astronauts trained in Sudbury, Ont. For the Apollo 16 moon mission." CBC News. Accessed April 22nd, 2022. <https://www.cbc.ca/news/canada/sudbury/apollo-astronauts-trained-sudbury-50-years-ago-1.6096556>

³⁸ Olivia W. Saarien. *From Meteorite Impact to Constellation City: A historical Geography of Greater Sudbury*. Waterloo, Ontario: Wilfred Laurier University Press. 2013. 262



Figure 23 Celebration of 40th Year of Sudbury's Regreening Program

the next 44 years the program has been able to plant a total of 9,998,074 trees and 497,313 shrub/understory trees.³⁹ This program has been led by a group of government organizations, educational institutions, community conservation associations, local businesses, national brands, and industrial corporations working together to change the visual narrative of the city.⁴⁰

The commitment for change in the city of Greater Sudbury does not stop with the regreening effort. The city has taken many steps towards making Sudbury a more liveable place. Community engagement and advocate groups have been working with the city to design and provide public infrastructure that will respond to the community's needs. Coalition for a Liveable Sudbury is a grassroots organization which aims to create "A more liveable and sustainable community through advocacy, research, action, support and connection."⁴¹ The group supports

³⁹ VETAC, City of Greater Sudbury. "Regreening Program 2021 Annual Report." City of Greater Sudbury. 2021. 7

⁴⁰ Ibid . 2

⁴¹ "Coalition for a Liveable Sudbury." Coalition for a Liveable Sudbury. Accessed December 10th, 2021. <https://www.liveablesudbury.org/>

projects involved in regreening efforts and protecting our clean water sources.⁴² They advocate for an increase in public transportation and active transportation infrastructure and promote action on climate change.⁴³ The Sudbury 2050 design competition is another example of the community participating in the reimagining Downtown Sudbury and providing visions for its future. Sudbury 2050 was a design competition led by the McEwen School of Architecture in collaboration with the community.⁴⁴ There were 100 design ideas submitted from teams around the world with 13 finalists chosen to present their ideas to the jury and community.⁴⁵ Many of the finalists shared similar views for the future of Sudbury, including regreening efforts and densifying downtown with various types of community programs and residential spaces.⁴⁶ These groups represent the voice of the people, and their views on how the city should develop community infrastructure.

The city has realized mistakes that were made during the mid twentieth century, which led to the decline of Downtown Sudbury. The Downtown Master plan was created by the city and various consultants in 2011 was intended to reimagine the urban fabric of Downtown Sudbury, proposing several urban planning and architectural changes.⁴⁷ Among this proposal was the McEwen School of Architecture

42 Ibid.

43 Ibid.

44 "Sudbury2050 Design Competition." Sudbury 2050. Accessed December 10th, 2021. <https://sudbury2050.ca/>

45 Ibid.

46 Ibid.

47 Urban Strategies Inc., J.C. Williams Group, IBI Group, Yallowega Bélanger Architecture. "Downtown Master Plan: Executive Summary." The City of Greater Sudbury. March 2012.

and Place des Arts centers which have been constructed within the past decade and have begun to rejuvenate and reshape the urban fabric of the city. Both facilities help to bring community back into the Downtown acting as educational, cultural, and social hubs. The McEwen School of Architecture campus is also associated with another city project, the Elgin Street Greenway. This project proposes a green-belt that runs between Elgin Street and the CP rail corridor. The path begins at the school of architecture campus at the corner of Elm and Elgin Street, traveling through Downtown Sudbury and ending at the canoe club on the edge of Bell Park. The aim of this project is to bring back elements of nature into the urban fabric of Downtown. It provides community programming spaces and non-motorized movement infrastructure. It also creates a connection with Downtown and Bell Park on Ramsey Lake giving the city a connection with Nature that is currently lacking. The city has many plans aiming to revitalize Downtown Sudbury. However, until these projects can be realized, the urban core remains in pieces, a shell of city that is in need of rejuvenation.



Figure 24 McEwen School of Architecture, Downtown Sudbury, ON



Figure 25 Place des Arts, Downtown Sudbury, ON

3.0 MOVEMENT

- 3.1 History of Movement in Sudbury
- 3.2 Current Narrative of Movement in Sudbury
- 3.3 Movement Oriented Development

Movement plays an important role in the shaping of the built environment. How people move through a space often determines how the built environment is created. This chapter analyses the history and current narrative of movement in the City of Greater Sudbury and within its Downtown core. Having an understanding of the existing and historic paths of movement in the city, this thesis can begin to build off of these systems using the framework of movement-oriented development to reimagine the city as a more walkable, accessible urban center.

3.1 HISTORY OF MOVEMENT IN SUDBURY

Sudbury's history began with the rail. It is ingrained in the narrative of the city from its creation in 1883 as Sudbury Junction, a station along the newly constructed CP railway. Before the age of the automobile, rail was the primary mode of transportation to travel to Sudbury. The Canadian Pacific Railway Company had routes connecting the city of Sudbury to large urban hubs like Toronto, Ottawa and Montreal. Sudbury was the gate to the west, with routes that would connect Eastern Canada to its Western Provinces and Territories. The Historic Canadian Pacific Railway Station was constructed in 1929 in Downtown replacing the original station structure. In 1978 VIA Rail which was created a year before by Prime Minister Pierre Elliott Trudeau and the Canadian Government, took over the passenger operations of both the Canadian National and the Canadian Pacific Railways.⁴⁸ In 1990 VIA rail operations were cut almost in half while the country continued to provide massive subsidies to air and highway travel. This resulted in the loss of frequent rail traffic to Sudbury from the rest of the province and country. Passenger rail routes were diverted outside of the Downtown, leaving the historic station virtually empty.

48 "A ride through our history." VIA Rail Canada. Accessed October 22nd, 2021. <https://corpo.viarail.ca/en/company/our-history>

Rail movement in the city was not limited to the railway either. In 1903 the Sudbury Copper Cliff Suburban Electric Railway Company was created. The company was responsible for the construction of a rail track connecting Copper Cliff and the Inco mine to Downtown Sudbury.⁴⁹ This allowed residents of Sudbury the opportunity to find work in the mines without the need to live on company property. For a brief period, Copper Cliff and Sudbury juggled the role of regional urban hub. Once the streetcar was constructed, Sudbury truly developed into the center

49 John D Knowles. *The Sudbury Streetcars: The Sudbury-Copper Cliff Suburban Electric Railway Company*. 1st ed. Nickel Belt Rails, no. 3. Sudbury, Ont., Canada: Nickel Belt Rails, 1983. 7



Figure 26 Sudbury Streetcar on Elm Street

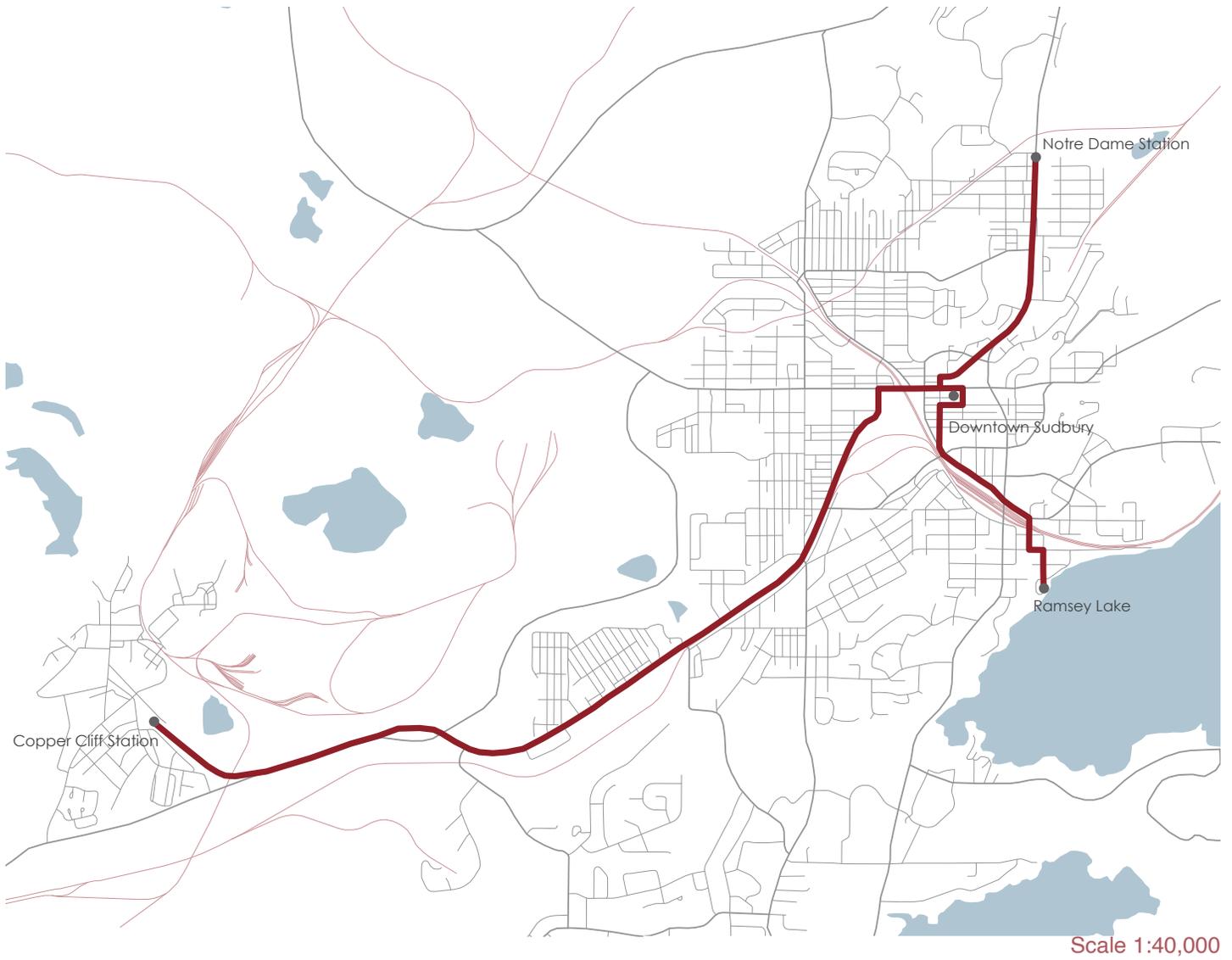


Figure 27 Sudbury Copper Cliff Suburban Electric Railway Map

of the area. It allowed residents living in Copper Cliff the ability to travel to Sudbury for financial services with the banking institutions being constructed in the Downtown area. It also strengthened the social importance of Downtown. Being outside of company property, bars, restaurants, and other amenities became generators of a social language of the Downtown. The SCCSER began operations in 1915 when the construction of the route had finished, and the first streetcar began regular service on November 11, 1915.⁵⁰ It ran regularly for decades, until the beginning of the end in the late 1940's. In 1947 due to an electric power shortage, operations had to decrease to only rush hour, with buses taking over

50 Ibid.



regular service.⁵¹ In 1948, the connection to Ramsey Lake was lost due to construction and sewer work on Lisgar Street, when the contractor paved over the block of rails, with the mistake never being rectified.⁵² This route was ultimately replaced by a bus. Finally on October 1st, 1950, the last streetcar ran leaving Copper Cliff traveling to Downtown Sudbury at the end of the workday.⁵³ The company continued under the name for another year until finally being replaced altogether by Sudbury Bus Lines Limited.⁵⁴

Sudbury's history of movement includes non-motorized forms of transportation and were the most popular in the beginning of the city's history. With such a large population of immigrants moving to the area in search of work in the mines, many cultural traditions were brought with them to Sudbury. There was a large population of Finnish descent who moved to the region, bringing with them traditional foods, the sauna, the Summer Festival, and sports like cross-country skiing. Cross-country skiing became a popular mode of movement in Sudbury during the winter. Many of the Finnish population during the 1930's began expanding the sport of cross-country skiing at a competitive level.⁵⁵ "If they

51 Ibid. 14

52 Ibid. 14,15

53 Ibid. 15

54 Ibid.

55 Oiva W. Saarinen. *Between a Rock and a Hard Place: A Historical Geography of the Finns in the Sudbury area.* Wilfred

Figure 28 Construction of SCCSER

were working miners, they often practised at night with the aid of their miners' lamps."⁵⁶ Various clubs were created over time in the area as the sport continued to increase in popularity in the city. Sudbury became known as a cross-country skiing city with many national competitors hailing from the nickel city.⁵⁷ Although the sport evolved in the city through competition and clubs, the practice of cross-country skiing remained popular as a leisure hobby, and as a mode for people to get around the city during the harsh winter months.

The history of movement in Sudbury does not stop at forms of human movement but also includes natural paths as well. Water plays an important role in the development of Sudbury. When looking at historic maps of the creation of Sudbury Junction, you can see the importance of water is highlighted showing only 3 paths in the landscape. First is the railway and the overall reason for the creation of the settlement. The other two are forms of natural movement in Nolan and Tion (Junction) creeks. When creating

Laurier University Press. 1999. 226

56 Ibid. 226/227

57 Ibid. 227

a settlement or encampment, fresh water is an important consideration. Running water and rivers are widely known as better sources for fresh water as moving water naturally filters itself, not letting bacteria grow. Therefore, it is safe to assume that the site chosen for this camp which eventually became the city of Sudbury, was influenced by this movement of water. The appreciation for this water was lost in the expansion of the urban grid and infrastructure. Between the early 1900's and the 1950's sections of the Nolan's creek were covered; the water being rerouted to underground culverts. By the 1950's the creek was completely hidden, allowing for more land parcels in the uptown area. In the 1950's the urban renewal wave came to Sudbury, and the Junction creek was lost in a wave of new development. Both creek systems were converted to underground culverts. Now there is no evidence of any natural form of movement through Downtown Sudbury.

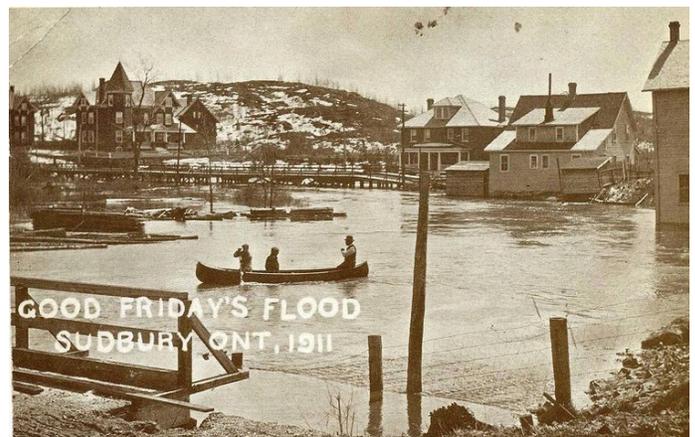


Figure 29 Good Friday Flood, Sudbury Ont. 1911

3.2 CURRENT NARRATIVE OF MOVEMENT IN SUDBURY

tion with passenger rail transportation. After the loss of the streetcar in the 1950's and the VIA rail cutbacks of the 1990's, rail movement has condensed to mainly industrial and freight transportation. The last remaining passenger rail routes connected to the city are the VIA transcontinental rail line and the Chapleau/ White-River Cart. The VIA transcontinental route runs from the eastern city of Toronto to the western city of Vancouver. The route runs through Sudbury, but has been diverted around the city, stopping at a station on the boarder of the city limits in the industrial area of Garson. With the station being located so far from any urban space, it is difficult for the population of Sudbury to access, and it deters any passenger to stop and experience the city. The last route to continue to run from the Downtown historic CP rail station is the VIA rail Sudbury-White River cart. This is a small passenger train that runs once a week from Sudbury to White River, with several stops at more secluded communities in North-eastern Ontario. There are no platforms along this route other than in Sudbury, Chapleau and White River. The rest of the stops are simply at road intersections where the train can stop if requested.

Active transportation involves several forms of

movement within the human scale and is generally defined as forms of movement that are non-motorized. Since the mid-twentieth century, Sudbury's urban fabric has been oriented around the automobile and motorized forms of movement. Before this period, automobiles were still used within the city but less popular. Not every household had an automobile because they were more expensive at the time and had not been mass-produced like we saw during the post-war industrial boom. Many people used a combination of public and active transportation. It wasn't until this post-war industrial boom that automobiles were mass-produced with some households even having multiple vehicles. Within the narrative of Downtown Sudbury, there was a moment in time where up until the 1970's, the pedestrian had priority over the landscape. The Durham Street amble scrambles were intersections located along Durham Street where the pedestrian was permitted to travel where they wanted, the most popular being at the corner of Elm and Durham Streets. Durham street was a hub for pedestrian movement through the urban space, and we can begin to see this reemerging today. With the Covid-19 pandemic, restaurants were in need of outdoor space to seat customers. Patios were built into the streets to allow

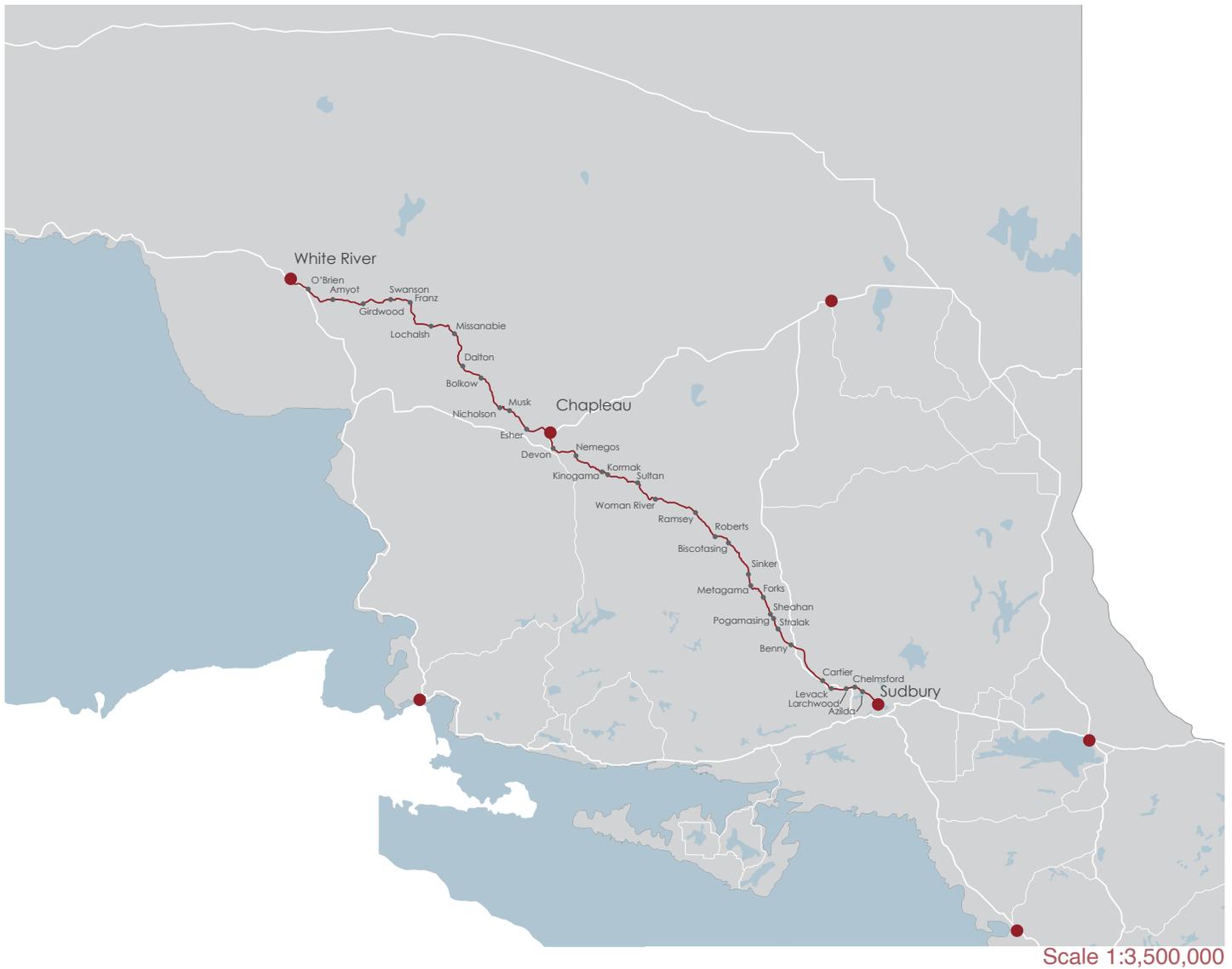


Figure 30 VIA Rail Sudbury - Chapleau/ White River
Cart Route

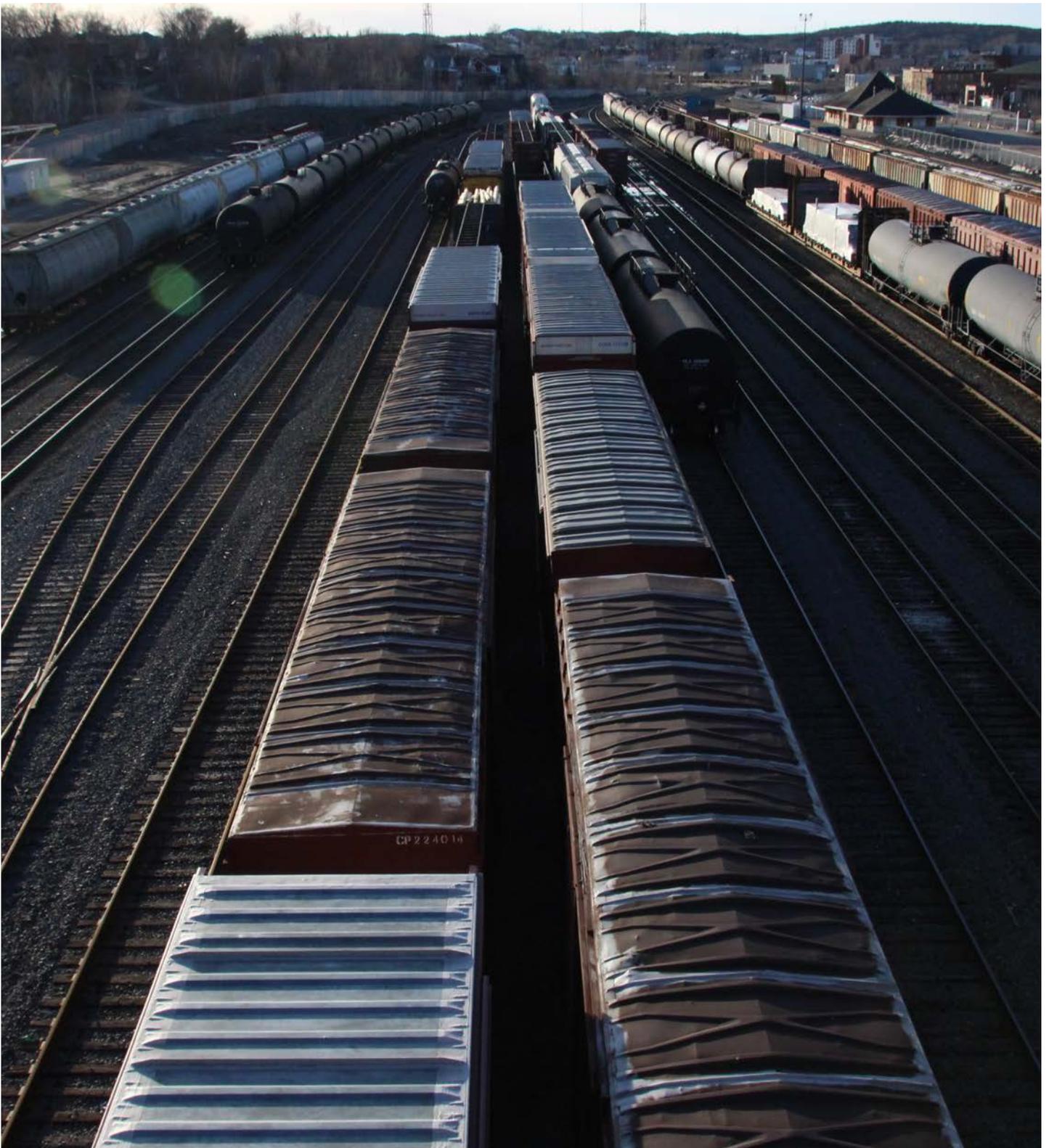


Figure 31 Downtown Sudbury Railyard

for outdoor seating. This saw the pedestrian take back the urban fabric of this city from the automobile. Events such as Up Here Festival are located within Durham Street and create temporary public infrastructure oriented around the human scale.

Non-Motorized movement is also becoming more popular with the increase in infrastructure within the city. The Rainbow Routes Association is a Non-Profit in Greater Sudbury which promotes and expands non-motorized trail networks around the city.⁵⁸ Rainbow Routes encompasses over 30 wilderness and urban trails around the Greater Sudbury area.⁵⁹ Coalition for a Liveable Sudbury is also another non-profit community led group that promotes a variety of community initiatives. This includes the expansion of bike lane infrastructure in the city and conservation actions aiming to save Sudbury green space and hiking trails.⁶⁰

58 “About Rainbow Routes.” Rainbow Routes Association. Accessed November 24th, 2021. <https://www.rainbowroutes.com/>

59 Ibid.

60 “Coalition for a Liveable Sudbury.” Coalition for a Liveable Sudbury. Accessed December 10th, 2021. <https://www.liveablesudbury.org/>

The non-profits and community engagement groups work with the city of Greater Sudbury to promote the maintenance and expansion of active transportation infrastructure.

As a Northern Ontario city, Greater Sudbury experiences longer and colder winter months than the average city in Ontario. This results in the city embracing winter sports and activities to stay entertained during the extended winter. Snowmobiling is a very popular pass-time and mode of transportation of many residents in the Greater Sudbury area outside of the urban core. Many people enjoy skating as an activity and form of movement in the city. The Ramsey Lake skating path is a popular outdoor attraction for many in the city. The city maintains the 1.5km strip of ice through the winter months and the McEwen School of Architecture first year warming huts add a sense of community and place on the temporary path. There are also several accounts of community members that use this path as a source of transportation from the Health Sciences and Laurentian University area to the Downtown core. Cross-country skiing has also remained a very popular pass-time in the area. There are 6 different Nordic skiing clubs in the Greater Sudbury area, the Bio Ski XC Ski Club, the Capreol XC Ski Club, the Laurentian Nordic Ski Club, Kivi Park, Onaping Falls Nordic Ski Club, and the Walden XC Ski Club. Altogether there is over 130 km of trails in the area that are maintained.⁶¹ There are even rumors of a Laurentian University professor that cross-country skis across Ramsey Lake to get to work everyday. As a hobby, the activity is quite popular but there is room for growth as a mode of everyday transportation during the winter months.

61 “Cross Country Skiing.” Discover Sudbury. Accessed April 2nd, 2022. <https://discoversudbury.ca/things-to-do/activities/cross-country-skiing/>

3.3 MOVEMENT ORIENTED DEVELOPMENT

This analysis of Sudbury’s history and existing narrative of movement leads to the question, how can the city begin to expand and provide more alternatives to automotive movement? There is existing infrastructure that the city can use and historic paths the city can bring back into the urban narrative to promote the use of public transportation. Current activities and non-motorized forms of movement that are present in the city can be increased to orient the urban fabric back to the human scale.

TOD which stands for Transit Oriented Development is an urban planning theory and movement that promotes the integration of public transit systems into the urban fabric of modern cities. Cities are beginning to invest in urban rail projects to provide sufficient forms of public transportation within urban centers. “There is a potential for a substantial market for a new form of walkable, mixed-use urban development around new and existing rail or rapid bus stations.”⁶² The urban planning theory of Transit-Oriented Development brings to discussion the expansion of development of transportation systems namely public transport, and how we can develop around these paths.

62 Hank Dittmar. Gloria Ohland. *The New Transit Town: Best Practices in Transit-Oriented Development*. Washington, Covelo, London: Island Press. 2004. 3

“Transit-oriented development is regional planning, city revitalization, suburban renewal, and walkable neighborhoods combined. It is a cross-cutting approach to development that can do more than help diversify our transportation systems: it can offer a new range of development patterns for households, businesses, towns, and cities.”⁶³

Implementing this idea of Transit Oriented Development into the city planning, would have the potential to provide residents with reduced house-hold transportation expenses, reduce environmental impacts and provide an alternative to traffic congestion. Rail movement plays a part in the discussion of TOD. Commuter rail, Light Rail Transit (LRT) and Streetcar/Tram systems have grown in popularity within the urban fabric of cities. These rapid forms of movement reduce automotive congestion and provide an alternative to the automobile and the highway/road infrastructure. Cities can develop around these platforms or stations, providing opportunity for densification, affordable housing, and community programs to rejuvenate these areas.

This thesis builds off the urban planning theory of TOD but aims to expand the concept to include all forms of movement, not just public transit systems. Urban development can be influenced by various

63 *Ibid.* xi

forms of movement infrastructure. Affordable housing and other residential development can be built around paths of movement such as biking lanes, walking paths, cross-country skiing trails and natural paths like rivers. This redefining of the term allows for a broader range of movement to be promoted and celebrated in the urban fabric of cities.

The primary goal of Transit Oriented Development and Movement Oriented Development is to create paths of movement to promote urban density and development. “Successful TOD needs to be mixed-use, walkable, location-efficient development that balances the need for sufficient density to support convenient transit service with the scale of the adjacent community.”⁶⁴ This can be achieved by placing commercial, housing, jobs, parks, and civic uses within close proximity to transit and other paths of movement. There is also an emphasis on “making public spaces the focus of building orientation and neighborhood activity.”⁶⁵ Integrating public transit

64 Hank Dittmar. Gloria Ohland. *The New Transit Town: Best Practices in Transit-Oriented Development*. Washington, Covelo, London: Island Press. 2004. 4

65 Ibid. 5

systems and promoting walkable and non-motorized forms of movement into a site can increase the value of the land for both residential and urban spaces. This makes land within the city connected to these systems more desirable for homeowners/residents and for developers.

One of the main reasons for the use of the term Movement Oriented Development is to include all forms of movement into the theory, not just human but natural movement as well. With the hardscapes and urban grid of modern city’s, natural movement is often forgotten, ignored or covered in the pursuit of urban development. The term daylighting has been used within the past several decades within the planning, engineering, and architectural professions. Daylighting is used to describe the act of revealing or resurfacing water systems that had previously been removed or hidden by infrastructure.⁶⁶ During the rapid urban development of the twentieth century, those designing rarely gave thought to the treatment of urban streams “subjecting them to human manipulation through diversion, straightening and/or confinement in underground channels.”⁶⁷ Since the late twentieth century, the use of the term daylighting has grown in popularity within the design and environmental community. Daylighting is a tool that is now being used within various urban settings, bringing back covered water systems through cities, and through it promoting natural public spaces and wildlife habitat which had once been lost in infrastructure.

66 Luna Khirfan. Megan Leigh. Peck. Niloofar Mohtat. “Digging for the truth: A combined method to analyze the literature on stream daylighting.” *Sustainable Cities and Society*. 59. 2020. 1

67 Ibid.

4.0 INTERMODAL CONNECTIONS CREATING PLACEMAKING

4.1 Intermodal Connections

4.2 Taking Back the Streets

4.3 Placemaking

In the second chapter the idea of place was discussed. We defined place location being formed by people's relationship and interaction with the physical setting. The third chapter focused on movement and how people and nature travel through a space. We can now begin to understand how these two concepts merge analysing how place and movement interact and work with each other. The title of this thesis includes the terms Intermodal Connections and Placemaking. This chapter will define both these terms and how they can be used as a tool to rejuvenate the City of Greater Sudbury and its Downtown core.

4.1 INTERMODAL CONNECTIONS

Intermodal is the act of using various forms of transportation to get from point A to point B. Driving to the grocery store can technically be considered intermodal because you are using more than one form of transportation, the automobile and walking. The context this thesis uses for Intermodal, however, is the use of various transportation systems excluding the automobile.

Intermodal connections is the overall system of various paths of movement and transportation and the focal points or nodes that are connected to this system.

By excluding the automobile, a more sustainable, people-oriented network of movement can be created. A well-connected Intermodal system within an urban center can reduce the toll of traffic congestion within our cities. By investing in public transit infrastructure and non-motorized paths an alternative to the car can be provided to the population. The automotive industry continues to act as the national and global primary form of transportation. Globally the automotive industry accounts for 74.5 percent of transportation emissions. As gas prices continue to rise the world searches for a solution to the automotive issue. The world is investing in electric cars and

trucks to provide a more sustainable energy source. This does not however respond to the problem of urban automotive congestion and the toll automotive infrastructure has on our cities. By implementing better public transit infrastructure and human-oriented forms of movement the city can begin to respond to its true user, the people.

Nodes are an important aspect of the idea of Intermodal connections. Without the node, there is no connection point for the intermodal movement. The term node is derived from the writing of Urban Planner and Architect Kevin Lynch. In the book *The Image of the City*, Lynch uses the chapter 'The city Image and Its Elements' to deconstruct what a city is, using several terms to describe the elements that make up the urban fabric of a city.⁶⁸ One of the elements Lynch analyses within an urban context is the Node. The Node is described in the text as "the strategic foci into which the observer can enter, typically either junctions of paths, or concentrations of some characteristic."⁶⁹ These are points within the urban fabric of the city were forms of movement can

68 Kevin Lynch. *The Image of the City*. 33. print. Publication of the Joint Center for Urban Studies. Cambridge, Mass.: M.I.T. Press, 2008. 72

69 Ibid.

meet, or concentrations of movement can be found. The node also acts as a temporary break in movement, which heightens the user's attention to their surroundings. The most successful nodes within an urban ecosystem provide some sort of interaction or programming to celebrate this junction. There are different scales of nodes, depending on the scale of the observer. For example, a small-scale node could be a bench where two walking paths meet. It could be a station associated with a transit system. It can be a park, a plaza, or a building in an urban context where there is heavy traffic intersecting. It can also be an entire city, where roadways and transportation infrastructure connect with one another.

4.2 TAKING BACK THE STREETS

One of the problems that has been briefly discussed earlier in this text is the abundance of urban space allocated for parking in Downtown Sudbury. Since the start of the Urban Renewal Movement in the mid-twentieth century, Sudbury has seen a loss of urban density in its Downtown core, with many buildings being torn down over time and these vacant lots being turned into parking space for the downtown commuter. The urban landscape today is left with holes that are underutilized but provide endless possibility for the rejuvenation of the city.

This section looks at various examples of theoretical frameworks and movements within city planning that promote orienting city spaces to the human scale.

These movements combat previous urban planning ideologies that have been imposed on cities in North America and the world prioritizing the automobile in urban spaces. The original voice for people-oriented cities is

Jane Jacobs, a celebrated author, theorist, and activist who had a major influence on the urban planning and architecture professions. She was a dominant figure in the battle against the urban renewal movement in large cities across North America. Jacobs fought against city planners that wanted to tear

down existing neighborhoods to create mega-highway systems in inner cities. Her article *Downtown is for People* is a critical analysis of many urban centers around North America and how Downtown's can be reimaged to create a more livable community space. She also expands the analysis to elements of the city, such as the focal point. The focal point, very similar to Kevin Lynch's "Nodes" is an important part of the city as she states, "All truly great Downtown focal points carry a surprise that does not stale."⁷⁰ Jacobs believed that cities should be designed for people, supporting the idea of pedestrian streets separated from roadway infrastructure and giving back the urban landscape to the people.

Today we can see a shift in ideologies in the way we design and interact with urban spaces. Rather than continue to prioritize mega infrastructure and machines within our cities, planners, architects, and other design professionals have shifted their perspective to designing urban spaces that respond to the human scale and prioritize people within the urban fabric. The Happy City theory is one example of this shift in ideology. Happy city is a movement as

⁷⁰ Jane Jacobs. "Downtown is For People." *The Exploding Metropolis*. University of California. 1958. 129

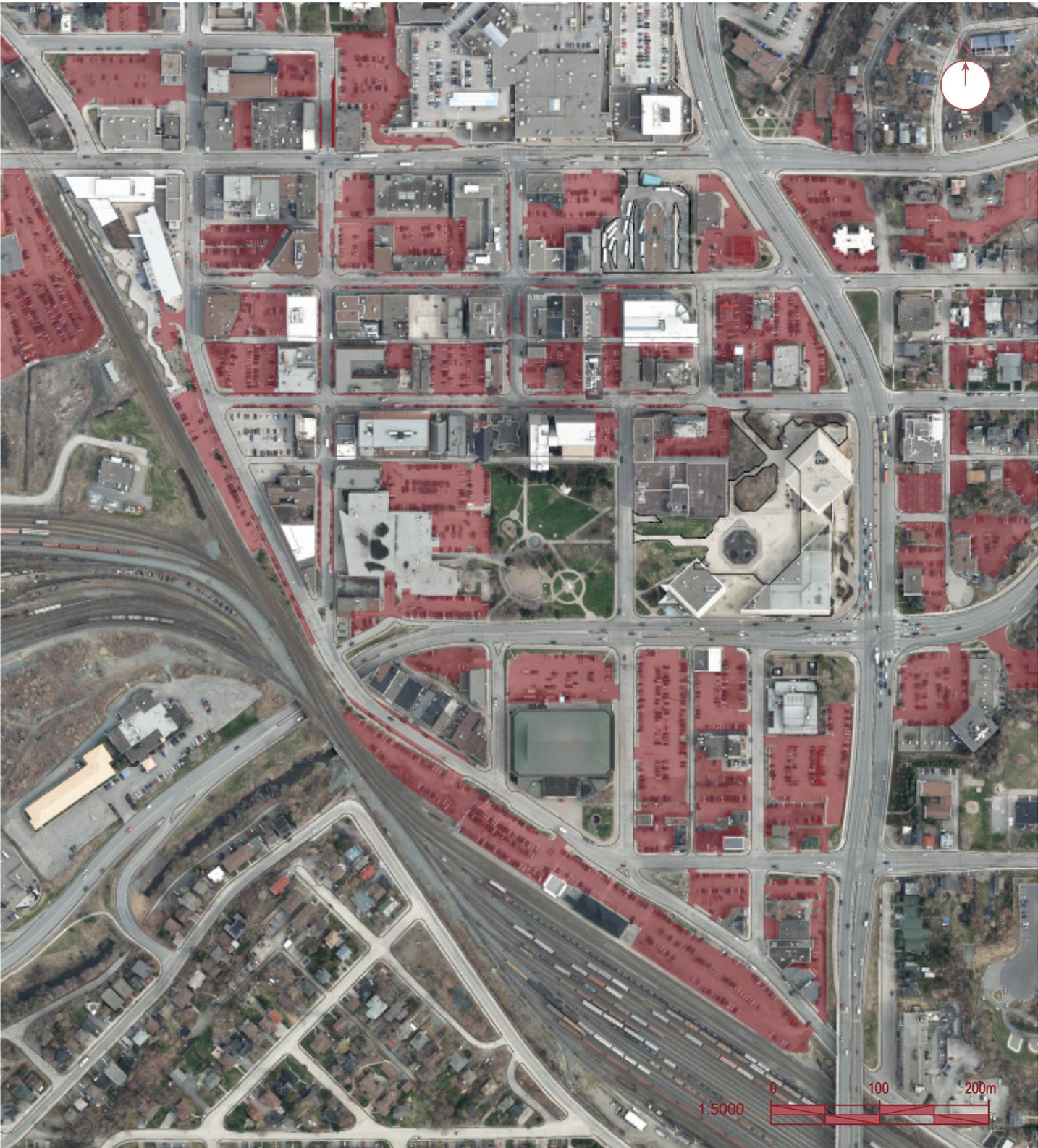


Figure 32 Downtown Sudbury Parking Space Map



Figure 33 Up Here Festival on Durham Street

well as a design practice. Led by the Canadian writer and urbanist Charles Montgomery, the group aims to promote wellbeing and sustainability within the narrative of city planning.⁷¹ The theory falls heavily on the idea of non-motorized urban spaces, replacing the priority of the city that was once focused on the automobile and machine with the priority to the pedestrian and user.⁷² This includes investing in infrastructure updates, street widening and closing allowing walkers other forms of active transportation to thrive.⁷³ It also promotes other forms of transportation namely public transport to support active transportation infrastructure, which cannot succeed without a form of rapid movement. This idea has become prominent today, with cities around North America beginning to heal the scars that had be left by the urban renewal movement.

Taking over automotive infrastructure for public space is not a new concept in Sudbury. There have been several instances where programs, events and

71 “Happy Cities.” Happy City Consultants. Accessed December 10th, 2021. <https://thehappycity.com/>

72 Charles Montgomery. *Happy City: Transforming Our Lives Through Urban Planning*. Anchor Canada a division of Penguin Random House. 2013. 17-29

73 Ibid.

initiatives began populating space that was once allocated to vehicles. Up Here Festival is an annual event that brings together muralists, musicians, and installation artists to “transform downtown Sudbury into an urban art gallery.”⁷⁴ The event is widely embraced by the community providing a space to celebrate local artistic talent and culture. Every year the event takes over Durham Street in Downtown creating a temporary pedestrian roadway in the heart of the city. The site is filled with temporary stages and installations that the user can interact with, creating a unique landscape through tactical urbanism. In the summer months local farmers markets populate vacant parking lots in Downtown and other various locations around Greater Sudbury. These pop-up events occupy land traditionally intended for vehicles and temporarily reorient them to public spaces. The McEwen School of Architecture has also held events like Parking Day which had design build projects populate parking spaces around the Downtown with various forms of public programing. This form of tactical urbanism begins the narrative in the city on how we should be using our urban spaces to promote more community driven programing.

74 “Up Here.” Up Here Festival. Accessed March 23rd, 2022. <https://uphere.com/>

4.3 PLACEMAKING

Expanding on the definition of place discussed at several points throughout this thesis, placemaking is the act of creating a sense of place within a designated area. It is the act of integrating design strategies to create a place within a community. Placemaking “Facilitates creative patterns of use, paying particular attention to the physical, cultural, and social identities that define a place and support its ongoing evolution.”⁷⁵ Successful placemaking projects act as incubators or innovation and sustainable development.⁷⁶ The goal is to create a community and cultural ecosystem with various programs and activities that the user can participate in. This would bring people who normally would not inhabit the site to populate the area and promote continued growth.

There is an existing role for movement in the process of placemaking. Analyzing the Place Diagram created by the Project for Public Spaces we can see that one of the four key elements to placemaking is

75 “What is Placemaking?” Project for Public Spaces. Accessed March 28th, 2022. <https://www.pps.org/article/what-is-placemaking>

76 Francois Duconseille. Raymond Saner. “Creative Placemaking for Inclusive Urban Landscapes.” *The Journal of Arts Management, Law, and Society*. 2020, Vol. 50, No. 3. 138

access and linkage. A place must be accessible to the public through forms of public transit and there is an emphasis on walkability and proximity and continuity for the users. Movement also plays a role in placemaking, in that nodes or focal points that are associated with paths of movement provide spaces for uses and activities.

The market has always been a focal point for community engagement for the city. A place where farmers from the surrounding area can bring their produce to an urban center bringing to the food to the people. Where local artists and makers can bring their goods to showcase to people and sell their goods. “Nowadays with all our consumer needs just a click away, the notion of ‘real time’ shopping in physical shops is under threat.”⁷⁷ The market is one of few retail spaces that is surviving and thriving. This is because the market is not just a location for collecting goods, it is an experience of social interaction and community engagement.⁷⁸ Many markets are temporary, farmers markets usually only operate

77 Brian Gallagher. “Market Day: How architects are interpreting the modern marketplace.” Roca Gallery. Accessed March 10th, 2022. <http://www.rocagallery.com/market-day>

78 Ibid.

WHAT MAKES A GREAT PLACE?

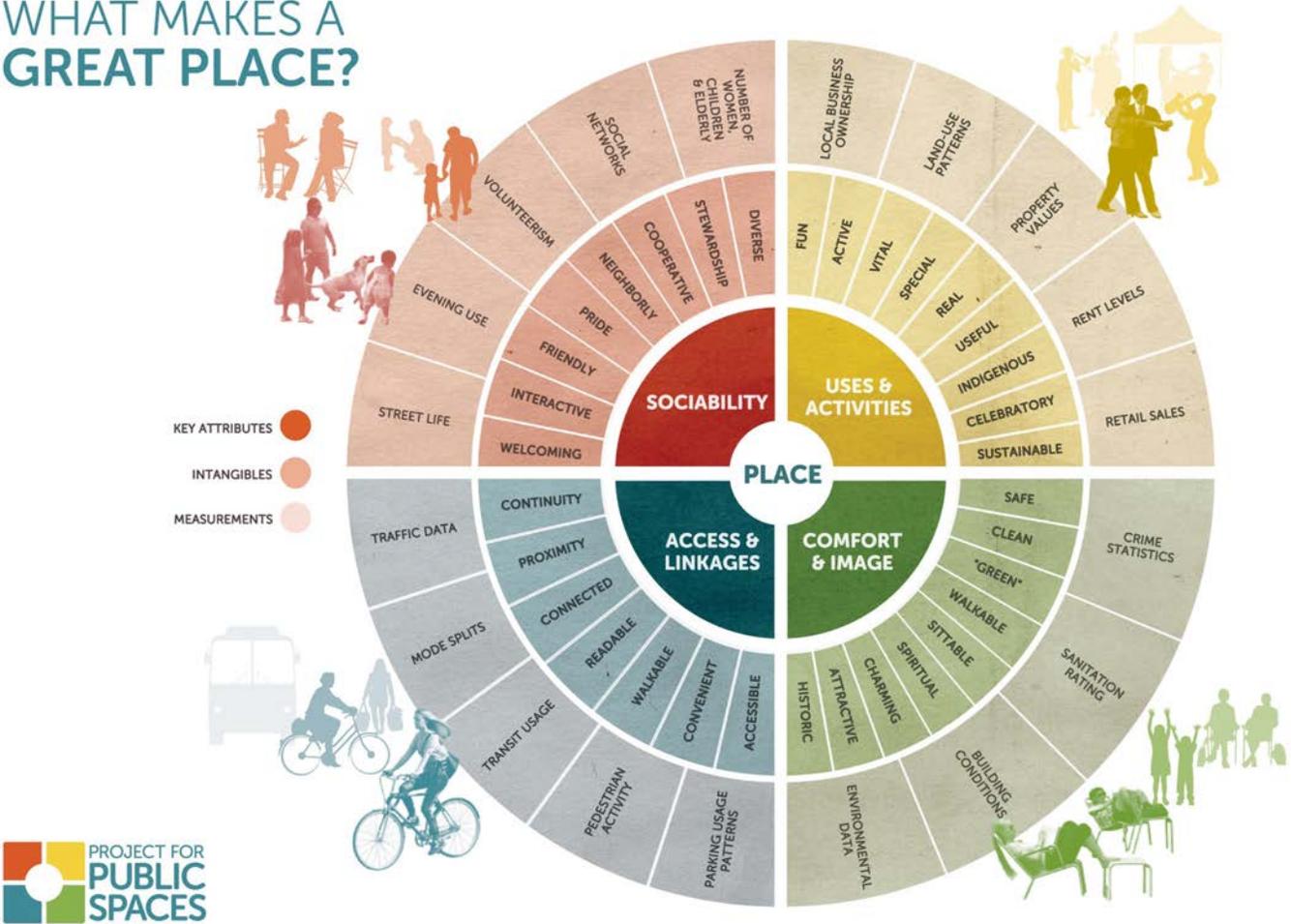


Figure 34 What Makes a Great Place? Placemaking Diagram

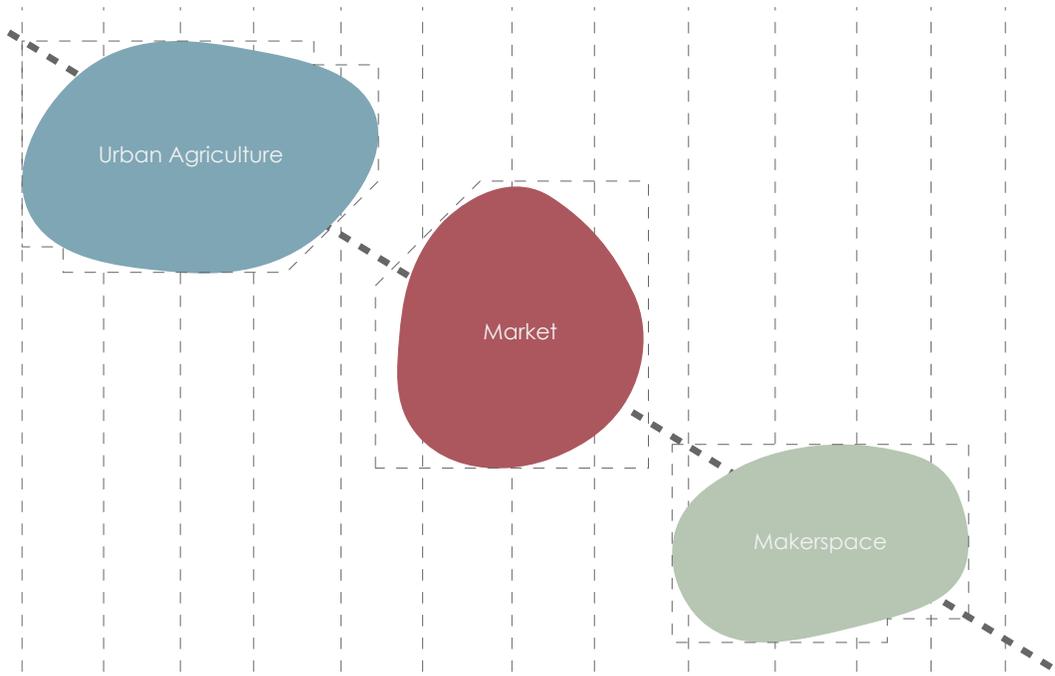


Figure 35 Placemaking Program Diagrams

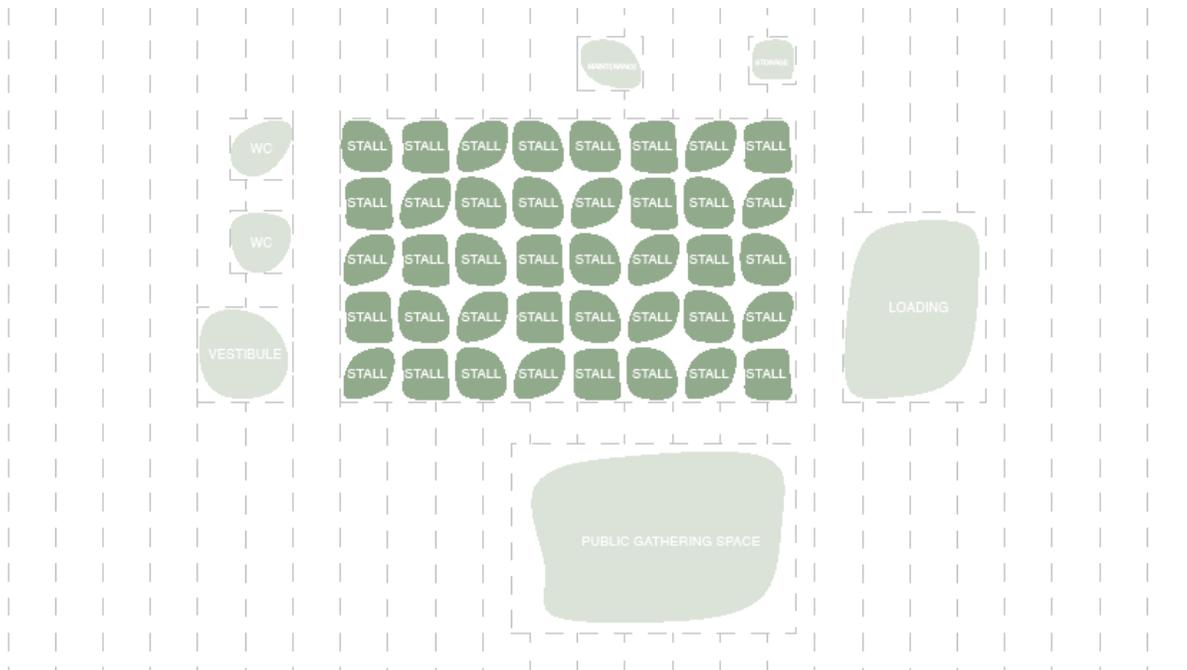


Figure 36 Market Space Program Bubble Diagram

once a week during the warmer months of the year. They create a temporary sense of place onto a site that during any other time is physically and metaphorically empty. Permanent market spaces create a lasting sense of place in an urban context. They are incubators for small businesses, local growers and makers.⁷⁹ Placing a permanent market into a city can provide the opportunity for rejuvenation of an urban space, attracting more people to venture to the place which can also benefit surrounding businesses.⁸⁰

The makerspace is a term that is growing in popularity to describe technology activity spaces for people interested in science, technology, engineering, and math (STEM).⁸¹ This, however, is not the type of makerspace this thesis refers to. A maker space can include spaces for technology development

and digital fabrication, but it also includes spaces for a wide range of making including woodworking, metalworking, ceramics, fabrics, and various other forms of artistic expression. Makerspaces can be a good tool in the practice of placemaking, as they offer a wide range of activities that the community can participate in. There are levels of public and private interaction with the community that this program has. For instance, a woodshop or metal shop can be open to the public but would require users to gain experience and training with the tools before being permitted access to use such a facility. Certain forms of ceramic, drawing, painting, and fabric working does not require the same formal training and can be a more public space for anyone to sit down and begin making. This type of program could respond to a city's existing making community and promote the expansion of making culture within the area.

79 Emily Barbour, Anne Hunter, Julia Jones, Julia Whiting. "Contemporary Permanent Farmers Markets: A comprehensive study of successful permanent farmers' markets, their strengths and the systems that support them." City of Northampton's Office of Planning and Sustainability. 2014. 2

80 Ibid.

81 "What is a Makerspace?" Makerspaces.com. Accessed January 26th, 2022. <https://www.makerspaces.com/what-is-a-makerspace/>

The final community program this thesis analyzes through the context of placemaking is urban agriculture or urban growing. As global populations continue to rise, we need to begin to think about how our food is sourced. Food security and access to healthy food is a growing concern in many cities in North America and around the world. In Northern Ontario, there is a very limited window for food production. Most of the food we consume must be imported from various locations around the world. This leads to higher cost of fresh produce, and lack of option for where and how our food is being sourced. Urban agriculture is the concept of creating growing spaces within urban areas to be able to grow local produce. This is popular idea for many who have begun the practice of guerilla gardening, which is taking a section of land within a city that may be neglected and planting private or community gardens.⁸² There

82 Michael Hardman, Lovemore Chipungu, Hangwelani Magidimisha, Peter J. Larkham. Alister J. Scott. Richard P. Armitage. "Guerilla gardening and green activism: Rethinking the informal urban growing movement." Landscape and Urban

are also examples of community programs that use hydroponic and aquaponic technologies enabling vertical growth within very small urban spaces.⁸³ Integrating community food production into urban spaces can provide a social activity for members of the community to participate in. It can also provide the community with better food security and access to healthy foods year-round if placed in an indoor space.

Planning 170. 2018. 9

83 Ibid. 6

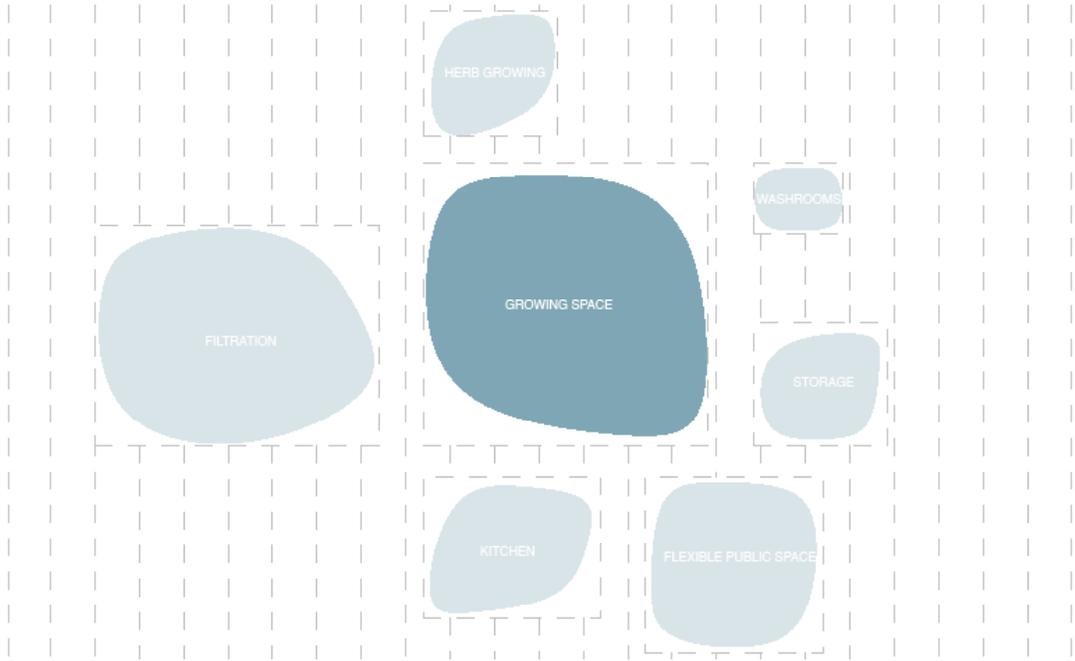


Figure 37 Urban Agriculture Program Bubble Diagram

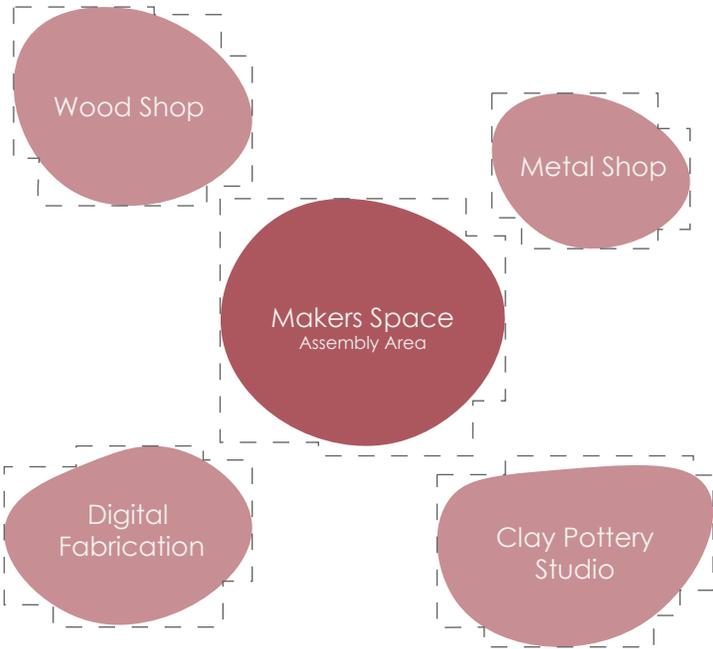


Figure 38 Makerspace Program Bubble Diagram

5.0 CASE STUDIES

This chapter highlights a number of case studies that have provided inspiration for this thesis. The examples include urban studies of city planning, focusing on transit and movement systems, and designing urban spaces for people. Architectural projects are included that focus on placemaking including markets, makerspaces, and urban agriculture spaces. Some of these precedents were analysed to understand how to create these types of spaces. Others were analysed for their use of specific systems or activities that this thesis has included in the final proposal.

City of Portland

Portland, OR, USA

The city of Portland is one of the best examples of integrating movement and placemaking at a city scale. Portland over the years has chosen to expand its infrastructure in a different direction than most North American cities. The city has invested in transit and biking infrastructure rather than highway systems. They created programs such as the Skinny Streets/Slow Streets program where over 100 miles of low traffic streets were converted into local access only emphasizing that the streets are also shared with pedestrians.⁸⁴ The city also implemented an Urban Growth Boundary used to control urban expansion onto surrounding agriculture and forest lands. This prevents urban sprawl and entices urban growth and development within the city limits.⁸⁵ The city of Portland is also one of the best examples of implementing Transit-Oriented Development into a city in North America. The city and its surrounding

neighborhoods and suburbs are connected with different forms of rapid transit systems, allowing for better connectivity to each urban space. A Transit-Oriented Development Program was created, which from its 2020 annual report is committed to funding 13 new projects providing affordable housing and community programs around paths of public transportation.⁸⁶ This system of transit-oriented development provides “places for people to live and work near high quality transit.”⁸⁷ City planning and community activist groups work together to redesign the cities urban public spaces.⁸⁸ Community spaces like Lovejoy Plaza and Tanners Square are great examples of implementing public spaces, integrated into natural water systems within the urban fabric of a city. The goal is to create a more sustainable approach to urban design and providing natural and programmatic elements to the users of the city.

84 “What is the Slow Streets Program?” Government of Portland. Accessed April 2nd, 2022. <https://www.portland.gov/transportation/safestreetspdx/what-slow-streets-program#:~:text=In%20May%20of%202020%2C%20PBOT,during%20the%20public%20health%20crisis.>

85 “Urban Growth Boundary.” Oregon Metro. Accessed April 2nd, 2022. <https://www.oregonmetro.gov/urban-growth-boundary#:~:text=The%20Portland%20area%20urban%20growth%20boundary,-To%20meet%20SB&text=That%20year%2C%20the%20Oregon%20Legislature,residential%20development%20inside%20the%20boundary.>

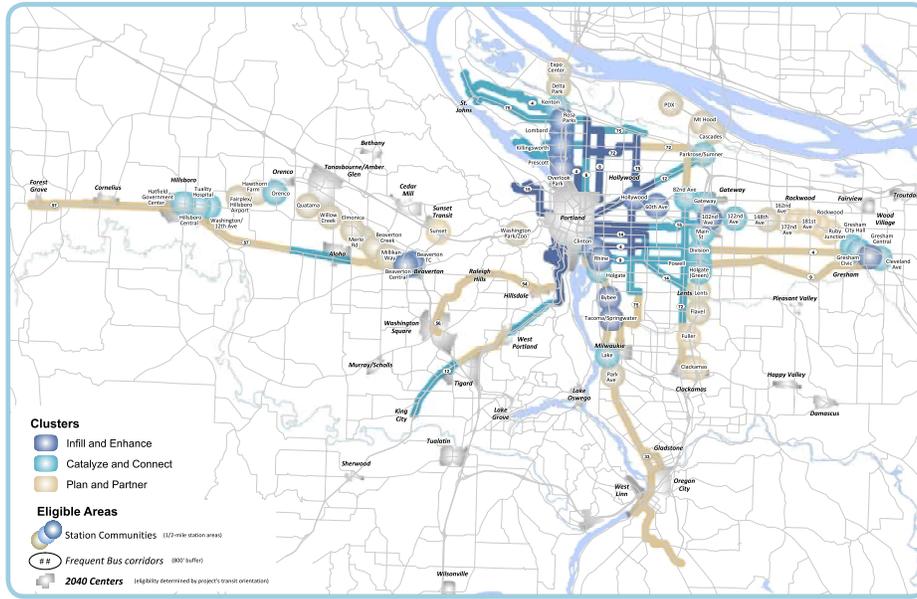
86 Oregon Metro. “Transit-Oriented Development Program: 2020 Annual Report.” Oregon Metro. <https://www.oregonmetro.gov/tools-partners/grants-and-resources/transit-oriented-development-program>

87 Ibid.

88 Reimagining the Civic Commons. “Reflections on public space strategies in Portland and Seattle.” Reimagining the Civic Commons. <https://medium.com/reimagining-the-civic-commons/reflections-on-public-space-strategies-in-portland-and-seattle-864b40b6e3ce>

TOD typology clusters

(transit orientation + market readiness)



infill + enhance

Infill and enhance transit communities are the most "TOD ready" areas in the region outside of downtown Portland. Given the relative strength of these areas, TOD program project investments should leverage either long-term affordability or demonstrate innovative or untested approaches to achieving higher densities or enhanced sustainability.

catalyze + connect

Catalyze and connect areas offer some physical and market foundation for supporting transit-oriented development, and increase activity levels through density and/or urban amenities are appropriate. There is also an opportunity to work with local jurisdictions to identify placemaking and infrastructure needs to enhance the pedestrian orientation of the street network and provide better connectivity for all modes.

plan + partner

Plan and partner transit communities are not currently ripe for direct TOD program investments since they generally lack the built form and market environment that would attract private investment. Given their transit accessibility, however, these areas are ideally suited for station area planning and development implementation technical assistance. The TOD program will work with local and regional partners as strategic opportunities arise to develop partnerships for future projects.



Top
Figure 39 City of Portland Transit Oriented Development Planning Map

Bottom
Figure 40 Tanner Springs Park, Portland



Figure 41 Evergreen Brickworks Facility and Site Isometric Drawing



Figure 42 Evergreen Brickworks Farmers Market

EVERGREEN BRICKWORKS

ERA, Diamond Schmitt, Claude Cormier + Associés
Toronto, ON

Evergreen is a non-profit organization whose mission is to make cities “more livable, green and prosperous.”⁸⁹ The organization’s flagship project has been the Evergreen Brickworks located in the Don Valley area of the city of Toronto. The project is an example of adaptive reuse, brownfield remediation and ecological restoration to create a community hub from an existing industrial landscape.⁹⁰ The site provides green spaces, gardens, parks, and a skating rink for outdoor activities year-round. The existing industrial buildings were converted for various

uses including a garden market, farmers market, café, makerspaces, and office space for the Future Cities Center, a program that reimagines how cities are designed for people.⁹¹ All aspects of the building and activities that happen within the facility focus on sustainable practices. The Brickworks aims to be a leader and template for new placemaking projects.

91 Ibid.

89 “About Evergreen.” Evergreen. Accessed April 1st, 2022. <https://www.evergreen.ca/about/>

90 “What is Evergreen Brickworks?” Evergreen. Accessed April 1st, 2022. <https://www.evergreen.ca/evergreen-brick-works/what-is-evergreen-brick-works/>



Figure 43 Evergreen Brickworks Green Market

HALIBURTON SCHOOL OF ARTS

ERA, Diamond Schmitt, Claude Cormier + Associés
Haliburton, ON

Located in the small cottage country community of Haliburton, this satellite campus for Fleming College offers various art and making courses. The facility, located in a wooded area on the outskirts of the town is surrounded by the Haliburton Sculpture Forest Park and Haliburton Pioneer Museum. The campus provides spaces for a variety of making, including pottery, glass blowing, drawing, and painting. Jewellery making, metal working, blacksmithing, and fibre arts are also offered.⁹² Apart from providing space for making during the school year, the campus also provides summer courses for children and adults which is used by the community. The campus has become a hub for the large community of artists and craftspeople in the area.

92 “Haliburton School of Art and Design.” Fleming College. Accessed March 22, 2022. <https://flemingcollege.ca/school/haliburton-school-of-art-and-design>



Figure 44 Ceramic Studio in Haliburton School of Arts



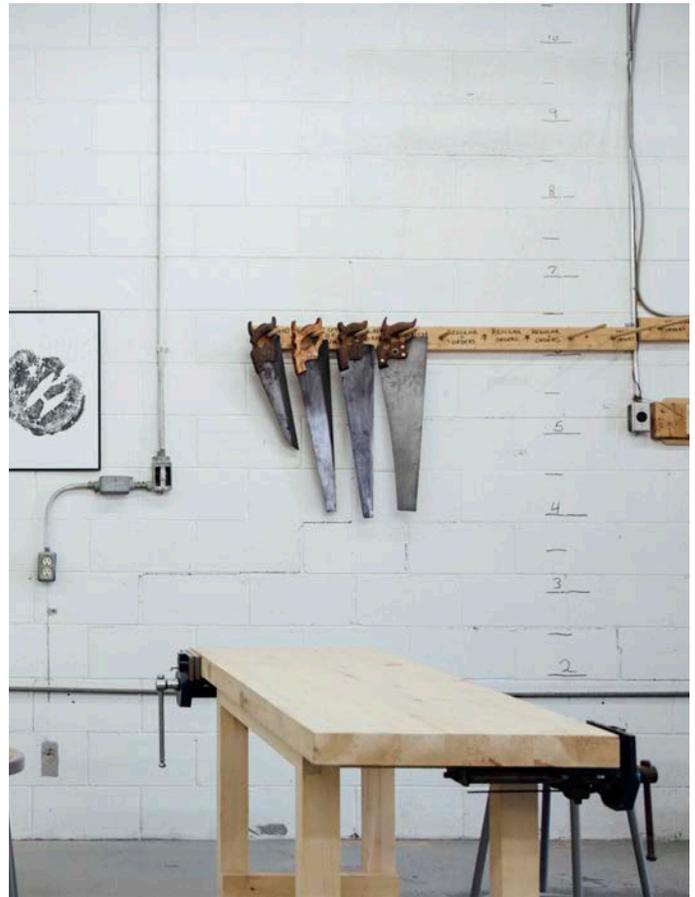
Figure 45 Haliburton School of Arts Exterior View

OTTAWA CITY WOODSHOP

Ottawa, ON

The Ottawa City Woodshop is a woodworking makerspace for the city's emerging urban woodworking community. The Woodshop is located in an old industrial facility celebrating the region's rich heritage as a lumber town. The facility includes many of the standard machinery like table saws, chop saws, planer, jointers and more. It also provides large assembly spaces with woodworking benches. The Woodshop provides membership-based access and provides courses at various levels for anyone who is interested in woodworking.⁹³ The practices of the Woodshop focus on intricate craft promoting hand craft woodworking using more traditional methods while still offering the machines that are used in more modern styles of woodworking. This facility successfully brings together a community who are interested in craft and making.

93 "Ottawa City Woodshop." Ottawa City Woodshop. Accessed March 22, 2022. <https://ottawacitywoodshop.com/collections/courses>



Top
Figure 46 Ottawa City Woodshop Woodworking Table Detail

Middle
Figure 47 Ottawa City Woodshop Space

Bottom
Figure 48 People Woodworking in Ottawa City Woodshop

USA Pavillion: American Food 2.0 Expo 2015

Biber Architects
Milano, Italy

The USA Pavilion from the 2015 Expo in Milan focuses on the issue of food security and food choices.⁹⁴ The goal of the project was to create architecture that would promote and invite an open public discussion. The building creates an industrial farm narrative embracing both simple and industrial agricultural architecture.⁹⁵ The façade is created using vertical hydroponic growing systems creating a green wall. This hydroponic system creates a more efficient growing practice, which can be utilized within urban environments. The project questions traditional agricultural practices which see large areas of land used for food production. It also sparks the narrative of food security which is a problem that many towns and cities around the world still deal with. Urban centers need to be able to locally source their own food, allowing better access to fresh produce for all people.

94 “USA Pavilion – Milan Expo 2015/ Biber Architects.” Archdaily. Accessed March 25th, 2022. <https://www.archdaily.com/628092/usa-pavilion-milan-expo-2015-biber-architects>

95 Ibid.



Figure 49 USA Pavilion: American Food 2.0 Hydroponic Growing Wall Facade Treatment



Figure 50 USA Pavilion: American Food 2.0 Hydroponic Growing Wall Detail



Figure 51 USA Pavilion: American Food 2.0 Entrance

RIVERPARK FARM

ORE Design + Technology
New York, NY, USA

The Riverpark Farm is an example of guerilla urban agriculture within a large city center. The project designed by ORE Architects is an urban growing farm originally located on a stalled construction site adjacent to the Riverpark Restaurant in New York City.⁹⁶ The temporary garden was created using recycled plastic milk crates to hold various types of produce. This produce was used by the restaurant, creating a self-sustaining system of in house growing and cooking. The urban farm was later moved

to a different location within the campus. The farm acts as an educational tool for the community on food production and urban growing. The growing space can also used for various events that are held through the restaurant.

96 "Riverpark Farm." ORE Design. Accessed March 26th, 2022. <https://ore-design.com/project/riverpark-farm/>



Figure 52 Riverpark Farm Site



Figure 53 Riverpark Farm Entrance to Growing Space



Figure 54 Riverpark Farm Growing Space

6.0 FINAL PROPOSAL

6.1 Greater Sudbury (Large Scale)

6.2 Downtown Sudbury (Medium Scale)

6.3 Borgia Place Community Center (Small Scale)

Returning to the thesis question, how can movement create a basis for placemaking at an architectural and urban scale to promote connection and density in the City of Greater Sudbury and its Downtown core? To respond to this question, the final proposal has been separated into three different scales. The largest scale reimagines the City of Greater Sudbury with an emphasis on movement and people. It proposes new transit systems that connect the surrounding areas of the city to each other, leading them to the urban center of Downtown. This scale also provides possible paths for non-motorized movement like walking, biking, and cross-country skiing that can support and enhance a larger network of movement throughout Sudbury. The second scale narrows the focus to the Downtown core, with many of the proposed movement paths guiding people to the city center. This scale responds to the problems the Downtown currently faces with the lack of community activity and interest by providing a framework for re-orienting the urban fabric of the city back to the human scale while focusing on movement and community-based programming. The third and final scale focuses on a specific site at an architectural scale with the Borgia Place Community Center. As a placemaking project, this community center would provide a facility for various makerspaces of all forms, combined with the program of urban agriculture and growing. The architectural proposal would act as a catalyst for future development in the Downtown area focusing on community-oriented projects.

6.1 Greater Sudbury (Large Scale)

The first and largest scale this thesis focuses on is the regional scale of the City of Greater Sudbury. The city is spread across a large area with various secluded communities, the original mining camps and other urban spaces built up over time around industry. These communities now act as surrounding suburbs to the central urban hub of Sudbury. The communities are disconnected from the city hub and from each other, due to the distance and lack of available paths to connect them. Most of these towns are connected by single highway systems, making it rather difficult to move around the city without having a personal vehicle. The current public transit for the city does not provide an adequate system to get around comfortably without a vehi-

cle. There is also a lack of non-motorized paths of movement within the city and its surrounding communities to provide alternative options to automotive and motorized movement systems. Figure 55 shows three possible systems for public transit that can be implemented into the urban fabric of the city.

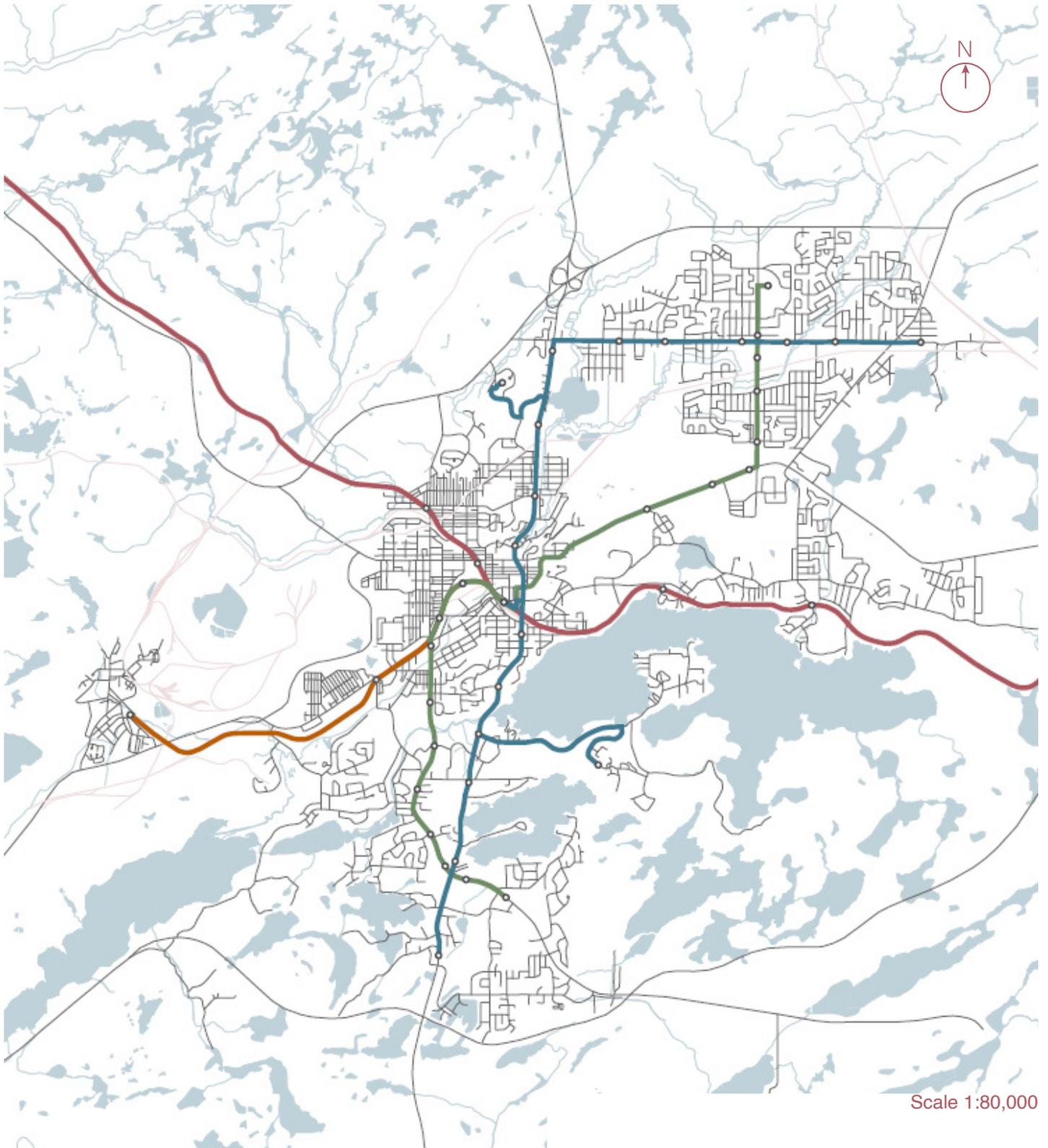


Figure 55 Proposed Public Transit Map

The first system to be proposed is a Light Rail Transit (LRT) system. LRTs are becoming more popular in North America and around the world as a form of rapid public transport. This form of rail transportation is smaller and slower than a metro transit system like the GTA's GO transit or Canada's VIA rail systems but is larger and faster than a streetcar or tram rail system. An LRT system would be ideal for use in the Greater Sudbury Area, which already has an expansive network of railways constructed for industrial practices and commercial transportation. Figure 56 shows a possible use of existing rail infrastructure to connect several surrounding communities in the Greater Sudbury area to the city of Sudbury and its Downtown. The Red Line LRT

uses the main CP and CN Trans-Canada rail line to connect the communities of the Nickel Center on the east end of the city, to Azilda and Chelmsford on the west end. There has been a lot of discussion around the future of this rail line that runs through the city and the Downtown railyard it connects to. City Government and advocate groups have been fighting to reroute this heavily used commercial and industrial rail transportation route outside of the city. Many submissions from the Sudbury 2050 competition reimagined the Downtown without the railyard and what could begin to occupy this space. If commercial and industrial rail movement is to be re-routed outside of the city limits, the infrastructure should be adapted for passenger rail networks rather than re-

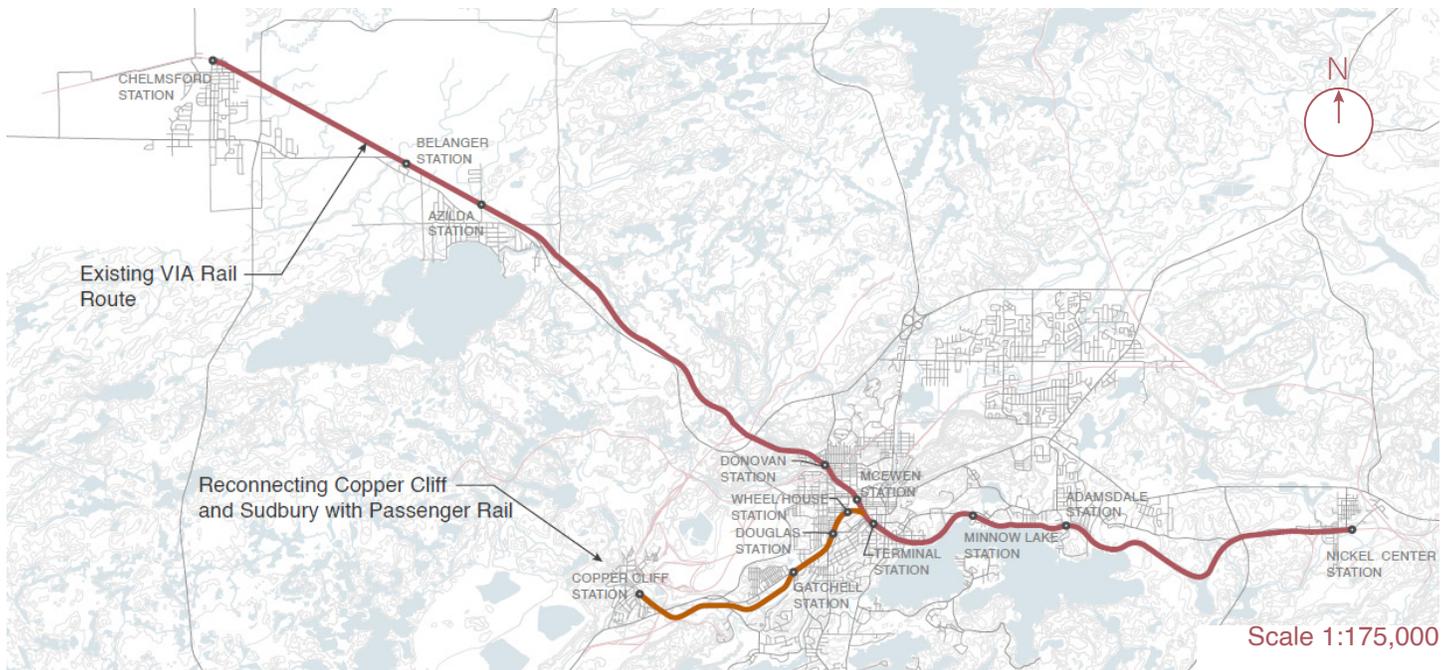


Figure 56 Red and Copper Lines Light Rail Transit Routes

moving it. The railyard could be removed Downtown to make room for further development, and the triple rail line in the corridor could be reduced to double or single for an LRT use. A second route for an LRT is also proposed with the Copper Line. This is a smaller section of railway that would again use existing industrial rail infrastructure for pedestrian transit. The Copper Line would connect Downtown Sudbury to the Gatchell neighborhood and the community of Copper Cliff. This line would follow a similar route to the historic SCCSER streetcar of the early to mid-twentieth century. Once a prominent path in the city, the Copper Line would reconnect these two places once more with a public transit route that celebrates the city's history.

The second proposed transit system is a tram or streetcar. Streetcars are usually intended for use within a higher density urban setting. They are traditionally electric powered and provide a more sustainable form of rapid movement compared to automobiles and other forms of motorized movement. Many trams use overhead electric power systems with trolley cables that hang from roadside electrical poles. With the advancement of modern technology, many streetcar systems today use electric engines rather than the overhead cable system. The proposed streetcar route which can be seen in Figure 57 stays within the limits of the urban center of Sudbury. The streetcar follows the existing road network

as a center transitway. It follows the path of Regent Street at the South End of Sudbury, to the Kingsway and Barry Downe in the northern part of the city. The system would connect the neighborhoods and commercial centers of the South End and Four Corners, the New Sudbury area, and the Downtown. It is ideal for a streetcar to follow this path as it can use part of the existing railway system when enter-

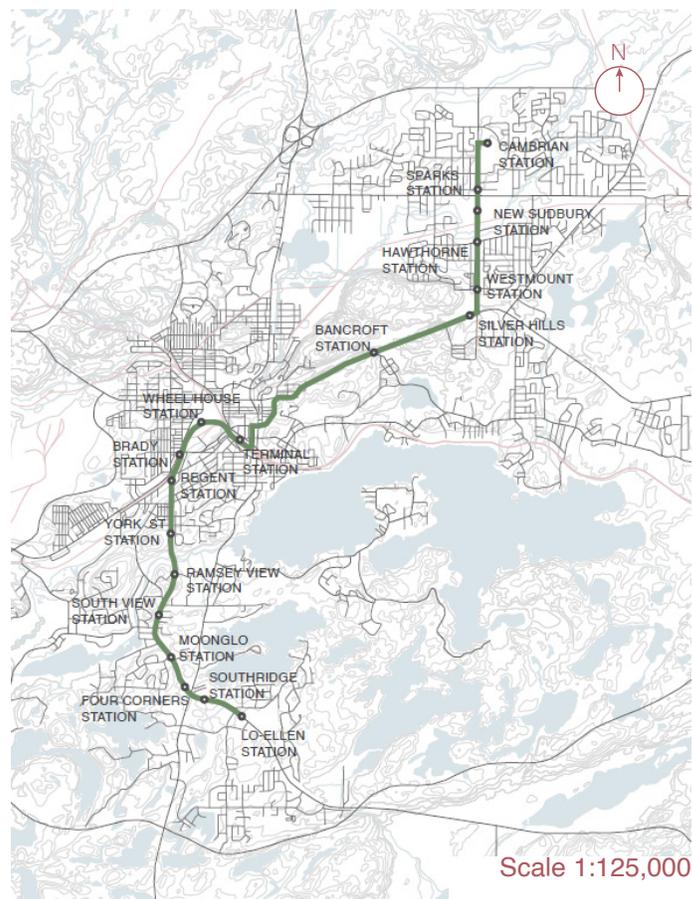


Figure 57 Green Line Streetcar Route

ing the Downtown from the South End. While it does not follow the historic path of the original streetcar in Sudbury, it does celebrate the narrative of the streetcar, bringing the language back into the urban fabric of the city.

The original intent was to imagine the proposed route using historic trams, similar to many cities such as San Francisco, Los Angeles, New Orleans,

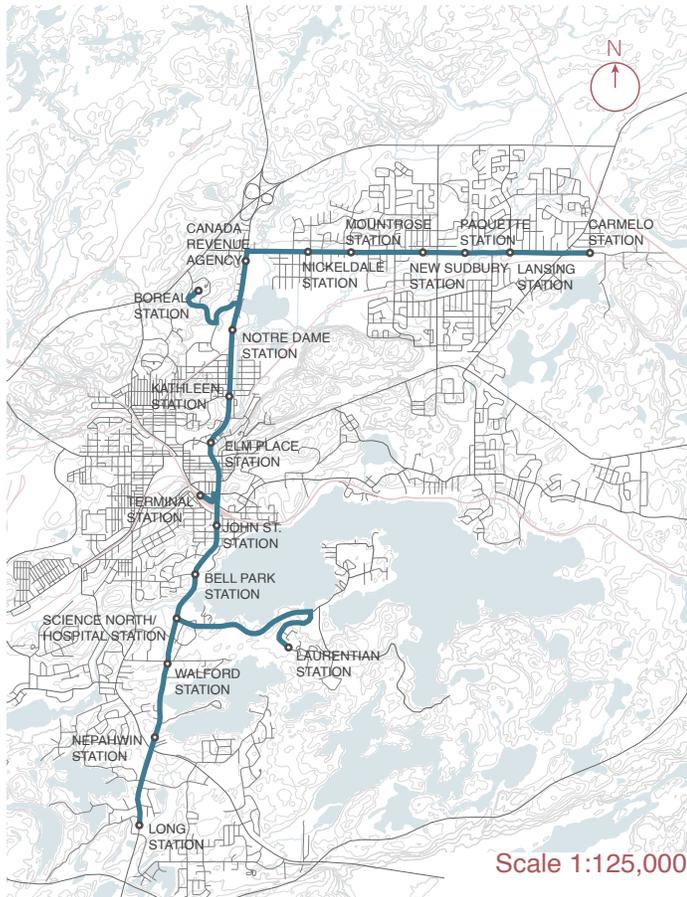


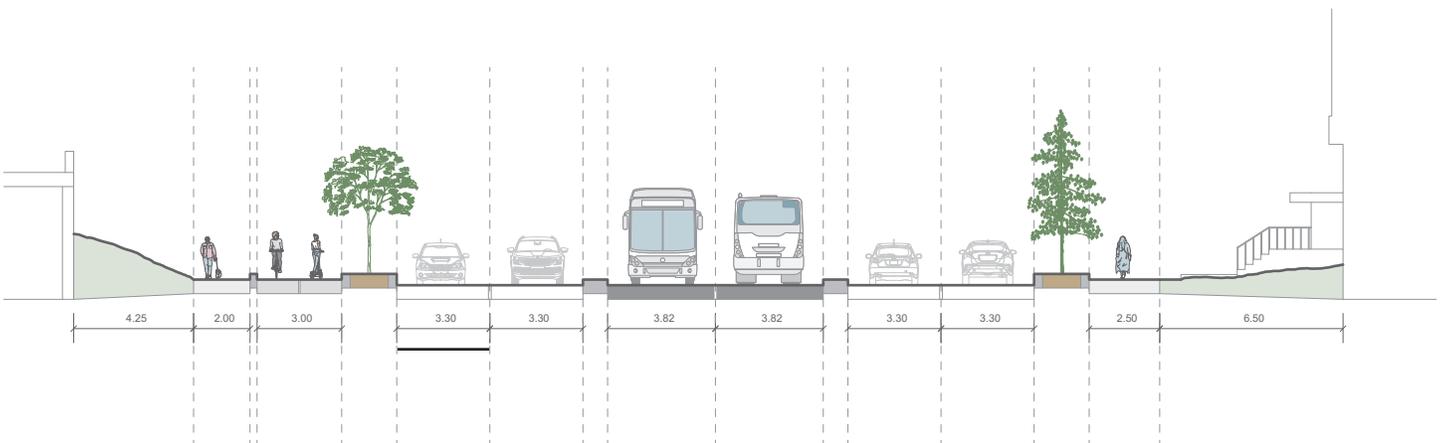
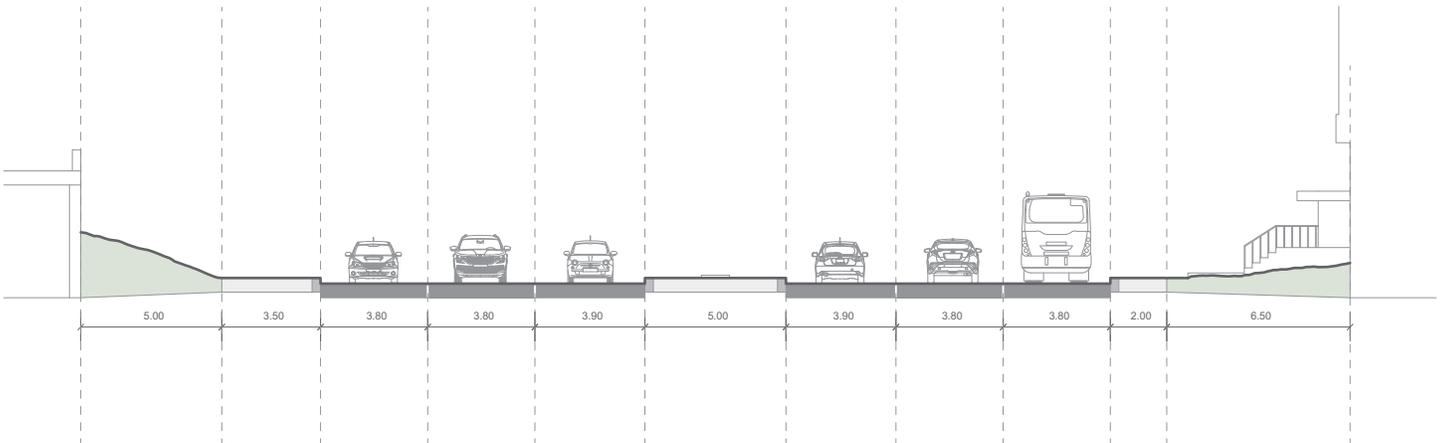
Figure 58 Blue Line Bus Rapid Transit Route

Boston, Melbourne, Aruba, and Lisbon that continue to operate using the original tram cars. However, this idea is unrealistic as the original streetcars were destroyed and historic trams are difficult to acquire and expensive to refurbish and maintain. There are also problems with accessibility, as the historic trams were not designed for wheelchair access or accommodating other disabilities.

Figures 59 and 60 show the comparison between the existing road condition and the proposed interventions, cutting a section along the Kingsway. The streetcar as stated previously would follow a center transitway design. This would separate the directional automotive traffic on either side. Along with the streetcar, non-motorized forms of movement are being proposed on this path. This includes widening of existing sidewalks, as well as providing additional walking infrastructure to locations that are currently limited to a single sidewalk along the roadway. It also includes bike lanes that are separate from the automotive and walking traffic, promoting non-motorized forms of movement and giving the user multiple options for mobility.

The final proposed transit system is a Bus Rapid Transit (BRT). Different from a standard bus route that would navigate the road with all other traffic, BRT's have designated lanes which allows for more

Key Plan

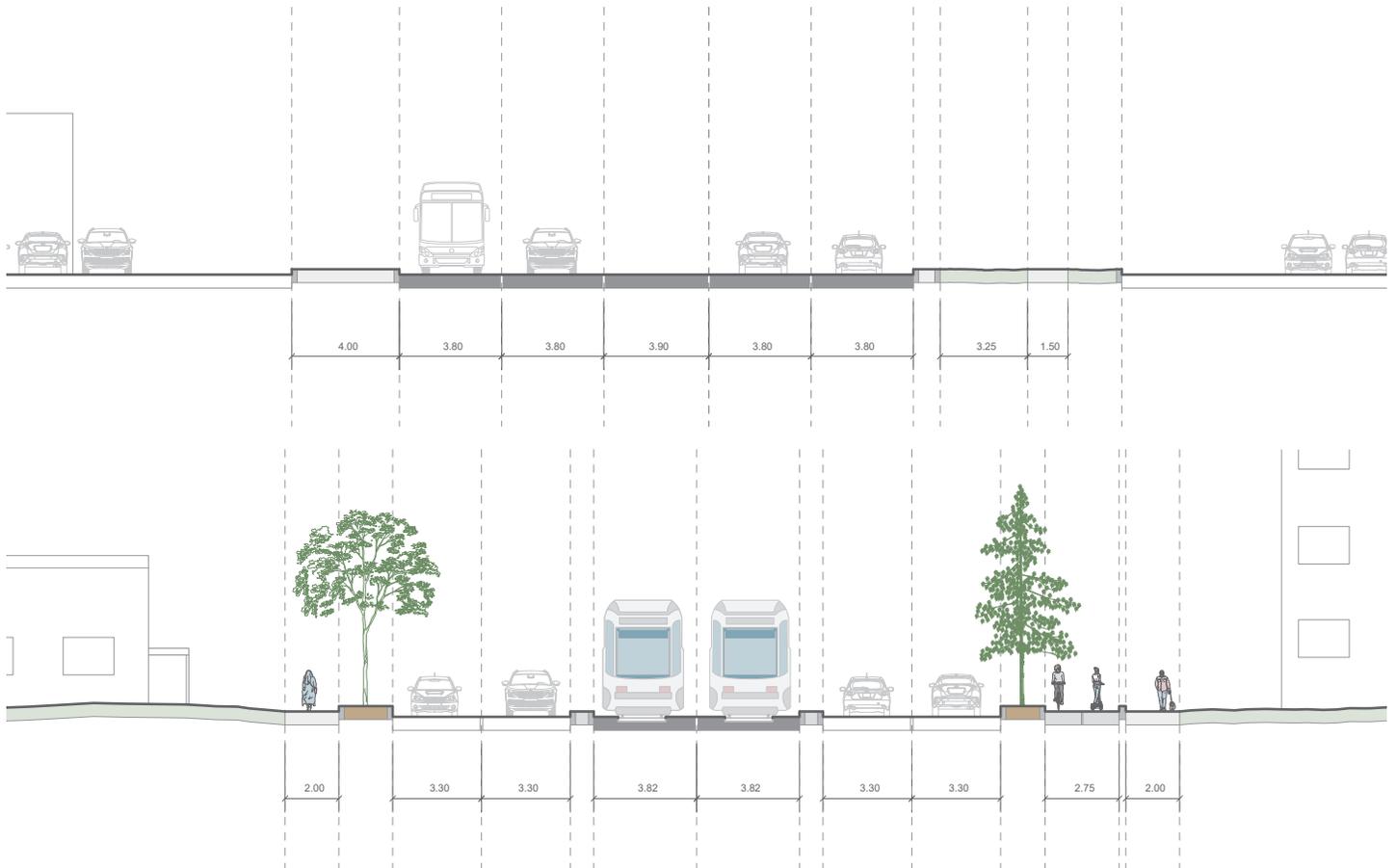
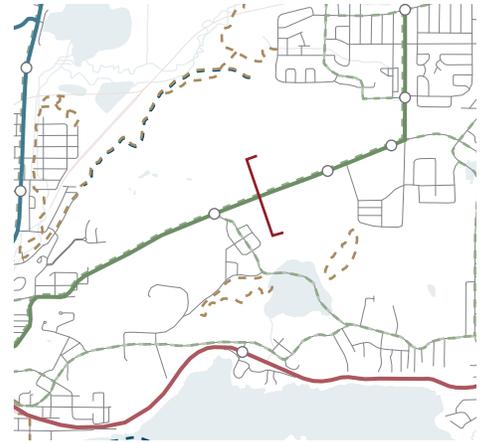


Top
Figure 59 Paris Street Existing Road Section

Bottom
Figure 60 Paris Street Proposed Road Section



Key Plan



Top
Figure 61 Kingsway Existing Road Section

Bottom
Figure 62 Kingsway Proposed Road Section



rapid movement within the system avoiding traffic congestion. The proposed BRT system, like the proposed streetcar would follow a center transitway. The proposed path shown in Figure 58 would follow Paris Street from the South End into Downtown where the street merges into Notre Dame Ave. It would then turn onto Lasalle Blvd. in the northern part of the city traveling to the New Sudbury Area. This route was chosen for a Bus Rapid Transit system because of the versatility that buses can have within roadway networks. Along this path is 2 post secondary schools that would benefit from a rapid transit system being linked to the campuses. The Laurentian University and College Boreal campuses are set back several kilometers from the main roadways of Paris Street and Notre Dame Ave. It would be beneficial to have stations at each of these locations providing better access for students to travel to and from campus. A BRT system can diverge from the central transitway and is able to follow other roadways. There is also the access to Downtown and terminal station, traveling to Paris Street. The buses will have to diverge from the straight path again to access the terminal station and connect with the other proposed forms of transit systems.

The proposed intervention within the existing roadways follows a similar design to the proposed streetcar. With a central transitway, the directional automotive traffic is divided. The car lanes are

compressed from a 4-meter width to 3.5 meters. The transit system and other forms of movement would reduce traffic congestion. Smaller lanes have also been proven to reduce automotive speed through urban spaces creating a safer environment within the city. Along with the transit proposal is an expansion of sidewalk space on either side promoting walkability within the city. Bike paths are also added along the roadway providing alternative options to motorized movement. Each path is separated by a median for safety. These medians can be strategically used to introduce vegetation into parts of the city that are normally void of any greenery. The existing condition of the Paris Street and Notre Dame Avenue Bypass shown in Figure 61 has a five-meter median between the 3-4 lane traffic on either side. This is an underutilized surface area that can be used for pedestrian space, vegetation, and public transit.

These three proposed transit systems can provide a network of public transit into the City of Greater Sudbury to alleviate automotive congestion and provide a rapid form of movement reducing the need for the population to invest in personal vehicles. Intermodal Connections, however, is more than just a network of transit systems. Intermodal is defined as the use of various different paths to move from one place to another. Non-motorized forms of movement play an important role in the network of Intermodal Connections. Studies in Transit Oriented Development

have found that people are willing to walk a distance of 1.5 kilometers from a transit system or station to reach a destination.⁹⁷ The diagram shown in Figure 63 represents this idea of intermodal movement analysing transit systems and the walkability around these nodes. The proposed stations for each of the transit systems were chosen based on the walkability from each other. These stations also provide an opportunity for existing and future development in residential, commercial and community spaces built around an accessible transit network. Non-motorized paths of movement also play an important role in creating Intermodal Connections. The existing network of walking and bike paths in the city needs to be increased to provide alternative non-motorized paths for users to take. Providing additional designated bike paths along all major roadways would promote the use of bikes as a form of transportation in three seasons. Bike share systems have also become very popular in many cities, with many people choosing to use public bicycles to navigate urban landscapes. This type of system could be introduced into the City of Sudbury giving people the option to use a bicycle for transportation without requiring purchasing a personal bike. The hiking trails can also be expanded to provide urban and natural walking paths around the city. For the winter months, the network of cross-country skiing trails can be expand-

ed to include paths used for commuting around the city. Certain bike trails that require less road crossings can be adapted for cross-country ski paths. The current narrative for this activity can be expanded from a hobby to a mode of transportation through the urban landscape. The transit systems combined with various forms of non-motorized paths can provide a network of movement within the city to create Intermodal Connections.

Previously discussed in this thesis was the topic of transit infrastructure being used as a tool for colonization. The railway was used by colonists to lay claim to the territory of Canada. The railway today continues to be used for industrial and commercial practices that feed western industry. Overtime, the highway system and automotive industry became the tool used by colonialist groups to control the territory with the urban grid being implemented onto the landscape. To be able to move around the city people are all but forced to purchase personal vehicles. Taxes collected by government organisations are used to maintain and expand the network of roads in the city. Intermodal Connections provides various options for the user to choose how they would move around the city. This idea of choice is the difference between colonist transit infrastructure and the proposed community and people-oriented urban movement network. By providing options, people are not forced to use a specific system of movement. They can interact with the built environment however they choose without being controlled by the infrastructure.

97 Brian Canepa. "Burstin the Bubble: Determining the Transit-Oriented Development's Walkable Limits." *Transportation Research Record: Journal of the Transportation Research Board*. Vol 1992, Issue 1, 2007. 28

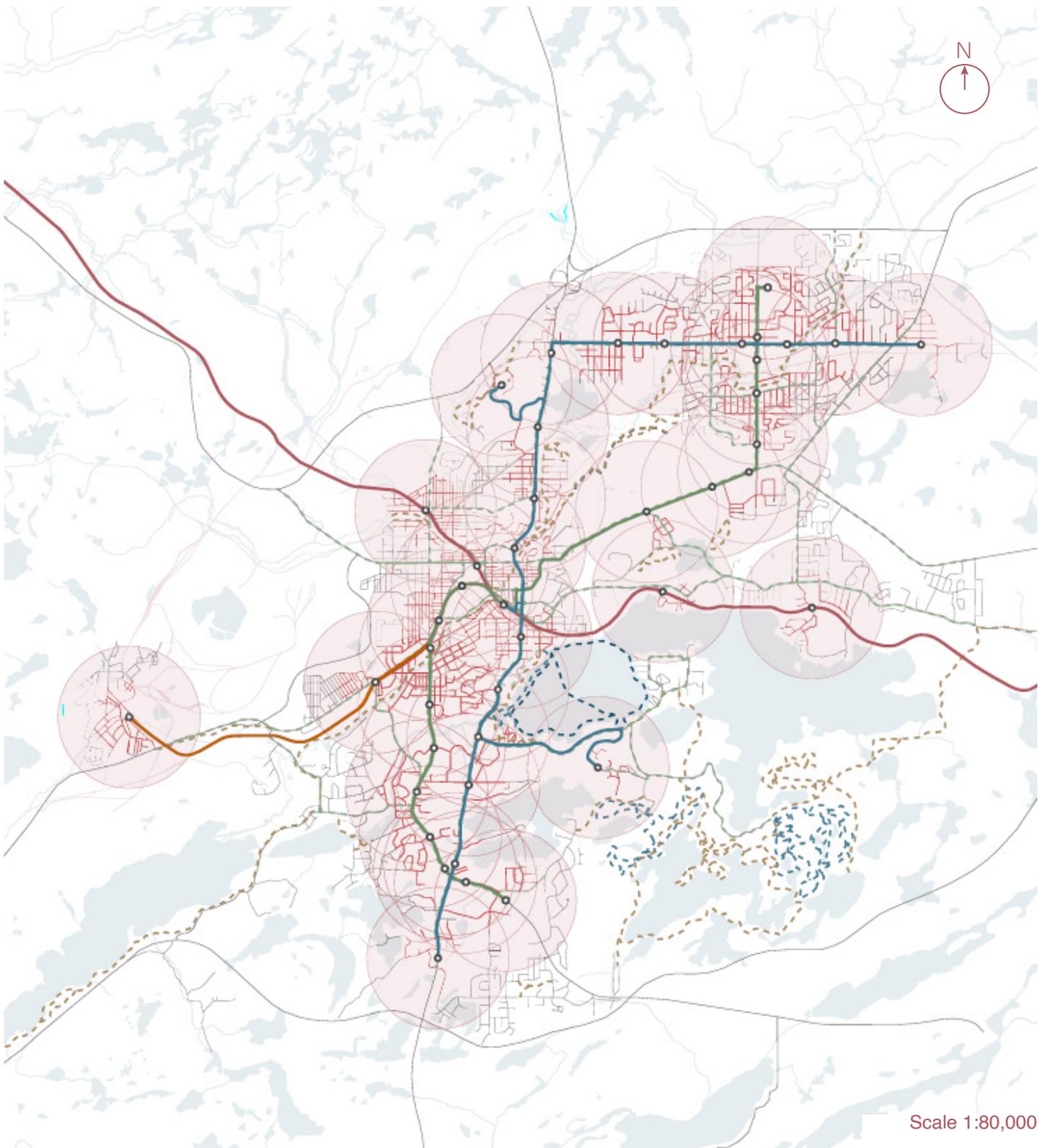


Figure 63 Intermodal Connection Diagram

Key Plan

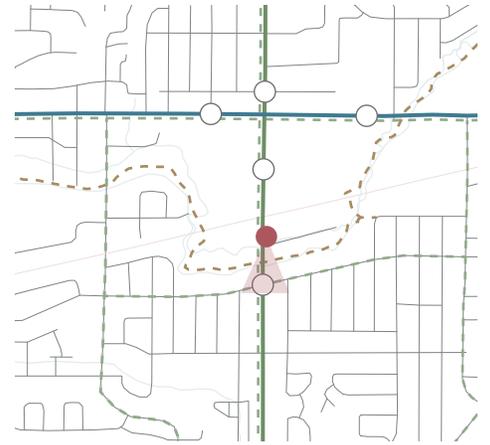


Figure 64 Barry Downe Vignette

6.2 Downtown Sudbury (Medium Scale)

Moving into a more focused perspective of the urban center of Downtown Sudbury, this second scale proposes various urban designs that celebrate movement and people within the city center. The transit and movement systems proposed for the Greater Sudbury scale lead to the city's Downtown core aiming to bring people back to the urban center. Community, commercial and residential development have all been expanding outside of the downtown area leaving the Downtown a half empty shell. The aim of this project is to resolidify the Downtown as the central hub of the city of Sudbury by bringing people back to the urban landscape. The terminal station for the BRT, LRT and Streetcar systems that are being proposed is located in the south end of Downtown at the existing historic CP railway station. The vacant land surrounding the station can be utilized for additional infrastructure for the terminal station including railway platforms and bus stations. With the network movement bringing people into the city, there needs to be further development of the built environment to get people to stay Downtown.

One problem the Downtown currently faces is the large urban area allocated for parking. The urban renewal project saw to the demolition of many buildings within Downtown, ranging from residential, to important community and commercial centers. The land where these buildings once stood remain vacant with no new development replacing what was destroyed. These vacant lots are now occupied by the automobile, acting as parking space for the nine to five commuters. By providing alternative forms of transportation in the 3 public transit systems and network of non-motorized movement paths that lead into Downtown, the need for this abundance of vacant lots for parking can be reduced and the city can begin investing in new buildings and public spaces.

A possible use for several of the vacant parking lots Downtown is to turn them into public plazas. Other than Memorial Park, Downtown does not have designated areas for outdoor public space. A successful urban area needs to provide outdoor space for community interaction. One possible site for an outdoor plaza space is at the north end of Durham Street. The premise this thesis follows is to reimagine spaces that are currently occupied for

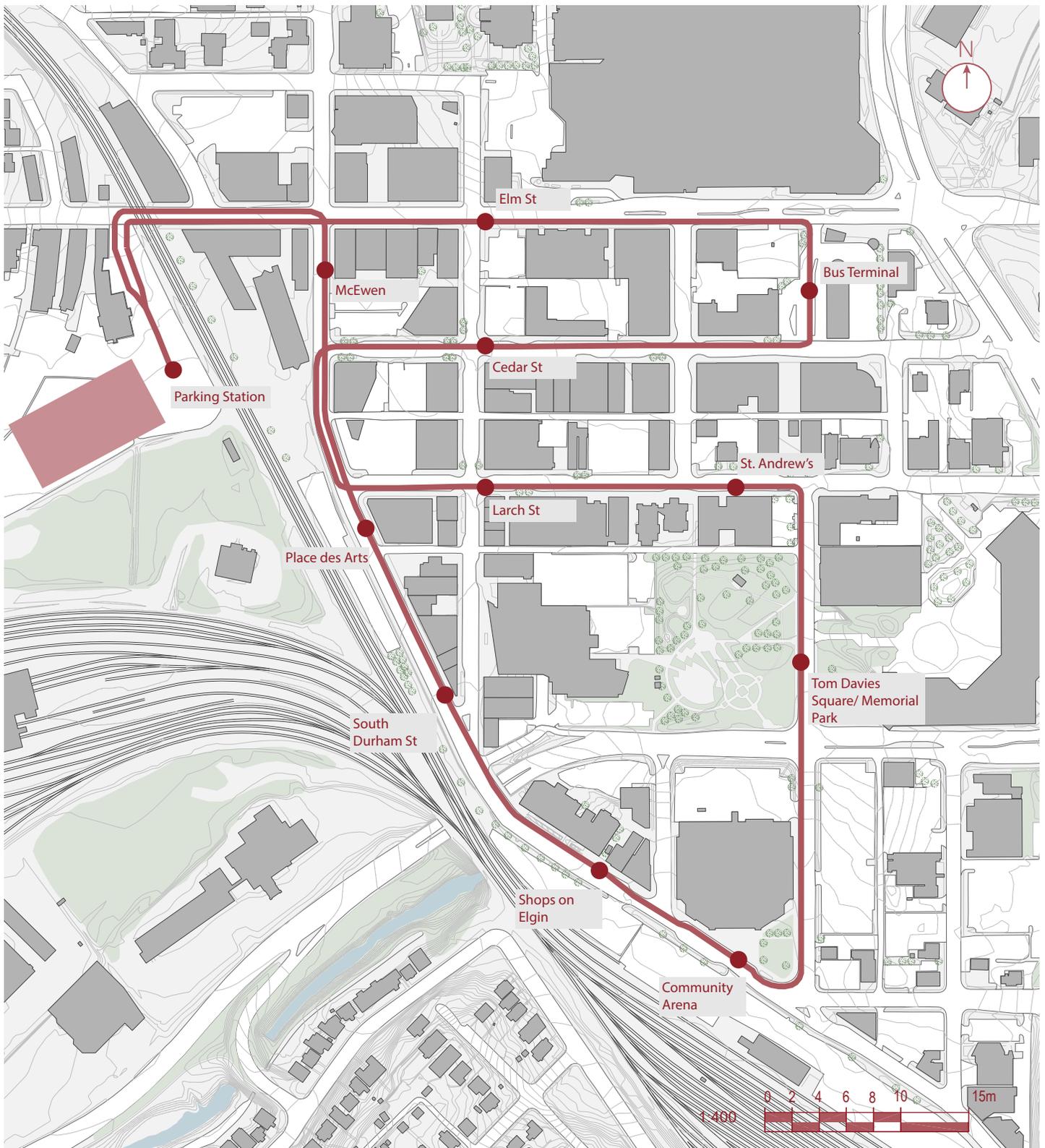


Figure 65 Downtown Shuttle Proposed Route



Figure 66 Downtown Transit Stop Street Elevation

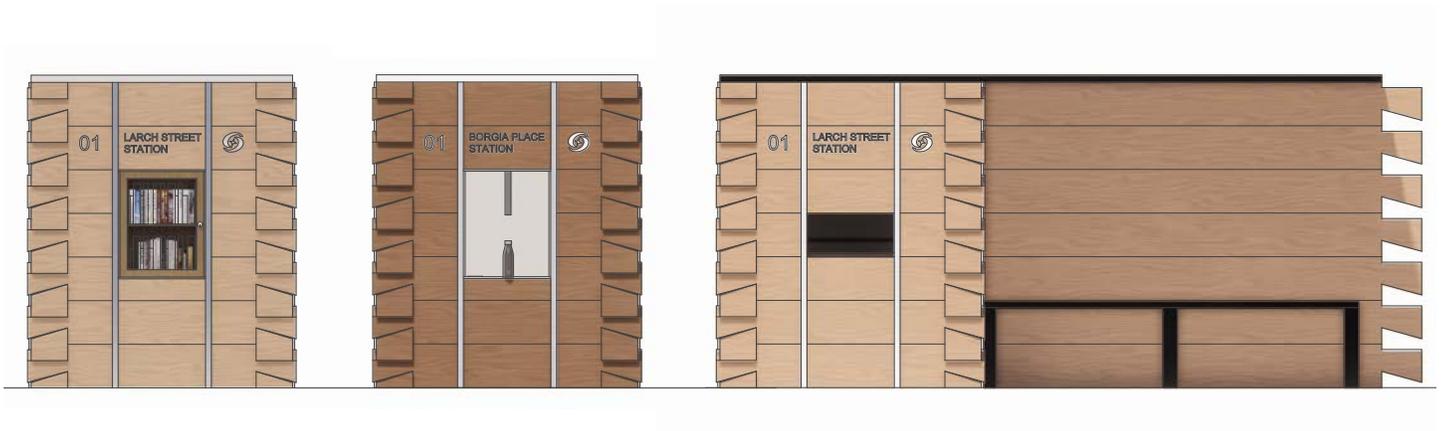


Figure 67 Downtown Transit Stop Detail Elevations

vehicular activity. The proposed Nolan Creek Plaza occupies the existing parking lot on the west side of Durham Street at the north end of the road. The design of the plaza follows the language of breaking the urban grid which has been implemented onto the landscape. A linear grid language is created using concrete pavers for hardscape landscaping. The grid of the concrete pavers is broken by a natural landscape growing within the grid. The site is the original location of the Nolan's creek water system which was diverted into an underground culvert during the Urban Renewal Project. The creek currently runs underground from the intersection of College Street and Froad Road, leading into Downtown where it connects with the underground path of Junction Creek. It flows under the parking lots at the north end of Durham Street and the Elm Place Mall. The proposed plaza provides a landscape where the creek can be daylit, bringing the natural movement of water back to the urban narrative of the city. The underground culvert runs several feet below the grade of the city. The daylit section of the river would need to be pumped to the surface using mechanical systems. The water eventually would flow back to the underground network below the city. This plaza celebrates nature and water within the urban landscape of the city which can be used year-round. The summer months the daylit creek acts as a natural pond that people and animals can interact with. In the winter the pond can be frozen to create a small skating rink.

This proposed plaza is just one example of how the urban narrative of the city can be re-imagined for people rather than automobiles. There have already been several discussions to make Durham Street a pedestrian only roadway. This is space that can be occupied by various community-oriented programs, as well as various forms of non-motorized paths of movement. Through the warmer months of the year, the Durham Street restaurants have been constructing temporary patios on the roadside parking spaces. This idea can be expanded to create more permanent structures for the local businesses. A bike lane can be added to the street for additional movement within the city. No major landscaping changes would be required to change the street to a pedestrian street. Small landscaping strategies like including additional planter beds could provide more greenery in the space. Bollards can be installed at the ends of the street sections to restrict automotive access while still providing temporary access to vehicles if required. Additional streets can be converted into pedestrian only roadways as the city develops over time.

A transit shuttle is proposed to operate within the boundaries of Downtown, providing a rapid form of movement within the urban center of the city. This shuttle system draws inspiration from the Denver Freeride Shuttle which operates as a free bus route

within a section of the city. With the development of the land currently used for parking lots, and roadways becoming pedestrian only within the city center, one issue that presents itself is accessibility.

The Shuttle is intended as a rapid form of movement that can be accessed by either the proposed regional transit systems at the terminal station, or by the proposed parking structure located just outside the Downtown boundary. The shuttle can move people throughout the city, stopping at various stations around the office buildings for the commuters. Stations are also chosen based on community and social hubs such as the local restaurants, retail stores, educational institutions, and community centers. These stations are also chosen based on existing and proposed paths of urban movement. The nodes can also act as more than just an intersection between paths of movement.

Following the principles of placemaking, providing micro community programs at these intersections can create and celebrate a sense of place at various points throughout Downtown. This is where the stations themselves can act as tools for community connection, in turn solidifying the idea of Intermodal Connections within the city. The stations are designed to use a mass-timber language, similar to the size of rail-ties to relate to the idea of movement in the city. The joinery uses the traditional style of timber construction that can be found throughout

Sudbury's history. Inside each of these stations, a micro-program is added to spark an interaction with the station and with the community itself. The various programs include a micro-library, a water station, art station and seating. The micro-library is small bookshelf recessed into the structure where people can take and leave books sharing knowledge with the community. A water bottle filling station that can provide fresh clean water to all members of the community. This would especially help the demographics in the Downtown that might not have access to clean drinking water. It also continues the celebration of water within the urban fabric of the city. Art stations would follow a similar design to the micro-library where art supplies could be placed on shelves in the station. This would connect with the existing urban art narrative of Downtown with Up-Here Festival and the mural scene. Spaces on the station could be provided for drawing, sketching, and painting. And finally, seating can be incorporated into several stations to provide a place for people to rest while they wait for the shuttle. It also provides seating to the community which is currently lacking in Downtown because of the anti-homeless urban environment that has been built. Many buildings even have anti-homeless hostile architecture with spikes installed on flat surfaces to ward off the unhoused population from using them as places to rest.

Key Plan



Figure 68 Durham Pedestrian Street Facing South Vignette

Key Plan

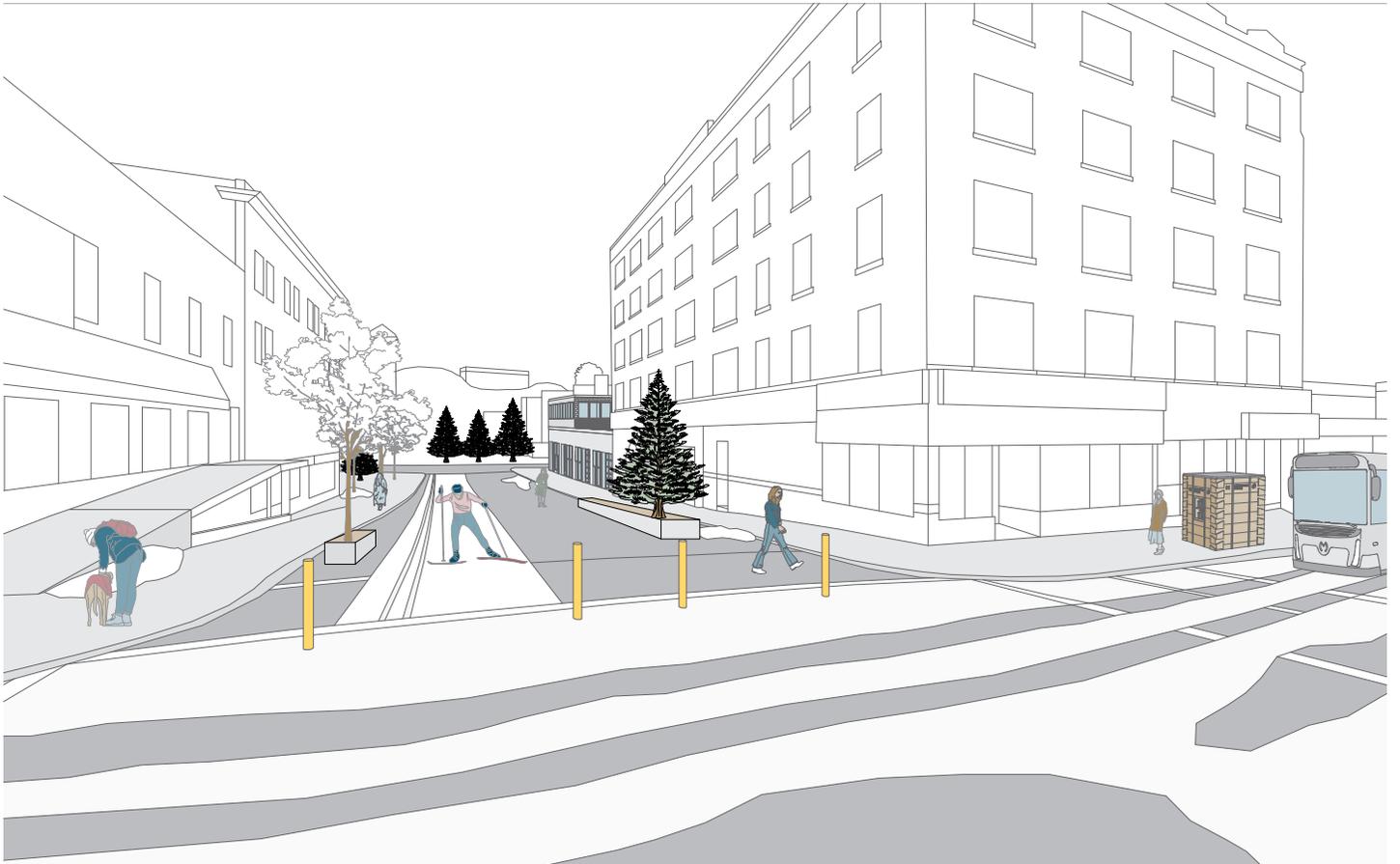


Figure 69 Durham Pedestrian Street Facing North Vignette



Figure 70 Nolan's Creek Urban Plaza Render

This scale provides possible solutions to re-imagine the Downtown core as an accessible and vibrant urban environment. Using the network of movement proposed in the large scale can bring people back to the Downtown. The urban fabric of the city can then be re-imagined as a people-oriented space, focusing on movement and community connections. Pedestrian streets and plazas can provide public space that the city is in dire need of. Movement through the city, motorized, non-motorized and natural can increase public activity and interaction. The intersections of these paths can be used to place community programming that would benefit a large range of the city demographics creating micro-placemaking spaces.

6.3 Borgia Place Community Center (Small Scale)

how to rejuvenate the downtown by creating public spaces that foster community interaction. The Borgia Place Community Center can provide a space for people to gather for various public activities. The center includes various forms of makerspaces to celebrate making and craft in the city. Urban agriculture and food education is included through various programed spaces. Finally, a permanent market would be used by both activities and provide additional community interaction for the space. The

community center is an adaptive re-use of the existing Elm Place Mall at the north end of Downtown Sudbury. The building is both an addition to the existing structure constructed on vacant parking land between the mall and Durham Street, and adaptive re-use of specific spaces within the existing mall. The proposed building would bring back the street front narrative of buildings that were torn down along Durham at this location.

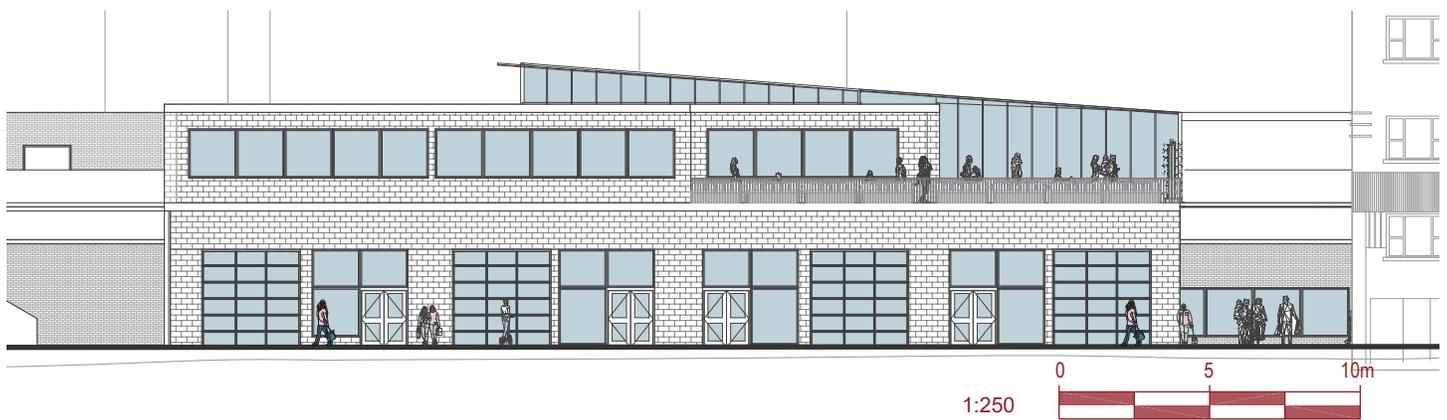


Figure 71 Borgia Place West Elevation

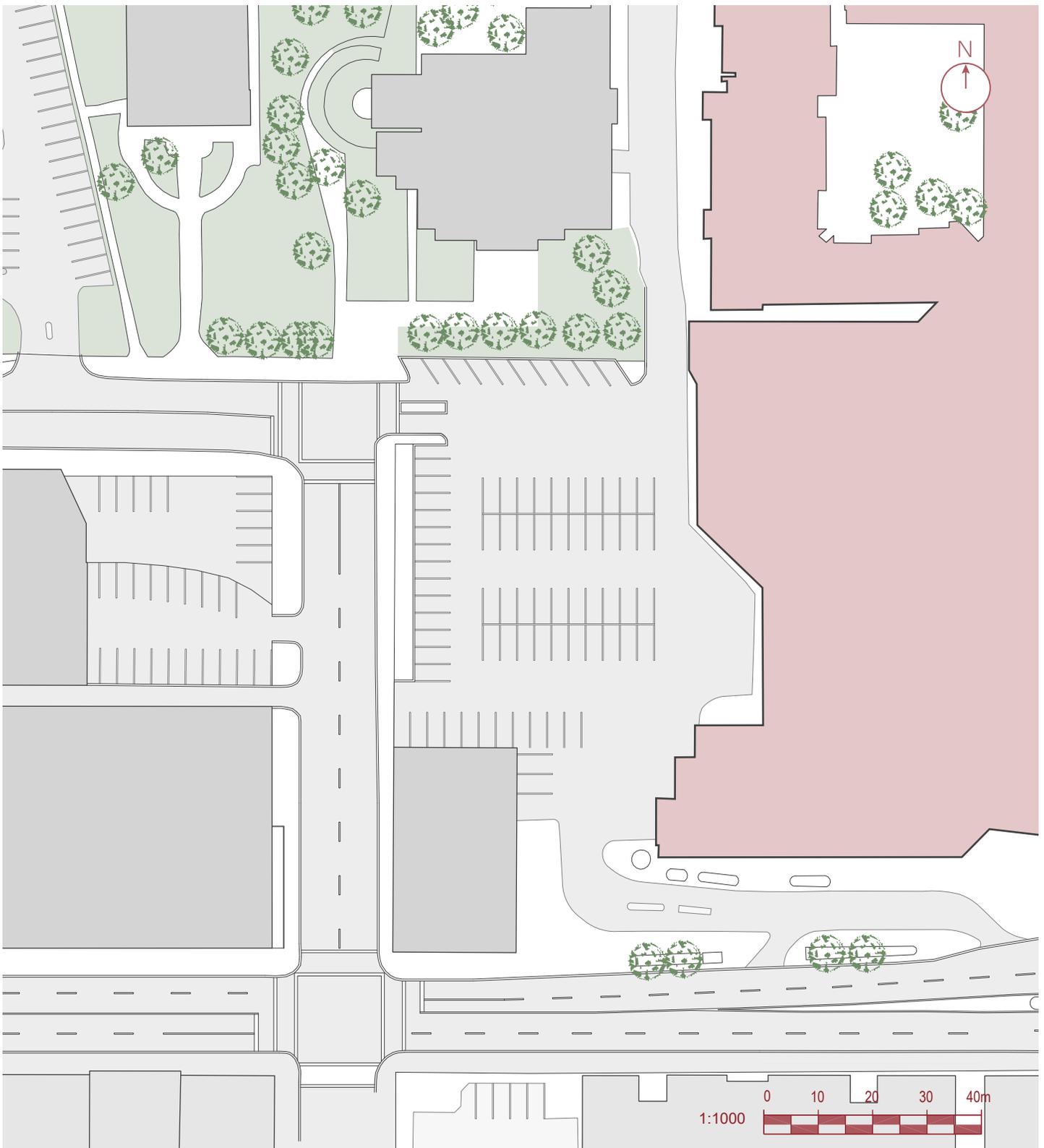


Figure 72 Existing Site Plan



Top
Figure 73 Durham Street Vacant Parking Lots and Mural

Top
Figure 75 North End of Durham Street Vacant Parking Lots

Bottom
Figure 74 Elm Place South Entrance into Mall

Top
Figure 76 Elm Place West Entrance Into Grocery Store

The landscaping language is continued from the Nolan Creek Plaza across the street from the building. Concrete pavers are used to represent the urban grid on the site. Various sections of the grid are broken up using natural landscaping strategies, visualising the narrative of the city being healed by introducing nature. Part of the existing Mall is removed to reduce uncomfortable spaces on the site like harsh corners and blind spots. The proposed addition and the existing structure of the mall are separated on the first floor by a large walkway so that existing paths of movement that occur on the site are not disrupted. Where the section of the existing building is being removed, the structural components will remain, creating a pavilion space at the entrance.

Steel beams and columns create an outline of what was previously there, while green space and vegetation can begin to grow within it.

The first floor of Borgia Place is designed as an open area that can be adapted to fit the needs of the programs and activities that populate the space. The façade treatment uses glass curtain walls with various openings along all four sides of the building. This creates an interior space that can be opened to the exterior to promote movement through the building. People walking along Durham Street can access the building from various large glass garage doors which can be opened when community-orient-



Figure 77 Borgia Place Site Plan



Figure 78 Borgia Place Site Render

ed activities are taking place inside. Large double doors are also included for easy movement into and through the building during colder months when the garage doors would normally remain closed. Using garage doors with glass panels allow for people walking past to continue to watch and interact with the activities from the outside of the building when the doors are closed. The interior can be arranged into several separated spaces for different programs including more public forms of making and craft, as well as educational and urban growing activities. Spaces are divided by a using adaptable wall components attached to a track system on the ceiling. The walls are assembled using wood cladding and a light insulated interior, reducing sound that can carry between rooms. The track follows the structural grid of the building allowing the spaces to be separated into individual 83 square meter areas or combined to create larger rooms based on the demand for the intended program. Wheels are attached to the base

to allow the wall to move freely along the path of the track. The garage door and double door openings can be found on the north, east and west faces of the building entering the interior space. The south façade on the first floor is a floor to ceiling curtain wall letting in natural light into the interior spaces. South facing windows absorb the most natural light and heat. This passive design strategy can be useful during the winter months to reduce the energy consumption of the building. The first-floor spaces of the Borgia Place building have been arranged for programs within makerspace and urban agriculture categories however, these spaces can be populated by any form of community-oriented activities.

One possible use for the space which has been visualized in the south-west section of the building is a ceramic/ pottery studio. Ceramics is a form of making that is relatively safe and requires very little

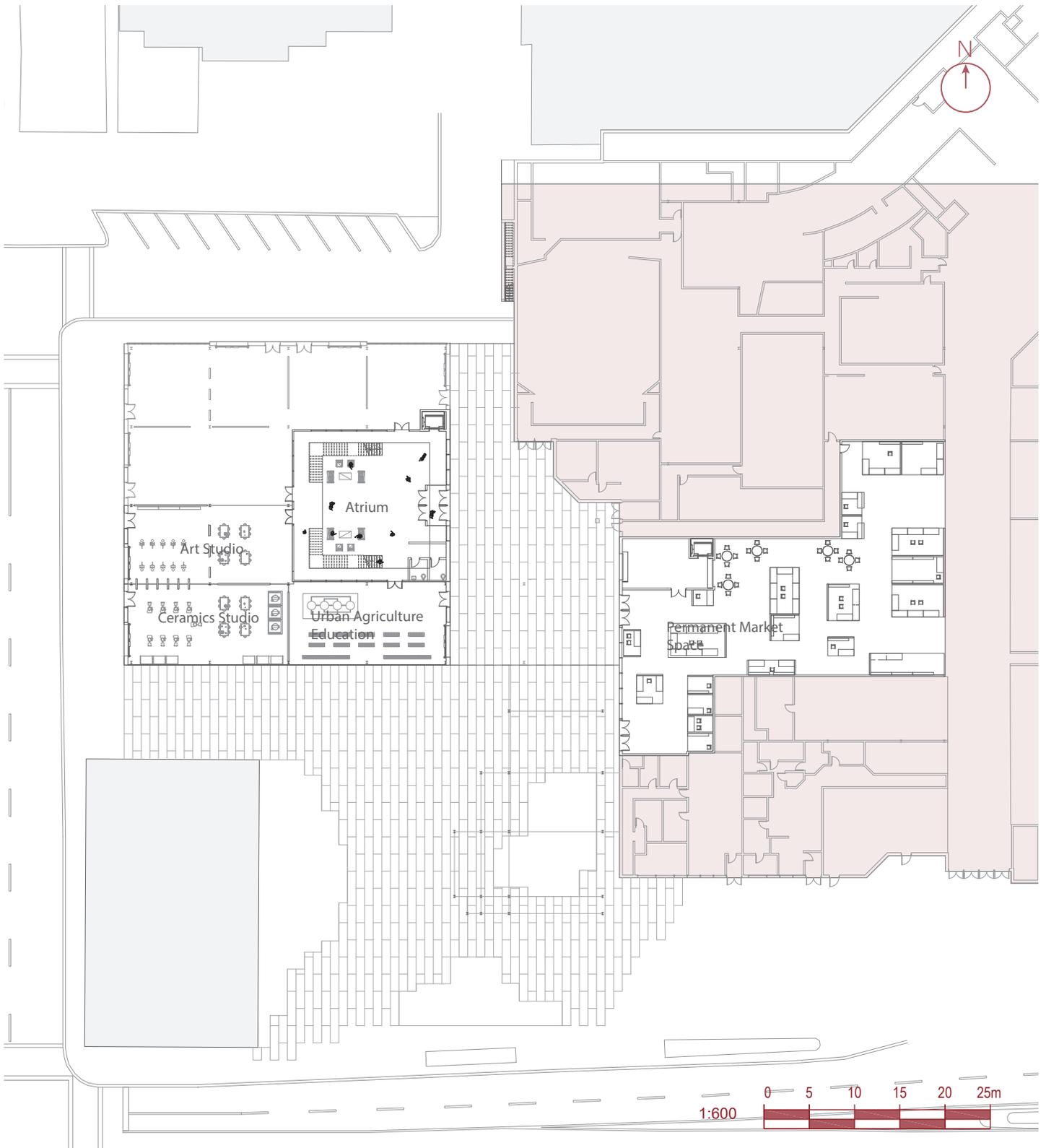
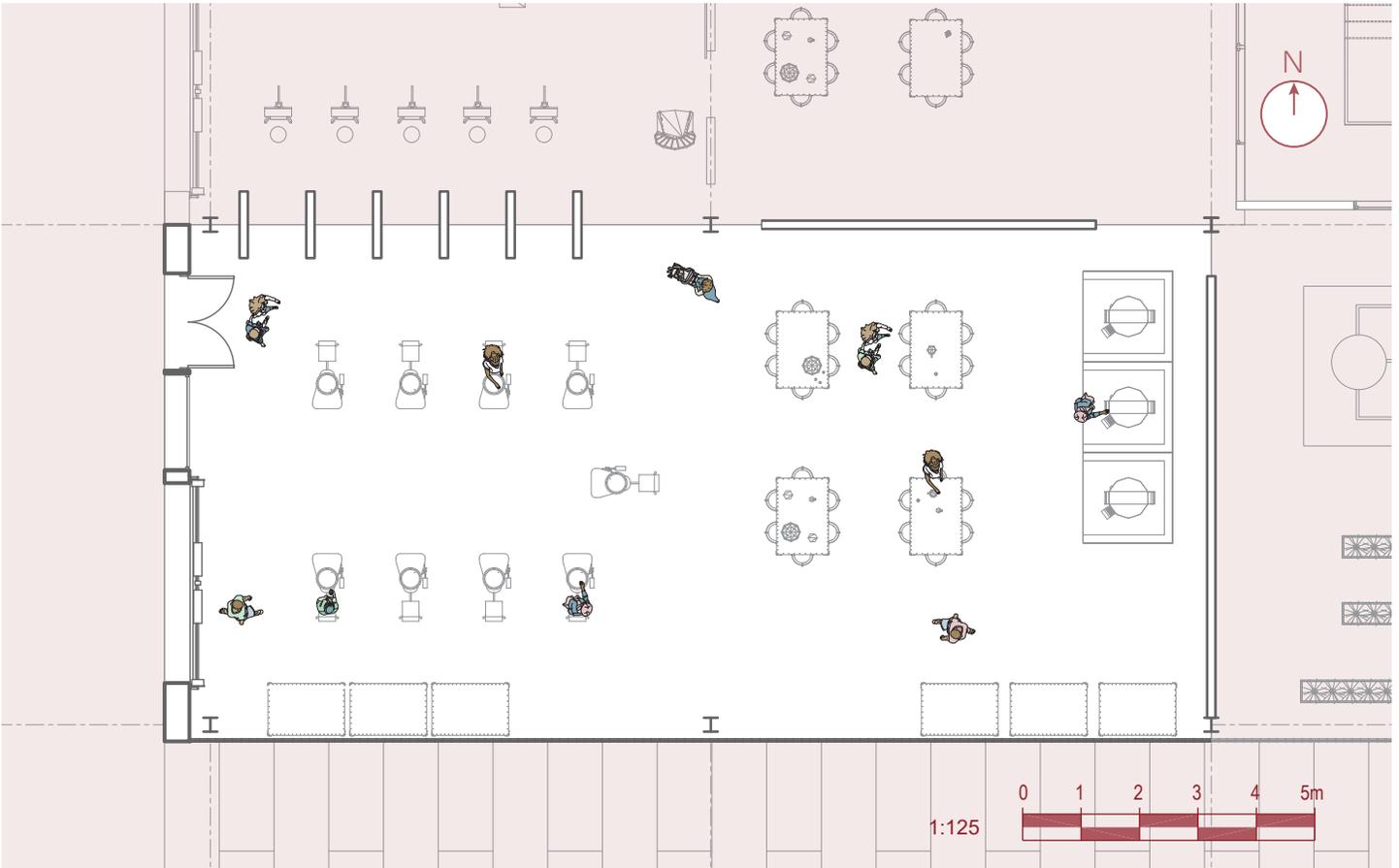


Figure 79 Borgia Place First Floor Plan

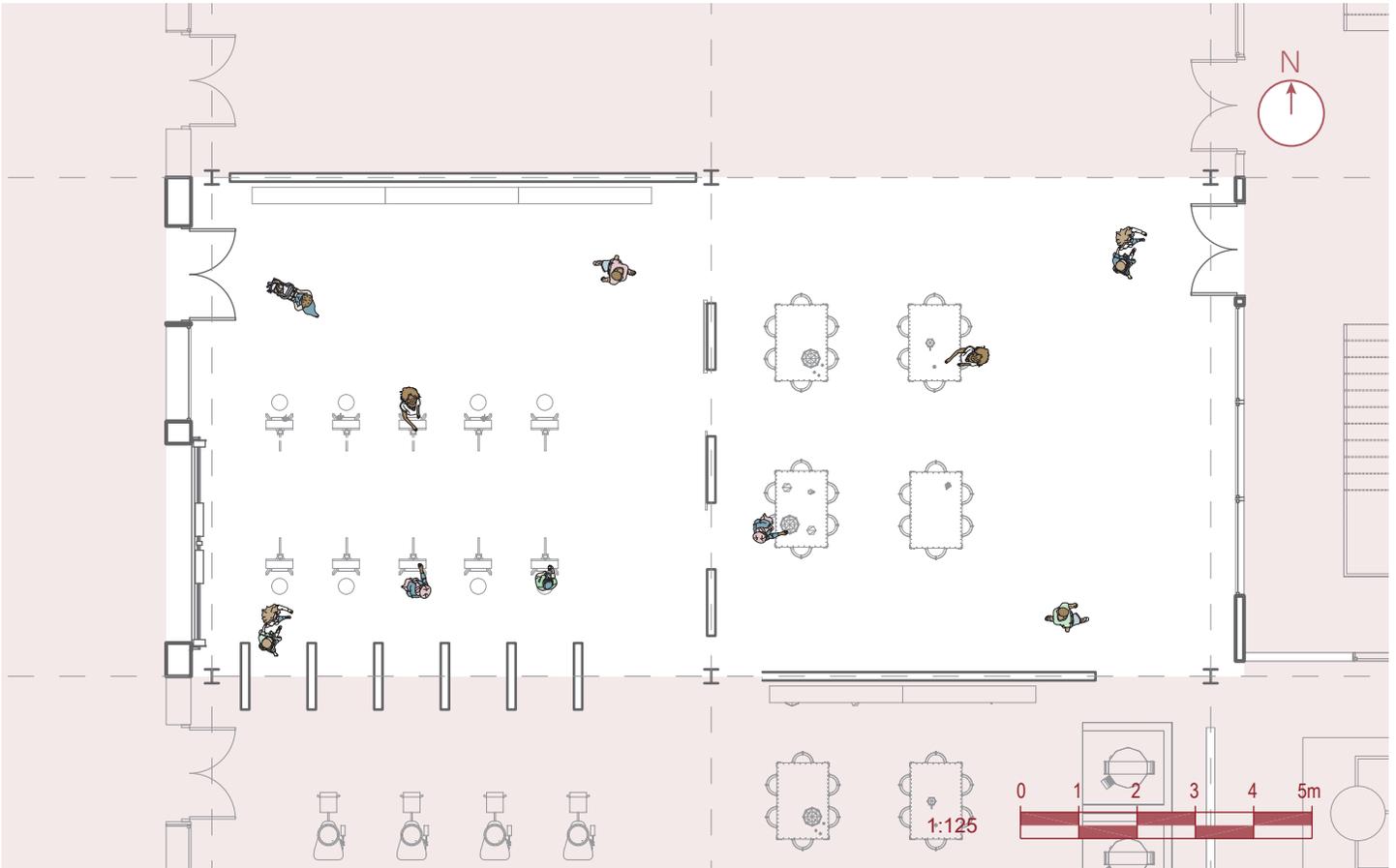
safety training. There are different forms of ceramic making including spinning and non-spinning techniques. Non-spinning techniques can be a very public activity, where people can sit down and begin molding clay forms using tools or by hand. This would be the safest and most public form of ceramic making requiring very little training besides teaching technique. Spinning pottery requires additional training for beginners who could walk in off the street for a public class. Courses could be taught on how to use the spinning wheel which are now mainly electric powered. This could still be a public activity for community members to enter the studio, sit down and begin working with a trained instructor. Figures 80 and 81 show what the studio layout could possibly look like with spaces for both spinning and non-spinning practices. A large amount of shelf and additional table space is required for these activities to hold supplies and working pieces. The studio has three smaller sized kilns to bake finished pieces. Using several smaller kilns that can be easily moved allows for the space to be flexible, with larger kilns needing to be installed in place. There is an existing ceramics maker culture in the city of Sudbury with the Sudbury Basin Potters group. The current facility is located in an old park maintenance building in the New Sudbury area. The building is rather small having a limited capacity for users. Only a handful of artists can use it at one time. Introducing an additional ceramic studio into the city would invite new members to take up the activity and expand the existing maker community. By having the location Downtown, it would make it easier for more people to access the studio with the current facility being hard to reach, especially without a personal vehicle.

Another possible use for the first-floor space related to making would be an Art, Painting, and Drawing Studio. These activities could be amalgamated into one studio space or spread out into several studio areas depending on the demand. Figure 82 and 83 present a possible layout for an art studio which could provide public classes to the community. The studio can also be divided into two sections depending on what types of art classes and making are taking place. The Sudbury art community is quite large with many groups and events based in the city that celebrate all forms of artistry. The urban landscape itself has been enriched with street art and murals populating once empty walls around Downtown and across the Greater Sudbury area. The Up-Here Festival, the origin of many of these murals, is a festival downtown that celebrates local artists. There are several art galleries and exhibition spaces for local artists to hold events and viewings for their work. What is currently lacking in the city is a space for new and experienced artists to come together to create art. Some established artists have their own private studio spaces to work in. The Art Gallery of Sudbury provides classes for beginners throughout the year, and other studios have pop-up art class events. However, there is no public space for artists to use at any time without registering for a class. This studio could become an open public space to create art, as well as an additional space to provide classes to the community.



Top
Figure 80 Ceramic Studio Render

Bottom
Figure 81 Ceramic Studio Floor Plan



Top
Figure 82 Art Studio Render

Bottom
Figure 83 Art Studio Floor Plan

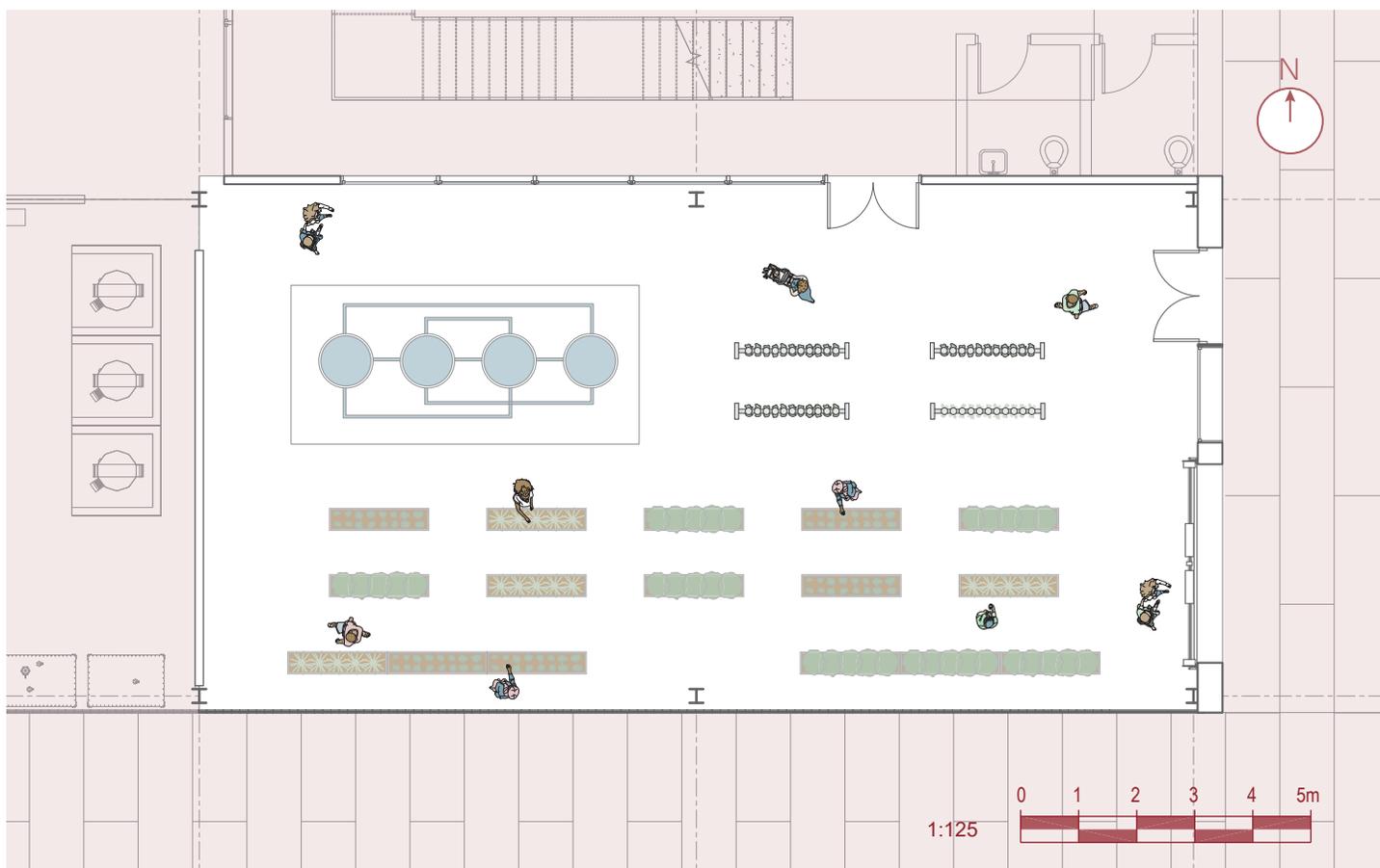


Figure 84 Urban Agriculture Education Floor Plan

The first-floor flexible spaces can be populated by a variety of programs and activities. Other possible uses for the studio spaces can include various forms of making and craft. Fabric working can be introduced into a studio as a public form of making. This could include various forms of fabric making like sewing, stitching, quilting, knitting and other types of fibre arts. These are all generally safe forms of making that can be open for the public. Another form of making that can be introduced into a studio space could be leather and bead working. Both of these are traditional forms of Indigenous making, that can be taught and celebrated within the Borgia Place community center.

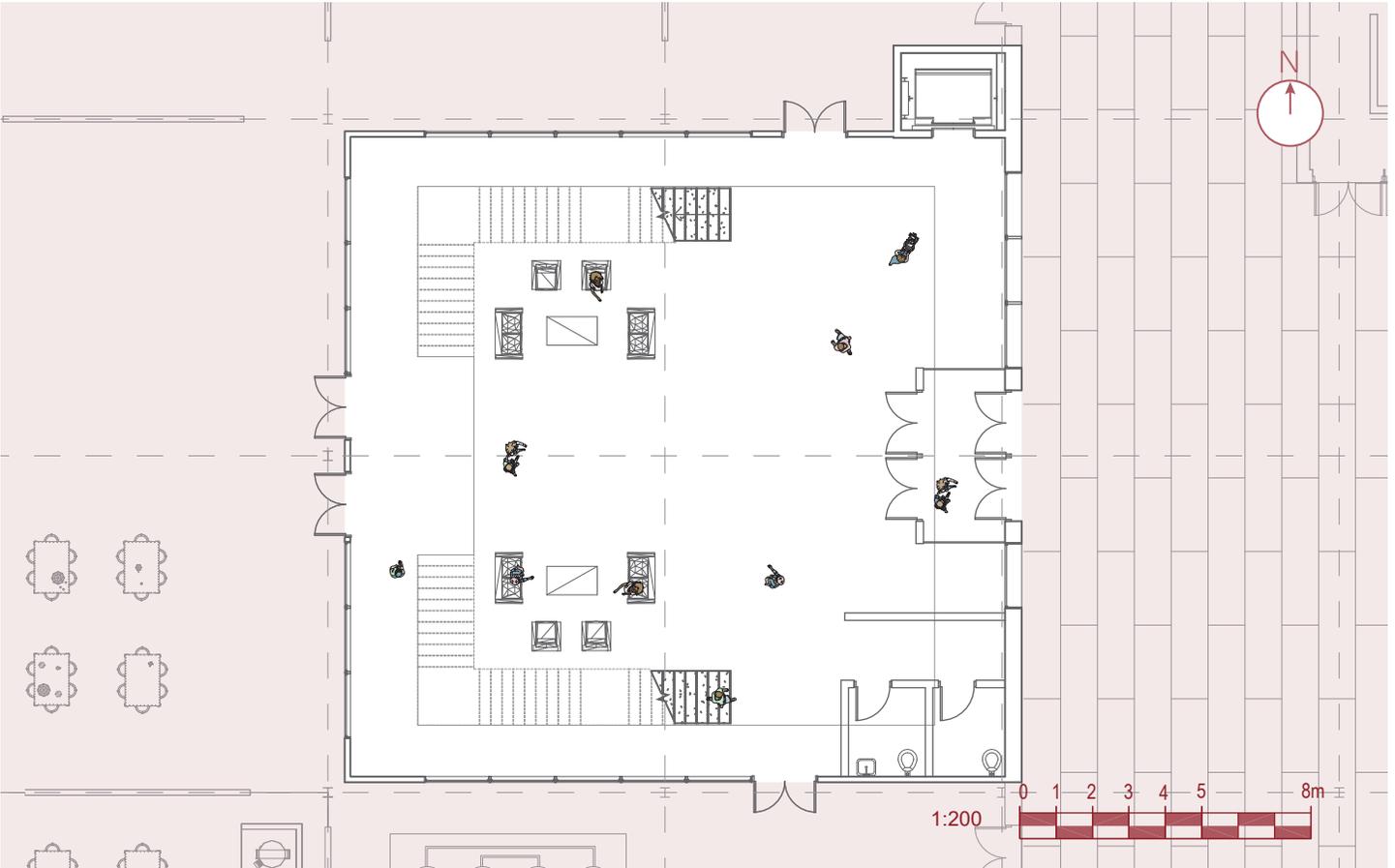
A use for the first-floor space outside of the craft and making programs would be an educational space for urban agriculture and water treatment. Growing is one of the three program typologies found within the Borgia Place Community Center. There are several spaces throughout the building designated for urban agriculture and activities associated with growing. The first-floor educational urban agriculture and water treatment space is intended to be the starting point for people to learn and interact with growing. The space has been arranged to include both forms of growing systems found throughout the building, with the standard planter boxes as well as the vertical hydroponic wall systems. A water filtration system is included in this space to expand

discussion on water sources, and to connect the interior activities with the narrative of the site and the daylight Nolan's Creek. The water that travels through the Nolan's Creek Plaza across the street from the building is brought into the building and filtered for use within the community center. This program would require a more permanent location within the first floor of the building because of the water filter which is a permanent system that can not be moved once installed. Education would be a primary activity in this space, introducing community members to the idea of urban agriculture within the city.

The atrium is the only permanent space within the first floor acting as the central focal point of the building. Located on the east side of the Borgia Place proposed building, the atrium is surrounded on three sides by the flexible studio spaces. It acts as the main entrance into the building, with washrooms and public seating inside. The space can also be partitioned using the moveable hydroponic growing walls that are included in the furnishing of the space. The atrium can be accessed by various doors that lead into the adaptable studio spaces to continue the idea of movement through the building. Large interior windows let people inside the atrium watch the activities that are taking place in the studio spaces. Two grand staircases are mirrored on



Figure 85 Atrium Second Floor Mezzanine Render



Top
Figure 86 Atrium First Floor Render

Bottom
Figure 87 Atrium First Floor Plan

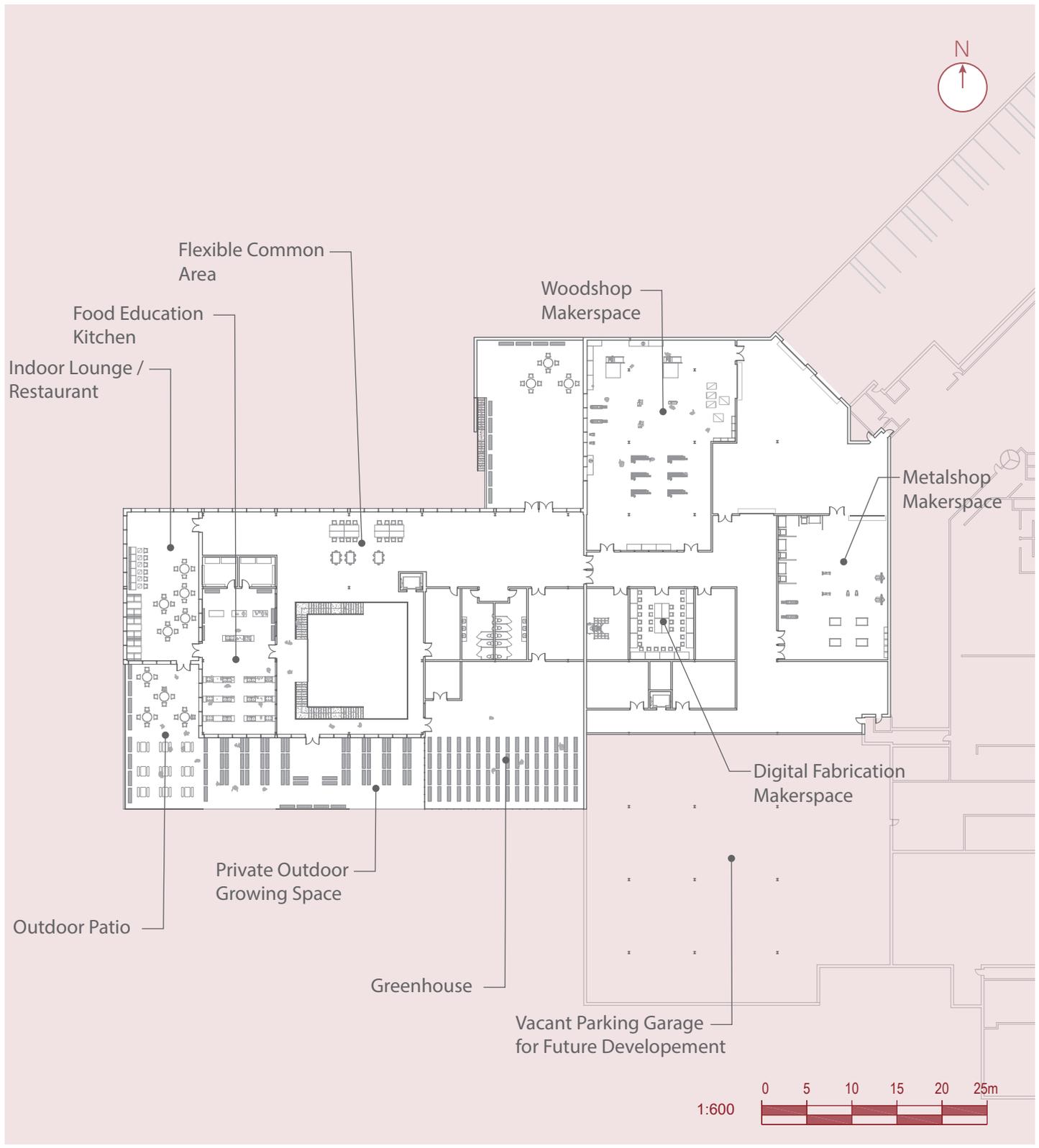
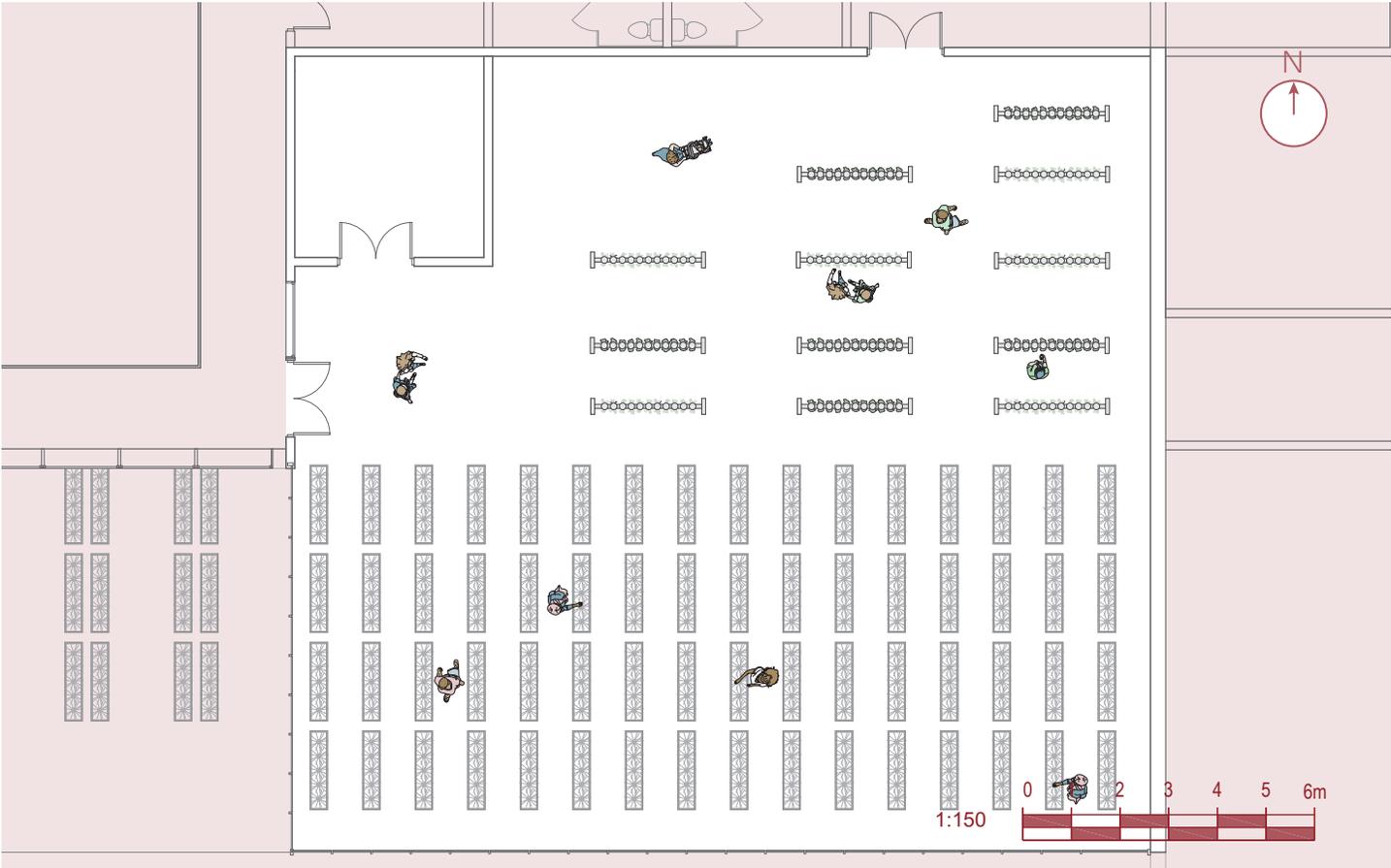
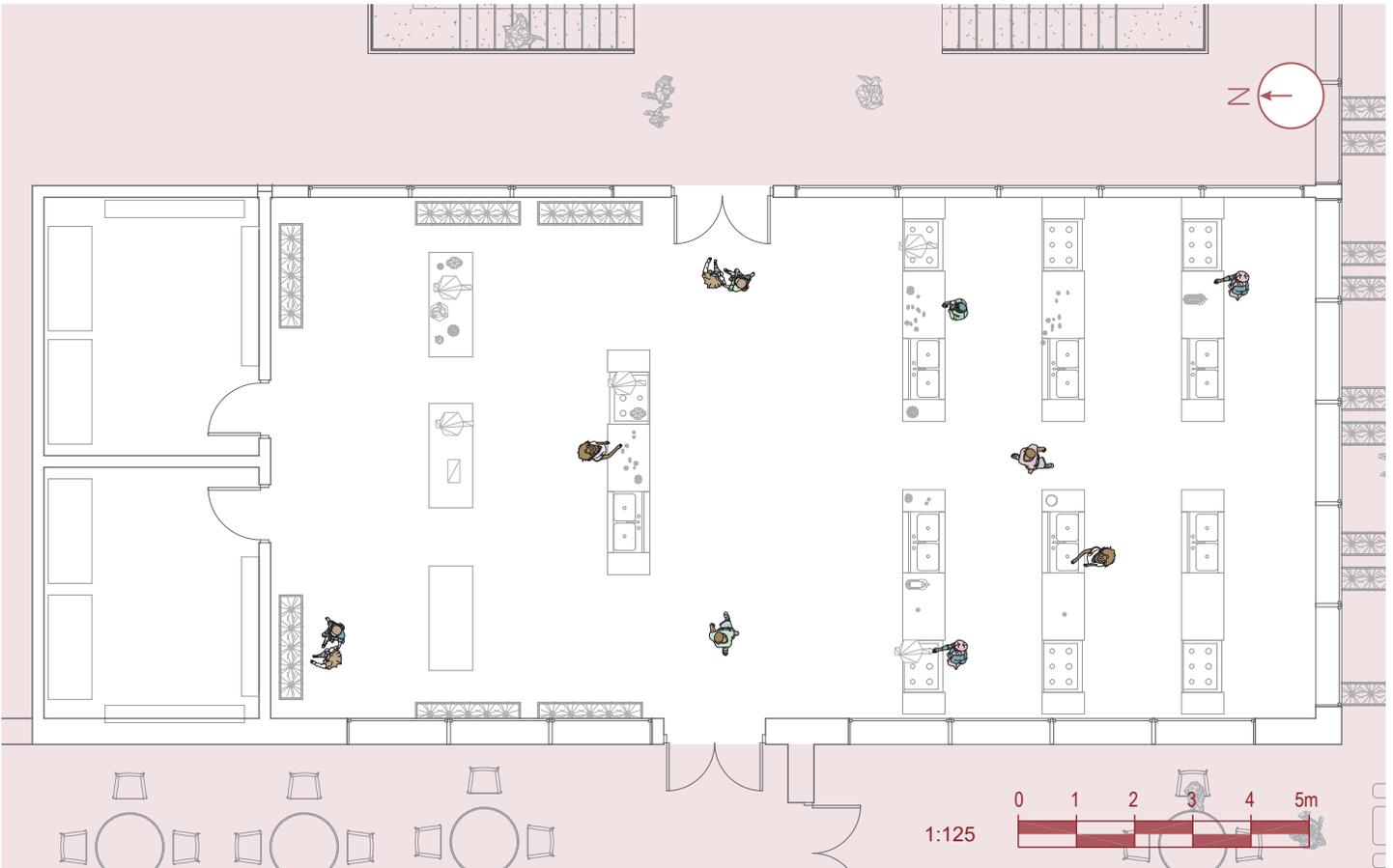


Figure 88 Borgia Place Second Floor Plan



Top
Figure 89 Urban Agriculture Greenhouse Render

Bottom
Figure 90 Urban Agriculture Greenhouse Floor Plan



Top
Figure 91 Food Education Kitchen Render

Bottom
Figure 92 Food Education Kitchen Render

either side of the room celebrating movement within the space providing access to the second floor. A second-floor mezzanine wraps around the atrium with a large skylight to bring in natural light into the open space. Various spaces branch out from the mezzanine with the interior window language continued from the first floor to allow users to watch and interact with the activities taking place.

The idea of urban growing is continued on the second floor with the greenhouse interior space and exterior growing patio. The greenhouse is located on the south part of the second floor to optimize natural light into the room. The skylight language that is used in the atrium continues into the greenhouse space. It is populated with standard planter boxes, as well as a series of hydroponic wall systems, allowing for various ways for produce to be grown. The greenhouse would utilize natural light for growing within a controlled interior space which would allow for produce to be grown year-round. The intent of the greenhouse is to be a more private space for growing with restricted access. As a spark for development of urban agriculture in Downtown and more specifically within the Borgia Place and Elm Place buildings, growing can expand into more vacant spaces over time. Empty retail spaces in the mall can be temporarily occupied by urban growing until tenants move in. The second-floor parking lot of the Elm Place Mall takes up a large surface area

that could be utilized by other programs oriented around people and growing. Part of this area could be adapted for year-round growing using artificial lighting strategies which are now becoming more efficient ways of growing local produce.

Complimenting the urban agricultural programming located throughout the building is a Food Education Kitchen. This space can be used by the community to participate in cooking classes. It is important to provide a space to educate the community on cooking with fresh, local produce. The kitchen would use produce that is grown within the Community Center to promote the discussion of food security. The kitchen layout follows a design cooking education with six separate cooking stations that include a stove top, oven, sink and counter space, while also having a central cooking station at the head of the room for an instructor. A walk-in pantry and freezer are included at the back of the room, and planter boxes surround the space to be able to grow herbs and some produce. The kitchen is also attached to an indoor lounge and dining space, which can be used by the cooking classes. The kitchen and dining space can also be used by local chefs as a pop-up restaurant space. The lounge space can be converted into a dining hall, and a separate entrance outside of the kitchen can provide access to the restaurant space.

The outdoor growing patio is a seasonal growing space that is more public than the greenhouse space. The patio is located between the greenhouse and the kitchen space and can be accessed by both areas. It is separated into two areas, the first being an outdoor growing space for members of a growing community, the other is a patio space for the public to access for lounging and eating. The outdoor growing space provides both spaces for planter boxes and the vertical hydroponic systems. The hydroponic systems act as wall facades along the balcony which can be used to grow produce. The planters are arranged to provide the most amount of growing space outside and can be used for any form of growing either with plants or for produce. The planting space can be rented out for members of the center who would grow their own produce in the facility throughout the summer months for personal use. The patio space is accessed by both the kitchen and the outdoor growing area to be used by the entire community.

More construction-based forms of makerspaces are located on the second floor. This includes a woodshop, metal shop, and digital fabrication spaces which would need to be removed from the public access of the rest of the building. The woodshop and metal shop use more industrial tools and machines that would require training and safety certification before using. The digital fabrication space also uses

machines that would require a certain amount of training to use. These programs are located on the second floor where the parking structure of the mall is currently located. The parking garage is constructed using heavy structural members which can withstand the heavy industrial practices of these maker spaces. The heavy concrete floors constructed for automotive use can support the machines used within the makerspaces. There is currently no public woodshop or metal shop in Sudbury that is open for anyone to use. The MSOA fabrication facility is limited to architecture students. The Hilltop Woodshop in Sudbury is currently only open for seniors to use as it is part of a senior's community. The Public Library does provide a small makerspace in their facility but it is lacking in scale and only provides a small se-



Top
Figure 93 Outdoor Patio Render

Bottom
Figure 94 Outdoor Patio Floor Plan



Top
Figure 95 Woodshop Makerspace Render

Bottom
Figure 96 Makerspace Floor Plan

lection of hand tools for making. Providing a space where people can join classes in woodworking and metal working can expand the interest in trades and craft within the community.

The final program this community center includes is a permanent market on the first floor of the existing elm place mall. The market is located in the retail space that is currently occupied by the Marketplace grocery store. On the west side of the building, this space as two access points, one from the exterior adjacent to the site of the proposed Borgia Place addition, and the other from the interior of the mall. The existing tenant can be relocated to one of several vacant spaces within the building. The market can then guide people into the mall promoting movement into and through the building, aiming to rejuvenate the forgotten retail center. It will act as the center of the Borgia Place programs, connecting both the maker spaces and urban agricultural programs together. Pieces that are made from the various makerspaces can be sold in booths located in the mall. Fresh produce that is grown within the greenhouse and any other space that has expanded for urban agriculture can be sold year-round in the market. Stalls can be occupied for food sale as well, using the kitchen space to bake or cook. The market brings together all activities within the building to one space where the public can meet. Acting as the beacon for movement into and through the building, to bring people back to the Downtown retail center.

The Borgia Place community center aims to be a catalyst for future development of people-oriented design within Downtown Sudbury. This facility has focused on provided sufficient space for the community to engage in making and craft activities. It begins the discussion of food security and healthy food options by providing space for urban agriculture. It creates a sense of place within the Downtown by providing opportunities for community interaction and engagement through various programs. This project is just one example of using placemaking strategies to re-imagine the city by using community-oriented architecture.



Top
Figure 97 Market Render

Bottom
Figure 98 Market Floor Plan

7.0 CONCLUSION

The City of Greater Sudbury has had a history of Industrial desecration and an urban narrative that is scared by planning ideologies focusing on efficiency and machines rather than people. The product of this development is a city that is disconnected from itself and an urban landscape that is fragmented. As the city begins to heal from the scars left by destructive practices of the past, it must re-imagine a landscape where infrastructure is designed for people and the community.

Intermodal Connections provides a network of movement throughout the City of Sudbury to reconnect the city as a whole. This network comprised of motorized forms of public transit and non-motorized paths of movement focuses on the human interaction with city infrastructure and provides the user various options on how to move around the city. This network in turn creates nodes and connection points where paths meet to promote urban development.

The network of movement leads people to the Downtown core, aiming to rejuvenate the city center through strategic placemaking interventions. This thesis re-imagines the Downtown as a pedestrian friendly urban environment. Pedestrian and natural movement are celebrated through urban landscaping strategies. Community-oriented spaces provide the Downtown with programs that support and benefit the current and future demographics.

The Borgia Place Community Center acts as a focal point for community-oriented architecture within Downtown, using the existing site of a forgotten retail center. The Community Center brings together various activities into one facility to celebrate community interaction. Makerspaces that are open to the public can support and expand the maker community within the city. Urban agricultural programs can start the discussion of food security and nutrition within the city's northern climate. This proposed building can help to reshape Downtown Sudbury to create a sense of place once more.

This proposal has included various scales of possible interventions both at an urban and architectural level to rejuvenate the city. Some of these interventions are large in scale, while others are simple ideas that can easily be introduced into the city. It is ultimately up to the community itself and the people of Sudbury to decide what the future of the urban narrative of the city will be.

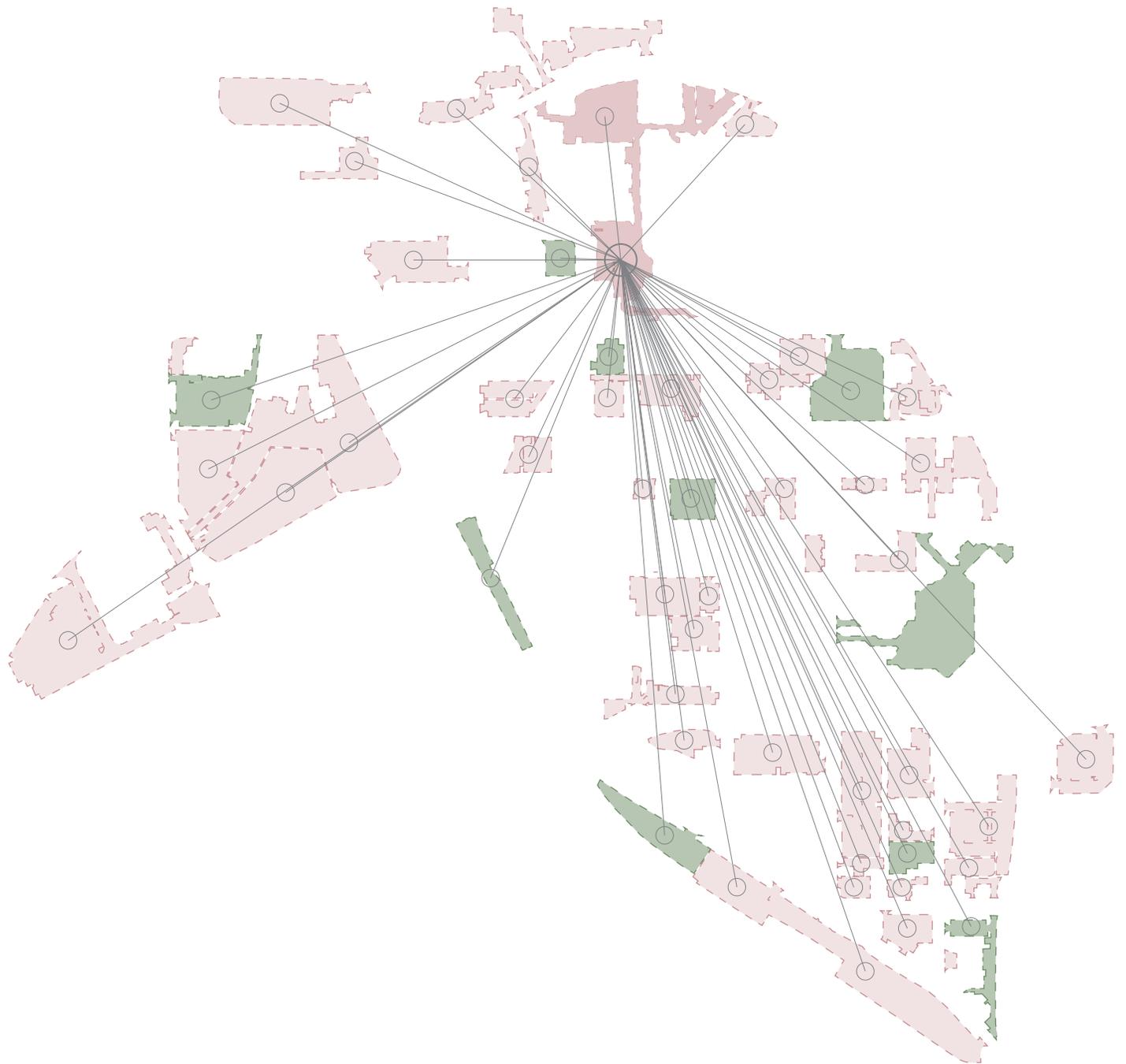


Figure 99 Development of Vacant Urban Space Diagram

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