

**A Reason to Stay:  
Architecture to Diminish the Trend  
of Rural to Urban Migration**

by

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## ABSTRACT

This thesis examines how the design of a creative hub can stitch together disconnected elements of a *rural* community.

Nova Scotia was once comprised of rural self-sustaining communities that thrived because of the industries located within them. As the industries shut down, the amount of local work was reduced; forcing residents to relocate, commute or work from home. A significant geographic separation between “work”, “live” and “recreation” leads to unhealthy lifestyles, and rural *bedroom communities* where residents spend their daily lives elsewhere.

This proposed creative hub structure will provide collaborative spaces and resources for entrepreneurs and creators, to diminish the trend of rural to *urban* migration. The general program is “a place to create” while the exact program will be dependent on the location of the building. The architectural prototype will be designed for the specific context of Hantsport, Nova Scotia but remain adaptable to other rural communities.

## DEFINITIONS

**Urban:** an area with a concentration of population at a high density. Also referred to as a 'population center', it has a population of at least 1 000 people and a density of 400 or more people per square kilometer.

**Rural:** an area where population is not concentrated but dispersed at a low density; any area outside of an urban area.

**Small population center:** an urban area with a population of 1 000 to 29 999.

**Medium population center:** an urban area with a population of 30 000 to 99 999.

**Large population center:** an urban area with a population of 100 000 and greater.

**Bedroom community:** a suburban area or town where many commuters live, often a significant distance from the place of employment.

**Infrastructure:** the basic physical and organizational structures and facilities (e.g., buildings, roads and power supplies) needed for the operation of a society or enterprise.

**Active transportation:** refers to all forms of human powered or non-motorized transportation.

**Makerspace:** a community operated workspace where people with common interests can meet and collaborate.

**Crowdsourcing:** obtain (information or input into a particular task or project) by enlisting the services of a number of people, either paid or unpaid, typically via the internet.

**Lido:** a public, open-air swimming pool or beach.

## **ACKNOWLEDGEMENTS**

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I would like to especially thank my committee for their unwavering guidance. Thank you Susan for encouraging me to strive for a deeper understanding of the research topic and for teaching me how to approach projects with new perspective. Thank you Niall for keeping my ideas on track from the beginning and for pushing me to always develop my resolution further. To both of you for your contagious enthusiasm and passion for architecture.

The support from my family has made this entire academic journey achievable. You have been willing to do whatever possible to help me during stressful times and always back me up with decisions I have faced. A special thanks to Greg for being a voice of reason and for putting my needs before his own. I would not be where I am now without you.

## **CHAPTER 1: THE ISSUE**

### **The Global Issue: Rural to Urban Migration**

#### **Push and Pull Factors**

There is currently a global trend of rural to urban migration. There are many different reasons for people to leave rural areas as well as reasons for people to relocate to urban centers. These are referred to as push and pull factors. Some push factors are more apparent in developing countries where poor living conditions (low quality housing, education and health care), war and conflict, famine, and drought may force people out of rural locations. Other factors that push people out of residing rurally are unemployment, agricultural changes, and natural disasters.

One of the key pull factors that cities have as an advantage over rural areas is employment. There is a greater amount of job opportunities and job diversity as well as opportunities to receive higher incomes. Some people will choose to relocate to cities for access to better education, health care, urban facilities or protection from conflict. The choice can also be based on a difference in way of life which acts as both a push and pull from both rural and urban lifestyles.<sup>1</sup>

#### **Increasing Rural Pull Factors**

The pull factor of employment is one of the main areas of focus for this thesis. The intention of this architectural intervention is to provide strong pull factors in rural areas to fight migration to urban areas. Urban centers are able to provide a larger spectrum of employment types and opportunities but they cannot necessarily provide the same way of life that rural areas can. If rural communities provide local employment options and tap into cultural and recreational opportunities then they can be just as attractive to reside in as urban centers. Combining live, work and recreation into rural zones would help curtail the trend of rural to urban migration.

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<sup>1</sup> Matt Podbury, *Rural - Urban Migration in LEDCs*, accessed January 20, 2016, [http://www.geographypods.com/uploads/7/6/2/2/7622863/3-rural-urban\\_migration\\_in\\_ledcs.pdf](http://www.geographypods.com/uploads/7/6/2/2/7622863/3-rural-urban_migration_in_ledcs.pdf).

Creating employment opportunities in rural areas isn't the only way to make residing rurally more appealing. Richard Florida states that "creative people don't just cluster where the jobs are, they cluster in places that are centers of creativity and also where they like to live".<sup>2</sup> This iterates the fact that rural communities need a revival process that addresses all aspects of the rural fabric since urban areas are seen as containing more creative and cultural diversity. Rural areas are at a disadvantage because they have lower densities than urban centers, but through built forms they can become more diverse. Jane Jacobs felt that streets and built form can be planned to promote vibrancy and social capital by encouraging diversity.<sup>3</sup>

While it can be criticized that Richard Florida's theories do not approach rural issues directly, the research he applies to small cities with less density can apply to rural areas. Florida feels that creative people are drawn to specific environments that are not only densely-populated, but also vibrant and diverse. In some cases, creative clusters will emerge more fully in smaller, less dense cities provided that amenities available in the smaller cities are more conducive to a 'creative lifestyle'.<sup>4</sup> Emphasizing the attractive way of life and natural amenities of rural places will help to strengthen the pull factors of rural areas. Emphasizing aspects already existing rurally can improve the quality of place.

## **Provincial Issue: Permanent and Daily Rural to Urban Migration**

### **The Importance of Rural Nova Scotia**

The trend of rural to urban migration is observed in Nova Scotia, Canada because such a high percentage of the population resides rurally. As of 2011, almost half of the population (43%) lived in rural areas; more than double the Canadian average.<sup>5</sup> If only the *large and medium population centers* are considered urban, then 65% of the population is located rurally.

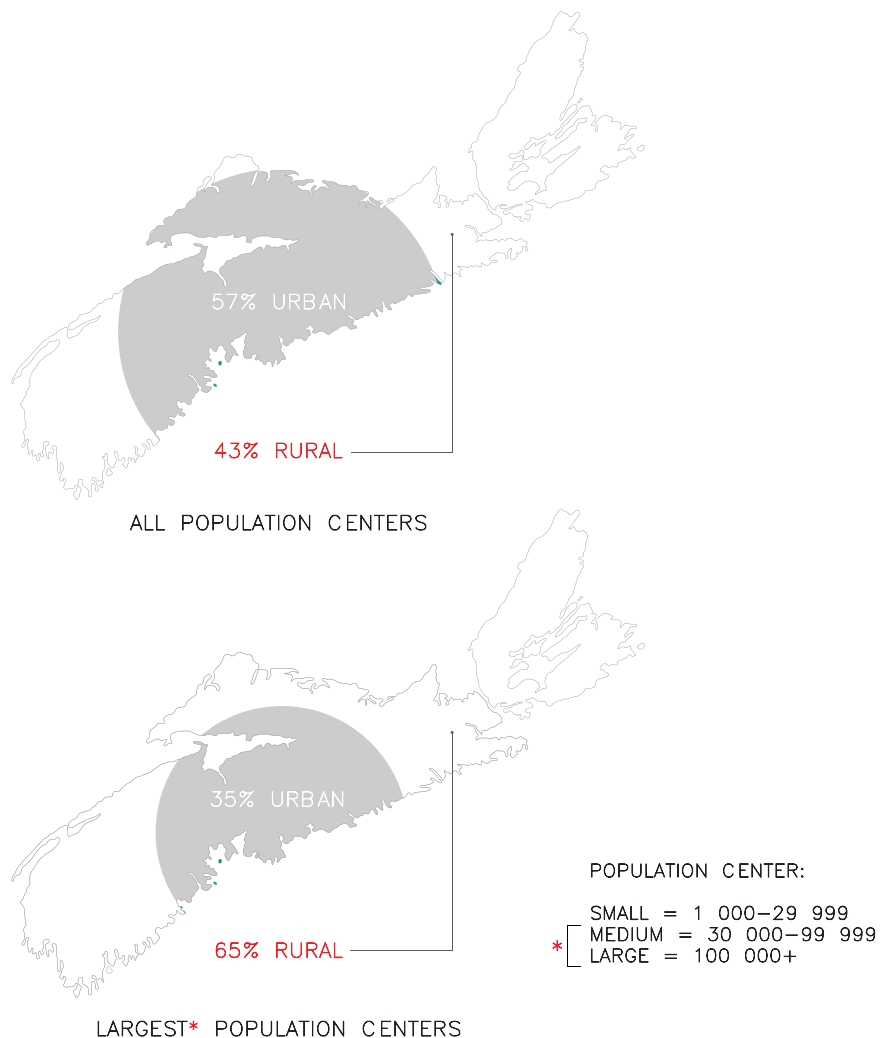
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2 Richard L. Florida, *The Rise of the Creative Class: And How it's Transforming Work, Leisure, Community and Everyday Life*, (New York: Basic, 2002), 7.

3 Angela Bepple, Ellise Goarley, Johnson Kwan, Sana Razvi, Katherine Glowacz, Gregory Kuenzig, Peter Moskalyk, and Garrett Von Aderkas, *Cultivating Rural Creativity: Prince Edward County*, (Toronto: Ryerson U Department of Urban and Regional Planning, 2009), 27.

4 Florida, *The Rise of the Creative Class*, 249.

5 *Population, Urban and Rural, by Province and Territory (Nova Scotia)*, last modified February 4, 2011, <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/demo62d-eng.htm>



Nova Scotia Population: Rural vs. Urban; data from *Population, Urban and Rural, by Province and Territory (Nova Scotia)*.

The success of rural Nova Scotia is vital because when small communities struggle, a large portion of the province is impacted. Many large industries have shut down for a variety of economic reasons; taking with them employment opportunities, population and wealth. These rural towns have been unable to develop a modern method to support a post-industrial culture.

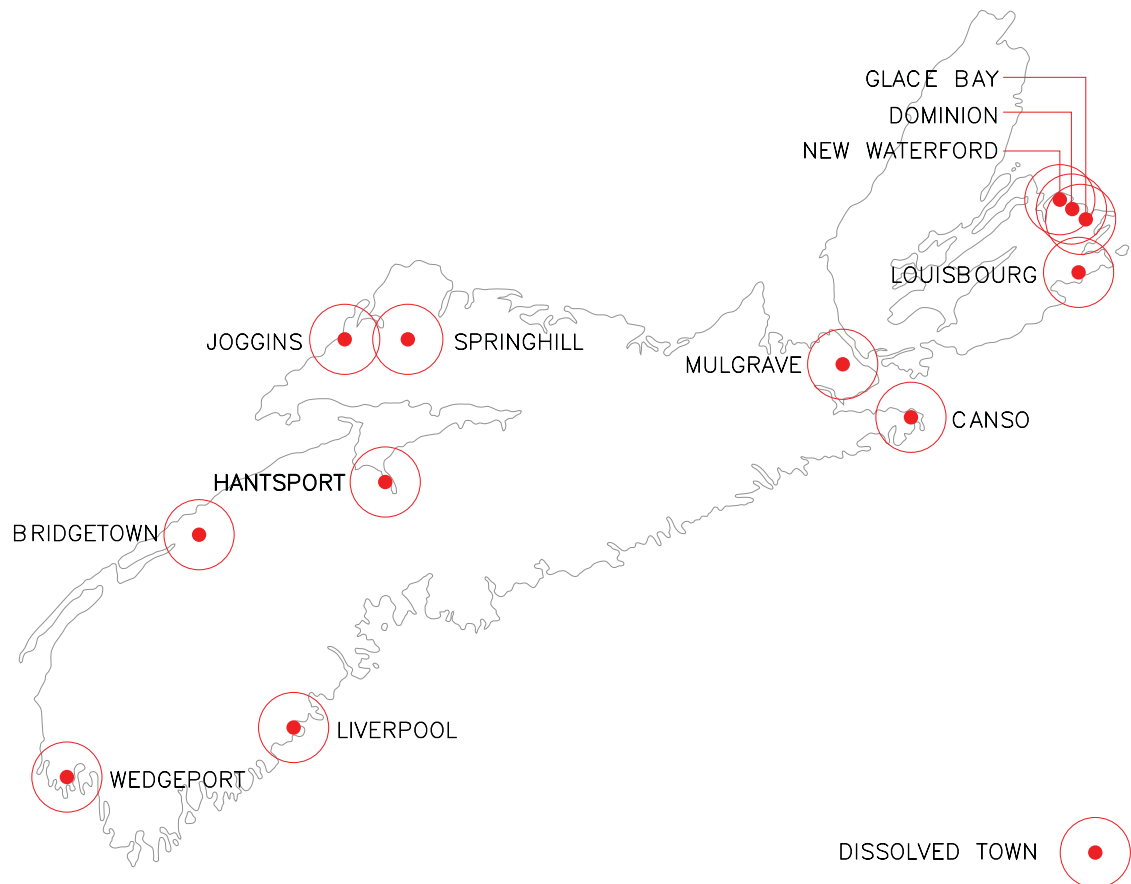
Most rural towns in Nova Scotia were established because of the potential for industrial development. The abundance of raw materials across the province enabled the start-up of local corporations. Communities would settle surrounding the industry and the industrial companies would support the community through employment and taxes; leading to a self-sustaining town. The availability of materials, high demand for goods, hard-working



culture and strong trade routes all contributed to the prosperity of rural Nova Scotia during the 19th and 20th centuries.

Toward the end of the 20th century and the beginning of the 21st century, many industries across Nova Scotia closed down. The reasons for termination varied: the demand for the goods diminished, certain international economies were suffering, and goods were made cheaper elsewhere due to the higher cost of labour in Canada. Thousands of rural residents have lost their jobs and many towns are left with few local employment opportunities.

Many of these rural communities are unable to sustain themselves once the industries leave as the taxes paid by the large corporations supported the maintenance of the towns' *infrastructure*. When the towns are no longer self-sustaining, they are absorbed into adjacent municipalities to gain financial support. Twelve towns across the province have already dissolved their official town status.



Struggling rural communities: Dissolution.

In almost all of these post-industrial Nova Scotian towns, no new industries or employment-generating programs replaced the industrial infrastructure. The impact of this is very apparent in job availability statistics: in 2012, the average number of job-seekers for every job available in Nova Scotia was 10.8 while in the province of Alberta there were only 1.7 job-seekers for available jobs.<sup>6</sup> An intervention needs to occur in rural areas so that people can once again live and work rurally.

### **Permanent Rural to Urban Migration**

Rural residents that were once able to live and work within communities are now forced to either work from home, move or commute. Based on the latter options, three levels of rural to urban migration are considered with studies of Nova Scotia. The first is “permanent” which involves moving to a more urban location, mainly due to employment opportunities. The second is “semi-permanent” where employment requires seasonal placement away from family. The third is “daily” migration where residents remain living rurally, but commute daily to their place of work. This thesis addresses both permanent and daily migration patterns, with a focus on daily rural out-migration.

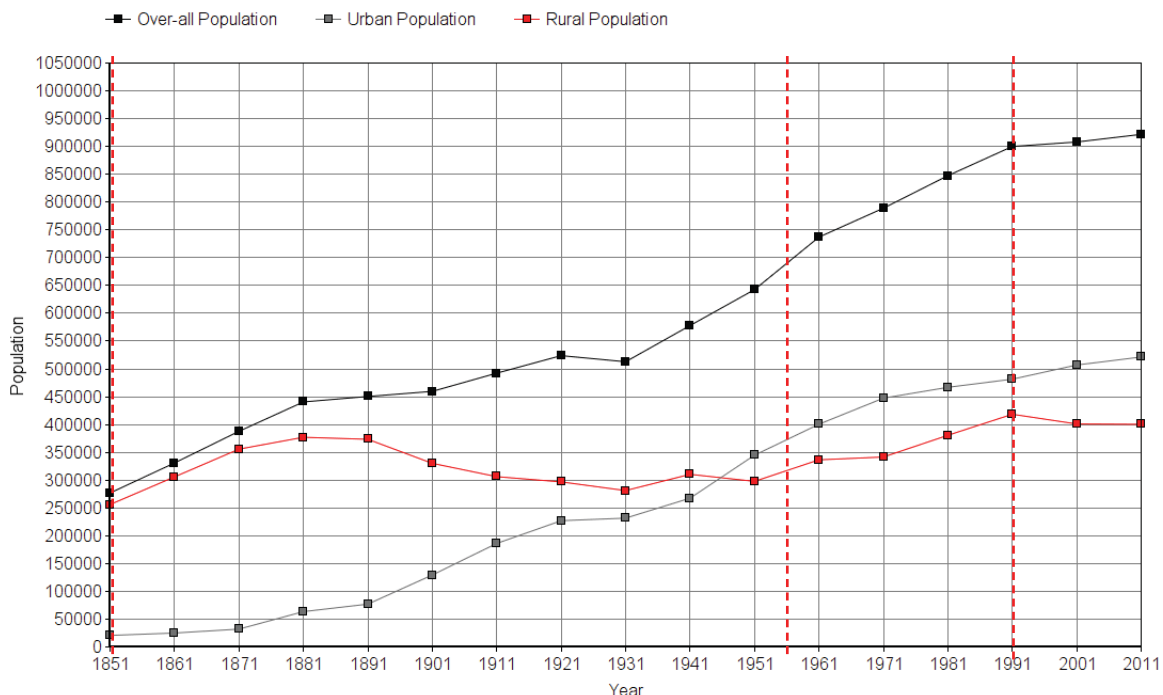
The historic trend of Nova Scotia reflects a permanent migration away from rural regions. Between 1851 to 1956 the urban population grew from 7% to 57%. However, from 1956 to 2011 the province’s population remained divided almost equally between rural and urban areas, even though the population of the province was increasing.<sup>7</sup> In the 1990’s, another shift occurred and the rural population began to decline again.

The recent trend of the province has returned to a permanent migration from rural to urban areas. This is clear in the population data of counties across the province. All counties’ populations have decreased over the past five years, except in the central county of Hants and the Halifax region. This is because the main employment opportunities are now located in the province’s urban center.

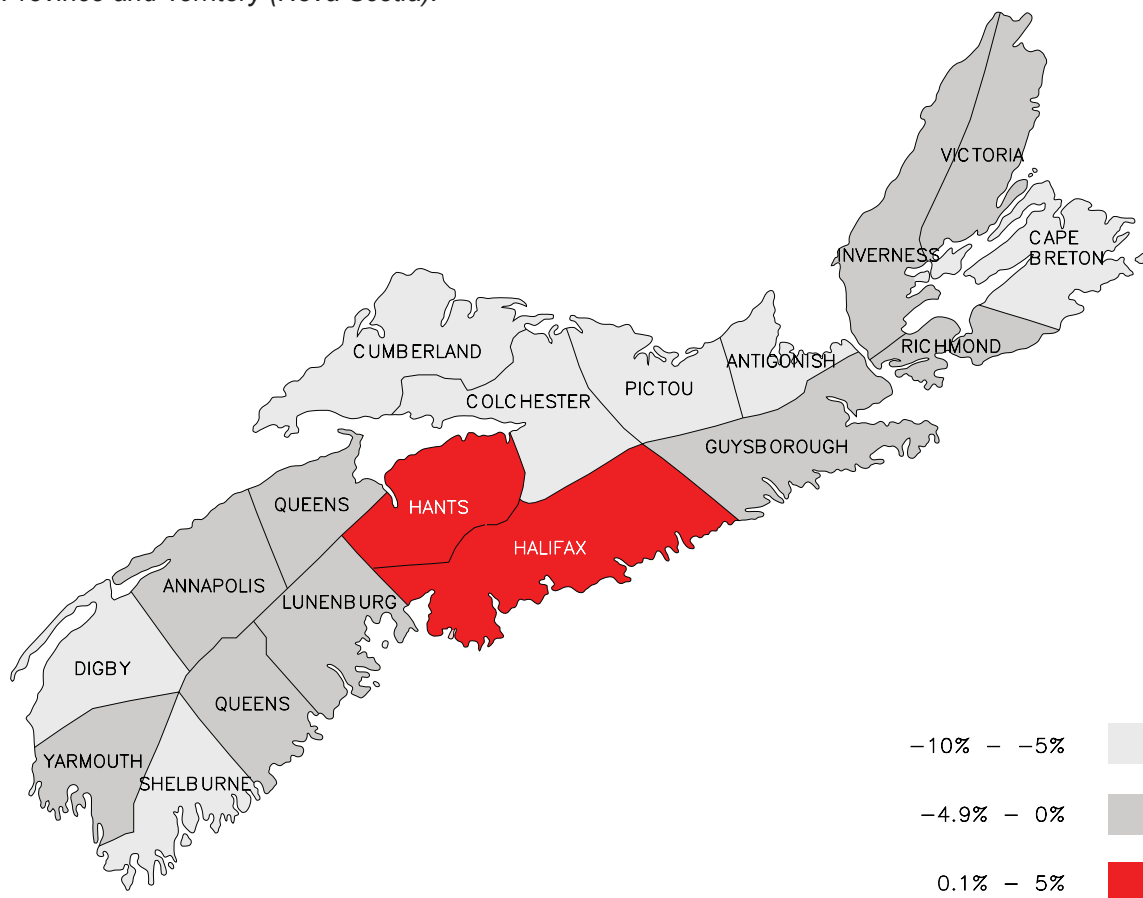
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6 Michael Tutton, *Canadian economy: One Industry Towns Struggle as Economy Passes Them By*, last modified February 15, 2013, [http://www.huffingtonpost.ca/2012/12/17/one-industry-towns-canada\\_n\\_2314075.html](http://www.huffingtonpost.ca/2012/12/17/one-industry-towns-canada_n_2314075.html).

7 *Population, Urban and Rural, by Province and Territory (Nova Scotia)*, published April 2, 2011, <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/demo62d-eng.htm>.



Nova Scotia historic population trends - Rural vs. urban; data from *Population, Urban and Rural, by Province and Territory (Nova Scotia)*.



Permanent rural to urban migration in Nova Scotia: Population change by county; data from *Population Changes by Census Division, 1976-2014*.

## Daily Rural to Urban Migration: Cons of Commuting

The issue of rural out-migration takes on a common form in a small province like Nova Scotia due to the close proximity of regions. There is a strong pull factor from the urban center due to more employment opportunities with a broader range or diversity. However, the cost of renting or owning property in the metro area is significantly more expensive than the cost of living rurally. Because of this, many people will choose to commute long distances or to work from home. Both can lead to unhealthy lifestyles and limit the amount of human interaction people experience in a day, plus commuting is not environmentally sound.

The trend of commuting out of a town harms the success of the community. This pattern creates *bedroom communities*; comprised mainly of residential areas and “typically a suburb of a major urban center” (at the scale of Nova Scotia, rural towns become suburbs for urban centers). These community types include “a large number of commuters among the home-owning population” and “refers to the fact that commuters perform most professional and personal activities in another location, maintaining their residence solely as a place to sleep”.<sup>8</sup>

When residents’ day-to-day activities occur outside of their local region, they no longer support the town they reside within. Commuters take with them their skills and expenditures, causing the location of their rural residence to struggle. In the past, when rural residents were employed by local industry they were citizens invested in the place.

## Thesis Question

What new building type could be introduced into rural communities to connect fragmented elements of the rural fabric and reuse vacant infrastructure, while synthesizing live, work and recreation locally?

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8 *Bedroom Community*, accessed January 20, 2016, <http://www.businessdictionary.com/definition/bedroom-community.html>.

## CHAPTER 2: PRECEDENTS

### Theoretical Precedent: The Potteries Thinkbelt by Cedric Price

This precedent was selected to gain knowledge on a cultural approach to a post-industrial wasteland. The scale of the proposed project is much larger than mediations for rural communities in Nova Scotia, however, useful lessons can be translated.

North Staffordshire (referred to as “the Potteries”) was chosen as the site for Cedric Price’s Potteries Thinkbelt because of the high level of unemployment. Similar to most of rural Nova Scotia, the Potteries area had rich deposits of natural materials that could be utilized for industrial processes. Coal and clay made North Staffordshire a natural location for the production of ceramics: the clay was used to fabricate the pottery which was fired by the local coal. The Potteries were not only the center of the English ceramics industry but also contributed greatly to the development of modern ways of transportation. First, in the eighteenth century a network of canals was built to assist in the transportation of materials to and from the Potteries, then in the nineteenth century a railroad system was constructed to replace the function of the waterways.<sup>9</sup>

After World War II, the collieries and potteries struggled and after two centuries of production a majority of them were closed. As a result, thousands of coal miners and pottery workers were laid off.<sup>10</sup> The historic trends of the Potteries region reflects rural Nova Scotia community trends. The areas were first established due to an abundance of raw materials leading to a successful era of an industry driven economy which in turn left behind high levels of unemployment and abandoned infrastructure when it ended.

Price’s reaction to this issue of vast unemployment was similar to this thesis approach: provide new employment opportunities that connect with the history and culture of the place of the intervention. His proposed concept was the Potteries Thinkbelt, a high-tech think-tank school that spanned a 174 square kilometre area. “Price’s proposal recuperated derelict industrial sites and railways as the basic infrastructure for a new school where

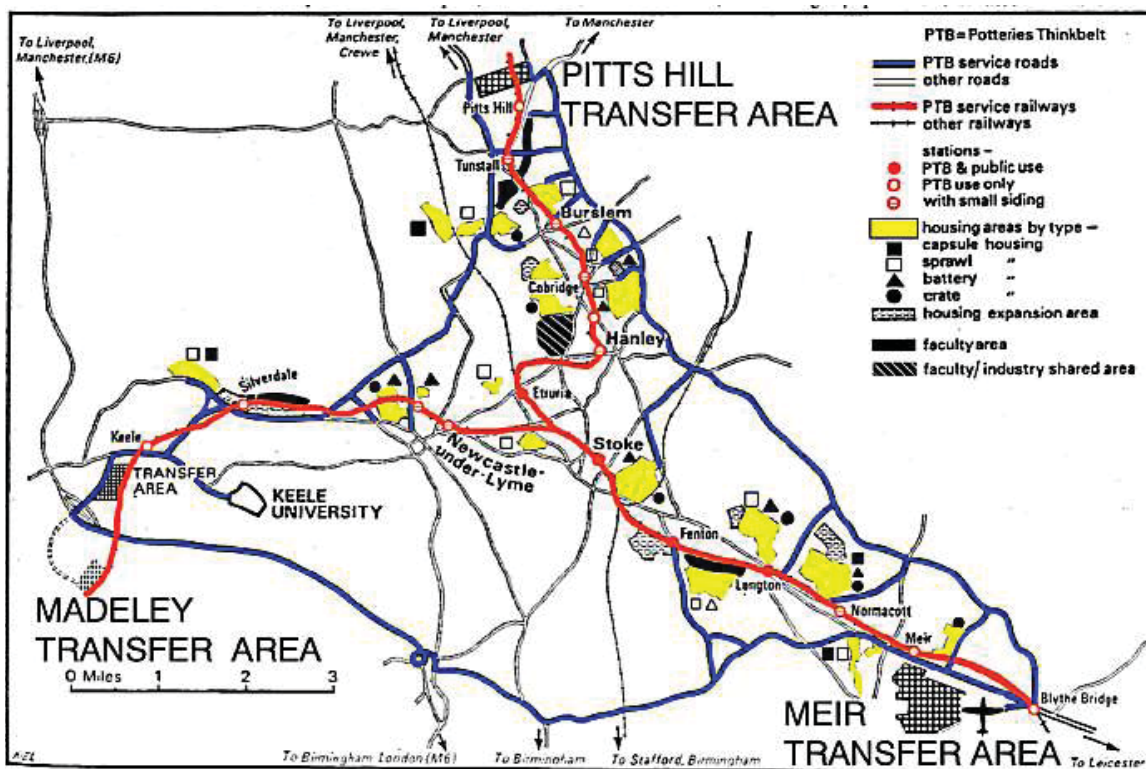
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9 J. Stanley Mathews, *From Agit-prop to Free Space: The Architecture of Cedric Price* (London: Black Dog Publishing, 2007).

10 Ibid.

unemployed British workers could study and practice science and technology, subjects largely ignored by the English universities at the time”.<sup>11</sup>

Cedric Price’s design re-worked the abandoned rail infrastructure to accommodate housing and education programs. Transportation networks would converge with outside rail and road systems at transfer areas at the three corners of the triangular master plan. At these hubs, industrial units would be reconfigured to contain public learning spaces and accommodations for visiting students and staff. The railway network that was once utilized by the pottery industry would be reimagined through the use of rail buses which could also be reconfigured as learning spaces.<sup>12</sup>



Potteries Thinkbelt master plan (1965) - A connection of transportation and housing; image from Cedric Price - “Brain Drain” to the “Knowledge Economy”.

11 Ibid., 195

12 Daryl Martin, *The Thinkbelt: The University That Never Was*, accessed September 15, 2015, <http://discoversociety.org/2014/07/01/the-thinkbelt-the-university-that-never-was/>.

The Potteries Thinkbelt was never realized but it remains an important study of the combination of industrial infrastructure, employment opportunities (through teaching and research and design centers), education, culture, transportation, and adaptable spaces. The utilization of the abandoned rail infrastructure is a key lesson to take away from Price's approach. The railway used to interact with industrial buildings (the place of work) and form a physical connection to other regions; it has a strong potential to tie together abandoned infrastructure.



Perspective sketch of transfer area (1966) - Physical connections to abandoned railway; image from *The Thinkbelt: The University That Never Was*.

### **Built Precedent: Luchtsingel Bridge**

This project is built in the Rotterdam Central District which has become neglected and detached over the past 20 years.<sup>13</sup> The location has been impacted by different factors than Nova Scotian's rural post-industrial communities, but the physical aftermath is the same - abandoned infrastructure.

"The Luchtsingel in a 390 meter wooden bridge for pedestrians that connects the Center and North of Rotterdam. It is a triggering force for new developments in a part of the city that has been forgotten for a long time. The bridge is also a catalyst for economical growth."<sup>14</sup> The bridge isn't the only element that creates physical connections to aban-

<sup>13</sup> *Luchtsingel*, accessed May 12, 2016, <http://www.luchtsingel.org/en/about-luchtsingel/the-idea/>

<sup>14</sup> *Luchtsingel*, accessed May 12, 2016, <http://www.luchtsingel.org/en/locaties/bridge/>

done infrastructure. Other mediations also engage with vacant spaces, such as: “The Dakakker”, the largest rooftop farm in Europe, “Park Pompenburg” which will be transformed into a space for urban agriculture and recreation, and “Hofplein Station” the roof of the train station used for public space and small-scale initiatives.<sup>15</sup>



Luchtsingel Bridge - diagrammatic site plan; diagram from *Luchtsingel*

It would have taken years to wait for redevelopment of the area to occur because of the market-oriented economy. The people of Rotterdam took the issue into their own hands and through the help of the Rotterdam City Council realized a smaller scale project that would physically connect vacant elements and begin to revive the area. The construction of the bridge was only made possible through the efforts of the surrounding community. Construction costs were covered through *crowdsourcing* by purchasing “planks”, “elements” and “parts” of the structure.

The scale and population density of Rotterdam is much larger than rural Nova Scotian communities, however, the approach can be imagined at various scales. The physical connections to abandoned elements are vital as well as the reimagining of vacant spaces

<sup>15</sup> *Luchtsingel*, accessed May 12, 2016, <http://www.luchtsingel.org/en/about-luchtsingel/4-stages-of-the-bridge/>



through new programs. One dilemma that the Luchtsingel Bridge doesn't tackle is the fact that the Rotterdam Central district is littered with vacant high-rise structures. The circulation of the bridge and program of the other mediations makes the area more accessible and appealing, but it does not deal with how the area now has fewer locations for employment.



Luchtsingel Bridge - Aerial view showing the bridge's context in the city; image from *Luchtsingel*.

### **Transient Precedent: Renew Newcastle**

“Renew Newcastle is a not-for-profit company limited by guarantee. The organization has been established to find short and medium term uses for buildings in Newcastle’s central business district (CBD) that are currently vacant, disused, or awaiting redevelopment.”<sup>16</sup>

Newcastle is an aging industrial town in Australia, currently suffering the aftermath of its largest industries closing down, leading to mass unemployment. The city is left with dozens of empty buildings in the old downtown. Even the shops and offices that are open are struggling because of the high vacancy rates surrounding them.<sup>17</sup>

A similar question was posed to Newcastle that is being asked to rural communities in Nova Scotia: how can life, interest and commerce be brought back to the struggling area? “Renew Newcastle” attempts to answer this question in a nonphysical way, where no new

<sup>16</sup> *Renew Newcastle*, modified May 24, 2016, <http://renewnewcastle.org/about/>

<sup>17</sup> Marcus Westbury, “Cities as Software”, *Volume* (2011), 90

infrastructure is bought or built.



Newcastle Central Business District - Dilapidated storefronts; image from *Renew Newcastle*.

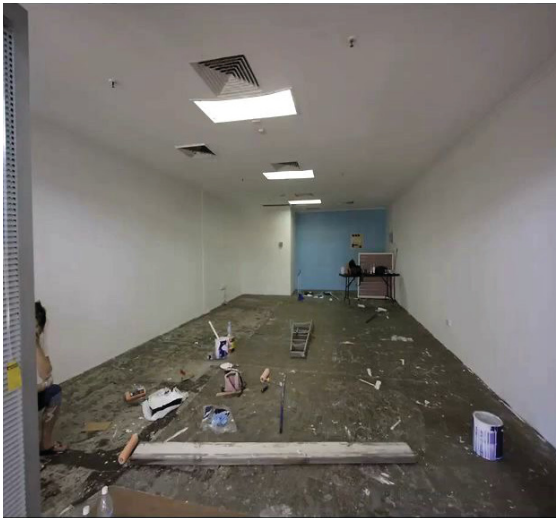
“Renew Newcastle aims to find artists, cultural projects and community groups to use and maintain these buildings until they become commercially viable or are redeveloped. Renew Newcastle is not set up to manage long term uses, own properties or permanently develop sites but to generate activity in buildings until that future long term activity happens.”<sup>18</sup>

The approach benefits both those who already own retail and office space and those who cannot afford it. Vacant space will be occupied and renovated until the owner needs it back, preventing vandalism. For residents struggling to start up their own business, Renew Newcastle was able to “lower barriers to initiative and experimentation” and “made the city work for people for whom it had not worked in a long time”.<sup>19</sup> People that worked from home and ran digital industries gained access to physical space that they couldn’t acquire on their own.

<sup>18</sup> *Renew Newcastle*

<sup>19</sup> Westbury, “Cities as Software”. 91

The organization has been successful at cleaning up vacant buildings that were vandalized or decaying and finding temporary tenants to inhabit the spaces. This has led to a current revival of the area but it is unknown if it is a permanent solution. This is acceptable in the case of Newcastle because long term prospects for the redevelopment of the CBD have been planned. The mediation in rural Nova Scotia needs to be a permanent solution so that the communities do not find themselves back in the same unfortunate situation a few years down the road. Nova Scotia requires a new building type to give the architectural intervention a sense of permanence.



Before and after images - Vacant retail space occupied temporarily, revived permanently; images from *Urban Dream Brokerage*.

## CHAPTER 3: THE SOLUTION

### The Approach: The Introduction of a Creative Hub

An architectural form must be designed to provide rural residents a viable reason to live and work rurally. Without this new rural building design, small Nova Scotia towns will remain bedroom communities and will continue to struggle. For a rural town to be self-sustaining, it must contain elements of live, work and recreation.

When a town depends on one industry for a majority of its employment, there is no back-up plan if the company fails. A modern day solution to towns relying on a sole industry is to create various employment opportunities within the town. This would cater to more of the residents' needs and also lead to a more diverse population. One of the main ways that urban areas appeal to people is through their high levels of culture. Some of these cultural attributes need to be brought to rural lifestyles. This stems from Jane Jacobs' views that "successful places are multidimensional and diverse – they don't just cater to a single industry of a single demographic group; they are full of stimulation and creative interplay."<sup>20</sup>

The introduction of a creative hub in rural Nova Scotia communities will engage with entrepreneurs and creators who lack local resources and opportunities and provide an accessible platform for them to pursue their passions. The hub will also interact with elements of the towns that are disconnected and vacant. The building will house collaborative workspaces, workshops and *makerspaces* while simultaneously acting as connective infrastructure for the disjointed rural fabric. The intention is not to replace any existing elements of the towns but to create connections leading to renewal. By creating opportunities to live and work locally and rethink abandoned rural structure, the creative hub will help communities become more resilient.

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20 Richard L. Florida, *The Rise of the Creative Class: And How it's Transforming Work, Leisure, Community and Everyday Life*, (New York: Basic, 2002), 6.

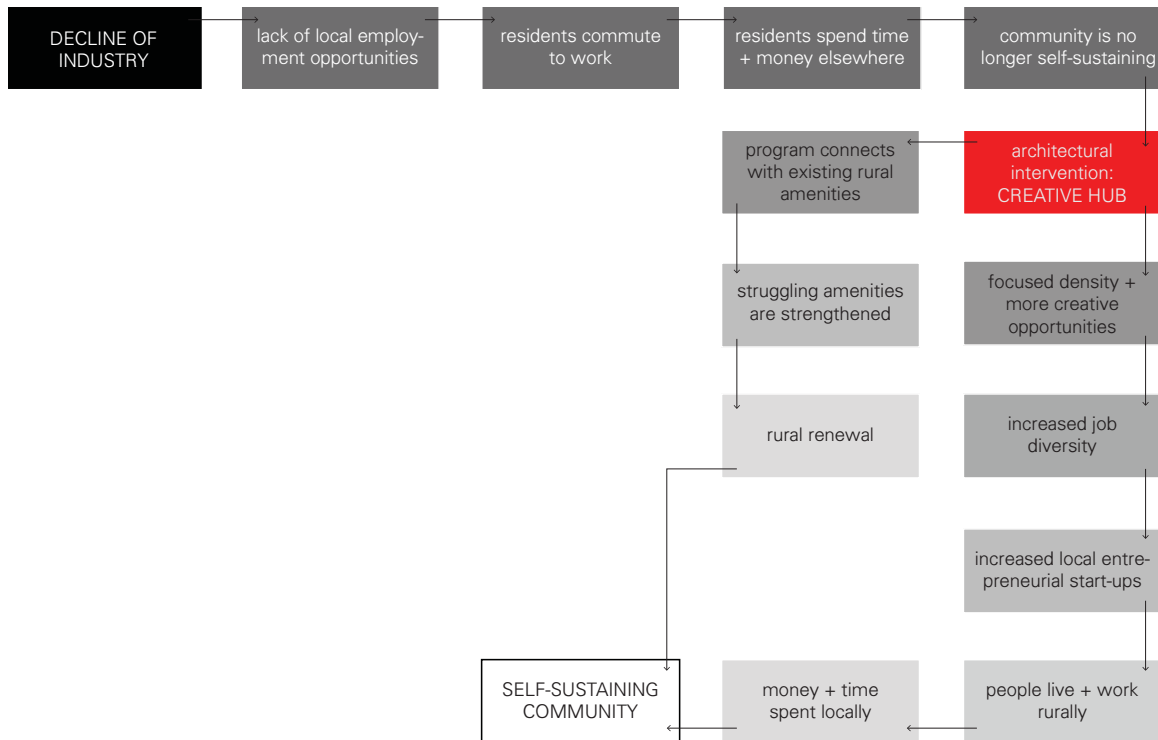


Diagram of how the introduction of a creative hub can transition a region from a struggling post-industrial status to a self-sustaining community.

The entrepreneurs, builders, artists and other creators could use the construction of the building itself as their first investment into the community. The entire hub structure would not need to be constructed at once. The introduction of one section of the creative hub in a highly visible location would draw attention to the site. Even the creation of one section of the hub would engage with the community and begin to activate vacant infrastructure.

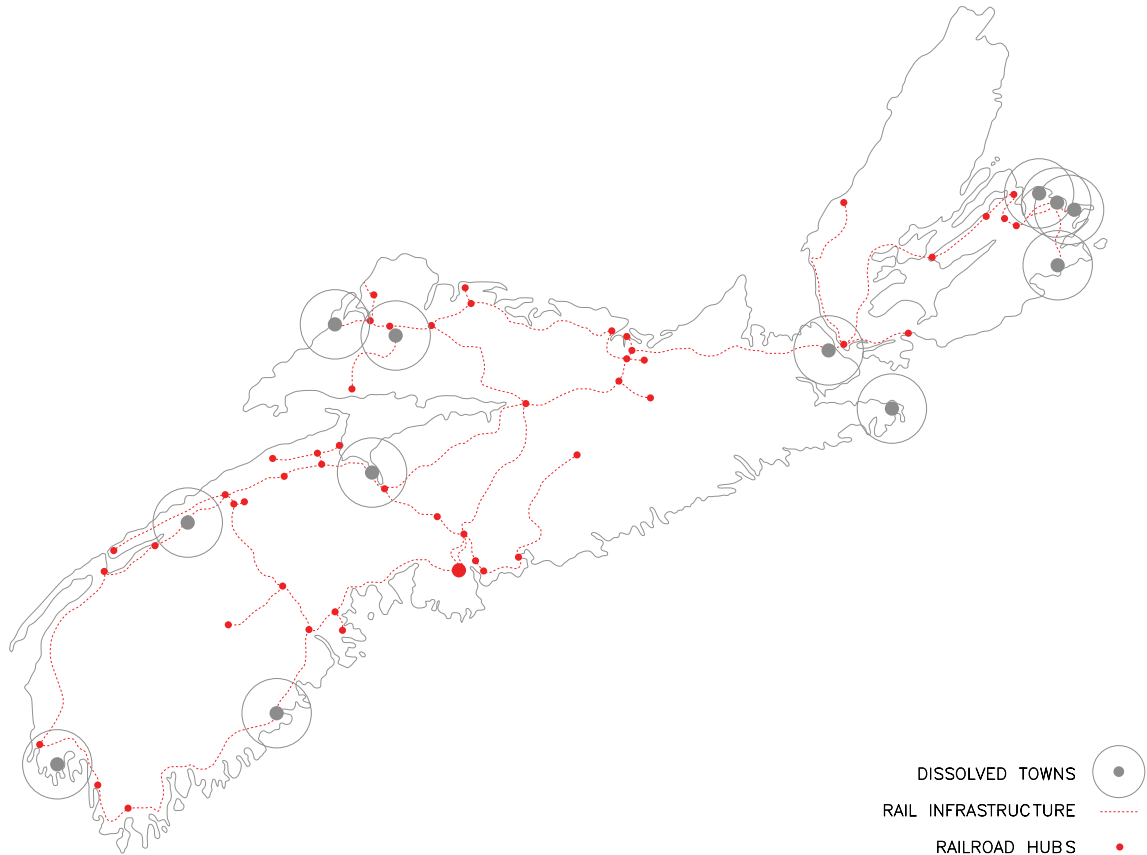
The government would need to purchase the land and building materials (as the first step in an action plan to revive rural Nova Scotia) and the users of the hub could help construct the space. Woodworkers, masons and welders that plan to utilize the workshops in the creative hub could assemble aspects of the structure and, in turn receive a discounted rent to use the space. Entrepreneurs and artists could invest in resources together so that initial start-up costs are reduced. Community members that only temporarily use the space and resources could pay for a membership and the creators using the building daily for work would pay rent to cover long term costs. Also, rural community members tend to feel quite passionate about their hometowns, so fundraising initiatives would help foot the cost of the new building type.

The collaborative hub will benefit the community by bringing employment diversity, investments and attention back to rural zones which will revitalize abandoned infrastructure. It will benefit individuals by creating access to otherwise unaffordable space and equipment and by encouraging collaborative working styles and information sharing. Readily available resources and collaboration will mean that residents won't need to work from home, and local creative opportunities will keep people from traveling outside of their local town for work. This will lead to healthier and more social lifestyles for rural residents.

The architecture to house the variety of workspaces, workshops and makerspaces must be flexible to accommodate different users over time. The flaws in industrial buildings will be avoided: spaces will serve more than one purpose, be able to update with changing technology and programs, and will be pleasant and naturally lit. Unlike industrial structures, the program will engage various creative types and the greater community. This way the activities taking place in the hub can also be experienced by those not working there, becoming a learning tool. The broad program of the hub is "a place to create" while the specificity of the building program will depend on the rural location and the community's needs, culture and strengths.

The built structure alone is not enough to connect the fragmented elements of rural communities. Rural landscaping will be utilized to physically connect town infrastructure where the architecture cannot reach. The abandoned railway that used to connect rural Nova Scotia and be a sign of prosperity now runs through rural communities like a scar. It has the potential to be reworked as circulation through towns. Rethinking the railroad as a recreational route will allow the network to physically interact with disconnected rural elements and revive a historic synergy between the railroad and place of work. It will also encourage *active transportation* methods in areas that rely heavily on vehicular transport and curtail unhealthy lifestyles developed from commuting and working from home.

The architecture of the creative hub combined with the active transportation route will renew rural communities by locally integrating live, work and recreation. People already choose to reside rurally because of the lifestyle, but providing residents with daily employment amenities will give them a reason to stay.



Abandoned railway infrastructure: The railway that once aided in rural industrial processes and connected communities physically, lays abandoned; from *Nova Scotia's Railway Heritage*.

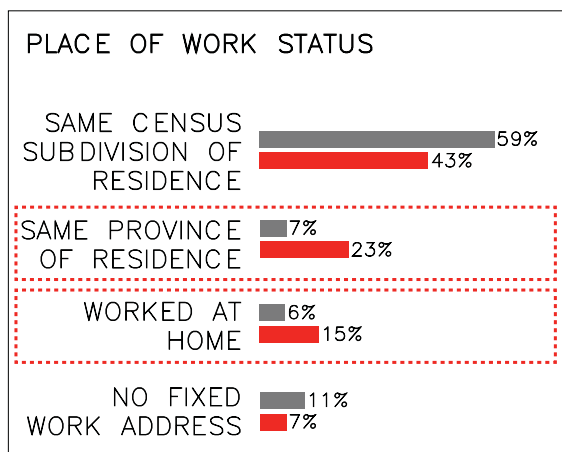
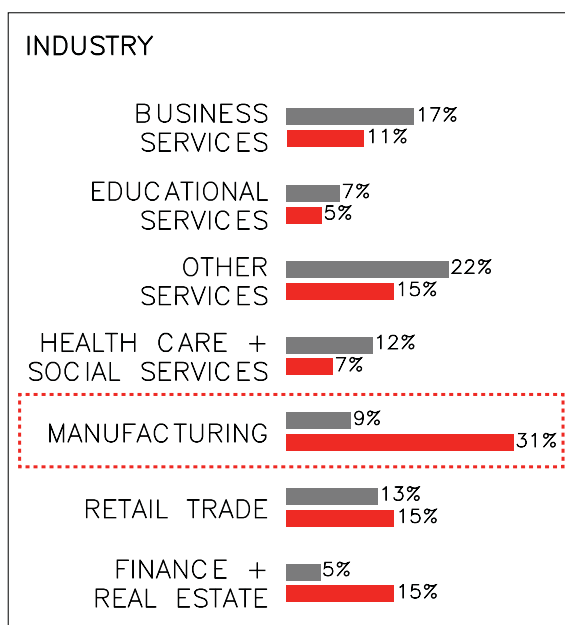
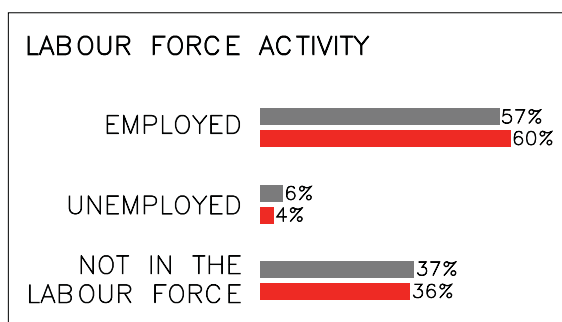
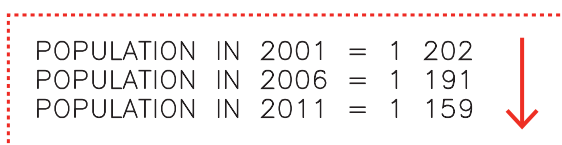


Conceptual collage: Combination of work and recreation [rail infrastructure reimagined].

## CHAPTER 4: SITE OF STUDY

### Post Industrial Community of Hantsport, Nova Scotia

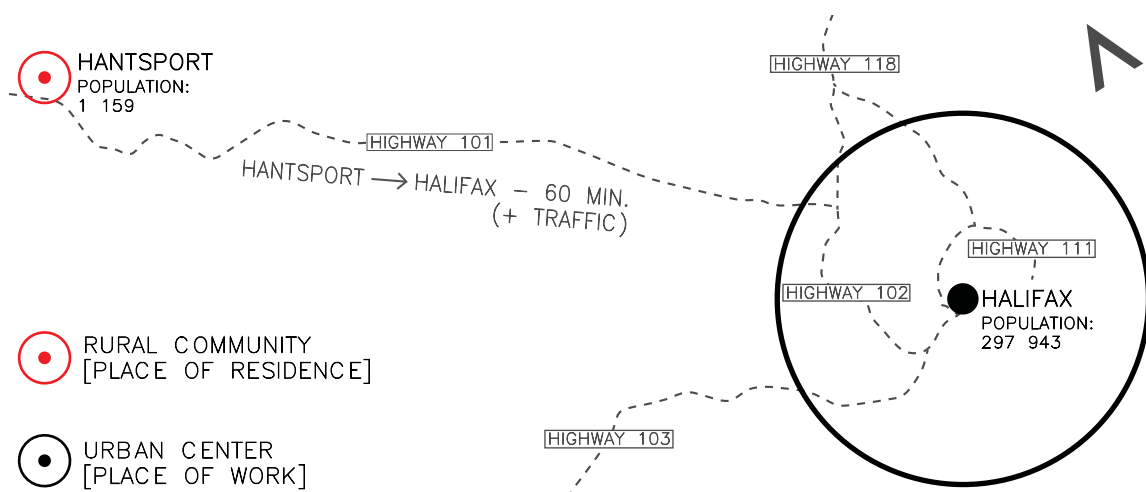
The trend of rural industries shutting down across Nova Scotia and the fact that the majority of employment opportunities are located within the urban center has impacted Hantsport, Nova Scotia. Residents that were employed at the local industries are now forced to move, work from home or commute. All three trends are apparent in Hantsport's "Place of Work" data: the population has decreased over the past ten years, three times more people commute to work than the provincial average and three times more people work from home than the rest of Nova Scotia.<sup>21</sup>



Hantsport data: occupation and industry; data from *Hantsport - Town, Nova Scotia, Canada*.

21 *Hantsport - Town, Nova Scotia, Canada*, published October 24, 2012, <http://www.city-data.com/canada/Hantsport-Town.html>





Commuting diagram: Traveling from Hantsport to the urban center requires a minimum of two hours spent sitting in a car daily (not including traffic or poor weather conditions). The lifestyle of a commuter is unhealthy as hours are taken away each day from social activities, family time and recreation; from *Google Maps*.

## Historic Trends: A Town Connected through Industry

Hantsport is a small town situated on the tidal Avon River, a tributary of the Bay of Fundy, along the western region of Nova Scotia. Located at the eastern end of the Annapolis Valley, the region relies most heavily on agriculture and mining which much of the large industrial infrastructure in the area supports. While agriculture continues to prosper, the infrastructure that aided in the mining industry is now abandoned.

The location and reason for settlement of the town occurred due to geography and natural resources. Hantsport first became a great shipbuilding center in the 19th century and then a major industrial-manufacturing site in the 20th century.<sup>22</sup> Its adjacency to the Avon River created a strong connection to the water; the river and high tides aided in the shipbuilding era. At the end of the 19th century, there was a steamboat fleet that carried freight and passengers around the Minas Basin and to Saint John. There was even a steam ferry that connected Summerville, Hantsport, Burlington, Avondale and Windsor, daily.<sup>23</sup>

<sup>22</sup> Allan B. Robertson, *Tide & Timber: Hantsport, Nova Scotia 1795-1995*, (Ontario: Global Heritage Press, 2001), 9-10

<sup>23</sup> *Ibid.*, 84



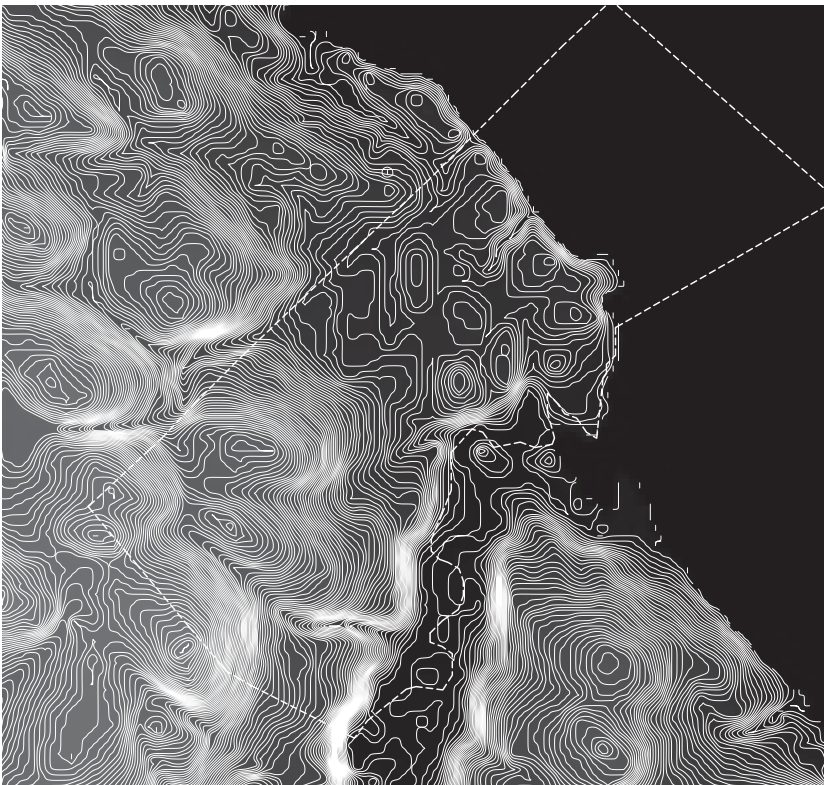
The Annapolis Valley, Nova Scotia - thriving agricultural region; image from *O'Canada*



Aerial view of Hantsport - a small community adjacent to the Avon River



Hantsport town boundary, located along the Avon River; underlay from *Google Maps*



Natural topography and town boundary of Hantsport, Nova Scotia; topographical information from *Nova Scotia Civic Address File Data*.

During the 1890's, the last years of Hantsport's first golden age occurred as Maritime shipbuilding declined. Town leaders, in search of new entrepreneurial ventures got involved with banking, quarrying and construction. The transitional phase from shipbuilding to an economy based on manufacturing and food-processing carried the community through to the 1920's.<sup>24</sup> Market routes and locals' skills developed during the shipbuilding era benefited new businesses in the 20th century. The area adjacent to the river transitioned well from a shipbuilding yard to an industrial port.

The important industrial establishments during this time were the Minas Basin Pulp and Power Mill Company Limited, its subsidiary Canadian Keyes Fibre plant and the Fundy Gypsum storage and distribution shed. These industries employed hundreds of local residents, brought large tax revenue into the town and connected Hantsport with its surroundings through the rail and shipping routes. The pulp and paper company was established in 1927. The waterways were used to deliver timber for the barker mill and to carry away pulp while the railroad was used to bring in pulp to feed the complex.<sup>25</sup> The gypsum storage shed and loading dock was constructed in 1947 and connected the town to the United States through an Atlantic shipping route and to the Windsor area gypsum mines and Halifax via the railroad.

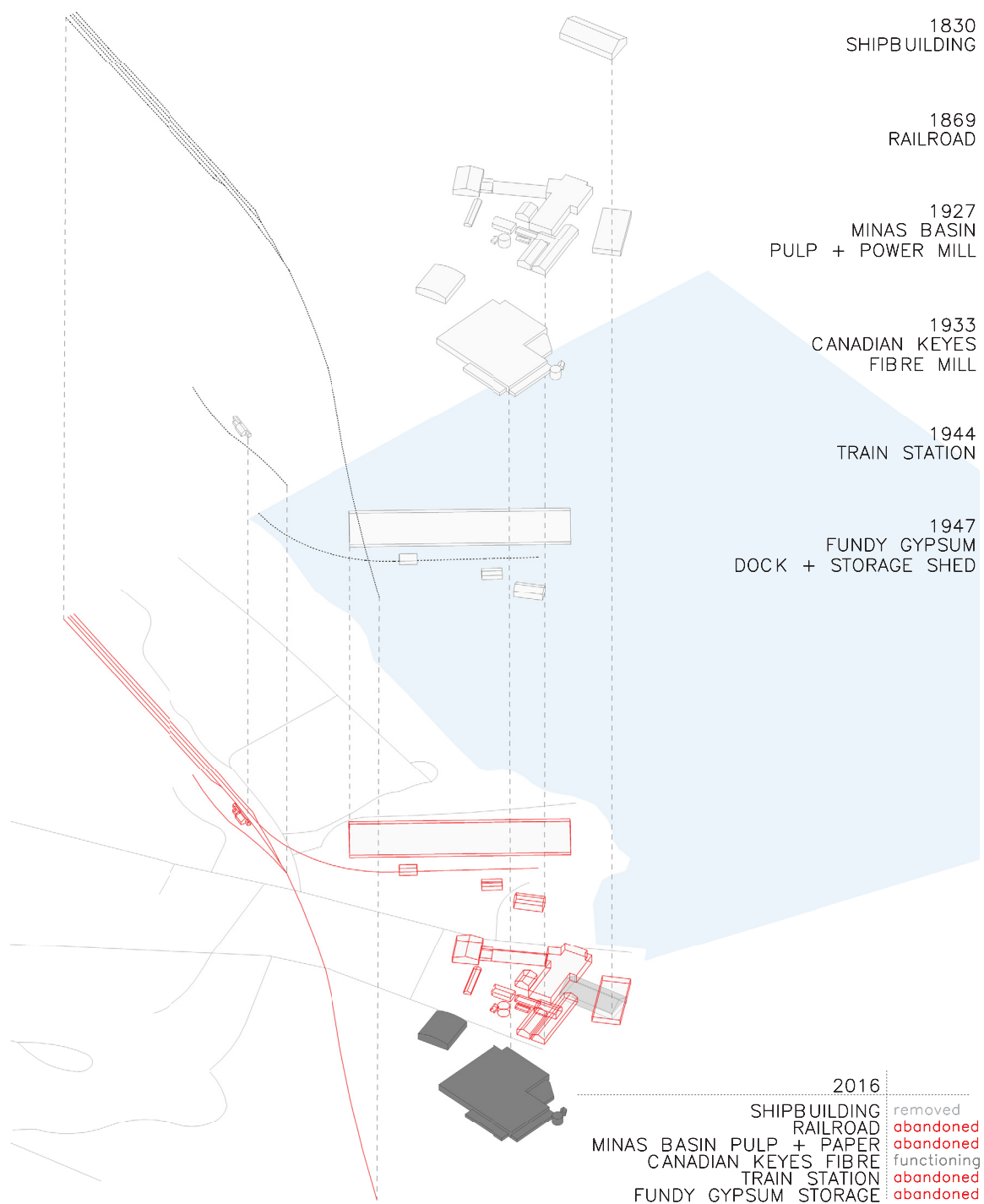
The use of the area's railroad track leading west of Hantsport was terminated in 2006 and the east track (connecting to the Windsor area mines and Halifax) was closed in 2011. The primary market of the gypsum being stored and shipped out from Hantsport was for residential construction in the United States. When the American housing crisis occurred in 2008, their construction activity decreased which eventually led to the permanent closure of the gypsum loading facility in 2011.<sup>26</sup>

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24 Robertson, *Tide & Timber: Hantsport, Nova Scotia 1795-1995*, 84

25 *Ibid.*, 107

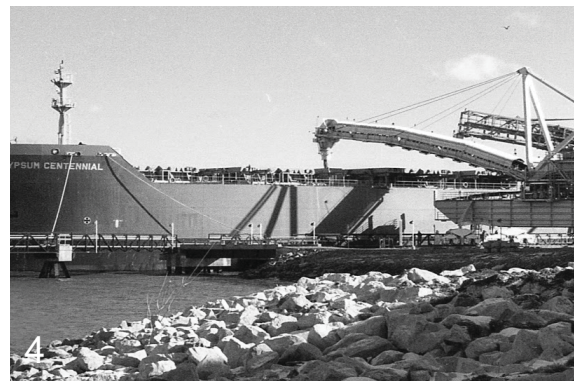
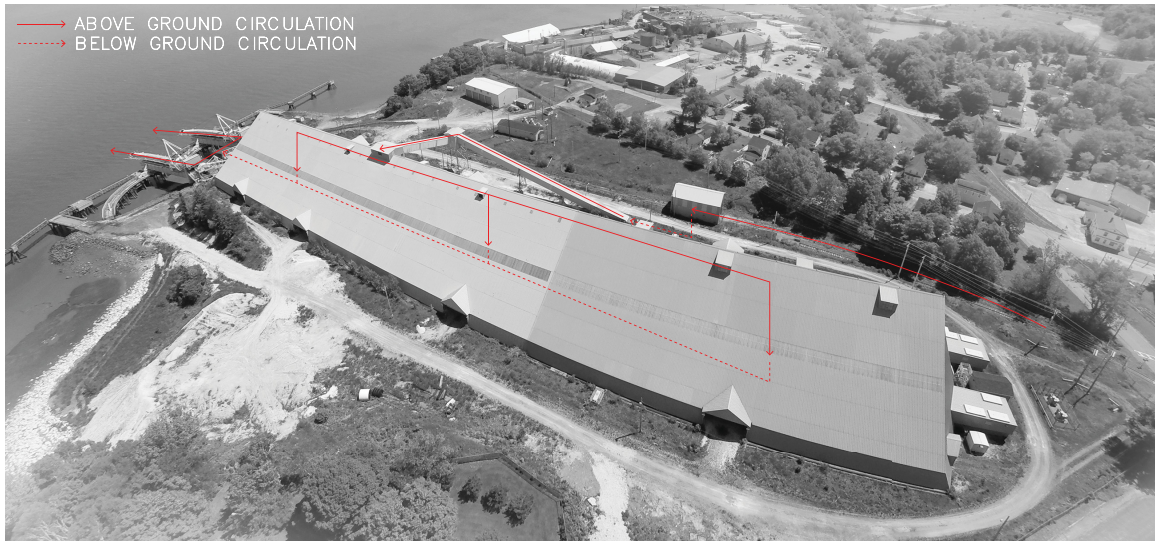
26 Mac Mackay, "Gypsum - No Rebound for Hantsport," accessed September 28, 2015, <<http://shipfax.blogspot.ca/2015/02/gypsum-part-2-no-rebound-for-hantsport.html>>.



Hantsport: Timeline of industrial establishments. Historically, the town's landmark buildings interacted with the water and railroad system. Now, most of the massive industrial infrastructure lays abandoned.



Hantsport railroad experience - Past interactions and present abandonment; map underlay from Google Maps.



Historic gypsum distribution process [shed is currently abandoned]: The raw gypsum would arrive to the Hantsport storage and distribution shed via train and be dropped into hoppers in an out-building. The gypsum would travel on a conveyor system (image 1) to the top of the shed where a conveyor running along the spine of the structure (image 2) would separate the material into three areas within the shed. The gypsum was then shoveled into hoppers in the ground of the shed (image 3), carried on underground conveyor belts to the suspended conveyors at the water side of the building and loaded onto a ship (image 4).

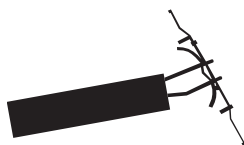


The gypsum mines outside Windsor and the gypsum loading dock in Hantsport were closed in 2011 because of the economic downturn in the United States and the lowered demand for housing construction materials (gypsum wallboard). Before that time, the gypsum processing in the area employed hundreds of residents and Fundy Gypsum Company Ltd. brought wealth to the communities.



EXTRACTION

Raw gypsum was extracted from two mines outside Windsor, Nova Scotia. The gypsum there is mostly wallboard grade and also high purity white gypsum and anhydrite products. The raw material was then transported 16km away to the shipping facility in Hantsport, Nova Scotia via unit train.



STORAGE

The gypsum was then unloaded from the trains which connected to the conveyor belts, taking the material into the large storage shed (14,000 square meter space). The next step was for the gypsum to be loaded onto a ship which could only occur at specific times due to the drastic tides in the area.



DISTRIBUTION

The storage facility in Hantsport required high speed conveyors to get the gypsum loaded onto the ship during high tide. The loading occurred at a rate of 6500 t per hour, to accommodate the 12m tidal range at the dockside. The ship then transported the gypsum to various ports in the United States to be manufactured into mostly construction products.

The Hantsport Fundy Gypsum storage and distribution shed had a great impact on the community. It was a source of employment for residences and tax resource for town infrastructure. It created a hub in the region that connected transportation routes on both land and sea; from *Gypsum and Anhydrite in Nova Scotia*, map underlay from *Google Maps*.



The negative impact that the closure of these industries and transportation infrastructure has had on the community of Hantsport is evident. From 2006 to 2011, the population dropped from 1,191 to 1,159. A decrease of 2.7% is significant in this case because the population of Nova Scotia rose 0.9% during that time. Between the closure of the Fundy Gypsum shed the Minas Basin Pulp and Paper mill, almost 300 people lost their jobs which comprises approximately a quarter of the town's population (assuming that everyone working in these industries resided locally).<sup>27</sup> In 2015 the town dissolved. "When the mill and the gypsum dock went, so did \$1.2 million in property tax revenue — about one-third of the town's annual operating budget. Rather than raise residential tax rates to cover the loss, town council voted to cede control to a larger municipal body with greater economic resources."<sup>28</sup>

The loss of so many local jobs has forced Hantsport residents to look for work in other regions. The trend of relocating permanently, commuting or working from home is high in the community. Without an intervention to provide diverse local employment opportunities, Hantsport will continue to struggle and its residents will spend their time and money elsewhere.

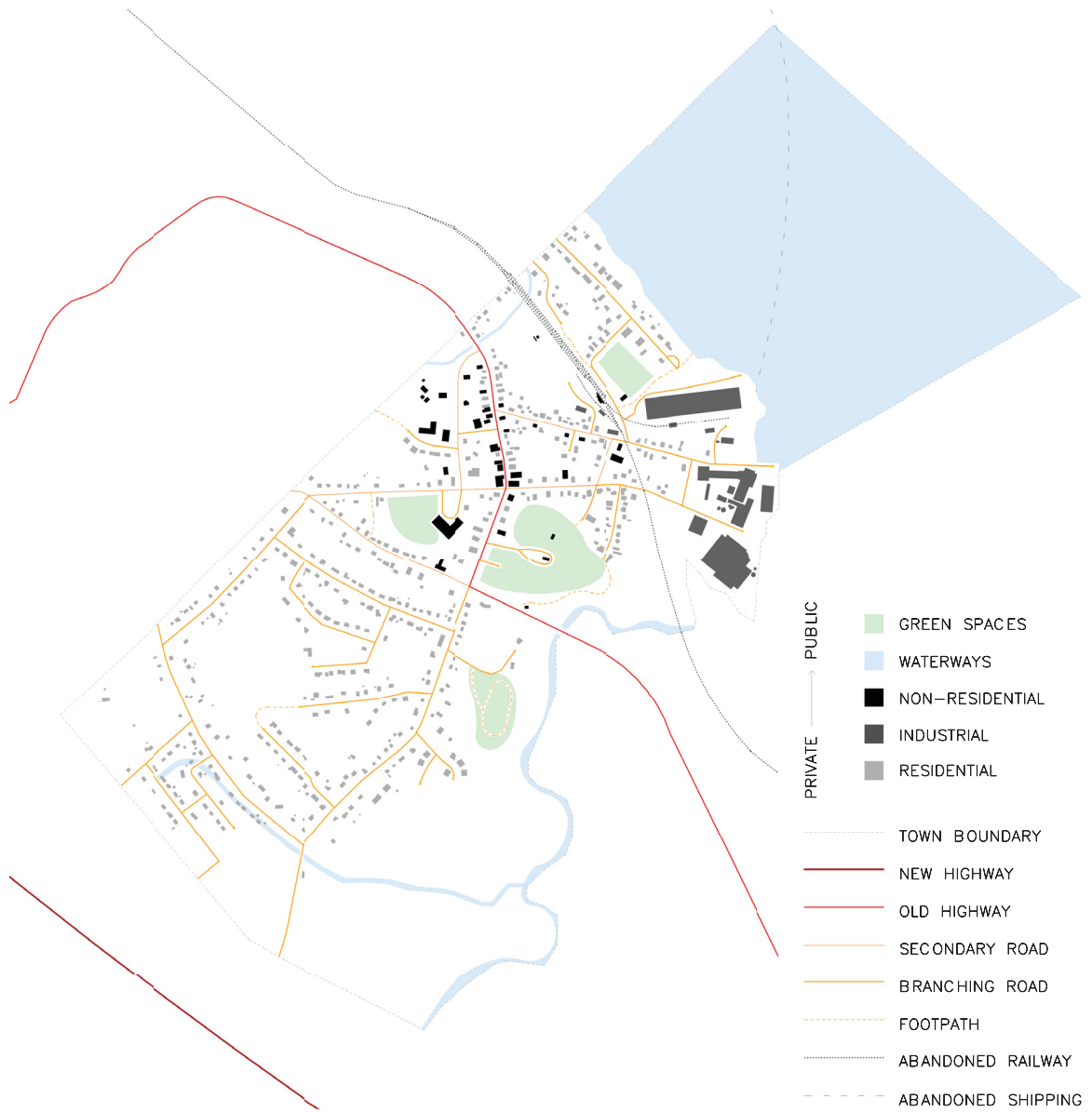
### **Current Trends: Disconnected/Vacant Rural Elements**

The current trends of the community of Hantsport are a result of historic transportation and industrial infrastructure. A majority of this infrastructure became abandoned in the past ten years, causing negative impacts on the area. The original highway (now referred to as the "old highway") ran directly through the town, which is where the Main Street and commercial zone developed. The "new highway" bypasses the community. The massive industrial structures consume a majority of the waterfront property within the town border and the railroad tracks lay abandoned adjacent to the industrial lots. Hantsport is mostly comprised of residential areas and although it now acts as a suburb for the urban center, it was never developed to do so. It is important to note that the trends of this specific area can be found in other rural communities.

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<sup>27</sup> Scott MacDonald, "Hantsport Deserves to Be Better Known," (Published 7 July 2015), <<http://thechronicleherald.ca/thenovascotian/1297322-hantsport-deserves-to-be-better-known>>.

<sup>28</sup> Ibid.



Hantsport current conditions: Circulation and built and natural structures.



Hantsport current trends - Figure/ground: zones and landmarks.

The current rural elements of Hantsport are very fragmented. The various zones of commercial, recreational and industrial are defined but lack a connection to one another. The large areas of outdoor community and recreation spaces are highly utilized by the community, however, there is a lack of indoor space for community events. There is only one point of public access to the water (which involves a long, steep set of stairs) because a majority of the waterfront area is comprised of private residential lots or large industrial land which is fenced off. Several commercial buildings on Main Street are vacant as well as most of the massive industrial infrastructure and many houses for sale.



Vacant building: Commercial.



Vacant building: Civic.



Vacant building: Residential.



Hantsport: Current condition - disconnected/vacant rural fabric; underlay from Google Maps; topographical information from Nova Scotia Civic Address File Data.

## **CHAPTER 5: ARCHITECTURAL SOLUTION**

### **A Stitching of Rural Fabric through Infrastructure and Landscaping**

The site for the architectural mediation was chosen through studies of the community of Hantsport and by highlighting the important elements and zones. With the intention of forming connections, a “hot spot” was selected to connect industrial, water, recreational and commercial zones.

The proposed site and structure will stitch together the rural fabric of the community by bridging between and over various disconnected elements. The building will physically connect between small industrial and large industrial space and rural landscaping will connect the site to water, recreational and commercial zones. The intention is not to replace any aspects of the town, but to enhance the existing elements through physical and nonphysical connections.

The creative hub will provide space and resources for entrepreneurs and creators to work so that commuting or working from home is not necessary. The goods produced in the workshops and studios can be sold in retail shops, creating a nonphysical connection to the commercial zone. Activities in the makerspaces and workshops can expand into industrial infrastructure, creating a physical connection.



Commercial connect - Goods produced in the creative hub can be sold on Main Street.



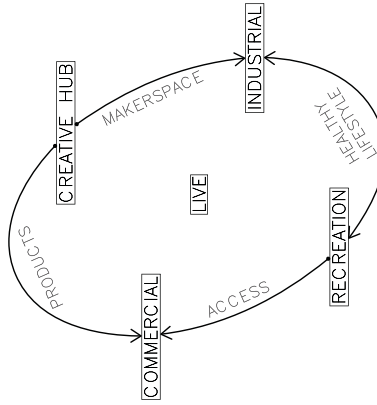
Recreational connect - Utilizing the abandoned railway as an active transportation route.



Waterfront connect - Rural landscaping and recreational path will bring residents to the water.



- COMMUNITY CONNECT: OPPORTUNITY
- RECREATIONAL CONNECT
- WATER CONNECT
- COMMERCIAL/ MAIN STREET ACCESS
- RECREATIONAL PATHWAY
- COLLABORATIVE SPACES [BRIDGING]
- OUTDOOR MAKERSPACE [LANDSCAPE]
- BUILT REC/ PUBLIC SPACE
- ACTIVE TRANSPORTATION
- CONNECTIONS [PHYSICAL+NON-PHYS.]



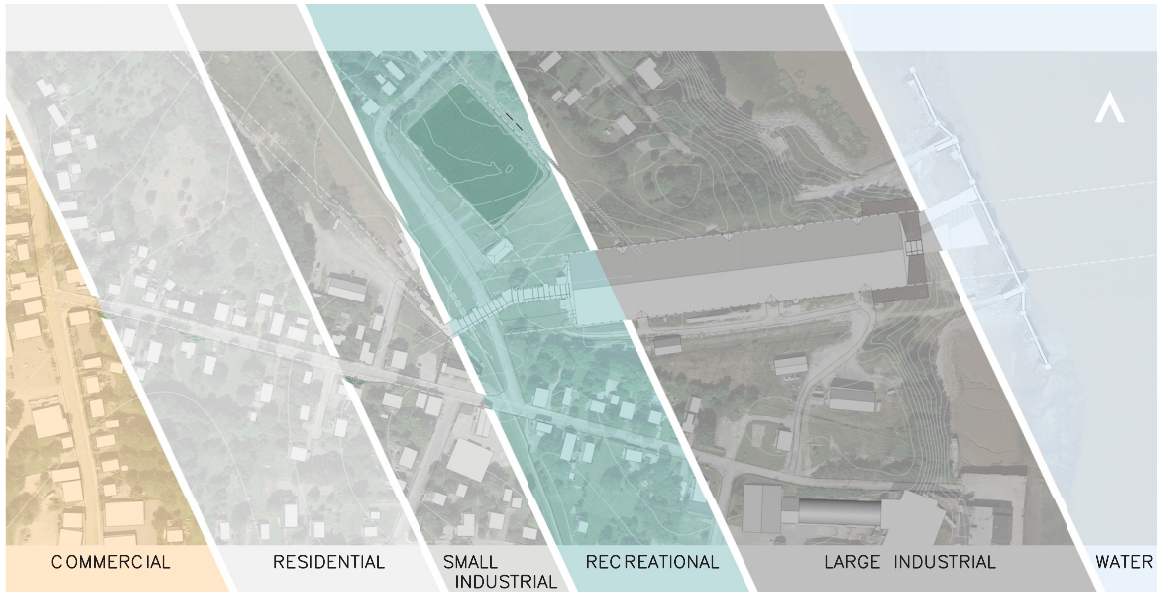
A STITCHING OF RURAL FABRIC

Hantsport: Proposed connections - rural infrastructure connected via collaborative architecture and recreational routes; underlay from Google Maps; topographical information from Nova Scotia Civic Address File Data.



## Site [as a Town] Strategy

The small scale of the town allows the entire community to become the site. The built architecture physically connects two industrial zones while the active transportation route and rural landscaping connects the site to water, recreational and commercial zones.



The site [as a town] - Built architecture and rural landscaping stitch together disconnected zones by bridging thresholds; underlay from *Google Maps*.

A *lido* located on the waterfront side of the unused gypsum shed would be filled with ocean water. By making the ocean water accessible to swimmers, a new public recreation zone would be created that allows citizens to engage with the river and famous tides.



Aerial view of the creative hub situated within its surroundings; underlay from *Google Maps*.

A built path guides users of the existing outdoor recreation field into the shed where change rooms are housed (an amenity not currently available at the field) and the path forms benches for the athletes beside the field. The abandoned train route is reworked as a recreational path and reconnects citizens with the rail infrastructure in a town highly reliant on cars. This path encourages active transportation throughout the town and provides access to the creative hub.

An existing street connects the creative hub to the commercial zone. William Street is the most direct route for drivers and pedestrians from the hub to Main Street. It is a highly residential road, bookended with a commercial zone on one end and a civic and small industrial zone on the other. The vehicular connection will allow for goods produced at the creative hub to be transported to vacant commercial spaces to be sold. Pedestrian access to purchase food and goods from Main Street will be encouraged through the design of “places to stop” along William Street. These places will expand the sidewalks at key points where walkers can pause for a moment, meet with others or just wander through. Informal gathering spaces build on the friendly social culture of rural lifestyles.



Civic zone - Post office. Inspiration for the William Street mediation was found in the public sitting area here.



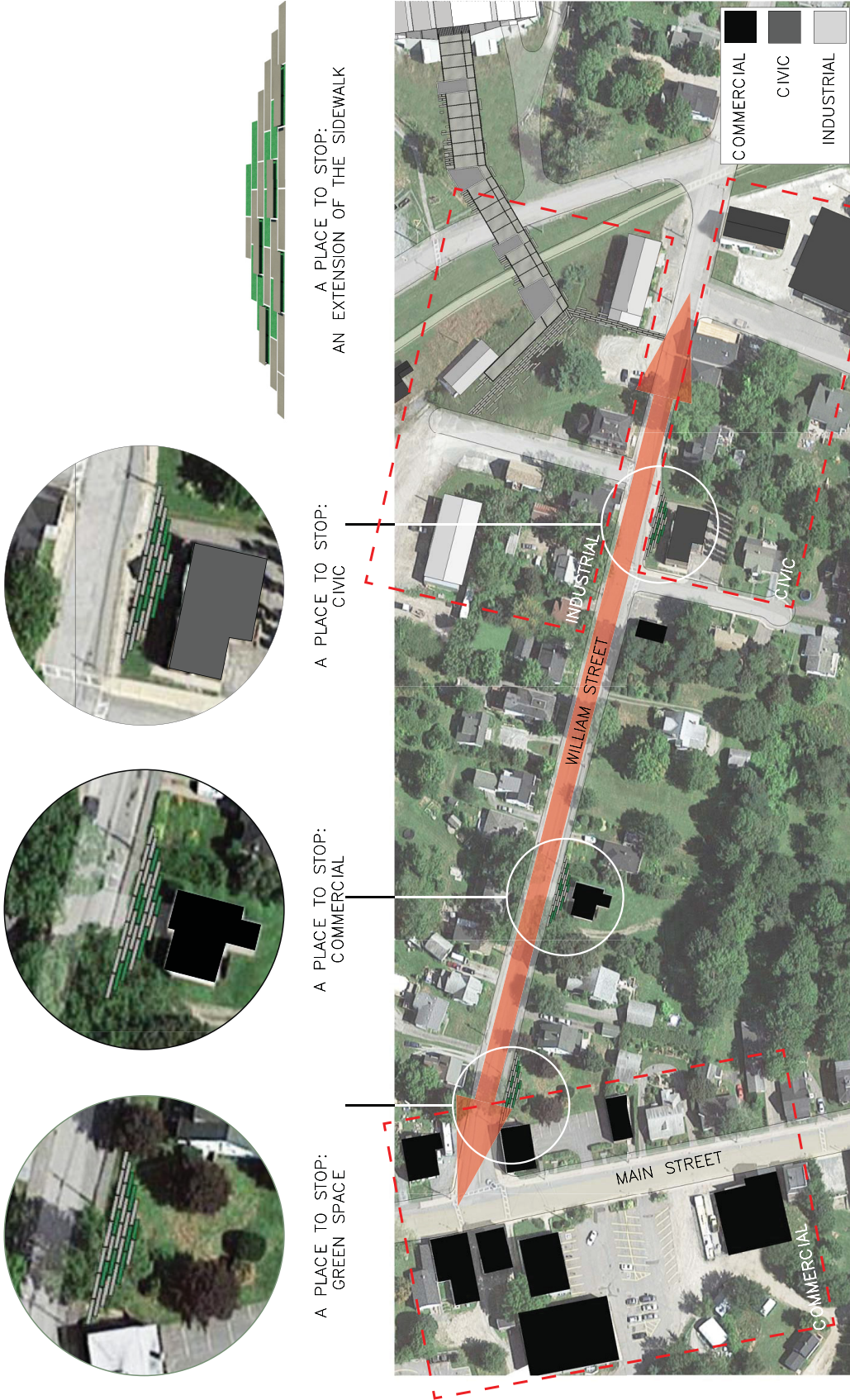
Commercial space, currently vacant.



Commercial and residential structures.



Green space adjacent to the commercial zone.



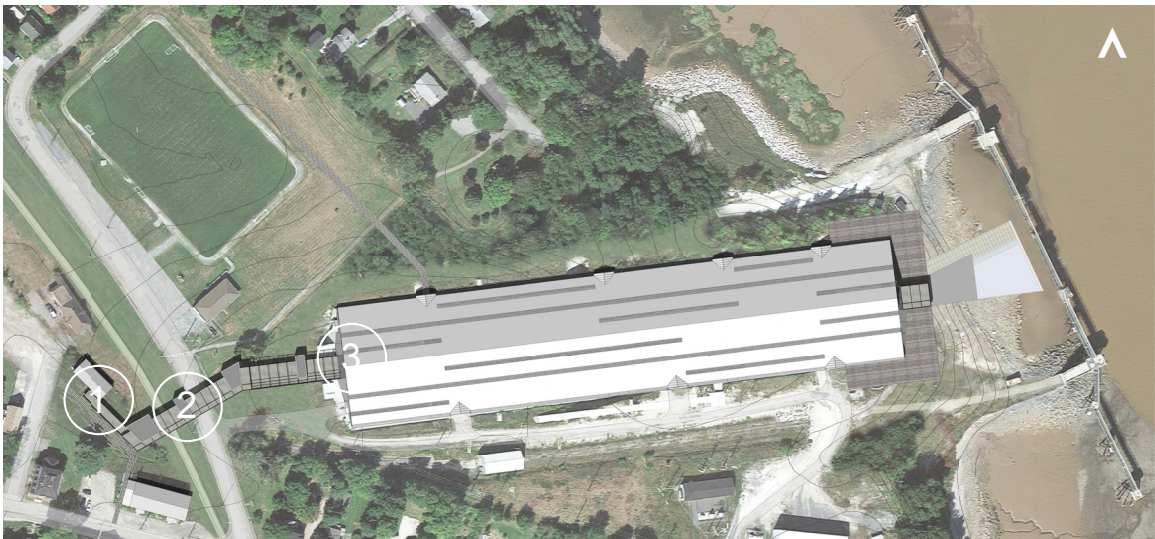
Commercial connect - encouraging active transportation is key to fighting the unhealthy lifestyle of commuters. Transforming William Street into more than just a sidewalk to travel on to reach Main Street will energize people to walk the route. "A place to stop" becomes an extension of the pedestrian zone where users can stop or gather; creating moments along the way. Offset concrete elements lay at ground level for circulation or pop up as benches for resting; underlay from Google Maps.

## Creative Hub Architecture

The site for the location of the creative hub was chosen by studying the over-all layout of the community and determining a “hot spot” where several different zones could be connected. The chosen site allowed for a small industrial zone, large industrial zone, recreational field/pathway and waterfront area to be physically united while maintaining pedestrian and vehicular access.

The building will interact with its immediate surroundings in three main ways:

1. by creating a covered outdoor work yard that allows for the ground floor workshop to spill outside and engage with the small industrial building;
2. by bridging over the recreational pathway and vehicular street, creating a visual interaction between the program inside and the movement outside; and
3. by puncturing the existing abandoned gypsum shed allowing for program and access to expand into the structure and out the water side to create elevated views of the river.

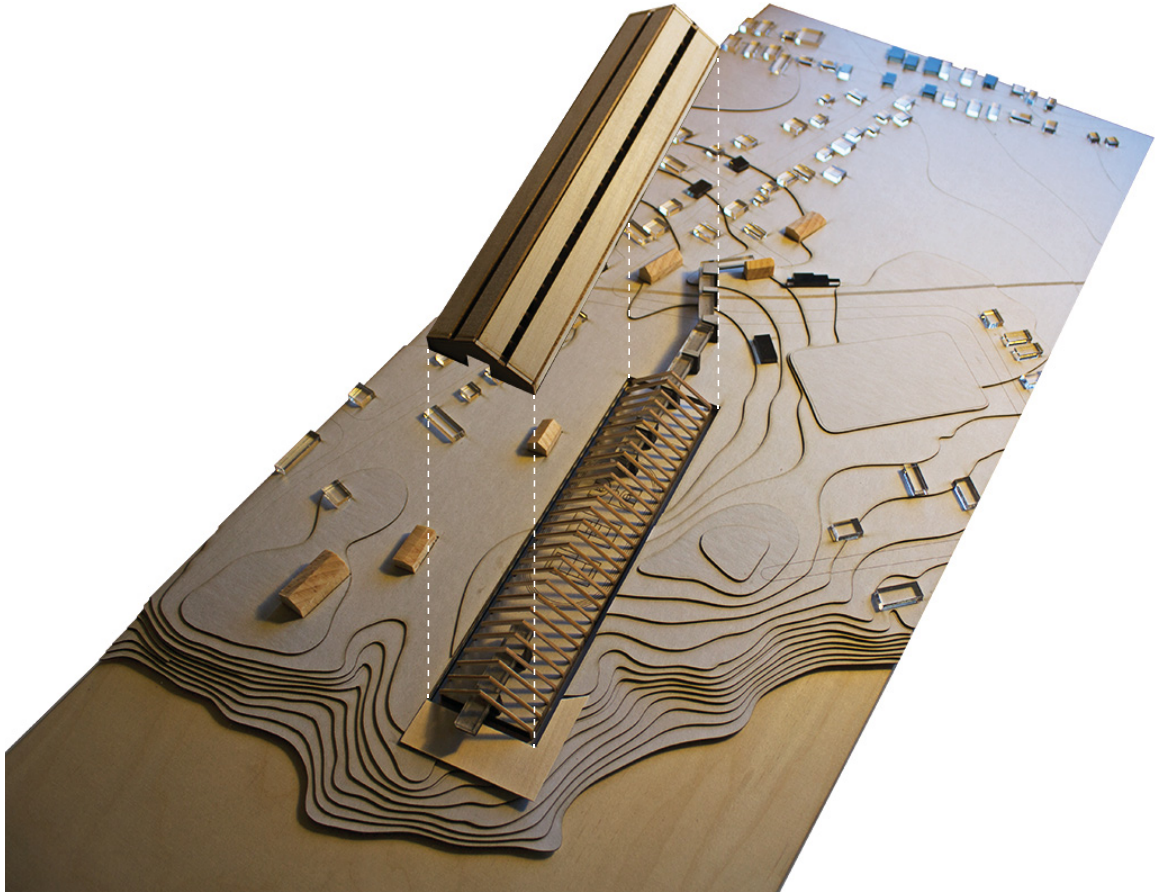


Creative hub site strategy: Work yard, bridge, puncture; underlay from *Google Maps*; topographical information from *Nova Scotia Civic Address File Data*.



Creative hub's interaction with immediate surroundings - Bridging over the recreational pathway. The collaborative workspaces can be accessed directly from the recreational pathway - encouraging users to be active when traveling to work and during the workday. A strong visual connection is created between the exterior active transportation route and the interior workspaces.

The industrial shell is activated by the creative hub puncturing through the structure. Three main programs are proposed for inside the vacant gypsum shed: workshop space, an indoor training and sports facility, and community market. The interior workshop space will be located at the west end of the shed and will act as an expansion of the creative hub workshops and outdoor work yards. The region currently lacks a large indoor sports facility so this program will engage Hantsport athletes as well as those from surrounding towns. The indoor recreation area is located in the central zone of the shed to connect with the adjacent outdoor field.



Model of gypsum shell structure, creative hub building, surrounding buildings, natural topography and the shed shell (removed in photograph). Wood material represents industrial buildings, clear plexi-glass serves as residential buildings and black plexi-glass marks civil and commercial buildings [non-residential].

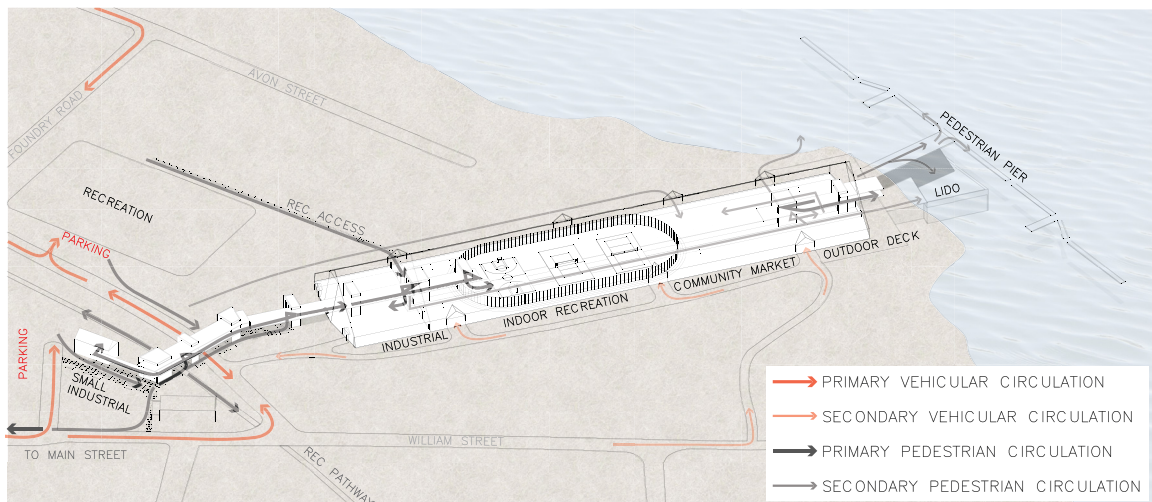
The program of a community market connects with the region's agricultural strengths and allows local people to showcase their cultural work. The market space can extend out onto the waterfront lot where an exterior deck is required because of the steep terrain heading down to the water's edge.

The entire program of the creative hub is not solely housed within the gypsum storage shed for a variety of reasons. This project's intention is not to adaptively reuse an isolated site, but to develop a strategy of rural renewal that connects fragmented community elements and revives vacant spaces. The architectural intervention requires a new rural building type, which cannot act as a landmark if it is contained within an existing structure. Every rural area has different physical conditions and varying abandoned industrial structures so a blanket adaptive reuse approach would be impossible. A main intention of the creative hub is to provide amenities that industrial buildings lack: a pleasant, naturally

lit workspace which is flexible to accommodate different users over time. Finally, housing the program in one structure of the town will not create connections to other disconnected elements.

The circulation of the creative hub takes inspiration from the historic gypsum process that once occurred on the site. This helps the community members understand and appreciate the history of the site because unless previously employed at the gypsum company, residents lack knowledge of the mechanisms within the industrial building.

There are various areas to park around the site, depending if the user is accessing the ground level workshops, upper level collaborative workspaces or programs within the shed. Pedestrian access is emphasized by locating main entry points off of the recreational pathway. After entering these access points, users move vertically into the upper level through stairs located in the solid structural cores. The collaborative workspaces may be the destination or this space can be bi-passed to walk into the shed structure. Here, one can drop down to the main level into the interior workshop or recreation zone or remain above for observation. The action of accessing different programs from above mimics the process of the gypsum being dropped into the shed from the roof conveyor during sorting.

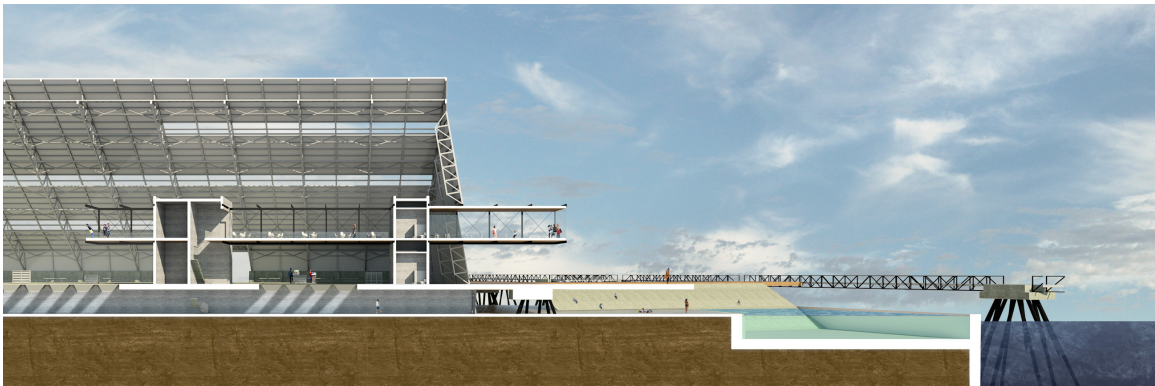


Circulation diagram - Inspiration from historic raw material process. Vertical circulation occurs within the solid concrete cores while horizontal circulation resembles the linear path of travel of the gypsum on long conveyor belts that traveled the length of the shed at both the roof spine and underground.

Reuse of the underground conveyor area is vital because even people that worked at the gypsum shed wouldn't have experienced this space. From the west zone of the shed, vertical circulation continues underground to provide users access to the underground pathway. This simulates the way the gypsum was pushed into hoppers taking the material to the conveyor below and the hopper infrastructure can now bring light into the tunnel. This pathway allows the linear circulation route (like gypsum on a conveyor) to continue uninterrupted to the east end of the shed. The bridging structure over the indoor recreation facility was not an option because of clearance heights for sports.

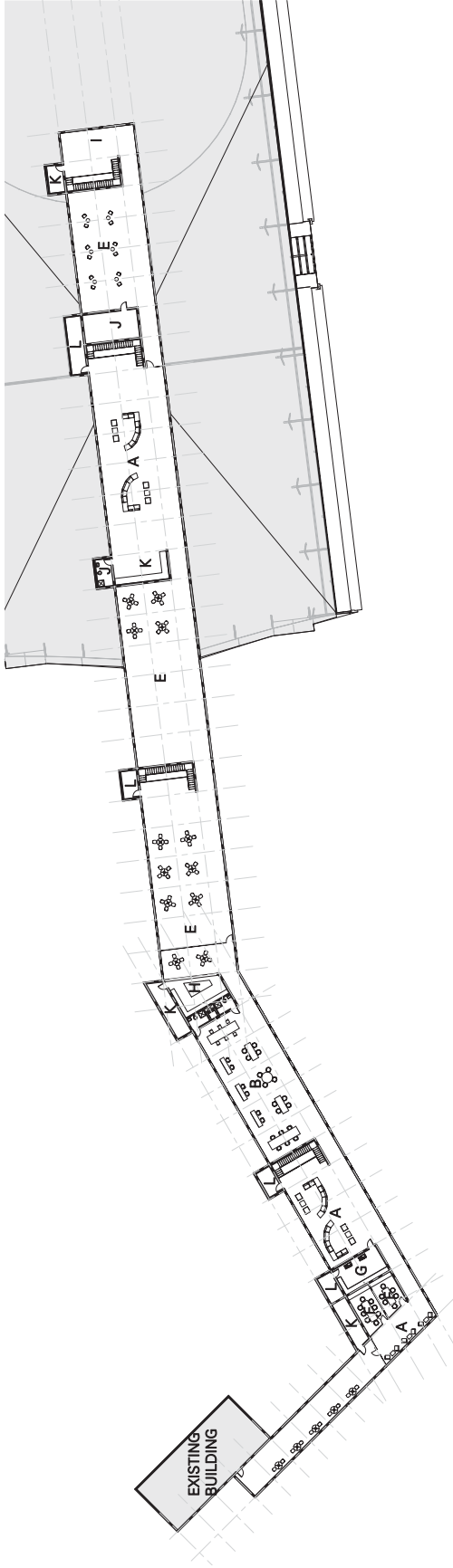
At the east end of the tunnel, the community market can be accessed at the main level or users can continue outside to experience the waterfront. Visitors and vendors can access the market either through the linear indoor access or they can walk outside to the waterfront and enter the shed at the main level. Heavy or large goods being brought into the shed can be dropped off via vehicle at the large openings in the shell.

From the market space, people can travel vertically within the concrete circulation and amenity core to access the upper level which punctures the shed shell, or travel outside to occupy the exterior market deck, lido, or pedestrian pier.

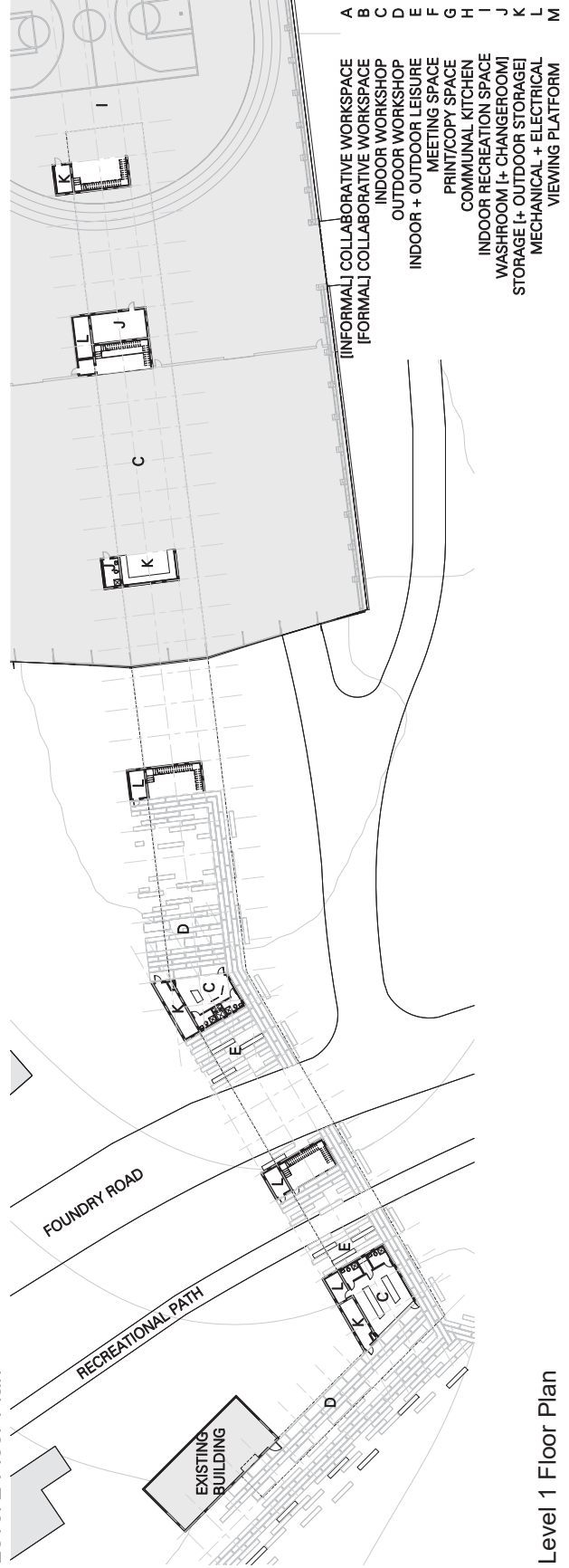


Sectional perspective at the water side of the shed (where the community market is hosted). At this location, the water can be experienced in various ways: from traveling out of the underground pathway, at the high tide and lido level; from the main level onto the deck which acts as an extension of the market; from the upper level that punctures through the shed exterior to gain expansive views of the river; or along the pedestrian pier that once aided in the loading of gypsum onto ships.





Level 2 Floor Plan



Level 1 Floor Plan



Interior perspective - [Formal] collaborative workspace within bridging creative hub structure. At this point of circulating through the building, the user has either reached their destination to work or can bypass the collaborative workspace and travel into the program hosted within the shed.



Gypsum shed interior perspective - Workshop program expanding into abandoned industrial infrastructure. The elevated bridge creates a space separate from the workshop floor for leisure and different vantage points and the solid cores house storage space, private amenities and circulation.

The solid concrete cores contain the workshops, amenities and vertical circulation while the collaborative workspaces are located within a glassy elevated space. There are various types of collaborative workspaces in the creative hub for entrepreneurs and creative types to work. All of them are flexible, well-lit spaces that provide local residents an alternative option to working from home or commuting to urban centers. The collaborative spaces include: outdoor leisure, communal kitchen, formal and informal workspaces, print shop, meeting spaces and workshops. These spaces encourage social interactions, networking and information sharing; absent in people's lives who commute or work from home. Also, a close proximity to recreation facilities and the river will encourage workers to get outside and have healthier lifestyles.



Sectional perspective - Creative hub spanning over Foundry Road and the recreational pathway. The solid concrete cores contain the workshops, amenities and vertical circulation while the collaborative workspaces are located within a glassy elevated space. (The workshops are separated from the workspaces due to noise and debris).

The bridging structure of the creative hub interacts with its immediate site in various ways. The workshops are located at the ground floor with the ability to expand outside as covered work yards. The second storey is at a high enough elevation that large vehicles can pass underneath and at a height that allows a lot of sun to reach the covered areas. Residents passing by on the recreational path can view the activities of the work yards and workshops and gain a knowledge of the projects being designed. The main entrances engage with the pathway and the bridge creates an enclosed space for people to not only work but to play.



Exterior perspective - View of how the creative hub interacts with its immediate site. The workshops spill out into the small industrial work yard where residents passing by on the recreation path can view the activities occurring there. The access points engage with the pathway and the bridge creates covered space for people to work and play.

## Material Selection: A Layering of History

The selection of materials for the creative hub in Hantsport is based on the history of the site as well as structural requirements. The historic use of certain materials in the area describes reasons for settlement and the development of a local culture of trades. Building on the development and continuing the use of traditional material culture leads to a layering of history on the site. The waterfront region in the town was initially utilized for a shipbuilding yard, then for industrial establishments and the creative hub is the next step in the transformation of the area.



Site surroundings: Industrial infrastructure. Steel structure: cross-bracing, piers, and interior steel joists. Inspiration for the overarching structure of the creative hub.

The era of industrial buildings is still visible on the site. The abandoned infrastructure became inspiration for the key structure of the creative hub. A material with the ability to bridge large spans was required to physically connect the large and small industrial zones. The large steel structures in the industrial zone once represented the prosperity of the region, using similar architectural strategies ties the new hub to historic strategies.

Concrete became another key attribute because a heavy material was needed for the construction of the solid amenity cores. The large concrete pillars ground the building and give it a sense of permanence while providing sheer walls to support the steel structure. The technique of using small boards for formwork and not just large plywood sheets relates the concrete construction to the use of wood planks during the shipbuilding era.

The gypsum once kept in the storage and distribution shed has key uses: fertilizer, gypsum wallboard, and in concrete to slow down the drying process. Simply putting drywall in the creative hub wouldn't have enough presence. Instead, the concrete bases of the building connects with the raw material once prevalent in the region. Originally, all gypsum mining in Nova Scotia occurred in the Hants region and now the mines and gypsum infrastructure have been closed.

A third material was introduced to soften the bold materials of concrete and steel and to tie the hub design back to the original production that occurred on the site. Wood was selected because of the material's warmth and timber's strong presence in the region both historically and currently. Its placement on the interior ceiling and the exterior soffit on the underside of the bridging structure demarcates the workspace and workshop zones. The use of wood for exterior shades limits the amount of southern sun exposure.

From the 1830's to the end of the century, nearly 200 vessels were built in the Hantsport area (from small schooners to ships proper).<sup>29</sup> At the time, Hantsport was the fifth most important shipbuilding center in the world and many historic homes and landmarks remain from that time.<sup>30</sup> Master craftsmen initiated a culture of building that has continued in the area through high involvement in trades and manufacturing.

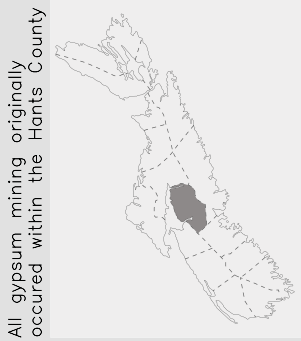
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29 Robertson, *Tide & Timber: Hantsport, Nova Scotia 1795-1995*, 56

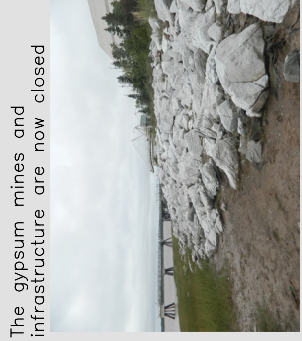
30 "Hantsport and Area Historical Society," (Published 2011), <<http://nsgna.ednet.ns.ca/hantsport/walkingtour.html>>.



First mining of gypsum in North America occurred in Nova Scotia



All gypsum mining originally occurred within the Hants County



The gypsum mines and infrastructure are now closed

HISTORY OF GYPSUM IN HANTSPORT'S REGION

HISTORY OF TIMBER IN HANTSPORT'S REGION



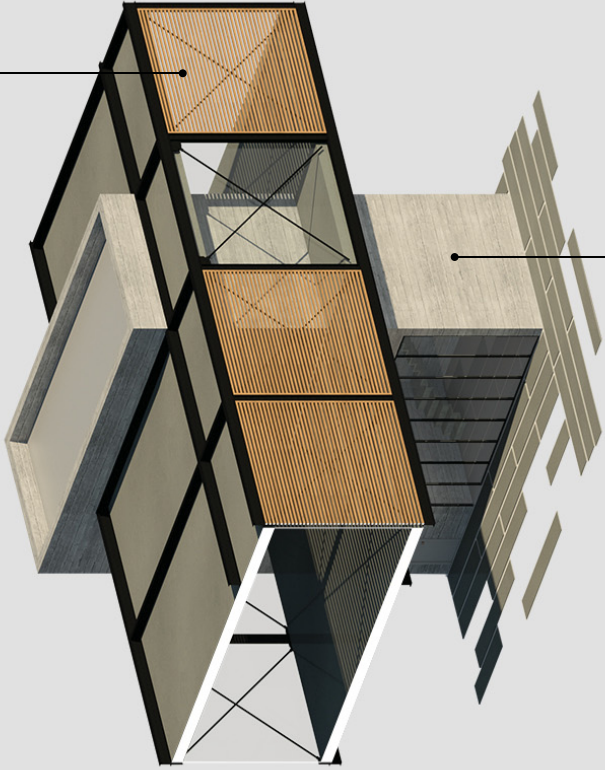
The Hantsport area built nearly 200 ships in the 1800's.



Timber construction was prominent in agriculture buildings.



Wood framing is a popular trade in Nova Scotia.



Sectional perspective view revealing the materials and structure of the creative hub. Top left image: *Gypsum Mining*; top and middle right images: *Nova Scotia Archives*; bottom right: *Timberhart Woodworking*.

## CHAPTER 6: CONCLUSION

### **Adaptability of Approach in other Rural Communities**

The design of the rural creative hub is adaptable to various locations but with the ability to be site specific and respond to place. The adaptable aspect stems from the fact that the program of the building is a response to the same issues across rural Nova Scotia. Several communities across the province once relied on local industries for employment but as the industries close down both permanent and daily urban migration occurs. Permanent relocation to urban centers has caused a decline in rural populations and those commuting daily to work spend their time and money outside the local community.

While the issues in these post-industrial towns are similar, when comparing two rural communities the current conditions will vary: different buildings will be vacant, there will be varying employment data, landscapes, population sizes, etc. It is for this reason that the creative hub program and structure must be capable of becoming site specific. The rural hub is not a blanket approach that can be applied in any community but a mediation that is introduced once an in-depth study of place is conducted.

The next step in the development of this thesis would be to apply the creative hub prototype at another test site. The study of place, including history, culture, demographics and physical built and natural surroundings would be examined in the same way they were researched for Hantsport. The overarching principles developed studying the test site of Hantsport would be adapted to other rural communities in Nova Scotia. This would show how a creative hub can stitch together fragmented elements of towns and prevent residents from migrating for work.



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