

March 2018



Background Report: Industry and Resource



Background Report 7 of 9
**Prepared by West Hants Planning
and Development Department**

Executive Summary

Forestry and gypsum have been highly profitable resources in the Municipality of the District of West Hants (West Hants). However, both industries have suffered from declining sales in recent years.

Although Nova Scotia is considered a service-based economy, manufacturing is the third largest industry in the Annapolis Valley, which includes West Hants.

Gas stations have been steadily declining across the country; the Federation of Canadian Municipalities has identified several best practices for municipalities to support the redevelopment of contaminated sites.

Table of Contents

Executive Summary	2
1. Industrial Development in West Hants	4
2. Trends in Resource and Industrial Development	5
3. New Opportunities in the Resource and Industrial Sector	7
4. Regeneration, Reclamation and Remediation	11
Bibliography	15

1. Industrial Development in West Hants

Reserves of gypsum and aggregate minerals underlie West Hants. The Municipality has no authority over extraction or uses accessory to extraction, but can control use of the area once extraction has ceased.

There have been a few permits issued over the last eight (8) years for industrial development not related to resource extraction (Figure 1). In most years there has been only one (1) industrial building/ development permit issued. However, in 2011 there was a slight increase to three (3) issued for greenhouse repairs and additions to an auto motive repair business. In 2015, several permits were issued for a pharmaceutical manufacturer, a pulp and power company, and a packaging manufacturer. The 2016 spike can be attributed to an agricultural cooperative, a water treatment facility and greenhouses. Construction value for industrial development has been well below \$1 million for most years except 2014 and 2015 (Figure 2).

Figure 1: Number of Industrial Permits, 2009-2016

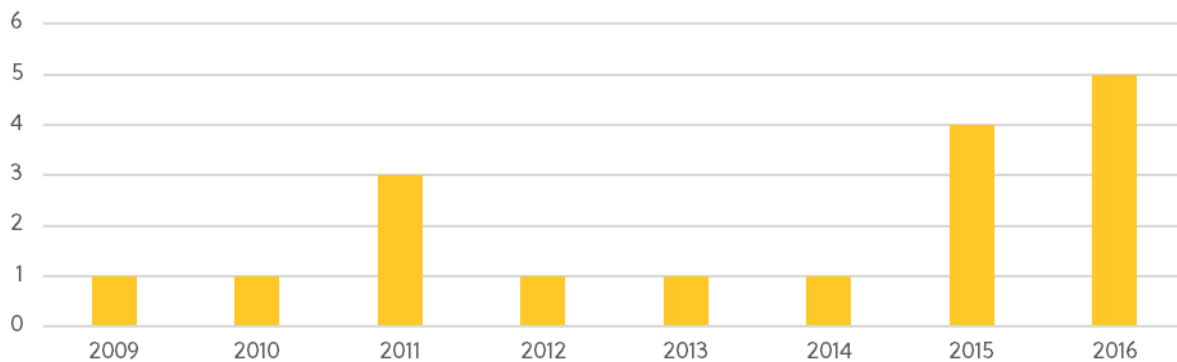
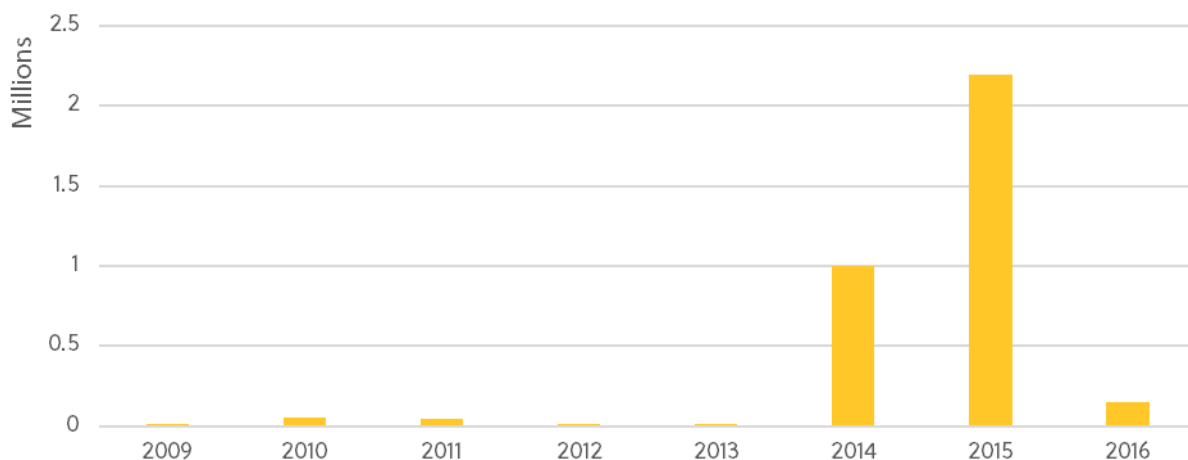


Figure 2: Industrial Construction Value, 2009-2016



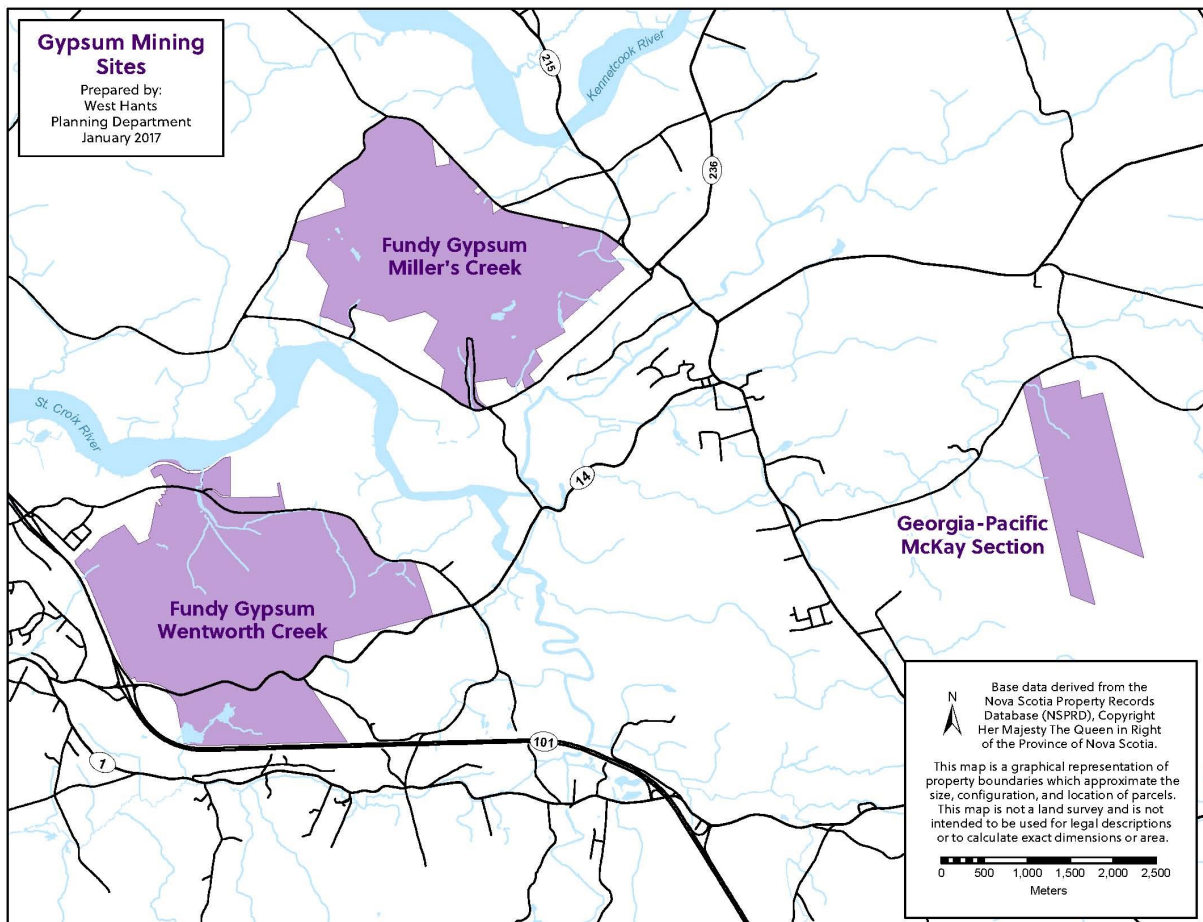
Source: Municipality of the District of West Hants

2. Trends in Resource and Industrial Development

The United States housing market crash of 2008, along with a strong Canadian dollar, significantly decreased Canadian wood exports to the United States. Pulp and paper manufacturing saw a downturn in 2009 due to low demand for newsprint which could be associated with an increase in technology.

In West Hants, gypsum has been a highly profitable mineral resource and there are three (3) mine sites (Figure 3). Since 1952, most gypsum in Nova Scotia has been used for wallboard production. The 2008 recession significantly reduced demand for new homes which impacted several industries including wallboard, and ultimately, gypsum. This caused four (4) large Nova Scotian quarries, including Wentworth and Millers Creek, to be placed on care-and-maintenance status. McKay Section was considered inactive in 2008, however, the property owner, Georgia-Pacific Inc., holds provincial approvals to mine on the site.

Figure 3: Gypsum Mining Sites in West Hants



The *Now or Never* report by the Nova Scotia Commission on Building Our New Economy, illustrates several key trends that could reflect Nova Scotia's economic future. According to the report, Nova Scotia is considered a service-based economy. In 2012, most people in Nova Scotia worked in the service-producing sector (81%). The goods-producing sector makes up the remaining 19% and includes primary industries, utilities, construction, and manufacturing. However, manufacturing is the third largest industry in the Annapolis Valley; West Hants is considered part of Annapolis Valley.

Gas stations are often considered an industrial land use due to the land contamination caused by former gas stations. In Canada, the number of gas stations have significantly decreased. In 1989, there were over 20,000 gas stations; by 2016, the number had dropped to 11,931.

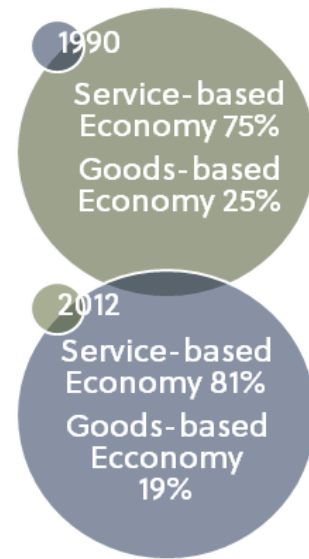
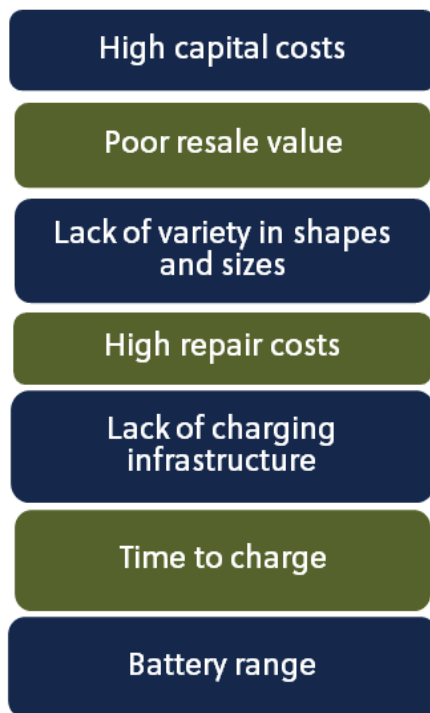


Figure 4: Why are BEVs and Hybrid Sales Low?



As climate change has become a global priority, the automobile industry has met new market demand and regulations. Battery electric vehicles (BEVs) and hybrids are seen by many environmental experts as the best option. However, these vehicles are not taking up a large portion of the market for several reasons (Figure 4).

Although sales have been low, infrastructure such as charging stations could encourage BEV and Hybrid sales. Internal combustion vehicles are also becoming more efficient. By 2025, they will be 50% more fuel efficient and emit 50% fewer greenhouse gas emissions than similar 2008 models. This means drivers will be stopping for gas far less frequently, requiring fewer gas stations.

3. New Opportunities in the Resource and Industrial Sector

3.1 Forestry

The Nova Scotia Woodlot Owners and Operators Association created The Forestry Lab in 2015 to address challenges in Nova Scotia’s forestry sector. The Lab became a testing group for new business ideas, particularly those based on new technologies, harvesting capacity and supply from private woodlots. Prototypes were tested to address key problems and issues facing the sector.

The Hidden Gem prototype examined the feasibility of creating a wood-products co-operative in the New Ross area. The Lab discovered that there is modest potential to develop a commercial supply of wood products in New Ross, if selling venues and opportunities were expanded and partners such as municipalities or community associations managed common assets such as woodworking tools.

The prototype team conducted a study tour of small, privately owned Finnish forests to identify ways to improve the profitability, efficiency and sustainability of Nova Scotia’s forestry sector (Figure 5).

Figure 5: Key Ways to Improve the Nova Scotian Forestry Sector

Culture and attitude	•local and provincial engagement with the industry
Strong landowner support system	•education for woodlot owners to give them access to trusted services and provide a voice for owners in the industry
Sustainable forest management plans	•cultivation of new trees to be planned to suit and sustain forest health
Market development	•creation of a clear process for creating product value, particularly for low-grade wood
A forest inventory and information sharing	•inventory of forest and good infrastructure to attract investors

3.2 Gypsum Mines

The Nova Scotia Department of Natural Resources is trying to increase demand through marketing and the creation of value-added alternative uses for gypsum in Nova Scotia.

There are a number of alternative uses for gypsum:

Agricultural Product: Gypsum has several impacts on soil quality. It serves as a source of calcium and sulphur to displace sodium in salty soils. It opens the soil, allowing water and air to penetrate. It can also adjust the pH of the soil and provides nutrients that improve crop yields and product shelf life (Figure 6).

Figure 7: Gypsum Self-Leveling Floor



Self-leveling floor: When stucco with added gypsum (Figure 7) is 'poured' onto plywood floors, gravity quickly creates a level surface prior to the stucco setting to form a hard floor.

Architecture: detailed architectural features shown in Figure 8 can be made with gypsum.

3D Printing: Gypsum could potentially be used to 'print' entire rooms by using gypsum as an input material in a 3D printer to create walls. It has the potential to lower the cost of buildings by an estimated 20%.

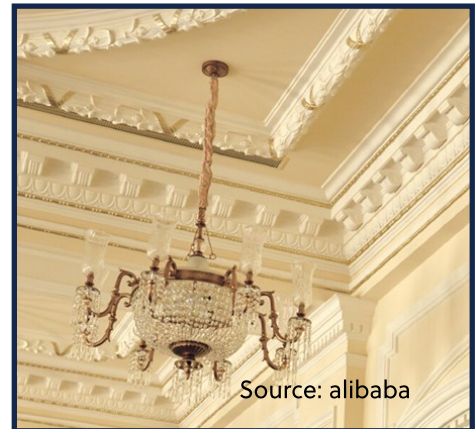
Figure 9: The Global Gypsum Conference and Tradeshow, 2014



Figure 6: Gypsum Soil Comparison



Figure 8: Gypsum Architectural Details



Several of these alternative uses are related to housing and can face the same market demand issues as wallboard.

The Province hopes to increase awareness and business potential by attending events such as the Global Gypsum Conference and Tradeshow in 2014 (Figure 9).

3.3 Industry

Incorporating eco-industrial principals provides a great competitive advantage. Environmental principles have become key for many companies due to concerns related to climate change and the financial benefits achieved when a company “goes green”. Some of the methods now in use in Nova Scotia which could be adapted by West Hants follow.

Eco-Industrial Parks

An eco-industrial park is a community of businesses that work collaboratively to achieve environmental, economic and social goals within an industrial park. This can be achieved by sharing employee amenities, creating an upcycling program which uses the waste from one facility to make products for another facility and generating energy or heat to be used by businesses in the industrial park. The benefits are listed in Figure 10.

Figure 10: Benefits of an Eco-Industrial Park

Economic	Increase efficiency and access to materials using upcycling which reduces dependency on raw materials and costs associated with disposing of waste
	Improve cost savings related to energy, water or other expenditures
Social	Create a healthy and clean work environment for employees and customers
	Create an environmentally conscious community
Environmental	Enhance and protect the environment by conserving water, energy and reducing waste
	Reduce company’s carbon footprint

Burnside Cleaner Production Centre

The provincial and federal governments assisted in the creation of the Burnside Cleaner Production Centre in 1995 for the Burnside Industrial Park in Dartmouth, Nova Scotia. The organization investigated waste linkages among over 1,200 businesses within the Park.

Springhill Geothermal Industrial Park

In the mid-1980s, employers in the Town of Springhill, Nova Scotia, were experiencing high energy costs and considered moving to other municipalities or provinces that offered cheaper energy alternatives. It was discovered that water inside abandoned mines under the industrial park had a consistent temperature that could be recirculated in heat pumps for heating in winter and cooling in summer. A manufacturer decided to stay in Springhill after becoming aware of the geothermal energy savings. The company doubled the size of its operation.

The Municipality of Clare, Nova Scotia

The Clare Eco-Industry Park (Figure 11) plans to offer on-site production of heat, power and steam for the benefit and use of its tenants.

Figure 11: Benefits of the Clare Eco-Industrial Park

- Keeping most existing buildings which is more environmentally sustainable and cost effective than demolition and rebuilding
- Building fitness trail/loop for employees to provide lake views, promote activity, and become a community asset
- Creating heat by the power generation process which can be used for other manufacturing purposes

Gas Stations

In 2011, there were 1,612 big-box gas stations in Canada, up from 1,349 in 2010. These retailers provide services, groceries, and other goods that typical gas retailers do not offer. Big box retailers also offer incentive programs such as points that can be put towards groceries, gas, or other goods. The variety of retailing options in one location and incentives seem to be key trends in the gas retailing industry.

4. Regeneration, Reclamation and Remediation

Ensuring any property on which an industrial use has closed is suitable for future development in terms of contamination levels is a top public safety priority. If contamination has not been addressed sites will remain vacant and unusable.

4.1 Regeneration of Forests

Harvesting forests does not necessarily mean deforestation. Deforestation only occurs when forests are permanently removed to use the land for residential, agricultural, or other human settlement. When a forest is harvested to manufacture wood products, the area usually grows back. Regeneration can be done by natural or artificial means (i.e., planting and seeding) or a mix of the two.

There are several regulations that apply to forests owned by the Province, but the Provincial government owns less than 35% of forested areas in the Nova Scotia. Crown lands are managed by the Province and can be available for private companies to use through a long-term lease program. However, at the end of the lease term, the land must be rehabilitated to its original state. For privately owned land, the fact that forest regeneration is in the best interest of forestry companies to ensure there is a dependable supply of raw materials may be the best protection for forests at this time.

4.2 Reclamation of Mines

Since 1975, mining companies in Nova Scotia have been required to post reclamation bonds of \$2,500 per acre used, which is held in security until reclamation has taken place.

The Nova Scotia Department of Natural Resources created the Surface Coal Mine Reclamation Enhancement Initiative to determine the best practices for mine site reclamation. The committee responsible for the initiative determined that in the absence of a planned alternative land use, the goal of reclamation should be to eliminate all contamination to ensure maximum opportunity for future land uses.

Some of the most common uses for sites where mines have closed are: recreational, residential, industrial, wildlife habitat, forestry, or agricultural.

4.3 Remediation of Industrial Land

A brownfield is an abandoned, vacant, derelict or underutilized commercial, industrial or institutional property where past actions have resulted in actual or perceived contamination. The most common brownfields are former gas stations. There are several benefits to brownfield re-development (Figure 12).

The Federation of Canadian Municipalities has identified best practices for municipalities to address brownfields (Figure 13).

Figure 12: Benefits of Brownfield Development

- It can allow all land in serviced areas to be developed which is economically efficient
- It can revitalize communities
- It can increase land values for the site and surrounding area
- It can protect residents from air and water contamination

Figure 13: Municipal Best Practices for Brownfield Development

- Offer tax incentives and waive municipal fee
- Offer grants for environmental and feasibility studies
- Guide developers through regulatory processes and streamline approvals
- Rezone brownfield properties to raise their value
- Create an inventory of under-utilized properties and include them in municipal planning
- Adopt a team approach and engage developers and the public in the planning process
- Collaborate with other municipalities and provincial and federal governments to streamline and clarify regulations
- Establish a reserve fund to support municipal brownfield projects
- Use sustainable methods for demolition and cleanup

One of the major remediation and redevelopment deterrents is the cost to remove contamination. Unlike mining sites, a bond is not required for developments which may result in brownfields once the development ceases operations. In many cases, municipalities take ownership of brownfields by donation or purchase to ensure redevelopment takes place. However, property owners may be willing to remediate and redevelop themselves if the land use potential for the site is of greater financial value than the site in its current state.

Interim or temporary uses can provide an opportunity for developers to earn income from the land and access the land for contamination monitoring. Temporary commercial structures, parking lots, parks, gardens, and farmers markets are all possibilities.

In Calgary, a coffee shop in a shipping container similar to Figure 14 was put on a contaminated site. The café can be moved to other locations once the remediation process starts on the original site.

Figure 14: Shipping Container Cafe



Figure 15: Solar Park in Vulcan, Alberta



In the Town of Vulcan, Alberta, a solar park with solar panels shaped like trees (Figure 15) was created on a brownfield site. If solar panels were used as an interim use before remediation, they could be reused on the roof of new structures after remediation.

The Nova Scotia Department of Environment has created two (2) remediation paths depending on the contamination circumstance (Figure 16).

Figure 16: Nova Scotia Remediation Paths

	Limited Remediation	Full Property Remediation
Contamination removal	can leave an acceptable level of contamination on the site under very controlled conditions	all contamination must be cleaned up for the entire property
Best option for	a specific contaminant or remediation of a limited area	contamination on the entire site
Conditions for future development	specific conditions may apply to future land uses	there are no conditions related to future land use

4.4 NS Remediation Example- Petite Riviere Community Park- Lunenburg, NS (2012)

The property owned by Covey Island Boatworks (Figure 17) had been the site of two fires. The owner agreed to donate the property to the Municipality of the District of Lunenburg, which agreed to take title once soil contamination was addressed. The Petite Riviere Community Park Association received partial funding for the project from the Federation of Canadian Municipalities' Green Municipal Fund program which provided a \$7,500 grant for the project. The Association led the environmental site investigations and learned several valuable lessons (Figure 18). The park officially opened in October 2014.

Figure 17: Petite Riviere Community Park



Source: Helping Nature Heal

Figure 18: The Petite Riviere Community Park Project Challenges and Benefits

Challenges for the Project	the community group did not anticipate the lengthy process and costly testing for environmental protocols and regulatory requirements (took five years from start to finish)
	the project was small, but the funding application process was complex
	the group had difficulty raising community funds for the cleanup because the public assumed remediation would be funded by either the property owner or the government
Benefits of the Project	a community green space was created that cultivates heritage plants
	a tourist feature was created
	it increased activity for local business
	it enhanced community livability to attract new residents
	a strong sense of community ownership was developed

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