

A Better Balance

How we can Protect Jobs *and* Land for Nova Scotians



Prepared by



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Executive Summary

While Nova Scotia's mining and quarrying industry supports protecting natural lands for future generations, we also believe the provincial government's Parks and Protected Areas Plan needs to strike a better balance between protecting land and protecting jobs. Beautiful, natural lands are important, but so are job creation, economic opportunity and government revenues to pay for programs such as health and education.

Nova Scotia has already protected over 12% of the province's land mass and the provincial government currently intends to bring the total amount of land removed from economic usage to approximately 13%. This would put Nova Scotia, the second smallest province and a province with some of the biggest economic and demographic challenges, in second place nationwide in limiting our ability to use land to create jobs and economic opportunity.

The Mining Association of Nova Scotia (MANS) has analyzed the province's Parks and Protected Areas Plan ("the Plan") to help illustrate the economic impact of the Plan on the mining and quarrying industry. The analysis shows the Plan is potentially costing Nova Scotians approximately 291-356 jobs by preventing mineral exploration and development in protected areas. The Plan is also costing Nova Scotians \$16-\$19.6 million per year in lost wages.

The Plan is also potentially costing the province \$22-\$27 million in foregone economic activity each year by preventing mineral exploration and development.

These figures are the losses to the province's mining and quarrying industry only; they do not include the negative impact of the Plan on other industries that also require land to grow and create jobs for Nova Scotians.

The analysis found that 5.5% of all known mineral occurrences in the province lie within protected areas and that protected areas now overlap 17% of historic mineral claim staking in Nova Scotia.

4.5% of claims held at least five years are now overlapped by protected areas. Claims being staked for multiple years indicates higher extraction potential, as well as ongoing exploration expenditures.

The fact that the Plan overlaps so many known mineral occurrences, and so much multi-year staking, is troubling as it prevents any economic benefit from these high-potential areas.

THE COST OF PROTECTING LAND

- **291-356 LOST JOBS**
- **\$22-\$27 MILLION ANNUAL LOST GDP**
- **\$16-\$19.6 MILLION ANNUAL LOST WAGES**

Lands already protected and those proposed for protection cover in whole or in part:

- 7 past-producing metals mines
- 39 past-producing aggregate pits (sand and gravel)
- 13 past-producing quarries

There is a saying in the industry that “new mines are often found next to old mines” because the evolution from pickaxes to sophisticated, modern technology often makes historical mines economically viable for modern miners. The Touquoy gold mine, an historical site that is in the process of returning to production, is a current example of this. It is therefore troubling that the Parks and Protected Areas Plan impacts so many past-producing sites. Former mines, quarries and pits have great potential value and are often low hanging fruit for the modern industry. However, the 59 sites described above are being harmed or blocked by the Plan.

The problem with the Parks and Protected Areas Plan is not the basic goal of protecting land – it is that the Plan lacks flexibility and balance that would allow land to be preserved for future generations while also ensuring Nova Scotians have much-needed jobs and opportunity. The Plan’s philosophy of protecting land permanently, without exception, cannot accommodate changing circumstances and the evolving needs of society.

Mining and quarrying is a large and important industry in Nova Scotia – it employs 5500 people and generates \$420 million per year in economic activity. However, it also faces significant challenges, including the loss of over 800 jobs since 2008¹ and the highest tax/royalty burden of any mining industry in the country.²

An annual survey of global mining executives conducted by the Fraser Institute regularly finds that Nova Scotia is seen as the least attractive province for mining companies to invest in.³

The Parks and Protected Areas Plan is adding to the industry’s challenges by shrinking the amount of land available for mineral exploration and development. About 1 in 10,000 exploration projects leads to an actual mine.⁴ Reducing the amount of land available for exploration dramatically reduces the probability of finding a deposit that could become a producing mine. This reduces the industry’s ability to find and develop new deposits; to create new jobs for Nova Scotians; and to contribute more to government tax and royalty revenues.

¹ http://novascotia.ca/natr/meb/data/pubs/13ofr03/ofr_me_2013-003.pdf

² <http://read.ca.pwc.com/i/754827-cdn-mining-tax-2016>, see exhibit 6, page 21

³ <https://www.fraserinstitute.org/sites/default/files/survey-of-mining-companies-2015.pdf>

⁴ Prospectors and Developers Association of Canada presentation the House of Commons Standing Committee on Environment and Sustainable Development, <http://www.pdac.ca/docs/default-source/lands-and-regulations/pdac--standing-committee-presentation.pdf?sfvrsn=0>

The Plan disproportionately harms Nova Scotia's rural areas, where most mines, quarries and pits are located.

Even among rural areas, the economic cost of the Plan is not spread evenly across the province – some areas are carrying a disproportionate burden. For example, Victoria County contains 15 times the percentage of protected land as counties such as Pictou, Richmond and Antigonish. In fact, Victoria has five times as much protected land as Pictou, Richmond and Antigonish counties *combined*. This report details how the Parks and Protected Areas Plan is harming the economies of certain parts of the province significantly more than others.



Acadia Park, a reclaimed mine site in Westville

Everything Nova Scotians want – from excellent health and education systems to opportunities for our kids to stay home instead of moving out West – ultimately depends on creating jobs.

The Mining Association of Nova Scotia proposes three modest policy changes that would strike a better balance between protecting both natural lands and economic opportunity.

Land Swap - A “land swap” mechanism should be added to the protected lands regulatory regime. This would allow mining and quarrying companies to access protected land by purchasing land of at least equal size and ecological value outside of the protected areas and arranging for it to be protected instead. This would ensure that:

- the total amount of protected land remains the same or grows;
- the ecological value of protected lands remains the same or grows; and
- Nova Scotians will continue to be able to access the minerals they need to create jobs and grow the economy.

Proposed land swaps would be fully regulated by the provincial government, on a case-by-case basis, to ensure there is a net benefit to the province. The government could even require that the land being swapped in by the company be larger and/or more ecologically valuable than the protected land being swapped out. This creates the potential to not only maintain but improve the government's portfolio of protected lands, creating a win-win for both the industry and the environment.

Protected Lands Cap - Now that the Government of Nova Scotia has fulfilled, and even exceeded, its legislated target for protecting land, we need to put as much focus on promoting

economic development as the government has put on land protection. The environmental goal has been achieved – we now need to focus on economic goals in order to strike a better balance.

To support job creation, a cap should be placed on the amount of land that the government will protect. This would simply put a reasonable limit on the amount of land that is permanently removed from economic use. Protecting 13% of Nova Scotia's landmass will put the province in second place nationwide in limiting our ability to use land to create jobs and economic opportunity. It will put us well ahead of our Atlantic neighbours in protecting land. It is a reasonable place to stop.

The Parks and Protected Areas Plan has contributed to uncertainty in the global mining industry about whether Nova Scotia is a safe place to invest.

Placing a cap on protecting land would help solve the problem of uncertainty scaring away investment. It would send a signal to the global mining industry that Nova Scotia is striking an appropriate balance between conservation and welcoming job creation and investment.

Increase Crown Lands - With the focus on protecting land in recent years, we have perhaps lost sight of the importance of Crown land, and how little of it Nova Scotia has compared to other jurisdictions.

In the absence of interest from industries such as mining or forestry, Crown lands generally remain in their natural state and open to public use. They may not be formally "protected" but the practical result is largely the same – they remain green spaces that the public can enjoy and where biodiversity can thrive. The difference is that Crown land that is not formally protected gives the government greater flexibility to decide, case by case, whether a small piece of Crown land might also be used to further the province's economic goals. Crown land makes it easier to strike reasonable compromises and the right balance.

Continuing to increase Crown lands holdings would help ensure an appropriate balance between environmental and economic uses of land.

To the government's credit, its 2016 overhaul of the province's Mineral Resources Act struck the right balance between cutting red tape and supporting job creation, while also holding the industry to the highest standards in public consultation and reclamation. This is the sort of balanced solution we need with the Parks and Protected Areas Plan.

While we all appreciate the importance and beauty of natural lands, and everyone wants to protect the environment, we also need to protect jobs and opportunity.

We need a better balance.



The Quarry Pond in Point Pleasant Park. The park contains over 50 former quarries.

Merv Sullivan Park, (a.k.a. "The Pit"), a former gravel quarry in Halifax.



Shubie Park in Dartmouth, a reclaimed quarry.

“Our Parks and Protected Areas” Background

The provincial government’s Parks and Protected Areas Plan envisions removing 13% of the province’s land mass from economic usage. This would put Nova Scotia, the second smallest province and a province with some of the biggest economic and demographic challenges, in second place nationwide in limiting our ability to use land to create jobs and economic opportunity. Only British Columbia, which has protected 15.7% of its land, will have a higher percentage of protected land than Nova Scotia.

To illustrate just how out of step this will put Nova Scotia compared to our neighbouring provinces, note that New Brunswick has only protected 4.6% of its land mass; PEI has protected 3.1%; and Newfoundland has protected 7.3%.⁵ Nova Scotia has already protected over 12% of the province’s land mass and the provincial government currently intends to bring the total amount of land removed from economic usage to approximately 13%.

However laudable the goals of the Plan, it is simply a fact that they come at significant economic cost. Removing land from economic usage limits how much industries like mining and quarrying can grow and create jobs for Nova Scotians.

Forever is an awfully long Time

The government’s position is that protected land is protected forever: “the protection is legal and permanent.”⁶

Taking that statement at face value, it means land protected based on ecological conditions today will still be protected not just in ten or twenty years, but in a hundred years, or a thousand. Regardless of what changes take place in nature, technology and society, protection is permanent, without exception, and without consideration of whether protection is still the most valuable use of a piece of land.

We do not believe this is a realistic position. The ways and extent to which the world has changed in the quarter of a century since the Internet was invented highlight that we should be cautious about thinking we know today what the world will be like in future, or what will be best for future residents of the province. We should be cautious about using words like “permanent.”

The reality, of course, is that the Plan will inevitably change for any number of potential reasons. The question is whether we will adopt a modest amount of flexibility in the Plan today, or if we will wait until economic necessity forces flexibility on us in future. The industry

⁵ http://www.ec.gc.ca/indicateurs-indicators/5FABE1CD-8908-4BB5-B893-1161B6D05778/CanadasProtectedAreas_EN.pdf, page 20. Note that Nova Scotia’s current percentage of land protected is 12.26%, a newer figure which is not reflected in this chart. The current figure of 12.26% is confirmed by the Government of Nova Scotia at <http://novascotia.ca/news/release/?id=20151229002>

⁶ <https://novascotia.ca/nse/12percent/docs/12.percent.our.wild.spaces.pdf>, page 4

believes it would be more sensible to adopt a modest amount of flexibility today to avoid unnecessarily harming the province's economy.

A more practical interpretation of the Plan's goal would be to constantly have 13% of the province protected, but allow for small, exceptional tweaking of the lands within the protected lands portfolio that results in a net benefit to Nova Scotians. Just as the Government of Nova Scotia negotiated a "made in Nova Scotia" solution to the issue of putting a price on carbon in 2016, focussing on constantly having 13% of the province protected, rather than permanent protection, would be a better solution to Nova Scotia's unique environmental and economic challenges.

It does not make sense to adhere strictly to the principle of permanence if a little flexibility might create opportunities to actually improve the protected lands portfolio, while also helping create jobs and opportunity for Nova Scotians.

How protecting land harms the Industry

There are three main ways in which the Parks and Protected Areas Plan harms Nova Scotia's mining and quarrying industry.

First, the industry cannot explore for, or extract, minerals under protected areas. The Plan simply rules 13% of the province out of bounds for economic development, which limits the industry's ability to grow and create jobs for Nova Scotians. This is the biggest impact of the Plan on the industry and the most obvious.

Second, in cases where land with existing mineral claims has been designated for protection but formal protection has not yet occurred, the pending protection makes it harder to attract interest and investment in claims because it creates uncertainty around whether it would be possible to actually permit and operate a mine. Investors avoid uncertainty and even pending protection – land that is not actually protected but may be in future - is a red flag to them that their investment could be lost if designated land becomes protected, or if political considerations result in a mine proposal being turned down. It is easier and safer to invest in other potential mining projects in other parts of the world.

Third, even proximity to protected land creates similar concerns and uncertainty:

- Mineral claims near protected areas, but not actually in them, may or may not be approved for production if a company tries to get permits to operate. Public opposition to projects near protected land, and political considerations, could scuttle proposals, even if they would have no impact on protected areas.⁷

⁷ To illustrate: In 2016 the government reduced the size of a proposed clearcut in order to maintain a buffer of trees around Kejimikujic National Park in response to public comments. The Parks and Protected Areas Plan and other related policies do not create buffer zones that extend beyond protected area boundaries, and economic

- If it is found that a mineral deposit runs under the protected area, it would not be possible to extract the minerals under the protected land and the overall value of the deposit would be reduced.
- Because protected areas are often expanded, there is the concern that claims currently outside protected areas could become protected in future, causing companies to lose their investments. For example, on August 1, 2013, the provincial government expanded:
 - 31 previously-designated wilderness areas;
 - 11 previously-designated nature reserves; and
 - 12 previously-existing parks.⁸

Also, expansions of protected land are sometimes very sizeable, which further adds to uncertainty and risk. For example, on June 18, 2015, the provincial government added 4,250 acres to Cape Chignecto Provincial Park, an increase in the park's size of 40%; and it added 1,415 acres to Blomidon Provincial Park, an increase of 70%.⁹

The Parks and Protected Areas Plan has significantly reduced the amount of land available for mineral exploration and development, and contributed to uncertainty in the global mining industry about whether Nova Scotia is a safe place to invest.

Economic Impact Analysis

The Mining Association of Nova Scotia has analyzed the province's Parks and Protected Areas Plan to help illustrate the economic impact of the Plan on the mining and quarrying industry.

It was found that 5.5% of all known mineral occurrences in the province lie within protected areas (263 occurrences out of 4,794 in total).

Protected areas now overlap 17% of all historic mineral claims staked in Nova Scotia (60,246 claims staked since 1940 out of a total of 349,310 onshore claims).

4.5% of claims held at least five years are now overlapped by protected areas (15,621 claims out of 349,310 onshore claims). Claims being staked for multiple years indicates higher extraction potential, as well as ongoing exploration expenditures.

activity can theoretically take place right up to a boundary if government approves permits. However, activists argue there should be buffers that extend beyond the protected areas, which would effectively increase the amount of land protected significantly beyond the 13%. In the Keji case, activists were critical of the government's decision because, while they were given a buffer that does not formally exist in law, they felt the buffer was not big enough. This is a forestry example but the same issue applies to mineral projects – there is no way to know whether permit applications near protected lands will be approved or whether a buffer zone will be applied to block a project. See <http://www.cbc.ca/beta/news/canada/nova-scotia/kejimkujik-national-park-clear-cutting-natural-resources-1.3822822>

⁸ <http://novascotia.ca/news/release/?id=20130801001>

⁹ <http://novascotia.ca/news/release/?id=20150618004>

The fact that the Plan overlaps so many known mineral occurrences, and so much multi-year staking, is troubling as it prevents any economic benefit from these high-potential areas.

To illustrate the harm the Parks and Protected Areas Plan causes the industry, MANS used the overlap of protected areas with 1) known mineral occurrences and 2) claims held for at least five years as proxies for actual and potential loss to the industry. Using this method, it was concluded that the Parks and Protected Areas Plan is potentially costing Nova Scotians approximately 291-356 jobs by preventing mineral exploration and development in protected areas.

The Plan is also potentially costing the province \$22-\$27 million in foregone economic activity each year by preventing mineral exploration and development.

The mining and quarrying industry is the province's highest-paying resource industry, with an average wage of approximately \$55,000 per year.¹⁰ 291-356 lost jobs therefore represent \$16-\$19.6 million in annual lost wages to Nova Scotians, and \$2.4-\$2.9 million in lost personal income tax revenue each year for the provincial government.¹¹

These figures are the losses to the province's mining and quarrying industry only; they do not include the negative impact of the Plan on other industries that also require land to grow and create jobs for Nova Scotians.

Lands already protected and those proposed for protection cover in whole or in part:

- 7 past-producing metals mines¹²
- 39 past-producing aggregate pits (sand and gravel)
- 13 past-producing quarries

There is a saying in the industry that "new mines are often found next to old mines" because the evolution from pickaxes to sophisticated, modern technology often makes historical mines economically viable for modern miners. The Touquoy gold mine, an historical site that is in the process of returning to production, is a current example of this. It is therefore troubling that the Parks and Protected Areas Plan impacts so many past-producing sites. Former mines, quarries and pits have great potential value and are often low hanging fruit for the modern industry. However, the 59 past-producing sites described above are being harmed or blocked by the Plan.

¹⁰ Gardner Pinfold, http://novascotia.ca/natr/meb/data/pubs/13ofr03/ofr_me_2013-003.pdf

¹¹ Average NS taxes on income of \$55,000 is 15% or \$8250 per person.

¹² Brookfield, Mooseland, Pleasant River Au, Hirshfield Pb mines, Chisolm Brook Cu mine, Middle River AU placer, and McGinty mine Au

Protected areas overlap 171 current mineral exploration licenses,¹³ representing thousands of acres of land that have attracted mineral interest and investment. These claims are also harmed by the Plan.

The Plan disproportionately harms Nova Scotia's rural areas, where most mines, quarries and pits are located.

Additional details about the economic impact analysis, including its methodology, are appended.

If a technology or financial services company said it could create up to 356 jobs and \$19.6 million in annual payroll, the Government of Nova Scotia would likely offer payroll tax rebates and generally do everything it could to attract that business. All we are asking is that the Parks and Protected Areas Plan be given a modest amount of flexibility to help the mining and quarrying industry create these economic benefits for Nova Scotians.



Reclaimed mine site in Coalburn

¹³ As of fall 2016.

Some areas harmed more than Others

Because the provincial government has little money to spend on purchasing private land for protection, it has to mainly protect land that it already owns. In fact, the government is protecting over one-third of the province's Crown land.

Because Crown land is not evenly distributed across the province – there are large concentrations of it in some areas and little in others – the government inevitably has to concentrate protected land in areas with large amounts of Crown land, which disproportionately harms the economies of those areas.

For example, the Municipality of Victoria County has complained that 40% of its land has been protected, creating concerns about the impact on the municipality's economy.¹⁴

MANS' analysis shows that there are 60 known mineral occurrences in Victoria County that are overlapped by protected areas, which eliminates a significant amount of the county's economic potential. Other counties with disproportionately large numbers of overlaps include Colchester, which has 43 known mineral occurrences that are overlapped by protected areas, and Cumberland which has 51. The county with the largest number of overlaps is Inverness with 78.

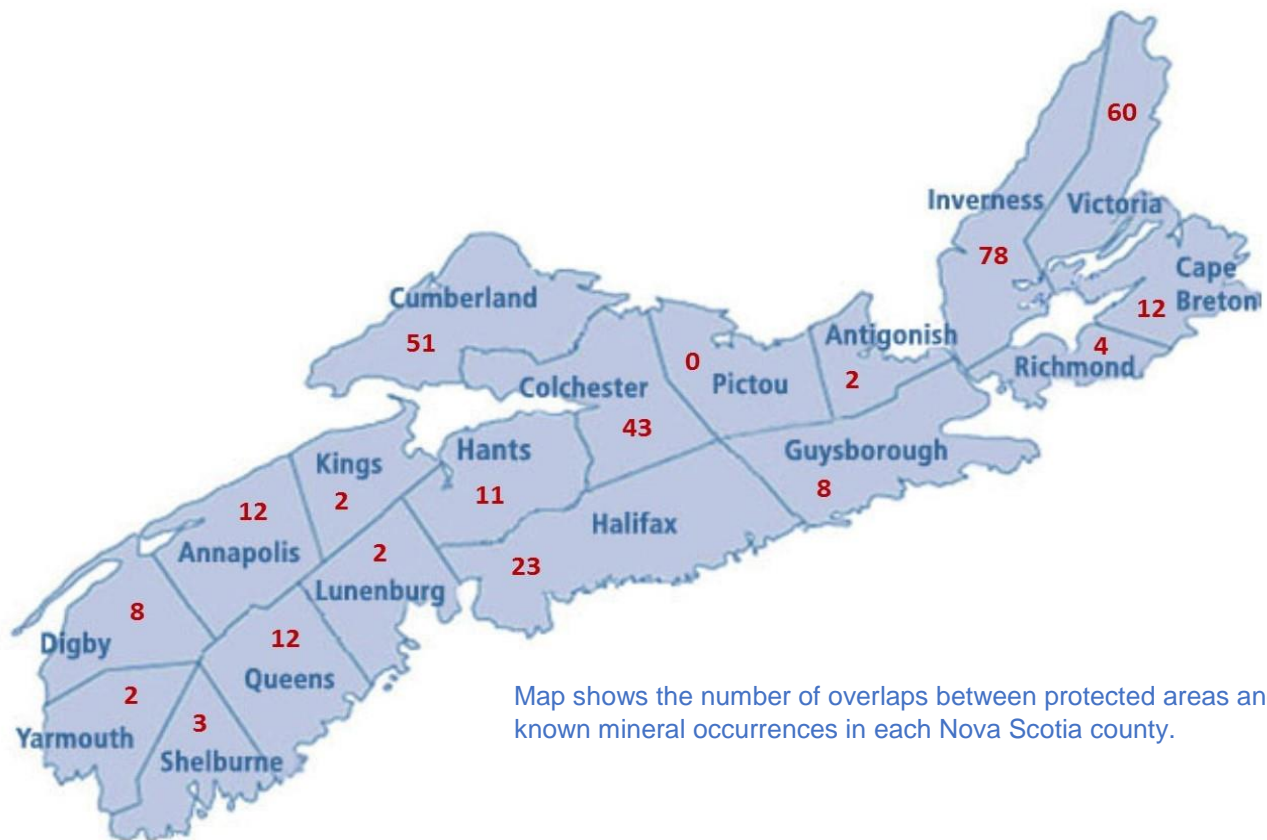
At the other end of the range, Pictou County has no overlaps between protected areas and known mineral occurrences because so little of its land has been protected.

It is important to remember that this analysis necessarily focusses on the overlaps of protected areas and *known* mineral occurrences. However, there are mineral occurrences throughout the province that we have not yet discovered, and protected areas undoubtedly overlap many of them as well. This causes additional economic loss in those areas with more protected land.

"I don't want to give the impression that we're against protected areas, because we're not, but there's a limit to what the economy can sustain, and ours is already small."

Former Victoria County councillor Athol Grant

¹⁴ <http://thechronicleherald.ca/novascotia/1330106-protected-areas-burden-on-economy-victoria-county-officials-say>

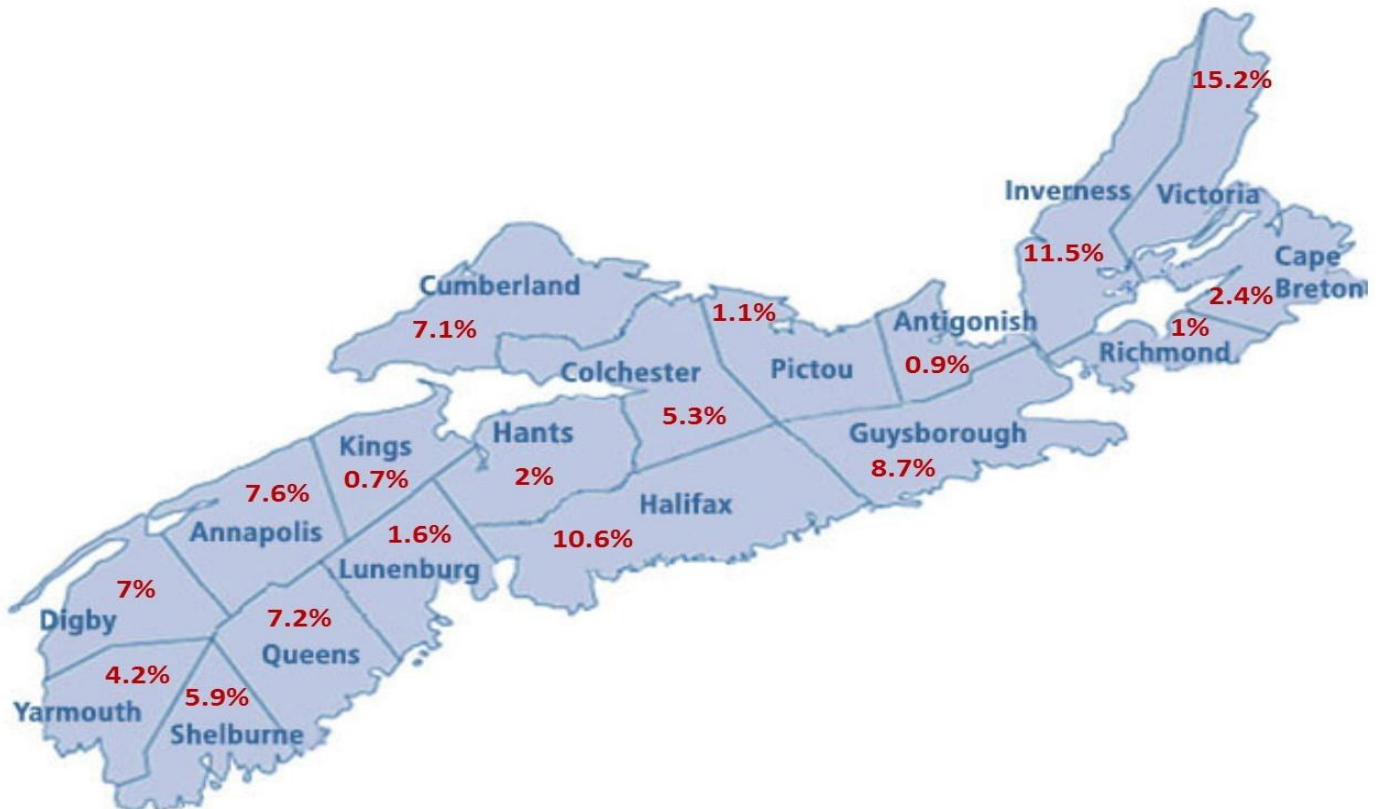


Comparing the percentage of protected land in each county further highlights how the Plan harms certain areas of the province significantly more than others. For example, Victoria County contains 15% of the total amount of protected land in Nova Scotia; Inverness contains 11.5% of protected lands; and Halifax County contains 10.5% of the province's protected lands.

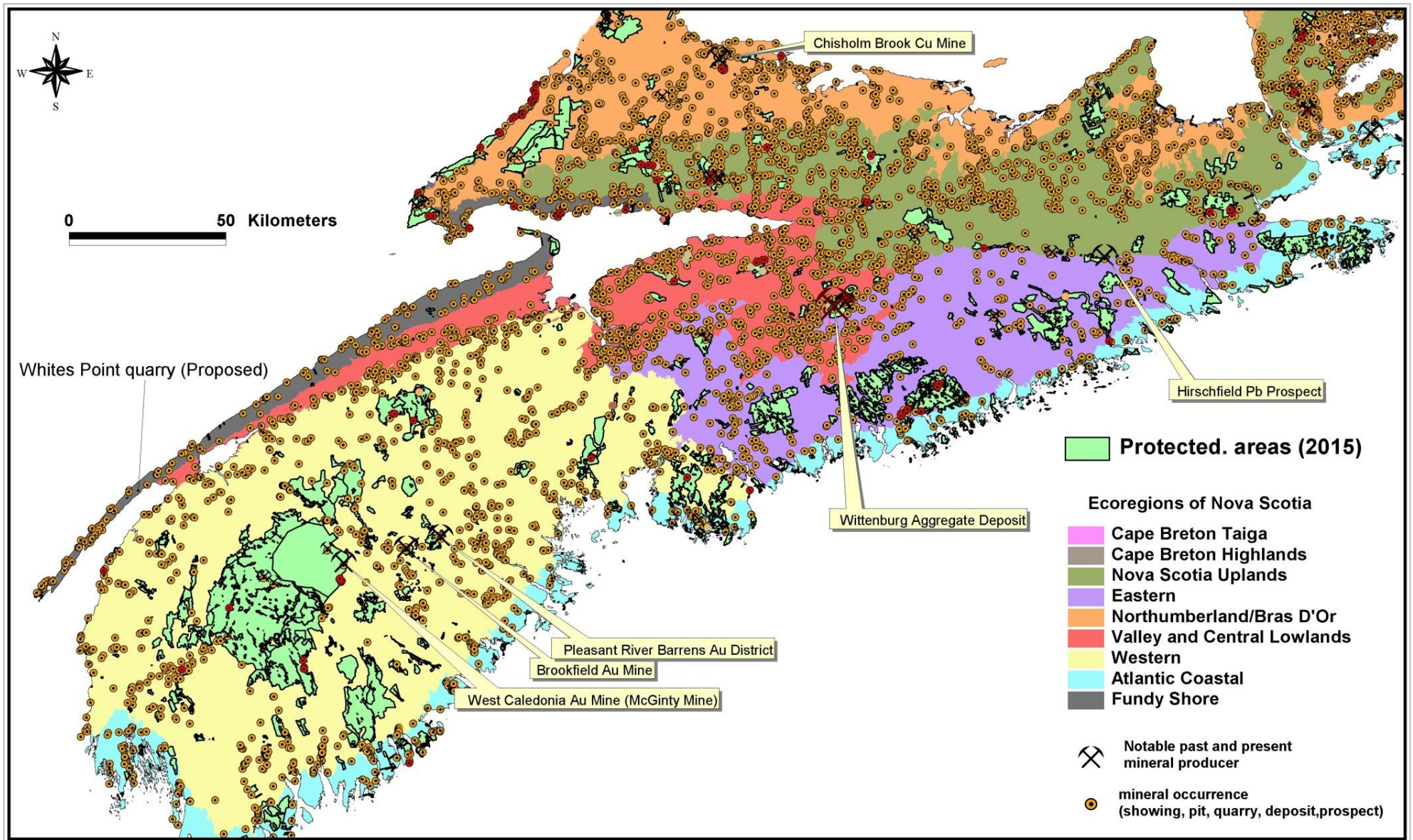
At the other end of the range, Pictou County contains 1.1% of the province's protected lands; Richmond contains 1%; and Antigonish County contains 0.9%.

The economic cost of the Parks and Protected Areas Plan is clearly not spread evenly across the province – some areas are carrying a disproportionate burden. For example, Victoria County contains 15 times the percentage of protected land as counties such as Pictou, Richmond and Antigonish. In fact, Victoria has five times as much protected land as Pictou, Richmond and Antigonish counties *combined*.

This imbalance in how protected lands are distributed around the province not only hinders mineral exploration and development in certain parts of the province; it also prevents other industries from creating jobs and opportunity in those areas. This is not just harmful to industries like mining and quarrying – it is unfair to Nova Scotians living in those areas whose economic potential is being curtailed.



Map shows what percentage of the total amount of protected land each county contains.



Map 1. Mineral occurrences (industrial and metallic) across mainland Nova Scotia and candidate and existing protected areas. The ecoregion is the fundamental ecological-landscape unit and were defined for Nova Scotia by Webb and Marshall, 1999). Examples of notable mines and quarries in protected areas indicated.

Examples of sites harmed by the Plan

To further illustrate the economic harm caused by the Parks and Protected Areas Plan, below are examples of mineral occurrences and potential projects negatively impacted by protected areas.¹⁵

Cape Breton

Kluscap Wilderness Area

The Kluscap Wilderness Area is a new protected area located along the Great Bras D'Or in eastern Cape Breton. The area was also proposed as a site for the Kelly's Mountain rock quarry whose geographical and geological setting essentially mirrors the successful Martin Marietta aggregate quarry at Port Hawkesbury along the Strait of Canso. The Martin Marietta quarry has been a mainstay of the strait area economy since the 1950s and provides approximately 100 full time, well-paying jobs.

The Kelly's Mountain project would have created approximately 80 direct jobs for a half-century. However, the designation of the Kluscap Wilderness area over the proposed project area has forever blocked this from happening.

Nova Scotia Environment rates the Kluscap Wilderness Area's mineral potential as only "medium" despite the known deposit on Kelly's Mountain.¹⁶

Cape Breton Highlands

The Cape Breton Highlands are also significantly overrepresented in the protected lands portfolio, and they also contain significant potential for discovery and development of valuable mineral resources. For example, the Meat Cove Zinc deposit¹⁷ was discovered in the 1950s and extensively explored over subsequent years. This resulted in a historic mineral resource estimate totalling 3,494,700 tons grading 2.08 percent Zinc - a significant deposit. Other elements of economic interest such as gallium and germanium have been noted. If developed, a mine at Meat Cove could create an estimated one hundred jobs for approximately ten years.

¹⁵ The purpose of this report is to discuss and illustrate the policy implications of the Parks and Protected Areas Plan. Throughout the report, terms are generally used for their common English meanings, and not necessarily as technically defined for usage in National Instrument 43-101s. Information about mineral occurrences, projects and various analyses and estimates is provided for illustrative purposes and should not be considered "forward-looking information." MANS has sought to ensure the accuracy of all information in the report but cautions that readers should confirm any information related to specific occurrences and deposits with the claims holder or project proponent.

¹⁶ <https://www.novascotia.ca/nse/protectedareas/consult/AreaHandler.ashx?id=532&type=html>

¹⁷ O'Reilly et al., 2006

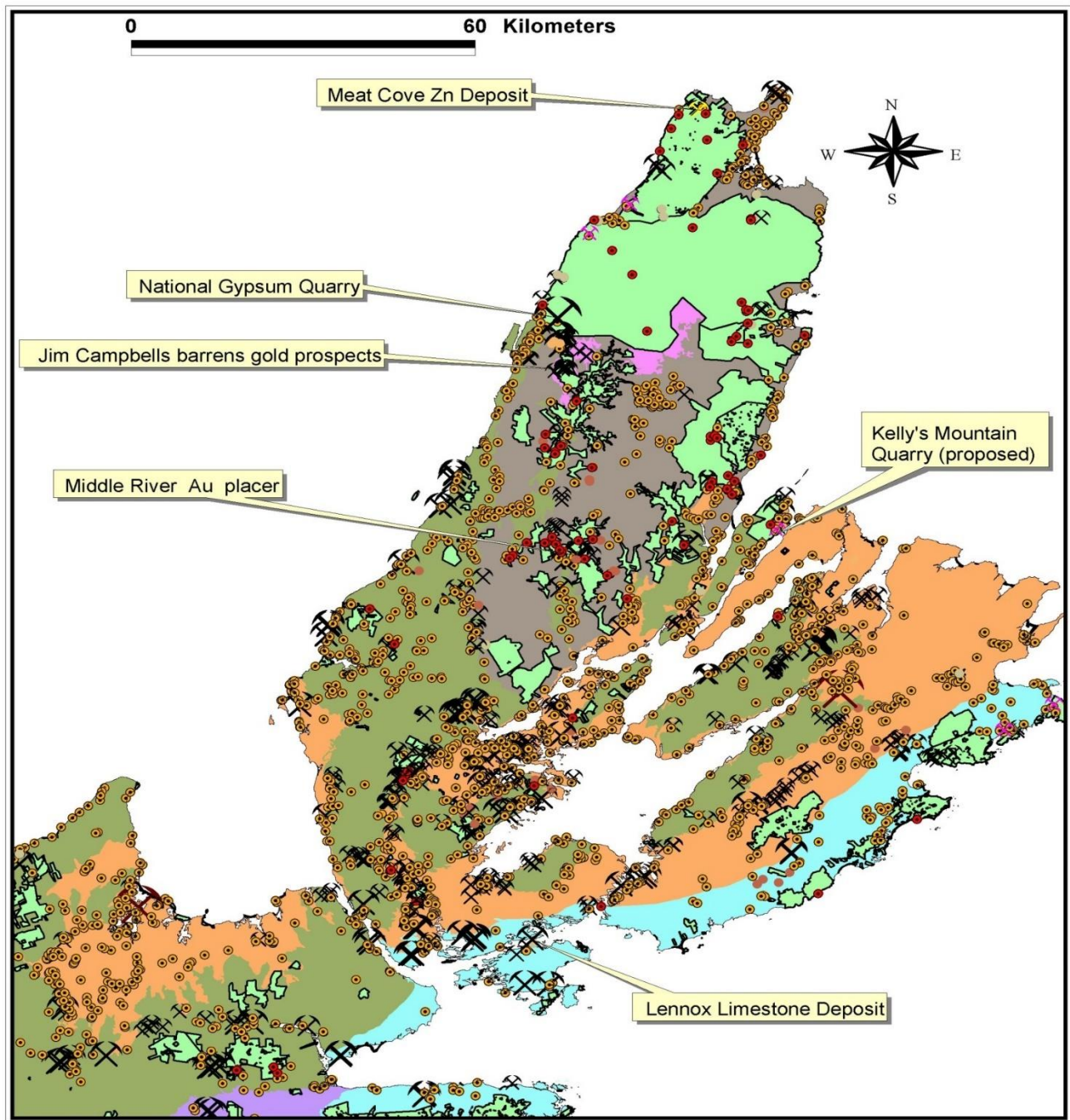
Approximately 45 claims have been held long term - for over 30 years - indicating strong potential for a mine to be established at Meat Cove were the land not protected.

Indigenous and Northern Affairs Canada has reported that for mineral projects in advanced exploration stages, \$1-\$5 million is spent annually.¹⁸ Considering that perhaps 15 years of 30 claim years were used for advanced exploration, and using a conservative estimate of \$0.5 million spent annually for an advanced program in Nova Scotia, total past exploration expenditures on the Meat Cove project are estimated at approximately \$7 million.

The Cape Breton Highlands are also a new frontier for gold deposits in the province and the now-protected Jim Campbell's barren hosts eight of the more significant prospects. Trenching and drilling on the barrens revealed widespread zones of gold, silver and base metal mineralization associated with quartz veining in greenstone rocks. Samples from drill cores and trenches produced gold grades as high as 47 g/t with significant intervals averaging 7 g/t.¹⁹ With the return of gold mining to the province at the Touquoy and Dufferin mines on the Eastern Shore, high potential gold prospects like these in the rest of Nova Scotia could receive more scrutiny and millions of dollars of further investment were they not harmed by the Parks and Protected Areas Plan.

¹⁸ <https://www.aadnc-aandc.gc.ca/eng/1100100023711/1100100023713>

¹⁹ O'Reilly et al., 2006



Map 2. Mineral occurrences (industrial and metallic) across Cape Breton Island and candidate and existing protected areas. Legend on Figure 1.

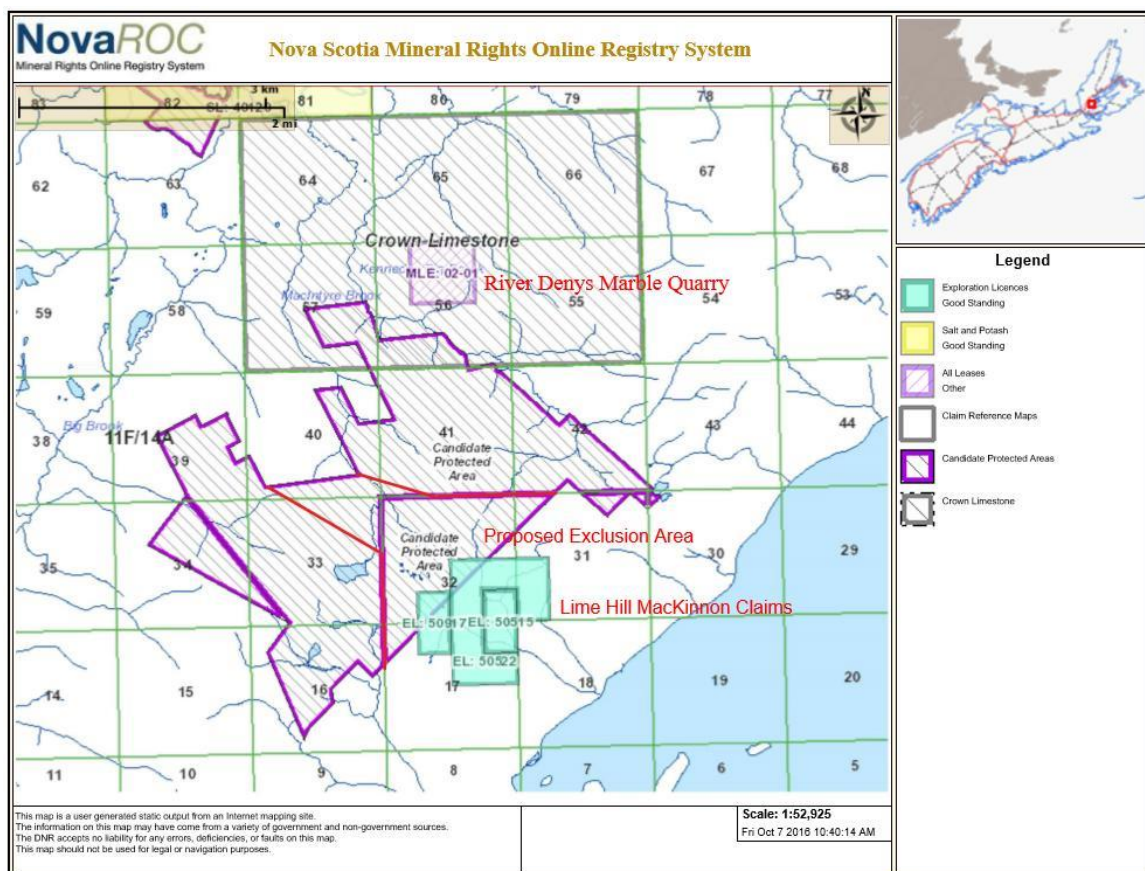
Inverness

Another Cape Breton example is the Lime Hill zinc deposit in Inverness County. Historic resource estimate documentation available at the Department of Natural Resources shows that

the Lime Hill deposit contains approximately 500,000 tons of 7.5% zinc. The mineralization occurs at surface so it is potentially amenable to surface mining, which would reduce operating costs. It is also relatively close to the Jubilee Deposit, which has a current mineral resource estimate of 1.9 million tonnes at 5.79% Zn Eq., which would potentially increase the viability of both deposits since they could share processing costs.

In addition to zinc, there is significant tungsten at Lime Hill, a metal that is often alloyed with other metals to strengthen them. There are also significant indications of wollastonite in the deposit area, an industrial mineral used in products such as ceramics, paint filler and brakes.

Lime Hill is partially overlapped by candidate protected areas which reduces the potential economic value of the site – if part of the deposit runs under the protected area, it will not be possible to extract that portion. The overlap also creates uncertainty about whether a mine would actually be permitted given the proximity to protected land, and whether additional land might be added to the protected area in future, further reducing the potential value of the deposit.



Map 3. Map of Lime Hill zinc deposit. Note that the staked areas (green) are partially overlapped by candidate protected areas (purple)

The potential Glencoe limestone quarry and Point Tupper cement plant is another project that is harmed by the Plan (artist's conception of the cement plant shown).



Approximately \$5 million has been spent on the Glencoe deposit since the late 1970s by the provincial government and companies such as Atlantic Industrial Minerals and Glencoe Resources. It is estimated that approximately half of the \$5 million has been invested by the provincial government and half by private companies. Eleven separate studies have explored the potential of the Glencoe deposit, five of which were published by the Nova Scotia government.

A 2006 study on the project shows its potential economic impact is significant.²⁰

- The cement plant and quarry would support at least 133 full time jobs
- Plant construction would cost \$120 million and create 1,500 person years of skilled and unskilled labour in construction
- Estimated payroll of \$7 million annually
- 60 person years of truck drivers required to supply the plant, representing added wages of \$3 million
- Purchase of local goods and services would be approximately \$2 million
- Estimate of \$12 million would be injected into the economy annually

All these numbers are based on a one million tonne-per-year plant, however, it is now believed that a two million tonne-per-year plant would be most optimal, according to the project proponent. The figures above therefore underestimate the project's true value.

Unfortunately, the Glencoe limestone deposit, which is essential to the cement plant, is now largely surrounded by protected areas, and even somewhat overlapped by them. This makes it harder to attract investor interest in the project and makes it less likely that the economic benefits listed above will be achieved.

The Glencoe limestone deposit is adjacent to a gypsum quarry which is currently idled due mainly to weak demand for gypsum in the United States. It is puzzling that the government would protect so much land in an area of known mineral wealth and existing industrial activity.

²⁰ Consultec, 2006

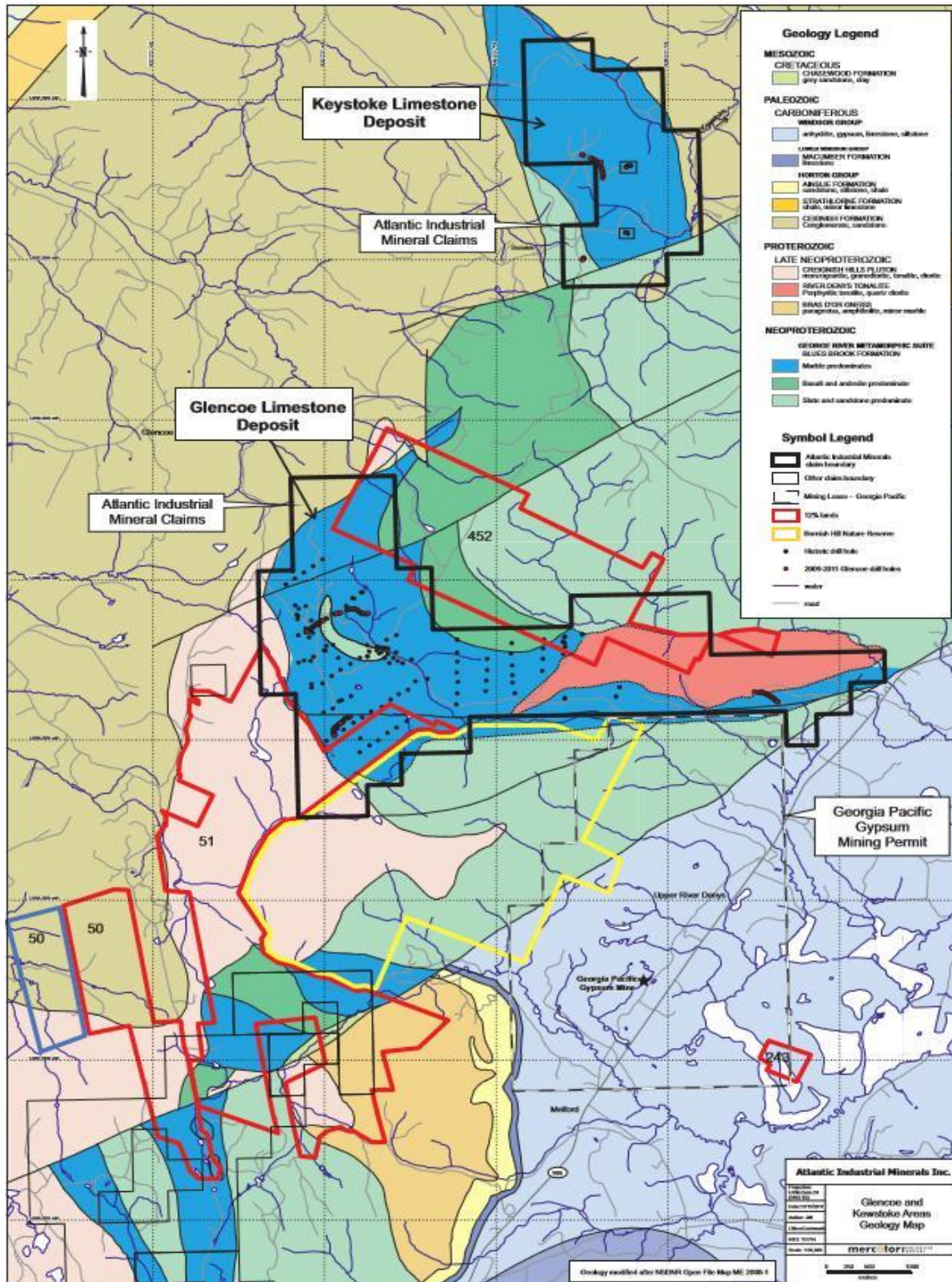
The Parks and Protected Areas Plan's negative impact on the Glencoe project largely undoes the important work the government did in finding and advancing the site over many years. The government used to have its own drilling unit and its annual exploration programs played a vital role in exploring and defining many deposits, and expanding our knowledge of the province's geology. Glencoe is one of those deposits.

It is also worth noting that a 2015 government-commissioned study looked at potential options to maintain the Cape Breton rail line whose future Genesee and Wyoming Incorporated has put into doubt. The report concluded that the Glencoe project, which could potentially use the rail line to ship material, "potentially offers a significant economic development opportunity for Cape Breton and could also positively impact the rail line."²¹

By protecting land around the Glencoe limestone deposit, one government department (Nova Scotia Environment) is essentially undoing the work of others (Natural Resources and Transportation). Departments working at cross purposes like this wastes taxpayer dollars and undermines the government's economic development policy goals.

The proposed land swap mechanism would be a potential solution for projects like Glencoe. It could allow the company to swap out the protected lands that surround so much of the deposit, and even overlap part of it. It would improve the project's business case, reduce uncertainty around whether the project would receive government approvals, and make it more attractive to investors.

²¹ <http://0-nsleg-edeposit.gov.ns.ca.legcat.gov.ns.ca/deposit/b10684098.pdf>



Map 4. The Glencoe limestone deposit (outlined in black) is largely surrounded, and even partly overlapped, by protected areas (outlined in red). This makes it harder to attract investor interest in the project

Central Nova Scotia/Eastern Shore

St. Andrews River Wilderness Area

The proposed St. Andrews River Wilderness Area is located in central Nova Scotia and hosts six abandoned sand and gravel haulage pits (including the Wittenburg Aggregate pit noted in Map 1) and an active aggregate pit which is almost completely surrounded by the designated protected area (the South Branch pit in Map 5).

The proposed wilderness area also includes a gold placer deposit and an abandoned slate quarry (see Map 5). The material mined in the pits is natural sand and gravel used largely for concrete manufacture, road base materials and fill, with some as landscaping uses as well. Each of these former pits is estimated to contain approximately 300,000 tonnes of recoverable aggregate. Taking an average value of \$4 per tonne for these varying quality aggregates, the value of the material in the ground totals \$7 million. The wilderness area has high potential for further aggregate development with un-utilized glacial gravel deposits found throughout the protected areas comprising approximately 500 hectares.

Nova Scotia Environment acknowledges that the St. Andrews River Wilderness Area has “from low to high mineral potential.”²² However, all of these sites are harmed in various ways by the Parks and Protected Areas Plan.

Tangier Grand Lake Wilderness Area

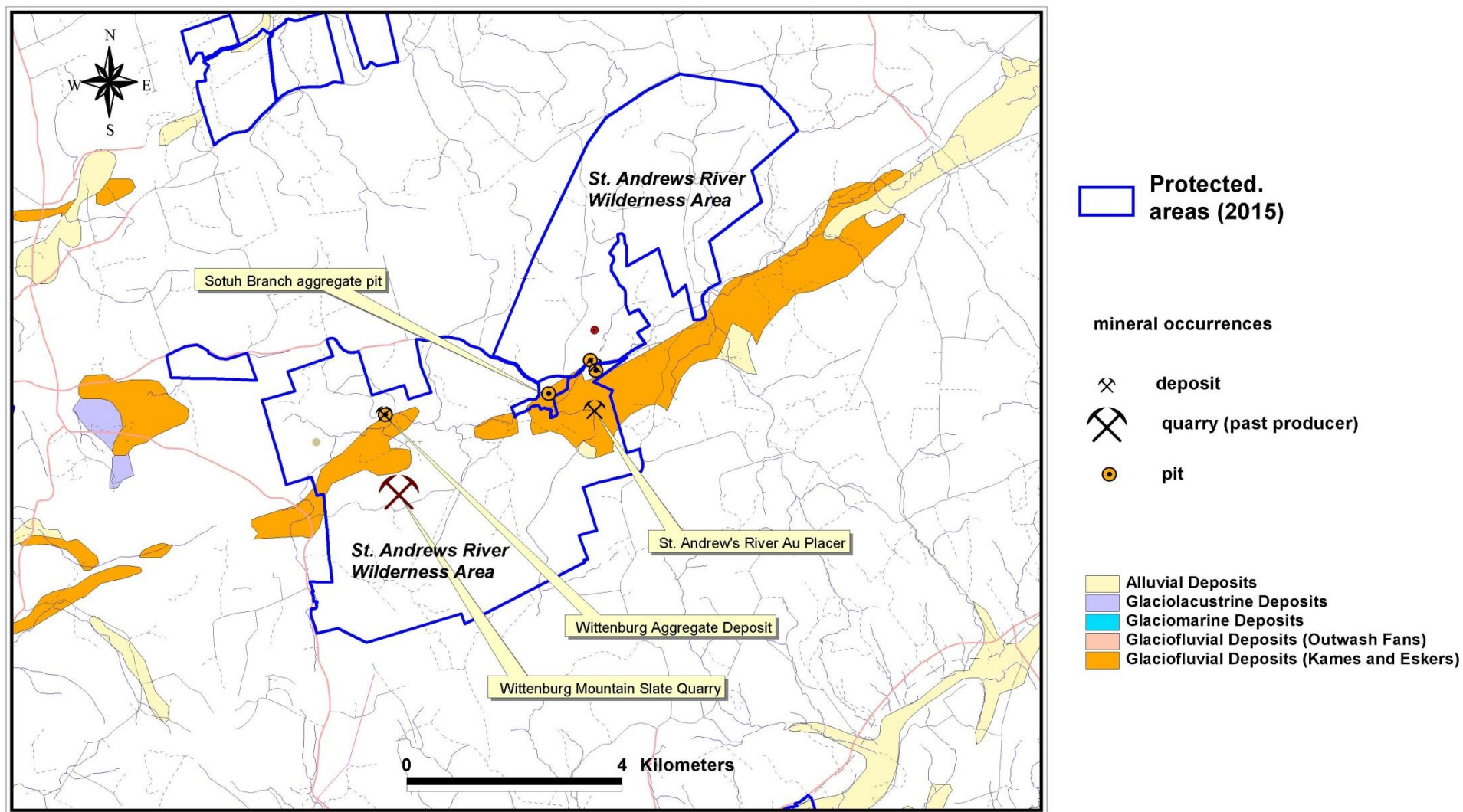
Gold was discovered at Mooseland, located in Halifax County, in 1858 – the first documented discovery of gold in Nova Scotia. This historical mine has established infrastructure and underground access in place, including roads and a 400-foot mineshaft. Current total inferred mineral resources for Mooseland are estimated at 454,000 ounces of gold and a Nova Scotia company is working toward returning the site to production. Mooseland is another example of how new mines are often found next to old mines.

Despite being well-known as a past producer and potential future gold mine, approximately 5% of the Mooseland gold deposit is overlapped by the Tangier Grand Lake Wilderness Area, which makes it harder to attract investor interest and potentially reduces the value of the deposit.

The Tangier Grand Lake Wilderness Area was expanded by nearly 170 hectares in 2015, so it is also an example of how even proximity to protected areas, which may continue to grow, creates uncertainty about deposits and claims that are near but outside protected areas.²³

²² <https://www.novascotia.ca/nse/protectedareas/consult/AreaHandler.ashx?id=618&type=html>

²³ https://novascotia.ca/nse/protectedareas/wa_tangierlake.asp



Map 5. St. Andrews River Wilderness Area mining conflicts. Orange area represents extent of exploited glacial sand and gravel deposits.

South Shore

Shingle Lake Nature Reserve

Three former gold mines are included in the proposed protected areas of the Western Ecoregion (see Maps 1 and 6). For example, the Shingle Lake Nature Reserve hosts the Pleasant River Barrens gold district which was mined at the turn of the last century. Production of approximately 600 ounces of gold is reported for this district, worth approximately \$800,000 at current gold prices. Sporadic exploration work has been done at the site for over 40 years. The nature reserve overlaps 211 claims, of which the average renewal duration was eleven years and the maximum 42 years. Exploration on the Pleasant River Barrens gold district can be considered advanced so this proposed protected area is costing the industry both significant exploration expenditures and high potential for future gold mines.

Despite its past-producing mines and advanced exploration, Nova Scotia Environment does not acknowledge the mineral potential of the Shingle Lake Nature Reserve.²⁴

Pleasant River Nature Reserve

The candidate Pleasant River Nature Reserve is a few kilometres west of the Shingle Lake Nature Reserve and hosts another former gold producer, the Brookfield gold district (Maps 1 and 6).²⁵ Brookfield was the largest of the Meguma terrane gold producers west of Halifax during the period 1887-1927.

Sites like Brookfield have significant potential to be mined again in the modern era – new mines are often found next to old mines – because new technology and techniques make it possible to mine them more efficiently and profitably than was possible in the past. The Touquoy open pit gold deposit at Moose River, which is expected to start production in 2017, is a good example of this. Companies are assessing many former gold districts in the Meguma terrane for open pit deposits like Touquoy, but the Parks and Protected Areas Plan is harming some of these potential projects.

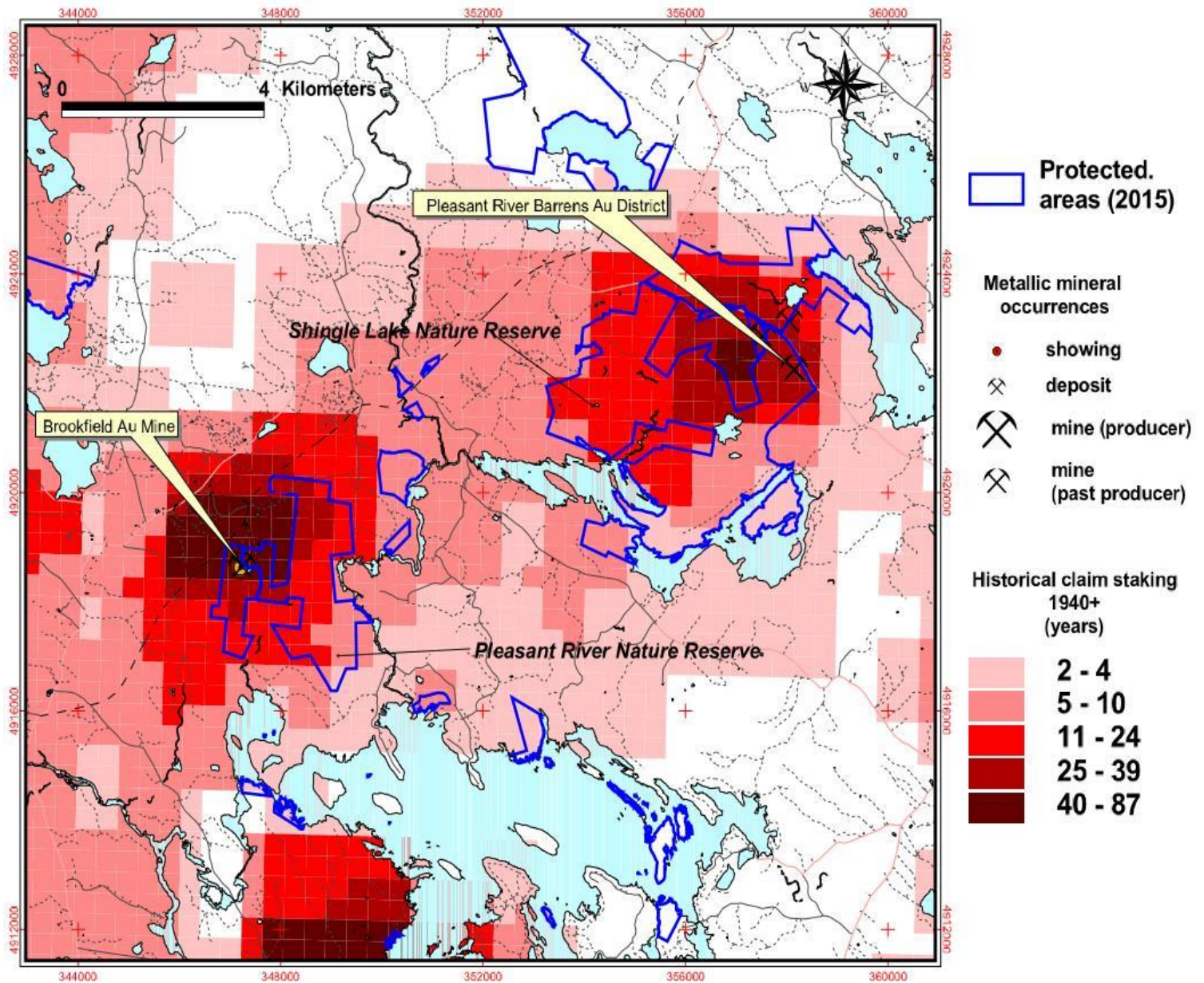
The Pleasant River Nature Reserve overlaps 67 mineral claims of which the average renewal duration was 24 years and the maximum over 63 years, indicating millions of dollars in past exploration work and tremendous potential for future extraction.

Nova Scotia Environment acknowledges that the Pleasant River Nature Reserve has “Medium to high mineral potential.”²⁶

²⁴ <https://www.novascotia.ca/nse/protectedareas/consult/AreaHandler.ashx?id=605&type=html>

²⁵ Malcolm, 1912

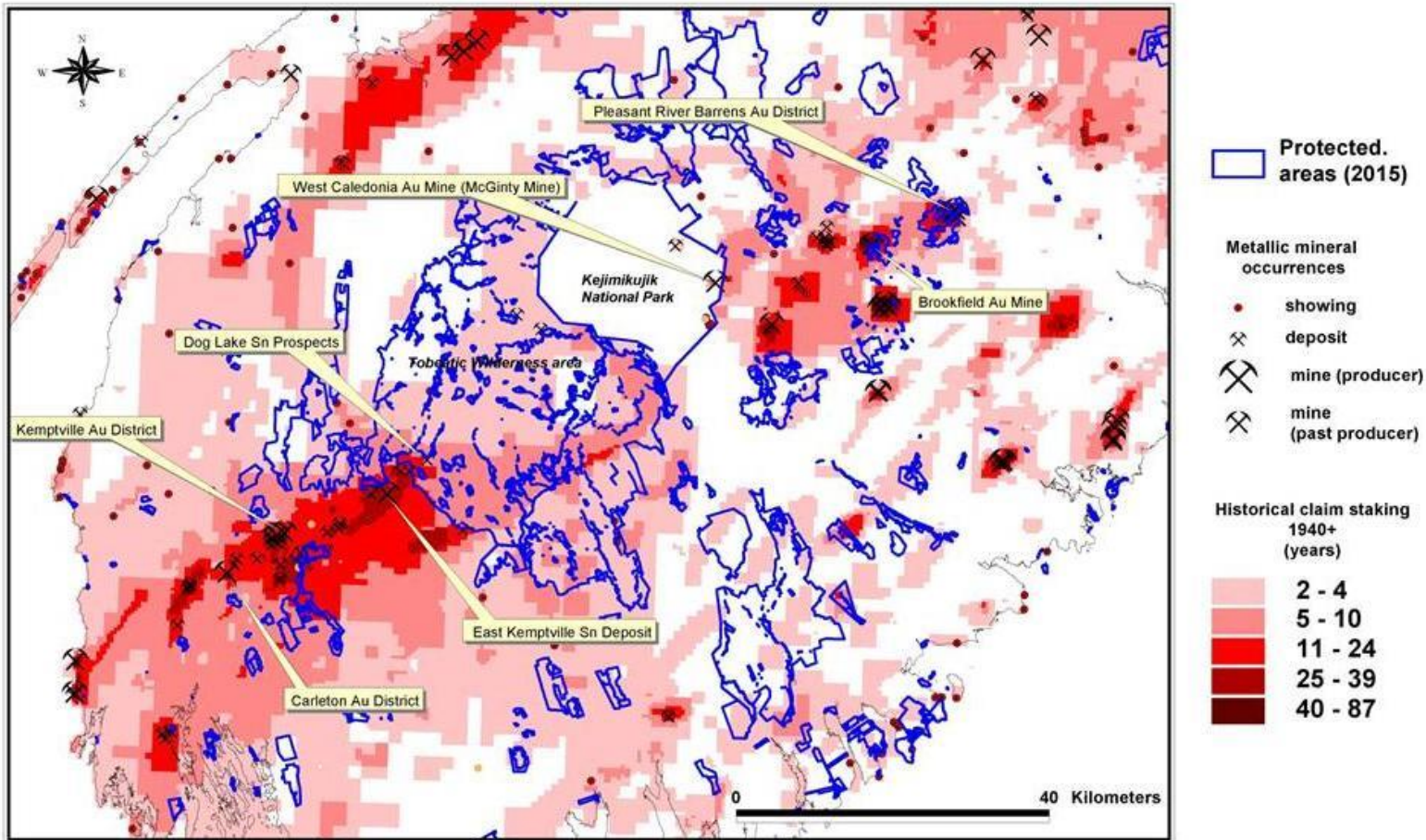
²⁶ <https://www.novascotia.ca/nse/protectedareas/consult/AreaHandler.ashx?id=577&type=html>



Map 6. The Shingle Lake and Pleasant River nature reserves. The dark red and brown colours show long-term staking, an indication of ongoing mineral potential and investment which is lost when land is protected.

Southwestern Nova Scotia

Map 7 shows the Southwestern end of the province, a region of high mineral potential with extensive historical staking for gold, tin, tungsten and other high value minerals. The region is also the location of the East Kemptville tin mine which was once the largest tin mine in North America and is expected to return to production within a few years. Occurrences run along a north-east trending belt of mineral occurrences that extends well into the huge Tobeatic Wilderness Area, the largest protected area in the Maritimes.²⁷



Map 7. Historical claim staking in southwestern Nova Scotia in the past 80 years and protected areas. Examples of notable past producing mines in protected areas indicated.

Banning mining and quarrying in vast tracts of high potential lands in this region, which is already over-represented in the protected areas, will have a significant negative impact on future economic development in Southwestern Nova Scotia.

All of the above are examples of known mineral occurrences, including past-producing sites, whose economic value is diminished or eliminated by the Parks and Protected Areas Plan.

²⁷ https://novascotia.ca/nse/protectedareas/wa_tobeatic.asp

Economic impact of new Projects

To further illustrate the economic cost of foregoing new mines, quarries and pits, below are current examples of jobs expected to be created by projects that plan to start production in the relative near-term.

Donkin Coal Mine

- Jobs created during construction: 75
- Direct jobs created during ongoing operations: 135

Touquoy Gold Mine

- Jobs created during construction: 300
- Direct jobs created during ongoing operations: 160
- Another 70 jobs will be created at Beaver Dam when this ancillary site goes into production

Black Point Aggregate Quarry

- Jobs created during construction: up to 150
- Direct jobs created during ongoing operations: 50-60

Several studies also illustrate the economic importance of mining and quarrying projects:

Rotman School of Management

A 2014 report by Rotman School of Management professors offers additional illustration of how new mines benefit both citizens and governments.²⁸ The report analyses the economic impact of a hypothetical new open pit gold mine in Ontario and concludes that a mine with a construction cost of \$750 million could directly employ 440 people for over 20 years. Direct and indirect jobs would total approximately 1800. In the construction phase governments would collect a total of \$60 million a year from the mine's direct, indirect and induced activity, while in the production phase this rises to \$95 million per year. The provincial government's share is \$25 million in the construction phase, and over \$38 million per year in the production phase.

The report's authors have told us their analysis is scalable and even adjusted for Nova Scotia's relatively small size, the numbers are still impressive. Assuming that a similar gold mine in Nova Scotia would be only 30% of the size of the hypothetical Ontario mine, it would still employ about 132 people directly during production - 540 people when direct and indirect jobs are combined. It would generate \$18 million in annual revenue for governments during construction, \$7.5 million for the province alone. It would generate \$28.5 million in annual revenue for governments during production, \$11.4 million for the province.

²⁸ "An Au-thentic Opportunity: The Economic Impacts of a New Gold Mine in Ontario," written by Peter Dungan and Steve Murphy. Released October 2014. Available at:

<http://www.oma.on.ca/en/resourcesGeneral/PEAPgoldmineFinalReport.pdf>

Gardner Pinfold

In its government-commissioned research, Gardner Pinfold estimated that a new aggregate quarry producing 2 million tonnes per year can generate 225 jobs during construction and 91 ongoing jobs during operations.²⁹

Such a quarry can also generate approximately \$1.6 million in provincial taxes during construction and about \$800,000 in taxes each year during operations.

The economic loss to the industry, and the province, caused by the Parks and Protected Areas Plan is significant. This reduced economic opportunity disproportionately harms Nova Scotia's rural areas, where most mines, quarries and pits are located.

The Plan's lack of Flexibility

The problem with the Parks and Protected Areas Plan is not the basic goal of protecting land – it is that the Plan lacks flexibility and balance that would allow land to be preserved for future generations while also ensuring Nova Scotians have much-needed jobs and opportunity. The Plan's philosophy of protecting land permanently, without exception, cannot accommodate changing circumstances and the evolving needs of society.

Our mineral needs change – Our society's mineral needs change over time as technological developments create new demands for materials. We therefore do not know today what minerals we will need tomorrow, and we should be very cautious about preventing exploration for minerals that may be vital in future.

For example, a century ago uranium was considered a mining waste product that had no purpose. Today it provides about 17% of Canada's electricity³⁰ and 10% of global electricity.³¹ It also has a wide range of other uses, including growing and preserving food, smoke detectors and many medical diagnostics and treatments.³² About half of all people in Canada will experience the benefits of nuclear medicine in their lifetimes. Nova Scotia has significant potential for uranium but a provincial ban on uranium mining prevents us from contributing our resource to the global supply that is helping save lives and powering homes.

Three decades ago, most rare earth elements were considered largely valueless, but today they are key to making electronics smaller, faster and more powerful. They are so indispensable that electronics companies not only choose minerals based on how well they work but how secure their supply chain is. There is no point designing a new device that includes a particular mineral if that mineral might not be available consistently and at a manageable cost. The fact that

²⁹ http://novascotia.ca/natr/meb/data/pubs/13ofr03/ofr_me_2013-003.pdf

³⁰ <http://www.world-nuclear.org/information-library/facts-and-figures/nuclear-generation-by-country.aspx>

³¹ <http://www.world-nuclear.org/nuclear-basics/electricity-supplied-by-nuclear-energy.aspx>

³² <http://tmans.ca/uranium>

China supplies approximately 95% of the global rare earth supply, and that it has in the past threatened to limit exports of these strategically-important materials, highlights that we cannot take for granted that supply of minerals will always be there when we need it. Nova Scotia has known rare earth element deposits such as indium, which is used in virtually all touch-screens, and neodymium, which contributes to permanent magnets such as those found in wind turbines.

Even if extracting minerals from protected lands would generate a net benefit for the environment – i.e. minerals that are essential for things like electric vehicles and wind turbines - and not reduce the quantity or quality of the government's portfolio of protected lands, the Plan has no ability to consider innovative proposals that might be in the best interests of the province.

Technology changes – The technology and techniques we use for exploring and extracting have improved dramatically in recent decades and will continue to do so. However, the Parks and Protected Areas Plan does not have any flexibility that would allow new, environmentally-friendly methods of exploration and extraction to take place.

For example, aeromagnetic surveys, which have no impact on land, have become a common type of exploration in recent decades. A magnetometer is either on board or towed behind an aircraft that flies in a grid-like pattern over an area of interest. This sophisticated technology generates important data and geological maps showing what is underground. While this is not currently the only type of exploration required to find a deposit and turn it into a mine, aeromagnetic surveys could be used to identify high potential areas without having any impact on the protected land below. As this technology continues to improve, it may be possible for it to replace some other forms of exploration altogether.

There are other, cutting edge methods of exploration and extraction, that have little environmental impact, that may also play big roles in mining and processing in coming years:

Biomining: using naturally-occurring bacteria already at a mine site to expedite separating minerals from surrounding rock. In other words, using a process that already exists in nature. Biomining is being done today in several countries such as Chile, Brazil, South Africa and Australia to extract minerals like copper, uranium and gold. Already 20% of the world's copper production is extracted using this method.³³

Phytomining: Some plants have the natural ability to take up minerals, such as nickel, cadmium and zinc, through their roots and concentrate them within the plant.³⁴ Phytomining is used to do exploration by analysing the plants to see if certain minerals exist in them after being absorbed from the soil. There is also potential to do extraction via phytomining – removing

³³ <http://www.bbc.com/news/technology-17406375>

³⁴ <http://www.livescience.com/28676-plants-grow-gold.html>

certain minerals from the plants as an alternative to traditional mining methods, particularly on former mine sites where plants can be grown on tailings to remove additional minerals. Research is also being done to see whether gold can be extracted from plants via this method.

There is no telling what environmentally-friendly technologies and methods might exist in future. What we do know is that the Parks and Protected Areas Plan will not allow any of them unless the Plan is altered to allow for some basic flexibility.

Land changes – Even when we protect it from human development, land continues to change naturally.

For example, a forest fire might completely alter the ecology that caused the government to protect a piece of land. The plants that warranted protection might all be destroyed and may not recover. The wildlife might migrate to other areas because food sources and shelter are gone. The properties of the soil may be forever altered.

The same is true of spruce budworm and other invasive species, and the destruction they can cause.

Everything that made us want to protect a piece of land may be fundamentally changed, but under the Plan, we cannot consider whether the protection should be lifted; whether there might now be better uses for the land that would contribute more to a community.

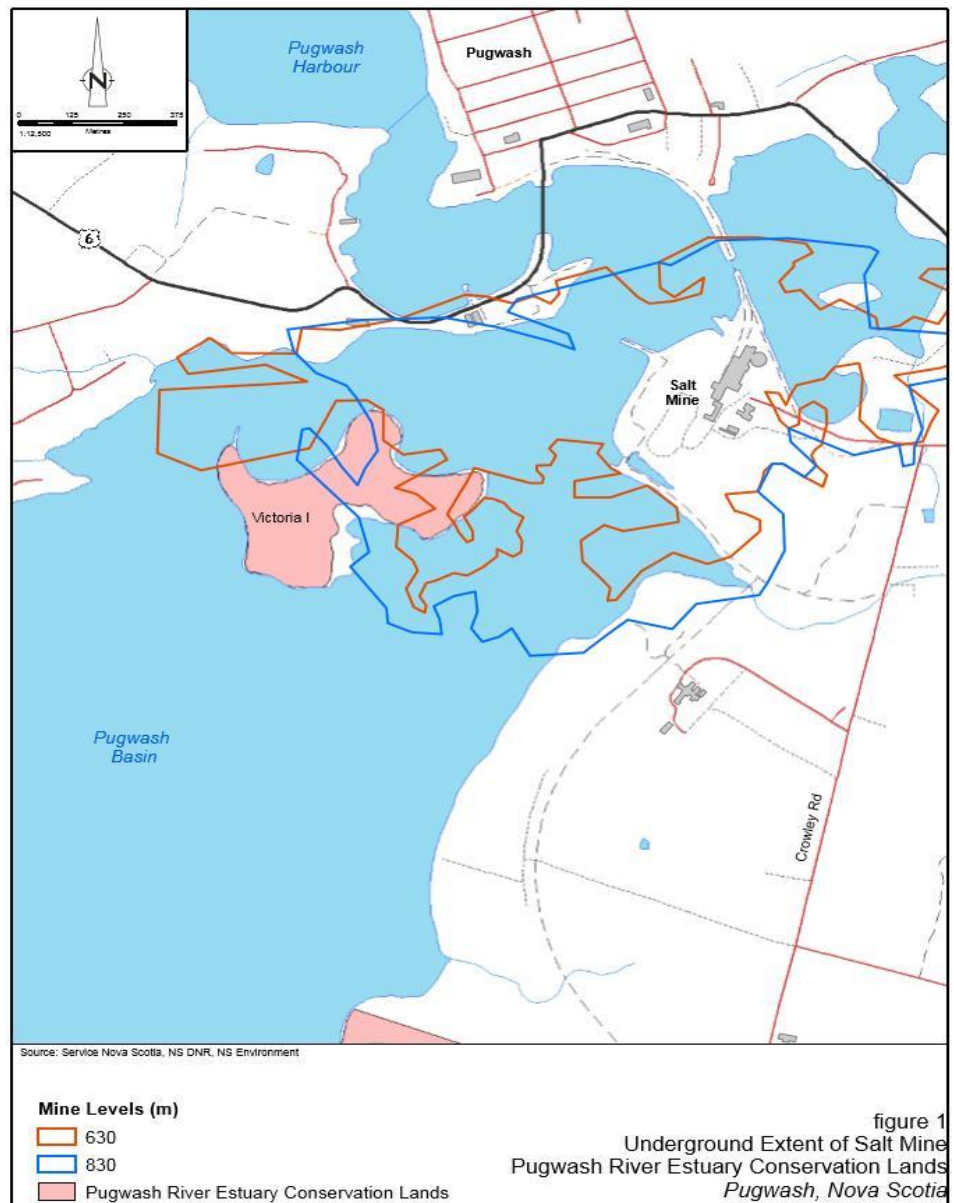
While the industry's focus is on making the Parks and Protected Areas Plan more flexible and balanced for economic purposes, the fact that the Plan has no practical mechanism for dropping land even as a result of naturally-occurring changes highlights its lack of practicality.

No Tunnelling under Protected Areas - The government's various policies related to protected land have some aspects that, in the industry's view, simply do not make sense.

For example, the government's position is that protection, which is mainly based on the ecology at ground level, extends to the centre of the earth and no extraction can be done underneath protected lands even if it could be done without impacting the ecology at surface level. This means if there is an underground mine located outside a protected area, and the mineral deposit runs underneath neighbouring protected lands, the mining company could not continue its tunnels under the protected land in order to extract that valuable resource – even if it could be done without impacting the surface ecology of the protected land.

The unreasonableness of this policy is highlighted by the fact that we have had precisely this situation in Nova Scotia for decades. The Windsor Salt mine in Pugwash tunnels under the Pugwash River Estuary and Victoria Island, which is partly owned by the Nature Conservancy of Canada and is considered protected under the Parks and Protected Areas Plan. The salt mine, which was established in the 1950s and is currently operating 1300 feet below surface, successfully co-exists with the estuary and protected land above, and salt from under those protected lands has contributed to both job creation and winter road safety.

If tunnelling under protected land can be successfully done in Pugwash, it is not reasonable for the government to prevent it in other locations in similar circumstances. This sort of inflexibility makes it unnecessarily difficult for the industry to create jobs and opportunity for Nova Scotians, and it does not create any environmental benefit.



Note the orange and blue lines which represent tunnels of the Pugwash salt mine, underneath the estuary and Victoria Island.

Our needs as a society, our technology for exploring and extracting, and nature itself all change on an ongoing basis. However, the Parks and Protected Areas Plan does not. The Plan's philosophy of permanent protection leaves us with no ability to respond to changing circumstances, no matter how much it might benefit the province.



Picture of Victoria Island and the Pugwash River Estuary, taken from a Nature Conservancy of Canada video. The NCC says the Estuary is “a spectacular and valuable conservation area.”³⁵ The Pugwash salt mine has operated under the island and estuary for decades.

Flexibility common in many Programs

The flexibility we are seeking is common in many other government programs and it is unfortunate that the government has adopted a policy of complete inflexibility with protected lands.

For example, our land swap policy proposal is similar to the government’s wetlands compensation policy, in which a company that impacts wetlands has to create or improve offsetting wetlands, often at a 2:1 ratio, to ensure there is no net loss of wetlands in the province.³⁶ This approach benefits Nova Scotians both environmentally and economically, and we believe it would also work in context of protected lands.

Indeed, Nova Scotia Environment touts the balance of its Wetland Conservation Policy, saying it maintains “a high level of wetland integrity for future generations, while allowing for sustainable economic development in our communities.”³⁷

³⁵ http://www.natureconservancy.ca/en/where-we-work/nova-scotia/featured-projects/pugwash_estuary.html?referrer=https://www.google.ca/

³⁶ <http://www.novascotia.ca/nse/wetland/compensation.asp>

³⁷ <http://www.novascotia.ca/nse/wetland/conservation.policy.asp>

Nova Scotia's Department of Natural Resources has several policies related to Crown lands that are based on this balanced approach. The Department allows Crown land exchanges³⁸ – land swaps – and for Crown land to be sold to, among other things, “support or promote economic activity.”³⁹ As with our land swap proposal, these transactions are stringently regulated to ensure “a clear benefit to the province.”

Also, when a mine is established in whole or in part on Crown land, the Department of Natural Resources can lease that Crown land to the mining company to help facilitate the establishment of the mine. After mining operations are done, the company is responsible for reclamation and returning the land to a natural state for public use. Current examples of this arrangement include the Touquoy and Dufferin gold mines on the Eastern Shore.

These are all examples of balanced, reasonable policies that both protect the environment and facilitate economic development for the benefit of Nova Scotians. The inflexibility of the Parks and Protected Areas Plan is the exception to the rule.

Why is access to land so Important?

It is extraordinarily difficult and rare to actually find economically-viable mineral deposits. While there are many mineral deposits in the earth's crust, it is not possible to extract the vast majority for various reasons. For example, a deposit may be too small, or it may be too difficult or expensive to extract. About 1 in 10,000 exploration projects leads to an actual mine.⁴⁰ Reducing the amount of land available for exploration dramatically reduces the probability of finding a deposit that could become a producing mine.

Not surprisingly, the availability of prospective land also profoundly influences investment decisions made by companies. The geologic potential of a jurisdiction accounts for about 60% of the decision when mining CEOs decide where to explore and invest.⁴¹ As the Parks and Protected Areas Plan and other land access restrictions prevent access to prospective areas, Nova Scotia becomes a less attractive place to explore, and companies invest elsewhere.

Without exploration today, there will be no new mines tomorrow. This would mean a loss of high-paying jobs, business development opportunities, and revenue flows to communities and governments.

Nova Scotia's unique land access Challenges

Even before the Parks and Protected Areas Plan was implemented, Nova Scotia's mining and quarry industry faced unique challenges in terms of land access:

³⁸ <http://novascotia.ca/natr/land/exchanges.asp>

³⁹ <http://novascotia.ca/natr/land/pdf/Sale-of-Crown-Land-Policy.pdf>

⁴⁰ <http://www.pdac.ca/docs/default-source/lands-and-regulations/pdac---standing-committee-presentation.pdf?sfvrsn=0>

⁴¹ <https://www.fraserinstitute.org/sites/default/files/survey-of-mining-companies-2015.pdf>, page 8

Small Size - Nova Scotia is Canada's second smallest province and the industry's scale is limited by the relatively small amount of land we have to work with. Our small size also makes the province a less attractive place to invest for mining companies.

Population Distribution - Nova Scotia's population is distributed throughout the province and we have no vast, sparsely-inhabited areas such as exist in other provinces and territories with mining industries. In other jurisdictions, the mining industry tends to flourish in northern areas where fewer people live and there are therefore fewer land-use conflicts. In Nova Scotia, mining and quarrying projects are usually relatively close to residential and/or commercial development, which can lead to additional challenges.

To illustrate, Nova Scotia has the second highest population density per square kilometre at 17.4 people per km².⁴² Only Prince Edward Island, which does not have a mining industry, has a higher density. By comparison, British Columbia's population density per square kilometre is 4.8, Alberta's is 5.7 and Newfoundland's is 1.4 people per km². Our higher population density per square kilometre inevitably contributes to more land use conflicts than in jurisdictions where sparsely-inhabited, remote areas can easily host mineral exploration and development, and where residents are often keen to have the jobs and economic opportunity that results.

Crown vs. Private Land - Nova Scotia's extremely high percentage of privately-owned land is another obstacle for the industry.

Nova Scotia is 29% Crown land and 71% privately-owned.⁴³ This is the opposite of most provinces where the majority of land is publicly-owned. British Columbia, for example, is 94% Crown land and a mere 6% privately-owned. Approximately half of New Brunswick and 88% of Newfoundland is Crown land.

Doing exploration and mine development on private land is often more difficult because there are generally more encumbrances than on Crown land. For example, Atlantic Gold had to negotiate land purchases with approximately 30 different private land owners, over several years, in order to amass the land it needed to develop the Touquoy gold mine on the province's Eastern Shore. One landowner declined to sell a small portion of his property, despite an offer from the company that was well above market value, and subsequent legal proceedings contributed to years of delay in the project. The need to work with so many landowners made the process more expensive, time-consuming and complicated than if the deposit had been on Crown land and there had been just one land owner to work with – the province's Department of Natural Resources.

⁴² <http://www12.statcan.ca/census-recensement/2011/dp-pd/hlt-fst/pd-pl/Table-Tableau.cfm?LANG=Eng&T=101&SR=1&S=10&O=A>

⁴³ <http://novascotia.ca/natr/land/>

Despite these challenges, Atlantic Gold is creating up to 300 jobs during construction of the Touquoy mine and 160 jobs during operations. An additional 70 jobs will be created when the first of the company's ancillary sites, Beaver Dam, is put into production. Touquoy is a good example of both the land access challenges Nova Scotia's industry faces and the tremendous boost to the rural economy that the industry can generate.

Nova Scotia's low percentage of Crown land is already a major challenge for the industry. Protecting over one-third of our Crown land will exacerbate this situation.

Other forms of Protection – In addition to the 13% of the province the Parks and Protected Area Plan envisions removing from economic usage, there are various other ways that land is either protected or has so many restrictions on it that it is *de facto* protected. This further reduces the amount of land available for mineral exploration and development beyond the 13%.

For example, we cannot do exploration or extraction under developed urban areas like peninsular Halifax or other towns. Residential developments, buffer zones around water supplies, historic sites, game sanctuaries and restrictions on Department of National Defence land are other examples.

We estimate approximately 25% of Nova Scotia's land mass is either legally or *de facto* protected, which further limits the industry's job creation potential.

We also note that the federal government's plan to protect 5% of Canada's marine and coastal areas by 2017, and 10% by 2020, poses significant risk to Nova Scotia's mining and quarrying industry and the province's economy in general.⁴⁴ Nova Scotia's easy access to tidewater is a key advantage the province's mining industry has over many other jurisdictions. We can generally get our product onto ships relatively quickly and inexpensively, which is why mining is one of Nova Scotia's leading export industries. However, protecting coastal areas has the potential to harm the industry if it interferes with shipping routes and/or wharf construction. We are also concerned that coastal protection could have onshore impacts, such as where waterways meet the ocean. The federal plan is another example of how protection is reducing the industry's ability to grow and create jobs for Nova Scotians.

The industry is also concerned that *de facto* protection may exist in some areas due to uncertainty about whether the government would approve projects. For example, the federal and provincial governments' rejection of the proposed Whites Point (Bilcon) Quarry on Digby Neck raises the question of whether any mineral development in the area is possible. According to the NAFTA Tribunal, which ruled in 2015 that denying permits to Bilcon was both arbitrary and unfair, the federal/provincial Joint Review Panel "effectively found the area to be a 'no go' zone for projects of this kind, rather than including, as at least a major part of its work, a proper

⁴⁴ <http://news.gc.ca/web/article-en.do?nid=1081789>

assessment of likely significant adverse effects on the environment and of the means by which these effects might have been mitigated.”⁴⁵

If the government view is that Whites Point is a “no go” zone, it is *de facto* protected even though there is no legal protection in place – governments rejected Bilcon’s proposal and could simply refuse to issue permits to future project proponents.

If there is *de facto* protection around Whites Point, where does it start and stop? Would other projects elsewhere on Digby Neck be acceptable? How far from Whites Point, or even Digby Neck, would a project have to be to potentially get approved? It is impossible to know the answers to these questions but the uncertainty created by the Whites Point decision discourages investment in mineral exploration and development in the area, and in the province in general.

The Whites Point project would have generated a GDP contribution of \$315.5 million over its fifty years of production, and it would have created 52 ongoing jobs in Digby County and 91 for Nova Scotia as a whole. Total employment in Nova Scotia over the half-century project would have been 4,550 person-years.⁴⁶ However, all these economic benefits were scuttled because of the governments’ rejection of the proposal.

Instead of investing hundreds of millions of dollars in Nova Scotia, Bilcon is reportedly seeking a US\$100 million settlement from taxpayers under NAFTA.

Nova Scotia’s aggressive protected lands strategy is adding to the province’s unique land access challenges and making it even more difficult for the mining and quarrying industry to grow and create jobs for Nova Scotians.

Nova Scotia’s bad Reputation

Nova Scotia has a largely negative reputation in the global mining industry as a place to invest, and the Parks and Protected Areas Plan is a contributing factor.

An annual survey of global mining executives conducted by the Fraser Institute regularly finds that Nova Scotia is seen as the least attractive province for mining companies to invest in.⁴⁷ The 2015 survey, the most recent available at the time of writing, shows that Nova Scotia’s ranking for investment attractiveness is getting worse not better. The province was ranked 42nd in the world in 2014 but fell to 59th in 2015.

⁴⁵ <http://www.appletonlaw.com/News/Bilcon%20Merits%20Award%20-%20March%202015.pdf>, clause 740 on page 226.

⁴⁶ Gardner Pinfold, 2006

⁴⁷ <https://www.fraserinstitute.org/sites/default/files/survey-of-mining-companies-2015.pdf>

The report's author has told us "uncertainty over which areas will be protected as wilderness, parks or archeological sites..." is a factor in the province's negative reputation. He also said "Mitigating uncertainty and making progress on these areas could help Nova Scotia become a more attractive jurisdiction for mining investment."

Research conducted by the Mining Association of Nova Scotia echoes the results of the Fraser Institute report.⁴⁸

Asked in both 2015 and 2016 to indicate which provincial government policies are obstacles to attracting investment/financing for exploration and mine development to Nova Scotia, survey respondents chose the Parks and Protected Areas Plan as the number one challenge.

Asked to indicate which factors other than government policies affect Nova Scotia's reputation in the global mining industry, survey respondents said a perception that Nova Scotia is too environmentally strident and anti-business is the biggest challenge. Respondents also said the Parks and Protected Areas Plan contributes to the province's reputation as being too environmentally strident.

The Parks and Protected Areas Plan is harming not only those claims covered by protected areas and those in close proximity to protected land; it also has a general dampening effect on exploration and investment because it contributes to the perception that Nova Scotia is not a mining-friendly jurisdiction.

There have been several political decisions in the last few decades that have been defining moments in giving Nova Scotia this negative reputation in the global mining industry. For example:

- Nova Scotia's ban on uranium exploration is an example of governments straying from the vital principle of science-based decision making, and allowing misconceptions to harm the industry and Nova Scotia's economic interests. It is an example of Nova Scotia chasing away investment and jobs.

"In terms of specific policy areas, mining executives found uncertainty over which areas will be protected as wilderness, parks or archeological sites; uncertainty concerning environmental regulations; and uncertainty concerning disputed land claims to be the least encouraging features of Nova Scotia's policy mix."

Mitigating uncertainty and making progress on these areas could help Nova Scotia become a more attractive jurisdiction for mining investment."

**Kenneth P. Green, Senior Director,
Natural Resource Studies
The Fraser Institute**

⁴⁸ MANS conducted a combination of surveys and interviews with industry leaders from Nova Scotia, across Canada and internationally.

- The actions taken by the Nova Scotia and federal governments in denying permits to the Whites Point (Bilcon) Quarry were found by the NAFTA Tribunal to be both arbitrary and unfair (discussed above in the “Other Forms of Protection” section). The Tribunal concluded that the Joint Review Panel appointed to consider the Whites Point Quarry simply ignored key mandatory elements of Nova Scotia and federal law, and that the governments failed to administer policies, processes and legislation in a fair and transparent manner. The widespread, global attention the case generated hurt Nova Scotia’s reputation as a home for foreign investment.⁴⁹
- Jim Campbell’s Barren, a highland bog that had been designated a candidate for protected-site status in 1993, was removed from the list by former premier John Savage in 1996, at the request of local residents and the development authority, only to be relisted less than a year later by his successor, Premier Russell MacLellan. This political decision negatively affected the development of a highly sought after and significant gold occurrence. This is an example of how sovereign political risk and lack of security around mineral title scare away investment.

Money has a long memory, and investors remember these decisions.

The Government of Nova Scotia needs to create *positive* defining moments in order to improve the province’s reputation nationally and internationally. Striking a better balance between protecting land and embracing economic opportunities would be an excellent example of a positive defining moment.

To the government’s credit, its 2016 overhaul of the province’s Mineral Resources Act is an excellent example of how industry and government can work together to create positive defining moments that will improve Nova Scotia’s reputation as a place to invest. The new Mineral Resources Act strikes the right balance between cutting red tape and supporting job creation, while also holding the industry to the highest standards in public consultation and reclamation.

This is the sort of balanced solution we need with the Parks and Protected Areas Plan to continue fixing the province’s reputation in the global mining industry.

Do we need Mining?

We all rely on – perhaps even take for granted – products that are only possible thanks to mining and quarrying. For example:

⁴⁹ More information on the NAFTA Tribunal’s Whites Point Quarry ruling is available at <http://www.appletonlaw.com/News/Bilcon%20Merits%20Award%20-%20March%202015.pdf>. Particularly note clause 740 on page 226, which summarizes governmental failings in the Whites Point process.

We need ten to fifteen million tonnes of new aggregate each year to keep Nova Scotia running. It is used in all infrastructure, including homes, roads, schools and hospitals.

All electronics contain dozens of minerals and metals, from televisions and computers, to mobile devices to medical equipment. Without gold from mines like Touquoy, on Nova Scotia's Eastern Shore, and indium from mines like the East Kemptville tin-indium mine in Yarmouth County, none of these essential electronics would be possible.

Salt from the Pugwash salt mine keeps our roads and highways safe in winter.

Nova Scotia has historically been one of the world's largest suppliers of gypsum, which is used in virtually all buildings as the key ingredient in wall board.

Limestone from Brookfield is used to manufacture cement, another essential part of most infrastructure.

Coal, such as that mined in Stellarton and Donkin, is an essential fuel in Nova Scotia, and in most jurisdictions around the world. It generated 56% of Nova Scotia's electricity in 2015.⁵⁰ While Nova Scotia's use of coal is declining, the electricity it provides cannot be replaced easily or quickly by any other source. Mining coal here, instead of importing most of it as we do now, makes it less expensive and helps keep our energy bills down. It also reduces the overall environmental footprint of the coal we use by eliminating the need to ship it from South America.

Nova Scotia's mining and quarrying industry is currently mining and/or exploring for all these materials and many others.

Removing land from economic usage prevents the industry from finding and providing these essential materials to Nova Scotians and the world.

Lessons from Lithium

While not the only example, recent developments related to lithium illustrate several problems with the Parks and Protected Areas Plan, and why it is so important that we strike a better balance between protecting both land and jobs.

Lithium is currently one of the hottest commodities globally. Like most minerals and metals, it has a wide range of uses, from use as a treatment for bipolar disorder to aluminum-lithium alloys that make things like planes and trains lighter and stronger.

The most important use of lithium is in rechargeable batteries for things like mobile phones, laptops and digital cameras because lithium batteries are cost efficient, with a long life cycle

⁵⁰ <http://www.nspower.ca/en/home/about-us/how-we-make-electricity/default.aspx>

and impressive energy density.⁵¹ Lithium batteries are also a potential solution to the problem of storing renewable energy for those times when the sun is not shining and the wind is not blowing.



It is batteries for electric vehicles that are driving the biggest increases in demand for lithium. Bloomberg estimates that 35% of light vehicles sold will be electric by 2040, generating a battery market worth a projected US\$250 billion.⁵² Navigant Research forecasts electric vehicle sales will rise from 2.6 million in 2015 to more than 6 million in 2024.⁵³

Tesla Motors' new gigafactory in Nevada will produce enough batteries to power 500,000 cars per year by 2020, and it is just one of a dozen gigafactories being built around the world. These gigafactories will raise the global demand for lithium batteries from 35 gigawatt-hours (GWh) in 2016 to 122 GWh by 2020.⁵⁴

This extraordinary projected growth in electric vehicles and rechargeable batteries depends on the global mining industry's ability to supply enough lithium to meet demand, something that cannot be done with the small number of lithium mines currently producing.

This has led to a lithium staking rush around the world. In Nova Scotia, several thousand claims were newly-staked or purchased by exploration companies in a matter of months in 2016.⁵⁵ For example, the Brazil Lake deposit in Yarmouth County was staked by a Nova Scotia company in 1997 but has recently drawn significant international interest for its lithium potential. Almost a thousand additional claims were staked around the Brazil Lake deposit in 2016 by another company hoping that the lithium potential of the area extends beyond the ground previously staked.⁵⁶ Other companies have also recently come to Nova Scotia to explore for lithium.

Several areas of Nova Scotia have potential for lithium, including Yarmouth County, the New Ross area and parts of Guysborough. Several of the areas that are prospective for lithium are impacted by the Parks and Protected Areas Plan, either because part of the geology is legally protected or protected areas are so close to prospective areas that there is uncertainty about whether a mine would be permitted.

⁵¹ <http://www.mining.com/lithium-could-be-the-new-gasoline-as-tesla-stokes-demand/>

⁵² Ibid.

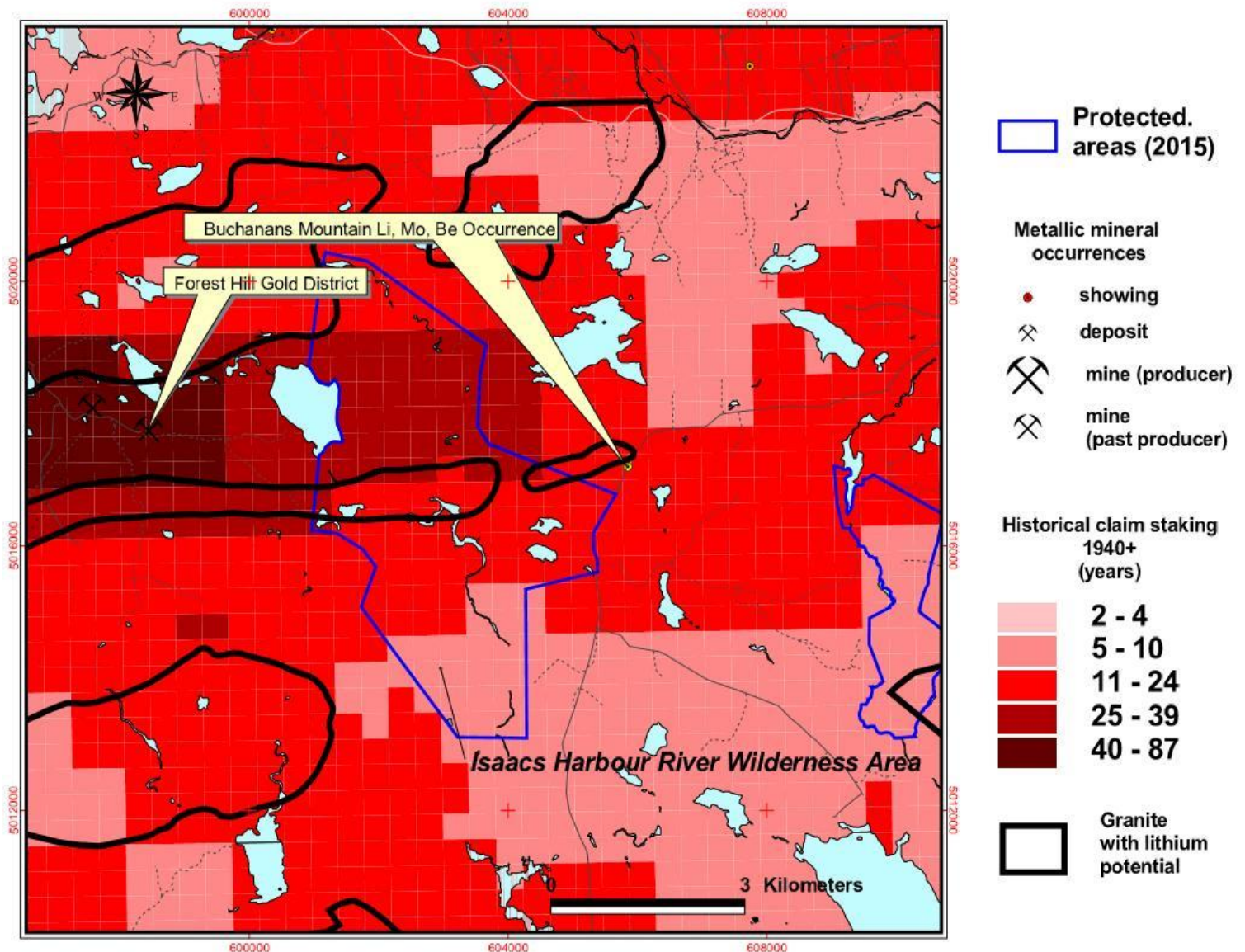
⁵³ <http://www.mining.com/web/could-a-lithium-shortage-de-rail-the-electric-car-boom/>

⁵⁴ Ibid.

⁵⁵ <http://thechronicleherald.ca/business/1400309-lithium-a-boon-for-mining-industry-in-nova-scotia>

⁵⁶ <http://www.cbc.ca/news/canada/nova-scotia/yarmouth-county-lithium-deposit-chinese-company-1.3644626>

For example, the Buchanan's Mountain lithium prospect north of Isaacs Harbour, Guysborough, is on a granite pluton. The western end of that pluton falls within a protected area. This means any lithium within the protected area could not be mined, and investors would be concerned about investing in deposits even outside the protected area for fear that proximity to legally protected land would make a mine impossible.



Protected area (outlined in blue) overlapping the Buchanan's Mountain Lithium prospect.

Another example is the Lower Caledonia beryl pegmatite northwest of Sherbrooke. It is a rare metal pegmatite and all such intrusions have lithium potential. It is just a couple hundred metres south of a protected area by the St Mary's River. Again, such close proximity to a protected area would likely discourage investors and make it very difficult to fund exploration.

Additional staking and exploration for lithium might well occur were it not for protected lands impacting areas with lithium potential.

There are several lessons to be drawn from the lithium example:

Our mineral needs change – As discussed in “The Plan’s lack of Flexibility” section, our society’s mineral requirements change over time as technological developments create new demands for materials. We therefore do not know today what minerals we will need tomorrow, and we should be very cautious about preventing exploration for minerals that may be vital in future.

Lithium is a current example of how changes in technology dramatically change our need for, and uses of, minerals.

The Parks and Protected Areas Plan’s philosophy of permanent protection, without exception, does not allow for changing circumstances and the evolving needs of society.

Existing Claims are just a snapshot in time – After significant lobbying from the industry, the government gave mineral claims holders additional time to continue exploration on lands that were proposed for protection under the Parks and Protected Areas Plan. In effect, claims holders are allowed to continue exploring and the land will not be protected unless and until the claims are dropped. The government is also allowing such dropped claims to be staked by someone else for up to a year before protection is implemented. While certainly better than nothing, this was an imperfect solution.⁵⁷

On one hand, it allowed claims that were staked in 2013, when the Plan was finalized, to be further explored and to potentially become mines if economically-viable deposits are found. We appreciate that the government altered its approach to partially address the industry’s concerns that existing claims would otherwise be rendered immediately valueless.

On the other hand, pending protection makes it harder to attract interest and investment in claims because it creates uncertainty around whether it will be possible to actually permit and operate a mine. Investors avoid uncertainty and even pending protection – land that is not actually protected but may be in future - is a red flag to them that their investment could be lost if candidate land becomes protected, or if political considerations result in a mine proposal being turned down. It is easier and safer to invest in other potential mining projects in other parts of the world.

It is also worth noting that just because a deposit is not economically-viable today, or a company is not currently able to finance a project, does not mean the site has no value. Commodity prices change all the time, based on society’s evolving needs, and a site that cannot

⁵⁷ See page 16 of “Our Parks and Protected Areas”, <https://novascotia.ca/parksandprotectedareas/pdf/Parks-Protected-Plan.pdf>

be turned into a mine now could well be a job- and wealth-creating site in future. Lands protected after the current claim holders drop them would still be an economic loss to the industry and the province since mineral potential may still exist.

Even more concerning is that the compromise on existing claims does not address the larger problem: that the claims that existed at the time the Parks and Protected Areas Plan was written only reflect the mineral interest and geological knowledge at that time – 2013 - and not the province's ongoing geological potential and future needs.

The thousands of claims now being staked and changing hands in the rush to find lithium highlight just how quickly and dramatically the claims staking map can change, and why it is important that our approach to protecting land have some flexibility. The province's potential for lithium, and its importance to greening transportation and electricity supply, were not considerations when the protected areas were chosen.

There may well be deposits of lithium and other vitally-important minerals under protected lands, but we will never know about them because we cannot do exploration in protected areas.

Mining is necessary to help the environment

Something we can all agree on is that we want to reduce society's environmental footprint. In our daily lives, we increasingly recycle, try to reduce our energy consumption and adopt new technologies that reduce our impact.

New "green" products and technological advancements are only possible because of the materials we take from the ground.

Lithium is an example of this with its important contribution to rechargeable batteries for electric vehicles and renewable energy storage. A wide range of energy-efficient products, such as wind turbines, solar panels and LED light bulbs, also could not be made without minerals. We need these products if we are going to make the transition to a low carbon economy, and mining makes them possible.

Protecting land is sometimes cast as a simple "for or against" proposition. Either you are for the environment or against it. However, the issue is much more nuanced than that.

Mining minerals that are used in environmentally friendly products is essential to reducing our environmental impact. Protecting land may have an environmental benefit but so does mining key minerals - it is a question of the greater good. If a lithium deposit in a protected area could be turned into a mine, it would generate an environmental benefit in the form of more electric



vehicle batteries. If a rare earth element deposit in a protected area could be turned into a mine, it would generate an environmental benefit in the form of more wind turbines, solar panels and energy-efficient light bulbs.

And if the protected land with these deposits could be replaced in the government's protected lands portfolio with other, ecologically-valuable land, it would be a win-win for the environment. Precious resources could be extracted to further our environmental goals, while the quantity and quality of the province's protected land would be maintained or improved.



A “Concrete” Example of why Land Swap is Important

Potassium feldspar is an important ingredient in many products. Its main use is in concrete and asphalt, but it is also used in things like glass, ceramics and abrasives. For example, potassium feldspar helps make the floor tiles, sinks and bathrooms in your home stronger and more durable.

A significant deposit of potassium feldspar was discovered in Guysborough County in spring 2016 while the prospector was exploring for lithium pegmatites.

Until 2013, potassium feldspar was mined in the southeastern United States. However, American mines have largely run out of ore and no other American deposits are known. New sources are needed. The United States uses about 200,000 tonnes of potassium feldspar per year, a market worth approximately US\$80 million, and demand is increasing. The Nova Scotia deposit is therefore an exciting opportunity for the province’s mining industry to create jobs and contribute to the global supply of an important mineral. Unfortunately, the deposit zone is adjacent to, and runs into, a candidate protected area.

This discovery of potassium feldspar in Nova Scotia provides another current and concrete example of several industry arguments about the protected lands issue:

Why Land Swap is Important – This is a quintessential example of how the land swap mechanism could be used to create jobs and opportunity for Nova Scotians. A deposit discovered adjacent to a protected area may not be economically viable if too much of the deposit runs under the protected land, and too little is outside the protected area. The land swap would make it possible to swap out a very small amount of protected land in order to improve the business case for the overall project.

Conversely, without the land swap, the Parks and Protected Areas Plan harms the project by reducing the amount of the mineral that can be extracted, and by creating uncertainty about whether its proximity to a protected area would prevent a mine receiving government approval.

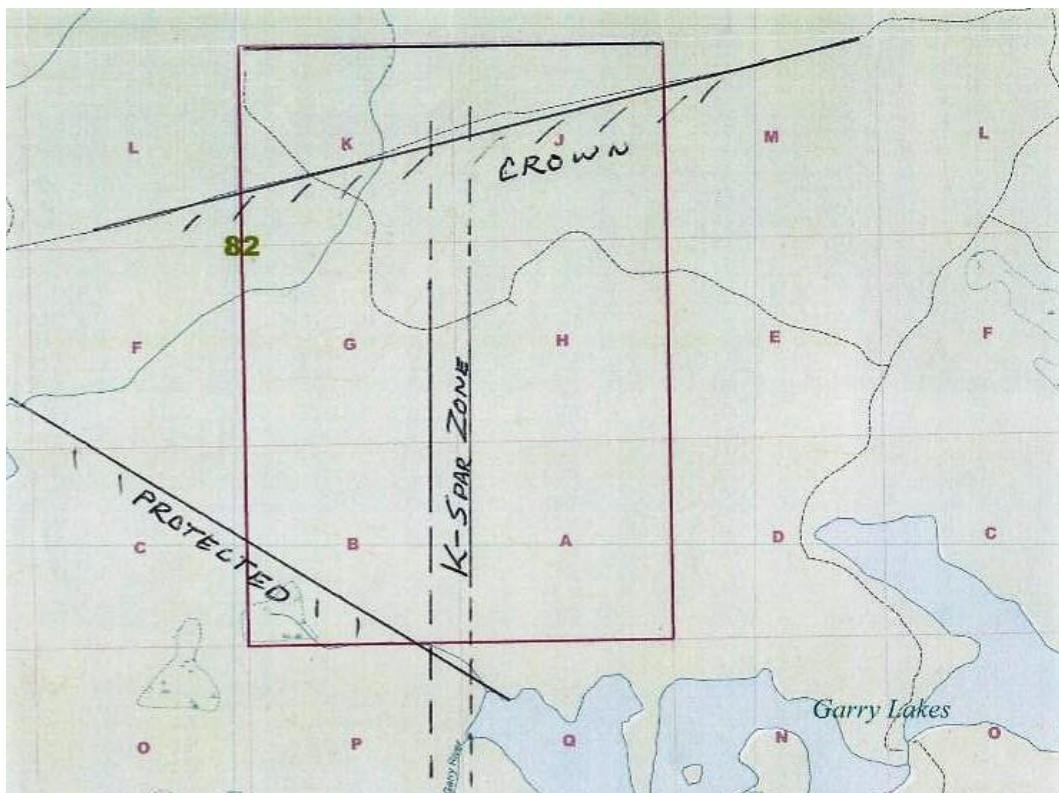
Inconsistent Government Policy Goals - Much of the potassium feldspar deposit is on Crown land that is not protected. Given the government’s desire to get more economic value out of Crown lands, it would be unfortunate if the candidate protected area effectively prevented a potassium feldspar mine being developed on the unprotected Crown land. As in the case of the Glencoe limestone quarry and cement plant project, one government department - Nova Scotia Environment - would be undermining the policy goals of another - Natural Resources. (See “Examples of sites harmed by the Plan” for details about the Glencoe project).

Meeting Society’s Mineral Needs - Potassium feldspar’s wide range of uses, and its dwindling known supply, underscore society’s need to find new deposits of this important mineral. The Parks and Protected Areas Plan limits the industry’s ability to do this.

Exploration generates Knowledge – The exploration that led to the potassium feldspar discovery was actually in search of lithium, so this is an example of how exploring for one mineral can fortuitously result in other mineral discoveries, and in a generally better understanding of our geology.

The problem with the Plan's "snapshot in time" Approach - Lithium and potassium feldspar have particular importance these days due to changes in market conditions, making this another example of why the Parks and Protected Areas Plan needs to be more flexible to accommodate change. Only a couple years after the Plan was released, we are already seeing how it is limiting the industry's ability to supply the minerals that are essential to our daily lives.

The Parks and Protected Areas Plan was designed with no thought to the importance of potassium feldspar and the province's potential for it. It is another example of how the Plan's "snapshot in time" approach is incompatible with things that are constantly evolving, such as our geological knowledge and society's needs. It is also another example of a project that could benefit from the land swap mechanism.



The Garry Potassium Feldspar Property in Guysborough. Candidate protected area, in the lower left corner, overlaps the deposit zone (the dotted lines).

Mining and conservation can Co-Exist

Mining is an environmentally-responsible industry that makes temporary use of land and then reclaims it for other purposes, such as natural space, recreational areas and commercial and residential development.

Reclamation, or preparing a mine or quarry site for its next use, is key to ensuring future generations will continue to enjoy an area after we have taken from the ground the materials we need to support our modern society. Mining and quarrying companies are committed to minimizing their environmental impact while working on a site, and then to reclaiming it in ways that maximize its use for communities.



Reclaimed mine site in Coalburn

Reclamation is done on an ongoing basis as areas of mines and quarries are completed, which limits the size of the area in actual production, and ensures that environmental considerations are a daily concern for companies, not just an afterthought.

Examples of reclaimed mines and quarries across Nova Scotia can be seen in this short video entitled “We Give Back” (www.NotYourGrandfathersMining.ca/we-give-back).

This process of temporarily using land to extract vital resources and then reclaiming it – usually returning it to nature – highlights that mining and the environment can successfully co-exist. They do not need to be viewed as conflicting uses of land but rather as complementary ones.

Other jurisdictions offer examples of governments taking a balanced approach to protecting land while also supporting job creation.

In the Northwest Territories, the Prairie Creek Mine site is completely surrounded by the Nahanni National Park Reserve. The mine, which is an advanced staged zinc-lead-silver property, ended up being in the middle of a national park when the Nahanni was expanded in 2009. However, the federal government exempted the mine site from the expanded protection so the mine could still proceed. The Government of Canada also created a corridor through the protected land that allowed a road to be built to the mine. While final decisions have not been made – the company is still in the permitting process – a likely outcome is that the land will be reclaimed and become part of the park when mine operations are done.

Even British Columbia, the only province whose percentage of protected lands exceeds Nova Scotia's target, offers an excellent example of co-existence. The Myra Falls mine, on Vancouver Island, produces ore containing zinc, copper, gold and silver and has a capacity of 1.4 million tons annually. The mine is surrounded by a Class A park, Strathcona Provincial Park, and also by a smaller Class B park, the Strathcona-Westmin Park. The mine is therefore surrounded by two different provincial parks but was given special zoning to operate by the provincial government because of its economic importance.

According to the Government of British Columbia, "constant monitoring ensures that environmental concerns and public safety are an integral part of the continuing mine program. It is interesting to note that not only are recreational activities not impeded by mining activities, but mine tours have become an important attraction for park visitors."⁵⁸

When the mine's operations are complete, the Myra Falls site will be reclaimed by the operator and become part of the parks.

In England, the North York Moors National Park Authority gave approval in 2015 for a new mine to tunnel 37 kilometres under the national park so it could extract polyhalite, an ingredient in fertilizer.⁵⁹ To facilitate the project, the Authority also allowed exploration to take place in the park and for a mine access point to be constructed within park boundaries. The project's economic benefits, combined with environmental mitigation measures, made the mine proposal a "once in a lifetime opportunity," according to Andy Wilson, chief executive of the Authority.⁶⁰ Two municipal councils in the area supported the project⁶¹, as did local Members of Parliament.⁶²

Mining and conservation can co-exist in ways that benefit both the environment and the economy. If other jurisdictions can strike these sorts of reasonable compromises, so can Nova Scotia.

⁵⁸<http://www.empr.gov.bc.ca/MINING/GEOSCIENCE/PUBLICATIONSCATALOGUE/INFORMATIONCIRCULARS/IC1995-07/Pages/MyraFallsMine.aspx>

⁵⁹ <http://www.northyorkmoors.org.uk/planning/york-potash>

⁶⁰ <http://www.bbc.com/news/uk-england-york-north-yorkshire-33333543>

⁶¹ <http://www.bbc.com/news/uk-england-york-north-yorkshire-33163124>

⁶² <http://www.bbc.com/news/uk-england-york-north-yorkshire-33323730>



Former coal mine in Inverness, now the Cabot Links golf course.

Recommendations

While Nova Scotia's mining and quarrying industry supports protecting natural lands for future generations, we also believe that the provincial government's Parks and Protected Areas Plan needs to strike a better balance between protecting land and protecting jobs. Beautiful, natural lands are important, but so are job creation, economic opportunity and government revenues to pay for programs such as health and education.

The Mining Association of Nova Scotia proposes three modest policy changes that would strike a better balance between protecting both natural lands and economic opportunity.

Land Swap

A "land swap" mechanism should be added to the protected lands regulatory regime. This would allow mining and quarrying companies to access protected land by purchasing land of at least equal size and ecological value outside of the protected areas and arranging for it to be protected instead. This would ensure that:

- the total amount of protected land remains the same or grows;
- the ecological value of protected lands remains the same or grows; and
- Nova Scotians will continue to be able to access the minerals they need to create jobs and grow the economy.

Government maintains Control - Proposed land swaps would be fully regulated by the provincial government, on a case-by-case basis, to ensure there is a net benefit to the province, just as the Department of Natural Resources maintains full control over proposed transactions involving Crown land (see "Flexibility common in many Programs" section.) Adopting the land swap mechanism would not tie the government's hands in any way – it would only create the opportunity for discussion of options and give the government the opportunity to consider what is best for Nova Scotians. A company would still have to seek the government's approval and fulfill any requirements imposed by it.

While it would be important that the government not make such transactions so expensive or difficult that they become impossible, we note that the government could even require that the land being swapped in by the company be larger and/or more ecologically valuable than the protected land being swapped out. This creates the potential to not only maintain but improve the government's portfolio of protected lands, creating a win-win for both the industry and the environment.

No cost to Taxpayers - The cost of the land being swapped in would be fully borne by the mining company; no taxpayer money would be involved in the transaction.

Land swaps would be Rare - Land swap proposals would be made only rarely. As discussed above, about 1 in 10,000 exploration projects leads to an actual mine, so it would be

exceptional for a company to feel that an area had enough potential to warrant the additional expenditure of time, energy and money to negotiate a land swap.

Amount of land involved would be Tiny - The amount of protected land that mining companies might be interested in swapping out, and the potential changes to the protected land portfolio, would be miniscule. Despite being a big job creator, mining uses relatively little land - approximately 0.01% of Canada has been used for mining, and we estimate a similar percentage of Nova Scotia has historically been used for mines, quarries and pits. (By comparison, agriculture has used 7% of Canada's landmass.⁶³)

The amount of protected land of interest to the industry for swaps would be 0.01% at most, and likely significantly less. A land swap would only be attempted in exceptional cases.

The land swap mechanism would give the industry a potential path forward in exceptional cases where a swap is shown to be in the best interests of both the industry and the protected lands portfolio.

Protected Lands Cap

Now that the government has fulfilled, and even exceeded, its legislated target for protecting land, we need to put as much focus on promoting economic development as the government has put on protecting land. The environmental goal has been achieved – we now need to focus on economic goals in order to strike a better balance.

To support job creation, a cap should be placed on the amount of land that the government will protect. This would simply put a reasonable limit on the amount of land that is permanently removed from economic use. Protecting 13% of Nova Scotia's landmass will put the province in second place nationwide in limiting our ability to use land to create jobs and economic opportunity. It will put us well ahead of our Atlantic neighbours in protecting land. It is a reasonable place to stop.

The Parks and Protected Areas Plan has contributed to uncertainty in the global mining industry about whether Nova Scotia is a safe place to invest.

Investors and explorationists need to know that claims will be respected and access to mineral rights will be preserved so mines can be developed and jobs created. Instead, we now have a situation in which there will always be the concern that an area could be added to the province's protected lands and investment of time, energy and money could be lost. Even proximity to protected lands creates uncertainty about whether a mine outside but close to protected areas would actually be permitted. Nothing scares away investment like this sort of uncertainty.

⁶³ <http://www.miningfacts.org/economy/how-does-large-scale-mining-affect-agriculture/>

The industry is concerned that the amount of protected land in Nova Scotia will continue to increase indefinitely – which is not unreasonable given that the history of the Plan has, to date, suggested this.

By 2011 Nova Scotia had protected 8.6% of its landmass⁶⁴ – already well ahead of the other Atlantic provinces. With a legislated commitment to protect 12% of the province already on the books, the government amended the *Environmental Goals and Sustainable Prosperity Act* in 2012 so the target became “at least” 12%. The government then designated 13.9 % of the province for potential protection in 2013.⁶⁵

It does not stop there. “Our Parks and Protected Areas” calls for an “increased focus on private land conservation” and to “Further develop and support land trusts and other partners to encourage leadership in, and continued enhancement of, private land conservation....”⁶⁶ Land purchased by private land trust groups sometimes becomes legally protected by the provincial government, which extinguishes mineral rights and prevents mineral exploration and development. Some lands originally protected by land trusts are, in fact, part of the Parks and Protected Areas Plan including, for example, most of Victoria Island in Pugwash (see the “No Tunnelling under Protected Areas” section).



Reclaimed coal mine in Westville, Pictou County

In other words, the Parks and Protected Areas Plan argues that additional land should be protected, beyond even the 13.9% it proposed.

Given all of the above, it is understandable that the industry might ask where, or even if, the government intends to stop at some point. We propose that the limit be the 13% that the government currently envisions protecting.

Placing a cap on protecting land – in essence, saying 13% is enough – would help solve the problem of uncertainty scaring away investment. It would send a signal to the global mining industry that Nova Scotia is striking a better balance between conservation and welcoming job creation and investment.

⁶⁴ <https://novascotia.ca/nse/12percent/docs/12.percent.our.wild.spaces.pdf>, page 4

⁶⁵ <https://novascotia.ca/parksandprotectedareas/pdf/Parks-Protected-Plan.pdf>, page 8

⁶⁶ *Ibid.*, page 26

Increase Crown Land

With the focus on protecting land in recent years, we have perhaps lost sight of the importance of Crown land, and how little of it Nova Scotia has compared to other jurisdictions.

Nova Scotia is 29% Crown land and 71% privately-owned.⁶⁷ This is the opposite of most provinces where the majority of land is publicly-owned. Doing exploration and mine development on private land is often more difficult, so this is a unique challenge that Nova Scotia's industry faces. (See "Nova Scotia's unique land access Challenges" section for more details).

In the absence of interest from industries such as mining or forestry, Crown lands generally remain in their natural state and open to public use. They may not be formally "protected" but the practical result is largely the same – they remain green spaces that the public can enjoy and where biodiversity can thrive. The difference is that Crown land that is not formally protected gives the government greater flexibility to decide, case by case, whether a small piece of Crown land might also be used to further the province's economic goals. Crown land makes it easier to strike reasonable compromises and the right balance.

Continuing to increase Crown lands holdings would help ensure an appropriate balance between environmental and economic uses of land.

⁶⁷ <http://novascotia.ca/natr/land/>

APPENDIX

Economic Impact Analysis Details

The Mining Association of Nova Scotia has analyzed the province's Parks and Protected Areas Plan to help illustrate the economic impact of the Plan on the mining and quarrying industry.

To illustrate the harm the Parks and Protected Areas Plan causes the industry, MANS used the overlap of protected areas with 1) known mineral occurrences and 2) claims held for at least five years as proxies for actual and potential loss to the industry.

Methodology

Baseline Economic Impact Statistics - The mining and quarrying industry's baseline jobs and GDP statistics were taken from the average of two government-commissioned studies by Gardner Pinfold.⁶⁸ The 2008 version of the report, entitled "Economic Impact of the Mineral Industry in Nova Scotia," said the industry had total employment of 6340 and total gross domestic product (GDP) of \$488.6 million per year. The 2013 version of the report said the industry had total employment of 5484 and total gross domestic product (GDP) of \$419.7 million per year. Averaging those figures gave us an initial baseline of 5912 jobs and \$454 in GDP annually in that time period.

We then factored in that 8.6% of the province was already protected in 2011, even before the Parks and Protected Areas Plan was implemented.⁶⁹ We therefore extrapolated that if another 8.6% of the province were open for mineral exploration and development, the industry's size would be that much larger - that its baseline statistics would be 6468 jobs and \$497 million GDP per year. This was done by subtracting 8.6% from 100% to get 91.4%. We then divided 5912 by 0.914 to get a total of 6468 jobs, and divided \$454 million by 0.914 to get a total of \$497 million in GDP per year. These are the figures we used as the baseline when calculating the impact of protected land on the industry.

Harm to the industry from Protected Lands - MANS' analysis assesses the economic impact of mining/quarrying bans in protected areas as a result of the government's Parks and Protected Areas Plan which envisions protecting 13% of the province's landmass.

The simplest way to approach this problem is to evaluate the economic losses of land-dependent resource industries as a function of the total land area of Nova Scotia. The total economic output/GDP (\$497 million) of the provincial mineral industry can then be divided by the percentage of land protected (13%). This translates to a per annum GDP loss of \$64.61 million ($497 \text{ m} \times 0.13$) and the loss of 841 full time jobs (6468×0.13).

⁶⁸ http://novascotia.ca/natr/meb/data/pubs/13ofr03/ofr_me_2013-003.pdf
<http://novascotia.ca/natr/meb/data/pubs/08ofr01/08ofr01.pdf>

⁶⁹ <https://novascotia.ca/nse/12percent/docs/12.percent.our.wild.spaces.pdf>, page 4

This simplistic approach depends on assumptions of a uniform distribution of mineral resources and protected areas. This is generally not the case for both minerals and protected areas, but there is significant overlap, as discussed above, and mineral resources have been exploited from many candidate protected areas in the past. While we did not rely on this methodology, and instead opted for a more conservative approach, the figures from this approach are nonetheless worth noting.

The mineral potential of Nova Scotia can be better-defined by the number of known mineral occurrences (including pits and quarries) and claims staked that are now covered by protected areas. In other words, the *overlap* between protected areas and known occurrences and claims staked.

Mineral occurrence databases available on the Nova Scotia Department of Natural Resources (DNR) website were compared to protected areas using an up-to-date candidate and existing protected areas database which was kindly provided by DNR. The analysis was conducted using a GIS platform (ARCVIEW). The mineral occurrence databases include:

1. Sand and gravel occurrences in mainland Nova Scotia (Fowler and Dickie, 1978)
2. Industrial commodities database of the province of Nova Scotia (Fowler, 1985)
3. Aggregate pits and quarries Cape Breton Island, Nova Scotia (Wright, 1985)
4. Aggregate deposits of Cumberland and Colchester Counties (Prime, 1991)
5. Nova Scotia mineral occurrence database (O'Reilly, et al., 2006)

A compilation of historical mineral claims (metallic) from the 1940s to present day has also been considered.

Claim staking provides a primary indication of mineral potential of an area and recurrent claims indicate advanced exploration work with all attendant fees and royalties (>250 dollars per claim per year).

These databases were first merged then clipped against the protected areas polygons using a geo-processing (GIS) algorithm to define the numbers and percentages of claims, mineral occurrences and their types within existing protected areas. The resulting empirical data on known mineral wealth within existing protected areas are compared to the hypothetical 13% reduction of mineral output as a result of mining bans as an assessment of actual and potential loss of mining GDP resulting from protected lands.

In addition to this statistical analysis, several notable mineral/protected land conflict areas are discussed in detail above. The combination of statistical analysis and illustrative examples lend credibility to the report's conclusions.

Assumptions Conservative

Our assumptions are conservative to ensure methodological soundness of the analysis. For example, we have not attempted to quantify the negative impact on exploration and investment of the province's bad reputation in the global mining industry, although it is believed to have a harmful impact on the province's ability to attract interest and investment. We have not included older economic impact data such as a 1993 government-commissioned Gardner Pinfold report that showed the industry had almost 12,000 jobs, since new technology has since reduced the industry's job levels through efficiencies.⁷⁰ We have also not attempted to quantify the negative impact of lands that are *de facto* protected, which further reduce the land available for mineral exploration and development (see "Other Forms of Protection" section).

Notable gaps in mineral occurrences are found in protected areas like the national parks, a result of long-term legislated extraction bans in national parks, and *de facto* bans in areas such as game sanctuaries and candidate areas. The gaps contribute to an underestimation of the province's mineral resources because exploration has not been done in them for decades, and this further reduces the industry's baseline economic statistics.

Many mineral occurrences, especially a large number of aggregate occurrences, are not included in the analysis because some government mineral databases, especially aggregate databases, are out of date. For example, as this report was being finalized we reviewed, but did not include, recently updated data on the location of aggregate pits and quarries in Digby, Hants, Kings and Annapolis counties. The new data showed a total of 127 extraction sites overlapped by protected areas in those counties, more than double the total number of aggregate sites shown to be overlapped in other databases for the entire province. The report's estimate of economic harm is therefore conservative since it does not include all now-known or likely occurrences.

Results

The table below shows the breakdown of the number and percentages of all mineral occurrences and types outside and inside candidate protected areas. Across the province there are 4794 mineral occurrences of all types with 263 inside protected areas, representing 5.5 % of the total. Of these occurrences 1801 are metallic minerals with 173 inside protected areas (9.6%); 2099 active and inactive pits with 39 inside protected areas (1.9%); 198 rock quarries with 13 inside protected areas (6.6%); and 696 total other industrials (eg. gypsum, salt) with 38 inside protected areas (5.5%).

⁷⁰ http://novascotia.ca/natr/meb/data/pubs/ofr/ofr_me_1993-032.pdf

Since 1940, of the total onshore claims available for staking in Nova Scotia (349,310), 60,246 have been staked within candidate and existing protected areas for at least one year (17%). 15,621 claims (4.5%) have been staked for at least five years, indicating an ongoing interest and increasing extraction potential with mounting exploration expenditures.

Total onshore claims in Nova Scotia	349,310
Total claims staked since 1940 overlapped by protected areas	60,246 (17%)
Total claims overlapped by protected areas held for at least 5 years	15,621 (4.5%)
Total metallic mineral occurrences	1801
Metallic occurrences overlapped by protected areas	173 (9.6%)
Total number of pits (aggregate/sand-gravel)	2099
Pits overlapped by protected areas	39 (1.9%)
Total number of quarries	198
Quarries overlapped by protected areas	13 (6.6%)
Other industrial mineral occurrences (salt, gypsum, etc)	696
Industrial mineral occurrences overlapped by protected areas	38 (5.5%)
Total mineral occurrences	4794
Total overlapped by protected areas	263 (5.5%)

Conclusions

It was proposed above that the overall annual economic impact of mining and quarrying bans in protected areas could be roughly estimated by taking the eventual percentage of total protected lands (13%) and dividing that figure by the provincial annual mining GDP (\$497 million). The assumptions inherent in this analysis are an equal distribution of mineral wealth and protected areas. This hypothesis was tested using actual data, including the percentage of mineral occurrences of all types and the percentage of mineral claims staked overlapped by candidate and existing protected areas.

It was found that 5.5% of all known mineral occurrences lie within protected areas and 17% of all claim staking was overlapped by protected areas. 4.5% of claims held at least five years are now overlapped by protected areas.

Using this overlap as a proxy for actual and potential loss to the industry, it was concluded that the Parks and Protected Areas Plan is costing Nova Scotians at least 291-356 jobs in the mining and quarrying industry (6468×0.045 and 6468×0.055). The Plan is also costing the province \$22-\$27 million in foregone economic activity each year by preventing mineral exploration and development in these high-potential areas ($497 \text{ million} \times 0.045$ and $497 \text{ million} \times 0.055$).

The overall annual mining GDP figure (\$497 million) is based on producing mines, pits and quarries that largely lie outside current protected areas but, as discussed, several metal mining projects and promising aggregate quarries within protected areas representing millions of dollars of actual exploration revenues and future potential GDP contributions were in advanced stages of exploration and development before mining/quarrying bans. Arguably with the development of just one of these advanced projects now within protected areas the annual mining GDP would be increased by millions. So the estimates of GDP reduction are potential losses due to scuttling of major aggregate and metallic mineral projects in development, actual losses due to curtailed mineral exploration and the resulting relinquishment of any new resources within protected areas.

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