

## Appendix C

APWPS,

*Toward a Mineral Strategy for the New Nova Scotia:  
From Mitigation to Sustainability*



## **Toward a Mineral Strategy for the New Nova Scotia: From Mitigation to Sustainability**

The Avon Peninsula Watershed Preservation Society (APWPS) appreciates this opportunity to join in the conversation about a new mineral strategy for Nova Scotia. All mining occurs in watersheds and can have far reaching impacts. The APWPS is particularly interested in mineral strategy in view of a proposal to sacrifice the Avon Peninsula watershed to gypsum mining. Our society represents some 200 members and 5,000 petitioners committed to the preservation of the Avon Peninsula watershed and its many values. In our view the proposal to mine this ecologically sensitive and economically important agricultural watershed offers a timely illustration of mineral resource management issues in the province. We are grateful for the support of the Ecology Action Centre, Sierra Club Atlantic, and Eastern Forest Watch in the preparation of this submission, parts of which may appear in their submissions as well.

Natural resource management is a core business area of the Nova Scotia Department of Natural Resources. It includes responsibilities relative to the development, management, conservation, use and protection of mineral resources. According to the Nova Scotia Department of Natural Resources Business Plan 2008-2009, a *key priority* is the launch of the department's natural resources strategy, with components that will cover forests, minerals, parks and biodiversity. The new strategy will be developed in three phases over the next three years.

In the first phase, an independent citizen committee has been appointed through Voluntary Planning to lead citizens and other stakeholders in discussions to lay the foundations and define the values for the strategy. This paper hopes to contribute to these discussions in the following areas.

1. Sustainability
2. Mineral Stewardship
3. Full Cost Accounting
4. Integrated Environmental Planning
5. Water, Biodiversity, and Greenhouse Gas Emissions
6. Mineral Legislation Reform
7. Mineral Stewardship Certification
8. Environmental Assessment
9. Uranium Mining
10. Consultation
11. Implementation

These topics will be discussed in sequence in the following pages.

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## 1. Sustainability

According to the Department of Natural Resources, as stated in its Business Plan 2008-2009, the new strategy will aim to achieve resource sustainability:

In 1987 the United Nations Commission on Environment and Development (the Brundtland Commission) reported that economic development often leads to a deterioration, not an improvement, in the quality of people's lives. The Commission also provided the most commonly used description of sustainable development. Sustainable development, according to this definition, is “development which meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Managing our renewable resources and non-renewable resources in a manner that is consistent with this concept of *sustainable development* is critical. Our natural resources provide significant material and non-material values to Nova Scotians. Natural resources provide a range of economic, social, cultural, recreational and environmental benefits to Nova Scotians. *The province's natural resources must be managed on a sustainable basis* and their values, which can change over time, must be considered and taken into account when decisions are made concerning resource uses. These decisions can have effects for decades so they need to be made based on complete and evidence-based scientific information (p 3).” [Emphasis added.]

This passage is striking in that it acknowledges that economic development, as conventionally understood, often does more harm than good. This has deep implications for the approach of the Department and its Renewable Resources Branch, which includes the Forestry Division, and particularly for its Mineral Resources Branch, which covers both geological services and mineral management.

The Department's traditional approach to both forest and mineral management has tended to focus on *resource extraction* rather than other mineral, forest, watershed and land use values. Thus the Department has focused on maximizing the production of wood fibre by promoting the softwood lumber and pulp and paper industries, and on maximizing the production of minerals by promoting the expansion of the mining industry.

Underlying this focus is an economic assumption that, because of the jobs and business activity involved, resource extraction is usually the “highest and best use” of the land, and always produces a net benefit to the province. However, the passage quoted above suggests that the Department is reconsidering this assumption, and that the new strategy will reflect a commitment to consider the *triple bottom line*—economic, environmental, and social net benefit—in resource management decisions.

*Mitigation* is the process of making negative impacts milder or less severe. Traditionally, mitigation has been the framework for considering any negative environmental and social impacts of resource management decisions, particularly with respect to the negative impacts of mining. Thus mine approvals are typically issued with conditions that stipulate mitigation measures to be taken to reduce harm to the environment.

The following are three examples of mitigation: 1) containment structures, settling ponds, and other water treatment techniques might be stipulated to reduce the amount of siltation and toxins released into watercourses; 2) monitoring programs might be stipulated where the impact of destruction of habitat for species-at-risk is reduced by establishing monitoring programs to try to preserve the remaining species-at-risk in the area; and 3) biodiversity offsets might be stipulated to compensate for the destruction of wetlands or fish habitat by attempting to construct or enhance them elsewhere.

However, there is little evidence that such measures are successful in replacing the range of values that are lost. Even tiny amounts of dangerous effluents can have disastrous effects on biological systems. Likewise particulate emissions, microscopic particles released in, e.g., koline or gypsum mining, can lodge in and damage the lungs, resulting in disease and death. Regulations typically specify allowable limits for such discharges, but they only reduce the amounts, they still allow small quantities into the environment.

Thus, in a sense, regulations constitute a licence to cause harm. Accordingly mitigation, by itself, is an *inadequate framework* for managing negative impacts because, over time, the impacts accumulate. The cumulative result is the incremental destruction of our natural landscapes, the ecosystem goods and services that they provide, and the viability of the communities that depend on these goods and services.

In other words, if I am in Halifax and set out for Cape Breton, but find myself traveling toward Yarmouth at 100 kilometers per hour, it will do no good to slow down to 20 kilometers per hour. What is needed is a change in direction

William McDonough is a world-acclaimed architect who is changing the way we think about the design of economies. Michael Braungart is a chemist. In their book, *Cradle to Cradle: Remaking the Way We Make Things*, McDonough and Braungart argue being less bad is no good: “it will in fact achieve the opposite; [in time] it will let industry finish off everything, quietly, persistently, and completely” (p 62).

Mitigation accepts that harm to the environment is an acceptable consequence of economic activity. This is *poor design*. It is an example of what the authors call cradle-to-grave thinking, where raw materials are extracted from the earth, made into products, used, and then discarded with little regard to waste and overall harm to the environment.

In contrast, *cradle-to-cradle thinking* seeks not to reduce waste and harm but to *eliminate* it. Innovative design can change the way we make things such that materials can be obtained from the environment without causing harm. They can be then made into products and

recycled in closed loops. Materials can be made such that they can be safely returned to the environment not as waste but as nutrition, like compost.

This view is articulated in Opportunities for Sustainable Prosperity 2006, a key policy document produced by the Nova Scotia Department of Economic Development:

Sustainable competitiveness, admittedly, represents a *dramatic shift in thinking*. The traditional view has always been that the human footprint is inevitably harmful, and therefore needs to be constrained by regulations. This new approach aims to develop an economy that enhances the social and natural systems that support its growth (p 14). [Emphasis added.]

A significant step toward the implementation of this new approach was the passing of the province's Environmental Goals and Sustainability Act in 2007. The act commits the government to "having one of the cleanest and most sustainable environments in the world by the year 2020" and to "adopt strategies to ensure the sustainability of the Province's natural capital in the areas of forestry, mining, parks and biodiversity by the year 2010." The new approach is also the foundation for the government's corporate path as set out in Nova Scotia Government Business Plan 2008-2009.

We would now like to consider some implications for mineral policy of this shift in direction from mitigation to sustainability and offer recommendations for the new strategy. Note, however, that the Department's present policy, Minerals: A Policy for Nova Scotia 1996, outlines a number of strategies to achieve sustainability. Thus, while it is important to complete and implement a new natural resources strategy, it is equally important not to wait for the strategy to be completed before acting now. Implementing provisions of the present strategy would go a long way toward protecting our environment and communities and enhancing our capacity for sustainable prosperity.

At this point, then, we would make two recommendations:

***In the new strategy, shift from a narrow mitigation approach to a broader sustainability framework for making mineral resource management decisions.***

***Meanwhile, act now to implement the sustainability provisions of the Department's present mineral policy, as proposed in Minerals: A Policy for Nova Scotia 1996.***

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## **2. Mineral Stewardship**

The mineral section of Voluntary Planning's conversation starter, a pamphlet called The Future of Nova Scotia's Natural Resources: Join in the Conversation, opens with *an astounding statistic*: "Every year in North America, more than 21 tonnes of new minerals are required for each person to maintain our standard of living. Virtually everything we build or use either contains mineral products or is produced by machines that are built from

minerals.” A second astounding statistic is that as little as .02% of the ore that is mined is valuable and the rest is discarded as waste at the mine site. In other words, for every 4,999 truckloads of waste, 1 truckload of valuable minerals may be produced.

Our dependence on minerals is often remarked as a justification for seeking the expansion of mining. However, our mineral resources are finite. Once they are mined, used, and disposed of, they are gone. Thus, our dependence on minerals might be better considered as a justification for *mineral conservation*. That is, as our supply of mineral resources is limited, we should aim to conserve, rather than deplete them, and seek alternatives to mining, not its expansion. As the saying goes, “when you’ve dug yourself into a deep hole, stop digging.”

Moreover the environmental and social costs of extracting minerals rise as higher grade and more easily assessable deposits are exhausted. Availability of minerals may be limited as much by the opportunity costs—the goods and services that have to be given up in order to obtain a given mineral commodity—as by their geological occurrence in the province. Thus mineral resource stewardship suggests that we transition from a cradle-to-grave approach to a cradle-to-cradle approach with respect to our use of materials. We need to shift our focus from mineral extraction to promoting recycling and keeping as much of the previously extracted minerals in circulation as possible.

At a societal level mining is a *waste management* issue: producing less, consuming less and recycling more will lessen the need for mining and the accompanying impact on our environment and our stocks of natural, human, and social capital. A society that produced zero waste would have no need for mining at all.

In a *cradle-to-grave system* mining has a two-fold impact on the environment: first, at the input stage where minerals are extracted from the earth, and second, at the output stage when the products embodying the minerals are disposed of as waste. A *cradle-to-cradle* approach would aim to eliminate both these costs by seeking alternatives to mining.

As a world leader in waste recovery, through the efforts of agencies such as Clean Nova Scotia and the Resource Recovery Fund Board, Nova Scotia has taken a significant step toward transitioning toward a cradle-to-cradle material handling system. As well, the Environmental Goals and Sustainable Prosperity Act commits the Province to reduce solid waste to 300 kilograms per person per year by 2015. Other jurisdictions are also transitioning to a cradle-to-cradle system, e.g., through the efforts of the Recycling Council of British Columbia, Vancouver is pursuing a goal of zero waste. The Department of Natural Resources can support the Province’s efforts toward a cradle-to-cradle material handling system by adopting a policy of mineral stewardship that seeks alternatives to mining rather than its expansion.

Three areas in which the Department can support the Province’s cradle-to-cradle approach are with respect to gypsum mining, coal mining, and uranium mining.

1. *Gypsum mining*. Gypsum wallboard is 100% recyclable, and can also be produced synthetically by recovering the sulfur from the stack emissions of coal fired generating

plants. Nearly all wallboard plants constructed in the past two decades are designed to process synthetic gypsum. Yet Nova Scotia extracts approximately 8 million tons of gypsum annually from six mines, the majority of which is exported as an unrefined bulk commodity.

A proposed gypsum mine in the Avon Peninsula watershed near Windsor would come at high opportunity costs in terms of impacts on surface and ground water, fish habitat, a globally rare karst ecosystem, the local farming economy, the health and quality of life of the surrounding community, and impacts on future generations. From an industry perspective the mine could perhaps be justified according to a cradle-to-grave model where economic, environmental and social costs are largely ignored or heavily discounted. However, a public interest, cradle-to-cradle approach would account for and eliminate these costs by seeking alternatives to a new mine.

2. *Coal mining.* Currently coal is extracted via surface mining on Bouladerie Island in Cape Breton County, with 14 additional mines proposed. On the input side this comes at a considerable cost to the environment and the local community. On the output side, the mining company sells the high sulfur coal to Nova Scotia Power to be burned in its generating plant at Point Aconi, which then contributes to the province's emissions of greenhouse gases and other air pollutants.

The Environmental Goals and Sustainable Prosperity Act sets targets for reducing these emissions, and also sets a target of obtaining eighteen and one-half per cent of the total electricity needs of the Province from renewable energy sources by the year 2013. The province's present dependence on coal for power generation poses a considerable challenge. Nonetheless, in view of the reality of climate change the cradle-to-cradle approach suggests a mineral policy that would phase out support for coal mining.

3. *Uranium mining.* Every stage of the nuclear fuel cycle—from mining and processing of the uranium ore through its use in nuclear reactors to eventual disposal—is highly problematic with respect to materials handling. Uranium decay products are radioactive for tens or hundreds of thousands of years, and there is no consensus as to a method of permanently dealing with the disposal problem, either with respect to uranium tailings at the mine site or spent fuel at the reactor site.

Mineral conservation and waste management are two dimensions of mineral stewardship. A third is the significance of geological resources for *non-extractive* uses. Often the mineral occurrence is associated with outstanding historical, ecological, or cultural values. Two examples of non-extractive uses are the Joggins Fossil Cliffs and the Avon Peninsula Karst.

1. *Joggins Fossil Cliffs.* Joggins, a former coal mining community in Cumberland County, has long been known for the area's exceptional 300 million-year-old fossil record of the coal age. In July 2008 UNESCO recognized the geological significance of the Joggins Fossil Cliffs with a World Heritage Site designation, due in part to efforts of the Mineral Resources Branch.

2. *Avon Peninsula Karst*. Similarly, geologists and naturalists have long appreciated the upland interior of the Avon Peninsula for its exceptional karst topography and gypsum associated ecosystems. The area's biodiversity and ecosystems are essentially unique and irreplaceable: there are a large number of rare ecosystems, a number of rare and threatened species, unrepresented ecosystems, and rare topographic features. A mineral stewardship approach would carefully consider the costs of sacrificing the non-extractive values of this significant provincial asset for the short-term benefit of gypsum mining.

***Recommendations:***

***In the new strategy, adopt a cradle-to-cradle philosophy of mineral stewardship that aims to eliminate waste and harm to the environment, not just reduce it. Seek alternatives to mining rather than its expansion.***

***Build on the Province's leadership in waste management by coordinating with other provincial efforts to reduce dependence on new minerals, e.g., promote the recycling of gypsum and the use of synthetic gypsum rather than opening new gypsum mines.***

***Build on the Province's commitment to reduce air emissions and shift to renewable energy by phasing out coal mining.***

***Promote non-extractive values of geological resources, including those that may be more valuable left in the ground than mined for a one-time only short-term benefit, e.g., Joggins Fossil Cliffs, Avon Peninsula Karst.***

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### **3. Full Cost Accounting**

The Department's Minerals: A Policy for Nova Scotia 1996 presents the view that "in an increasingly competitive world, Nova Scotia will have to draw on its abundant natural and human resources and aggressively promote what the province has to offer (p 6). Policy 2 is:

Provide a competitive business climate. Mining in Nova Scotia faces some important challenges. Primary among them is a loss of exploration and mining capital, much of which originates in Canada, to foreign countries who aggressively pursue these investment dollars. To increase the competitive position of Nova Scotia's mineral industry the province must create a positive business climate and promote the province's attributes and strengths (p 12).

However, public policy must distinguish between industry perspectives and what is in the public interest. This is particularly true in the minerals industry, where exploration and mining can have widespread impacts.

The Department's May 2008 Economic Impact of the Mineral Industry in Nova Scotia 2006 is featured as a slide presentation on the Department's web site. The presentation is focused

on the direct, indirect, and induced economic benefits of mining: mineral exploration and development, secondary processing, the provision of goods and services to the industry and mine site reclamation. The non-extractive values of geological resources are not covered, although recreational values are briefly described in the context of reclamation. As the presentation is restricted to economic benefits and does not include the economic, environmental and social costs to Nova Scotians of obtaining these benefits, it gives a one-sided view of the economic impact of the industry. A *full cost accounting* of economic, environmental and social impacts—the triple bottom line—would be required for an adequate foundation upon which to base public policy decisions about mineral resource management.

The Department contracted two consulting firms to produce Economic Impact of the Mineral Industry in Nova 2006. One firm is the consultant of choice for mining companies seeking help in public relations and navigating the environmental assessment and permitting process in Nova Scotia. It has been involved in most of the major mining projects in the province over the past several years. These projects include Acadian Gold's lead zinc mine at Gays River in Colchester County, Black Bull Resources' quartz mine near Flintstone Rock on the Shelburne Barrens in Yarmouth County, Pioneer Coal's surface coal mine on Bouladerie Island in Cape Breton County, DVD Gold's gold mine at Moose River in Halifax County, and United States Gypsum's proposed open pit gypsum mine on the Avon Peninsula in Hants County. The firm's chief consultant is president of the Mining Association of Nova Scotia. It is possible, then, that the presentation leans toward an industry perspective oriented to the promotion of mining activity.

Economic Impact of the Mineral Industry in Nova 2006 is useful in conveying some basic economic data on the industry, and also for giving an insight into the industry perspective on the impact of its operations. The presentation gives figures for direct, indirect, and induced impacts of the industry. Direct impacts are explained as the expenditures exploration companies, mine operators, or secondary processors make on goods and services, including wages and salaries. Both capital and operating expenses are included. Spin-offs, or indirect and induced impacts, obtained by using a multiplier, are benefits resulting to businesses that supply goods and services to the industry, and also from consumers spending the income they earn from both the direct and indirect stages. Figures given include employment, GDP, direct revenue to the Province, and productivity.

1. *Employment*. Direct employment in exploration and extraction was 1,600 in 2006. Total Nova Scotia employment for 2006 was 441,800; thus direct mining employment was about *1/3 of one percent* of Nova Scotia employment.

Total direct, indirect, and induced employment, including secondary processing, packaging, and distribution was 6,340, or about 1 ½ percent of Nova Scotia employment. By comparison, direct and indirect employment in the tourism industry in 2006 was 33,100 or 7 ½ percent of Nova Scotia employment.

2. *GDP*. Direct GDP expenditures in exploration and extraction were \$161M in 2006. Total Nova Scotia GDP for 2006 was \$31,997M; so direct GDP expenditures were  $\frac{1}{2}$  of one percent of Nova Scotia GDP.

Total direct, indirect, and induced GDP expenditures including secondary processing, packaging, and distribution were \$489M or 1  $\frac{1}{2}$  percent of total Nova Scotia GDP.

| Direct and Indirect Benefits of the Mineral Industry In Nova Scotia 2006* |                           |          |       |                   |          |         |
|---|---------------------------|----------|-------|-------------------|----------|---------|
|   | Employment (person years) |          |       | GDP (\$ Millions) |          |         |
|   | Direct                    | Spin-off | Total | Direct            | Spin-off | Total   |
| Primary Extraction<br>(Exploration & Mining)                              | 1,600                     | 1,750    | 3,350 | \$160.7           | \$109.6  | \$270.3 |
| Processing, Packaging<br>& Distribution                                   | 1,475                     | 1,515    | 2,990 | \$122.7           | \$95.6   | \$218.3 |
| Total   | 3,075                     | 3,265    | 6,340 | \$283.4           | \$205.2  | \$488.6 |

\*Compiled from Gardner Pinfold Consulting and Conestoga Rovers and Associates, Economic Impact of the Mineral Industry in Nova Scotia 2006, pp 6-13.

3. *Direct revenue*. On the one hand the economic and employment impact of the mineral industry in Nova Scotia is much smaller than some people think. On the other hand increased mineral prices are providing an unprecedented stimulus to mineral exploration and development in Nova Scotia. Licences have more than doubled over the last two years, with exploration occurring on over 900,000 hectares or 16% of Nova Scotia's land-base.

Mineral exploration and mining have a big impact on the environment, and out of this activity the province receives surprisingly little revenue. Total mineral activity direct revenue to the provincial government for 2005-2006 was \$2.4M or about  $\frac{1}{25}$  of one percent of its total estimated revenue of \$6,097M.

| Department of Natural Resources total mineral activity revenue 2006* |        |        |          |                |
|--|--------|--------|----------|----------------|
| <b>Exploration</b>   | Number | Claims | Hectares | <b>Revenue</b> |
| New Licences   | 521    | 19,372 | 313,578  | \$96,860       |
| Renewals   | 338    | 5,847  | 94,651   | \$135,135      |
| Forfeits   |        |        |          | \$28,600       |
| Other Revenue  |        |        |          |                |
| Mineral Lease Rentals  |        |        |          | \$79,109       |
| Royalties  |        |        |          | \$654,268      |
| Taxes on non-mineral production                                      |        |        |          | \$1,425,108    |
| Total Direct Revenue   |        |        |          | \$2,419,080    |

\*Gardner Pinfold Consulting and Conestoga Rovers and Associates, Economic Impact of the Mineral Industry in Nova Scotia 2006, p 23.

4. *Productivity*. According to the presentation productivity in the mining industry has improved by 28% over the past twelve years: “output has been increasing at the same time employment has been decreasing” (p 19). Rising productivity is of benefit to the industry, as it lowers the cost of production associated with paying wages and salaries.

From a public interest perspective productivity is more problematic. The main justification for gypsum mining in the province, for example, has been that it creates jobs. But employment in the industry is steadily *decreasing*. At the same time the resource is being depleted at a faster and faster rate and environmental and social impacts are increasing due to steadily increasing production.

In the section on gypsum mining, “a mainstay of the industry with almost continuous growth,” we are told, on the one hand, that production has increased from an annual output of less than 2 million tons in the early 1940s to the present output of over 8 million tons (p 29). On the other hand, most of the gypsum is mined and exported as an unrefined bulk commodity by foreign multinationals. There are no royalties on gypsum, and the provincial gypsum income tax rate is currently set at \$0.16/tonne, or about \$1.3M for the 8 million tons produced yearly. This is about 1/45 of one percent of total provincial revenue.

Employment at the two open pit gypsum mines near Windsor has declined from a high of 500 in the early 1950s to about 145 in 2007. At the same time the open pits have expanded from a few hundred acres to an area of over 3,000 acres. In the process they have swallowed up homes, roads, farms, streams, forests and some of the best agricultural land in the province. They have also quarried away several well-known bat hibernacula and extirpated the provincially protected Canadian Violet. Thus, while from an industry point of view the gypsum industry in Nova Scotia is increasingly attractive because both productivity and production are rising, from a public interest point of view the industry is increasingly unattractive as employment decreases, the gypsum resource is depleted, and environmental and social costs rise.

As discussed above, direct employment for all mining in Nova Scotia is about 1/3 of one percent of total provincial employment, and direct revenue to the Province is about 1/25 of one percent of total provincial revenue. Given these facts, some people might reasonably ask how much we would be losing by walking away from new mines in favour of more durable and benign approaches to community economic development, especially in an atmosphere where there are job shortages showing up in field after field in other areas of the economy. Shouldn't we at least count up the costs of mining as well as the benefits to get an accurate picture of the role of mining in our economy?

GDP statistics provide only a narrow account of economic growth, and give a dangerously incomplete view of what is really happening in our economy. A GDP approach to the economic benefits of the mining industry does little to convey to Nova Scotians the hidden, often enormous, costs associated with these benefits.

Examples of the hidden costs of mining are the depletion of the resource itself, the impact on the natural environment, and the human and social costs.

1. *Depletion of the resource.* One uncounted cost of mining is the depletion of the resource itself, and the opportunity costs our children and future generations will pay to obtain minerals in a mineral depleted world. Our mineral resources are finite and non-renewable, yet the GDP approach assumes they are infinite, because withdrawals from the mineral “bank” are not subtracted from production figures. This is bad accounting. Mining today means mineral resources will not be available tomorrow or to future generations for use or as revenue streams. As our mothers told us, “perhaps we should save some for a rainy day”.

2. *Impact on the natural environment.* A second uncounted cost of mining is the impact on the environment. The challenge is to ensure that environmental assets are appropriately valued. All mining occurs in watersheds. Watersheds are composed of various ecosystem types, including forests, wetlands, grasslands, lakes, rivers, riparian zones, croplands, and undeveloped and developed land. The economic value of the goods and services these ecosystems provide may far outweigh any gains from converting them to mineral extraction. The Value of Natural Capital in Settled Areas of Canada provides a good introduction to understanding the economic value of natural areas:

The conversion of natural landscapes may be inefficient from an economic viewpoint. By destroying natural capital, we must find substitutes for the services this capital provides, services in the form of water purification, waste assimilation, cleansing of the atmosphere, mitigation of greenhouse gas emissions, flood prevention, soil retention, fertility enhancement, alternative recreational services and much more. The substitutes for natural capital may be far more expensive to build and operate than those provided by nature. This is inefficient and costly for society today and for generations to come.

As importantly, when decision makers undervalue the benefits from nature, they underestimate the full costs to society of converting land to uses that destroy or degrade natural capital. Left intact the natural capital from the land may generate far more value to society than alternative land uses. Intact natural capital also provides many intangible and hard to quantify benefits to society (for example, protection of genetic material, aesthetic appreciation, wildlife enhancement and much more). Recognition of these benefits by policy makers is another important step in formulating land use policy.

No company would stay in business long if its management did not know how much product was being produced, how much it costs to produce it, or the market price for the product. Why should we treat our natural capital—capital that sustains life on the planet—any differently? (N. Olewiler, The Value of Natural Capital in Settled Areas of Canada, published by Ducks Unlimited Canada and the Nature Conservancy of Canada, 2004, p 1.)

Accordingly, the paper states that we must “invest in the science to measure, value, and monitor ecological goods and services” and “develop economic instruments that recognize and protect natural capital, rather than continue to reward its destruction.”

3. *Human and social costs.* A third uncounted cost of mining is the impact on human and social capital, and the viability of our communities. These assets constitute part of our stock of capital. Like natural capital, they are subject to depreciation if they are not accounted for, protected, and nurtured. Human capital can be briefly defined as human wellbeing or human health as embodied in individuals. Social capital or social fabric is the capacity of people to cooperate and achieve goals together, as embodied in social relationships. Community viability is the capacity of a community to adapt to stress and thrive over the long term. Exploration and mining activity can catastrophically depreciate all three of these values, particularly if the affected individuals and communities are excluded from decisions about the allocation and use of critical community resources.

Sustainable mineral resource management must take into account these costs that are not measured by narrow indicators of economic growth. Fortunately, Nova Scotia is a world leader in *full cost accounting* through the efforts of GPI Atlantic. Since 1997 GPI Atlantic has been constructing an index of indicators in 20 economic, environmental and social areas as a practical tool to measure Nova Scotia's progress toward sustainability.

For example, in 2001 the organization released the GPI Forest Accounts for Nova Scotia. The accounts assign explicit value to natural capital assets, including the full range of forest functions and vital ecosystem services that provide multiple benefits to society. In May 2008 GPI released an update, The GPI Forest Headline Indicators for Nova Scotia, which assesses whether progress towards sustainability has been made in key areas, and makes recommendations that flow from the evidence indicating how forest sustainability can be improved. Other GPI releases include reports on Nova Scotia's air, water, marine, and agricultural assets.

Forthcoming releases will include *indicators of human capital, social capital, and community viability* in the context of agricultural communities. Exploration and mining take place in forested or rural and agricultural areas of the province. Thus these accounts and the methodology developed to construct them are relevant for a full cost approach to mineral resource management.

***Recommendations:***

***Collaborate with the Department of Economic Development, the Department of Environment, and GPI Atlantic to develop indicators of sustainability in the mineral industry and produce a full cost accounting of economic, environmental and social impacts. Ensure that mineral activity is producing a net benefit to Nova Scotians.***

***Develop the capacity, through collaboration, to carry out full cost accounting of proposed mining projects to determine whether they would return a net benefit.***

***Review the royalty and tax structure, including the Gypsum Income Tax, for mineral activities to ensure that Nova Scotians are getting a fair return for our mineral resources.***

#### 4. Integrated Environmental Planning

Integrated Resource Management (IRM) is the department's main planning tool. It aims to achieve sustainability through a rational decision making process that takes into account all resource and conservation values in a transparent and open public process. Thus Policy 4.1 of Minerals: A Policy for Nova Scotia 1996 is:

Encourage integrated land use planning and management with meaningful public and community involvement. The department supports an integrated approach to land and resource management, with flexible planning strategies that accommodate many different resource and conservation interests. Rational choices between multiple resource and conservation uses should be made with an integrated decision-making system, which includes high-quality data on mineral resources. Resolution of land use conflicts should be based on the need to integrate social, economic, and environmental commitments in a sustainable way. Integrated land and resource management decisions should be reached through an application of fair and effective processes that are open to all stakeholders (p 17).

However, the Department's approach to IRM is not working. It is based on an outdated philosophy of *multiple-use* that assumes that all land uses are compatible with resource extraction. It is true that some land uses may be compatible with resource extraction depending on the situation. For example selection harvesting of wood may be compatible with recreation values. However, assuming that *all* land uses are compatible excludes, by definition, protecting land from resource extraction.

The IRM filter that is used to determine all activities and decisions concerning land use is exclusive. Only the extractable resources under the administration of the Department are considered. So when proposals come forward to protect land from resource development they garner little support because access to land for extraction is a condition of protection. The process favors resource extraction—mining and logging—over all other land uses, such as conservation, recreation, fisheries, tourism and other watershed goods and services.

The Department's IRM process is limited to Crown land, which constitutes about one-quarter of the province. Crown land is highly fragmented and IRM decisions concerning the use of Crown land do not consider the use of adjacent lands. Consequently we have mines and clear cuts adjacent to candidate or protected natural areas. A more adequate planning process would ensure sufficient buffer zones between incompatible land uses.

Approximately three-quarters of the province is privately owned. The Department's IRM process apparently does not consider the impact of mining on other values on private land proposed for extraction or the impacts on surrounding land use.

From an organizational point of view, IRM cannot work because input from other planning processes and other provincial departments, local government, non-governmental groups

and the public is apparently shut out at the decision making level. Many government departments have relevant areas of responsibility and the requisite technical capacity to comment on these areas. However, these departments, such as Agriculture, Economic Development, Energy, Environment, Fisheries and Aquaculture, Tourism, and Culture and Heritage are under represented in IRM and have no decision-making authority. Tourism, for example, returns many times the value of mining to Nova Scotia, but the IRM process seems not to account for mining impacts on tourism values.

Local governments also have little say in decisions about mineral exploration and mining within their planning area. Thus Cape Breton Regional Municipality has been unsuccessful in halting the ongoing strip mining of coal on Bouladerie Island, a coastal agricultural community similar in size to the Avon Peninsula. Municipalities can protect local water supply areas served by utilities, but most rural areas are not served by utilities. Although Part 8 of the Municipal Government Act gives local government planning and development authority, including control over the removal of topsoil, this does not apply to the removal of topsoil for the purposes of mining. In the view of provincial authorities, mining “trumps” municipal zoning. The legal justification for this is that because the province has chosen to exercise jurisdiction with respect to mining, this jurisdiction is not available to local government.

However, the presumption of mining priority can be disruptive, especially where municipal planning processes are well developed. For example, with respect to the Avon Peninsula, the Municipality of West Hants has made considerable progress in providing a framework for growth and development going back to 1970. The Municipality recognized the rural and agricultural character of the peninsula in 1991 by zoning the area Agriculture Priority in its planning documents. An ongoing plan review affirms general development goals that include maintaining a “quiet, rural atmosphere” as desired by respondents to the 2002 Plan Review Survey; recognizing the poor supply of potable water in the Municipality and the need for identification of potential sources of water; and protection of the natural environment, watercourses, and environmentally sensitive areas.

The agricultural priority designation for the Peninsula, including the interior upland woodland watershed, would seem to provide guidance for prudent land use compatible with the agricultural economy. However, in 2002 the Mineral Resources Branch granted a mining lease (Non-Mineral Registration 02) to United States Gypsum for an area covering nearly all the western half of the peninsula, an area zoned for agricultural priority development due to its excellent agricultural soils, a living heritage of mixed farming, and the local desire to conserve farm land and the investment in the farming economy. Subsequently, after assembling land in the area, the company brought forth a proposal for a 420-hectare open pit mine in the heart of the peninsula watershed.

In its comments for the Class 1 EA screening on March 6, 2008 the Department supported the proposal, commenting: “DNR supports the development of the Province’s resources when such development is conducted in an *environmentally and socially responsible* manner as outlined in this project description.” The Department of Environment postponed a final

decision on the proposal, pending more information regarding impacts on ground and surface water, wetlands, species-at-risk, and fish habitat.

The purpose of Part 8 of the Municipal Government Act includes “enabling the Province to identify and protect its interests in the use and development of land.” With respect to the Avon Peninsula, the Department of Natural Resources’ promotion of mining may be at odds with the Province itself insofar as it contradicts the “Statement of Provincial Interest Regarding Agricultural Land” and Sections 196 and 197 of the Municipal Government Act:

Planning documents must identify agricultural lands within the planning area. Planning documents must address the protection of agricultural land. Measures that should be considered include: giving priority to uses such as agricultural, agricultural related and uses which do not eliminate the possibility of using the land for agricultural purposes in the future. Non-agricultural uses should be balanced against the need to preserve agricultural land. *The activities of the Province shall be reasonably consistent with a statement of provincial interest.* 1998, c. 18, s. 196. A department of the Province, before carrying out or authorizing any development in a municipality, shall consider the planning documents of the municipality. 1998, c. 18, s. 197. Municipal Government Act. [Emphasis added.]

The proposal for a gypsum mine in the Avon Peninsula watershed involves blasting a pit over 3 kilometers long, up to nearly a kilometer wide, and 70 meters deep. People might ask in what sense this is “environmentally and socially responsible” and “reasonably consistent” with the long-standing agricultural zoning on the Avon Peninsula. The Peninsula itself is only 5 kilometers long.

For the Department’s approach to land use planning to have credibility in Nova Scotia, it must move from a narrow focus on resource extraction to a more inclusive *integrated environmental planning* approach. The Department and the Mineral Resources Branch have significant budget constraints and limited capacity for integrated environmental planning. Thus they will need to collaborate with other departments, local government, non-governmental groups and the public, and formally include these groups in decision-making.

A good start would be to recognize the planning and stewardship work carried out by other provincial entities. Thus the protected areas network should be completed, and a system put in place that will deliver new protected areas as candidates arise in view of new scientific information and government’s commitment to protect the province’s natural assets. Likewise the Province’s commitment to protect agricultural land through the Municipal Act should be recognized. Local planning should be recognized, including the efforts of non-governmental community groups.

***Recommendations:***

***In the new strategy, shift from a narrow planning focus on resource extraction to a more comprehensive integrated environmental planning. Collaborate with other Departments,***

*local governments, non-governmental groups, communities, and the public and formally include them in decision-making.*

*Complete the protected areas network and put in place a system to deliver new protected areas as new candidates arise. Establish buffer zones between incompatible land uses.*

*Adopt criteria for determining the acceptability of mineral exploration, extraction and transport from ecological and social perspectives.*

*Abide by existing legislation with respect to the “Statement of Provincial Interest Regarding Agricultural Land” and Sections 196 and 197 of the Municipal Government Act. Amend the Municipal Government Act to enable local planning control over mining.*

*Establish a multi-stakeholder “Nova Mineral Alliance” advisory group on mineral exploration and development similar to the Nova Forest Alliance.*

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## **5. Water, Biodiversity, and Greenhouse Gas Emissions**

Three aspects of integrated environmental planning which merit particular attention are water, biodiversity, and greenhouse gas emissions. If we can conserve and enhance biodiversity, the quantity and quality of our water resources, and reduce greenhouse gas emissions, we will have gone a long way toward achieving sustainability.

1. *Water.* With respect to water, the department claims IRM conveys sustainable development principles. In other IRM processes, this is achieved by a strong focus on how existing and proposed development affects the quality of water. In Nova Scotia 40% of rural residents depend on unprotected ground water resources. However, water is under the jurisdiction of the Department of Environment and so water quality is not fully considered in IRM decisions within the Department of Natural Resources.

Accordingly the last few years have seen major mining projects proposed and approved in or adjacent to sensitive watershed areas, e.g., the East Kemptonville tin mine, the Black Bull quartz mine, the Gays River lead and zinc mine, the Bouladerie Island coal mines, the Moose River gold mine, and the proposed gypsum mine on the Avon Peninsula. Indeed the Gays River mine is an open pit operation that occupies the former bed of the river, which was diverted to make way for the mine.

As noted above, the Department of Environment has formal responsibility for regulating water quality and quantity. However, the Geological Services Division is located in the Mineral Resources Branch of the Department of Natural Resources and constitutes most of the province’s capacity with respect to geological science. It is unclear how much of this capacity is allocated to environmental planning as distinguished from the promotion of mining.

The Division's collaboration with the Department of Environment with respect to groundwater resource mapping is a noteworthy initiative. A groundwater vulnerability database would be helpful in developing an integrated environmental planning process that would determine where mining and other heavy industrial activity would be inappropriate. For example, the karst geology of the Avon Peninsula suggests that the watershed is particularly vulnerable to contamination and disruption. In other jurisdictions, e.g., Switzerland, mining would be prohibited in such areas. Groundwater vulnerability mapping in agricultural watersheds is particularly urgent in view of climate change and food security concerns.

Nova Scotia is a small province and there is water nearly everywhere. If Nova Scotia is to be "clean and green" then in operational terms this means first of all that our water be pristine. A sustainable mineral policy would ensure adequate buffer zones around all watercourses. This includes streams, rivers, lakes, wetlands and groundwater. Secondly, it would prohibit effluent discharges into watercourses, even at minimum levels of toxicity. Thus 100 percent self-contained mining systems should be the standard with respect to water use and discharge.

If the mining industry protests that this is an unrealistic standard, then this is an acknowledgement that it cannot operate without causing harm to the environment.

2. *Biodiversity*. The United Nations Convention on Biological Diversity defines biodiversity as: "The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems." There is a substantial literature devoted to best practices in mining and biodiversity, much of which originates from industry or multisectorial initiatives. One best practice is the establishment of "no-go" zones where mining will be prohibited.

The mining industry has traditionally been reluctant to support policies that reduce the area of land available for mineral exploration and mining. One reason for this is that while exploration may cover hundreds of thousands of hectares, commercially viable mineral occurrences and potential mine development occur on only a fraction of the area explored. Thus the industry seeks to maximize access to land for exploration in hopes of finding a viable mineral occurrence.

However, this view is perhaps changing insofar as the industry recognizes that the public wants more protected areas and a more responsible approach to mining. There is also a growing public recognition that exploration itself can have considerable impact on the environment as it opens up access to undeveloped areas via line cutting, road building, test drilling, bulk sampling, etc. In response to these concerns various industry bodies have developed biodiversity policies that, on paper at least, recognize the validity of no-go zones.

For example, the Mining Association of Canada has issued a Mining and Biodiversity Policy Framework that commits association members to "integrate the importance of biodiversity

conservation, including respect for critical habitat, into mining and land-use planning and management strategies, including considering the option of not proceeding with a project.”

The Mining, Minerals and Sustainable Development (MMSD) project is an international multi-stakeholder initiative that has developed criteria for a sustainable minerals industry, including biodiversity. The International Council on Mining and Metals (ICMM) is an industry led offshoot of MMSD. As a result of ongoing work between the ICMM and the International Union for the Conservation of Nature (IUCN), the ICMM has recently accepted World Heritage Sites as “no-go” areas and is open to other kinds of “no-go” areas.

The IUCN has developed a system of six categories of protected areas according to management objective. Nova Scotia could achieve world recognition for its protected area system by choosing not to permit mining in IUCN protected area categories I, II, and III. These categories roughly correspond to the province’s Wilderness Areas, Nature Reserves, and lands under conservation easements. This would be consistent with “legally protected” lands as defined by the province’s Environmental Goals and Sustainable Prosperity Act.

One component of a system to deliver new protected areas could be the use of *provincial zoning regulations* as suggested in a 2008 report by the Margaree Environmental Association (MEA). Conserving Biodiversity in the Mabou Highlands: Land-use planning as an approach to conservation by Chris Miller proposes a method for conserving biodiversity on a landscape level. With the Mabou Highlands as a case study, the MEA report proposes a conservation model using zoning to protect ecologically significant areas on Crown and private lands. This model is similar to the successful 1973 Niagara Escarpment Model. A Provincial zoning process could be used to protect the Mabou Highlands and other ecologically significant areas in the province.

Collaborating in the development of the province’s water strategy and the coastal management framework would be a good opportunity to development interdepartmental coordination and cooperation with respect to the impact of mining on water and biodiversity.

3. *Greenhouse gas emissions.* Mining is a fossil fuel intensive, greenhouse gas producing activity, particularly with respect to the high volume production and long distance transportation of bulk gypsum. The production, transportation and burning of coal is also highly greenhouse gas producing. Although air emissions are the formal responsibility of the Department of Environment, the Mineral Resources Branch has responsibility for sustainability in the mineral industry. A strategy to reduce the greenhouse gas emissions of the industry would be to phase out gypsum export and coal production.

***Recommendations:***

***In the new strategy adopt a biodiversity framework to guide integrated environmental planning and the regulation of mining. Reserve IUCN protected area categories I, II and III as no-go zones. Consider a system of provincial zoning regulation to deliver new protected areas.***

*Adopt a 100 percent self-contained water use standard for mining systems including buffer zones from all watercourses and zero discharge of effluents into watercourses.*

*Collaborate in the development of the provincial water strategy and the coastal management framework, particularly with respect to the application of geological science to environmental planning.*

*Collaborate with the Department of Energy and the Department of Environment to reduce greenhouse gas emissions in the mineral industry.*

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## **6. Mineral Legislation Reform**

Mineral legislation reform should be seen in the larger context of the need to create an *unambiguous legislative hierarchy*, with sustainability at its heart, governing all resource decision making in the province.

Currently, integrated environmental planning and sustainable resource management is hampered by the patchwork of acts, regulations, policies, and guidelines that govern resource use. Resource decision making is fragmented across departmental and sectoral lines, including minerals, forests, agriculture, fisheries, transportation, land use planning and development, pollution, air, water, and energy. Jurisdictions are sometimes ambiguous, overlapping, or inappropriate. The challenge is to create one integrated framework to replace the many present resource-use regimes.

The sustainability provisions of the province's 1994 Environment Act and the 2007 Environmental Goals and Sustainable Prosperity Act are significant steps in this direction. Section 6 of the Environment Act states that where there is a conflict between it and any other act, the Environment Act prevails. In practice, however, application of the Act seems to be hampered by sectoral barriers.

Discussion of the development of an integrated resource decision making system for the province is well beyond the scope of this paper. However, reform of the Mineral Resources Act as discussed below might be helpful in removing barriers to sustainability with respect to mineral management in the province.

The Nova Scotia Mineral Resources Act is focused on mineral exploration and mining, and tends to promote mineral resource extraction over mineral stewardship and other land uses. The stated purpose of the act is "to support and promote responsible resource management consistent with sustainable development" while recognizing the goals of providing a mineral rights administration; encouraging, promoting and facilitating mineral exploration, development and production; providing a fair royalty regime; and improving the knowledge of mineral resources in the province. s. 1A. Although sustainable development is cited as the purpose of the act, there are no provisions in the act to encourage, promote, or develop sustainability.

Furthermore, provisions of the act are at odds with sustainability, in that they tend to subordinate all other land uses, including the interests of private property owners, to the interests of resource extraction. A level of certainty in mineral rights tenure and the ability to exercise those rights is a requirement for mineral resource development and maintenance of interest in mineral investment. However, mineral rights and development must be subject to the requirements for sustaining ecological integrity and biodiversity of natural areas, as well as the economic and social sustainability of local communities.

A minimal approach to reform of the Act might be to ensure the integrity of conservation easements and private property, the integrity of protected areas, provision for new protected areas, and regulation of aggregates.

1. *Integrity of conservation easements and private property.* Although s. 21, s. 39, and s. 59, require the consent of the landowner for mineral exploration and development, where the holder of an exploration or special licence or a mineral lease is unable to obtain an agreement with the landowner to enter upon and work their land, under s. 70 and s. 100, the licence or leaseholder can apply to the Minister for the right to enter and work the land. The landowner or tenant has *no right of appeal* of the Minister's decision. Nova Scotians are uncomfortable with the notion that they do not have certain enjoyment of their property—it can at any time be subject to mineral exploration or be expropriated for mining. Thus s. 70, Application for right in land, and s. 100, Surface rights permit, should be removed from the Act to ensure integrity of private property.

Furthermore this provision is inconsistent with the Province's commitment to legally protect twelve per cent of the total landmass of the province by 2015. As the total protected land area includes private property protected by conservation easements, and this land is subject to s. 70 and s. 100, land under conservation easements cannot be considered protected.

2. *Integrity of protected areas.* The Minister “may withdraw any lands in the Province from being subject to application for an exploration licence for all or certain minerals.” s. 22. However “lands withdrawn from being subject to application for an exploration licence may be explored and mined pursuant to a special licence or special lease granted for all or certain minerals by the Minister with the approval of the Governor in Council.” s. 22. Again, this provision is inconsistent with the public's expectations with respect to the meaning of protected areas.

3. *New protected areas.* S. 82 Remedies of the Minister and s. 94 Review of permit provide for Ministerial review and cancellation of mineral and non-mineral registrations in the event of certain non-performances of the lessee. However, as quoted above from the Department's business plan, “the province's natural resources must be managed on a sustainable basis and their values, which can change over time, must be considered and taken into account when decisions are made concerning resource uses.” As values change from resource extraction to conservation and sustainability and our knowledge of Nova Scotia's special and sensitive areas increases, it is important to have the capacity to revoke mineral rights in order to deliver new protected areas.

4. *Aggregates*. There is no legislation to govern the mining or quarrying of aggregates—sand and gravel—in Nova Scotia, although aggregates are covered under the province’s *Pit and Quarry Guidelines*. Given the proliferation of pits and quarries and their impact on the environment and communities there is a need for stronger governance in this area.

***Recommendations:***

***Remove s. 70, Application for right in land, and s. 100, Surface rights permit, from the Mineral Resources Act to ensure integrity of private property and conservation easements.***

***Remove s. 22 to ensure integrity of protected areas.***

***Enable mineral rights to be revoked where the exercise of those rights would conflict with the delivery of new protected areas to ensure protection of Nova Scotia’s natural, human, and social assets.***

***Legislate a Mineral Aggregate Act to govern the mining or quarrying of aggregates in Nova Scotia. Include provisions for royalties, returns to the local community, reclamation, and environmental assessments for all pits and quarries, including those under 3.9 hectares.***

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## **7. Mineral Stewardship Certification**

Policy 5.1 of Minerals: A Policy for Nova Scotia 1996 is “encourage the mineral industry to minimize environmental disturbance during mineral exploration and development. The department will advocate that all parties use management practices that are designed to anticipate and minimize environmental disturbances that are better than the minimum requirements where possible” (p 19).

In the forest industry, suppliers of wood products are under increasing pressure from purchasers of wood products to adopt forest certification systems as the public becomes more concerned about unsustainable forest practices. Public and investor concern about the impacts of the mineral industry is also increasing. Examples of responses to these concerns are the Dow-Jones Sustainability Index, the Carbon Project Index, and the Mining Certification Evaluation Project (MCEP) by WWF-Australia. NS Mineral Stewardship Certified products could be a valuable “brand” for industry and Nova Scotia.

***Recommendation:***

***Recognize environmental and social values practiced by mineral companies that work in Nova Scotia by establishing a third-party Mineral Stewardship Certification system for new mines in Nova Scotia.***

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## 8. Environmental Assessment

Policy 5.2 of Minerals: A Policy for Nova Scotia 1996 is “support an effective and timely environmental assessment process. The Department of Natural Resources will work closely with the Department of the Environment to seek opportunities to improve efficiency in the environmental assessment processes while maintaining the highest possible standards” (p 19).

However, the province’s approach to environmental assessment is not working. Communities across Nova Scotia have lost faith in the process, particularly with respect to mining. This is because the process *excludes communities* from meaningful participation in decisions about the use and commitment of resources that impact individual well-being and community viability. Despite well-intentioned efforts on the part of administrators, the process tends to discourage participation, encourage conflict, and foster mistrust.

50 mine and quarry proposals greater than 3.9 hectares in size (new and expansion) were registered for Class 1 Environmental Assessment with the Province between April 1992 and August 2007. Of these, 42 proposals or 86 percent were approved at the Class 1 screening level. Of the remaining 8, the government eventually rejected 1 and approved 6. One of the proponent’s withdrew their application. One proponent eventually submitted a new application for a modified project, which was approved. Thus of the 50 proposals registered for environmental assessment, 48 proposals or 96 percent were eventually approved.

Bilcon’s proposed White Point Basalt Quarry was assessed as a comprehensive study under the Canadian Environmental Assessment Act and undertaken as a joint federal-provincial process. Through the efforts of the local community it was eventually raised to a full panel review. The panel rejected the proposal in 2007, and made several recommendations to the provincial government, including making improvements in the public participation process and implementing a moratorium on mining and quarry development on the North Mountain until a coastal management plan is in place.

| Nova Scotia Class 1 Environmental Assessments<br>Mines and Quarries (1992-2007) |          |          |           |           |
|---|----------|----------|-----------|-----------|
| Total   | Approved | Rejected | Withdrawn | Reapplied |
| 50  | 48       | 1        | 1         | 1         |

| Nova Scotia Extended Class 1 Environmental Assessments<br>Mines and Quarries (1992-2007) |                               |      |                  |            |            |
|--|-------------------------------|------|------------------|------------|------------|
| Proponent  | Project                       | Year | Decision 1       | Decision 2 | Decision 3 |
| Pioneer Coal Ltd.  | Stellarton Open Pit Coal Mine | 1992 | More Information | EA Report  | Approved   |

|  |  |      |                  |           |           |
|--|--|------|------------------|-----------|-----------|
| Northumberland Rock  | Georgeville Quarry   | 1996 | Focus Report     | Withdrawn |           |
| Riverland Developments   | Upper Sackville Rock Quarry                                | 1997 | Focus Report     | Rejected  |           |
| Black Bull Resources   | White Rock Quartz, Kaolin and Mica Mine                    | 2001 | More Information | EA Report | Approved* |
| Mark-Lyn Construction  | South Bishop Soil/Peat and Aggregate Operation             | 2004 | More Information | Approved  |           |
| Thomas Brogan & Sons Construction  | Point Aconi Phase III - Surface Coal Mine                  | 2004 | More Information | Approved  |           |
| Pioneer Coal Ltd.  | Surface Coal Mine and Reclamation Project-Prince Mine Site | 2005 | More Information | Approved  |           |
| DDV Gold Ltd   | Moose River Gold Mines                                     | 2007 | Focus Report     | Approved  |           |
| *Black Bull Resources withdrew, reapplied as quartz only mine, and was approved. |  |      |                  |           |           |

Significant public participation (e.g., comment on the terms of reference) is required *only* for Environmental Assessment Reports. Thus, of the 50 proposals, the public was invited to comment on the terms of reference for two mining proposals, or 4 percent.

In “Time for a new approach to public participation in EA: Promoting cooperation and consensus for sustainability,” M. Doelle and A.J. Sinclair describe how the Nova Scotia environmental assessment process has gone astray by eliminating meaningful public participation. This may also go some way toward explaining the extraordinary high approval rate for mining proposals registered for environmental assessment. Doelle drafted the Nova Scotia Environment Act, which includes environmental assessment in Part IV.

The Nova Scotia EA (1994) process offers a good illustration of the problems associated with a focus on process rather than outcomes of public participation. The Nova Scotia EA process is set up to require all undertakings to be registered with the provincial department of the environment. A notice of the registration is then made public and interested parties are given 30 days to comment on the registration. Following this, the Minister decides whether an EA is needed and at what level of assessment.

These legislative steps have the potential to provide a good starting point for public participation, especially if the registration documents are filed as early as possible in the project planning stage. Assuming the public is only expected to indicate its level of interest in the project within the initial 30-day notice period (as opposed to being expected or required to make final substantive comments on potential concerns with the project), and the decision by the Minister is simply based on what level of assessment is justified based on a combination of the nature of the project and the

level of public interest, one might consider this to be an effective legislative framework for ensuring early and meaningful public participation.

In practice, however, quite the opposite has occurred. First, the public is expected to make substantive comments on the proposal within the 30-day notice period, not just indicate its level of interest or concern. Making substantive submissions about complex technical and scientific issues is impractical, especially considering that many members of the public will have to hire that expertise to make any convincing submission on the substance. Further, the provincial administrator of the EA process has developed a practice of encouraging proponents to file draft registration documents for review by government officials, and to file a completed environmental impact statement (EIS) with the registration document.

On the surface, this may seem to be a constructive approach, putting more and better information before the Minister when she decides on the form of the EA process, and encouraging early and open lines of communications between the proponent and the administrator of the EA process. On closer examination, however, this has turned an early process decision into the final project decision and has eliminated the public from the process. Whatever the motive, the effect of this practice is that the provincial administrator essentially encourages the proponent to complete the EA before there is any required public participation.

The EA process has essentially become a private matter between the proponent and the department, with the public seen as an intruder after the fact, at a minimum in the sense that it is a threat to the common preliminary understanding achieved between the proponent and the regulator. Not surprisingly, over the past few years, most registered undertakings in Nova Scotia have been approved at the registration stage without any public involvement beyond the 30-day notice of registration. (M. Doelle and A.J. Sinclair, “Time for a new approach to public participation in EA: Promoting cooperation and consensus for sustainability,” Environmental Impact Assessment Review 26 (2006) 185–205.)

Doelle and Sinclair make a number of recommendations relevant to the role of environmental assessment in mineral policy, including requiring mandatory early notification and call for public comment and participation at the initial stage of the proposed project, early consideration of alternative paths to community sustainability, and shifting from adherence to a formal process to a focus on consensus and a sustainable outcome.

The Department of Environment has formal responsibility for administering environmental assessment of mining proposals under Part IV of the Environment Act. Department of Natural Resources staff see themselves as having only a limited role in environmental assessment.

However, the Department of Natural Resources has a *de facto*, perhaps *decisive*, impact on the EA process with respect to access to land, the “One Window” process, Departmental review, and executive council.

1. *Access to land.* Through its administration of the Mineral Resources Act and the provincial mineral rights tenure system, the Mineral Resources Branch controls what land is accessible for exploration and extraction. Access to land is the first stage in the mining cycle, and making land available for exploration and extraction is a de facto environmental planning decision entirely under the authority of DNR. As noted above, the Department's philosophy of multiple-use and the exclusive focus of its IRM planning process on resource extraction makes land available that under a more inclusive and comprehensive process might not have been considered acceptable for mineral activity in the first place. By giving access to land and granting an exploration permit or mineral lease to a mineral company both the department and the lessee are already developing a shared expectation that mining will occur, with environmental assessment and permitting as just another step in the mining cycle.

2. *The "One Window" process.* Through the "One Window" process, the Mineral Resources Branch coordinates interdepartmental reviews of mineral development projects. The process is designed to minimize the cost and effort required for proponents to meet regulatory requirements. At the same time however, the process serves as an ongoing de facto environmental assessment process that may precede by several years formal registration for environmental assessment by the proponent. During this time the project builds momentum and a shared understanding that mining will proceed, and government staff are dependent primarily on the proponent for detailed assessment of the project area, the predicted impacts of the proposed project, the efficacy of proposed mitigations, and the degree of acceptance of the local community.

3. *Departmental review.* The Department's comments during the formal environmental assessment following registration are filtered through its multiple-use philosophy, its focus on the promotion of mining, and its commitment to the project as both the proponent and the department have by this time expended considerable effort and cost through the One Window process. Thus, for example, biodiversity concerns raised by the department's Wildlife Division will be addressed by conditions to mitigate the worst of the effects of a project that is nonetheless endorsed by the department as sound.

4. *Executive council.* Finally, the Department's view carries weight at Executive Council where the Minister of the Environment must gain support from his cabinet colleagues, especially the Minister of Natural Resources, with respect to decisions on major projects.

For Nova Scotians to have faith in the environment assessment of mining proposals, local communities must be valued and have *the right to choose their own development path*. All proposed mines and quarries, including those under 3.9 hectares, must be subject to environmental assessments. Where there is public concern and/or potential to harm the environment, the assessment must include a full public review with meaningful public participation, as required under Part IV of the Environment Act. Government will earn the trust of communities by ensuring that the proposal is accepted only if it will produce a durable economic, environmental, and social net benefit to the local community and only if it is consistent with community values.

***Recommendations:***

***Work with the Department of Environment to support an effective environmental assessment process, particularly with respect to ensuring meaningful public participation. Require mandatory early notification of mining proposals and call for public comment and participation at the initial stage of the proposed project. Shift from adherence to a formal process to a focus on consensus and a sustainable outcome.***

***Design and implement a “one window” process to minimize the cost and effort for communities to respond to mining proposals, to identify alternative paths to community sustainability, and to participate in environmental assessments.***

***Establish no go zones and sustainability guidelines to reduce the number of inappropriate proposals that reach the EA stage.***

***Require environmental assessments of all mines, pits, and quarries, not just those exceeding 3.9 hectares.***

***Ensure that the full scientific resources of the Department, including the geological services division, are brought to bear on environmental assessments of mining projects.***

***Work with the Department of Environment to bring Community Liaison Committees under administration of a third party rather than the mine operator.***

***Shift administration of mine reclamation to the Department of Environment, which has ultimate responsibility for the reclaimed land.***

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## **9. Uranium Mining**

Policy 6 of Minerals: A Policy for Nova Scotia 1996 is “protect health and safety in the mining industry and the general public” (p 21). Of all mineral activity, the greatest *threat* to health and safety in the mining industry and the general public is uranium mining. Fortunately, the Province has had a moratorium on uranium exploration and mining in place since 1982. This ban should be made permanent, as the risks to miners, to communities, and to the environment are unacceptable. The uranium decay products in tailings piles remain toxic for hundreds of thousands of years, in human terms, forever.

Despite improvements in mining technology we cannot ensure that our air, water, soil, and food can be protected from these toxic materials once they are dug up. For example, the JEB Uranium Tailings Facility at McClean Lake in Saskatchewan is a state of the art facility with respect to uranium tailings waste management. Yet it has been the subject of a major court challenge regarding the environmental assessment of its safety. A uranium hexafluoride

plant in Port Hope using similar containment technology has been found to be leaking uranium and other contaminants into Lake Ontario.

The mining industry in Nova Scotia has been promoting nuclear energy as a solution to the climate crisis. However, we must not allow trying to solve global climate change to scare us into creating multiple crisis involving radioactive wastes, nuclear safety, and the proliferation of nuclear weapons.

Furthermore nuclear power will not solve the climate crisis. According to the Intergovernmental Panel on Climate Change, nuclear power accounted for 16 percent of the electricity supply in 2005 and could have an 18 percent share of the total electricity supply in 2030. Building nuclear plants is expensive and time consuming.

We can reduce carbon emission much more cheaply and quickly by investing in conservation and renewable energy. These provide jobs and business development without the risks, expense, and greenhouse gases associated with uranium mining and processing and the construction and decommissioning of nuclear power plants.

Finally, with respect to mining the province has a lack of capacity in environmental planning, environmental assessment, monitoring, and enforcement. The requirements for regulating uranium mining would overwhelm an existing capacity that is already strained.

***Recommendation:***

***Legislate a permanent moratorium on uranium mining.***

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## **10. Consultation**

Policy 7 of Minerals: A Policy for Nova Scotia 1996 is “encourage consultation and cooperative working arrangements between stakeholders. The government, industry and other stakeholders are all dependent on each other, therefore they must communicate and work closely together to ensure that the industry continues to prosper and benefit the people of Nova Scotia” (p 22).

In June 2008 the Department hosted a meeting between the Mineral Resources Branch and stakeholders represented by the Nova Scotia Environmental Network, including the APWPS. In our view this is a promising start toward better mutual understanding and cooperation. Regular meetings of this kind might go a long way to developing cooperative working arrangements with non-industry stakeholders as we work toward the shared goal of sustainability.

Currently the annual Mining Matters conference hosted by the Mineral Resource Branch serves primarily industry insiders. Encouraging the participation of other government departments, non-governmental organizations, community groups, and the public to

participate would provide a good opportunity for increased mutual understanding and collaboration.

***Recommendation:***

***Host regular meetings with non-industry stakeholders to encourage mutual understanding and cooperation.***

***Expand the Mining Matters conference to include non-industry perspectives.***

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## **11. Implementation**

Voluntary Planning expended considerable effort to produce Minerals: A Policy for Nova Scotia 1996. Now, over a decade later, many of its recommendations seem not to have been implemented, particularly those having to do with consultation, integrated planning and environmental protection.

***Recommendation:***

***Ensure that any new mineral strategy is accompanied by an action plan for implementation, accountability, and consultation.***

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Thank you for the opportunity to take part in the discussion. We look forward to reading the summary report.

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4 August 2008