Chapter 5
Lightening the Environmental Footprint of Aggregates in Ontario

Contents

The MNRF has addressed a few problems with aggregate extraction, but many long-standing issues remain.

Abstract

Sand, stone, and gravel, known as aggregates, are essential to build everything from highways to bridges. They help sustain and build Ontario's economy. However, aggregates come with a significant environmental and social cost. Aggregate extraction can often cause conflict, due to the location of the aggregate and/or how the operation is carried out.

The ECO, along with many others, has long called for an overhaul of the policy framework for aggregate approvals and operations. The government began a review of the governing law, the *Aggregate Resources Act*, in 2012 and, in 2017, amended the law and regulation in certain areas. The amendments have addressed some, but certainly not all, of the concerns raised by the ECO and other stakeholders. Significant opportunities remain on the table for lightening the environmental footprint of aggregates including: decreasing the need for new sites; ensuring the environmental protection at operating sites; and decreasing the environmental impact at end-of-use sites.

5.1 Introduction: The Inherent Conflict of Aggregate Extraction

Aggregates – sand, stone and gravel – are essential raw material for everything from the construction of highways and buildings to bridges, sewer pipes and water lines. Some types of aggregates are used to make toothpaste, make-up, and even the drywall used in virtually every home and office. Altogether, 14 tonnes per person per year is the often-cited estimate of Ontario's consumption of aggregates.[1]

However, our pervasive need for aggregates comes at a cost. The process of both siting and approving the operation of pits (sand and gravel) and quarries (solid bedrock material such as limestone and granite) is often highly controversial and divisive for many local communities. Few people want to live beside an aggregate operation or its haul roads as they typically generate dust and noise and increase truck traffic.

OUR PERVASIVE NEED FOR AGGREGATES COMES AT A COST.

Aggregate operations can also impact local water systems, wildlife, natural habitats, and farmland. In addition, as pits and quarries often cluster together in groups – where nature deposited the most desirable types of rock – cumulative environmental effects can arise. For example, some of the best sources for high-quality stone lie along the narrow ribbon of the Niagara Escarpment.

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Quick Aggregate Facts:

- The average brick house is built with approximately 12 truckloads (250 tonnes) of aggregate.
- One kilometre of 4-lane highway is typically built with approximately 1,430 truckloads (30,000 tonnes) of aggregate.
- One kilometre of subway tunnel is typically built with approximately 5,430 truckloads (114,000 tonnes) of aggregate.[2]

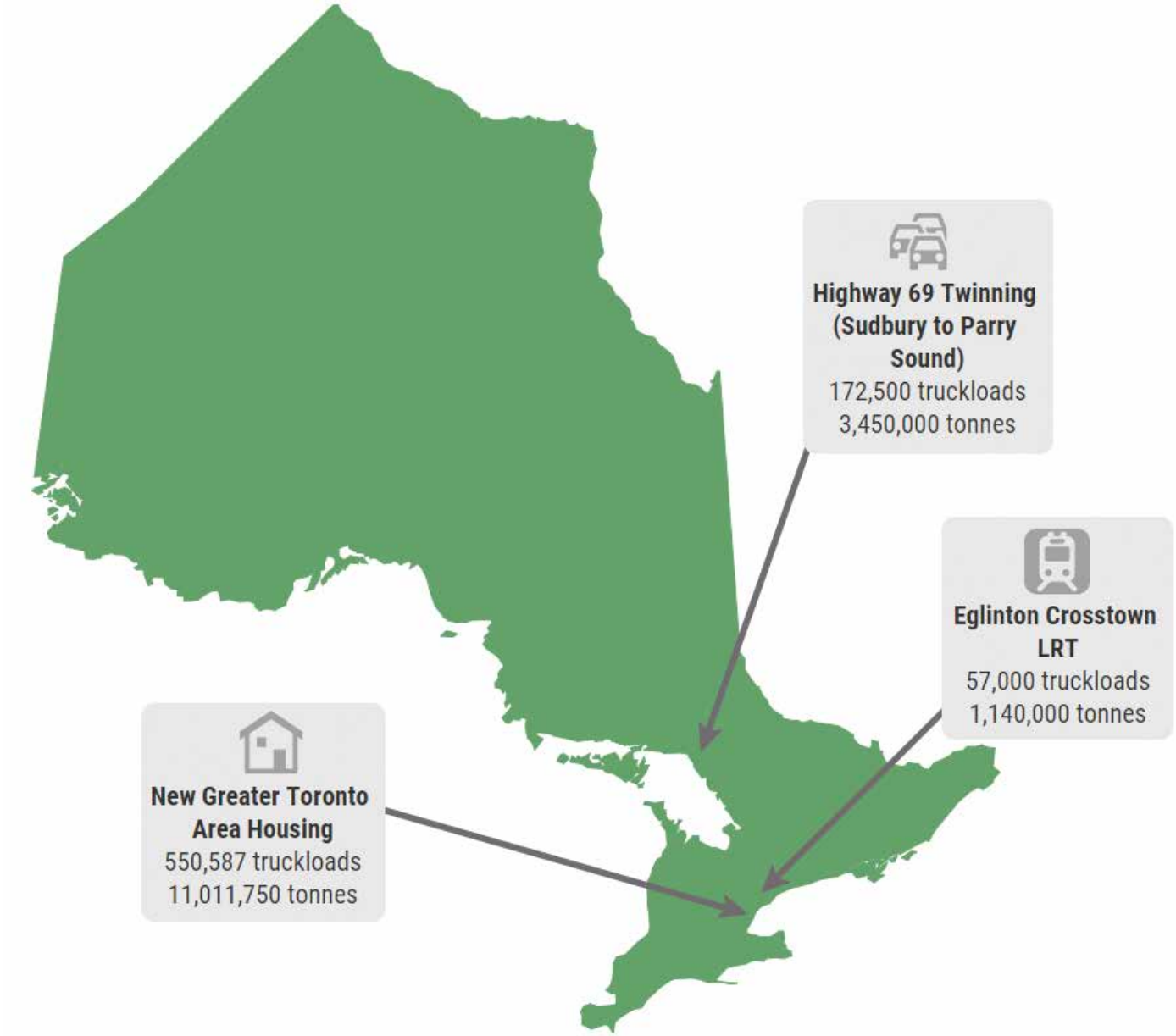

Figure 1. Example of recent Ontario housing and infrastructure projects and their relative aggregate requirements.

Source: Created by the ECO using data from: The State of the Aggregate Resource of Ontario Study Paper 1 - Aggregate Consumption and Demand; and Ryerson University, GTA 905/416 Charts: New Housing Starts (2006-2015).

5.2 How are Aggregates Regulated in Ontario?

The province's governance of aggregate operations involves both land use planning (governed by the Ministry of Municipal Affairs and municipalities in southern Ontario) and site-specific regulation (governed by the Ministry of Natural Resources and Forestry under the *Aggregate Resources Act*). Together, they make for a complex mix of rules and policy. Navigating this regulatory framework can be challenging and frustrating for members of the public.

5.2.1 Land Use Planning Rules Dictate Where a Pit or Quarry Can Operate

The decision on *where* a pit or quarry is located is determined first by where appropriate aggregate exists, because aggregates can only be dug up where geology has put them. Second, the location of a pit or quarry is determined by Ontario's land use planning policies, which put a very high priority on aggregate extraction.

ONTARIO'S LAND USE PLANNING POLICIES PUT A VERY HIGH PRIORITY ON AGGREGATE EXTRACTION.

Strictly speaking, *where* a pit or quarry may be located is determined, in southern Ontario and parts of the north, at the local level by a municipality's official plan. Municipalities develop their official plans by considering such factors as geology and the quality of local aggregate deposits, nearby development, and the long-term growth goals of the municipality.

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But municipalities do not have a free hand. Aggregate extraction gets powerful support from the *Provincial Policy Statement, 2014* (*PPS*), which all official plans must be consistent with. The *PPS* is the Ontario government's overarching planning policy, which sets out the provincial interests. The *PPS* sets high-level direction to protect aggregate extraction, dictating that municipal official plans shall: protect aggregate resources for long-term use; seek to locate pits and quarries as close to markets as possible; and protect aggregate supplies from conflicting development and activities that would hinder continued use. Finally, the *PPS* dictates that municipalities cannot require aggregate proponents to demonstrate a need for their product.[3]

Within this context of the high priority given to aggregates, local official plans are adopted and updated on a regular basis, with public input. During this process, interested parties have the opportunity to provide comment on the designation of any new lands for aggregate extraction (which is implemented through a zoning by-law, which must be consistent with the official plan). Unfortunately, at this early planning stage, the public is rarely motivated to be involved; few residents understand how an official plan might affect their lives, their family, or their property. Often, it is very far into the planning process when people become aware or engaged on specific aggregate applications, and by then the official plan may already be in place.

5.2.2 The *ARA*: How A Pit or Quarry Can Operate

The operation of aggregate sites is regulated by the Ministry of Natural Resources and Forestry (MNRF) under the *Aggregate Resources Act* (*ARA*). This law, its regulation and a complex suite of standards, policies and procedures outline how the sector is required to operate. Pits and quarries on private land need an aggregate licence, while operations on Crown land are issued aggregate permits. Different rules apply to licences and permits, including different application requirements, fees and royalties, and inspection targets.[4] In essence, the *ARA* approval authorizes the operation of a pit or quarry and determines how it must operate.

OFTEN, IT IS VERY FAR INTO THE PLANNING PROCESS WHEN PEOPLE BECOME AWARE OR ENGAGED ON SPECIFIC AGGREGATE APPLICATIONS.

Quick Aggregate Facts:

- There are more than 6,000 approved pits and quarries in Ontario.
- Approved sites cover just over 175,000 hectares of land across the province – this is about half the size of the state of Rhode Island.
- The majority of aggregate produced in Ontario comes from private land in southern Ontario, where most aggregate is also consumed and where development pressures are greatest (Figure 2).[5]

Many considerations go into the approval of an aggregate operation under the *ARA*. Starting at the application stage, the proponent must provide a number of plans and studies, addressing the natural environment, hydrogeological (in some cases) and cultural heritage considerations. Once completed and submitted, the proponent must conduct public consultation and ensure that all concerns are satisfied before the MNRF will grant the approval. If the proponent is unable to satisfy all concerns, the MNRF staff have the option to recommend to the Minister: to issue the approval nonetheless; refuse it; or, refer the application to the Ontario Municipal Board (OMB) to make a decision.[6] If the application is referred to the OMB, the process can take years and be prohibitively expensive, especially for members of the public. Once at this stage, the outcome of the application rarely satisfies anyone; but for the proponents at least, approvals are rarely denied completely.

THERE ARE MORE THAN 6,000 APPROVED PITS AND QUARRIES IN ONTARIO.

Quick Aggregate Facts:

- Ontario uses 164 million tonnes of aggregate each year.
- Each Ontarian uses approximately 14 tonnes of aggregate each year.
- The Greater Toronto Area consumes over 50 million tonnes of aggregate annually.[7]

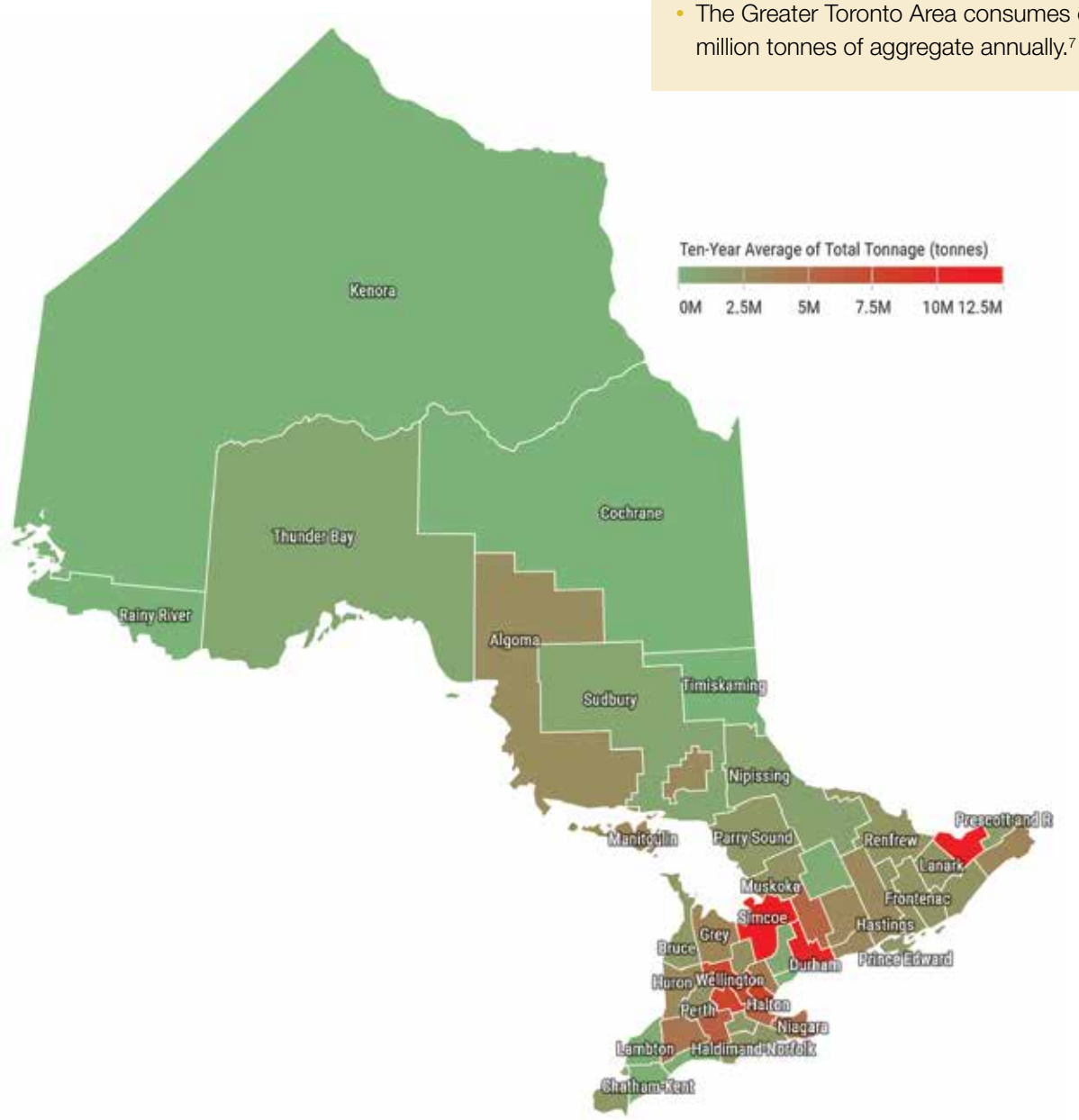

Figure 2. The ten-year average annual tonnage extracted (in millions of tonnes) within upper tier municipalities

Source: Created by the ECO using the Ontario Aggregate Resources Corporation's 2015 Production Statistics.

5.3 Government Review of the *Aggregate Resources Act* Framework

The ECO and many others have long called for an overhaul of the *ARA* to better address the challenges related to aggregate extraction. Finally, in 2012, the government began a review of the *Aggregate Resources Act*. Five years later, the law was updated to "modernize the province's resource extraction rules to increase environmental protections, boost competitiveness and create jobs and economic growth," according to the MNRF.[8]

The MNRF confined its changes to those that fall squarely within the ministry's own direct responsibilities under the *ARA*. Its new strategy, *A Blueprint for Change,* "sets out a blueprint of proposed changes to modernize and strengthen the [*ARA*] policy framework…".[9] No changes were made to the land use planning rules that give aggregate extraction priority over most other land uses.

The following is a summary of many key concerns that the ECO and others have raised over the last several decades,[10] and the extent to which government has addressed these concerns:

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NO CHANGES WERE MADE TO THE LAND USE PLANNING RULES THAT GIVE AGGREGATE EXTRACTION PRIORITY OVER MOST OTHER LAND USES.

Concerns with Aggregates Relating to Land Use Planning

Because the review of the *ARA* does not address land use planning, it will not resolve any land-use conflicts:

- **"Close to market" siting** – provincial land use planning policy directs that as much of the mineral aggregate resources as realistically possible be made available as close to markets as possible, which reduces transportation costs and greenhouse gas emissions, but creates conflicts with surrounding land uses.[11]
- **"Interim use"** – provincial land use policy refers to aggregate extraction as interim, meaning operations are intended to be temporary activities on the landscape, yet extractions often go on for decades, and the land is rarely returned to its original form.[12]
- **Demonstration of need** – provincial land use policy directs that proponents of aggregate sites cannot be required to demonstrate that their aggregate is needed, potentially creating a situation where sites are approved even when aggregate is not needed.[13]
- **Impacts on natural heritage** – provincial land use planning policy prioritizes aggregates over other land uses meaning aggregate sites can, in many cases, be located in provincially significant areas and landforms (e.g., wetlands, woodlands, species, etc.).
- **Cumulative effects** – clustered aggregate extraction sites in a relatively small area can cause a 'death by a thousand cuts' for the local environment.

Concerns with Aggregates Relating to the ARA (i.e., Approvals and Operations)

The *ARA* review has addressed some, but not all, of the major concerns with aggregate operations:

✗ **Rehabilitation of sites** – rehabilitation rates for end-of-use pits and quarries remain low, leaving long-term damage by not returning sites to useful land uses (see section 5.4.3).

✓ **Protection of source water values** – aggregate operations often conflict with source water protection, due to fuel handling and storage associated with aggregate operations in vulnerable municipal drinking water protection areas. The 2017 amendments to the *ARA* address this by authorizing the Minister to establish conditions on existing aggregate sites related to source water protection plans.

✗ **Impacts on natural heritage (e.g., groundwater, wetlands, woodlands, species, etc.)** – aggregate operations can have continuing impacts on the environment throughout their operating lifetime. Conditions in the aggregate approval to protect the environment are rarely updated to ensure ongoing environmental protection throughout the duration of extraction (see section 5.4.2).

✓ **Compliance and enforcement** – the MNRF had historically failed to meet its own inspection targets.[14] However, the MNRF appears to have improved their compliance and enforcement capacity. For example, the MNRF inspected, on average, 18% of all aggregate approvals per year since 2007.[15]

✓ **Fees and royalties** – the amount charged in fees and royalties has historically failed to provide a fair rate of return to the province for the use of the resource and administration of the program.[16] All aggregate operators must pay a specified amount to the government per tonne of aggregate removed per year. On Crown land, operators are required to pay a minimum of 50 cents per tonne per year in royalties and an annual fee of $200, all of which are retained by the provincial government.[17] On private land, operators are required to pay 11.5 cents per tonne per year in fees, which are disbursed as follows: 52% to the local municipality; 13% to the County or Regional municipality; 4% to the Aggregate Resources Trust; and the remainder is retained by the provincial government.[18] As part of the *ARA* review, the MNRF amended the regulation in July 2017 to update the fees and royalties and index them over time based on Ontario's Consumer Price Index.[19]

✗ **Public participation** – the approval process is proponent-driven, which often causes concerns about fairness and transparency; for example, misalignment between the consultation periods of the *ARA* and the *Environmental Bill of Rights* can cause the public to miss critical comment deadlines.[20] The ECO is disappointed and continues to be very concerned generally about this public participation issue with respect to the *ARA* (see Part 1 of this report). The ECO continues to monitor the MNRF's progress in improving the quality of their *ARA* notices on the Registry and the promptness of posting notices.

5.4 How Can We Lighten the Environmental Footprint of Aggregates in Ontario?

Although land use planning policy remains a significant challenge, there are many opportunities within the *ARA* policy framework to lighten the environmental footprint of new and existing aggregate operations. This section highlights three areas in which the MNRF could make real progress:

1. Decrease the demand for new or 'virgin' aggregate.
2. Strengthen ministry powers to update site-specific environmental requirements.
3. Improve rehabilitation rates (not just at the end of production life, but also during the decades of extraction).

5.4.1 Decrease the Demand for Aggregate

The most important way to decrease the environmental impact of aggregate extraction is to reduce our demand for new (or "virgin") aggregate. Shifting to increased use of recycled aggregate can alleviate the need to either open new or expand existing operations. In cases where the highest quality aggregate is not required, recycled aggregates could be utilized.

THE MOST IMPORTANT WAY TO DECREASE THE ENVIRONMENTAL IMPACT OF AGGREGATE EXTRACTION IS TO REDUCE OUR DEMAND FOR NEW (OR "VIRGIN") AGGREGATE.

Currently, only about 7% of aggregate used in Ontario is recycled material.[21] By contrast, some European countries use up to 20% recycled aggregate.[22] [23] If Ontario could achieve such a recycling rate, we could theoretically avoid extracting up to 33 million tonnes of new aggregate per year.

What is Recycled Aggregate?

Recycled aggregate is recovered aggregate materials from building demolition, road reconstruction, and other infrastructure projects that is re-engineered and re-used in new projects as a substitute for new aggregate.[24] Using recycled aggregate can not only reduce the demand for new aggregate but can avoid the need to dispose of reclaimed material in landfills. Properly engineered, recycled material that meets provincial construction standards can be used in a variety of applications including backfill and base material for roads and many other uses that do not require the highest quality aggregate.

Many Users Don't Consider Recycled Aggregate as an Option

Some Ontario organizations successfully use recycled aggregate at a high volume. For example, the Ministry of Transportation (MTO) has incorporated recycled aggregate into their operations for years; the Town of Erin, and the Toronto and Region Conservation Authority (TRCA) recently adopted procurement policies prioritizing recycled aggregate.

The MTO has been doing an excellent job using recycled aggregate in the construction and maintenance of Ontario's highways. From 2005 to 2008 (the most recent period for which data is available), up to 20% of the aggregate used in highway construction and maintenance by the MTO was recycled. Similarly, the Town of Erin's new procurement policy prefers sustainably sourced aggregate, which includes the use of recycled aggregate.[26] The TRCA has adopted a similar procurement policy for its operations.

Unfortunately, most other large volume users of aggregate in the province ignore recycled material. For example, Ontario municipalities use a high volume of aggregate for roads, bridges, and drainage. A survey of municipalities in the 2009 *State of the Aggregate Resource in Ontario Study* (SAROS) showed that most municipal official plans do not consider recycled aggregate in their procurement policies.[27] This perpetuates a preference for new aggregate in municipal procurement. The survey concluded that this is largely due to a lack of experience, unfavourable past experience, and the desire for high-performance materials.[28]

Another example is Metrolinx, the provincial agency that oversees transit operations including the GO Transit network. Metrolinx is a large consumer of aggregate for projects ranging from installing and maintaining the rail network to constructing and maintaining stations and related infrastructure such as parking lots. In fact, Metrolinx has built and operates over 65,000 parking spaces at GO rail stations, making it one of the largest parking operators in North America.[29] Many of Metrolinx projects (e.g., parking lots) do not require high-quality aggregate, making them an ideal organization to utilize recycled aggregate. However, Metrolinx does not appear to incorporate recycled aggregate in their construction or maintenance. Indeed, Metrolinx's Sustainability Strategy does not mention using recycled aggregate in their operations.[30] Metrolinx, as a Crown agency, should be a leader and not a laggard in green procurement, especially for a high-impact material such as aggregate.

METROLINX, AS A CROWN AGENCY, SHOULD BE A LEADER AND NOT A LAGGARD IN GREEN PROCUREMENT.

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What Can Government Do to Increase the Use of Recycled Aggregate?

The MNRF's recent review of the *ARA* framework included one very small measure to help promote the use of recycled aggregate. The *Blueprint for Change* proposed mandatory reporting and record-keeping for removal of recycled aggregate from sites.[31] This will allow for annual tracking of aggregate recycling occurring at sites regulated under the *ARA* and can provide trends in the use of recycled aggregate over time. Moreover, this should help increase transparency on the part of both government and industry, which is critical for keeping the public aware of how aggregate operations impact the environment.

Although the ability to track the movement and use of recycled aggregate over time is a good first step, it does not go nearly far enough to promote its use. To boost the amount of recycled aggregate used in Ontario, the province should do much more.

First, government intervention is needed to more fairly price recycled aggregate.[32] Currently, it costs a buyer about the same to acquire recycled aggregate as it does to buy virgin material. In some cases, recycled material can be even more expensive. A key reason for this cost disparity is that environmental costs (externalities such as impacts on water resources, species habitat and the landscape) and community impacts are not reflected in the price of virgin aggregate. The market failure to internalize these environmental costs skews

the economics of aggregates towards new extraction. Further, extraction fees charged for virgin aggregate are very low. Rapid growth in the recycled market could be expected if the MNRF gives recycled material a distinct cost advantage. This it could easily do by increasing the fees it charges for extraction of virgin material (as recommended by the Standing Committee report[33] and as proposed in the MNRF strategy document, *A Blueprint for Change*[34]). The ECO commends the MNRF for increasing the fees for operators to extract virgin aggregate; now, **the ECO recommends that the government use the additional funds from the increased fees and royalties to grow the market for recycled aggregate.**

Second, **the ECO recommends that the government adopt procurement policies across all ministries, agencies and Crown corporations that prioritize the use of recycled aggregate,** where appropriate. The government and broader public sector wield a significant amount of purchasing power for a vast amount of projects. As the MTO is already recognized as a leader in the use of recycled aggregate, their model could be expanded and applied to all ministries and the broader public sector. For example, the MTO could share their knowledge and experience on best practices for incorporating recycled aggregate into operations. A periodic public progress report on the recycling rates achieved by public sector agencies would help showcase leaders, success stories, and best practices.

Third, **the ECO recommends that the province make recycled aggregate procurement policies a prerequisite for municipalities to receive infrastructure funding.**

THE ECO COMMENDS THE MNRF FOR INCREASING THE FEES FOR OPERATORS TO EXTRACT VIRGIN AGGREGATE.

Finally, the government should invest in research and educational outreach to validate and share the engineering capabilities of recycled aggregate. Currently, the Aggregate Resources Trust applies a portion of aggregate fees towards rehabilitation research. Since the MTO is an acknowledged leader in recycling, the ministry could use a very similar approach in using fees to support aggregate recycling research. MTO-led seminars and workshops to share know-how among public sector aggregate users would also seem a productive approach.

Reducing the Demand for Aggregate in Buildings and Infrastructure

Use of Wood Building Materials

Another important way to decrease demand for aggregate is to increase the use of wood building materials. Using wood in the construction of buildings reduces the demand for aggregate by requiring less concrete in construction and decreasing the footprint of the foundation.

In Ontario, 2015 amendments to the provincial *Building Code* increased the maximum allowable height of wood buildings from four to six stories.[35] The first occupied, six-storey wood building in Ontario, known as Templar Flats, was completed in Hamilton in 2016.[36] Other jurisdictions allow larger wood buildings. For example, Quebec allows 12 storey wood buildings; a students' residence at the University of British Columbia in Vancouver, completed in September 2016, is an 18-storey wood building.[37]

Use of Green Infrastructure

Another opportunity to decrease demand for aggregate is through the use of green infrastructure. Green infrastructure is an approach to water management that protects, restores, or mimics the natural water cycle. Not only does it boost ecosystem resilience and enable adaptation to climate change, but it can also offset some demand for the aggregate found in traditional man-made engineering works such as ditches, culverts, storm sewers, catch basins, inlets, outfalls, and other water quality treatment devices.

Ontario has made some progress in promoting green infrastructure. This includes changes to the *Development Charges Act* that promote green space in developments, and the forthcoming update to Ontario's climate change adaptation strategy which includes a climate modelling collaborative that, in part, will assist in infrastructure risk assessments to help build resiliency.[38] These actions would likely drive a shift away from "gray infrastructure" as municipalities benefit from the reduced environmental and economic costs of implementing more green infrastructure.

Both of these initiatives fall under the Ministry of Municipal Affairs, not MNRF, which underscores the importance of cross-ministry cooperation to reduce aggregate demand.

Example of a bioswale to increase water absorption in a highway median.

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5.4.2 Ensure Existing Sites Keep Up With the Times

Beyond the initial environmental harm of establishing a pit or quarry, the operation of an aggregate site has ongoing impacts: dewatering (which affects water quantity in the area); water discharges (which can pollute water sources); and truck traffic, noise, vibrations and dust (which can negatively impact the surrounding community). As some pits and quarries operate for many years, or even decades, the MNRF badly needs to review long-operating pits and quarries to ensure that they continue to meet modern standards, and to reflect any changes in the environment and nearby communities.

Operating Conditions Are Rarely Updated

Once approved, aggregate operations can go on for many decades. The initial environmental protection measures, which are put into place at the time of approval of the operation's site plan, often remain unchanged for the duration, essentially frozen in time. This is unlikely to provide adequate protection over time, as the nearby landscape and communities change and as climate change impacts accelerate. For example, a drought could change water levels in the area, or a municipality could incorporate the site into a protection zone for its municipal drinking water, or another pit could open nearby. Any of these examples could warrant an altered approach to environmental management at an existing aggregate site. Improvements in environmental science and standards alone may justify new or different environmental protection measures.

Ontario's existing regulatory regime does allow for amendments to the operator's site plan, which can be initiated by either the operator or the Minister of Natural Resources and Forestry.[39] Amending a site plan is often a painfully slow process, and operators can appeal the minister's site plan amendments to the Ontario Municipal Board. Typically, such amendments are initiated only because the operator is planning to expand extraction, not to update environmental measures. The province needs more effective and nimble tools to update and strengthen environmental measures at existing approved aggregate sites.

What Can the MNRF Do to Minimize Environmental Impacts of Existing Operations?

The province has recognized the need for enhanced powers to update environmental protections at existing operations. The *Blueprint for Change* has proposed adding new powers for the MNRF, related to existing operations through future regulation.[40] The proposed powers would include the authority to require proponents to do additional studies or provide new information (which could inform and facilitate making site plan amendments), and add new conditions related to source water protection. For example, a new traffic study could lead to different routes for trucks going into and out of the extraction site.

The MNRF's proposed new powers are a modest step towards ensuring an increased level of environmental protection at existing aggregate extraction sites. However, to support and reinforce these new powers, the MNRF now needs a strategic, risk-based approach to identify which permits and licenses need to be updated.

The ECO recommends that the MNRF identify currently licenced aggregate sites that require studies and, if appropriate, update their operating conditions to ensure environmental protection. Note the public can also request this; the public does have the right to request a review of an existing aggregate approval (including seeking site-specific updates of environmental protection measures within the approval) under the *Environmental Bill of Rights* (*EBR*). The *EBR* affords Ontarians the ability to apply to have a ministry (in this case the MNRF) review certain instruments, such as an aggregate licence, under a formal process monitored by the ECO.

The ECO and the public expect a more responsive and nimble approach to increasing environmental protection standards for aggregate extraction. The perpetual grandfathering of approvals is no longer appropriate in the 21st century.

5.4.3 Improve Site Rehabilitation Rates

After use, aggregate sites should be rehabilitated. With a multitude of pressures on the dwindling natural areas of southern Ontario, it is not wise or sustainable to leave thousands of worked-out aggregate sites pock-marking the landscape. Left alone, such aggregate sites provide little natural habitat, regenerate only very slowly, and have risks of serious erosion and contamination of underlying aquifers, as noted in the ECO's 2006/2007 report, *Reconciling Our Priorities* (see "Our Cratered Landscape: Can Pits and Quarries be Rehabilitated?"). Rehabilitation of aggregate sites provides an opportunity to re-establish unique landforms and ecosystems previously lost, thereby potentially providing habitat for rare species of flora and fauna.

Low Rates and Poor Quality Rehabilitation

Rehabilitation has been a legal requirement for aggregate operations as far back as 1971. Under the current *ARA* regulatory framework, rehabilitation, both progressive and final, is mandated in each operator's site plan. Operators must also annually submit information on the amount of area disturbed and rehabilitated, as part of the Compliance Assessment Report.[41]

Despite these long-standing requirements, low rates of rehabilitation remain a chronic problem due to a lack of inspection and enforcement capacity in the MNRF.[42] For example, less than 60% of aggregate sites had done progressive (i.e., stepwise) rehabilitation of sites still under production, based on a 2009 survey for the State of the Aggregate Resource Survey (SAROS); the other 40% of sites had done no progressive rehabilitation.[43]

LOW RATES OF REHABILITATION REMAIN A CHRONIC PROBLEM.

Similarly, the MNRF's Operational Standards in the *ARA* policy framework set out minimum rehabilitation standards (allowing for variance or enhancement of these standards on a site-specific basis for the purpose of attaining higher-quality rehabilitation).[44] To support better rehabilitation, The Ontario Aggregate Resources Corporation (TOARC) has published a best practices manual offering a number of restoration and management practices to achieve the goal of maximizing biodiversity while minimizing maintenance costs.[45] Yet despite both the standards and best practices manual, SAROS found that operators were using a high number of non-native and in many cases invasive plant species at sites in rehabilitation, with a reliance on commercial seed mixtures.[46] Although more cost-effective for the operator, the use of non-native or invasive species, combined with commercial seed mixtures for rehabilitation will not achieve the goal of creating a native landform or useful habitat at an end-of-use aggregate extraction site.

The need to improve rehabilitation rates for the aggregate industry has been highlighted by many observers, including the ECO, by the SAROS report, and by the Standing Committee on General Government's Report.[47]

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What Can Government Do to Increase and Improve Rehabilitation?

The MNRF's strategy, *A Blueprint for Change*, proposes some strengthening of rules for progressive and final rehabilitation. One proposal will require an enhanced "summary statement" on applications to include rehabilitation, that is, a plain-language summary of what steps will be taken to carry out progressive and final rehabilitation. Currently, no such detailed statement is required. This would include information pertaining to the rehabilitation's compatibility with surrounding land uses, consideration of municipal land use plans, and performance indicators for monitoring and reporting.[48] The proposal also would establish a maximum disturbance area for all new applications to encourage progressive rehabilitation.[49] For operating sites, the MNRF proposes to enhance reporting requirements to better describe the extent and type of progressive rehabilitation that is occurring on the site.[50] These would be helpful steps, if they become reality.

Two key measures are missing, however, from the ministry's strategy. Together, they would go some distance towards improving progressive and final rehabilitation at aggregate sites.

The first is adequate compliance and enforcement. The MNRF must ensure that progressive rehabilitation is occurring as outlined in an operator's site plan. The MNRF has advised our office that since 2007 they have been inspecting about 18% of licences and permits annually, meeting the ministry's own inspection targets.[51] But, it is not clear whether the ministry's inspections place enough, or any, emphasis on a site's progressive rehabilitation efforts. At a minimum, the ministry should be annually compiling and publicly reporting progressive rehabilitation rates, based on its

site inspections. Compliance and enforcement statistics related to rehabilitation should also be published annually.

A second support for site rehabilitation would be introducing clarity around the required timing of rehabilitation efforts. Apart from the annual reporting requirement for progressive rehabilitation, the *ARA* policy framework does not provide any direction on timing for either progressive or final rehabilitation activities.[52] **The ECO recommends that the MNRF include clear timelines for progressive and final rehabilitation in the *ARA* policy framework.** The inclusion of clear timelines would provide assurance to both ministry staff, operators and other interested parties on timing expectations for both progressive and final rehabilitation.

5.5 Conclusion: Ontario Needs Aggregates but Could Do Better for the Environment

Ontario's aggregates are a vital, non-renewable resource. They provide the raw material for our buildings and infrastructure and are thus critical to our everyday lives. As population and economic growth drive increased demand for aggregate, our environment and communities will feel the increased pressures of extraction.

The *ARA* review did not look at any of the long-standing land use policy problems with aggregate extraction. These issues are a core part of the conflict between aggregate operations and the public. Nonetheless, the ongoing review of the *ARA's* regulatory and policy framework has made some progress to mitigate many of the chronic environmental issues. But the ECO believes that there are three areas that need urgent attention in this round of reforms:

First, by incenting and promoting aggregate recycling, reserves of high-quality aggregate can be put to the best possible use while mitigating the impact that new aggregate extraction sites have on the environment. The ECO commends the MNRF for increasing the fees for operators to extract virgin aggregate; **the ECO recommends that the government use the additional funds from the increased fees and royalties to grow the market for recycled aggregate.** Further, **the ECO recommends that the government adopt procurement policies across all ministries, agencies and Crown corporations that prioritize the use of recycled aggregate,** where appropriate. Finally, **the ECO recommends that the province make recycled aggregate procurement policies a prerequisite for municipalities to receive infrastructure funding.** For public transparency, the government should also periodically publish a list showing how much recycled aggregate is used by key public bodies.

Second, by updating (and, of course, enforcing) the environmental requirements of operating sites, the ongoing impact of aggregate extraction on the environment can be decreased. The ministry needs stronger powers to proactively review and update the site-specific environmental protection elements of currently operating sites, as needed. Building on the proposed new ability for the Minister to require existing operations to provide additional studies and information, **The ECO recommends that the MNRF identify currently licenced aggregate sites that require studies and, if appropriate, update their operating conditions to ensure environmental protection.**

And finally, adequate enforcement of progressive and final rehabilitation requirements will help ensure that restored sites can contribute much-needed ecological services, including habitat, the buffering of water quantities in times of flood and drought, and the protection of groundwater. **The ECO recommends that the MNRF include clear timelines for progressive and final rehabilitation in the *ARA* policy framework.** The ECO also urges the MNRF to report annually on rehabilitation rates, and related compliance and enforcement actions.

Endnotes

1. Ontario Ministry of Natural Resources, *State of the Aggregate Resource in Ontario Study (SAROS) Paper 1 – Aggregate Consumption and Demand* by Altus Group Economic Consulting (Toronto: MNR 2009) at 69.

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3. Ontario Ministry of Municipal Affairs and Housing, *Provincial Policy Statement, 2014* (Toronto: MMAH April 2014) at 27-28.

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