Alva Construction Limited

Hartville Quarry Expansion Project
Ellershouse, Windsor West Hants Regional Municipality, Nova Scotia

Environmental Assessment Registration Document for a Class 1 Undertaking – Section 9 (1) of the Nova Scotia Environment Assessment Regulations

April 2024

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CONTENTS

Appendices

List of Figures

List of Tables

1 PROJECT INFORMATION

Alva Construction Ltd. (Alva) is a construction company which operates aggregate quarries in Nova Scotia, which are an important source of aggregate material for many local and regional projects in Nova Scotia and the Maritimes. Hartville Quarry, located at 783 Ellershouse Road, Lot 769, in the community of Ellershouse, Windsor West Hants Regional Municipality (WWHRM), is an approved quarry under 4 ha which has been operated by Alva Construction for 16 years from 2008 and which is now reaching its maximum size. The company is applying for approval from the Province of Nova Scotia to increase the maximum allowed extent of the quarry to 10.118 ha allow the company to continue its operations over the next several decades. To do so requires an Environmental Assessment Registration approval under Part IV of the *Environment Act*. Alva is a provincial corporation registered under the Nova Scotia Corporations Registration Act. A copy of Alva's Joint Stock Registry Certificate is provided in Appendix E.

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1.1 PROJECT NAME

Hartville Quarry Expansion Project

1.2 GEOGRAPHIC LOCATION

The Alva Hartville Quarry is located in Ellershouse, Windsor-West Hants Regional Municipality (WWHRM), Nova Scotia, approximately 1.6 kilometers east of St. Croix, and 3.3 kilometers west of Newport Corner, Hants County, Nova Scotia at approximately UTM Zone 20, NAD83, Easting 0377947 and Northing 4914805 and PIDs 45407111, 45407905, and 45007903. The quarry is accessed by an unnamed gravel road leading off Ellershouse Road. The study area for the assessment is shown in Figures 1 and 2; and in Figures 3 to 7. The proposed quarry expansion area will be located entirely within the EA study area of 10.118 ha, and is shown in the project site plan (Appendix F).

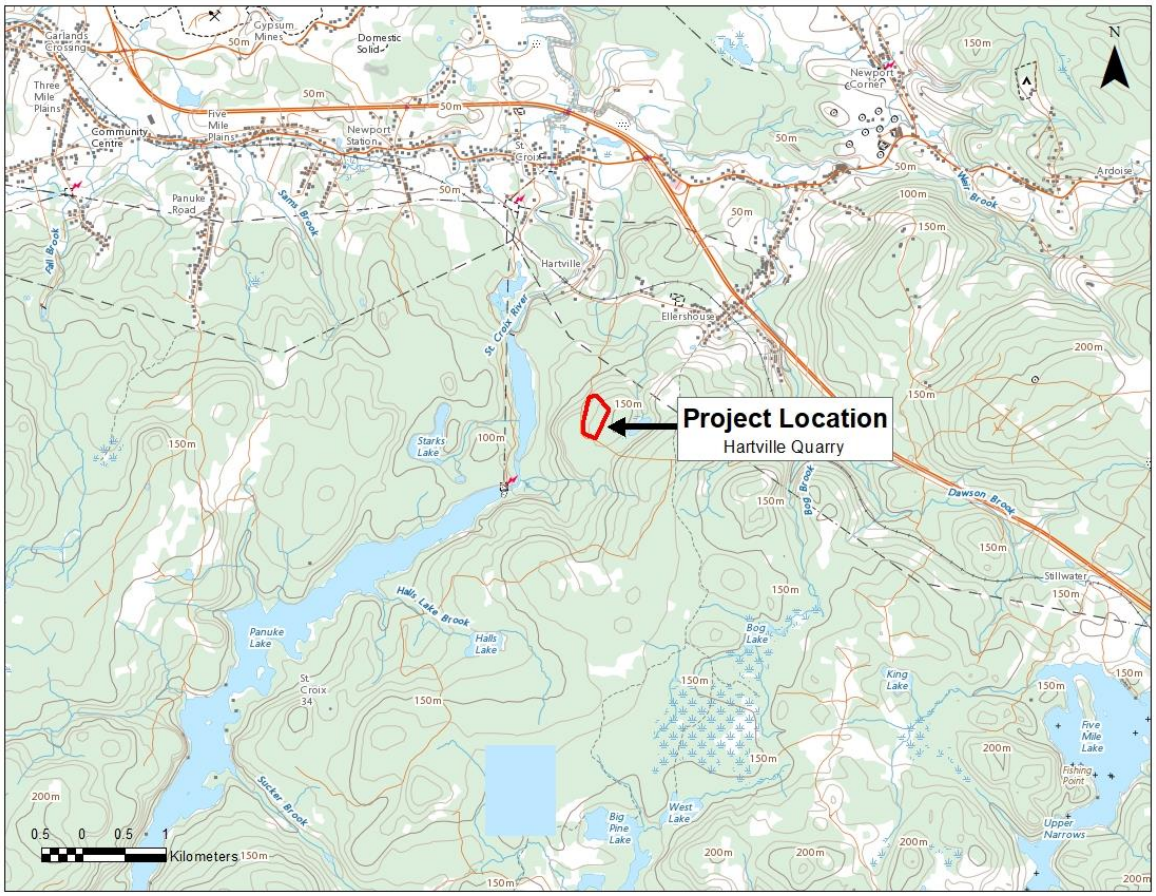

Figure 1. Project location shown on NTS 1:50,000.

2 SCOPE OF THE UNDERTAKING

Alva Construction Ltd. (Alva) owns and operates the Alva Quarry on leased land located near the community of Ellershouse, West Hants Regional Municipality, Nova Scotia. The existing quarry has been in operation for 16 years and is currently operating under a Nova Scotia Environment and Climate Change (NSECC) Industrial Approval (2008-061091-02) for a quarry than four hectares in area. It is located in a rural area surrounded by forest, rural residential properties, and the Ellershouse Wind Farm development. Hartville Quarry has an approved area of 3.988 ha.

Operations typically include a mobile crushing plant, weigh scale and scale house / testing lab, portable asphalt plant and heavy equipment such as front-end loaders, excavators, back hoes, bulldozers etc. for clearing and grubbing the site and move rock and aggregate. Aggregate is stored on site to be used for local private and commercial use, and provincial (NSDPW) highways projects. Aggregate is transported by truck along adjacent roads and the Provincial Highway network which includes Hwy 101. During past operations an average of approximately 25,000 to 75,000 tonnes of aggregate has been extracted per year from the quarry.

The quarry will operate entirely above the deep bedrock water table at approximately the same base level as at present (140 m above mean sea level), from which it will access successive upslope source material in stages.

Figure 2. Proposed expansion area and site features.

Alva intends to continue quarry operations on the property using existing infrastructure as the quarry expands over the next several decades. It is anticipated that future production will supply 25,000 to 75,000 tonnes of aggregate per year, as a result of the quarry expansion. The annual quantity may vary depending on local demand and associated project requirements.

2.1 Purpose / Need for the Undertaking

Expansion of Hartville Quarry is needed to produce aggregate to supply construction industries with locally-sourced aggregate and associated rock products. The primary benefit will be to supply market demands for aggregate in Nova Scotia. Availability of high-quality aggregate at competitive prices is important for further economic development in Nova Scotia.

2.2 CONSIDERATION OF ALTERNATIVES

Alva operates several rock quarries throughout Nova Scotia and uses modern industry standard methodologies in all phases of extraction, processing and delivery. Availability of a network of quarries within short trucking distances of projects is important. Alternatives to existing approaches are always being considered in terms of their efficiency, cost effectiveness and environmental mitigation advantages. Continuing operations of the Hartville Quarry will be assessed on an on-going basis to ensure that the best available techniques are being utilized in all phases of operations.

2.3 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

Registration for an environmental assessment of the proposed Expansion Project as a Class I Undertaking is necessary under the Environmental Assessment Regulations of the Nova Scotia *Environment Act*. This report provides information necessary to meet the primary requirements for project registration under this legislation, including descriptions of the human use and biophysical features of the local area, as well as an overview of the key Valued Environmental Components (VECs) and proposed mitigation measures for these components (Section 6.0). A summary of the interactions of the project with the local environment during all phases of the proposed undertaking is also provided.

The environmental assessment follows the Nova Scotia Environment guideline document, Guide to Preparing an EA Registration Document for Pit and Quarry Developments in Nova Scotia (NSEL 2008), and has been prepared in consultation with Envirosphere Consultants Limited, the principal environmental consultant for the project. It relies on the environmental consultant's experience and professional judgement of the scope of the proposed undertaking in relation to specialized knowledge, results of field studies, consultation with relevant regulatory authorities and government departments, and other desktop research of the biophysical environment. Identification, evaluation and recommended mitigation measures of the VECs for this project are with respect to all phases and activities of the project.

Figure 3. View of work areas at Hartville Quarry and surrounding area, facing north, July 14 2023.

2.4 REGULATORY CONSIDERATIONS

All activities at Hartville Quarry will be carried out according to Alva Construction Limited's approval for operating a quarry under 4 ha, and to the Nova Scotia Pit and Quarry Guidelines (2003). The Guidelines set out appropriate limits to operations of the quarry to reduce interference with land uses on adjacent properties; includes setbacks from property lines, watercourses and wetlands; sets allowable noise levels; airborne emissions levels; set blasting limits; and require execution of rehabilitation of the site at project completion. Equipment which may be operated at the site, such as an asphalt plant and crushing equipment, will have approvals specific to those operations regarding air quality and noise limits from Nova Scotia Environment. Operation of a quarry of the proposed expanded size is permitted with approval of the Minister of Environment after an environmental assessment; however the quarry is too small to require a federal approval under the *Impact Assessment Act (2019).* Regulatory considerations are presented in Table 1.

Several small wetlands will be disturbed the project, and therefore the project will require wetland alteration approvals under Activities Designation Regulations of the Nova Scotia *Environment Act*. One Species at Risk or species of concern—the Snapping Turtle—may occur in the general vicinity of the proposed study area and therefore the project may require special management consideration under the Nova Scotia *Endangered Species Act*. The site has been deemed unlikely to contain archaeological artefacts; however if artefacts are discovered during expansion the appropriate measures such as stop work and notification of the Province as per the Nova Scotia *Special Places Protection Act* will be undertaken. Activities have been described to the Mi'kmaq community to support both good relations and the support the Provincial government responsibility to consult the Mi'kmaq on matters which concern lands in Nova Scotia. Operation of Hartville Quarry as a sand and gravel operation is an allowed use in the area, which is zoned as "General Resource" under the Municipality of the District of West Hants Land-Use By-Law (WWHRM 2023).

Table 1. Regulatory considerations, Hartville Quarry Expansion, 2024.

Jurisdiction	Nature of Authorization	Responsible Agency	Comments
Federal	Fish Habitat, *Fisheries Act*	Fisheries and Oceans Canada	Not required. Fish habitat not present
	Species at Risk, *Species at Risk Act*	Environment and Climate Change Canada	Not required. No listed species present.
	Migratory Birds Convention Act	"	Not required. Any potential impacts on migratory birds will be impacted.
Provincial	Wetland and Watercourse Alteration Permits	Nova Scotia Environment and Climate Change (NSECC)	Several small wetlands to be impacted and compensated
	Endangered Species Act (*ESA*)	NS Natural Resources and Renewables (NSNRR)	Management measures for Snapping Turtle may be required.
	Notification of blasting (if required)	NSECC	To be specified in Industrial Approval
	Archaeology Field Research Permit	NS Communities, Culture, Tourism and Heritage (NSCCTH)	Study completed and approved, February 2024.
Municipal	Municipal Planning Strategy and Land use By-law	Windsor West Hants Regional Municipality	No approval required if quarry is provincially approved.

3 PUBLIC INVOLVEMENT

3.1 METHODS OF INVOLVEMENT

Information from the general public has been sought at various stages of the project. Residents in the vicinity of the Hartville Quarry were contacted by telephone in 2024 to provide background information on local land use and concerns, and interactions with the quarry. Field personnel visiting the site in 2023 spoke to various individuals from the area, including locals and workers at the quarry. In April 2024, letters and a handout describing the project were sent to the local MLA, to the Mayor of the Windsor-West Hants Regional Municipality and councillors for adjacent districts, to the main Mi'kmaq groups (Native Council of Nova Scotia and KMKNO); the Chiefs of Glooscap and Annapolis Valley First Nation, which are nearest the site; and the Nova Scotia Office of L'nu Affairs. Alva Construction convened a meeting with several Municipal Councillors and a representative of Windsor West Hants Regional Municipality in Windsor on April 17, 2024. A summary of public and Mi'kmaq consultation activities is presented in Appendix H.

3.2 PUBLIC COMMENTS

No unsolicited comments from the public have been received. At the meeting in Windsor, various issues related to the quarry were brought up and discussed by the attendees, including blasting (effects, noise), effects on local waters, interactions with wind turbines, forest fires, Mi'kmaq rights and consultation, truck noise on Hartville Road, and wildlife issues. A further meeting with Ellershouse and vicinity residents was suggested and may be pursued in future. Minutes of the meeting are presented in Appendix H.

3.3 STEPS TAKEN TO ADDRESS PUBLIC CONCERNS

Alva Construction is open to addressing public concerns up to the limit imposed by normal operations of a quarry. It is acknowledged that quarries are industrial scale operations which require heavy equipment including trucks and generate noise. Alva Construction operates within environmental limits imposed by its authorization from Nova Scotia Environment.

4 DESCRIPTION OF THE UNDERTAKING

4.1 EXISTING QUARRY SITE COMPONENTS

The quarry is located at Lot 769, 763 Ellershouse Road, on PIDs 45407111, 45007903, 45407905 and approximately UTM Zone 20, NAD83, Easting 0377947 and Northing 4914805 between the communities of Hartville and Ellershouse, Hants County. It is located in a rural area surrounded mainly by forest, much of which has been previously logged, and in proximity to an aggregate quarry and the Ellershouse Wind Turbine development. Physical, biological and social features of the environment in which the quarry is located are presented in a biophysical assessment presented in Appendix A. The quarry is operated in accordance with an existing Industrial Approval (Approval No. 2008-061091-02), for a quarry under 4 ha in area, and the quarry operation is approaching its maximum allowable area. A copy of the Industrial Approval is found in Appendix F. The quarry operates in accordance with the Nova Scotia Pit and Quarry Guidelines, which apply to all pit and quarry operations in the province and which provide separation

distances for operations, including blasting, liquid effluent discharge limits, suspended particulate matter limits, sound level limits and requirements for a reclamation plan and security bond. Alva Construction uses Best Management Practices in all phases of their operations, including the on-site management of air quality, greenhouse gas emissions, noise, dust, and water quality and operates in accordance with applicable Federal and Provincial legislation and standards. The existing quarry operations involve blasting, crushing, and stockpiling of aggregate and associated trucking on an as required basis. In addition, a portable NSE approved asphalt plant may occasionally be situated on the property. Blasting is done an average of one to two times per year when the site is active. Surface water controls are currently in place and associated surface water monitoring will be implemented to ensure that surface water leaving the site meets all applicable water quality guidelines

Rock quarried at the site is non-acid-generating based on the sulphur content. Sulphur concentration of a sample was 0.019 % (0.58 kg H_2SO_4/tonne), which is below the minimum (0.4 % S; 12.51 kg H_2SO_4/tonne) defined by NSECC as sulphide-bearing material and is therefore not acid producing. The laboratory results of this sample are included in Appendix G.

Figure 4. View of the Hartville Quarry facing south, July 14 2023.

4.2 Future Quarry Site Preparation and Construction

Alva Construction needs to expand the permitted area of Hartville Quarry to allow continued operation and allow it to continue to meet the ongoing demand for aggregate. It is seeking an Environmental

Assessment Registration approval under the *Environment Act* for a maximum area of 10.118 ha, which includes a production and operational footprint, storage (stockpiles) and provision for surface water control.

Although future production will depend on demand, it is anticipated that in future the quarry will produce from 25,000 to 75,000 tonnes or more of aggregate per year, with a life expectancy depending on available reserves. The quarry would be initially advanced in a south to southwest from the existing face (Appendix D).

Quarry operations will generally coincide with the road construction season; therefore, it is reasonable to anticipate seasonal operations within a similar time frame (April – December). Alva Construction is committed to use Best Management Practices in all phases of their operations, including the on-site management of air quality, greenhouse gas emissions, noise, dust and water quality, and will operate in accordance with applicable Federal and Provincial legislation and standards.

Future activities at the Hartville Quarry would include drilling and blasting, utilizing a qualified blasting contractor to conduct this work. The blasting contractor would be responsible for blast designs and methods in accordance with the General Blasting Regulations contained in the Nova Scotia Occupational Health and Safety Act, 1996. Blasting would also be conducted in accordance with the Pit and Quarry Guidelines. Blasting and noise level guidelines respecting the time of day/day of the week will be followed and blast monitoring will be conducted for every blast event. The existing Industrial Approval stipulates blasting control and monitoring requirements, and similar operational requirements are expected to be in the amended Industrial Approval if the project is approved.

The blasted rock will be excavated with an on-site excavator, forwarded using heavy equipment such as front-end loaders, and processed by portable crushing equipment. Excavation will not take place below the current quarry floor elevation and therefore will not intercept the deep bedrock water table. In addition, there will be no pumping of groundwater and therefore no dewatering of associated bedrock aquifer. The various aggregate products will be stockpiled in designated areas within the quarry. Product will be transported from the quarry via tandem and tractor trailer trucks via the Ellershouse and Hartville Road, to Highway 1 and Highway 101 as necessary to meet project demands. Traffic volumes generated by the quarry are expected to be stable in the long-term, and the level and pattern of road use is not expected to increase from past levels. Portable equipment such as crushers and asphalt plants will be moved to the site from time to time over the existing road network. Employment numbers and patterns are also not expected to change significantly.

4.3 Operation and Maintenance

The expanded Hartville aggregate quarry will be typical of aggregate quarries in Nova Scotia. Development will take place in various stages. First, logging and removal of forest cover will be carried out by logging crews and harvesting machines. Heavy equipment will be used to manage residual surface material including tree waste and overburden, an activity known as grubbing. Removed surface material will be placed in berms or distributed around the margins of the expanding quarry. A 30-m buffer zone will be maintained between the quarry and access roads. After drilling and placing of explosives, blasting by licensed blasters will initially open the site and then expand the quarry after it has been developed to the finished floor level. Surface water runoff and water quality will be managed or controlled through placement of retention ponds and treatment areas.

Aggregate is produced from blasted rock using portable crushing equipment such as jaw or cone crushers for reducing larger rocks to suitable grades, screeners and conveyor plants, and mobile asphalt plants may be used from time to time. Heavy equipment including excavators, loaders, bulldozers etc. are used in removing overburden and for moving and stock-piling product. Blasting takes place infrequently, from less than once per year to one to two times per year depending on demand for aggregate. Aggregates of various grades as well as other materials are likely to be stored at the quarry from time to time. Typical types of material expected to be produced include Type 1 & 2 gravel, clear stone, environmental rock, and armour rock. Material will be laid down on the floor of the quarry once it has been opened sufficiently.

In the course of operations, environmental management activities such as environmental monitoring for water quality, dust and noise levels may be put in place at a site. The project will have contingency plans for spills and management of harmful substances at the site.

4.4 Decommissioning and Reclamation

Parts of the quarry which have reached capacity will be reclaimed by restoring slopes to a minimum of 1:1 and terracing the bedrock and revegetating, following a rehabilitation plan developed in consultation to Nova Scotia Department of Environment and Climate Change. It is expected the land will be returned to a natural state at the end of the Quarry's useful life.

4.5 Summary of Activities at the Hartville Quarry

Activities anticipated for expansion and operation of the Hartville Quarry have been described in Sections 4.2 and 4.3. Activities involved in ***developing the site*** are those which modify or change the existing environment, such as forest clearing, removal of overburden, building of roads, excavation and development of a working quarry area, installation of infrastructure such as weigh-scales and buildings, constructing and maintaining work and laydown areas, and constructing surface water management structures. These have been completed for the existing under 4 ha quarry at the site. New development will consist mainly of forest removal, clearing, grubbing of the unused parts of the site, and expansion of the existing work areas and quarry. ***Operations*** or the ***operational phase*** of the project are the day-to-day activities at a typical quarry, including periodic blasting, removal of the blasted rock, and activities involved in production of aggregate such as crushing, stockpiling, loading of product, trucking, dust control, work area maintenance and site management. In addition, at the completion of stages in the useful life of the quarry, **reclamation** of the site with activities such as restoration of slopes with overburden and re-seeding, being carried out.

The activities are typical of quarry projects in general, and are summarized in Table 2. Generalized groups of activities are used in the environmental assessment, to determine interactions of the project with the environment at the site.

Table 2. Categories of activities for Hartville Quarry.

Construction and Development Phase
• Site Access - access roads, drainage, ditching

- Site Clearing/Grubbing
- Overburden Removal
- Drilling & Blasting
- Excavation and Work Areas

Operational and Reclamation Phase

- Drilling and Blasting
- Moving/Transporting Rock and Product
- Crushing
- Washing
- Lights
- Site Runoff Management
- Portable Asphalt Plant
- Onsite Materials Storage
- Accidents (Fires/Oil & Fuel Spills)

5 ENVIRONMENTAL ASSESSMENT APPROACH AND METHODS

5.1 DESCRIPTION OF THE ENVIRONMENT

The environment in the vicinity of the Hartville Quarry has been reviewed and is presented primarily in a *Biophysical Environmental Assessment* and an *Archaeological Resources Impact Assessment* for the proposed expansion, which are presented in Appendices A and B respectively. Additional information relevant to the environmental assessment and to other requirements of the environmental assessment registration for the project are presented in other Appendices.

Information for the assessment was obtained from specialized knowledge and experience of consultants, field studies of the study site, reviews of available biophysical information, consultations with relevant government departments, authorities and the local public, and knowledge of the purpose and proposed design of the project. The environmental assessment follows *Guide to Preparing an EA Registration Document for Pit and Quarry Developments in Nova Scotia* (NSE September 2009) and uses assessment methodology typical for environmental assessment screenings of this kind.

Field studies for this assessment included a walkover and review of archaeological resources conducted by Davis MacIntyre Associates in 2023; site visits by a hydrogeology consultant (Russell Finley, P. Geo., Halifax), and biological and environmental studies (wildlife survey by Mark Pulsifer, M.Sc.; and breeding bird and owl surveys, fish and fish habitat, terrestrial, wetland and aquatic environment surveys, and spring and fall botany surveys) by Envirosphere Consultants in 2023 and March 2024. A desktop assessment of species at risk, wildlife (mammals, amphibians and reptiles), significant habitat, and special management and protected areas was conducted in 2023 based on database searches from the Atlantic Canada Conservation Data Center (ACCDC), the Nova Scotia Museum of Natural History, and contacts with Nova Scotia Department of Natural Resources, and Nova Scotia Environment, also conducted by Envirosphere.

Figure 5. Mixed woodland south of the existing Hartville Quarry, July 14 2023.

5.2 VALUED ENVIRONMENTAL COMPONENTS

To carry out the environmental assessment, a list of valued environmental components (VECs)[1] (also known as VCs)[2], were developed based on the field and desktop studies (Table 3); and the potential for interactions between project activities and VECs was identified (Table 3). Where interactions were identified, and there was potential for significant impacts if mitigation was not undertaken, mitigating actions or activities were suggested that would avoid the impact or reduce it to acceptable levels (see Section 6 and Table 4). The process ensures that all potentially significant impacts of the project on VECs are identified and all potential impacts on them have been considered, and sufficient mitigation planned.

[1] Valued Environmental Components (VECs) are features or things in the environment, which are particularly important either ecologically, socially, economically or culturally. The environmental assessment addresses potential interactions of the project with each VEC identified, and assesses potential impacts. The process followed involves identifying all the activities or outcomes of the project which interact with each VEC, and then determining and rating the magnitude of the impact in a standard way, in this case in a manner guided by standard approaches that have been developed for environmental assessments.

[2] Valued Environmental Components (VECs) and Valued Components (VCs) are equivalent. Use of the acronym VC is occurring more commonly as a result of its use in environmental assessments carried out under the federal environmental assessment process under the Canadian Impact Assessment Act (2019).

The list of Valued Environmental Components considered for the assessment, and interactions with project components, are presented in Table 3. The environmental effects and potential impacts of the project along with their significance and suggested mitigations are outlined in Section 6, and summarized in Table 4.

Table 3. Valued Environmental Components (VECs) for the Hartville Quarry Expansion.

BIOPHYSICAL	SOCIO-ECONOMIC
Air Quality, Noise and Light	Mi'kmaq
Groundwater	Recreation, Tourism & Viewscape
Hydrology	Recreational, Commercial & Mi'kmaq Fishing
Water Quality	Archaeological, Cultural and Historical
Freshwater Aquatic Environments and Wetlands	Economy, Land Use and Value
Terrestrial Environment	Transportation
Fish & Fish Habitat	Residential Use
Flora & Fauna & Habitat	Commercial /Industrial Use
Species at Risk	Water Supplies & Residential Wells
Natural Areas & Wilderness	Parks & Protected Areas
	Forestry, Hunting & Trapping

Figure 6. Stockpile at the Hartville Quarry, July 14, 2023

Table 4. Potential interactions between project activities and operations and Valued Environmental Components (VECs) for Hartville Quarry expansion.

General Category of VEC	**Biophysical**										**Socioeconomic**									
Project Component (potential interactions shown by ✓)	Air Quality, Noise and Light	Groundwater & Hydrology	Water Quality	Freshwater Aquatic Environments and Wetlands	Terrestrial Environments	Natural Areas & Wilderness	Fish and Fish Habitat	Flora & Fauna Species & Habitat	Species at Risk	Mi ' kmaq	Archaeological/Cultural/Historical	Recreation, Tourism & Viewscape	Residential Use	Recreational, Commercial & Mi' kmaq Fishing	Water Supplies/ Residential Wells	Economy, Land Use, and Value	Transportation	Commercial /Industrial Use	Parks & Protected Areas	Forestry Hunting /Trapping
CONSTRUCTION																				
Site Acquisition, Use/Removal of Resources	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓	✓		✓
Site Clearing/Grubbing	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓				✓
Drilling	✓	✓	✓	✓		✓		✓	✓	✓		✓	✓			✓				
Blasting	✓	✓	✓	✓		✓		✓	✓	✓		✓	✓		✓	✓			✓	
Lights & Noise	✓					✓		✓		✓		✓	✓						✓	
OPERATION																				
Moving/Transporting Rock and Product	✓					✓		✓	✓	✓		✓	✓			✓	✓	✓	✓	✓
Crushing	✓				✓	✓		✓	✓	✓		✓	✓			✓				
Washing		✓	✓	✓						✓										
Lights & Noise	✓				✓	✓		✓	✓	✓		✓	✓						✓	
Site Runoff Management		✓	✓	✓			✓													
Portable Asphalt Plant	✓				✓	✓		✓		✓		✓	✓			✓	✓			
Onsite Materials Storage			✓															✓		
Accidents (Fires/Oil & Fuel Spills)	✓	✓	✓	✓		✓	✓	✓				✓	✓	✓	✓				✓	✓

6 ASSESSMENT OF ENVIRONMENTAL IMPACTS, SIGNIFICANCE, AND MITIGATION

6.1 OVERVIEW

This assessment of environmental impacts of the project is based on various studies conducted for the project, and summarized in the following sections. These included the Biophysical and Socioeconomic Environmental Assessment (Appendix A); an Archaeological Resources Impact Assessment (Appendix B) and a hydrogeology / water balance assessment (Appendix C). In particular the Biophysical Environmental Assessment identified Valued Environmental Components (VECs). The studies determined there were no significant negative impacts which could not be mitigated, and no residual potential impacts of the project on social or biophysical features of the environment in the vicinity of the Hartville Quarry.

6.2 ASSESSMENT OF SOCIOECONOMIC IMPACTS

6.2.1 Mi'kmaq

The Mi'kmaq maintain a general interest in all lands in Nova Scotia and claim they have never surrendered, ceded or sold the Aboriginal title, and that they claim all of Nova Scotia [for detailed information on this topic, refer to Appendix A, Sections 4.3.1 and 5.3.1]. As co-owners of the land and its resources, they expect that any potential impacts to rights and title be addressed. Mi'kmaq occupied much of Nova Scotia prior to European contact, and lands were used to varying degrees for habitation, hunting and fishing. In more recent times, treaties made with the British and continued through Canadian law have maintained their rights. Although the quarry site does not appear to have had particular significance for Mi'kmaq, nearby areas were actively used in past. Lake Panuke and associated lake and river systems were used by the Mi'kmaq to transit cross-Province in the general vicinity, and there is evidence of the use of the land at the mouth of the St. Croix River for seasonal and perhaps permanent encampments; however the Archaeological Resource Impact Assessment (ARIA) for the project (Davis McIntyre Associates (2024), Appendix B) concluded that there is low potential for occurrence of Mi'kmaq archaeological resources at the quarry site itself. If artefacts or significant features are discovered during expansion or continued operation of the quarry, work will be stopped and appropriate officials in the Nova Scotia government, Nova Scotia Museum, and the Mi'kmaq community will be contacted pending investigation of the discovery.

The land proposed to be used for expansion of the Hartville Quarry has been modified by past forestry, historical land clearing and trails for access to the area, and is not likely to see significant use by Mi'kmaq traditional or modern uses. Although the quarry is near the St. Croix Mi'kmaq Reserve of Annapolis Valley First Nation, no First Nation activities which might be associated with the reserve such as general use, hunting and trapping, or ceremonial, recreational of subsistence use of natural resources in the area are expected to be directly affected by the Hartville Quarry.

6.2.2 Recreational Activities

Lands in the immediate vicinity of the Hartville Quarry are used by locals for various nature- and outdoors-based activities, but not particularly by the general public [for detailed information on this topic, refer to Appendix A, Sections 4.3.8, 4.3.10, 4.3.11, 5.3.2, 5.3.4 and 5.3.11]. Managed recreation resources such as nature trails (e.g. Dawson Brook Falls Trail), sports and outdoor facilities such as the St. Croix Recreation Site, are used by locals and the general public but they are some distance from the quarry. Residents of the area also participate in hunting, fishing, walking, hiking, and home-based recreation (e.g., gardening) concentrated around roads and population centres in the area. The principal interactions with the Quarry would be from associated vehicle traffic and noise, but both would not significantly impair recreational use. Vehicle traffic from the quarry forms a small part of overall road use which includes logging trucks, and local commercial as well as public vehicle use Noise from routine operations at the Quarry and occasional blasting has the potential to be heard by the in the nearby communities of Ellershouse, St. Croix, and Newport Corner—but at low levels; while blasting is likely to be heard over a wide area, one to two times a year, but would not interfere with recreational activities.

6.2.3 Tourism and Viewscape

Continued operation of Hartville Quarry is will have little influence on tourism and viewscape [for detailed information on this topic, refer to Appendix A, Sections 4.3.14 and 5.3.3]. The road through the nearby communities of Hartville and Ellershouse is not a major travel route for tourists which would include travel by car and cyclists. The principal interactions with tourists in vehicles would be noise, and truck traffic transporting aggregate to job sites. The quarry access road entrance on the Hartville Road has good sightlines. Overall the impacts on viewscape and tourism are expected to be negligible. Some operations at the quarry may be heard nearby but are not likely noticeable by tourists in vehicles passing by, and if heard would be against a background of truck noise on Highway 101, and Highway 1. Blasting, which may be heard at greater distances, is of short duration and occurs infrequently—one to two times a year, and overall activity levels will not change as the result of expansion. The quarry can only be seen from a distance and then only as a small point on the horizon and so likely would not be noticeable and would not disrupt any scenic views available to tourists in the area. Overall, the impacts on viewscape and tourism are expected to be negligible.

Figure 7. View of Quarry access road from Ellershouse Road, March 2024.

6.2.4 Recreational, Commercial & Mi'kmaq Fishing

Recreational fishing provides an important resource and pastime for residents and visitors to WWHRM [for detailed information on this topic, refer to Appendix A, Sections 4.3.8 and 5.3.4]. Mi'kmaq similarly access suitable fish in food and ceremonial fisheries. The study area itself is not important for freshwater recreational fishing but rivers and lakes in the area including Panuke Lake, St. Croix River, Dawson Brook, Weir Brook, and Thumb Hill Creek have resident fish populations, some of which are fished recreationally. The Hartville Quarry isn't a source of contamination which could impact surface waters. The amount of runoff from the quarry is small and high quality, and will have a negligible impact on overland runoff and groundwater. Overall, no significant effect of the Hartville Quarry on recreational, commercial, and Mi'kmaq fishing is expected.

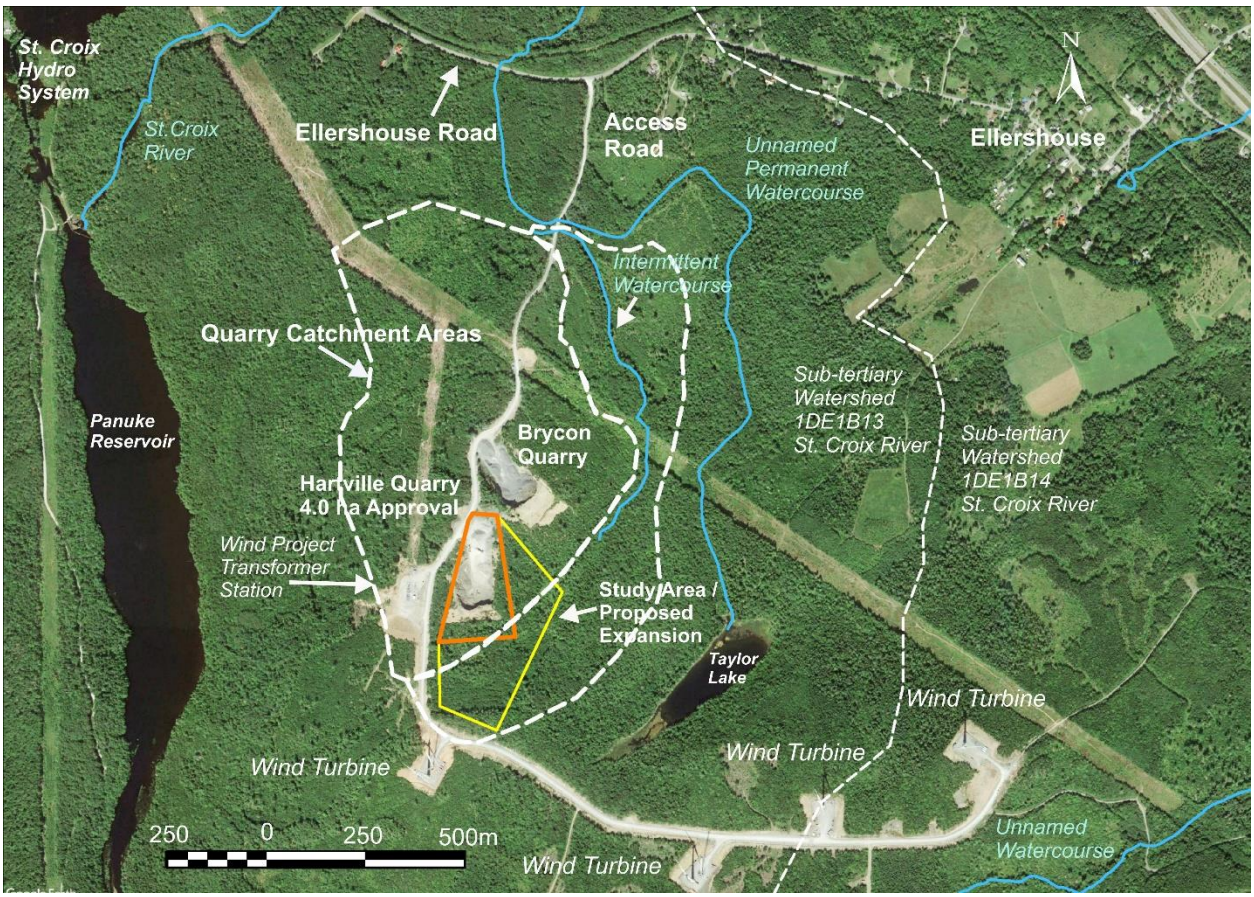

Figure 8. Study area in relation to watersheds in a 2016 air photo.

6.2.5 Archaeological/Cultural/Historical

The land proposed for the quarry expansion has low potential for pre-contact and/or early historic Mi'kmaq or European archaeological resources [for detailed information on this topic, refer to Appendix A, Sections 4.3.9 and 5.3.5]. The area was not settled by Europeans until late in the 17th century and no evidence of past activity at that or more recent time at the site was found by the archaeological survey. The site is not expected to have been a prime area used by Mi'kmaq pre-contact. If an archaeological feature of significance is encountered during quarry activities, particularly evidence of Mi'kmaq occupation, operations will be stopped, and experts including Nova Scotia Department of Communities, Culture, Tourism and Heritage will be consulted to ensure the artifact or feature is not disturbed and is adequately documented and preserved. Consequently the project is not likely to discover or disturb cultural/historical/archaeological features.

6.2.6 Economy, Land Use and Value

Forestry, aggregate production, wind energy development, wildlife resources for hunting and trapping, as well as small rural-residential properties, are the major land uses in area [for detailed information on this topic, refer to Appendix A, Sections 4.3.2, 4.3.4 and 5.3.6]. The land on the site is not good for agriculture, and aggregate production and forestry are among the only potential commercial uses of the area. The area around the quarry is already developed for wind energy; the project will not restrict future development; and the project has necessary waivers regarding blasting in relation to existing wind

turbines. Activities at the Hartville Quarry do not restrict forestry in the area and in fact, support those operations by helping to maintain the access road to the site which is also used by logging trucks and equipment. Aggregate from the quarry is used in projects in the area at a competitive cost due to the proximity of the quarry. Employees working at the quarry use local services which generates tax revenue. The existing quarry has been operating at the site with little to no impact for many years, while providing economic development and a source of aggregate for local construction projects. Continued use of the quarry will maintain the property value of the area. As no change is likely in activities at the quarry, no negative effects are foreseen.

6.2.7 Transportation

The quarry generates a fluctuating low level of truck traffic on highways in the area, but activity levels are not expected to increase as the result of the expansion, and consequently the quarry is not expected to change the existing traffic volumes significantly [for detailed information on this topic, refer to Appendix A, Sections 4.3.15 and 5.3.7]. The project will not interfere with use of the access road by other operations such as logging and maintenance of the Ellershouse Wind Farm. Transport of crushing and asphalt production equipment to and from the site prior to and after a production phase leads to short-term delays in traffic caused by the often slower-moving equipment. Heavy trucks moving through the area and trucks turning can be a hazard to local traffic. The intersection of the Quarry access road with Ellershouse Road has good sightlines but may lead to hazardous encounters due to sharp corners and blind hills along Ellershouse Road. These hazards can be mitigated by applicable warning signs placed far in advance of the access road to indicate the likely presence of heavy equipment and trucks turning. Safe use of the road and avoidance of accidents is essential, both for human impacts and the potential impacts of vehicle accidents and spills on the local watercourses and environments. Equipment and truck operators for the quarry will be given instruction on safe and environmentally acceptable procedures. With suitable foresight and care, the impact of the project on transportation and safety is expected to be minimal, will little or no change from previous operations at the quarry. Overall, however, the impact of the project on transportation and safety is expected to be minimal.

6.2.8 Residential Use

Quarry activities can potentially interfere with normal use and enjoyment of nearby residential properties by creating background noise (truck and heavy equipment engines, back-up signals, engine brakes, generators, crusher operations); periodic blasting; sky-shine through night-time operations; and through truck and equipment traffic, which some residents may find objectionable and a safety concern [for detailed information on this topic, refer to Appendix A, Sections 4.3.12 and 5.3.8]. The quarry is located approximately 1.3 km from the nearest permanent residences, which is within hearing distance. Blasting, which may occur one to two times per year during years in which the quarry is active, can be heard both nearby and in more distant communities, but blasting is unlikely to affect nearest structures and Alva is required to monitor effects, if any, on nearby structures. Truck traffic from the quarry would also create noise levels which would impact local residents. Activities at the quarry would be limited in time seasonally (approximately March to November) typically during the day, although nighttime operation may take place from time to time. Traffic volumes from the site would be moderate, and high frequency of truck traffic would be an irregular occurrence, depending on the supply requirements for particular projects. Dust from operations is unlikely to reach residential areas and blasting is not expected to impact residential wells, as they are located at a significant distance from the site. The quarry affects a small

surface area relative to the overall water table in the area. Nighttime activities will involve minimal additional lighting and noise, and will be unlikely to be a significant disturbance to local residents but may be seen by distant communities. The quarry includes signage with phone numbers and contact persons should any members of the community have inquiries. A complaint resolution procedure will be put in place by Alva to address complaints and concerns.

6.2.9 Commercial/Industrial Use

The nearest commercial operations / businesses are the adjacent Brycon Construction quarry and the Ellershouse Wind Farm Project, the Minas Energy Hydro generation system, and several businesses in the Ellershouse area [for detailed information on this topic, refer to Appendix A, Sections 4.3.13 and 5.3.9]. Activities at the quarry site will contribute to traffic in the area but will not likely affect other operations to a significant degree. There are no businesses in the vicinity of the Quarry which could be affected. The quarry does not impact on the existing Ellershouse Wind Farm and the proposed expanded project. Occasional blasting at the quarry will not impact the Minas Energy Dam system. The quarry contributes to net economic benefit in the community through supporting local trucking operations and providing access to aggregate and other quarry products as well as supporting the maintenance of the Nova Scotia highway system.

6.2.10 Water Supplies and Residential Wells

Both drilled and dug wells are used as drinking water sources in WHRM and drilled wells are the primary drinking water source for the Hartville-Ellershouse area, and there are no municipal water supplies in the area. [for detailed information on this topic, refer to Appendix A, Sections 4.3.3 and 5.3.10]. There are 28 wells within a 2 kilometer radius of the quarry entrance and only one within 800 m of the Hartville Quarry, located 360 meters west, none of which are expected to be impacted by activities at the Quarry. Quarry activities are not expected to impact residential wells, in particular occasional blasting, as they are located at a sufficient distance. Groundwater recharge generated by the quarry is of high quality (low conductivity and dissolved solids and neutral in pH). The footprint of the quarry and the proposed expansion involves a small part of the watershed and near-surface groundwater reserves, and dug wells are not expected to be affected. Best management practices for operations will be undertaken to eliminate the potential for any contamination of aquifers at the site and a contingency plan will be maintained to mitigate impacts on aquifers at the site.

6.2.11 Parks and Protected Areas

There are a number of parks and protected areas in the general vicinity of the Hartville Quarry, the closest of which is approximately 3.3 km from the Quarry [for detailed information on this topic, refer to Appendix A, Sections 4.3.10 and 5.3.11]. These include: Eagles Nest Nature Reserve; Newport Corner Significant Ecological area (SES); Smiley's Provincial Park, approximately 9.5 km northeast; Nova Scotia Nature Trust St. Croix Conservation Lands approximately 3.3 kilometers north; and an International Biological Program (IBP) site. The St. Croix Conservation Lands owned and managed by the Nova Scotia Nature Trust is the closest, located above the gypsum cliffs on the St. Croix River. The quarry and its expanded area will not be visible to tourists traveling by road. With no expected change in the scope or frequency of quarry activity due to the expansion, road traffic activity from the quarry is not expected to change, or be high enough in volume to disrupt tourist traffic or access to any protected area. Occasional blasting may be heard in the Provincial Parks, Nature Reserves, IBPs, SESs, or Conservation Lands in the area, but noise

levels generated from routine operations at the quarry are not expected to be heard. Occurrences of blasting are brief and infrequent, and not likely to be a significant concern to visitors/users of those areas. The quarry will be reclaimed at the end of its useful life. Expansion of the quarry will not affect the integrity of any nearby protected areas. Overall, the change due to the expansion of the quarry will be negligible to the surrounding parks and protected areas.

6.2.12 Resource Use—Forestry, Hunting & Trapping

Use of the land for a quarry will remove the potential for logging, hunting and trapping at the site for many years. After the quarry is closed and the land rehabilitated, forest communities are expected to re-establish [for detailed information on this topic, refer to Appendix A, Sections 4.3.6, 4.3.7 and 5.3.12]. There are no areas of mature forest in the proposed expansion area which will be altered as the result of the expansion; forests there are in various stages of regeneration and fragmentation after previous logging activity. The area occupied by the quarry is relatively small in relation to the available forest resources in the area, and the overall impact on economic return is expected to be small. The quarry will occupy a relatively small area of habitat for furbearing and game species, and will not have a significant impact on hunting and trapping

6.2.13 Local Economy

Alva Construction employs local contractors and workers, and proceeds of sales of aggregate help support the Provincial economy, having an overall positive benefit [for detailed information on this topic, refer to Appendix A, Section 4.3.2].

6.2.14 Human Health

Operations of Hartville Quarry are not expected to result in impacts on human health [for detailed information on this topic, refer to Appendix A, 5.3.13]. Dust, which is derived both from the source rock, aggregate and activities at the quarry, does not contain toxic components and exposure to residents along the Ellershouse Road will be low to negligible. Residual dust associated with the quarry after control measures, will be largely localized in the immediate vicinity of the quarry. Operations of an asphalt plant which may take place from time to time at the site is closely regulated under provincial approvals and levels of volatile emissions will be below those which could be harmful. Activity levels of the quarry may include periodic operations at night which potentially would disturb the sleep of residents, which could if prolonged could be considered a health concern. However this effect was not noted as a concern in conversations conducted with locals. Other air-borne emissions such as vehicle exhaust which potentially can affect health, are not unique to quarry activities and would also be derived from other traffic along roads in the area.

6.3 Assessment of Biophysical Impacts

6.3.1 Air Quality, Noise, and Light

The size of the quarry and magnitude of activities are not expected to change as the quarry expands; the level of activity depends on demand for aggregate and other products, which is expected to remain relatively stable over the lifetime of the quarry and in a rural area such as Windsor West Hants Regional Municipality, is not typically high [for detailed information on this topic, refer to Appendix A, Sections 4.1.4 and 5.4.1]. This demand does not change appreciably from year to year. Various activities at Hartville

Quarry have the potential to generate dust, combustion emissions, noise, and light. In particular, operation of heavy equipment (e.g. earth movers, crushers), rock drilling and blasting, operation of an asphalt plant, as well as onsite routine operations contribute to increased dust and particulate levels. Trucks from the quarry traveling along (the unpaved) access road raise dust and may be controlled through voluntarily reducing speed and possibly use of dust suppressant, and would not reach residents along Ellershouse Road. Noise levels can impact human use and enjoyment of the environment. Dust emissions from the quarry are expected, but will be mitigated by use of particle separators on equipment and use of water sprays on exposed working and laydown areas. Monitoring of airborne particulate emissions will be conducted at the request of NSE and in accordance with the Pit and Quarry Guidelines and the Nova Scotia Air Quality Regulations. An environmental protection plan will be put in place and followed during all phases of operations.

Exhaust emissions will be generated from the operation of vehicles and equipment. An asphalt plant may generate air-borne odours that can be detected at a distance from the site; however given the scope of the planned operations, these emissions will be minimal (i.e. restricted to several pieces of heavy equipment, earth movers, trucks etc. as well as operation of crushers and asphalt plant), and will be localized. Ambient air quality monitoring will be conducted at the request of NSECC.

Noise levels from the expanded quarry are expected to be similar to those already produced at the site, since the operations are expected to be similar in size at a given time, and the company will ensure that they do not exceed those specified in the Nova Scotia Pit and Quarry Guidelines. Blasting is expected to occur infrequently (1-2 times per year).

Light during nighttime operations particularly during times of low-hanging cloud and fog, can attract migrating birds. Measures can be taken to ensure use of directional lighting, which minimizes emanation of light upward and laterally over the horizon.

6.3.2 Groundwater

Activities associated with the project including forest clearing, grubbing and removal of overburden, and blasting, influence groundwater flow locally in the vicinity of the quarry, but are not expected to influence groundwater aquifers in adjacent areas [for detailed information on this topic, refer to Appendix A, Sections 4.1.6 and 5.4.2; Appendix C, Water Balance Assessment]. The amount of recharge area involved in project activities is small in relation to the overall size of the aquifers in the general vicinity; there is a high degree of infiltration of surface water through the floor of the quarry; and the water table in bedrock below the quarry floor will continue to recharge at approximately the same rate as at present. A contingency plan will be established to manage emergency response in the unlikely event of spills or releases of fuels or hazardous chemicals potentially impacting groundwater in the area. In the continued operation of the quarry, a groundwater monitoring program is expected to be developed as part of the Industrial Approval awarded by NSECC. The groundwater monitoring program will establish baseline groundwater quality and quantity prior to the quarry expansion, and will provide regular monitoring to ensure that any potential impacts associated with the quarry expansion are identified. Overall, the effect on overall groundwater distribution and flow are expected to be negligible.

6.3.3 Hydrology

Expansion of the quarry will result in an artificial and managed regime of surface water movement and runoff at the site, mainly near the quarry and will have a negligible effect on surface waters in the immediate vicinity [for detailed information on this topic, refer to Appendix A, Sections 4.1.4 and 5.4.3 and Appendix C]. Several small wetlands which are expected to be removed by the expansion, form only a small fraction of the source flow to an intermittent / permanent watercourse which arises east and downslope of the site. Surface water runoff from the quarry is inherently intermittent due to the dominance of precipitation in water balance, and most is expected to enter the water table directly through percolation through cracks and fissures in the bedrock. Surface flows will be moderated by the surface water management system and will ensure that flow characteristics in downstream areas are not affected significantly. Runoff will be managed to ensure that it meets acceptable environmental standards.

6.3.4 Water Quality

Water quality leaving the quarry via surface or groundwater is not expected to be impacted significantly outside the expansion area, as there are no watercourses in the vicinity into which runoff from the quarry will be directed, and surface runoff currently supplying wetlands which will be removed in the course of the expansion, will be captured within the expanded quarry footprint and ditches associated with the quarry drainage and access road, neither of which connect directly with a surface watercourse [for detailed information on this topic, refer to Appendix A, Sections 4.2.3 and 5.4.4]. Quality of water leaving the site and entering surface or groundwater is generally high, due to the low-contaminant characteristics of the bedrock, Quarry rock is within acceptable limits for sulphur and acid-generating potential. Blasting is not expected to result in groundwater quality changes. Forest clearing and grubbing activities can lead to releases of fines from the soil, resulting locally in elevated suspended sediment levels but little surface water flow from grubbed areas is expected off the site in part due to the small area involved, the high potential for infiltration, and trapping of residual sediments during flow through the adjacent landscapes., Management measures to reduce erosion and sedimentation on the quarry floor will help increase water quality as well as the low-contaminant characteristics of the bedrock and location of the site high in the local catchment area. All activities will conform to the Nova Scotia Erosion and Sedimentation Control Handbook (NSE 1988) and the Nova Scotia Pit & Quarry Guidelines (NSE 2003) and monitoring will be conducted as a requirement of the Amended Industrial Approve. Overall, impact of the quarry on water quality in adjacent streams and other waters is expected to be negligible.

6.3.5 Freshwater Aquatic Environments

Impact of the quarry on water quality in adjacent streams and other waters is expected to be negligible [for detailed information on this topic, refer to Appendix A, Sections 4.2.2 and 5.4.5]. There are no permanent streams in the proposed expansion area. Intermittent watercourses and flowages which may arise from local runoff in the vicinity of the quarry and drain northerly towards the St. Croix River, are not expected to be impacted significantly. Quantities of runoff arising from the site in future from the outer slopes of berms, product storage piles, and grubbing's piles will be approximately the same as at present and will remain in the same watershed. The quarry is unlikely to generate significant quantities of contaminants or suspended sediments that could impact any freshwater habitat.

6.3.6 Wetlands

Wetlands in the expansion area which may be disturbed together occupy less than 0.4 ha, may be fully or partially removed as a result of the quarry expansion [for detailed information on this topic, refer to Appendix A, Sections 4.2.4 and 5.4.5]. These wetlands are not "significant" wetlands" as defined in provincial wetland regulations, and appropriate approvals (e.g. Wetland Alteration Approval from NSECC) will be obtained, including appropriate wetland compensation for the impacted area.

Figure 9. One of the wetlands at the Hartville Quarry, July 2023.

6.3.7 Fish and Fish Habitat

The expanded quarry will not directly impact fish habitat [for detailed information on this topic, refer to Appendix A, Sections 4.2.5 and 5.4.7]. There is no fish habitat at the site and the closest watercourse is 150 meters distant. Removal of wetlands as proposed during expansion, will reduce surface water flow by about 15% to a watercourse arising east of the site which is an insignificant effect. The access road to the Quarry crosses a watercourses which may have fish habitat, an unnamed watercourse which flows from Taylor Lake to the St. Croix River. Because the watercourses cross the road, they have the potential to be impacted by road runoff and vehicle accidents and associated contaminant releases. The expansion will not affect the supply of water to adjacent areas significantly. Water quality typically found in runoff

from the quarry will be monitored and is expected to meet NSECC guidelines and limits stipulated in the Industrial Approval. Safe use of vehicles traveling to and from the Quarry will minimize the potential for accidental spills into the unnamed watercourse which crosses the access road north of the Quarry. All guidelines for activities and timing of blasting in the quarry will be followed. Overall, the effects of the quarry construction and operations on fish and fish habitat are expected to be negligible.

6.3.8 Flora and Fauna and Habitat

The existing terrestrial ecosystem (plants and animals) will be removed in areas covered by the footprint of the quarry [for detailed information on this topic, refer to Appendix A, Sections 4.2.6, 4.2.7, 4.2.8 and 5.4.8]. Expanding the Alva Hartville Quarry will remove existing terrestrial ecosystem (plants and animals) in the footprint of the quarry. With time, areas no longer suitable for quarry operations will be remediated, through a site reclamation plan which has been established as a condition of quarry Industrial approval. Plant and animal communities that arise in remediated areas will likely differ to some degree from those at present; however, a goal of remediation will be to ensure that conditions (e.g., soil types and topography) are reasonably restored to pre-existing conditions, to allow natural communities to re-establish, and to avoid development and expansion of communities of invasive species. During recovery and revegetation of abandoned areas, the seeding in and succession of forest species will provide habitat for a moderate diversity of species which will change with time. Removal of forest cover is a feature that quarry development shares with logging activities, which affects local ecosystems to a moderate degree, and is allowed in Nova Scotia. Normal management practices regarding forest clearing, such as avoidance of cutting or major clearing activities during critical breeding periods of songbirds from mid-April to mid-September, will reduce harm to nesting birds in forest areas.

Expansion of the Hartville Quarry will result in only a comparatively small loss of 6.13 ha in the coverage of natural and mature forest stands in the area and is expected to have a small impact on forest birds and wildlife. During normal operations, modified areas of the quarry offer potential nesting sites for certain species of birds and other wildlife, including hunting spaces for species such as owls and nesting for ground nesting birds such as nighthawks. Quarry employees should be educated on the need to check areas for activity and nests including both ground- and tree-nesting birds, before undertaking activities which would disturb established surfaces. Night operations and use of lights have various effects, including attracting insects which otherwise would need darkness to mate and reproduce; light pollution is considered to be an important factor globally in decline of songbird populations, through declines in populations of some insects. Many migrating birds follow the Bay of Fundy coast on their southward migration; if night-time operations are required, in particular during fall migration periods (August-September) when lights have the potential to attract migrating birds, downward directional lighting will be used which focuses downward and below the normal horizon, to limit visibility by birds and insects from a distance. The potential for use of the margins of the quarry site for nesting by Snapping Turtles (an S3S4 species) will be noted, and measures put in place to manage interactions and avoid harming the species.

Alva is committed to minimizing potential effects of the quarry, in particular to minimize traffic, noise, dust and light from operations to the extent possible. The quarry expansion is not expected to change the frequency, intensity, or scope of operations, and consequently the already negligible impact on natural areas and wilderness is expected to continue to be low. Site restoration will also consider values important

in conservation of biological communities and ecosystems, as well as changes in physical conditions that could affect those communities.

6.3.9 Species at Risk

The project is not expected to impact species at risk. No plant or animal species at risk have been found at the site or identified as potentially occurring in the study area [for detailed information on this topic, refer to Appendix A, Sections 4.2.9 and 5.4.9]. No federally or provincially-listed species at risk, or species more sensitive than S3 ranking (vulnerable), were found in the study area. No American Marten or Canada Lynx (both provincially listed as Endangered and which can occur in Hants County) have been recorded within 25 kilometers of the site. No American Marten have been trapped recently in the area, while two Canada Lynx have been trapped in Hants County in the last 5 years. Common Nighthawk, a ground-nesting species, potentially could nest in grubbed and marginal but open areas of the quarry; employees should be made aware of the need to check areas for activity and nests before undertaking activities which would disturb established surfaces. Activities such as logging and site clearing should be scheduled outside the April to mid-September nesting period for breeding birds. Lights used during night operations during nesting and migration periods would attract various bird species and insects, which could include species at risk. Lighting used at the site should focus downward and below the normal horizon, to limit visibility from a distance. Overall, interactions of the quarry activities with species at risk can be mitigated and minimized, and the overall effects of the quarry are expected to be negligible.

6.3.10 Natural Areas & Wilderness

Due to extensive forestry development in the general vicinity of the Hartville Quarry, untouched wilderness areas are largely absent, while smaller areas which have escaped development can be found in several locations. Natural areas in the vicinity of the site are appreciated by locals and tourists alike, while forests are important in supporting wildlife populations, and nearby undeveloped areas are appreciated by society as a whole, evidenced by their designation for parks and protected areas [for detailed information on this topic, refer to Appendix A, Sections 4.2.10, and 5.4.10]. Natural and protected areas in the vicinity of the site such as the wilderness Eagle Nest Nature Reserve, St. Croix Conservation Lands, St. Croix Indian Reserve, Newport Corner Significant Ecological Site, and St. Croix International Biological Program site are a minimum of 3 to 5 km from the quarry and will not be impacted by Quarry activities. The proposed expansion of the Hartville Quarry will affect a small proportion of the natural landscape at the site, in an area that has already been extensively logged, and is not in any protected areas. Normal procedures such as dust control and light management will help to minimize impacts on natural and wilderness values at the site.

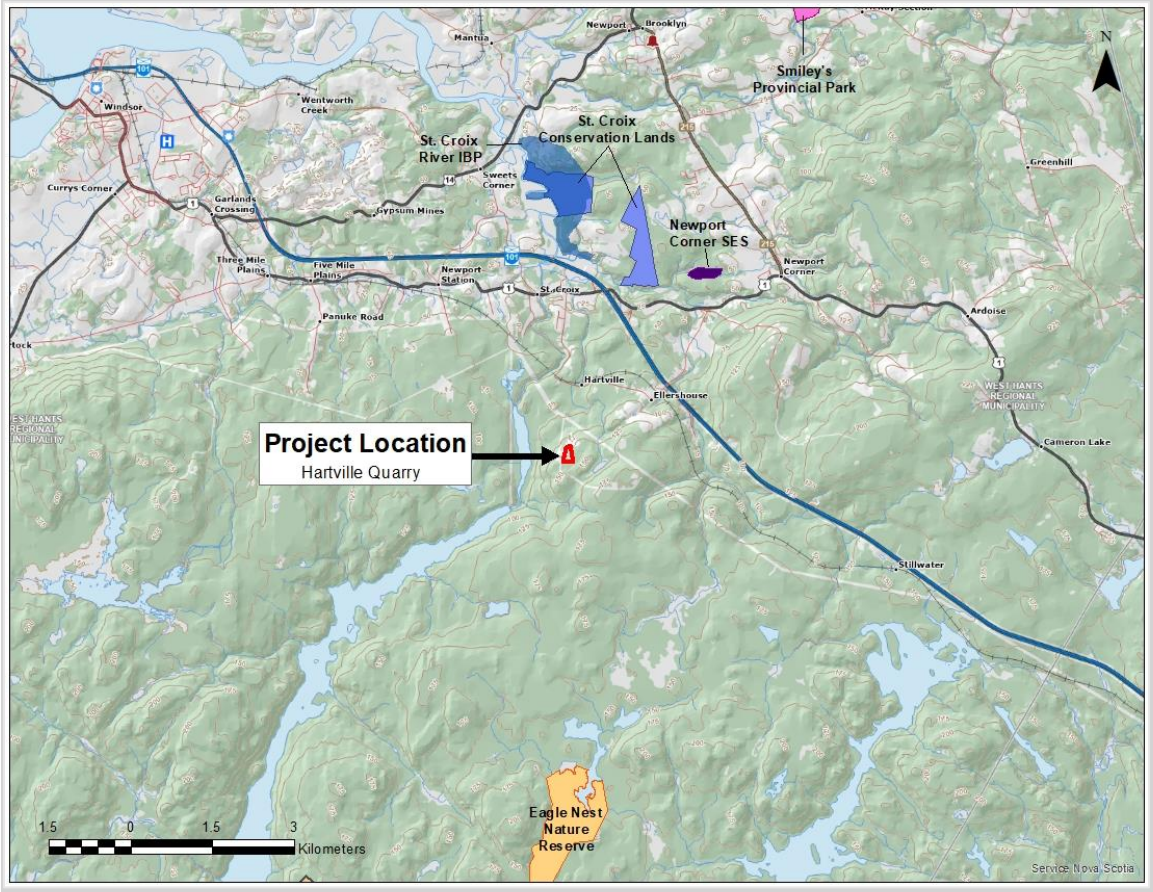

Figure 10. Parks and protected areas in the vicinity of the Hartville Quarry.

Table 5. Summary of impacts and mitigation on Valued Environmental Components, Hartville Quarry Expansion.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Suggested Mitigation	Significance after Mitigation
BIOPHYSICAL COMPONENTS						
Air Quality, Noise & Light	Construction	Noise and dust from heavy equipment during site clearing and grubbing.	Significant	Negative	Take steps to reduce noise sources such as engine braking. Maintain vehicles and equipment to reduce noise and emissions generated from worn parts.	Not significant.
		Drilling and blasting.	Significant	Negative	Monitor noise levels and undertake to avoid exceedances of regulatory levels.	Not significant.
		Light from the quarry can be seen in neighboring areas.	Significant	Negative	Use directional lighting with downward and lateral focus to minimize light leaving the quarry during night operations.	Not significant.
	Operation	Noise from drilling and blasting; crusher;	Significant	Negative	Monitor noise levels and undertake to avoid exceedances of regulatory	Not significant.

Table 5. Summary of impacts and mitigation on Valued Environmental Components, Hartville Quarry Expansion.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Suggested Mitigation	Significance after Mitigation
		heavy equipment operation; dust.			levels. Institute measures for dust control.	
		Noise from engine braking of trucks on access road interfering with residential enjoyment.	Significant	Negative	Instruct truck operators to avoid engine braking on access road and Ellershouse Road and in populated areas.	Not significant.
		Light from the quarry can be seen in neighboring areas.	Significant	Negative	Use directional lighting with downward and lateral focus to minimize light leaving the quarry at night.	Not significant.
		Dust from crushing operations and site activities.	Significant	Negative	Water spray systems on crusher to reduce dust. Water spray or approved dust suppressant on access road and working areas to reduce the resuspension of dust.	Not significant
Groundwater/ Hydrology	Construction	Forest and soil removal changes surface and ground water flow levels and patterns.	Negligible	Negative	Use site runoff management to minimize impacts. Likely changes in groundwater and runoff patterns will be small.	Not significant.
	Operation	Blasting fractures bedrock, disturbs till, and changes groundwater flow patterns. Drilled wells in bedrock and surface wells can be disturbed.	Significant	Negative	Analyze groundwater quality and movement to determine changes. No residential wells near the site but water quality can be verified by testing on request.	Not significant.
	Operation	Quarry and work areas change surface water flows. Increased peak stormwater flows. Washing product creates silt-laden surface flows.	Significant	Negative	Onsite water management to moderate extreme surface water runoff and suspended sediment levels. Aggregate washing arranged in closed loop system to retain all wash water onsite.	Not significant.
	Operation	Accidental hydrocarbon spills and blasting residues contaminate groundwater.	Significant	Negative	Measures to minimize danger of spills; monitor and control nitrates from blasting; proper fuel handling strategies, onsite emergency numbers, spill kits etc.	Not significant.
Water Quality	Construction	Possible presence of Halifax Formation bedrock generates acid runoff.	Significant	Negative	Test newly-blasted faces for Sulphur content and acid-generating potential. Avoid problem areas.	Not Significant
		Altered surface water flows and turbidity in ditches leaving the site.	Negligible	Negative	Erosion and sedimentation controls in work areas. Onsite water management to moderate surface water runoff and	Not significant.

Table 5. Summary of impacts and mitigation on Valued Environmental Components, Hartville Quarry Expansion.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Suggested Mitigation	Significance after Mitigation
					suspended sediment levels.	
	Operation	Dust & suspended sediment from operations potentially enters local watershed. Chemicals (e.g., nitrates) from explosives entering runoff.	Significant	Negative	Onsite dust control and water management to moderate surface water runoff and suspended sediment levels. Erosion & sedimentation controls. Closely monitor chemical residues after blasting.	Not significant.
	Operation	Water chemistry changes in runoff from stockpiles stored on site.	Negligible	Negative	Best management practice allows leaving piles exposed to the environment. Monitor settling ponds; storm-water management.	Not significant.
Natural Areas & Wilderness	Construction & Operation	The presence of quarry, emissions, dust etc., detracts from public perception of wild quality of area. Site is not near popular wilderness areas.	Negligible	Negative	The area affected is small in relation to remaining natural areas, and previous development and logging has occurred in the area, diminishing value of natural areas and wilderness. Minimize footprint. Manage releases of dust and light, and control noise.	Not significant.
Freshwater Aquatic Environments	Construction	Minimal potential for disturbance of watercourses and other surface waters which are far removed from the quarry. Reduced source water supply to watercourse east of the site.	Negligible	Negative	Preserve wooded buffer areas for quarry. Avoid as much as possible disturbance of wetlands feeding the nearby watercourse. Onsite water management and sedimentation controls to moderate surface water runoff and suspended sediment levels.	Not significant.
	Operation	Surface runoff with dust, nutrients, and contaminants in local ditches. Residues from aggregate washing. Reduced water availability from evaporation from pit floor and exposed surfaces.	Negligible	Negative	Maintain forested buffers. Onsite water management. Use sedimentation ponds and store wash water during off peak season. Minimize unvegetated areas.	Not significant.
	Operation	Higher peak flows and suspended sediment during activities.	Significant	Negative	Onsite water management to store wash water. Preserve woodland in buffer areas of quarry.	Not significant.

Table 5. Summary of impacts and mitigation on Valued Environmental Components, Hartville Quarry Expansion.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Suggested Mitigation	Significance after Mitigation
	Operation	Releases of chemicals from blasting and runoff from materials stored on site.	Negligible	Negative	Isolate and treat runoff from work areas and stored materials piles.	Not significant.
	Construction & Operation	Accidental spills of hydrocarbons on site.	Significant	Negative	Provide pollution prevention and emergency measures.	Not significant.
Terrestrial Environments	Construction	Grubbing, road construction, pit preparation. Damage to natural forest ecosystem, and associated species.	Significant	Negative	Maintain forested buffers. Conduct species specific breeding bird surveys prior to development stages. Monitor species-at-risk birds and Snapping Turtle. Monitor for invasive and exotic plant species. Conduct forest removal in small stages corresponding to site development and not in breeding period for birds.	Not significant.
	Operation	Dust, nutrient inputs from runoff, changes to environment and functioning of forest communities.	Negligible	Negative	Maintain buffers. Conduct species specific surveys prior to expansion into new areas. Be aware of critical times for rare species which might occur.	Not significant.
Fish & Fish Habitat	Construction	No direct or indirect impact. Change runoff patterns at site in local and adjacent watersheds.	Negligible	Negative	Runoff management to maintain flow to natural watersheds and to avoid sudden runoff events.	Not significant.
	Operation	No direct impact. Site runoff management and water use affects hydrological and groundwater regime.	Negligible	Negative	Ensure the runoff from the site is managed to avoid sudden runoff events.	Not significant.
	Construction & Operation	No direct impact. Small releases of oils, hydraulic fluids etc. from operating equipment. Accidental spills of hydrocarbons on site and on roads passing surface waters.	Negligible	Negative	Maintain equipment to minimize loss of lubricants and fuels. Provide pollution prevention and emergency measures.	Not significant.
	Operation	No direct or indirect impact. Accidental spills into watercourses due to vehicle accidents on roads in area.	Negligible	Negative	Recommend safe driving practices for truckers and staff and reduce speed in vicinity of quarry key intersections. Provide pollution prevention and contingency measures for accidents.	Not significant.
Terrestrial Flora & Fauna & Habitat	Construction	Removal of Existing Forest Communities	Negligible	Negative	Restore damaged and unused parts of the site (e.g. grubbing's and waste	Not significant.

Table 5. Summary of impacts and mitigation on Valued Environmental Components, Hartville Quarry Expansion.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Suggested Mitigation	Significance after Mitigation
					rock piles) as soon as possible. Long-term site rehabilitation plan developed with NSECC. Cut forest short term only as needed to expand quarry. Conduct species specific breeding bird survey prior to development.	
	Construction & Operation	Noise disturbs wildlife which avoid or can be driven out of nearby areas.	Significant	Negative	Consider placing noisy equipment such as crushers in parts of the quarry which direct noise away from the forested areas.	Not significant.
		Accidental contaminant releases, contamination of habitat.	Significant	Negative	Provide pollution prevention and emergency measures & response capability. Remediate areas affected by spills.	Not significant.
		Artificial light from operations influences movements of birds and insects.	Significant	Negative	Use directional lighting with downward focus to minimize light leaving the quarry.	Not significant.
		Removal of potential forest and wildlife resource (i.e., wildlife habitat)	Negligible	Negative	Small area affected relative to the total available. Minimize footprint of quarry. Restore and rehabilitate areas not used. Leave mature standing trees where possible as nest cavities.	Not significant.
		Quarry affects wildlife movement patterns and connectivity of habitats.	Negligible	Negative.	Restoration should include consideration for wildlife movement through the restored site.	Not significant.
Species at Risk	Construction	Removal of potential habitat for SAR occurring in the area.	Negligible	Negative	Small area affected relative to the total available. Minimize footprint of quarry.	Not significant.
	Operation	Sound from blasting can harm bats and birds.	Negligible	Negative	Minimize blasting activity and concentrate in summer (outside breeding and migratory periods for birds and bats).	Not significant.
		Light influences movements of species at risk birds migrating overland.	Significant	Negative	Use directional lighting with downward and lateral focus to minimize light leaving the quarry.	Not significant.
		Open and revegetated areas and grubbing's piles may be occupied by nesting species such as nighthawks and Snapping Turtle,	Significant	Negative	Educate personnel to look for birds of concern prior to activities; periodically conduct nesting bird survey at site. Restrict quarry activities around	Not significant.

Table 5. Summary of impacts and mitigation on Valued Environmental Components, Hartville Quarry Expansion.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Suggested Mitigation	Significance after Mitigation
					margins where turtles may nest to the late fall to spring period (i.e. November to April).	
SOCIOECONOMIC COMPONENTS						
Mi'kmaq	Construction and Operation	Any land use conflicts with Mi'kmaq Right to Use land	Significant	Neutral	Engage with Mi'kmaq in developing quarry.	Not significant.
		Expansion reduces the land base available for wildlife to a minor degree.	Negligible	Negative	Employ Best Management Practices for noise and activity quarries. Avoid accidental releases of contaminants. Avoid vehicle accidents.	Not significant.
Archaeological, Cultural and Historical Significance	Construction	Expansion may affect undiscovered artifacts.	Not significant	Negligible	Unlikely that artifacts occur at site. Stop work and report discoveries. Minimize project footprint.	Not significant.
Recreation	Construction & Operation	Quarry traffic uses same roads as both residents and tourists.	Not significant	Negative	Signage of truck use, dangers, and quarry activity. Use for safety program for responsible driving by truckers transporting product.	Not significant.
Tourism and Viewscape	Construction & Operation	Principal interaction of the quarry with tourists is through encounters with trucks and other vehicles. Quarry cannot be seen.	Negligible	Negative	Maintain entrance to quarry access road in natural condition. Safety program for vehicle operators transporting product.	Not significant.
Residential Use	Construction & Operation	Noise; light pollution perceived by local residents; operation of trucks and transportation of heavy equipment along highways used by locals.	Significant	Negative	Use best management practices. Provide community with safety information for truck traffic and quarry operations. Ensure protective measures such as tarps over loads are used to prevent release of product onto road surface.	Not significant.
Recreational and Mi'kmaq Hunting and Fishing	Construction & Operation	Accidental hydrocarbon spills and blasting residues contaminate surface runoff, but has negligible potential for reaching waters supporting fish.	Negligible	Negative	Not an important local activity. Provide pollution prevention, emergency measures & response capability. Identify and control contaminant releases.	Not significant.
	Construction	Loss of forested area under quarry footprint.	Not significant	Negative	Small area affected. Rehabilitate areas no longer needed for activity and future development.	Not significant.

Table 5. Summary of impacts and mitigation on Valued Environmental Components, Hartville Quarry Expansion.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Suggested Mitigation	Significance after Mitigation
					Minimize cutting outside quarry footprint.	
Water Supplies & Residential Wells	Construction and Operation	Blasting potentially impacts local aquifers.	Negligible	Negative	No wells within 1 km and only one non-residential surface water well at 300 m. Develop groundwater-monitoring plan in consultation with NSECC.	Not significant.
Economy, Land Use and Value	Construction & Operation	Removal of potential forest and wildlife resource (e.g., forestry & trapping).	Not significant	Negative	Small area affected relative to total land available. Minimize footprint of quarry. Restore and rehabilitate areas not used.	Not significant.
Transportation	Operation	Wear on highway	Negligible	Negative	Current levels low and will not increase.	Not significant.
	Operation	Collisions with trucks and equipment on Ellershouse Road.	Not significant	No Change	Use good signage at entrance to access road, have speed policy in vicinity of quarry. Safety training for truck drivers.	Not significant
Industrial & Commercial Use	Operation	Use of access road for forestry and access to Wind Turbines.	Negligible	Neutral	Quarry will cooperate to maintain access road to support other industrial and Mi'kmaq users.	Not significant.
Resource Use Forestry, Hunting & Trapping	Construction & Operation	Removes woodland; game habitat.	Not significant	Negative	A relatively small area is used. Minimize footprint and rehabilitate areas no longer needed.	Not significant.
Parks and Protected areas	Construction & Operation	Noise and blasting likely can be heard parks in the general area, but is short term and infrequent.	Not significant	Neutral	Employ best management practices for all aspects of quarry operation, in particular control of noise, light, and dust.	Not significant.

7 IMPACTS OF THE ENVIRONMENT ON THE PROJECT

Hartville Quarry will not be impacted to a significant degree by weather, including high winds and rainfall, and effects can be managed by appropriate site design and surface water management features. Halifax Formation bedrock which is potentially acid-generating, may occur in parts of the proposed expansion area; this would affect the development trajectory of the quarry. Acid-generating potential of rock should be tested as the quarry expands.

8 CUMULATIVE EFFECTS

Expansion of the Hartville Quarry will have minimal cumulative effects, in part because of the small size of the expansion relative to other similar uses of the area involving development of sites for aggregate production, mining, and other industrial development; and because the pit is expected to be reclaimed at the end of its useful life. Cumulative effects are effects of a project that are likely to result in combination with other physical activities that have been or will be carried out (IAA 2023). Relative importance of particular cumulative effects is determined using similar criteria to those of individual impacts of projects, which are often socially-perceived limits, such as acceptable geographic extent of the effect relative to available land or habitat type in a particular area.

The Hartville Quarry's proposed expansion of approximately 6 ha is comparatively small and only 0.5% of the current area developed for similar purposes within a 10 km radius of the site (1074.6 ha) (e.g. gravel pits, quarries, gypsum mines or other areas which involve modifying the landscape for industrial development) (NS Forest Classification 2013) and will not be a significant increase in relation to those uses. The expansion area would remove previously clear-cut forest, which will result in a reduction of about 0.3% of the approximately 2,042 ha of clear-cut and natural forest types occurring within the same 10 km radius (NS Forest Classification 2013). Two open pit gypsum mines— Fundy Gypsum Wentworth Road and Miller Creek— are the largest contributors and alone occupy 361.9 and 457.3 ha respectively. A smaller but significant developed area is the Newport Corner DND site (68.8 ha); and there is a significant amount of permanent urban development associated with the outskirts of Windsor. The Brycon Construction Limited aggregate quarry located immediately adjacent and north of the Hartville Quarry occupies approximately 4 ha. The adjacent Ellershouse Wind Farm with 10 turbines occupies approximately 60 ha (turbine pads and infrastructure) most of which was new permanent construction; and a further expansion to 12 additional turbines and a project area of 69 ha is currently proposed. The proposed quarry expansion area is 5% of these projects, occurring over the life of the quarry, and the land is expected to be rehabilitated. Combined with the adjacent quarry and the two wind projects, 138.8 ha is involved, or 6.8% of forested area within a 10 km radius. Apart from the increase in footprint of the quarry, site operations are not expected to increase in frequency or scope from past use. Therefore the cumulative effect of the quarry and other local activity is not expected to change and will be negligible.

9 OTHER APPROVALS REQUIRED

The process of registering an expansion of the Hartville Quarry requires an amendment to the current Industrial Approval for a quarry under 4 ha. Alva Construction Limited will summarily apply for the required amendment upon approval.

10 FUNDING

Alva Construction Limited is a privately owned incorporated company and is solely supporting all its operations. No government or public funding is involved.

11 CORPORATE AUTHORIZATION

This registration document for the Hartville Quarry is submitted as authorized by Mr. A.G. MacDonald, Vice-President, Alva Construction Limited.

APRIL 8, 24

Date

A.G. MacDonald, Vice-president
Alva Construction Limited

12 REFERENCES

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