



**DEXTER CONSTRUCTION COMPANY LIMITED  
WHYCOCOMAGH QUARRY EXPANSION,  
WHYCOCOMAGH, INVERNESS COUNTY  
NOVA SCOTIA**

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

**NOVEMBER 2021**

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## 1.0 EXECUTIVE SUMMARY

Dexter Construction Company Limited of Bedford, Nova Scotia is proposing to expand an existing aggregate quarry located at 5505 Whycocomagh Port Hood Road, Churchville, Inverness County, Nova Scotia. An approval to expand the quarry is required under the Nova Scotia Environmental Assessment Regulations. The registration of this Environmental Assessment (“EA”) is in response to Schedule A of the Environmental Assessment Regulations, Undertaking B.2., “A pit or quarry that is larger than 4 ha. in area for extracting building or construction stone.”

The Whycocomagh quarry operates under an existing Nova Scotia Environment and Climate Change (NSECC) Industrial Approval (Approval No. 2009-069961-02), which has a current expiry date of March 10, 2030.

Dexter proposes to expand its existing Whycocomagh quarry to produce aggregate, primarily used in the local highway and construction industry. The proposed undertaking (“the quarry”) involves the expansion of an existing NSECC approved quarry from a less than four-hectare quarry to a 10.0-hectare quarry. Other than the proposed increase in size, it is expected that continued use of the quarry will be identical, or very similar, to historic use of the site.

The Environmental Assessment for this project involved review of the Industrial Approval (IA) for the existing quarry, testing for Potential Acid Rock Production, the preparation of a Biophysical Assessment, an Archaeological Resource Impact Assessment, Water Balance Assessment, and Stakeholder Engagement. The environmental assessment follows the “Guide to Preparing an EA Registration Document for Pit and Quarry Developments in Nova Scotia (NSE September 2009). The NSECC guidance document states that an “Environmental Assessment (EA) is a planning and decision-making tool used to promote sustainable development. By predicting and evaluating the environmental effects of an undertaking before it begins there is the opportunity to mitigate potential impacts of the undertaking on the environment”.

Dexter has engaged various project stakeholders, as outlined herein. Community engagement to date has focussed on notifying local elected officials. Engagement efforts have included email correspondence and in person meetings. As part of the Biophysical Assessment, local community members in the immediate vicinity of the Quarry were contacted to provide comments on their interactions with the quarry over the years. Engagement letters have been sent to local First Nations stakeholders to notify them of the project and offer meetings to discuss the project in greater detail.

For this assessment a list of Valued Environmental Components (VECs) and project activities for the proposed quarry expansion were developed and the potential for interactions of these activities with VECs were identified. Where interactions were identified and there was potential for significant impacts, mitigating actions or activities have been identified that will avoid the impact or reduce it to acceptable levels before the project proceeds. This process ensures that potentially significant impacts on VECs are identified and potential impacts on them have been considered and sufficient mitigation planned and implemented.

It is noted that the existing Whycocomagh quarry is subject to an existing IA, which includes conditions related to operational sound levels, separation distances, particulate emissions, surface water quality, groundwater management, blasting, reclamation, regulatory reporting as well as several site-specific conditions. It is understood that prior to quarry expansion, the existing IA will be amended based on the results derived from the various studies and assessments that form this Environment Assessment, and the potential EA Approval. The amended IA will outline

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the operational requirements of the future quarry operation. It is expected that the amended IA will include additional conditions for specific surface water monitoring and groundwater monitoring. Environmental monitoring information that is collected from the site will be provided to NSECC as part of an annual report.

In addition to the respective site approvals, Dexter also operates the quarry in accordance with applicable environmental laws and regulations, including the NSECC Pit and Quarry Guidelines.

Dexter is required to notify NSECC of any adverse effect or the potential for adverse effect which the Company becomes aware of while operating under the IA and must notify NSECC if any of the conditions specified in the IA are violated or exceeded.

Dexter is required to bear all costs associated with meeting the requirements of the approval; no cost is borne by the Nova Scotia taxpayer.

Dexter is committed to operating the expanded quarry as per the NSECC Industrial Approval through the use of proven Best Practices and the deployment of Professionals knowledgeable in Environmental Management.

## 2.0 INTRODUCTION

Dexter Construction Company Limited (herein after referred to as “Dexter”) of Bedford, Nova Scotia is proposing to expand an existing aggregate quarry located at 5505 Whycocomagh Port Hood Road, Churchville, Inverness County, Nova Scotia. An approval to expand the quarry is required under the Nova Scotia Environmental Assessment Regulations. The registration of this Environmental Assessment (“EA”) is in response to Schedule A of the Environmental Assessment Regulations, Undertaking B.2., “*A pit or quarry that is larger than 4 ha. in area for extracting building or construction stone.*”

Dexter is a private Canadian company. It is incorporated under the laws of Nova Scotia and registered to do business in Nova Scotia under the Nova Scotia Corporations Registration Act. Dexter’s Company Profile Report from the Nova Scotia Registry of Joint Stock Companies is attached in **Appendix A** “Property Information.” Municipal Enterprises Limited is the parent company of Dexter and may be referred to within the appendices.

### Proponent Address:

927 Rocky Lake Drive,  
P.O. Box 48100  
Bedford, NS, B4A 3Z2  
Phone: 902-835-3381

### Proponent Contact:

Gary Rudolph, P. Eng.  
927 Rocky Lake Drive,  
P. O. Box 48100  
Bedford, NS, B4A 3Z2  
Phone: 902-835-3381

### Consultant Contact:

Mr. J. H. Fraser, M. A. Sc., P. Geo.  
Consulting Hydrogeologist  
Phone: 772-812-1981 (Cell)

The Whycocomagh quarry operates under an existing Nova Scotia Environment and Climate Change (NSECC) Industrial Approval (Approval No. 2009-069961-02), which has a current expiry date of March 10, 2030. A copy of the Industrial Approval (NSE File # 92100-30) is also attached in **Appendix A** “Property Information”.

## 3.0 THE UNDERTAKING

### 3.1 Description of the Undertaking

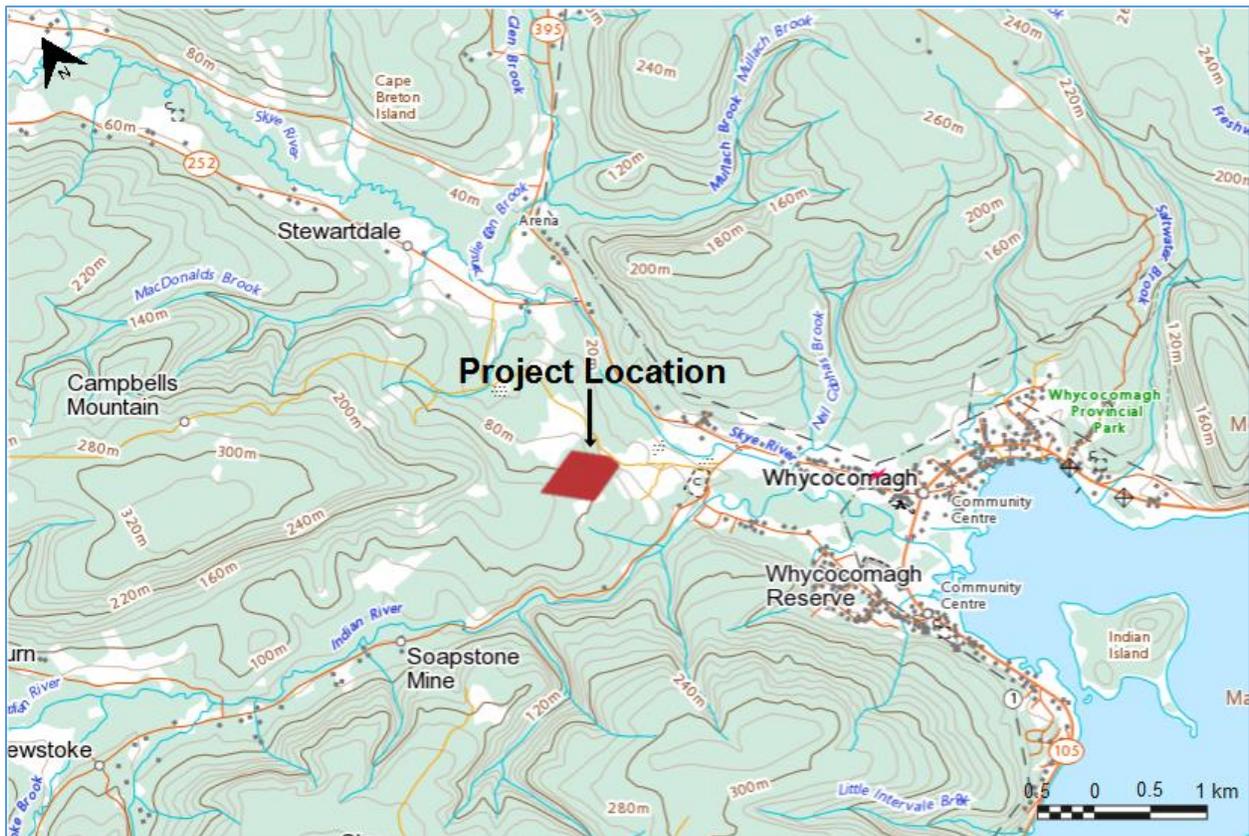
Dexter proposes to expand its existing Whycocomagh quarry to produce aggregate, primarily used in the local highway and construction industry. The proposed undertaking (“*the quarry*”) involves the expansion of an existing Nova Scotia Environment approved quarry from a less than four-hectare quarry to a 10.0-hectare quarry. Other than the proposed increase in size, it is expected that continued use of the quarry will be identical, or very similar, to historic use of the site. A plan showing the existing NSECC approved quarry permit area is included in **Appendix**

A. The 10.0-hectare proposed boundaries of the proposed quarry expansion area are illustrated in **Appendix B**.

### 3.2 Location

The quarry is located on Company owned land (PID# 50209980) on the Chuggin Road off the Whycocomagh Port Hood Road in the community of Churchview, Inverness County, Nova Scotia, 5094474 Northing, 642657 Easting, UTM Zone 20, NAD 83. The site is shown in Google Earth satellite imagery from July 2019 (**Figures 1 & 2 (below) and Drawing 1, Appendix B**). There is no designated Municipal zoning in this area of Whycocomagh / Inverness County.

**Figure 1 – Project Location.**



**Figure 2 – Site Location and Adjacent Land Use.**



## **4.0 SCOPE OF THE UNDERTAKING**

Dexter intends to expand the existing Whycocomagh quarry for the continuing purpose of extracting and supplying aggregate for the local construction industry. Other than the proposed increase in size, it is expected that continued use of the quarry will be identical, or very similar, to historic use of the site.

The existing quarry was originally developed by others and has been operated as a NSECC approved quarry since 1999. Dexter acquired the site in 2011 and the IA was subsequently transferred to Dexter. A working highwall has been developed in the central portion of the property, advancing to the southwest. The site is operated periodically during the road construction season to provide construction aggregates for local projects as well as Nova Scotia Department of Public Works (NSPW) projects in the area. The quarry is currently operating under a NSECC IA (2009-069961-02) for a less than four-hectare quarry. The scope of this application is for expansion of the existing quarry to a 10.0-hectare permit area. The existing active area includes a working highwall, stockpiled overburden, a staging area for a portable crushing spread and/or a portable asphalt plant (with separate a NSECC approval), stockpiling areas, and site infrastructure including a temporary scalehouse and truck scale. During past operations, Dexter has extracted an average of approximately 25,000 to 50,000 tonnes of aggregate per year from the quarry during years in which the quarry was active. There are no off-site related support facilities, other than the provincial highway network.

It is Dexter's intent to continue quarry operations on the property. It is anticipated that future operations will involve the extraction of up to 50,000 tonnes/year during years in which the quarry is active. However, the annual quantity may vary depending on local demand and associated project requirements.

### **4.1 Purpose/Need of the Undertaking**

Dexter proposes to expand the existing Whycocomagh quarry to produce aggregate, primarily used in the road and local construction industry. The primary benefit will be to the people of Nova Scotia via the continued construction and maintenance of the Provincial highway system.

### **4.2 Consideration of Alternatives**

Dexter operates rock quarries throughout Nova Scotia and Atlantic Canada and uses modern industry standard methodologies in all phases of the extraction, processing, and delivery processes. Alternative processes are always being considered in terms of their efficiency, cost effectiveness and environmental mitigation advantages. Operations at the Whycocomagh quarry will be assessed on an on-going basis to ensure that the best available techniques are being utilized in all phases of day-to-day operations.

### **4.3 Scope of the Environmental Assessment**

The scope of the environmental assessment is in keeping with the NSECC document entitled "Guide to Preparing an EA Registration Document for Pit and Quarry Developments in Nova Scotia" as well as Dexter's experience with respect to similar projects over the past several decades. The NSECC guidance document states that an "Environmental Assessment (EA) is a planning and decision-making tool used to promote sustainable development. By predicting and evaluating the environmental effects of an undertaking before it begins there is the opportunity to mitigate potential impacts of the undertaking on the environment".

The scope also takes into consideration that the quarry is, at present, operational, and subject to an existing IA (**Appendix A**). It is noted that the existing IA includes conditions related to operational sound levels, separation distances, particulate emissions, surface water quality, groundwater management, blasting, reclamation, regulatory reporting as well as several site-specific conditions. It is understood that prior to quarry expansion, the existing IA will be amended based on the results derived from the various studies and assessments that form this EA, and potential EA Approval. The amended IA will outline the operational requirements of the future quarry operation.

The following sections of this document provide a description of the project, an overview of the human uses and biophysical features of the local environment; outline the key “Valued Environmental Components” addressed by the EA document; and present an evaluation and summary of the benefits and potential impacts to the environment during all phases of the proposed undertaking. In support of the EA a Biophysical Assessment (**Appendix D**), an Archaeological Resource Impact Assessment (ARIA) (**Appendix E**), and Water Balance Assessment (**Appendix F**) were completed.

Envirosphere Consultants Limited (Envirosphere) was retained by Dexter to undertake a Biophysical Assessment as part of the proposed expansion of the Whycocomagh quarry. Information for the Biophysical Assessment (**Appendix D**) was obtained from consultants’ personal knowledge, from reviews of available information 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. For this assessment a list of VECs, and project activities and outcomes for the expansion of the existing quarry were developed. Potential for interactions of these activities with VECs was identified. Where interactions were identified, and there was potential for significant impacts, mitigating actions or activities have been suggested that will avoid the impact or reduce it to acceptable levels before the project proceeds. The process ensures that all potentially significant impacts on VECs are identified and all potential impacts on them have been considered, and sufficient mitigation planned. These aspects of the project are fully dealt with in Section 6 – Valued Environmental Components and Effects Management.

Cultural Resource Management Group Limited (CRM Group) was retained by Dexter to undertake an ARIA as a part of the proposed expansion of the Whycocomagh quarry. The assessment involved background research, Mi’kmaw engagement and field reconnaissance to identify, document, interpret and make management recommendations for potential cultural resources within the proposed impact area (Archaeological Resource Impact Assessment. CRM, 2021 – **Appendix E**).

The ARIA was conducted according to the terms of Heritage Research Permit A2020NS110 (Category “C”) issue to CRM (Sarah Ingram) through the Special Places Program of the NS Department of Communities, Cultural and Heritage (Special Places). The report describes the ARIA of the Whycocomagh quarry expansion study area, presents the results of these efforts and offers cultural resource management recommendations. Based on these results, CRM provided the following specific recommendations for the study area:

1. It is recommended that the study area, as defined in the CRM report be cleared of any requirement for future archaeological investigation.

2. Should the ground disturbance extent beyond the current proposed study area, further archaeological assessment must be conducted as the surrounding area retains archaeological potential.
3. In the unlikely event that archaeological deposits or human remains are encountered during activities associated with the development of the quarry, all work in the associated area should be halted and immediate contact made with the Special Places Program (John Cormier at (902) 424-6475).

Consulting Hydrogeologist J. Fraser prepared a Water Balance Assessment for the proposed Whycocomagh quarry study area. This Water Balance presents an assessment of the estimated effects on the surrounding water features resulting from the proposed quarry expansion. The analysis is intended to identify any potential changes in the surface and groundwater flow regime and to provide input into the design and implementation of surface water control infrastructure as the site is further developed. The Water Balance Assessment for the Whycocomagh quarry is included as **Appendix F**.

#### **4.4 Other Approvals Required**

The existing Whycocomagh quarry is subject to an existing IA (**Appendix A**), which includes conditions related to operational sound levels, separation distances, particulate emissions, surface water quality, groundwater management, blasting, reclamation, regulatory reporting as well as several site-specific conditions. It is understood that prior to quarry expansion, the existing IA will be amended based on the results derived from the various studies and assessments that form this Environment Assessment, and the potential EA Approval. The amended IA will outline the operational requirements of the future quarry operation. It is expected that the amended IA will include additional conditions for specific surface water monitoring and groundwater monitoring. Environmental monitoring information that is collected from the site will be provided to NSECC as part of an annual report.

In addition to the respective site approvals, Dexter also operates the quarry in accordance with applicable environmental laws and regulations, including the NSECC Pit and Quarry Guidelines. If the Dexter fails to comply the conditions of approval, the IA may be suspended or revoked. Failure to comply may also result in penalties as set out in the *Nova Scotia Environment Act* and associated regulations.

Dexter is required to notify NSECC of any adverse effect or the potential for adverse effect which the Company becomes aware of while operating under the IA and must notify NSECC if any of the conditions specified in the IA are violated or exceeded.

Dexter is required to bear all costs associated with meeting the requirements of the approval; no cost is borne by the Nova Scotia taxpayer.

## **5.0 PUBLIC CONSULTATION AND STAKEHOLDER ENGAGEMENT**

### **5.1 Methods of Involvement**

Dexter has engaged various project stakeholders, as outlined below. Community engagement to date has focussed on notifying local elected officials. Engagement efforts have included email correspondence and in person meetings. As part of the Biophysical Assessment, local community members in the immediate vicinity of the Quarry were contacted by EnviroSphere to provide comments on their interactions with the quarry over the years.

A site visit was held on June 21, 2021, with regulatory stakeholders, including those from the NSECC EA Branch, NSECC Regional Office, and the Nova Scotia Department of Lands and Forestry. The site tour provided an opportunity for stakeholders to explore the quarry, gain an understanding of the scope of the operation, and ask questions about general quarry operations and site management.

With respect to the First Nations Community, Dexter has followed the Proponent's Guide: The Role of Proponents in Crown Consultation with the Mi'kmaq of Nova Scotia. In this regard Dexter has advised Chief Rod Googoo (We'koqma'q First Nation) of its intent to file the Registration Document for a Class 1 Undertaking under Section 9 (1) of the NS Environmental Assessment Regulations. Dexter also sent this letter to Ms. Twila Gaudet, Director of Consultation with the Kwilmu'kw Maw-klusuaqn Negotiation Office (KMKNO), Chief Lorraine Augustine of the Native Council of Nova Scotia, and Ms. Gillian Fielding, Consultation Advisor with the Nova Scotia Office of L'Nu Affairs. A follow up letter was also sent to all noted First Nation representatives on October 20, 2021, advising of the EA registration date, public viewing locations, and timelines for the submission of comments. A copy of First Nations correspondence is included in **Appendix G**.

**Table 1 – Summary of Stakeholder Engagement Efforts Conducted to Date.**

Stakeholder	Description of Engagement	Summary of Engagement
<b>We'koqma'q First Nation</b> Chief Rod Googoo	January 29, 2021 Early Engagement Letter	<ul style="list-style-type: none"> <li>• Early engagement letter, including brief description of project and anticipated timeline, offer to discuss the project, and commitment to send a follow up notification letter prior to EA registration.</li> <li>• No response received</li> </ul>
	October 20, 2021 Notification Letter	<ul style="list-style-type: none"> <li>• Notification letter, including EA registration date, copy of draft public notice and publish locations, location of hard and electronic copies available for review, deadline for submission of comments, offer to meet to discuss</li> </ul>
<b>Kwilmu'kw Maw-klusuaqn Negotiation Office</b> Ms. Twila Gaudet	January 29, 2021 Early Engagement Letter	<ul style="list-style-type: none"> <li>• Copied KMKNO on early engagement letter to We'koqma'q First Nation</li> <li>• No response received</li> </ul>
	October 20, 2021 Notification Letter	<ul style="list-style-type: none"> <li>• Copied KMKNO on Notification letter, including EA registration date, copy of draft public notice and publish locations, location of hard and electronic copies available for review, deadline for submission of comments, offer to meet to discuss</li> </ul>

<b>Native Council of Nova Scotia</b> Chief Lorraine Augustine	January 29, 2021 Early Engagement Letter	<ul style="list-style-type: none"> <li>• Early engagement letter, including brief description of project and anticipated timeline, offer to discuss the project, and commitment to send a follow up notification letter prior to EA registration.</li> </ul>
	January 29, 2021 Email	<ul style="list-style-type: none"> <li>• Forwarded a copy of early engagement letter via email to Jesse MacDonald (NCNS).</li> <li>• Email response received. Meeting scheduled.</li> </ul>
	February 18, 2021 Virtual Meeting (Jesse MacDonald, NCNS; Rhett Thompson, Dexter; Gary Rudoloh, Dexter)	<ul style="list-style-type: none"> <li>• High level discussion of typical Industrial Approval requirements and the requirement for an EA to expand the site.</li> <li>• Explained the scope of existing operations and the scope of proposed expansion.</li> <li>• NCNS questions included; <ul style="list-style-type: none"> <li>- What is the proposed size of the expansion?</li> <li>- How is water managed at the site?</li> <li>- What type of explosives are used?</li> <li>- How is dust controlled?</li> <li>- Have archaeological studies been completed / and features identified?</li> </ul> </li> <li>• NCNS noted the susceptibility of aggregate sites to invasive species and the importance of implementing mitigation measures when possible.</li> <li>• Confirmed that Dexter will follow up with a Notification Letter when environmental studies have been complete and EA registration date has been confirmed.</li> </ul>
	October 20, 2021 Notification Letter	<ul style="list-style-type: none"> <li>• Notification letter, including EA registration date, copy of draft public notice and publish locations, location of hard and electronic copies available for review, deadline for submission of comments, offer to meet to discuss</li> </ul>
	October 20, 2021 Email	<ul style="list-style-type: none"> <li>• Forwarded copy of Second notification letter via email to Jesse MacDonald (NCNS)</li> </ul>
	<b>Office of Aboriginal Affairs</b> Ms. Gillian Fielding Consultation Advisor	January 20, 2021 Email
January 29, 2021 Early Engagement Letter		<ul style="list-style-type: none"> <li>• Copied OAA on early engagement letter to We'koqma'q First Nation</li> </ul>
January 29, 2021 Email		<ul style="list-style-type: none"> <li>• Forwarded a copy of early engagement letter via email</li> </ul>
October 20, 2021 Notification Letter		<ul style="list-style-type: none"> <li>• Copied KMKNO on Notification Letter, including EA registration date, copy of draft public notice and publish locations, location of hard and electronic copies available for review, deadline for submission of comments, offer to meet to discuss</li> </ul>
October 20, 2021 Email		<ul style="list-style-type: none"> <li>• Forwarded copy of Notification Letter via email</li> </ul>
<b>Local Community - Elected Officials</b> MLA Allan MacMaster	August 30, 2021 Email	<ul style="list-style-type: none"> <li>• Dexter email to notify of Project and upcoming EA Registration, including an offer to meet to discuss the Project (not response received)</li> </ul>
	October 15, 2021 Email	<ul style="list-style-type: none"> <li>• Follow-up email to notify of registration date and placement of public notices, and an offer to meet to discuss the Project. (no response received to date)</li> </ul>

<b>Local Community - Elected Officials</b> Inverness County Councillor Mr. John MacLennan District 4 (Whycocomagh / Orangedale / Ainslie)	August 30, 2021 Email	<ul style="list-style-type: none"> <li>Dexter email to notify of Project and upcoming EA Registration, including an offer to meet to discuss</li> </ul>
	September 14, 2021 Meeting	<ul style="list-style-type: none"> <li>High level history of the site. Developed approximate 20-years ago by Gordie Munroe. Now owned and operated by Dexter.</li> <li>High level overview of NSE Quarry Approvals (Industrial Approval (&lt;4 ha) vs. Environmental Assessment Approval (&gt;4 ha), including summary of terms and conditions in a typical Industrial Approval.</li> <li>Reviewed the location of the Whycocomagh Quarry in relation to the other sites in the area.</li> <li>Discussed the scope of the expansion (proposed expansion from 4-hectares to 10.0-hectares. Noted that there are no anticipated operational changes (frequency, duration, level of activity, etc.) other than an increase in the site footprint. Site to be seasonally operated on an as needed basis to support Dexter work in the area.</li> <li>Reviewed reclamation requirements, including regular updates to the site Reclamation Plan and ongoing requirement for Reclamation Security.</li> <li>Noted that primary benefit to the community is crews using local accommodations and services, and a quality source of aggregate for use on highway projects in the community.</li> <li>Noted that we intend to register the project for Environmental Assessment in early November. Aligned with this will be a newspaper notice inviting comments from the public.</li> <li>Reviewed a copy of the Whycocomagh Quarry Expansion Project Description, drone photo of the site, and Dexter quarry discussion package. Documents were forwarded electronically.</li> </ul>
	October 15, 2021 Email	<ul style="list-style-type: none"> <li>Email to notify of registration date, placement of public notices, and viewing locations</li> </ul>
<b>Government Stakeholders</b> NSE EA Branch - EA Officer NSE Compliance - Regional Engineer NSE Compliance - Inspector DLF - Regional Biologist	June 21, 2021 Site Visit	<ul style="list-style-type: none"> <li>Site visit to review scope of site and discuss typical quarry operations</li> </ul>

## 5.2 Stakeholders Comments

No stakeholder comments regarding the project have been received to date. General questions regarding the project have been discussed with local elected officials. Dexter will document any concerns received during the public consultation portion of the EA process and provide a copy to NSECC.

No concerns regarding the project have been received from the First Nations Community to date. Dexter will continue to liaison with the First Nation Community when appropriate, and forward any comments received regarding the Project to NSECC.

### 5.3 Future Steps

The public will be notified of the EA Registration by an advertisement in the Chronicle Herald and the Cape Breton Post on November 3, 2021. A copy of the newspaper advertisement is included in **Appendix G**.

## 6.0 DESCRIPTION OF THE UNDERTAKING

### 6.1 Existing Quarry Operations

The existing quarry operations involve blasting, crushing, and stockpiling of aggregate, and associated trucking on an as required basis. In addition, a portable NSECC approved asphalt plant may occasionally be situated on the property. The quarry is operated in accordance with an existing IA (Approval No. 2009-069961-02). A copy of the IA is attached in **Appendix A**. The quarry operates in accordance with applicable environmental laws and regulations, including the Nova Scotia Pit and Quarry Guidelines. These Guidelines apply to all pit and quarry operations in the province and 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. Dexter is committed to the utilization of 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.

Operation of the quarry occurs on an as-required basis. Blasting occurs on average one to two times per year during years in which the site is active. Surface water controls are maintained, and associated surface water monitoring is conducted at the request of NSECC.

Site operations and historic aggregate excavation has not encountered the deep bedrock water table as evidenced by the lack of water ponding on the quarry floor, no observed seepage from the quarry highwall, and no upwelling of water through the quarry floor.

With respect to the characteristics of the quarry bedrock, a rock sample from the quarry was analysed for sulphur content to determine if the material was sulphide bearing. The results of this analysis yielded a sulphur concentration of 0.038 % (1.16 kg H<sub>2</sub>SO<sub>4</sub>/tonne), which is below the minimum (0.4 % S; 12.51 kg H<sub>2</sub>SO<sub>4</sub>/tonne) defined by NSE as sulphide bearing material. The laboratory results of this sample are included in **Appendix C**.

### 6.2 Future Quarry Operations

Dexter proposes to expand the Whycocomagh quarry for the extraction, storage, and removal of aggregate, primarily used in the road and local construction industry. Dexter is proposing to expand the existing quarry to a maximum 10.0-hectares, which includes the existing production and operational footprint, set-up and storage (stockpiles) areas, and provisions for surface water control.

Although totally dependent on local market conditions, it is anticipated, at this time, that future development will involve the production of up to approximately 50,000 tonnes of aggregate per year, during years in which the site is active, for the foreseeable future. The quarry highwall would be initially advanced in a south-westerly direction from the existing face. **Drawing # 2, Appendix B** identifies the proposed 10.0-hectare expansion area.

Quarry operations will generally coincide with the road construction season; therefore, it is reasonable to anticipate periodic, seasonal operations within a similar time frame (April – December). The quarry will operate when and as required within the typical 32-week construction season, depending on local demand and project requirements. A typical project (often an NSPW Contract) will require crushing activities at the quarry for a period of two to four weeks at a time. Although uncommon, during crushing activities the site may be operated 24 hours per day, possibly 7 days per week. Following crushing activities, aggregate products would be loaded and hauled from the quarry for several weeks, or as required by the project. During load and haul activities the site is typically operated during daylight hours (approx. 12 hours per day), possibly 7 days per week. Dexter is committed to the utilization of 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.

Consistent with current operations, aggregate production would commence with 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.

The blasted rock will be excavated with an on-site excavator and processed by on-site portable crushing equipment. The various aggregate products will be stockpiled in designated areas within the quarry. Material within the quarry will be hauled and moved with a front-end loader. Products will be transported from the quarry via tandem and tractor trailer trucks via a 150 m private gravel driveway to the Chuggin Road and will be routed as necessary through the provincial highway and roadway network to support local projects. The number of trucks hauling aggregate will be determined on a job-by-job basis, however as the site is not expected to increase in level of activity, trucking activity is not expected to increase from past use.

Aggregate excavation will not take place below the deep bedrock water table. In addition, there will be no pumping of groundwater and therefore no dewatering of associated bedrock aquifer. Prior to quarry expansion, a network of groundwater monitoring wells will be installed around the quarry to confirm the local groundwater elevations.

## **7.0 VALUED ENVIRONMENTAL COMPONENTS AND EFFECTS MANAGEMENT**

### **7.1 Evaluation and Categorization of VEC's**

The Environmental Assessment for this project involved review of the Industrial Approval for the existing quarry (**Appendix A**), testing for Potential Acid Rock Production (**Appendix C**), the preparation of a Biophysical Assessment (**Appendix D**), an Archaeological Resource Impact Assessment (**Appendix E**), Water Balance Assessment (**Appendix F**), and a variety of Stakeholder Engagement as outlined in **Table 1** and **Appendix G**. The environmental assessment follows the “Guide to Preparing an EA Registration Document for Pit and Quarry Developments in Nova Scotia (NSE September 2009). For this assessment a list of VECs and project activities for the proposed quarry expansion were developed and the potential for interactions of these activities with VECs were identified. Where interactions were identified and there was potential for significant impacts, mitigating actions or activities have been identified that

will avoid the impact or reduce it to acceptable levels before the project proceeds. This process ensures that potentially significant impacts on VECs are identified and potential impacts on them have been considered and sufficient mitigation planned and implemented.

The list of Valued Environmental Components considered for the assessment, and interactions with project components, are presented in **Table 2**. The environmental effects and potential impacts of the project along with their significance and suggested mitigations are outlined in the following sections.

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

## 7.2 Socio-economic Components

### 7.2.1 Mi'kmaq First Nation

#### Background

The Mi'kmaq maintain 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. 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.

Coastal areas of the Bras d'Or Lakes and rivers, including the Skye River and Indian River leading inland in the vicinity of Whycocomagh may have been used by Mi'kmaq, including as a transportation route as Mi'kmaq moved throughout the province. However, there is low potential for occurrence of Mi'kmaq archaeological resources at the quarry site (CRM 2020).

The quarry is near the We'Kokma'q First Nation and activities at the quarry and transport trucks along the Whycocomagh-Port Hood Road and Highway 252 likely could be heard at the Reserve. Reservation Road which runs through the We'Kokma'q Reserve joins the Whycocomagh-Port Hood Road and serves as a north entrance to the Reserve; residents using the road would encounter traffic related to the quarries in this area.

In addition, it is noted that the land around the existing Whycocomagh quarry which is proposed for expansion may be used by Mi'kmaq for activities such as nature walks, bird watching and hunting or fishing, either recreational or for subsistence.

### Significance and Mitigation

With respect to the above, it is noted that there is low potential for occurrence of Mi'kmaq archaeological resources within the quarry site as outlined in the ARIA (CRM, 2020). In the unlikely event that artifacts are uncovered at the site, all work will stop, and discoveries will be reported to the appropriate authorities and mitigation will be enacted to the satisfaction of all parties involved.

The quarry is located approximately 500 m from the Skye River and approximately 700 m from the Indian Rivers and in this regard is not expected to have significant impacts. The land area affected is small in relation to the available wildlife habitat in the area, and would not likely affect wildlife or fish populations, potentially used by Mi'kmaq. Since quarry operations are not expected to change in scope or increase in frequency from past use, there is unlikely to be a change in the overall impact of the quarry or the cumulative effects of other activities in the area. Consequently, none of these effects are considered significant. Engagement with the local Mi'kmaq has occurred as part of this EA process and will continue on required basis throughout the lifespan of the project.

Best management practices used at the site will reduce potential impacts that the quarry activities may have on water quality/quantity and fish habitat. This will be validated via the implementation of both surface water management plans and associated monitoring that will be established through the subsequent IA process.

## **7.2.2 Recreational Activities**

### Background

Recreational use and nature appreciation of the environment in the vicinity of the site consists principally of walking/hiking and home-based recreation (e.g., gardening) concentrated around Highway 252 and the We'Koqma'k Reserve. Only activities associated with the Whycocomagh-Port Hood Road are likely to be affected by quarry activities, principally by truck traffic, and then only when the quarry is operational. Operations at the quarry would be cyclic, likely occupying several weeks during the construction season during the years in which the site is active, and the facilities are well maintained.

### Significance and Mitigation

Although quarry operations may be heard and residents may experience truck traffic and other effects of quarry operations, the frequency and scope of activities within the quarry is not expected to increase from past use, and any impact on normal activities of residents because of the proposed quarry expansion are expected to be negligible.

Signage will be in place during periods of site activity to ensure that residents are informed of seasonal quarry activities and associated trucking and transportation routes.

## **7.2.3 Tourism and Viewscape**

### Background

Expansion of the existing Whycocomagh quarry is not expected to impact tourism and viewscape. Highway 252 is an important local travel and tourism route to Western Cape Breton and operations at the quarry and associated truck traffic would interact with local and tourist traffic. Truck and equipment traffic accessing and exiting the site from the Whycocomagh-Port Hood Road and Highway 252 is expected to be the main interaction with tourists. This traffic is expected to be occasional, will be similar now as in the future, and would likely be only a minor impediment to tourist vehicle traffic in the area. The intersection of Highway 252 and the Whycocomagh-Port hood Road has a sharp angle of approach, which would require extra diligence from truck drivers and traffic signage. While the quarry is not visible from Highway 252, it may be visible from lookoffs on the Whycocomagh Mountain Trail, which in the western section of its route runs parallel to Highway 252 at an elevation of approximately 50 m, as well as from the highest elevations in Salt Mountain in Whycocomagh Provincial Park. However, in this regard the quarry at these distances is expected to be a small feature in the overall landscape.

### Significance and Mitigation

Overall, the effects on tourism and viewscape are expected to be negligible. Signage will be in place during periods of site activity to ensure that residents are aware of seasonal quarry activities and associated trucking and transportation routes. This may include truck turning signage at the intersection of the Whycocomagh-Port Hood Road during periods of on-site activity.

Other on-site mitigation to control and mitigate potential nuisance impacts will include Best Management Practices, including dust and noise control, and the on-going progressive rehabilitation of quarry areas no longer required for activity and/or future development.

## **7.2.4 Recreational, Commercial, and Mi'kmaq Fishing**

### Background

Recreational fishing in the Skye and Indian Rivers is not expected to be affected by activities at the quarry. The amount of runoff from the quarry has been determined to be a small percentage of the total runoff and is also expected to be of high quality, including low turbidity and neutral pH, which would be beneficial to downstream watercourses and fish habitat.

### Significance and Mitigation

The effects of the quarry expansion are expected to have a negligible impact on recreational, commercial and Mi'kmaq fishing. Mitigation will include the use of Best Management Practices on-site (i.e., pollution prevention, emergency response procedures, dust control, progressive rehabilitation). It is expected that a condition of EA approval will be to develop a surface water management plan for the site. A surface water management plan will be developed as part of the subsequent IA process and will include specific surface water controls. Surface water, groundwater, and blasting will be monitored as per the Terms and Conditions of the amended IA.

## **7.2.5 Archaeological / Cultural / Historical**

### Background

The land proposed for the quarry expansion has low potential for pre-contact and early historic Mi'kmaq archaeological resources and low potential for encountering historic Euro-Canadian archaeological resources (CRM 2020).

## Significance and Mitigation

The impact of the proposed quarry expansion on archaeological, cultural, or historical features is expected to be negligible. If an archaeological, cultural, or historical feature of significance is encountered during quarry activities, the impact will be reduced by halting operations and consulting with experts in the field to ensure the artifact or feature is not disturbed and is adequately documented and preserved. If the feature is suspected to be of Mi'kmaq origin, the appropriate Mi'kmaq authorities will be contacted.

### **7.2.6 Economy, Land Use, and Value**

#### Background

Activities at the Whycocomagh quarry will not restrict or negatively impact industrial activity in the area. The quarry supports construction activities through the use of aggregate from the quarry for projects in the area. When the quarry is operating, construction crews will typically use local accommodations and services as well as local trucks. The existing quarry has been operating at the site for many years with little or no impact, while providing economic development and a source of aggregate for local construction projects. The proposed quarry expansion will result in the removal of potential woodland and associated wildlife resources (i.e., forestry and trapping), however these impacts are expected to be minimal.

#### Significance and Mitigation

Overall, due to the small area affected relative to the total land area available in the area as well as the current low traffic levels, which will not increase due to quarry expansion the proposed quarry expansion is expected to have a negligible impact on economy, land use and value. Mitigation will include the minimization of the quarry footprint within the NSECC approved quarry permit area, and the progressive rehabilitation of areas no longer required for aggregate production or site related activities.

### **7.2.7 Transportation**

#### Background

The Whycocomagh quarry will generate a comparatively low level of truck traffic on highways in the area, but activity levels are not expected to increase significantly, and consequently the quarry is not expected to change the existing traffic volumes significantly. The angled intersection of the Whycocomagh-Port Hood Road with Highway 252 and the one-lane bridge over the Skye River, leads to potential traffic bottlenecks, which at times, may restrict local traffic.

#### Significance and Mitigation

Overall, the impact of the project on transportation is expected to be minimal, with little or no change from previous operations at the quarry. During periods of site operation, signage for truck and equipment operators, as well as the surrounding communities will be placed to help inform the public that the quarry is active. 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. Warning signs and speed limits can be placed in areas leading to the quarry, when the quarry is operating, to improve safety. Equipment and truck operators for the quarry will be given instruction on safe and environmentally acceptable procedures.

## **7.2.8 Residential Use**

### Background

Quarry activities can potentially interfere with normal use and enjoyment of nearby residential properties by creating background noise, dust, light, and through truck and equipment traffic which some residents may find objectionable. The quarry will include periodic blasting (typically 1-2 events/year during years in which the site is active). The property is located approximately 1 km from the We'koqma'q Reserve and there are a few residents in the vicinity, located along Highway 252 and the Whycocomagh-Port Hood Road. Noise, dust, and lights from routine operations in the quarry will be within regulated limits and will not normally disturb residents living nearby; truck movements along Highway 252 may result in periodic elevated noise levels.

One homeowner located approximately one km from the quarry, in a subdivision on the opposite side of Highway 252 was aware of noise and lights from an adjacent quarry south of the Whycocomagh quarry but had not been inconvenienced and dust was reported as not being an issue. It is also noted that noise on Highway 252 would likely exceed any noise coming from the Whycocomagh quarry for the homes located in the vicinity.

### Significance and Mitigation

Overall, the impact of the project on residential use is expected to be minimal, with little or no change from previous operations at the quarry. However, mitigation measures such as maintaining appropriate operational buffers, controlling vehicle speed and engine braking, securing equipment to prevent banging (e.g., doors and chains), covering loads, wetting working areas, etc. will be implemented, ensuring that quarry operations comply with noise and dust limits according to the Pit and Quarry Guidelines. Attention will be given to dust management through standard dust mitigation strategies (water spray, reducing speeds, gravelling working areas, etc.). Noise and dust monitoring will be conducted as per the terms and conditions of the Industrial Approval for the approved quarry. Lights, if required at the site, may be seen by immediate residents, but would be controlled by proper environmental management practices at the site (i.e., downward directional lighting).

Quarry activities such as blasting, are not expected to impact residential water supplies, as homes are located at a significant distance from the site. All blasting events will continue to be monitored for concussion and ground vibration to ensure blasting limits are achieved as per the IA. It is expected that a condition of EA approval will be to develop a groundwater monitoring program for the site. As part of the subsequent IA process, an on-site groundwater monitoring program will be developed, and a network of groundwater monitoring wells will be constructed to establish baseline groundwater quality as well as existing groundwater table elevations. The monitoring well network will allow for on-going monitoring to ensure that any potential groundwater impacts are identified.

The quarry will include signage with phone numbers and contact persons should any members of the community wish to register complaints or concerns. A complaint resolution procedure will be put in place by Dexter to address any complaints and concerns received.

## **7.2.9 Commercial / Industrial Use**

### Background

An industrial repair yard at the corner of Chuggin Road and the Whycocomagh-Port Hood Road and the adjacent quarries are unlikely to be affected by traffic and related operations arising from the Whycocomagh quarry. The Whycocomagh quarry has been operating alongside the other quarry and local businesses safely and without interference for many years.

The quarry contributes to net economic benefit in the community through supporting local trucking operations and providing access to high quality aggregate and other quarry products, as well as helping to maintain access roads to the site for future development.

### Significance and Mitigation

The impact of the project on commercial and industrial use is expected to be minimal, with little or no change from previous operations at the quarry. The continued use of Best Management Practices as well as strict adherence to the terms and conditions of the Industrial Approval will ensure that this is maintained through future operations.

## **7.2.10 Water Supplies and Residential Wells**

### Background

Nearby residents use drilled wells and dug surface wells for potable water supply; however, there are no wells within 800 m of the quarry study area and none are between the quarry and the Skye River. Groundwater recharge generated by the quarry is likely to be of high quality (low conductivity and dissolved solids and neutral in pH).

### Significance and Mitigation

The impact of the project on water supplies and residential wells is expected to be minimal, with little or no change from previous operations at the quarry. Best management practices and Industrial Approval conditions for all operations, including blasting will be followed. Established operational procedures for fuelling will be followed and a contingency plan will be maintained to mitigate reasonable impacts on aquifers at the site. It is expected that a condition of EA approval will be to develop a groundwater monitoring program for the site. As part of the subsequent IA process, an on-site groundwater monitoring program will be developed, and a network of groundwater monitoring wells will be constructed to establish baseline groundwater quality as well as existing groundwater table elevations. The monitoring well network will allow for on-going monitoring to ensure that any potential groundwater impacts are identified.

## **7.2.11 Parks and Protected Areas**

### Background

The proposed expansion of the Whycocomagh quarry site is not expected to be visible by tourists traveling by road. With no change in the scope or frequency of quarry activity, road traffic activity due to the quarry is not expected to increase or be high enough in volume to disrupt tourist traffic.

Occasional blasting may be heard locally along Highway 252, on the We'koqma'q Reserve and in Whycocomagh (e.g., at the Whycocomagh Provincial Park and the Skye River Picnic Park

along Highway 105) but occurrences are likely to be brief, and distant, and not likely to be a significant concern to visitors/users of those areas. Expansion of the quarry will not affect the integrity of any nearby protected areas.

### Significance and Mitigation

The impact of the project on parks and protected areas is expected to be minimal, with little or no change from previous operations at the quarry. Mitigation will include the use of Best Management Practices for all aspects of the quarry operation. Monitoring of surface water, groundwater, and blasting events will be conducted as per the terms and conditions of the IA.

## **7.2.12 Resource Use – Forestry, Hunting, and Trapping**

### Background

Use of the land for a quarry will remove the potential for future forestry use of the site, at least until after the quarry is closed and rehabilitated in future; however, 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.

### Significance and Mitigation

The impact of the project on resource use such as forestry, hunting and trapping is expected to be minimal, with little or no change from previous operations at the quarry. Mitigation will involve the minimization of the footprint of the quarry footprint within the NSECC approved quarry permit area, and the progressive rehabilitation of areas no longer required for aggregate production or site related activities.

## **7.3 Biophysical Components**

### **7.3.1 Air Quality, Noise, and Light**

#### Background

Quarry activities are not expected to change from the previous scope of operations. Various project activities have the potential to generate dust, emissions, noise, and light. The operation of heavy equipment (e.g., earth movers, crushers), rock drilling and blasting, as well as onsite routine operations contribute to noise, dust, and particulate levels. Dust emissions are expected to be localized and short term and are expected to be minimal from routine operations. Exhaust emissions will occasionally be generated by the operation of vehicles and equipment.

Noise, dust, and emission levels from the expanded quarry are expected to be similar to those already produced at the site, since there is not anticipated change in the scope of the quarry. Blasting is expected to occur infrequently (1-2 times per year during years in which the site is active).

Occasional night-time operations may be required. Light during night-time operations—particularly during times of low-hanging cloud and fog—can attract migrating birds traveling over water towards the rest of the mainland of Nova Scotia.

## Significance and Mitigation

Overall, the impact of the project on air quality, noise and light is expected to be similar to the existing operation, with little or no change from previous operations at the quarry. With appropriate mitigation applied, potential impacts on air quality, noise, and light are expected to be minimal.

Dust management will be achieved through the use of water spray systems designed to reduce air borne dust originating from crushing operations and construction vehicle movement, by gravelling working areas, and reducing vehicle and equipment speed. Monitoring of airborne particulate emissions will be conducted at the request of NSE and in accordance with the Pit and Quarry Guidelines and the site IA. Industry standards and best practices will be followed during all phases of operations.

Noise mitigation will include maintaining appropriate operational buffers, maintaining vehicles and heavy equipment in operational order, and giving attention to traffic patterns around the site to reduce the need for heavy equipment to use back-up signals. The operation will ensure that heavy equipment does not exceed the noise limits specified in the Nova Scotia Pit and Quarry Guidelines. Blasting and the associated noise, is expected to occur infrequently (1-2 times year, during years in which the site is active). All blasting events will be monitored for concussion (noise) and ground vibration. Noise monitoring will be conducted at the request of NSE, in accordance with the terms and conditions of the Industrial Approval.

Vehicles and heavy equipment will follow efficient operating procedures such as not idling unnecessarily when not in use. Given the relatively small size of the quarry and 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 portable crushers) and will be localized and similar in type and amount to those produced during previous operations. Ambient air quality monitoring will be conducted at the request of NSE, in accordance with the terms and conditions of the Industrial Approval.

With respect to light emanating from the site during infrequent night-time operations, measures will be taken to ensure use of directional lighting, which minimizes emanation of light upward and laterally over the horizon.

### **7.3.2 Groundwater**

#### Background

Activities associated with the project including forest clearing, grubbing and removal of overburden, and blasting, can influence groundwater flow locally in the vicinity of the quarry, but are not expected to influence groundwater aquifers over a broader area. The amount of recharge area involved in project activities is moderate in relation to the overall size of the aquifers in the general vicinity. The quarry floor will continue to add recharge in approximately the same amount as at present. Groundwater can potentially be impacted by spills and/or leaks from operating equipment

Site operations and historic aggregate excavation has not encountered the deep bedrock water table as evidenced by the lack of water ponding on the quarry floor, no observed seepage from the quarry highwall, and no upwelling of water through the quarry floor.

Future aggregate excavation will not take place below the deep bedrock water table. In addition, there will be no pumping of groundwater and therefore no dewatering of the associated bedrock aquifer.

### Significance and Mitigation

Overall, the impact of the project on groundwater is expected to be similar to the existing operation, with little or no change from previous operations at the quarry. With appropriate mitigation applied, potential impacts on groundwater are expected to be negligible.

It is expected that a condition of EA approval will be to develop a groundwater monitoring program for the site. As part of the subsequent IA process, an on-site groundwater monitoring program will be developed, and a network of groundwater monitoring wells will be constructed to establish baseline groundwater quality as well as existing groundwater table elevations. The monitoring well network will allow for on-going monitoring to ensure that any potential groundwater impacts identified.

Dexter has developed a Contingency Plan for pit and quarry operations. The Contingency Plan includes procedures and processes for responding to environmental emergencies including spill or release occurrences that could potentially impact groundwater in the area. Spill response, clean-up, and reporting will be in accordance with applicable NSECC Regulations. The Contingency Plan will be included with subsequent IA applications for review by NSECC.

## **7.3.3 Hydrology / Water Quality**

### Background

Expansion of the quarry will modify the existing hydrology at the site, resulting in an artificial though managed regime of surface water movement and runoff at the site. The proposed expansion area is small and consequently the effect on flow to local surface water will be minimal and therefore not significantly disrupted (Water Balance Assessment, 2021) (**Appendix F**). If aggregate washing is required, wash water will be managed within the site itself such that all wash water is retained on-site and can be re-used in the aggregate washing process. Surface water runoff from the quarry is inherently intermittent and is not expected to affect overall flow characteristics in downstream areas significantly.

With respect to the characteristics of the quarry bedrock, a rock sample from the quarry was analysed for sulphur content to determine if the material was sulphide bearing. The results of this analysis yielded a sulphur concentration of 0.038 % (1.16 kg H<sub>2</sub>SO<sub>4</sub>/tonne), which is below the minimum (0.4 % S; 12.51 kg H<sub>2</sub>SO<sub>4</sub>/tonne) defined by NSE as sulphide bearing material. The laboratory results of this sample are included in **Appendix C**. The quarry rock to be excavated is not acid producing and therefore will not have a negative effect on surface water or groundwater quality.

### Significance and Mitigation

Overall, the impact of the proposed quarry expansion on the local hydrology (i.e., flow and quality) is expected to be similar to the existing operation. With appropriate mitigation applied, potential impacts on local hydrology are expected to be minimal.

It is expected that a condition of EA approval will be to develop a surface water management plan for the site. A surface water management plan will be developed as part of the subsequent IA

process and will include specific surface water controls. A monitoring program will be included with the surface water management plan. Surface water monitoring locations will be identified and monitored to establish baseline surface water quality. The surface water monitoring network will allow for on-going monitoring to ensure that any potential hydrology impacts are identified.

### **7.3.4 Freshwater Aquatic Environments and Wetlands**

#### Background

There are no permanent streams or wetlands within the proposed quarry expansion area. Riparian wetlands along the small intermittent watercourses downstream from the quarry are not expected to be impacted significantly. Quantities of runoff arising from the site in future from the outer slopes of berms and grubbing 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.

#### Significance and Mitigation

Overall, the impact of the project on the local freshwater aquatic environments and wetlands is expected to be negligible.

Potential impacts to local freshwater aquatic environments and wetlands will be mitigated via the maintenance of forested buffer zones and using surface water control and monitoring procedures as outlined in the Hydrology and Water Quality Section.

### **7.3.5 Terrestrial Environments**

#### Background

The proposed quarry expansion will utilize areas which are mainly medium-aged deciduous and mixed forest, types which are common in the general vicinity, and locally at the site and the quarry will not remove a large proportion of either type. No unique habitats were identified at the site. Dust from operations may affect adjacent forest communities although the impacts are likely to be negligible. Other potential impacts include releases of chemicals from blasting and runoff from materials stored at the site, accidental spills from vehicles operating during quarrying operations, grubbing, road construction, pit preparation and damage to the natural forest ecosystem and associated species, changes to runoff patterns locally and associated effects to the local surface water and groundwater regimes.

#### Significance and Mitigation

Overall, the impact of the project on the local terrestrial environments is expected to be minimal.

Mitigation to address the potential effects noted above will include the provision of pollution prevention and emergency control procedures; the use and maintenance of vegetated buffer zones; the removal of forest cover in small stages according to a site development plan and clearing vegetation outside of the breeding seasons for birds (mid-April to mid-September).

### **7.3.6 Fish and Fish Habitat**

#### Background

None of the proposed project activities will physically impact potentially fish bearing streams. There is no fish habitat on-site. Surface runoff from the site enters the headwaters of two local catchment areas on the north and northeast side of the existing quarry. Brook trout and potential habitat for other species can access the watercourse east of the quarry at a point below Chuggin Road in one of the catchments and there is expected to be fish habitat in the watercourse in the north catchment as well. It is noted that the quarry expansion will occupy a relatively small area in relation to both watersheds.

A Water Balance Assessment (**Appendix F**) has been completed as part of the EA process, which estimates that the changes in infiltration and runoff due to quarry expansion are expected to be minimal and within the anticipated range of seasonal variance. This suggests that there will be only minor changes in the quantity of runoff from the quarry possible contributing flow to fish bearing streams. All fish habitat found is greater than 100 m from the study area, which is considered a safe distance from blasting activities. Fish and fish habitat could potentially be impacted by small releases of oils and hydraulic fluids from operating vehicles as well as accidental hydrocarbon spills. Possible accidental spills into local watercourses because of vehicle collisions are highly unlikely, but also of minor concern.

#### Significance and Mitigation

Overall, the effects of the quarry construction and operations on fish and fish habitat are expected to be negligible. Any potential impacts will be mitigated as outlined below.

It is expected that a condition of EA approval will be to develop a surface water management plan for the site. A surface water management plan will be developed as part of the subsequent IA process and will include specific surface water controls. A monitoring program will be included with the surface water management plan. Surface water monitoring locations will be identified and monitored to establish baseline surface water quality. The surface water monitoring network will allow for on-going monitoring to ensure that runoff from the quarry meets guidelines for maintenance of Freshwater Aquatic Life and the limits stipulated in the IA.

All guidelines for activities and timing of blasting in the quarry will be followed and each blast will be monitored for concussion and ground vibration.

Dexter has developed a Contingency Plan for pit and quarry operations. The Contingency Plan includes procedures and processes for responding to environmental emergencies including spill or release occurrences that could potentially impact fish and fish habitat in the area. Spill response, clean-up, and reporting will be in accordance with applicable NSECC Regulations. The Contingency Plan will be included with subsequent IA applications for review by NSECC. In addition, safe driving practices for all vehicle operators will be implemented to minimize the potential of accidents, especially in the vicinity of key quarry intersections.

### **7.3.7 Flora and Fauna Habitat**

#### Background

Expanding the Whycocomagh quarry will progressively remove existing terrestrial ecosystem (plants and animals) in the footprint of the quarry. 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. Expansion of the Whycocomagh quarry will result in only a comparatively small change in the coverage of natural and mature forest stands in the area and is expected to have comparatively small impact on interior forest birds and wildlife. During 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. Night operations and use of lights have various effects, including attracting insects which would divert them from normal activities and would reduce energy reserve for life processes such as reproduction and to survive. Other quarry activities such as blasting and vehicular operation and movement are also considered to be of some concern.

### Significance and Mitigation

Overall, the effects of the quarry construction and operations on flora and fauna habitat are expected to be generally minor. Potential impacts will be mitigated as outlined below.

Areas no longer suitable for quarry operations will be progressively remediated. A Reclamation Plan has been established and updating the Plan every three years is a condition of the 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 regenerate. During recovery and revegetation of progressively rehabilitated areas, the forest succession will provide habitat for a moderate diversity of species. 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 loss of nesting birds in forest areas. Quarry employees will 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. Lighting used at the site should focus downward and below the normal horizon, to limit visibility by birds and insects from a distance.

It is expected that a condition of EA approval will be to develop a Wildlife Management Plan for the site. As part of the subsequent IA process, a Wildlife Management Plan will be developed, to establish appropriate mitigation measures to manage wildlife resources (avian species and their nests, species at risk, non-native plant species, etc.). Dexter has developed a Contingency Plan for pit and quarry operations. The Contingency Plan includes procedures and processes for responding to environmental emergencies including spill or release occurrences that could potentially impact flora and fauna in the area. Spill response, clean-up, and reporting will be in accordance with applicable NSECC Regulations. The Contingency Plan will be included with subsequent IA applications for review by NSECC.

### **7.3.8 Species at Risk**

#### Background

No federally or provincially listed species at risk, or species more sensitive than S3 ranking (vulnerable), were found in the proposed expansion area. American Marten and Canada Lynx (both provincially listed as Endangered) are known to occur in the general area of the study site. Common Nighthawk, a ground-nesting species, potentially could nest in grubbed and marginal but open areas of the quarry. Lights during night operations during migration periods (April – June, August – September) would attract various bird species and insects, which could include species

at risk. Blasting events, although infrequent (1-2 times/year during years in which the quarry is active) are also of concern to species at risk.

### Significance and Mitigation

Overall, the effects of the quarry construction and operations on species at risk are expected to be negligible. Potential impacts will be mitigated as outlined below.

Employees will 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. Lighting used at the site should focus downward and below the normal horizon, to limit visibility from a distance. With respect to blasting, this activity will be minimized when possible and concentrated in the spring and fall when species are generally absent (i.e., outside breeding and migratory periods).

It is expected that a condition of EA approval will be to develop a Wildlife Management Plan for the site. As part of the subsequent IA process, a Wildlife Management Plan will be developed, to establish appropriate mitigation measures to manage wildlife resources (avian species and their nests, species at risk, non-native plant species, etc.). If wildlife and/or species at risk concerns arise for which potential mitigation is unknown, Dexter staff will liaise with the appropriate regulatory groups and knowledgeable consultants to determine appropriate action.

## **7.3.9 Natural Areas and Wilderness**

### Background

Natural areas in the vicinity of the site such as the Skye River and Indian River are appreciated by locals and tourists alike, and this region of Cape Breton Island is dominated by natural environments, including some of the most remote and wild areas of Nova Scotia. The proposed expansion of the Whycocomagh quarry will affect a small proportion of the natural landscape at the site and will have a limited effect on visitors to the area who are looking for nature experiences. It is noted that site operations which generate noise and dust will have some, but limited, effects on natural areas and wilderness.

### Significance and Mitigation

Overall, the effects of the quarry construction and operations on natural areas and wilderness are expected to be negligible. Potential impacts will be mitigated as outlined below.

Mitigation noted in the Air Quality, Noise, and Light section will be applied to reduce potential impacts on Natural Areas and Wilderness.

A quarry Reclamation Plan will be maintained, including provisions for progressive reclamation where appropriate, to rehabilitate areas no longer required for aggregate production. In addition, quarry reclamation will also consider values important in conservation of biological communities and ecosystems, as well as changes in physical conditions that could affect those communities.

Normal procedures and best management practices such as dust control and light management will help to minimize impacts on natural and wilderness values at the site.

## **8.0 IMPACTS OF THE ENVIRONMENT ON THE PROJECT**

The quarry will not be impacted in general by weather, including high rainfall and precipitation. Aggregate products produced and stockpiled at the site are stable under varying conditions of rainfall and wind.

As part of the subsequent IA process, a surface water management plan will be developed for the site, which will include consideration for extreme rainfall events. Integrity of any runoff management structures at the site will be inspected on a regular basis, in particular following major weather events. Corrective action will be undertaken, if needed, in a timely manner.

Changing climate may increase the operating season for transportation projects, and the need for aggregates produced by the quarry.

## **9.0 POTENTIAL CUMULATIVE IMPACTS**

Because of the remoteness of the location, all the potential impacts of the quarry operation (dust, noise, lights, blasting, traffic volume) are unlikely to be compounded by other development or human activity. Other aggregate quarries located in the area are not expected to increase in frequency of operations or scope from past use, and the amount of construction and roadwork in the area is not anticipated to increase significantly, the cumulative effect of these other quarries (and other local activity) is not expected to change from past levels.

## **10.0 INDUSTRIAL APPROVAL CONDITIONS, MONITORING, AND REPORTING**

Monitoring is an integral part of the operation of the Whycocomagh quarry and is dictated by the Pit and Quarry Guidelines and the IA for the site. Typical monitoring at quarry sites includes surface water monitoring, groundwater monitoring, and blast monitoring (concussion and vibration). Noise and dust monitoring is typically conducted at the request of NSECC.

Surface water monitoring will be conducted as per the terms and conditions of the IA and is expected to include both background (upstream) and downstream water quality in watercourses potentially affected by quarry operations. It is expected that a condition of EA approval will be to develop a surface water management plan for the site. A surface water management plan will be developed as part of the subsequent IA process. A surface water monitoring program will be included with the surface water management plan. Surface water monitoring locations will be identified and monitored to establish baseline surface water quality. The surface water monitoring network will allow for on-going monitoring to verify that surface water runoff from the quarry does not have an impact of downgradient receptors.

Groundwater monitoring will be conducted as per the terms and conditions of the IA. It is expected that a condition of EA approval will be to develop a groundwater monitoring program for the site. As part of the subsequent IA process, a groundwater monitoring program will be developed, and a network of groundwater monitoring wells will be constructed to establish baseline groundwater quality as well as existing groundwater table elevations. The monitoring well network is expected to include three industry standard monitoring wells. The monitoring well network will allow for on-going monitoring to ensure that potential groundwater impacts are identified.

Blast monitoring will be conducted as per the terms and conditions of the IA. Blast monitoring is required for all blasting events and includes measurement of air concussion and ground vibration at the nearest structures located around the quarry. Additionally, seismographs may be setup at

other selected locations in the surrounding community to ensure that the blast parameters meet with those dictated by the stipulations in the Industrial Approval.

Other specific parameters that may be monitored will be included in the amended Industrial Approval.

All monitoring results are maintained by Dexter and provided to NSECC as part of an Annual Report for the Quarry. If a monitored parameter exceeds a limit noted in the IA, Dexter is required to immediately notify NSECC of the exceedance.

## **11.0 FUTURE PUBLIC AND STAKEHOLDER INVOLVEMENT**

Public consultation and stakeholder engagement efforts undertaken to date are documented in Section 4 of this EA Registration Document. Project stakeholders and the general public will have an opportunity to provide feedback on the proposed quarry expansion project by providing written comments to the NSECC EA Branch during the project review period.

It is expected that a condition of EA approval will be to develop a Complaint Resolution Procedure for receiving, documenting, and responding to feedback received related to the quarry.

Quarry approvals typically include provisions to implement a Community Liaison Committee (CLC) at the request of NSE. If a CLC is required, Dexter will seek participation from the local community as well as First Nations representatives.

## **12.0 PROJECT CLOSURE / RECLAMATION**

The quarry will be reclaimed in accordance with NSECC requirements and industry standards. Dexter maintains a Reclamation Plan for the quarry. As per the Terms and Conditions of the IA, the Reclamation Plan is updated every three years and submitted to NSECC for review. The Reclamation Plan includes provisions for progressive reclamation of areas that are no longer required for aggregate production or supporting activities. A quarry permit bond which reflects the total site disturbed area is maintained. The value of the bond is updated every three years in accordance with the updated Reclamation Plan to ensure that the bond value reflects the size and scope of future reclamation efforts at the site.

## **13.0 APPROVAL OF UNDERTAKING**

Dexter will comply with all provisions of the Nova Scotia Environment Act and Regulations. Following successful EA approval, an application for an amendment to the existing Industrial Approval will be submitted to NSECC.

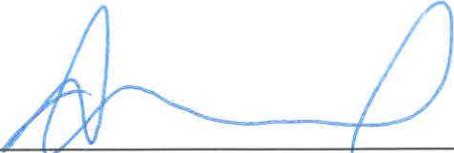
## **14.0 FUNDING**

No public or other government funding is involved in the execution of this undertaking. All costs are borne by Dexter.

## **15.0 SIGNATURE OF CEO AND DATE**

**OCT 25 2021**

Date

  
David Wood – Vice President & Chief Financial Officer  
Dexter Construction Company Limited