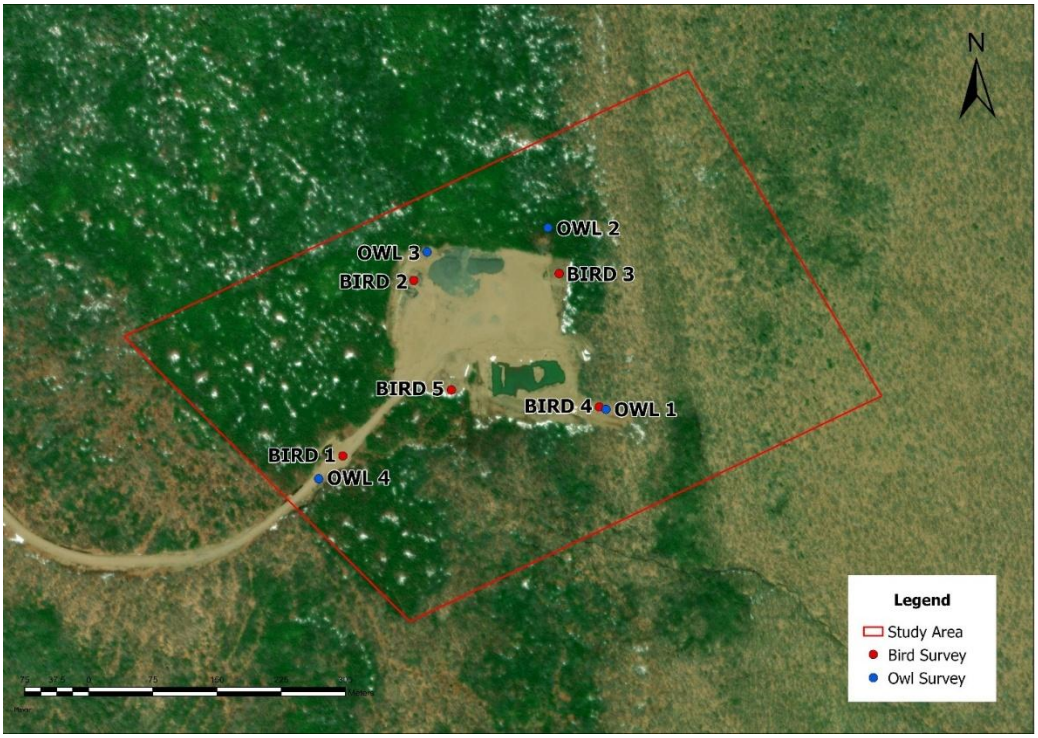

Figure 21. Locations for breeding bird and owl surveys.

4.2.6.5 Diversity

Total number of species (Species Richness) at the quarry ranged from low (6 species at Site 2 on June 7, 2024) to high (17 species at Site 1 on June 29, 2024)—and 30 species overall. All sites had similar total abundance, overall species per habitat, and average species per site (Table 5); and generally all measures were highest at all sites during the June 29, 2024 survey.

Table 5. Bird species heard or observed during dawn bird surveys conducted June 7 and June 29, 2024, between 05:00 and 06:38 hrs at the McIntyre Mountain Quarry study site. For locations of observation points (Figure 21).

	Softwood Forest (Sites 1 & 2)				Mature Deciduous Forest (Sites 3 & 4)				Mixed Woodland (Site 5)			
	June 7, 2024		June 29, 2024		June 7, 2024		June 29, 2024		June 7, 2024		June 29, 2024	
	# of sites	#/ 10 mins	# of sites	#/ 10 mins	#. of sites	#/ 10 mins	# of sites	#/ 10 mins	# of sites	#./ 10 mins	# of sites	#/ 10 mins
PASSERIFORMES												
Alder Flycatcher	0	0.00	1	2.00	0	0.00	0	0.00	0	0.00	0	0.00
American Goldfinch	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	2.00
American Redstart	0	0.00	1	1.00	0	0.00	1	1.00	0	0.00	0	0.00
American Robin	1	0.50	2	5.00	2	1.50	2	1.50	1	3.00	1	1.00
Black-Capped Chickadee	0	0.00	2	1.00	2	1.00	1	0.50	0	0.00	0	0.00
Black-and-White Warbler	1	0.50	2	3.00	0	0.00	2	1.00	1	1.00	0	0.00

Table 5. Bird species heard or observed during dawn bird surveys conducted June 7 and June 29, 2024, between 05:00 and 06:38 hrs at the McIntyre Mountain Quarry study site. For locations of observation points (Figure 21).

	Softwood Forest (Sites 1 & 2)				Mature Deciduous Forest (Sites 3 & 4)				Mixed Woodland (Site 5)			
	June 7, 2024		June 29, 2024		June 7, 2024		June 29, 2024		June 7, 2024		June 29, 2024	
	# of sites	#/ 10 mins	# of sites	#/ 10 mins	#. of sites	#/ 10 mins	# of sites	#/ 10 mins	# of sites	#./ 10 mins	# of sites	#/ 10 mins
Black-Throated Green Warbler	2	1.00	0	0.00	1	0.50	0	0.00	1	1.00	1	1.00
Blue-Headed Vireo	2	2.00	1	0.50	1	0.50	0	0.00	1	3.00	0	0.00
Blue Jay	1	0.50	1	0.50	1	0.50	1	0.50	0	0.00	1	2.00
Cedar Waxwing	0	0.00	0	0.00	0	0.00	2	1.00	0	0.00	0	0.00
Chestnut-Sided Warbler	0	0.00	1	0.50	0	0.00	0	0.00	0	0.00	0	0.00
Common Raven	0	0.00	0	0.00	1	0.50	0	0.00	0	0.00	0	0.00
Common Yellowthroat	1	0.50	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Dark-Eyed Junco	2	1.00	2	4.00	2	1.00	2	1.00	0	0.00	1	2.00
Hermit Thrush	2	1.50	2	7.00	1	0.50	2	1.00	1	1.00	1	1.00
Least Flycatcher	0	0.00	1	0.50	0	0.00	0	0.00	0	0.00	0	0.00
Magnolia Warbler	2	1.50	2	2.50	2	1.00	2	3.50	1	1.00	1	2.00
Mourning Dove	0	0.00	1	0.50	0	0.00	0	0.00	0	0.00	0	0.00
Mourning Warbler	1	1.00	2	3.50	2	1.00	0	0.00	0	0.00	1	1.00
Ovenbird	0	0.00	2	2.00	2	1.50	2	1.00	1	1.00	1	1.00
Rose-Breasted Nuthatch	0	0.00	1	0.50	0	0.00	1	0.50	0	0.00	0	0.00
Red-eyed Vireo	0	0.00	2	3.00	2	1.50	2	2.00	1	1.00	1	1.00
Song Sparrow	1	0.50	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Swainson's Thrush	2	1.00	2	13.50	1	0.50	2	7.00	1	1.00	1	5.00
White-Throated	1	1.00	1	1.00	2	1.00	1	0.50	1	1.00	0	0.00
Yellow-Bellied Flycatcher	0	0.00	0	0.00	0	0.00	1	0.50	0	0.00	0	0.00
Yellow-Rumped Warbler	0	0.00	0	0.00	0	0.00	1	1.50	1	2.00	0	0.00
PICIFORMES												
Downy Woodpecker	0	0.00	0	0.00	0	0.00	1	0.50	0	0.00	1	1.00
Hairy Woodpecker	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	1.00
Yellow-Bellied Sapsucker	1	0.50	0	0.00	0	0.00	0	0.00	0	0.00	1	1.00
SUMMARY												
Average Abundance	**13.00**		**51.50**		**12.50**		**25.00**		**16.00**		**22.00**	
Total Species per Habitat	**14**		**19**		**14**		**18**		**16**		**22**	
Average Species/Site	**9.50**		**17.00**		**6.75**		**5.50**		**11.00**		**14.00**	

4.2.7 Mammals

Various large and small mammals, including game and furbearing species, are found in the general vicinity of the site. Mammal species occurring regularly or occasionally at the quarry site are expected to reflect the community of the surrounding areas which includes coniferous, deciduous and mixed forest. A wildlife assessment was conducted by Edgewood Environmental Services on June 12th, 2024, to investigate signs of animal activity in the quarry area[3].

[3] Steep slopes on the eastern part of the property made that area inaccessible for the habitat survey.

Signs of White-tail Deer (*Odocoileus virginianus*) presence were observed during the Edgewood site visit. Evidence of deer activity included browse, scat, and tracks, although the signs were not abundant. Moose activity was not observed during surveys, although Moose occur in the general area (ACCDC reports confirm moose activity 9.4 km from the study area) (Appendix D), but the species on Cape Breton Island is not of conservation concern. Other animals confirmed on site include Snowshoe Hare (*Lepus americanus*), and Red Squirrel (*Tamiasciurus hudsonicus*). Tracks and scat confirmed the presence of Eastern Coyote (*Canis latrans*) on the property, and numerous coyotes were heard during reconnaissance for the owl survey. Availability of compatible habitat make the presence of Deer Mouse (*Peromyscus maniculatus*) likely, and rodent burrows were observed by field staff during the reconnaissance survey in July.

During the wildlife assessment, no evidence of American Black Bear (*Ursus americanus*) activity was directly observed. The time of year during the wildlife assessment made preferred food in the area scarce, however, compatible foraging was confirmed during the reconnaissance survey in July. American Marten (*Martes americana*) and Fisher (*Pekania pennanti*) are both known to reside in Cape Breton, with confirmed observations 29 and 38 km away from study site, respectively (Appendix D). Bobcat (*Lynx rufus*) and Canada Lynx (*Lynx canadensis)* are also known to reside in Cape Breton, but are uncommon and are unlikely to inhabit the property regularly. Observation records shows lynx activity as close at 7.7 km from study site. Little Brown Myotis (*Myotis lucifugus*) activity has been documented 11 km from study site, and it is likely bats are active closer to where habitat is available, however no viable habitat (e.g. old trees with cavities, and caves) was identified on site. No compatible habitat was identified on site for Short-tailed Weasel (*Mustela erminae*).

Lack of compatible habitat makes the presence of other common mammals including Red-backed Vole (*Myodes gapperi*), Woodland Jumping Mouse (*Napaeozapus insignis*), Northen Flying Squirrel (*Glaucomys volans*), River Otter (*Lontra canadensis*), Mink (*Neovison vison*), Muskrat (*Ondatra zibethicus*) and Raccoon (*Procyon lotor*) unlikely. Shrews are generally rare in Nova Scotia and no viable habitat was identified on site. Long-tailed Shrew (*Sorex* dispar) has been observed 36 km from study site (Appendix D).

4.2.8 Reptiles and Amphibians

Several snakes and other reptile as well as amphibians are known to occur in cutover areas, along roadsides, and in abandoned gravel pits, which are habitats found at the study site. Maritime Garter Snake (*Thamnophis sirtalis*) and Northern Redbelly Snake (*Storeria occipitomaculata*) potentially occur in sand, gravel, and waste areas, or deciduous forest adjacent to the quarry, basking or foraging for food (Gilhen 1984 in Appendix C). Habitat conditions present at the McIntyre Mountain Quarry area would indicate the potential presence of Maritime Garter Snake and Northern Redbelly Snake. No reptiles were observed during either of the reconnaissance surveys. ACCDC reports Wood Turtle, Snapping Turtle, Eastern Painted Turtle, and Painted Turtle observations 3, 17, 63, and 97 km respectively of the study site (Appendix D). Edgewood Environmental Services notes that habitat on site is not compatible for Wood Turtles, however, a Wood Turtle population has been confirmed 1.5 km east in River Inhabitants Nature Reserve (M. Pulsifer, pers. obs. 16 May 2024). ACCDC reports do express concern for Wood Turtles on site, although the preferred habitat would most likely be in the lowland areas around Inhabitants River and around the toe of slope of McIntyre's Mountain.

It is likely that the wet areas within the study area contains common amphibian species. The wildlife assessment confirmed Wood Frog (*Lithobates sylvaticus*) larvae in ponded areas on site, and one unidentified frog was observed during the reconnaissance survey in July. No other amphibians were

observed; however, it is likely that Green Frog (*Rana clamitans*) and American Toad (*Bufo americanus*) inhabit the area as well. Overall, the waterbodies on site were small and had little evidence of permanence, therefore amphibian presence is likely temporary/seasonal based on water availability. The Red-backed Salamander (*Plethodon cinereus*) is another amphibian with viable habitat in the nearby deciduous forests and may occur on site.

4.2.9 Species at Risk

4.2.9.1 Background

Species at Risk are plants or animals whose existence is threatened, or which are in danger of being threatened, by human activities or natural events. The Canadian Committee on the Status of Endangered Wildlife in Canada (COSEWIC) presently recommends species with potential to be listed for legal federal protection under the federal Species at Risk Act (SARA); and after review the majority are included in the legislation. At the provincial level, the Nova Scotia Species at Risk Working Group completes assessments and recommendations for a species' status. Nova Scotia maintains a list of legally protected species under the Nova Scotia Endangered Species Act (ESA). A third status list is the sub-national ranks (S-ranks), which is a provincial system used for ranking species rarity or conservation status as a tool for identifying gaps in knowledge for species for which occurrence data are maintained. S-ranks are specific to a province and consider a variety of factors including number of occurrences, distribution, population size, abundance trends, and threats. Species listed as "S1" (any species known to be, or believed to be critically imperiled due to extreme rarity or steep declines), and "S2" (any species known to be, or believed to be, imperiled due to restricted ranges, few populations, or steep declines) are considered priority species. Species that may be at risk of extirpation or extinction are candidates for a detailed risk assessment by COSEWIC, or provincial or territorial equivalents. The Nova Scotia Biodiversity Act sets guidelines for activities in the vicinity of species at risk on Crown Land and also provides guidance for private landowners for working near these species.

4.2.9.2 Species of Conservation Concern--Summary

The Atlantic Canada Conservation Data Centre (ACCDC) maintains a database of records of species of conservation concern listed under federal or provincial legislation as well as those with general status. Species of conservation concern in the database that occur within five kilometres of the McIntyre Mountain Quarry site include both animals and plants (Table 6).

Two plant species of conservation concern are known to be located 4 km from the study area: False Mermaidweed (*Floerkea proserpinacoides)* and Richardson's Pondweed (*Potamogeton richardsonii*). These species typically occur in open water ponds, lakes, or running waters, and neither were observed during the spring and fall botany surveys. No federally or provincially listed bird species of conservation concern were observed during dedicated surveys at the study site during the breeding bird and owl surveys. American Woodcock (*Scolopax minor)*, a species of national/continental concern, but not listed in federal or provincial legislation, were heard during the June 7, 2024 breeding bird reconnaissance at the site, but the species was likely to be migrating through the area and not likely to be nesting at the site. The mixed woodlands within the study site potentially support many bird species of conservation concern from time to time. Federally listed bird species of conservation concern occurring within 5 km of the study site include: Common Nighthawk (*Chordeiles minor*), Spotted Sandpiper (*Actitis macularius*), Canada Jay (*Perisoreus canadensis*), Evening Grosbeak (*Coocothraustes vespertinus*), Canada Warbler (*Cardellina*

canadensis), Black-backed Woodpecker (*Picoides articus*), Rusty Blackbird (*Euphagus carolinus*), Olive-sided Flycatcher (*Contopus cooperi*), and Eastern Wood-Pewee (*Contopus virens*) (Appendix D).

Of these species, Olive-Sided Flycatcher and Canada Warbler are typically associated with wetland habitats. In particular, treed and shrubby grassy swamps around bog/fen wetlands are preferred by Canada Warbler, and treed (Black Spruce) sphagnum bogs for Olive-Sided Flycatcher. The seasonal wetlands observed at the study site are small (~100 m^2), not dominated by Black Spruce, and no bogs are present on the site. Olive-Sided Flycatcher have been observed within 2.9 km of the study site, and Canada Warbler within 3.7 km (Appendix D), but neither species was encountered during the breeding bird surveys.

Evening Grosbeak, Eastern Wood Pewee, Canada Jay, and Black-Backed Woodpecker prefer open, mature, mixed wood forests where fir species or White Spruce are dominant. Mixed woodland is a relatively common habitat within the study area, with Balsam Fir and White Spruce found. These species could potentially be found in these mixed woodland areas within the study area. Rusty Blackbird is typically associated with forest wetlands centred on slow-moving streams, peat bogs, sedge meadows, marshes, swamps, beaver ponds and pasture edges during breeding season, none of which are found on the study site. Evening Grosbeak, Eastern Wood-Pewee, Canada Jay, Black-Backed Woodpecker, and Rusty Blackbird have been observed within 3.7, 2.9, 3.4 , 4.1 , and 4.5 km respectively of the site (Appendix D) but were not detected during breeding bird surveys.

Common Nighthawk may be found nesting in open areas with little ground vegetation including logged or burned over areas, forest clearings, rocky outcrops and peat bogs. Unvegetated quarry work areas and berms potentially can be used for nesting by Common Nighthawk, and the species have been observed within four km of the study site (Appendix D), but they were not observed during targeted surveys.

Spotted Sandpipers are most common near bodies of freshwater, such as rivers and streams, and near the ocean coast. Breeding territory tends to need a shoreline, a semi-open area for the nest to be constructed, and areas of dense vegetation for shelter. Spotted Sandpipers potentially nest in quarries around standing water. Normally they are found in natural habitats such as along streams. ACCDC records show an occurrence of Spotted Sandpiper within 4.5 km of the study site.

Other animals of conservation concern in this part of Nova Scotia include Wood Turtle (*Glyptemys insculpta*) (listed Provincially as threatened) which have been observed occurring as close as 2.5 km east and southeast of the study site (Sarah Spencer, NSDNRR, personal communication 2025). In the Kingsville area, the species is most likely to be found in the lowlands surrounding the Inhabitants River, and an established Wood Turtle population is located east of the study site in Inhabitants River (M. Pulsifer, personal observation 2024). Snapping Turtle (*Chelydra serpentina*) (listed as special concern by COSEWIC and SARA and vulnerable by the ESA); Eastern Painted Turtle (*Chrysemys picta picta*) (listed as special concern by COSEWIC and SARA); and Painted Turtle (*Chrysemys picta)* (listed as special concern by COSEWIC and SARA), have been documented as occurring within 17, 63, and 97, km, respectively of the site (ACCDC 2024, Appendix D). McIntyre's Mountain has been identified as potential habitat for the provincially endangered Canada Lynx (*Lynx canadensis*) and the species range likely includes the study area, with the closest recorded observation being 7.7 km from the study area (Nova Scotia Lynx Recovery Team 2006). American Marten (*Martes americana*) (listed Provincially as endangered) is also provincially endangered; however the closest record is 37.9 km from the quarry site (Appendix D).

Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-Colored Bat (*Perimyotis subflavus*) (all federally and provincially listed as endangered) are species of concern

potentially occurring in Nova Scotia, although none of the three endangered bat species have been recorded at the study site (Appendix D). Little Brown Myotis (listed as endangered by COSEWIC, SARA, and Nova Scotia ESA) has been recorded within 11 km of the study area, while Northern Myotis and Tri-colored Bat (listed as endangered by COSEWIC, SARA, and ESA) have been recorded within 90 and 39.4 km of the study area respectively. The absence of caves or old forest stands, with abundant standing deadwood structures (i.e., snag and cavity trees) suggests the species is not common or present at the study site; however, it is very likely that bats do occur closer where there are foraging and roosting habitats (e.g., wet areas, large diameter old or dead trees). Bats typically overwinter in abandoned mine shafts, natural caves, and old buildings, but no abandoned mines occur in the immediate vicinity of the property, the closest being 6 km from the center of the study area (NSDNR 2017). Numbers of bats are exceedingly low in most areas of Nova Scotia due to the White-Nose Syndrome, and occurrences are extremely unlikely at the quarry site due to the low overall numbers, but they may occur incidentally. Natural caverns were not noted during the site reconnaissance, so the occurrence of a hibernaculum at the site is unlikely.

A list of plants and animals of concern within a 5 and 100 kilometer radius of the study site is included in Appendix D. The only location sensitive species identified for the area is wood turtle (Appendix D).

Table 6. Records of species of concern within a 5 km radius of McIntyre Mountain Quarry, Inverness County. Atlantic Canada Conservation Data Centre (ACCDC) Database, April 2024.

			Status/Rank				
Family/Scientific Name		**Common Name**	**SARA**	**COSEWIC (NPROT[1])**	**NS ESA (SPROT[2])**	**SUB-NATIONAL RARITY RANK (SRANK)[3]**	**GLOBAL RARITY RANKING OF SPECIES (GRANK)[4]**
FLORA							
Limnanthaceae	*Floerkea proserpinacoides*	False Mermaidweed	-	Not At Risk	-	S2S3	G5
Potamogetonaceae	*Potamogeton richardsonii*	Richardson's Pondweed	-	-	-	S3	G5
FAUNA-BIRDS							
Caprimulgidae	*Chordeiles minor*	Common Nighthawk	Special Concern	Special Concern	Threatened	S3B	G5
Corvidae	*Perisoreus canadensis*	Canada Jay	-	-	-	S3	G5
Fringillidae	*Coccothraustes vespertinus*	Evening Grosbeak	Special Concern	Special Concern	Vulnerable	S3B, S3N, S3M	G5
Icteridae	*Euphagus carolinus*	Rusty Blackbird	Special Concern	Special Concern	Endangered	S2B	G4
Parulidae	*Cardellina canadensis*	Canada Warbler	Threatened	Special Concern	Endangered	S3B	G5
Picidae	*Picoides arcticus*	Black-backed Woodpecker	-	-	-	S3S4	G5
Scolopacidae	*Actitis macularius*	Spotted Sandpiper	-	-	-	S3S4B, S5M	G5
Tyrannidae	*Contopus cooperi*	Olive-sided Flycatcher	Special Concern	Special Concern	Threatened	S3B	G4

Table 6. Records of species of concern within a 5 km radius of McIntyre Mountain Quarry, Inverness County. Atlantic Canada Conservation Data Centre (ACCDC) Database, April 2024.

Family/Scientific Name		Common Name	Status/Rank				
			SARA	COSEWIC (NPROT[1])	NS ESA (SPROT[2])	SUB-NATIONAL RARITY RANK (SRANK)[3]	GLOBAL RARITY RANKING OF SPECIES (GRANK)[4]
	Contopus virens	Eastern Wood-Pewee	Special Concern	Special Concern	Vulnerable	S3S4B	G5
FAUNA-OTHER							
Coenagrionidae	*Enallagma vernale*	Vernal Bluet	-	-	-	S3	G5
Emydidae	*Glyptemys insculpta*	Wood Turtle	Threatened	Threatened	Threatened	S2	G3
Gomphidae	*Ophiogomphus aspersus*	Brook Snaketail	-	-	-	S3	G4
	Phanogomphus descriptus	Harpoon Clubtail	-	-	-	S3	G4G5
Libellulidae	*Nannothemis bella*	Elfin Skimmer	-	-	-	S3S4	G4G5
	Sympetrum danae	Black Meadowhawk	-	-	-	S3S4	G5
Margaritiferidae	*Margaritifera margaritifera*	Eastern Pearlshell	-	-	-	S2	G4

[1] NPROT, National conservation status of species, as designated by COSEWIC.
Extinct (X) - A wildlife species that no longer exists.
Extirpated (XT) - A wildlife species that no longer exists in the wild in Canada but exists elsewhere.
Endangered (E) - A wildlife species facing imminent extirpation or extinction.
Threatened (T) - A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
Special Concern (SC) - A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.
Data Deficient (DD)- A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.
Not at Risk (NAR) - A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
[2] SPROT=Provincial Rank/Status of Taxon.
[3] SRANK, Sub-National (Provincial) Rarity Ranks
S1 Extremely rare throughout its range in the province (typically 5 or fewer occurrences or very few remaining individuals). May be especially vulnerable to extirpation.
S2 Rare throughout its range in the province (6 to 20 occurrences or few remaining individuals). May be vulnerable to extirpation due to rarity or other factors.
S3 Uncommon throughout its range in the province, or found only in a restricted range, even if abundant in at some locations (21 to 100 occurrences).
S4 Usually widespread, fairly common throughout its range in the province, and apparently secure with many occurrences, but the Element is of long-term concern (e.g. watch list). (100+ occurrences).
S5 Demonstrably widespread, abundant, and secure throughout its range in the province, and essentially ineradicable under present conditions.
S#S# Numeric range rank: A range between two consecutive numeric ranks. Denotes range of uncertainty about the exact rarity of the Element (e.g., S1S2).
SH Historical: Element occurred historically throughout its range in the province (with expectation that it may be rediscovered), perhaps having not been verified in the past 20 - 70 years (depending on the species) and suspected to be still extant.
SU Unrankable: Possibly in peril throughout its range in the province, but status uncertain; need more information.
SX Extinct/Extirpated: Element is believed to be extirpated within the province.

Table 6. Records of species of concern within a 5 km radius of McIntyre Mountain Quarry, Inverness County. Atlantic Canada Conservation Data Centre (ACCDC) Database, April 2024.

		Status/Rank				
Family/Scientific Name	**Common Name**	**SARA**	**COSEWIC (NPROT[1])**	**NS ESA (SPROT[2])**	**SUB-NATIONAL RARITY RANK (SRANK)[3]**	**GLOBAL RARITY RANKING OF SPECIES (GRANK)[4]**

S? Unranked: Element is not yet ranked.
SA Accidental: Accidental or casual in the province (i.e., infrequent and far outside usual range). Includes species (usually birds or butterflies) recorded once or twice or only at very great intervals, hundreds or even thousands of miles outside their usual range; a few of these species may even have bred on the one or two occasions they were recorded.
SE Exotic: An exotic established in the province (e.g., Purple Loosestrife or Coltsfoot); may be native in nearby regions.
SE# Exotic numeric: An exotic established in the province that has been assigned a numeric rank.
SP Potential: Potential that Element occurs in the province, but no occurrences reported.

[4] GRANK, Global rarity rank of species, using CDC/NatureServe methods

G1 **Critically Imperiled**—At very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
G2 **Imperiled**—At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
G3 **Vulnerable**—At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
G4 **Apparently Secure**—At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
G5 **Secure**—At very low risk or extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
GU **Unrankable**—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends. NOTE: Whenever possible (when the range of uncertainty is three consecutive ranks or less), a range rank (e.g., G2G3) should be used to delineate the limits (range) of uncertainty.
GNR **Unranked**—Global rank not yet assessed.
G#G# **Range Rank**—A numeric range rank (e.g., G2G3, G1G3) is used to indicate the range of uncertainty about the exact status of a taxon or ecosystem type. Ranges cannot skip more than two ranks (e.g., GU should be used rather than G1G4).
Q **Questionable taxonomy that may reduce conservation priority**—Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower-priority (numerically higher) conservation status rank. The "Q" modifier is only used at a global level and not at a national or subnational level.
C **Captive or Cultivated Only**—Taxon or ecosystem at present is presumed or possibly extinct or eliminated in the wild across their entire native range but is extant in cultivation, in captivity, as a naturalized population (or populations) outside their native range, or as a reintroduced population or ecosystem restoration, not yet established. The "C" modifier is only used at a global level and not at a national or subnational level. Possible ranks are GXC or GHC. This is equivalent to "Extinct" in the Wild (EW) in IUCN's Red List terminology (IUCN 2001).
T **Infraspecific Taxon** (trinomial)—The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank. Rules for assigning T-ranks follow the same principles outlined above. For example, the global rank of a critically imperiled subspecies of an otherwise widespread and common species would be G5T1. A T subrank cannot imply the subspecies or variety is more abundant than the species. For example, a G1T2 subrank should not occur. A vertebrate animal population, (e.g., listed under the U.S. Endangered Species Act or assigned candidate status) may be tracked as an infraspecific taxon and given a T-rank; in such cases a Q is used after the T-rank to denote the taxon's informal taxonomic status.
SR Reported: Element reported in the province but without persuasive documentation, which would provide a basis for either accepting or rejecting (e.g., misidentified specimen) the report.
SRF Reported falsely: Element erroneously reported in the province and the error has persisted in the literature.
SZ Zero occurrences: Not of practical conservation concern in the province, because there are no definable occurrences, although the species is native and appears regularly. An NZ rank will generally be used for long distance migrants whose occurrences during their migrations are too irregular (in terms of repeated visitation to the same locations) or transitory. In other words, the migrant regularly passes through the province, but enduring, mappable Element Occurrences cannot be defined.

Table 7. Provincially listed species of concern with potential to occur in the vicinity of the project site (~10 km). Nova Scotia Museum records (J. Cormier, Coordinator, 2024).

			Status/Rank				
Family/Scientific Name		**Common Name**	**SARA**	**COSEWIC (NPROT[1])**	**NS ESA (SPROT[2])**	**SUB-NATIONAL RARITY RANK (SRANK)[3]**	**GLOBAL RARITY RANKING OF SPECIES (GRANK)[4]**
FLORA							
Berberidaceae	*Caulophyllum thalictroides*	Blue Cohosh	-	-	-	S2S3	G5
Limnanthaceae	*Floerkea proserpinacoides*	False Mermaidweed	-	Not At Risk	-	S2S3	G5
Orchidaceae	*Goodyera repens*	Dwarf Rattlesnake-plantain	-	-	-	S3S4	G5
Poaceae	*Bromus latiglumis*	Broad-glumed Brome	-	-	-	S2	G5
Poaceae	*Cinna arundinacea*	Stout Wood Reedgrass	-	-	-	S2	G5
Polygonaceae	*Fallopia scandens*	Climbing False Buckwheat	-	-	-	S3S4	G5
Potamogetonaceae	*Potamogeton obtusifolius*	Bluntleaf Pondweed	-	-	-	S4	G5
Violaceae	*Viola nephrophylla*	Northern Bog Violet	-	-	-	S3	G5

[1] NPROT, National conservation status of species, as designated by COSEWIC.
Extinct (X) - A wildlife species that no longer exists.
Extirpated (XT) - A wildlife species that no longer exists in the wild in Canada but exists elsewhere.
Endangered (E) - A wildlife species facing imminent extirpation or extinction.
Threatened (T) - A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
Special Concern (SC) - A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.
Data Deficient (DD)- A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.
Not at Risk (NAR) - A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
[2] SPROT=Provincial Rank/Status of Taxon.
[3] SRANK, Sub-National (Provincial) Rarity Ranks
S1 Extremely rare throughout its range in the province (typically 5 or fewer occurrences or very few remaining individuals). May be especially vulnerable to extirpation.
S2 Rare throughout its range in the province (6 to 20 occurrences or few remaining individuals). May be vulnerable to extirpation due to rarity or other factors.
S3 Uncommon throughout its range in the province, or found only in a restricted range, even if abundant in at some locations (21 to 100 occurrences).
S4 Usually widespread, fairly common throughout its range in the province, and apparently secure with many occurrences, but the Element is of long-term concern (e.g. watch list). (100+ occurrences).
S5 Demonstrably widespread, abundant, and secure throughout its range in the province, and essentially ineradicable under present conditions.
S#S# Numeric range rank: A range between two consecutive numeric ranks. Denotes range of uncertainty about the exact rarity of the Element (e.g., S1S2).

Table 7. Provincially listed species of concern with potential to occur in the vicinity of the project site (~10 km). Nova Scotia Museum records (J. Cormier, Coordinator, 2024).

Family/Scientific Name	Common Name	Status/Rank				
		SARA	COSEWIC (NPROT[1])	NS ESA (SPROT[2])	SUB-NATIONAL RARITY RANK (SRANK)[3]	GLOBAL RARITY RANKING OF SPECIES (GRANK)[4]

SH Historical: Element occurred historically throughout its range in the province (with expectation that it may be rediscovered), perhaps having not been verified in the past 20 - 70 years (depending on the species) and suspected to be still extant.
SU Unrankable: Possibly in peril throughout its range in the province, but status uncertain; need more information.
SX Extinct/Extirpated: Element is believed to be extirpated within the province.
S? Unranked: Element is not yet ranked.
SA Accidental: Accidental or casual in the province (i.e., infrequent and far outside usual range). Includes species (usually birds or butterflies) recorded once or twice or only at very great intervals, hundreds or even thousands of miles outside their usual range; a few of these species may even have bred on the one or two occasions they were recorded.
SE Exotic: An exotic established in the province (e.g., Purple Loosestrife or Coltsfoot); may be native in nearby regions.
SE# Exotic numeric: An exotic established in the province that has been assigned a numeric rank.
SP Potential: Potential that Element occurs in the province, but no occurrences reported.

[4] GRANK, Global rarity rank of species, using CDC/NatureServe methods

G1 **Critically Imperiled**—At very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
G2 **Imperiled**—At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
G3 **Vulnerable**—At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
G4 **Apparently Secure**—At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
G5 **Secure**—At very low risk or extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
GU **Unrankable**—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends. NOTE: Whenever possible (when the range of uncertainty is three consecutive ranks or less), a range rank (e.g., G2G3) should be used to delineate the limits (range) of uncertainty.
GNR **Unranked**—Global rank not yet assessed.
G#G# **Range Rank**—A numeric range rank (e.g., G2G3, G1G3) is used to indicate the range of uncertainty about the exact status of a taxon or ecosystem type. Ranges cannot skip more than two ranks (e.g., GU should be used rather than G1G4).
Q **Questionable taxonomy that may reduce conservation priority**—Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower-priority (numerically higher) conservation status rank. The "Q" modifier is only used at a global level and not at a national or subnational level.
C **Captive or Cultivated Only**—Taxon or ecosystem at present is presumed or possibly extinct or eliminated in the wild across their entire native range but is extant in cultivation, in captivity, as a naturalized population (or populations) outside their native range, or as a reintroduced population or ecosystem restoration, not yet established. The "C" modifier is only used at a global level and not at a national or subnational level. Possible ranks are GXC or GHC. This is equivalent to "Extinct" in the Wild (EW) in IUCN's Red List terminology (IUCN 2001).
T **Infraspecific Taxon** (trinomial)—The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank. Rules for assigning T-ranks follow the same principles outlined above. For example, the global rank of a critically imperiled subspecies of an otherwise widespread and common species would be G5T1. A T subrank cannot imply the subspecies or variety is more abundant than the species. For example, a G1T2 subrank should not occur. A vertebrate animal population, (e.g., listed under the U.S. Endangered Species Act or assigned candidate status) may be tracked as an infraspecific taxon and given a T-rank; in such cases a Q is used after the T-rank to denote the taxon's informal taxonomic status.
SR Reported: Element reported in the province but without persuasive documentation, which would provide a basis for either accepting or rejecting (e.g., misidentified specimen) the report.
SRF Reported falsely: Element erroneously reported in the province and the error has persisted in the literature.
SZ Zero occurrences: Not of practical conservation concern in the province, because there are no definable occurrences, although the species is native and appears regularly. An NZ rank will generally be used for long distance migrants whose occurrences during their migrations are too irregular (in terms of repeated visitation to the same locations) or transitory. In other words, the migrant regularly passes through the province, but enduring, mappable Element Occurrences cannot be defined.

4.2.10 Natural Areas and Wilderness

The McIntyre's Mountain area was occupied first by Mi'kmaq and then by settlers of European and American origin, the latter who developed the landscape, establishing communities based on agriculture and logging. Much of the local landscape has been modified by these activities, and remaining parcels of original forest are fragmented through the area.

The area surrounding McIntyre's Mountain to the north and west is largely dominated by Crown Land, as well as various pieces of protected land (see Section 4.3.10). The only significant piece of protected old growth forest in the area is 270.56 hectares and borders Bornish Hill Nature Reserve (12.2 km northeast). It is under temporary policy as its status as a Nature Reserve is pending –it would be added to the Bornish Hill Nature Reserve. The area surrounding the quarry site is dominated by early mature forest and areas subjected to commercial forestry; however there are three significant multi-aged old growth forest in the immediate vicinity but not at the site. Aside from these three parcels, multi-aged old forests and late mature forests are largely fragmented.

Inverness County is also one of four counties that contain parts of the Bras d'Or Lakes Biosphere Reserve (BLBR). The BLBR is a UNESCO designated and internationally recognized unique region of natural and cultural heritage with a watershed of over 3,500 km^2 of forest, freshwater and estuarine ecosystems in the centre of Cape Breton Island. The designation recognizes the significance of the area when assessed against various cultural and ecological criteria. The estuarine component of the Bras d'Or Lakes ecosystem provides habitat for species of various biogeographic regions, including arctic, temperate, as well as sub-tropical species through its many pockets of protected waters. The people have roots in at least four different languages and cultures: Mi'kmaq, Acadian, Gaelic, and English. The terrestrial, coastal and estuarine ecosystems promotes the conservation of biological diversity and contribute to the maintenance of healthy ecosystems. The Biosphere Reserve also provides educational opportunities about natural systems and how they are changing as well as traditional forms of land use through knowledge sharing and collaborative management (BLBR 2021). The Municipal McIntyre Mountain Quarry is located 7.5 km west of the boundary of BLBR.

4.3 Human Uses of the Environment

4.3.1 Mi'kmaq

The Mi'kmaq maintain aboriginal claim to all the landmass of Nova Scotia and the Province of Nova Scotia maintains a policy requesting that proponents of industrial development projects consult with the Mi'kmaq concerning proposed industrial projects and activities. Municipal Enterprises Limited has contacted First Nations representatives concerning the present McIntyre Mountain Quarry expansion project. Many of Nova Scotia's Mi'kmaq reside in Cape Breton and access lands throughout the region for various uses such as hunting and fishing, harvesting wild foods for sustenance and traditional ceremonial activities. The nearest First Nations community to the study area is We'koqma'q First Nation, situated in Whycocomagh, Inverness County along the western side of the Bras d'Or Lake, approximately 26 km northeast of the study area. We'koma'q First Nation, originally called Whycocomagh or Waycobah, was established in 1833 under the jurisdiction of the Eskasoni Chief and Council, but was officially declared a band in 1958 (CRM Group 2024). The second closest First Nation Community near the study site is

Wagmatcook First Nation, located in Victoria County approximately 47 km northeast of the study site. Five of the 13 Nova Scotian First Nations are located on Cape Breton Island.

The study area is in what was once the Mi'kmaw territory known as Unama'kik, a variation of the word Mi'kma'kik, meaning 'Mikmaw territory' or 'Land of the Fog' (Parks Canada 2025; CRM Group 2024). It straddles the border between the greater Mi'kmaw territories of Piktuk, meaning "at the explosions," and Sipekne'katik, meaning 'area of wild potato/turnip'. Streams, lakes and wetlands, and in particular coastal embankments and waters of this area would have provided hunting and transportation opportunities for the Mi'kmaq, their ancestors and predecessors prior to the arrival of European settlers (CRM Group 2024).

There are no registered Mi'kmaq archaeological sites within the study area perimeter, however one registered archaeological site has been identified approximately 11 km southwest of the study site: Site (BkCi-01) (CRM 2024). This historic site consists of three flake scatters on a beach located in Troy (Kelman Heritage Consulting 2015). In relation to the study area, the closest cemetery is about 3.3 km northeast of the study site, National Historic Site (Alexander Graham Bell) approximately 57 kilometres northeast, protected lands (River Inhabitants Nature Reserve) approximately 4.2 km northeast and the study site is bounded by crown land to the north, south, and west sides (CRM Group 2024).

There are two Mi'kmaq tribal councils in Nova Scotia: the Confederacy of Mainland Mi'kmaq (CMM) and Union of Nova Scotia Indians (UNSI). CMM is a not-for-profit organization incorporated in 1986, whose mission is to promote and assist Mi'kmaq communities. The UNSI, created in 1969, was formed to provide a cohesive political voice for Mi'kmaq people. The Native Council of Nova Scotia (NCNS) represents Mi'kmaq people living off reserve. The NCNS is a self-governing agency located in Truro. The Office of Aboriginal Affairs in Nova Scotia estimates that approximately 35% of Mi'kmaq live off reserve. The goal of NCNS is "to operate and administer a strong and effective Aboriginal Peoples Representative Organization that serves, advocates and represents our community."

The Mi'kmaq Rights Initiative (Kwilmu'kw Maw-klusuaqn; KMK) also represents Mi'kmaq. The mission of KMK—whose name means, "we are seeking consensus"—is "to address the historic and current imbalances in the relationship between Mi'kmaq and non-Mi'kmaq people in Nova Scotia and secure the basis for an improved quality of Mi'kmaq life." KMK's objective is to negotiate between the Mi'kmaq of Nova Scotia, the province and the Government of Canada, and operates from its main office in Millbrook. The Atlantic First Nations Environmental Network (AFNEN) is an environmental organization of Mi'kmaq communities and organizations. The CMM and UNSI are members and the Mi'kmaq Confederacy of PEI in Charlottetown is currently the acting coordinator. The AFNEN includes a representative from each Mi'kmaq organization and community interested in environmental issues. The Network meets regularly during the year through meetings, conferences, and the Internet to discuss environmental matters or concerns. Two First Nations—Millbrook First Nation, and Sipekne'katik (Indian Brook) First Nation operate independently of these organizations. Millbrook is situated outside Truro and includes activities in Cole Harbour, Sheet Harbour, and Beaver Dam. Sipekne'katik First Nation is one of 13 First Nations and is the second largest Mi'kmaq band in Nova Scotia. Sipekne'katik First Nation includes the communities of Indian Brook, New Ross, Pennal, Dodd's Lot, Wallace Hills and Grand Lake.

4.3.2 Historical, Archaeological, and Paleontological Resources

4.3.2.1 Background and Summary

The McIntyre's Mountain area of Nova Scotia in which the study area is located was used by Mi'Kmaq pre-contact, and by both Mi'Kmaq and European colonists in the historic era. However, the area does not have special significance for archaeology resources. The Archaeological Resource Impact Assessment (ARIA) conducted for the project concluded that the study area had no significant pre-contact Mi'Kmaq use, no notable historical activity, and low potential for encountering archaeological resources. These conclusions were accepted by the Nova Scotia Department of Communities, Culture, Tourism and Heritage which approved the ARIA study. Therefore, the site should be cleared of the requirement for further archaeological investigation (CRM Group 2024).

The ARIA involved consultation with Mi'Kmaq and review of databases concerning known activities by the in the Nova Scotia Archives, the Nova Scotia Crown Land Information Management, Kwilmu'kw Maw-klusuaqn's (KMK) Archaeological Research Division, a review of MARI (the archaeological database maintained by the Nova Scotia Museum), review of records Centre, the Department of Natural Resources and Renewables Natural Sciences Library, the Nova Scotia Registry of Deeds, Nova Scotia Property Online, and the Nova Scotia Crown Land Information Management Centre, and the Nova Scotia Museum. As well, land grant records, legal survey and historic maps, local and regional histories, previous archaeological reports, topographic maps and aerial photographs (current and historic), and LiDAR Digital Elevation Model (DEM) data are examined. Valuable information generated included proximity of the site to existing registered archaeological sites, heritage properties, cemeteries, First Nation Lands, Crown land parcels, and Nova Scotia Protected Areas.

The ARIA field survey conducted in 2024 involved a visual reconnaissance of the entire site proposed for expansion, and a soil profile and shovel test in a section of the site which was relatively undisturbed. Due to the disturbed nature of the study area, the archaeologist endeavored to record the existing state of the area of impact from as many vantage points as possible, while also examining undisturbed areas just outside of the study area. Site reconnaissance revealed no trace of previous agricultural use of the site, and that much of the study site has been impacted by the existing quarry and access road, leaving very few undisturbed areas. The study area primarily consists of exposed bedrock, or otherwise shallow and wet soils with sloped, undulating terrain. These factors would have been a deterrent to both wildlife and humans in the area. The study area is situated relatively distant from navigable waterways and therefore Mi'Kmaq travel routes, historic railways, and areas of known settlement and industrial development, which reduce its potential for archaeological resources. No evidence of on-site pre-contact cultural resources were identified during the reconnaissance. There were no watercourses within or adjacent to the study area which were large enough to have been important to the Mi'Kmaq, and likely to have archaeological resources. Further, the review of MARI, the archaeological database maintained by the Nova Scotia Museum, determined that there are no pre-contact registered archaeological sites in the immediate vicinity of the site. The nearest registered site is located 11 km southwest of McIntyre Mountain Quarry.

Mi'kmaw place names often highlight cultural elements such as local historic events, key resources, and essential meaning. Several known Mi'kmaw place names near the study area include Amasastukek ("far up River Inhabitants") referring to Glendale, 5.3 km northeast; Muinaqnji'jk ("at the small berry picking place") referring to Low Point, located 10.5 km southwest; Paqasepekiaq ("something hangs into the

water"), referring to Creignish, 9.6 km southwest; and Sutik ("Judique") referring to Judique, 14.5 km northwest. The nearest contemporary First Nations communities are We'koqma'q First Nation, located in Whycocomagh, and Wagmatcook First Nation.

4.3.2.2 Pre-Contact

During the Saqiwe'k L'nuk, meaning the "Ancient People" or Palaeo Period (13,000 to 9,000 years BP), the Mi'Kmaq were the earliest known inhabitants of the the Maritime Peninsula (the present land mass of Nova Scotia). Due to changing periglacial environmental conditions the area was a haven for caribou and other game animals. A clearer idea of Mi'Kmaq presence and activities emerged from archaeological material representing the Kejikawe'k L'nu'k (the Recent People), also known as the Woodland/Ceramic Period, which extends from 3,000 to 500 BP. In that period, the Mi'kmaq are known to have inhabited the territory known as Mi'kma'ki, which included all of Nova Scotia and Cape Breton, Prince Edward Island, New Brunswick (north of the Saint John River), southwestern Newfoundland, the Gaspé region of Quebec, and part of Maine. During this period, they were primarily a maritime people typically concentrated along coastal shorelines and navigable watercourses (CRM Group 2024).

There was a significant population of Mi'kmaq in Cape Breton (Unama'kik) due to the fishing and eventual fur trade that grew with the arrival of French fishing fleets and trading posts as early as 1520, when a Portuguese colony was established on the island, and maps from the mid-sixteenth century "Imply intensive contact with the Indigenous population" through Mi'kmaq place names. A census from 1713 on Cape Breton Island recorded the majority of Mi'kmaq families as located near St. Peters. The 1767 Chart of the Island of Cape Breton map identifies a large area of Unama'kik as "Indian Hunting Country", which includes the Study Area (CRM Group 2024).

Between the late sixteenth and the mid-eighteenth centuries, at least two Mi'kmaq villages were described as located within Unama'kik – one to the north, near Port Dauphin or Englishtown, and the other in the southern region of the island, along the southernmost areas of the Bras d'Or lakes. In the 1940s, approximately 46 Mi'kmaq summer villages were recorded, 35 of which being located near the mouths of substantial rivers and the rest near saltwater lagoons, coves, and bays. One of the "largest and most significant' seasonal sites were *Oegogmag*, or Whycocomagh, located approximately 26 km northeast of the study area (CRM Group 2024).

4.3.2.3 European Settlement

European settlement and development in the region commenced as early as 1520 with the establishment of a Portuguese colony on Cape Breton Island. As European settlers gradually arrived in the succeeding centuries, the continued presence and influence of the Mi'kmaq peoples remained evident well into the historic period. In Scotland, an economic downturn, driven by the collapse of key industries, prompted many Scots to either emigrate voluntarily or be compelled to leave. Between 1817 and 1838, the population of Cape Breton increased by approximately 30,000 individuals, the majority of whom were from the Scottish Highlands. These Gaelic-speaking immigrants to the Strait of Canso region discovered Inverness County to be densely wooded and traditionally used as a hunting ground by the Mi'kmaq. The settlers undertook efforts to clear the land for cultivation and infrastructure development, though the rocky soil proved less suitable for large-scale agriculture (CRM Group 2024).

In 1832, a Presbyterian Church was established under the leadership of Reverend Dugald McKichan, who was sent to the region in 1829 by the Glasgow Colonial Society to "promote the religious interests of Scottish settlers in British North America". At that time, the population of Port Hastings was predominantly Presbyterian or Roman Catholic (CRM Group 2024).

Port Hastings emerged as a central business hub in Inverness County. Ronald John MacDonald, the son of a Scottish pioneer from nearby Whycocomagh, became a prominent merchant in the area, opening his first business in 1879. The village also became a key site for the Atlantic Cable, hosting multiple cable and telegraph offices. Prior to the construction of the railway, Henry Archibald operated a notable mail and passenger transportation service, using horse-drawn carriages to travel between Port Hastings, Inverness, and Sydney. By 1922, the village featured three telegraph offices, a government wharf, a railway station, and a shipping pier (CRM Group 2024).

The McIntyre family of Queensville located near the study area, descends from Roderick McIntyre and his wife Mary (née MacEachern) of South Uist, Scotland. Their son, Archibald, along with 10 of his 11 children, settled in Cape Breton in the 1820s. Archibald's eldest son established his residence on McIntyre's Mountain, where several of his descendants also settled. Aerial photographs from the 20th century show minimal development near the Study Area (CRM Group 2024).

4.3.3 Population and Economy

The McIntyre Mountain Quarry is located in the Municipality of the County of Inverness, the municipal unit occupying the western region of Cape Breton Island. Inverness County had a population of 18,182 in 2023 one that has been slowly increasing—overall 1.12% positive population percentage change since 2022 (Government of Nova Scotia 2023). There are two First Nation reserves within Inverness County, Wagmatcook and We'koqma'q with a combined population of 1,942 (Nova Scotia Office of L'nu Affairs 2021).

In 2021, Inverness County represented approximately 3% of the agricultural industry in Nova Scotia (NSFA 2021). In comparison to the other industries, agriculture, forestry, fishing and hunting accounted for approximately 11.5% of all jobs in the region. The industries with the highest employment in Inverness County were health care and social assistance, retail trade, agriculture/forestry/fishing, and educational services (Statistics Canada 2022).

Table 8. Total Employment by Industry for Inverness County, 2021 (Statistics Canada 2022).

Industry	Nova Scotia	% of Nova Scotia's Total Employment	Inverness County	% of Inverness County's Total Employment
Total employed, all industries	425,190	100	6,605	100
Agriculture Forestry, fishing	15,410	3.6	760	11.5
Mining, quarrying, and oil/gas extraction	2,445	0.6	120	1.8
Utilities	3,445	0.8	70	1.1
Construction	30,890	7.3	535	8.1
Manufacturing	28,505	6.7	415	6.3
Trade	62,475	14.7	915	13.8
Transportation and warehousing	17,625	4.1	280	4.2

Finance, insurance, real estate, and leasing	22,020	5.1	215	3.3
Professional, scientific, and technical services	29,500	6.9	255	3.9
Management of companies and enterprises, administrative and support, waste management, and remediation	19,065	4.4	185	2.8
Educational services	35,215	8.3	655	9.9
Health care and social assistance	66,915	15.7	990	15.0
Arts, entertainment and recreation	6,290	1.5	175	2.6
Accommodation and food services	21,585	5.1	360	5.5
Other services	15,800	3.7	200	3.0
Public administration	40,465	9.5	420	6.4
Other	7540	2	55	1

4.3.4 Water Supply and Residential Wells

Permanent homes and seasonal residences in the vicinity of the current McIntyre Quarry typically have drilled wells or transport water to the site. There are no wells within 800m of the study area, confirmed by the Nova Scotia well logs database and verified through field observations. Within a 5 km radius of the site there are approximately 30 wells, most of which are drilled. The closest drilled well associated with an occupied dwelling is located about 1.3 km south of the quarry at 590 McIntyre's Mountain Road (NSECC 2024). The local watersheds are not part of any municipal water supply system. Within the County there are six public water systems and seven wastewater systems, which are only accessible in Port Hastings, Judique, Port Hood, Mabou, Inverness, Whycocomagh and Cheticamp. The closest water systems are in Port Hastings and Judique; both approximately 15 km away (Municipality of the County of Inverness 2017).

4.3.5 Land Use

Land in the vicinity of the quarry is predominantly forested, of which approximately 64.5% is undeveloped forest land (Table 9). A small proportion of the forest land (16.9%) is managed, which includes Xmas trees, maple syrup production and softwood plantations. Residents of the area occupy rural residential properties on large lots along the McIntyre's Mountain Road, along Highway 105 and other side-roads in the area. The majority of the land use around the immediate vicinity of the quarry is used for logging with a concentration of seasonal and permanent residences located on McIntyre's Mountain Road near the intersection with highway 105.

Table 9. Land use within 10 kilometer radius of the McIntyre Mountain Quarry. Based on Provincial Forestry Inventory for Inverness County (NSNRR 2021).

Classification	Area (ha)	% of Total
Natural Forest[1]	20247.9	64.5%
Forest, Treated[2]	5312.3	16.9%
Forest, Clear Cut or Partial Cut	1247.7	4.0%
Forest, Dead	779.3	2.5%
Brush / Alders	558.7	1.8%

Table 9. Land use within 10 kilometer radius of the McIntyre Mountain Quarry. Based on Provincial Forestry Inventory for Inverness County (NSNRR 2021).		
Classification	**Area (ha)**	**% of Total**
Wetlands	989.1	3.2%
Open Water	122.6	0.4%
Coastal	30.0	0.1%
Barrens	2.2	<0.1%
Agriculture[3]	1001.0	3.2%
Urban	378.7	1.2%
Sanitary Landfill	4.3	<0.1%
Gravel Pit / Quarry	107.5	0.3%
Industrial Corridors[4]	286.2	0.9%
Miscellaneous	316.5	< 0.1%
1. Includes natural, dead and windthrow. 2. Xmas trees, Sugar Bush, Plantation, Other. 3. Old Field, Blueberries, Other. 4. Pipelines, Powerlines, Roads. Source: https://novascotia.ca/natr/forestry/gis/forest-inventory.asp		

Agricultural uses including hay, livestock, and blueberry production are of some importance but occupy only about 3.2 % of land area. Logging and accessory roads have been used, and are currently used, for logging. Trails near the study site (NSNRR 2021) are actively used by locals year-round for activities such ATV and snowmobiling and some recreational hiking. The underlying bedrock is favourable to development of pits and quarries, and several active, inactive, and historically abandoned sites are present within 10 km of the McIntyre Mountain Quarry.

4.3.6 Hunting and Trapping

Lands surrounding the McIntyre Mountain Quarry site supports a variety of common game and fur-bearing species found throughout Nova Scotia. While hunting and trapping activities may occur in the general area, trapping data suggests that Inverness County experiences a relatively low harvest of most species (NSDNR 2024). White-tailed Deer are prevalent, although the county typically ranks low in deer harvest numbers within the province. Black bear are also hunted in the region. The primary fur-bearers trapped between 2019 and 2024 were Beaver, Muskrat, and Coyote, with only one American Marten being trapped incidentally. Ruffed Grouse is the most commonly hunted upland game in Inverness County (Table 10), with Snowshoe Hare and Ring-Necked Pheasant also being significant upland game species.

Table 10. Five-year summary of wildlife harvested in Inverness County and Nova Scotia (NSDNR 2024).			
Animal	**Inverness County Reported Harvest**	**Provincial Reported Harvest**	**Percent (%) of total for province**
LARGE MAMMALS			
Deer (Zone 111)	2,219	38,601	5.75%
Bear	40	1,862	2.15%
UPLAND GAME			
Snowshoe Hare	3,350	58,360	5.74%
Ruffed Grouse	4,177	59,507	7.02%
Ring-necked Pheasant	34	8,210	0.41%

Table 10. Five-year summary of wildlife harvested in Inverness County and Nova Scotia (NSDNR 2024).

Animal	Inverness County Reported Harvest	Provincial Reported Harvest	Percent (%) of total for province
FUR HARVEST			
Beaver	309	7,552	4.09%
Muskrat	305	10,821	2.82%
Otter	45	1,339	3.36%
Mink	13	719	1.81%
Bobcat	117	2,773	4.22%
Fox	64	911	7.03%
Racoon	52	2,907	1.79%
Skunk	10	113	8.85%
Squirrel	263	1,571	16.74%
Weasel	23	522	4.41%
Coyote	304	8,479	3.59%
Canada Lynx*	0	10	0%
American Marten*	1	9	11.11%
Fisher	13	477	2.73%
Total Furbearers	**11,339**	**204,743**	**5.54%**

*Trapped incidentally. Trappers Association of Nova Scotia prepares incidental pelts for auction and all proceeds go to the NS Species at Risk Conservation Fund.

4.3.7 Forestry and Agriculture

Forestry and farming contribute to the mix of industries in the study area, but the contribution is relatively small compared with the rest of Nova Scotia. Main agricultural activities in Inverness County include cattle ranching, crop growing, and other animal production, although the number of farms in Inverness County has decreased over the years (NSFA 2021). Other types of agricultural activity in Inverness County—including hog, pig, poultry, sheep, grain, and vegetable farming—fall below the provincial average production and value, largely due to the unsuitable terrain and lack of agricultural land required for these activities. In the early days of settlement, local agriculture was significantly more important. The forestry industry includes logging and timber tract operations, as well as a range of support activities, accounting for 32% of agriculture and forestry activities occurring in the County (Municipality of the County of Inverness 2017b).

4.3.8 Aquaculture and Shellfish Harvesting

Inverness County is bordered by two marine coasts; the Gulf of St. Lawrence to the northwest and the coastline of the Bras d'Or Lakes in the southeast. The McIntyre Mountain Quarry is situated approximately 9 km from the west coast of Inverness County along the Gulf of St. Lawrence and about 16 km from the Bras d'Or Lakes.

Currently, there are no licensed aquaculture or land-based finfish cultivation operations in Inverness County. The nearest licensed aquaculture facility to the McIntyre Mountain Quarry is located 26 km

northeast in Whycocomaugh Bay, Richmond County. Between Whycocomagh and Nyanza, there are five active commercial licenses, two pending commercial licenses, and two experimental licenses. Species being cultivated include Atlantic Salmon, Rainbow Trout, American Oyster, Blue Mussel, and Arctic Char (NSDFA 2023). The mouths of major rivers and harbours in Inverness County, such as the Margaree River, Mabou Harbour, and Chéticamp Harbour, are permanently closed to shellfish harvesting due to fecal coliform contamination. However, other nearby coastal areas generally remain open to shellfish harvesting (DFO 2024).

4.3.9 Recreational, Commercial, and Mi'kmaq Fishing

Recreational fishing provides a valuable resource and pastime for residents and visitors to Inverness County. Recreational fishing is managed through a system of six Recreational Fishing Areas (RFAs) currently determined by County boundaries, with Inverness County forming RFA 1 (Nova Scotia Government *n.d.*). Species, catch limits, and seasons are set for each RFA. Several lakes and rivers occur near the study site, all of which are located within the Inhabitants River watershed. Smaller watercourses and waterbodies in the general area may be fished recreationally during the freshwater fishing season of April 15 to September 30. Species fished recreationally in the Inverness County area include Rainbow Trout, Brook Trout, and Brown Trout; Largemouth Bass, and Striped Bass (FishBrain 2025). Brook Trout and Striped Bass are the most popular species in accessible lakes and rivers in Inverness County. Mi'kmaq residing in the area likely use the recreational fishing resource as well, and the Mi'Kmaq Conservation Group Netukulimk in Nova Scotia actively monitors and restores fish habitat, particularly that which supports Atlantic Salmon, in rivers in Inverness County. No commercial fisheries for freshwater fish occur in the area.

Stocked lakes and rivers in Inverness County include Hector Lake, Lake Ainslie, Margaree River, and Mull River which are stocked with Brook Trout. The Margaree River and Lake Ainslie have runs of Atlantic Salmon, and there is a catch-and-release fishery. No recreational fishing was observed during the site visit on July 22-23 2024, and no specific information on local fishing activity was identified. There are no commercial fisheries in the vicinity of the McIntyre Mountain Quarry. The Gulf of St. Lawrence and Northumberland Strait coast of Inverness County, as well as the Bras d'Or Lakes supports various marine and estuarine commercial fisheries.

4.3.10 Parks and Protected Areas

Inverness County is sparsely populated and natural areas suitable for conservation and outdoor recreation form a large proportion of the landscape. Wilderness or protected areas have been established in the Cape Breton Hills, and Bras d'Or Lowlands which are in the general area of the quarry site. Protected natural areas near the quarry site include: River Inhabitants Nature Reserve (4.4 km southeast), North Mountain Wilderness Area (11.3 km southeast), Bornish Hill Nature Reserve (12.2km northeast), River Denys Nature Reserve (12.6 km northeast), and MacLeod Brook Nature Reserve (13.7 km southeast) (Table 11 and Figure 22). These areas may be used by residents and visitors to enjoy outdoor recreation such as birdwatching, camping, hiking, and snowshoeing. Parks and protected areas in the general area are listed in Table 8, and include:

Wilderness Areas are provincially significant areas that protect representative examples of natural landscapes, native biological diversity, and outstanding natural features of Nova Scotia. They are used for scientific research, education and a variety of recreation and nature-tourism related activities such as

hiking, canoeing, sea-kayaking, sport-fishing and hunting. These areas are designated under Nova Scotia's Wilderness Areas Protection Act.

Nova Scotia Nature Trust's Conservation Lands are protected areas that are safeguarded and stewarded for the purposes of nature conservation. The properties have come under the care of the Nature Trust through donation, part-donation, purchase, or conservation easement, and protect Nova Scotia's rare, outstanding and unique natural areas while fulfilling landowner wishes to permanently protect the natural legacy that so many of them have proudly stewarded for generations.

Nova Scotia Nature Reserves are established to preserve and protect areas representative of natural ecosystems and associated plant and animal species. Scientific research and education are the primary uses of nature reserves and recreation is generally restricted. These areas are protected under the Special Places Protection Act.

Table 11. Parks and protected areas within a 20 km radius of McIntyre Mountain Quarry, Inverness County. Province of Nova Scotia, Nova Scotia Environment Database, 2021.

Name of Site	Primary Type of Protection	Protection Status	Area (ha)	Distance (km)
River Inhabitants Nature Reserve	Nature Reserve	Designated	889	4.44
Bornish Hill Nature Reserve	Nature Reserve	Pending	1137	9.95
North Mountain Wilderness Area	Wilderness Area	Designated	1080	11.34
River Inhabitants Nature Reserve Addition (Pending)	Nature Reserve	Pending	325	11.85
Bornish Hill Nature Reserve	Nature Reserve	Designated	955	12.21
River Denys Nature Reserve	Nature Reserve	Designated	181	12.62
MacLeod Brook Nature Reserve	Nature Reserve	Designated	121	13.66
North Mountain Wilderness Area (Subject to mineral interests) (pending)	Wilderness Area	Pending: Approved by cabinet	233	14.28
Lime Hill Conservation Lands	Land Trust or Conservation	Considered protected	241	14.46
Marble Mountain Conservation Lands	Land Trust or Conservation Easement	Considered protected	69	15.1
Ashfield Nature Reserve	Nature Reserve	Designated	40	16.17
Ashfield Nature Reserve (Pending)	Nature Reserve	Pending	34	17.75
Southwest Mabou River Nature Reserve	Nature Reserve	Designated	93	19.68

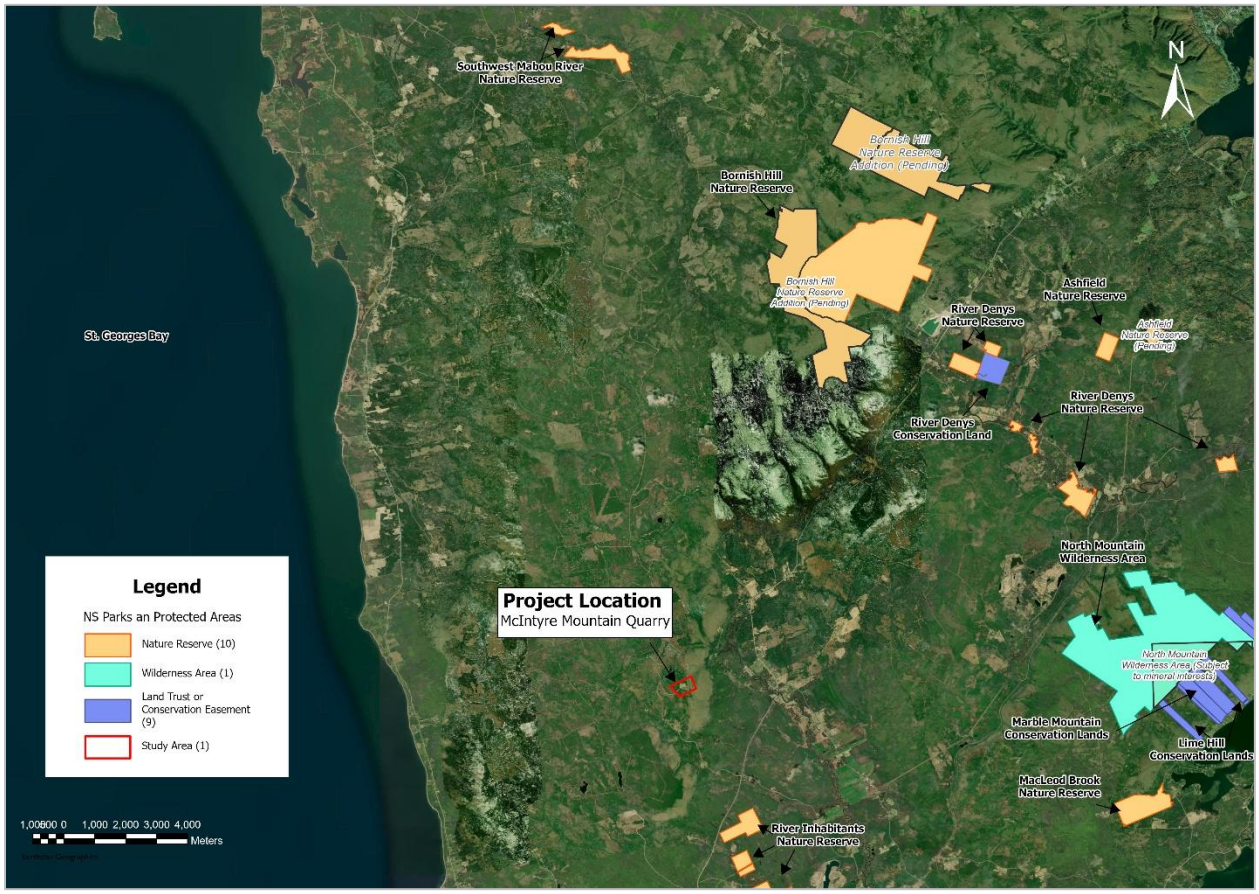

Figure 22. Parks and protected areas located within 20 km of the McIntyre Mountain Quarry and proposed expansion area.

4.3.11 Recreational and Cultural Features

Residents and visitors to Inverness County access the surrounding forest, lakes and rivers within the vicinity of the study area for outdoor activities including camping, hiking and snowshoeing, swimming, as well as hunting and fishing. Hunting for recreation is supported by a two shooting ranges in the general area of the McIntyre Mountain Quarry; Cape Nova Rifle and Revolver Club (2558 Hwy 105, Queensville, NS B9A 1R9) and Queensville DNR Shooting Range (2558 Hwy 105, Queensville, NS B9A 1R9) located 2.4. and 4.4 kilometres from the quarry, respectively. Existing logging roads, small side roads, and ATV trails allow access for outdoor activities, including McIntyre's Mountain Road which is the main entry point to the McIntyre Mountain Quarry. Nearby areas such as River Inhabitants Nature Reserve (4.4 km south), and the Bornish Hill Nature Reserve (13km northeast) provide outdoor recreation opportunities (Figure 22). Hikers use trails in adjacent areas to access Myles Doyle Falls, Will Brook Cascades, 3 Landing, Maple Brook Falls and nearby nature reserves. ATV use is popular, an in addition to local roads, and the Snowmobilers Association of Nova Scotia maintains trails throughout the area surrounding the McIntyre Mountain Quarry making it a popular area for ATV and snowmobile recreation in the summer and winter months. Cape Clear Snowmobile Club, one of the recreational users, is based out of River Denys, not far north along Highway 105 from the site.

Neighboring wilderness areas and trail systems within emphasize the importance of outdoor recreation and nature appreciation for the area and in Nova Scotia. The Ceilidh Trails Groomers Association maintains

trails both near the property, and in the general area. During Envirosphere's site reconnaissance survey on July 2024, numerous ATV/ snowmobile trails and signage were seen.

4.3.12 Residential Use

The area surrounding the McIntyre Mountain Quarry is rural, and overall has a low density of private residences and seasonal homes and "camps "occurring along main roads in the general vicinity of the site. Homes are widely dispersed along McIntyre's Mountain Road, Highway 105, and on associated side roads. The closest population centre would be the Strait of Canso in the Port Hawkesbury area, including Aulds Cove, Mulgrave, Port Hastings and Port Hawkesbury, 20 km southeast. "Camps" may be used at all times of the year, in particular for summer and winter recreation, and during the hunting season. The nearest full-time residence to the Quarry is to the south on McIntyre's Mountain Road (590 McIntyre's Mountain Road) approximately 960 meters from the proposed quarry expansion area. Although little road traffic was encountered on McIntyre's Mountain road during Envirosphere's site reconnaissance survey, signage for ATV and off-road vehicles indicate that locals are active in the area.

4.3.13 Commercial and Industrial Development

Aggregate and asphalt from the McIntyre Mountain Quarry is used locally, in particular for local highway maintenance as well as for other projects in the area. The Cape Breton Hills are suitable for wind energy development and one of the larger proposed developments—the Rhodena Wind Farm—is located approximately 3 km west of the site. The wind farm, which is owned by ABO Energy, is currently proposed to operate 6 turbines and generates 42 MW of energy.

Apart from forestry operations in the general vicinity of the study area there are few commercial/ industrial businesses in the area, and none were identified along McIntyre's Mountain Road, which is the only access to the Quarry. Businesses within 10 km include:

- C D Blue Forestry Limited (1785 NS-105, Queensville, NS B9A 1R9)
- Cape Nova Rifle and Revolver Club (2558 NS-105, Queensville, NS B9A 1R9).
- Celtic Touch Day Spa (Creignish, NS B9A 1B8).
- Lamey Brooke Farms (2662 Crandall Rd, Queensville, NS B9A 1S8).
- Linden Lea by the Sea (2180 Nova Scotia Trunk 19, Creignish, NS B9A 1B4).
- Melinda By The Sea (Creignish, NS B9A 1B4).
- Muileann Bheag Lumber Inc (Judique, NS B0E 1P0).
- Oceanview Cycling (2123 Nova Scotia Trunk 19, Creignish, NS B9A 1B4).
- Paul Archer, Business Coaching and Training (1922 Highway 19, Creignish, NS B9A 1C7).
- Queensville DNR Shooting Range (2558 Trans-Canada Hwy, Queensville, NS B9A 1R9).
- Robert Neil Smith Photography (2010 Crandall Rd, Sugar Camp, NS B9A 1T5).
- SugarCamp Lodge (834 Long Stretch Rd, Sugar Camp, NS B9A 1V4).
- The Store Studio (2384 Ceilidh Trail, Creignish, NS B9A 1B3).
- Thyme BY THE SEA (2096 Ceilidh Trail, Creignish, NS B9A 1B4).
- Vaughn McManus Construction Ltd (511 Riverside Rd, West Bay Road, NS B0E 3L0).

4.3.14 Tourism and Viewscape

McIntyre's Mountain and adjacent areas of the Cape Breton Highlands are features seen by tourists traveling along Highway 105 from the south toward key Cape Breton attractions including the Cabot Trail,

Cape Breton Highlands National Park, Bras d'Or Lakes, and other parts of Cape Breton, but the main local attraction in the Queensville to Kingsville area is the scenery. The McIntyre Mountain Quarry site is not visible from McIntyre's Mountain Road or from Highway 105.

4.3.15 Transportation

The McIntyre Mountain Quarry is located off McIntyre's Mountain Road which joins Highway 105 between Queensville and Kingsville. Highway 105 is the main provincial 100-series highway in Cape Breton. The road supports local residential traffic, vehicle traffic from logging operations, and trucks transporting product as well as processing equipment from time to time in support the quarry operations. The section of Highway 105 between Queensville with Kingsville provides a snapshot of the overall traffic volume along the 105, as it carries nearly all the traffic passing through Cape Breton. This section has a high traffic volume compared with other highways in the province, with an annual average daily traffic (AADT) of 3,460 vehicles in the year of 2023 (Nova Scotia Open Data Portal 2017). Average daily traffic (ADT) in the spring-summer period of the same year is much higher (6,037 vehicles per day) (Nova Scotia Open Data Portal 2017). The woods road along which the quarry occurs is well-maintained although below Nova Scotia Highway standard width, with limited advance visibility of forestry and quarry vehicles.

4.3.16 Human Health

For most people, their health and ability to live a healthy life, is one of their most important values. Activities associated with a wide variety of human undertakings often have impacts on human health. It is important to consider these impacts in the context of environmental assessment and manage them to limit the potential effects to a low level. Many aspects of modern industrial society have the potential for impacting human health. Effects range from impacts of contaminants in the food supply, trace metals and organic pollutants in water, pesticides in the working environment and on food, atmospheric emissions of smoke and volatile organic compounds, wood preservatives in everyday use, fuels, flame retardants, etc. Industrial operations, such as quarries, produce low-level environmental releases, including exhaust, dust, and emissions, similar to the effects of heavy equipment use elsewhere, and are effectively managed.

The main potential human health effects of quarry operations are noise. Noise can be experienced at or near the quarry, and along roadways used to transport product. Prolonged exposure to frequent or continuous noise from quarry operations can disrupt sleep, cause stress and general annoyance, which may be harmful to human health (Health Canada 2024). The nearest residence to the site is at 1.2 km and quarry activities as well as vehicle traffic would be heard but not at excessive levels. Similarly, residences along Highway 105 are a minimum distance of 2.2 km and would not experience harmful noise levels.

5 Environmental Impacts, Significance, and Mitigation

5.1 Assessment, Approach, and Methods

Information for the assessment 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 (NSECC 2009) and uses assessment methodology typical for environmental

assessment screenings of this kind. For this assessment a list of valued environmental components (VECs)[4] (also known as VCs)[5], and project activities and outcomes for the expansion of the existing quarry were developed, and the potential for interactions of these activities with VECs was identified. Where interactions were identified, and there was potential for significant impacts if mitigation was not undertaken, 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.

5.2 VALUED ENVIRONMENTAL COMPONENTS

The list of Valued Environmental Components considered for the assessment, and interactions with project components, are presented in Table 12. The environmental effects and potential impacts of the project along with their significance and suggested mitigations are outlined in the following and are summarized in Tables 13 and 14.

Table 12. Valued Environmental Components (VECs) for the McIntyre Mountain Quarry Expansion.

Biophysical	Socio-economic
Air Quality, Noise and Light	Mi'kmaq
Groundwater	Human Health
Hydrology	Recreational Activities
Water Quality	Tourism and Viewscape
Freshwater Aquatic Environments	Recreational, Commercial & Mi'kmaq Fishing
Wetlands	Archaeological, Cultural and Historical
Fish & Fish Habitat	Land Use
Flora, Fauna & Habitat	Transportation
Species at Risk	Residential Use
Natural Areas & Wilderness	Commercial /Industrial Use
	Water Supplies & Residential Wells
	Parks & Protected Areas
	Resource Use- Forestry, Hunting & Trapping

5.3 SOCIOECONOMIC IMPACTS

5.3.1 Mi'kmaq

The Mi'kmaq maintain a general interest in all lands in Nova Scotia which they claim to have never surrendered, ceded, or sold the Aboriginal title. 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, as noted in Sections 4.3.1 and 4.3.9. In more recent times, treaties made with the British and continued through

[4] 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 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.

[5] 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 Environmental Assessment Act (2012).

Canadian law have maintained their rights. Mi'kmaq used the Atlantic Coast and large waterways, both as a source of food and as a transportation corridor, none of which are within the immediate vicinity of the study site. Overall, there is low potential for occurrence of Mi'kmaq archaeological resources at the site (CRM Group 2024).

Two First Nations (We'koqma'q at Whycocomagh and Wagmatcook located near Nyanza) are located 28 and 48 km from the study area respectively along the coast of the Bras d'Or Lakes, but no First Nation activities are expected to be directly affected by activities at the McIntyre Mountain Quarry. Best management practices used at the site will reduce any potential impact quarry activities may have on water quality and quantity, fish habitat use of adjacent lands for recreation. The Industrial Approval granted to the project is expected to include measures to manage and monitor quality of surface waters in the vicinity of the site. Land around the Quarry may be used by for nature-based activities such as walking, ATV use, snowmobiling, and hunting or fishing (either recreationally or for subsistence). 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. Activities are seasonal and therefore would not interfere with other uses such as hunting, trapping and snowmobile and recreational vehicle use during the winter and spring. Since quarry operations are not expected to change significantly in scope or to increase in frequency or intensity from past levels, there is unlikely to be a change in the cumulative effects of other activities in the area; consequently, none of these effects are considered significant.

5.3.2 Recreational Activities

Recreational use of the environment in the vicinity of the study area includes use of roads for walking and ATVS and snowmobiles. Cycling on Highway 105 would interact with truck traffic originating in and destined to the Quarry but would likely be only a small proportion of traffic already present. Residents of the area also have the opportunity to live in a relatively untouched natural environment with a low population density leading to local uses such as hunting and fishing, walking/hiking and home-based recreation (e.g., gardening) concentrated around roads in the area.

The principal effects of the quarry on locals using the area for recreation would be from truck, vehicle traffic, and noise associated with the operation of heavy equipment—however these interactions are a small part of other industrial activities including logging trucks and equipment, and in particular, traffic along Highway 105, which is a major travel route and the busiest in Cape Breton. Unlike the other activities, the effects of the quarry would occur principally when the quarry is operating. Although quarry operations could likely be heard near the quarry and recreational users would experience truck traffic and other effects of quarry operations, the frequency and scope of the quarry is not expected to change from past use, and any impact on normal activities of residents as a result of the proposed quarry expansion are expected to be negligible.

5.3.3 Tourism and Viewscape

The expansion of the McIntyre Mountain Quarry is not expected to have a significant impact on tourism and viewscape. The principal interactions would be noise, and truck traffic transporting aggregate to job sites. Some operations at the quarry may be heard along McIntyre's Mountain Road, on land along Highway 105, and on the ATV trails that are adjacent to the quarry. The quarry does not operate every year, as activity depends on market demand. Blasting, which may be heard at greater distances, is of short duration and will occur infrequently—typically one to two times a year when the site is active. The expanded quarry will not result in a change in annual or daily activity, or visibility. Truck and equipment

traffic accessing and exiting the site onto McIntyre's Mountain Road, and Highway 105 is expected to be the main interaction with tourists. This traffic is expected to be seasonal and 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 quarry will not be visible from adjacent roads and in particular from Highway 105, which is an important tourist route, and for which scenic value of the area is important. Overall, the impacts on viewscape and tourism are expected to be negligible.

5.3.4 Recreational, Commercial, and Mi'kmaq Fishing

Recreational fishing in watercourses near the quarry is not expected to be affected by activities at the McIntyre Mountain quarry. River Inhabitants is the only major watercourse located within 2 km of the site, and the amount of runoff from the quarry is small and of high quality and will have a negligible impact on local surface waters. River Inhabitants and several tributaries arising from the slopes of McIntyre's Mountain have trout populations in their lower reaches, which will not be impacted by the quarry. Surface waters tested at the site have high quality, including low turbidity and neutral pH, which would lead to good quality of waters downstream for fish. Vehicle accidents along roads in the area, particularly Highway 105, pose a small potential risk in the vicinity of road crossings, which will be mitigated by safe driving practices of truck and equipment operators. Any changes in infiltration and runoff from the quarry compared to present conditions would slowly occur over the next several decades, which will allow for field data to be collected to measure any actual changes. Overall, a negligible impact of the quarry on recreational, commercial, and Mi'Kmaq fishing is expected.

5.3.5 Archaeological/Cultural/Historical

The land proposed for the quarry expansion has low potential for pre-contact and/or early historic First Nation or European archaeological resources. 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 in the field will be consulted to ensure the artifact or feature is not disturbed and is adequately documented and preserved. Overall, the proposed quarry expansion project is expected to have a negligible impact on archaeological, cultural, and historical resources.

5.3.6 Land Use and Value

Activities at the McIntyre Mountain Quarry do not restrict forestry in the area except by removing available forest lands on the property. During the proposed life of the quarry, most of the existing forest and plantations will be harvested at least once if not more, and the rehabilitated parts of the quarry will also allow replanting and future harvesting. Aggregate from the quarry is used in projects in the area at a competitive cost due to the proximity of the quarry. The quarry may intensify the competitive environment for aggregate provided by other quarries in the vicinity, which may lead to locally lower prices. The quarry provides employment for locals and generates tax revenue. The existing pit has been operating at the site for over 13 years with little to no impact, while providing economic development and a source of aggregate for local highway construction projects. Overall, the proposed quarry expansion project is expected to have a negligible impact on land use and value.

5.3.7 Transportation

The McIntyre Mountain Quarry generates a low to moderate level of truck traffic on roads and highways in the area. Activity levels are not expected to increase from current levels as the expanded operation will

be servicing approximately the same level of demand for aggregate as in past. Existing traffic volumes on the McIntyre's Mountain Road are low and vehicle traffic from the quarry would not constrain local traffic significantly. Transport of production and mobile equipment to and from the site prior to and after periods of site activity may lead to short-term delays in traffic caused by the often slower-moving transport trucks, however, the duration will be less than experienced during typical roadwork projects and will be therefore insignificant. Heavy trucks moving through the area and trucks turning can be a hazard to local traffic. The entrance road along McIntyre's Mountain Road has good sightlines and a long stretch of highway on either side which does not have significant on-turning traffic. This effect can be mitigated by applicable warning signs placed in advance of the access road to indicate the likely presence of heavy equipment and trucks turning. The intersection of McIntyre's Mountain Road and Highway 105 has good sightlines to provide safe exchange of vehicles. 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, with little or no change from current operations at the quarry. Overall, the proposed quarry expansion project is expected to have a negligible impact on transportation.

5.3.8 Residential Use

Residents in the immediate vicinity of the quarry including McIntyre's Mountain Road and along Highway 105 may be affected by noise from quarry operations, principally noise from heavy equipment operation such as loaders, trucks, periodic blasting, operation of crushers, ground vibrations from blasts, dust and noise from truck traffic, and accidental spillage of aggregate product (e.g. gravel, rock) from trucks during transport. Residents along Highway 105 already experience high levels of noise from vehicle traffic, including both private and industrial/commercial vehicles.

The quarry includes signage with contact information should any members of the community have inquiries. A complaint resolution will be established to document and address complaints and concerns.

Blasting will be heard by local residents, but would be instantaneous and infrequent (e.g., one to two times per year during years in which the quarry is active). Increasing distance from residences reduces the noise and ground vibration from blasting received in these areas, and consequently the potential effect on groundwater wells or impacts of blasting on building structure are likely negligible. There are no permanent residents within 800 m of the study area. Blasting follows conditions set forth in the Industrial Approval issued by the Province. A blasting contractor prepares a detailed blast design for every blast, and all blasting events are monitored for concussion and ground vibration at the nearest residence to ensure blasting limits are achieved.

Truck traffic generates noise and dust, and increases the potential for vehicle accidents, and accidental loss of product (e.g. gravel, rock) from trucks during transport and which can be hazardous. Proper loading, covering of loads, and handling of product to avoid spillage can mitigate the release of materials. Truck operators will be instructed to maintain reduced speeds in the vicinity of the quarry. Although quarry operations could likely be heard near the quarry and residents would experience truck traffic and other effects of quarry operations, the frequency and scope of activities at the quarry is expected to continue at present levels, and any impact on normal activities of residents as a result of the proposed quarry expansion are expected to be negligible.

Sky-shine from the quarry, on rare occasions when the quarry may be operated at night, will likely not be seen by local residents, and would be controlled by proper environmental management practices such as use of downward directional lighting at the site. The effects of the quarry would occur principally when the quarry is operating during the construction season, not year-round. Operations at the quarry would be cyclic, and operated on an as needed basis to support local construction projects in the area during the construction season during the years in which the site is active.

The quarry occupies a small area in relation to the local groundwater aquifer and will have negligible impact on groundwater supply to local residences.

5.3.9 Commercial and Industrial Use

Apart from commercial logging, there is negligible industrial activity in the vicinity of the McIntyre Mountain Quarry. Wind farms are becoming more commonplace in suitable areas of Nova Scotia; the quarry is 4 km from an area proposed for long-term expansion of the Rhodena Wind Farm, approved in 2024, and 10 km from the first six turbines of the project to be installed near Craigmore, which would not be impacted. The quarry contributes to net economic benefit in the community through supporting local trucking operations and providing local access to aggregate and other quarry products. Overall the proposed quarry expansion project is expected to have a negligible impact on commercial and industrial use in the general area.

5.3.10 Water Supplies and Residential Wells

Surface water and drilled wells associated with residences along McIntyre's Mountain Road and at the foot of McIntyres Mountain in the same aquifer as the quarry, may be affected by periodic blasting. A complaint management procedure will be put in place for the quarry and groundwater monitoring wells installed around the site to provide information to determine if impacts to groundwater resources occur. Groundwater recharge generated by the quarry is likely to be of high quality (low conductivity and dissolved solids and neutral in pH). Best management practices surrounding blasting will be followed, established operational procedures for fueling of equipment will be followed, and a contingency plan will be maintained to mitigate potential impacts from spills and releases that may occur at the site. Overall, the proposed quarry expansion project is expected to have a negligible impact on water supplies and residential wells in the area.

5.3.11 Parks and Protected Areas

Apart from noise from operations and occasional blasting, which may occasionally be heard in remote natural sites and parks and protected areas in the region, McIntyre Mountain Quarry will have a negligible effect on Parks and Protected areas. Activities at the quarry are not planned to change in scope or increase in frequency from past use, and levels of noise will be similar those historically experienced during periods of site activity. The site not close to parks or protected areas, with nearest park being the River Inhabitants Nature Reserve which is 4.4 km from the site, which will minimize noise impacts in general. The expanded quarry will not be visible to visitors traveling by road, or to ATV traffic. Road traffic associated with the quarry is expected to be consistent with historic levels. Noise generated from routine operations at the quarry are not expected to be heard at most Parks and Protected areas in the general vicinity. 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, which in the long term will reduce impacts

on the integrity of natural areas and by extension that of protected areas. Overall interactions and impacts on parks and protected areas are expected to be negligible.

5.3.12 Resource Use – Forestry, Hunting, and Trapping

The proposed quarry expansion is located on private lands. Use of the land in the expansion area will partially remove the potential for future forestry use of the site, at least until after the quarry is closed and rehabilitated in future. 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.

5.3.13 Human Health

Many aspects of modern industrial society have the potential for impacting human health. Effects range from impacts of contaminants in the food supply, trace metals and organic pollutants in water, pesticides in the environment and on food, atmospheric emissions of smoke and volatile organic compounds, wood preservatives in everyday use, fuels, flame retardants, etc. Industrial operations, including quarries, generate low-level releases to the environment including vehicle and equipment exhaust, dust, and emissions, although at typically extremely low levels, and comparable to the effects of heavy equipment use elsewhere, and which have been acknowledged and managed.

Operations of McIntyre Mountain Quarry are not expected to result in impacts on human health. 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 McIntyre's Mountain Road will be low. Residual dust associated with the quarry after control measures, will be largely localized in the immediate vicinity of the quarry. Operation of an asphalt plant which may take place from time to time at the site is regulated under provincial approvals. Noise from activities at the quarry and transport of product may disturb residents, which if prolonged could be considered a health concern, but management plans will be put into place to minimize noise levels. Other air-borne emissions such as vehicle exhaust are not unique to quarry activities and would also be derived from other traffic along roads in the area.

5.4 Biophysical Impacts – Impacts of the Project on the Environment

5.4.1 Air Quality, Noise, and Light

Other than the gradual increase in the total operational footprint of the site, site activities are not planned to change in scope or increase in frequency from past use. The expansion of the McIntyre Mountain Quarry area is not expected to result in an increase to traffic, noise, dust and light from operations over those previously experienced at the site. Operation of a quarry has the potential to generate dust, combustion 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 dust and particulate levels. Dust management will be undertaken, including use of water spray and covering working and laydown areas with blasted rock, dust suppression systems on crushing equipment, reducing vehicle speeds, and using tarpaulins on truck boxes. Airborne particulate emissions will be monitored in accordance with the site Industrial Approval, the Pit and Quarry Guidelines, and the Nova Scotia Air Quality Regulations. Industry standards and best practices will be followed during all phases of operations.

Traffic along McIntyre's Mountain Road and associated vehicle noise, dust, emissions and safety concerns are expected to be similar to those experienced in the recent past. Exhaust emissions are generated by the operation of vehicles and equipment. Vehicles and heavy equipment are expected to follow efficient operating procedures such as not idling unnecessarily. Given the relatively small size of anticipated future operations at the quarry, 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 and similar in type and amount to those produced during previous operations. Ambient air quality monitoring will be conducted in accordance with the terms and conditions of the Industrial Approval awarded to Municipal for the site.

Noise from the quarry may be experienced by locals living in the general vicinity and by wildlife. Noise mitigation will include maintaining vehicles and heavy equipment in proper working order; planning traffic flow patterns on the site to reduce the need for heavy equipment to back up (thus reducing the frequency of backup signals), and ensuring that parts of equipment capable of generating noise (e.g. tailgates on truck boxes) are secured. Municipal will ensure that site operations do not exceed the noise limits specified in the site Industrial Approval or the Nova Scotia Pit and Quarry Guidelines. Blasting is expected to occur infrequently (1-2 times per year, during years in which the site is active). All blasting events will be monitored for concussion and ground vibrations to confirm adherence to regulated levels. Noise monitoring will be conducted in accordance with the terms and conditions of the Industrial Approval.

Nighttime operations will only occur if necessary. Light during nighttime operations— particularly during times of low-hanging cloud and fog—can attract migrating birds. If nighttime operations are required, then directional lighting will be used to minimize emanation of light upward and laterally over the horizon.

5.4.2 Groundwater

Activities associated with the project including forest clearing, grubbing and removal of overburden, and blasting, may 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 small in relation to the overall size of the aquifers in the general vicinity, 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. A groundwater monitoring program will be developed and implemented as a requirement of the Industrial Approval awarded by the Province, which will establish baseline groundwater quality prior to the quarry expansion, allow monitoring of groundwater levels, and 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.

5.4.3 Hydrology

Due to the relatively small area of the expanded quarry, and its position in the local catchments, the expanded quarry is expected to have a negligible effect on surface waters in the general vicinity. This was shown by a Water Balance Assessment which estimates the change in surface water flows resulting from the proposed expansion project (Fraser 2025). It is estimated that the change in runoff for the main catchment affected by the quarry (Catchment Area A, Figure 9) from existing conditions to full Quarry development ranges from increases of 15.7% (Impervious Quarry Floor) to 7.8% (Pervious Quarry Floor). 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 by percolation through cracks and fissures in the bedrock. Runoff from the quarry floor will be managed through a surface water management system to ensure that it meets site discharge limits established in the site Industrial Approval.

5.4.4 Water Quality

Due to the location of the site being high in the local catchment area and the low-contaminant characteristics of the bedrock, the quality of water leaving the quarry via surface or groundwater is not expected to be impacted significantly. No direct runoff from the quarry into the headwaters of tributaries of Inhabitants River (Figure 9) is expected and consequently water quality is not expected to be impacted. Surface water management measures will be in place to reduce erosion and sedimentation in runoff from the site. Quarry rock does not have acid-generating potential, and blasting is not expected to result in groundwater quality changes. Forest clearing and grubbing activities can lead to releases of fines (silt and clay) 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, and sediments will be removed during flow through the adjacent vegetated landscapes. Dust can enter the local environment and potentially affect water quality offsite but will be mitigated by dust control measures. Possible release of other contaminants such as oils and lubricants from operating equipment; and nitrates from blasting, is expected to be mitigated by normal precautions, including equipment operations and fuelling locations. All activities will conform to the Nova Scotia Erosion and Sedimentation Control Handbook (NSE 1988) and the Nova Scotia Pit & Quarry Guidelines (NSECC 2003). Runoff from road surfaces and exposed surfaces potentially can lead to temporarily elevated suspended sediment levels in flows in ditches adjacent to them, although effects would be short term, and sedimentation control structures such as sedimentation ponds will be implemented as needed. A surface water management and monitoring program, and erosion and sediment control plan will be developed to meet expected conditions of the Industrial Approval.

5.4.5 Freshwater Aquatic Environments

There are no natural surface waters to be impacted by the project, and there is sufficient separation of the proposed expansion from headwaters of intermittent watercourses originating on the slopes of McIntyre's Mountain to ensure they will not be affected by quarry activities. Quantities of runoff arising from the site in future from the outer slopes of berms, product storage piles, and grubbing piles will be approximately the same as present and will remain in the same overall watershed. The quarry is unlikely to generate significant quantities of contaminants or suspended sediments that could impact any freshwater habitat.

5.4.6 Wetlands

Several small wetlands are present within the study area, none of which contain plant species of conservation concern or are considered wetlands of special significance. All wetlands found at the study site are located inside of the proposed expansion area, and may need to be removed to facilitate practical development of the quarry. Prior to physical disturbance, the wetland dimensions will be confirmed, and any larger than 100 m^2 delineated, and wetland approvals acquired.

5.4.7 Fish and Fish Habitat

None of the proposed project activities will physically impact fish habitat. Intermittent drainage down the steep slope of McIntyre's Mountain is not fish habitat, and the nearest potential fish habitat is, approximately 400 m west and 800 meters east and southeast of the proposed quarry expansion area. 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. All guidelines for activities and timing of blasting in the quarry will be followed. Overall, the effects on fish and fish habitat are expected to be negligible.

5.4.8 Flora and Fauna and Habitat

Development of the McIntyre Mountain Quarry will remove some existing terrestrial forest ecosystem in the footprint of the quarry. The quarry footprint is relatively small in relation to larger surrounding forested areas, and the effect on the overall distribution and quality of forests will be minor. Most of the area proposed for the quarry have second- or third-generation forest, having previously experienced stages of logging, and no terrestrial habitats which have conservation significance occur at the site. With time, areas no longer suitable for quarry operations will be remediated, following a site reclamation plan which will be established as a requirement of the 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 reclamation 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.

During recovery and revegetation of abandoned areas, the seeding in and succession of local forest species will provide habitat for a moderate diversity of animal species which will change with time. Preferred wildlife management practices regarding forest clearing which is required to develop the quarry, 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. Development of the McIntyre Mountain Quarry expansion area will result in only a comparatively small loss of coverage of natural and mature forest stands in the area, spread over many years, and is expected to have comparatively small impact on interior 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 will be informed of 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 a principal factor globally in decline of songbird populations, through declines in populations of some insects. Migrating birds are expected to pass over the site on their southward migration; if night-time operations are required, directional lighting will be used which focuses downward and below the normal horizon, to limit visibility by birds and insects from a distance.

In conclusion, the effects of the ongoing operation of the McIntyre Mountain Quarry on wildlife and plant communities are expected to be negligible.

5.4.9 Species at Risk

No federally or provincially-listed species at risk, or species more sensitive than S3 ranking (vulnerable), were found in the study area. No provincially-listed plant species, lichen species, or fur-bearing mammals of conservation importance have been recorded within the study site, and the only one with significant potential to occur at the site is Canada Lynx (Provincially listed as endangered). The quarry is only a small part of the much larger territory of lynx and would not interfere significantly with activities if one were to pass through the site. Common Nighthawk, a ground-nesting bird species, which potentially could nest in grubbed and marginal but open areas of the quarry, was not detected at the site. Periodic nighthawk surveys during operation of the quarry would aid in mitigating potential impacts. Activities such as logging and site clearing if scheduled outside the April to mid-September nesting period for breeding birds would

lessen potential impact on bird species. Lights if 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 will focus downward and below the normal horizon, to limit visibility from a distance, and lessen the impact on migrating birds. A Wildlife Management Plan – including mitigation for potential occurrences of species of concern is expected to be developed as a condition of the Industrial Approval for the project.

5.4.10 Natural Areas and Wilderness

Natural areas in the vicinity of the site such as the River Inhabitants Nature Reserve or Bornish Hills Nature Reserve are appreciated by locals and tourists alike. The proposed development of the McIntyre Mountain Quarry is located on private lands, and will affect a small proportion of the natural landscape at the site, in an area that has been actively logged, and is not in any protected area. Consequently, it will have a negligible effect on visitors to the area, including tourists passing through the area on Highway 105, who are looking for nature experiences. The site is not close to provincial parks of other conservation areas and impacts related to the quarry such as traffic, noise, dust and light over those experienced during past use, will be minimized by best management practices. In conclusion, the impact of the Quarry on natural areas and wilderness will be negligible.

6 IMPACTS OF THE ENVIRONMENT ON THE PROJECT

The McIntyre Mountain Quarry will be affected principally by extreme weather, in particular occurrence of high rainfall and snow melt events leading to erosion and high flows in surface water drainage systems, high winds leading to the resuspension of dust, and elevated temperatures affecting forest communities and human operators at the site. An erosion and sediment control plan will be developed as part of the Industrial Approval process which will reduce offsite stormwater flows and suspended sediment levels to a minimum. Aggregate and other rock products stored at the site are stable under varying conditions of rainfall and wind. Integrity of any runoff management structures at the site will be maintained and appropriately designed to reduce the likelihood of catastrophic failure. Changing climate may increase the operating season for transportation projects, and the need for aggregates produced by the quarry.

7 CUMULATIVE EFFECTS

Cumulative effects are effects of a project that are likely to result in combination with other physical activities that have been or will be conducted (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.

Development of the McIntyre Mountain Quarry will have minimal cumulative effects on most environmental features (Valued Environmental Components, VECs), in part because of the small size of the development relative to other similar uses of the area, and because the quarry is expected to be reclaimed at the end of its useful life. Other than gradual increase in the total operational footprint of the site, site activities are not planned to change in scope or increase in frequency from past use. Reduction in forest cover at the site will compound the overall effects of forestry and land-clearing for the area. Planned restoration of the quarry site to natural conditions after the useful life of the quarry will, in the long term, counteract the effect of present forest loss.

At the proposed 20.39 ha maximum size of the McIntyre Mountain Quarry, it will occupy 0.22% of the land within 10 km, and approximately 16% of the 107.5 ha already developed for gravel pits and quarries within a 10 km radius of the site (e.g. gravel pits, quarries, gypsum mines or other areas which involve modifying the landscape for industrial development) (Table 9). The development area would remove previously clear-cut and regenerating forest, which will result in a reduction of about 0.1% of the approximately 26,808 ha of forest (natural and clear-cut) occurring within the same 10 km radius. There are no other pits or quarries within 1 km of the study area. The total occupancy for quarries and pits in this area is 107.5 which is a small total overall. In comparison, land developed for agriculture, which includes Christmas trees, sugar bush, and plantations, occupy 1,001 ha, and the proposed quarry expansion area is 1.7% of this area. Apart from the increased footprint of the quarry, the combined operations would be at current activity levels and associated impacts on air quality, noise and traffic, experienced by residents on McIntyre's Mountain Road and Highway 105, will be small. Therefore, the cumulative effect of the quarry and other local activity is not expected to change and will be negligible.

Table 13. Potential interactions between project activities and operations and Valued Environmental Components (VECs) for McIntyre Mountain Quarry.

General Category of VEC	Biophysical								Socioeconomic											
Project Component (potential interactions shown by ✓)	Air Quality, Noise and Light	Groundwater & Hydrology	Water Quality	Aquatic Environments and Wetlands	Natural Areas & Wilderness	Fish and Fish Habitat	Flora & Fauna Species & Habitat	Species at Risk	Mi' Kmaq	Human Health	Cultural/Historical	Recreation, Tourism & Viewscape	Residential Use	Recreational, Commercial & Mi' kmaq Fishing	Water Supplies/ Residential	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	✓				✓		✓	✓	✓	✓		✓	✓						✓	
Operation																				
Moving/Transporting Rock and Product	✓				✓		✓		✓	✓		✓	✓			✓	✓	✓	✓	
Crushing	✓				✓				✓	✓		✓	✓						✓	
Washing		✓	✓	✓		✓			✓											
Lights	✓				✓		✓	✓	✓	✓		✓	✓						✓	
Site Runoff Management		✓	✓	✓		✓			✓					✓	✓					
Portable Asphalt Plant	✓				✓		✓		✓	✓		✓	✓						✓	
Onsite Materials Storage			✓	✓					✓						✓					
Accidents (Fires/Oil & Fuel Spills)	✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓		✓				✓	✓

Table 14. Summary of impacts and mitigation on Valued Environmental Components, McIntyre Mountain Quarry.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Mitigation	Significance after Mitigation
BIOPHYSICAL COMPONENTS						
Air Quality, Noise & Light	Construction	Noise and dust from heavy equipment during logging and grubbing.	Significant	Negative	Schedule activity to avoid peak periods of use by residents in the local community. Take steps to reduce noise sources such as engine braking.	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 neighbouring areas.	Significant	Slight, negative	Use directional lighting with downward and lateral focus to minimize light leaving the quarry during night operations.	Not significant.
	Operation	Drilling and blasting; equipment for moving rock; crusher; heavy equipment operation; air-borne emissions from asphalt plant.	Significant	Negative	Monitor noise levels and undertake to avoid exceedances of regulatory levels. Institute measures for dust control. Monitor and maintain asphalt plant to minimize emissions.	Not significant.
		Light from the quarry can be seen in neighbouring areas.	Significant	Slight, negative	Use directional lighting with downward and lateral focus to minimize light leaving the quarry at night.	Not significant.
		Dust from trucks on McIntyre's Mountain Road	Significant	Slight, negative	Consider use of dust suppressant surfacing of McIntyre's Mountain Road in vicinity of nearby permanent and seasonal residences.	Not significant.
		Noise from trucks on McIntyre's Mountain Road	Significant	Slight, negative	Instruct truck drivers to avoid use of engine braking on McIntyre's Mountain Road.	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	Significant	Negative	Drilled wells in bedrock and surface wells can be disturbed. Monitor groundwater quality and	Not significant.

Table 14. Summary of impacts and mitigation on Valued Environmental Components, McIntyre Mountain Quarry.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Mitigation	Significance after Mitigation
		groundwater flow patterns.			movement to determine changes.	
	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; measures to maintain normal flow regime.	Not significant.
	Operation	Accidental Hydrocarbon spills and blasting residues contaminate groundwater.	Significant	Negative	Measures to minimize danger of spills; onsite emergency numbers, spill kits etc. Avoid refueling near watercourses.	Not significant.
Water Quality	Construction	Altered surface water flows and turbidity, hydrocarbons from heavy equipment in watershed flowages.	Negligible	Negative	Erosion and sedimentation controls in work areas. Onsite water management to moderate surface water runoff and suspended sediment levels.	Not significant.
	Operation	Dust & suspended sediment from operations; hydrocarbons from vehicles, 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. Plan and BMP for hydrocarbon management at site. Closely monitor chemical residues after blasting.	Not significant.
	Operation	Water chemistry changes in runoff from materials stored on site. Erosion of stored materials.	Negligible	Negative	Control types of materials stored at site. Monitor settling ponds; storm-water management.	Not significant.
Natural Areas & Wilderness	Construction & Operation	Presence of quarry, emissions, dust etc., detracts from public perception of wild quality of area.	Negligible	Negative	Area affected is small in relation to remaining natural areas, although previous forestry has diminished value of natural areas and wilderness. Attempt to minimize footprint. Manage releases of dust and light, and control noise.	Not significant.

Table 14. Summary of impacts and mitigation on Valued Environmental Components, McIntyre Mountain Quarry.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Mitigation	Significance after Mitigation
Freshwater Aquatic Environments	Construction	Potential for occurrences of high suspended sediments and nutrient levels in runoff from the site.	Negligible	Negative	Preserve wooded buffer areas. Onsite water management and sedimentation controls to moderate surface water runoff and suspended sediment levels.	Not significant.
	Operation	Some of the runoff from the area is retained for site operations; or lost through evaporation.	Negligible	Negative	Maintain forested buffers. Onsite water management to stabilize flow pattern. Minimize unvegetated areas.	Not significant.
	Operation	Higher peak flows and suspended sediment during activities.	Significant	Negative	Onsite water management. Preserve woodland in buffer areas of quarry.	Not significant.
	Operation	Runoff from access roads.	Negligible	Negative	Use of ditching and artificial channels, to carry peak flows and additional site runoff. Sedimentation controls.	Not significant.
	Operation	Releases of chemicals from blasting; accidental releases of lubricants etc.; and runoff from materials stored on site.	Negligible	Negative	Isolate and treat runoff from work areas and stored materials. Lubricant management on site.	Not significant.
	Construction & Operation	Routine releases and accidental spills of hydrocarbons on site.	Significant	Negative	Provide pollution prevention and emergency measures.	Not significant.
Wetlands	Construction	Potential for disturbance of small wetlands on site.	Significant	Negative	Obtain alteration approvals and offset losses of necessary.	Not significant.
	Operation	Dust, nutrient inputs from runoff, changes to hydrology, changes to forest communities.	Negligible	Negative.	Maintain a significant forest buffer; maintain hydrological regime, employ site water management.	Not significant.
Fish & Fish Habitat	Construction	Change runoff patterns at site in local and adjacent watersheds.	Negligible	Negative	Avoid discharges into existing ravines around the site. Maintain forested buffer around the property.	Not significant.
	Operation	Site runoff management and water use affects hydrological and groundwater regime.	Negligible	Negative	Ensure the runoff from the site is managed to moderate flow and minimize suspended sediment levels.	Not significant.

Table 14. Summary of impacts and mitigation on Valued Environmental Components, McIntyre Mountain Quarry.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Mitigation	Significance after Mitigation
	Construction & Operation	Nominal releases of oils, hydraulic fluids etc. from operating equipment. Accidental spills of hydrocarbons on site.	Negligible	Negative	Maintain equipment to minimize loss of lubricants and fuels. Provide pollution prevention and emergency measures.	Not significant.
	Operation	Accidental spills into watercourses from truck highway accidents.	Negligible	Negative	Recommend truck traffic use safe driving practices and reduce speed in vicinity of quarry and along McIntyre's Mountain Road. Provide suitable pollution prevention and emergency measures.	Not significant.
Terrestrial Flora & Fauna & Habitat	Construction	Removal of Existing Communities.	Negligible	Negative	Communities removed have all been previously developed / modified. Restore damaged and unused parts of the site (e.g. grubbing's and waste rock piles) as soon as possible. Long-term site rehabilitation plan will be developed with NSECC. To minimize damage to communities, cut forest short-term in stages only as needed to expand quarry.	Not significant.
	Construction & Operation	Accidental releases, contamination of habitat.	Significant	Negative	Provide pollution prevention and emergency measures & response capability. Remediate any areas affected by spills.	Not significant.
		Artificial light from operations influences movements of birds and other animals.	Significant	Negative	Avoid night operations. If necessary to work at night, use directional lighting with downward focus to minimize light leaving the quarry. Avoid migratory periods for bird.	Not significant.
		Removal of potential forest and wildlife resource (i.e. wildlife habitat)	Negligible	Negative	Small area affected relative to total available. Minimize footprint of quarry. Restore and rehabilitate areas not used. Leave mature standing trees where possible as nest cavities.	Not significant.

Table 14. Summary of impacts and mitigation on Valued Environmental Components, McIntyre Mountain Quarry.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Mitigation	Significance after Mitigation
		Quarry affects wildlife movement patterns and connectivity of habitats.	Significant	Negative.	Restoration should include consideration for wildlife movement through the restored site.	Not significant.
Species at Risk	Construction	Water quality impacts affect downstream areas in watersheds with Atlantic salmon	Significant	Negative	Best management practices for management of runoff from the site.	Not significant.
	Operation	Sound from blasting can harm bats and birds.	Negligible	Negative	Minimize blasting activity and concentrate in spring and fall (outside breeding and migratory periods) when species are absent.	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.
		Species of conservation concern may encounter highwalls and steep slopes	Significant	Negative	Provide wildlife fencing to isolate active areas.	Not Significant.
		Increased risk of vehicle collisions.	Significant	Negative	Post roads in the area with warning signs for wildlife of concern.	Not Significant.
		Open areas and grubbing piles occupied by nesting species such as nighthawks.	Significant	Negative	Educate personnel to look for bird life prior to activities; periodically conduct nesting bird survey at site to identify bird issues.	Not significant.
SOCIOECONOMIC COMPONENTS						
Mi'kmaq	Construction and Operation	Any land use conflicts with Mi'kmaq Right to Use Land.	Significant	Neutral	Consult with Mi'kmaq in developing quarry.	Not significant.
		Minimizing impacts of the quarry improves the overall condition of environments in the area important to and potentially used by Mi'kmaq.	Negligible	Negative	Use Best Management Practices for quarries. Avoid accidental releases of contaminants. Avoid vehicle accidents.	Not significant.
Archaeological, Cultural and	Construction	Expansion may affect undiscovered artifacts.	Not significant	Negligible	Unlikely that artifacts occur at site. Minimize project footprint. Halt operations and notify NS	Not significant.

Table 14. Summary of impacts and mitigation on Valued Environmental Components, McIntyre Mountain Quarry.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Mitigation	Significance after Mitigation
Historical Significance					Department of Communities, Culture, Tourism & Heritage if artifacts found.	
Recreation	Construction & Operation	Quarry traffic interacts with local recreational use of roads and trails by ATVs and snow-mobiles.	Not significant	Negative	Users will be aware of activity at quarry but will not be otherwise impacted. Access roads gated to prevent unauthorized use. Post signage indicating site hazards and private property restrictions.	Not significant.
Tourism and Viewscape	Construction & Operation	Presence of quarry affects public perception of landscape character.	Negligible	Negative	Quarry is remote and cannot readily be seen from road. Maintain a clean operation. Rehabilitate areas no longer needed for activity and future development.	Not significant.
Residential Use	Construction & Operation	Noise; light pollution; dust; operation of trucks and transportation of heavy equipment on McIntyre's Mountain Road.	Significant	Negative	Use best management practices to reduce disturbance. Inform residents about quarry operations including proposed blasting. Provide community with safety information and signage for truck traffic.	Not significant.
Recreational and Mi'kmaq Hunting and Fishing	Construction & Operation	Accidental hydrocarbon spills and blasting residues contaminate surface waters.	Negligible	Negative	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	Rehabilitate areas no longer needed for activity and future development. Minimize cutting outside quarry footprint.	Not significant.
Water Supplies & Residential Wells	Construction and Operation	Blasting potentially impacts local aquifers.	Not significant	Negative	Develop groundwater-monitoring plan in consultation with NSECC. Consult with residents on McIntyre's Mountain Road concerning water supply issues.	Not significant.
		Port Hastings, Judique, Port Hood, Mabou, Inverness, Whycocomagh and	Not Significant	Negative	Quarry is in separate watershed and aquifers likely not connected. No mitigation needed.	Not significant.

Table 14. Summary of impacts and mitigation on Valued Environmental Components, McIntyre Mountain Quarry.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Mitigation	Significance after Mitigation
		Cheticamp Water Supply Watersheds				
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 McIntyre's Mountain Road	Negligible	Negative	Assist in road maintenance.	Not significant.
	Operation	Collisions with trucks and equipment on adjacent roads & highways.	Significant	Negative	Set low speed limit for trucks on McIntyre's Mountain Road to avoid collisions, and minimize noise and dust for residents. Use good directional signs for slow moving vehicles, and speed policy in vicinity of quarry. Safety training for truck drivers.	Not significant
Industrial & Commercial Use	Operation	Competition with other quarries.	Negligible	Neutral	Quarry operations are in a competitive environment; cooperate if possible.	Not significant.
		Blasting on Wind turbines	Not significant	Negative	Sufficient separation from Rhodena Wind Farm to have no effect. No mitigation needed	Not significant.
Resource Use Forestry, Hunting & Trapping	Construction & Operation	Removes woodland; game habitat.	Not significant	Negative	Relatively small area is used.	Not significant.
Parks and Protected areas	Construction & Operation	River Inhabitants Nature Reserve and Bornish Hills Nature Reserve	Not significant	Neutral	Employ best management practices for all aspects of quarry operation, in particular control of noise, light, dust and particulate emissions, and odours leaving the site.	Not significant.
Human Health	Construction	Release of dust containing hazardous materials.	Significant	Potentially impacts worker health.	Monitor rock for occurrence of hazardous materials. Implement Health and Safety Limits for dust exposure.	Not Significant.

Table 14. Summary of impacts and mitigation on Valued Environmental Components, McIntyre Mountain Quarry.

VEC	Project Component	Nature of Effect	Significance	Nature of Impact	Mitigation	Significance after Mitigation
		Noise from operations and vehicle traffic may impact workers and the general public.	Significant	Potentially impacts worker health. Health effects to public through long-term exposure to noise.	Employ Health and Safety measures such as hearing protection. Place limits on operating hours, vehicle speeds, engine braking etc.	Not Significant.
	Operation	Release of dust containing hazardous materials. Hazardous materials reaching groundwater.	Significant	Potentially impacts worker health; levels in product impacts health of users. Contamination of groundwater.	Monitor rock for occurrence hazardous materials and do not use if detected. Monitor groundwater and institute treatment if necessary to reduce levels.	Not Significant.
		Noise impacts workers and the general public.	Significant	Potentially impacts worker health. Health effects through long-term exposure to noise.	Health and Safety measures such as hearing protection. Place limits on operating hours, vehicle speeds, engine braking etc.	Not Significant.

8 MONITORING

Environmental Assessment approval for the proposed expansion will result in monitoring and environmental management requirements being placed in the amended Industrial Approval. Monitoring programs are intended to validate the environmental mitigation strategies which will be developed by Municipal and implemented at the site. Monitoring programs will include:

- Surface water monitoring for water quality in local water resources which may be impacted by the quarry;
- Groundwater monitoring of hydrogeological conditions and groundwater quality;
- Blast monitoring (noise and concussion) for all blasting events conducted at the site;
- Noise monitoring (at NSECC request through the Industrial Approval);
- Dust monitoring (at NSECC request through the Industrial Approval); and
- Additional monitoring for select biological species and/or other environmental features (as necessary).

9 PUBLIC CONSULTATION

In addition to contacts with members of the community already made by Envirosphere in developing this assessment, the Proponent will be consulting with elected government officials, and engaging with the Mi'kmaq of Nova Scotia about the project and its implications, and about plans for development at the site.

10 Personal Communications

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Mr. Mark Pulsifer, Wildlife Biologist, May 16, 2024.| Wildlife assessment report.

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12 LIMITING CONDITIONS

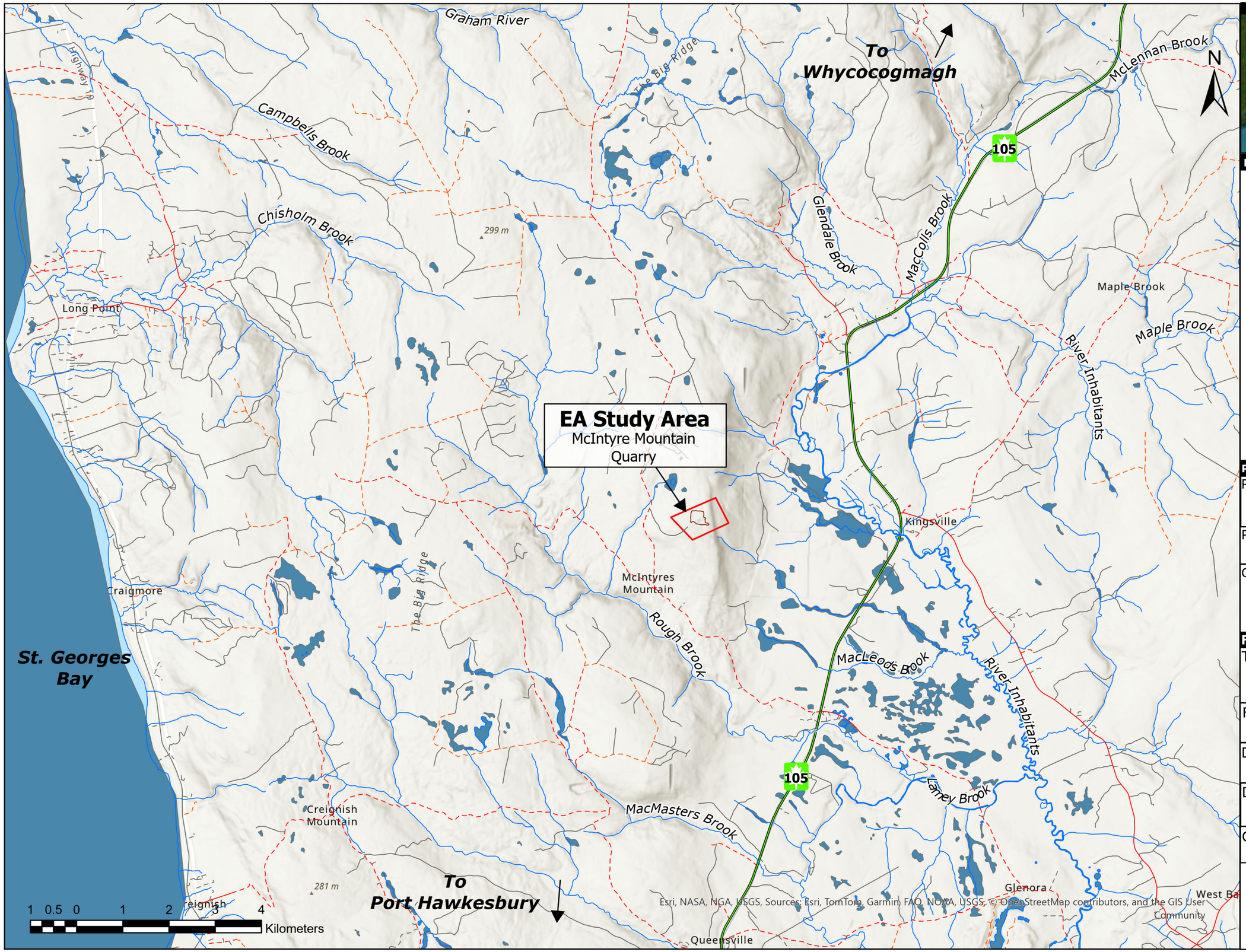
The American Society for Testing and Materials Standards of Practice and the Canadian Standards Association state that no environmental assessment can wholly eliminate uncertainty regarding the recognition of potential environmental liabilities. The intent of the assessment is to reduce, but not eliminate, uncertainty regarding projects, giving reasonable limits of time and costs.

The conclusions of this report are based in part on the information provided by others, which is assumed to be correct. The potential exists that unexpected environmental conditions may be encountered at the site and with the project, not specifically investigated. Should this occur, the proponent and regulatory authorities must be notified so that we may decide if modifications to our conclusions are necessary.

The findings of this investigation are based on research and investigations carried out in April 2024 to March 2025 and the generally accepted assessment practices of our industry. No other warranty is made.

APPENDIX A

MAPS



Key Map:

Legend:

- Study Area
- Active Quarry Boundary
- Watercourse
- Waterbody
- Driveway
- Local Paved Road
- Local Unpaved Road
- Resource Access Road
- Trail
- Trans-Canada Highway
- Contours (5m)

Project:

Project: **McIntyre Mountain Quarry Expansion**

Project No.: **2024-009**

Client: **Municipal Enterprises Limited**

Figure:

Title: **Topography**

Figure No.:	Revision No.:
A-1	**1**
Datum: **NAD 83 CSRS**	Projection: **UTM Zone 20 North**
Drawn By: **K. Scott**	Checked By: **P. Stewart**
Created Date: **2025-03-19**	Revision Date: **2025-03-21**

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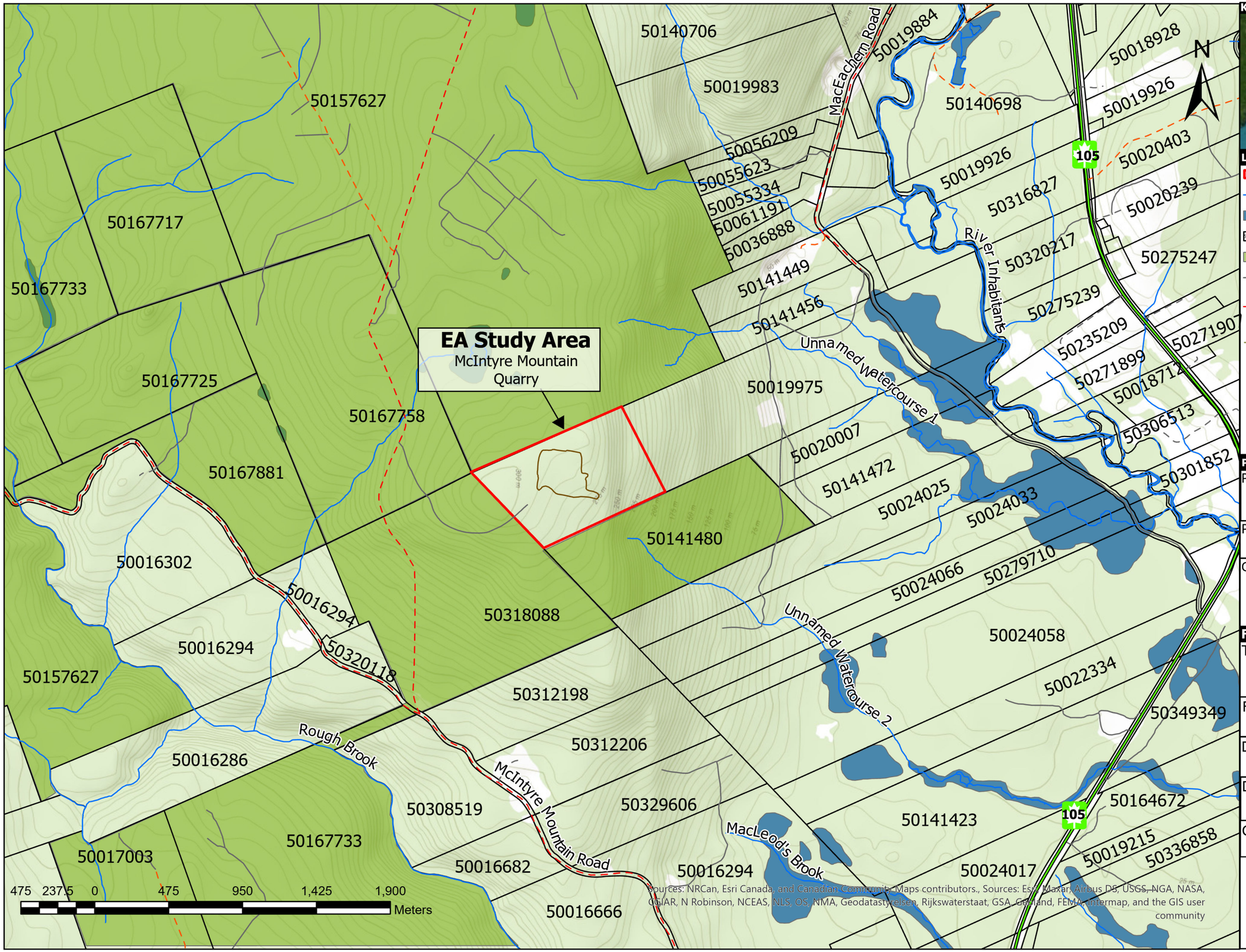

Key Map:

Legend:

- Study Area
- Watercourse
- Waterbody
- PID
- Crown Land
- Driveway
- Local Paved Road
- Contours (5m)
- Local Unpaved Road
- Resource Access Road
- Trail
- Trans-Canada Highway
- Active Quarry Boundary

Project:

Project: **McIntyre Mountain Quarry Expansion**

Project No.: **2024-009**

Client: **Municipal Enterprises Limited**

Figure:

Title: **Property**

Figure No.: **A-2**	Revision No.: **1**
Datum: **NAD 83 CSRS**	Projection: **UTM Zone 20 North**
Drawn By: **K. Scott**	Checked By: **P. Stewart**
Created Date: **2025-03-19**	Revision Date: **2025-03-24**

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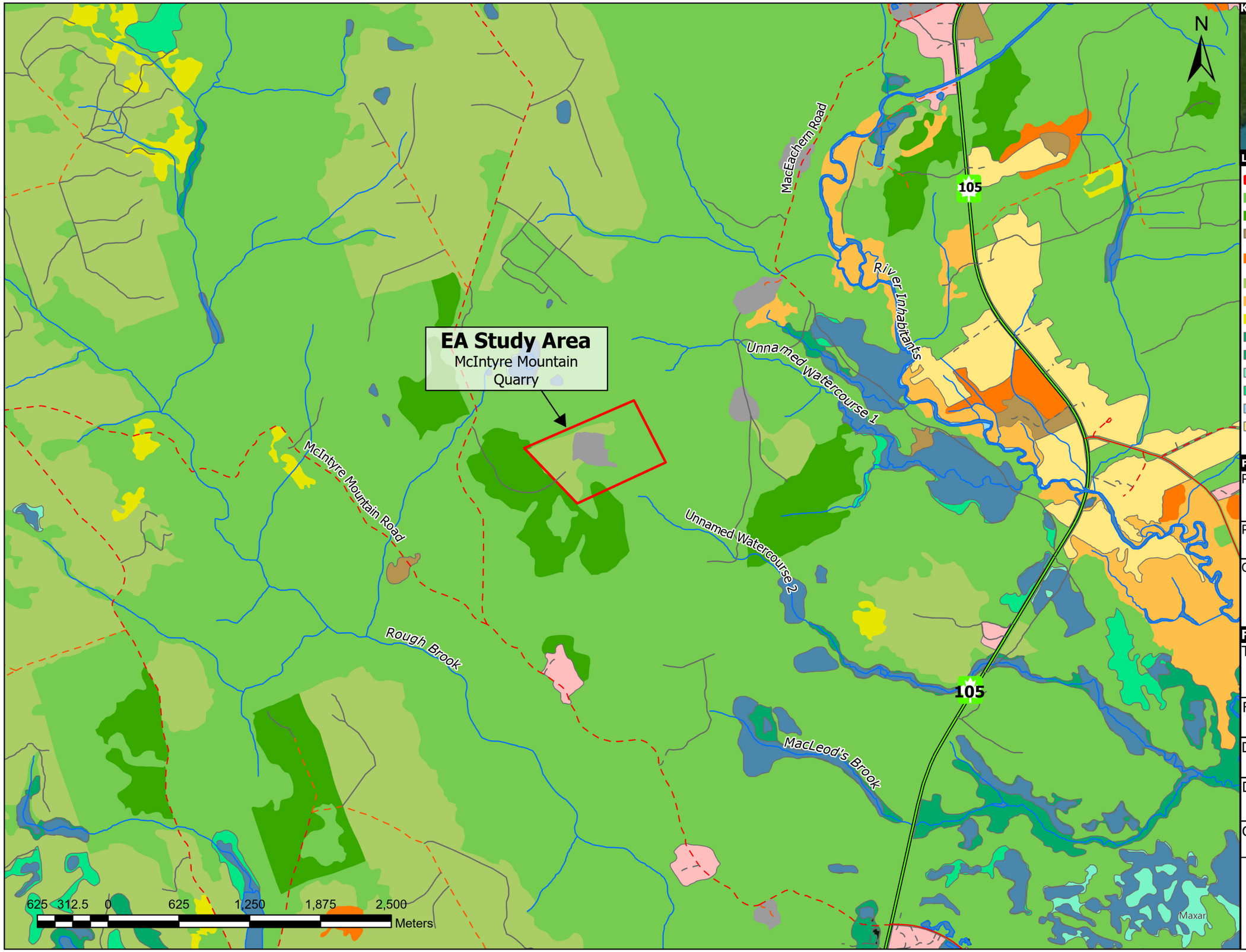

Key Map:

Legend:

- Study Area
- Natural Stand
- Treated Stand
- Old Field
- Stand c/w Dead Trees
- Plantation
- Alders
- Clear Cut
- Wetland General
- Beaver Flowge
- Open Bogs
- Treed Bogs
- Inland Water
- Agriculture
- Urban
- Beach
- Gravel Pit
- Watercourse
- Waterbody
- Driveway
- Local Paved Road
- Local Unpaved Road
- Resource Access Road
- Trail
- Trans-Canada Highway

Project:

Project: **McIntyre Mountain Quarry Expansion**

Project No.: **2024-009**

Client: **Municipal Enterprises Limited**

Figure:

Title: **Forestry**

Figure No.:	Revision No.:
A-3	**1**
Datum: **NAD 83 CSRS**	Projection: **UTM Zone 20 North**
Drawn By: **K. Scott**	Checked By: **P. Stewart**
Created Date: **2025-03-19**	Revision Date: **2025-03-24**

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