REPORT

Socio-Economic Assessment Report

Proposed Caledon Pit / Quarry

Submitted to:

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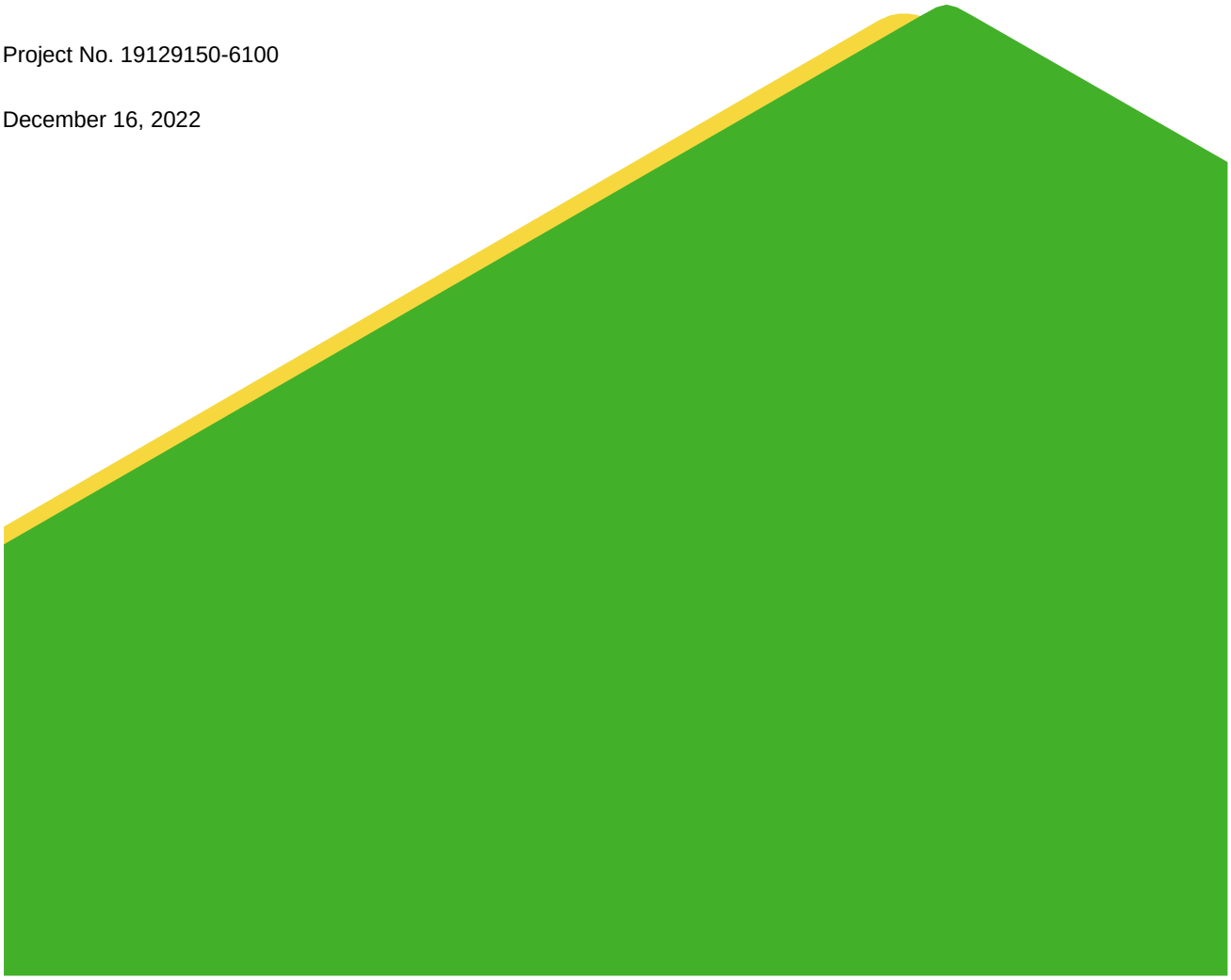
December 16, 2022



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1.0 INTRODUCTION

CBM Aggregates (CBM), a division of St. Marys Cement Inc. (Canada) is applying to the Ministry of Natural Resources and Forestry (MNRF) for a Class A Licence (Pit and Quarry Below Water) and to the Town of Caledon for an Official Plan Amendment and Zoning By-law Amendment to permit a mineral aggregate operation. Golder Associates Ltd. (Golder) has been retained by CBM to complete a socio-economic assessment for the proposed CBM Caledon Pit / Quarry in accordance with the Terms of Reference developed in consultation with the Development Application Review Team (DART) found in Appendix A.

CBM owns / controls approximately 323 hectares of land located at the northwest, northeast and southwest intersection of Regional Road 24 (Charleston Sideroad) and Regional Road 136 (Main Street). Of these lands, approximately 262 hectares are proposed to be licenced under the *Aggregate Resources Act* (ARA) and designated / zoned under the *Planning Act* to permit the proposed CBM Caledon Pit / Quarry. These lands are mapped as a Caledon High Potential Mineral Aggregate Resource Area (CHPMARA) in the Town of Caledon Official Plan and High Potential Mineral Aggregate Resource Area (HPMARA) in the Region of Peel Official Plan and are protected for their aggregate potential.

The remaining approximately 61 hectares of land owned / controlled by CBM are not subject to the application. These lands are referred to as “CBM Additional Lands” and these lands include approximately 36 hectares of land that is located adjacent to the minor urban centre of Cataract. As part of the application, CBM is proposing to create an upland forest and meadow grassland on these lands and is exploring the potential of conveying them permanently to a public authority for long term protection.

The lands proposed to be licenced under the *Aggregate Resources Act* are referred to as the “Subject Site” or “Site” and are legally described as Part of Lots 15-18, Concession 4 WSCR and Part of Lot 16, Concession 3 WSCR (former Geographic Township of Caledon). The Subject Site is approximately 262 hectares and extraction is proposed on approximately 204 hectares (**Figure 1**). These lands are referred to as the “Extraction Area”. The remaining approximate 58 hectares within the Subject Site and outside of the Extraction Area are referred to as the “Setback / Buffer Lands”. The Setback / Buffer Lands are used to provide setbacks to surrounding land uses and natural heritage features and the majority of these lands include a 5-metre visual / acoustic berm and visual plantings. For the purpose of this study, “Adjacent Lands” are defined as lands within 120 m of the Subject Site and the Study Area for this assessment includes lands within 1 km of the Subject Site.

The proposed Extraction Area includes approximately 80 million tonnes of a high-quality dolostone bedrock resource and approximately 5 million tonnes of a high-quality sand and gravel resource. Testing has confirmed that the mineral aggregate resource found on-site is suitable for the production of a wide range of construction products, including the use for high performance concrete. The bedrock resource provides some of the strongest and most durable aggregate material in Southern Ontario. The primary market area for the proposed CBM Caledon Pit / Quarry is the Greater Toronto Area, including the Town of Caledon and the Region of Peel. This site represents a close to market source of a high-quality mineral aggregate resource.

1.1 Operational Summary

The proposed tonnage limit for the CBM Caledon Pit / Quarry is 2.5 million tonnes per year and on average CBM anticipates shipping approximately 2.0 million tonnes per year. The CBM Caledon Pit / Quarry is proposed to be operated in 7 phases. Phases 1, 2A, 3, 4, 5 are located to the northwest of the intersection of Regional Road 24 and 136. This area is referred to as the “Main Area”. Phase 2B is located to the northeast of the intersection of

Regional Road 24 and 136. This area is referred to as the “North Area”. Phases 6 and 7 are located to the southwest of the intersection of Regional Road 24 and 136. This area is referred to as the “South Area”.

Operations would commence in the Main Area and Phase 1 would include the permanent processing area (crushing, screening, and wash plant), aggregate recycling area and the entrance / exit for the quarry. Until such time as sufficient space is opened up to establish the permanent processing area, a temporary mobile crushing, and processing plant is proposed to be used in Phase 1. The entrance / exit for the CBM Caledon Pit / Quarry is proposed to be located directly on Regional Road 24, approximately 775 m west of Regional Road 136. The entrance / exit is proposed to be controlled by a new traffic light and the installation of taper lanes and acceleration lanes on Regional Road 24 at CBM’s expense. The primary haul route for the proposed CBM Caledon Pit / Quarry is trucks will travel eastward on Regional Road 24 and then southward on Highway 10. The proposed haul route is an existing aggregate haul route and is designated as an aggregate haul route in the Town of Caledon Official Plan.

Access to the North Area for aggregate extraction is anticipated approximately 10 years after the start of the operations in the Main Area. There will be no processing in the North Area and aggregate extracted from the North Area is proposed to be transported to the Main Area through a tunnel underneath Regional Road. Access to South Area is anticipated approximately 30 years after the start of the operations in the Main Area. In the South Area, CBM is proposing to permit a portable processing plant and the aggregate extracted and / or processed from the South Area is proposed to be moved to the Main Area through a tunnel underneath Regional Road 24. Aside from the establishment of a 1 hectare stormwater settling pond on the easternmost portion of the North Area in the initial years of operation, the North and South areas will be maintained in their current state for agricultural uses until they are required for preparation for aggregate extraction.

The CBM Caledon Pit / Quarry is proposed to operate (extraction, processing, and drilling) 7:00 am to 7:00 pm Monday to Saturday, excluding statutory holidays and shipping is proposed from 6:00 am to 7:00 pm Monday to Saturday consistent with other mineral aggregate operations in Caledon. CBM is also proposing to permit limited shipping in the evening and nighttime (7:00 pm to 6:00 am) to support public authority contracts that require the delivery of aggregates during these hours to complete public infrastructure projects. These activities will be limited to only highway trucks and shipping loaders and no other operations will be permitted during evening or nighttime hours. Site preparation and rehabilitation is proposed to be permitted 7:00 am to 7:00 pm Monday to Friday.

The CBM Caledon Pit / Quarry involves stripping topsoil and overburden from the subject site to create perimeter berms and any excess soil will be temporarily stored in the northern portion of the Main Area or used for progressive rehabilitation of the site. The proposed Extraction Area includes extracting both sand and gravel and bedrock below the water table and the site will be dewatered to allow operations in a dry state. The site will be extracted in sequence of the proposed phases (Phase 1 to 7) and following extraction of Phase 7 the permanent processing plant in Phase 1 will be removed and this will be the final area to be extracted and rehabilitated. The phasing of the proposed mineral aggregate operation has been designed to reach final extraction limits and depths within each phase so progressive rehabilitation of the side slopes can be completed.

The overall goal of the final rehabilitation plan is to create a landform that represents an ecological and visual enhancement and provides future opportunities for conservation, recreational, tourism and water management. Overall, the progressive and final rehabilitation plan for the Subject Site includes the creation of lakes, vegetated shorelines, islands, wetlands, upland forested areas, riparian plantings adjacent to the existing watercourse, nodal

shrub and tree planting on upland areas, grassland meadows and specialized habitat features for bats and turtles. The proposed rehabilitation has been designed to use all of the on-site topsoil and overburden and does not require the importation of additional soils.

1.2 Description of the Proposed Development

The application is for a Class A Licence (Pit and Quarry Below Water) under the ARA. The intent is to extract, process and transport a maximum of 2.5 million tonnes of aggregate annually from the site.

The Site is irregularly shaped and is composed of three parcels of land (bisected by Charleston Sideroad and Main Street) with an approximate total area of 262 ha. As shown in **Figure 1**, the Main Area is located north of Charleston Sideroad and between Mississauga Road and Main Street; the North Area is located in the lands north of Charleston Sideroad and east of Main Street; and the South Area is located south of Charleston Sideroad and east of Mississauga Road.

To the west and north of the Site are agricultural lands. Immediately to the south of the Site is the Hamlet of Cataract. The Credit River is located to the east of the Site and the Osprey Valley Golf Course is located to the northeast of the Site.

The proposed extraction at the Site will be undertaken in seven Phases and involves the initial excavation in the Main Area and subsequently the advance of workings in a general counter-clockwise direction. Works will progress to the North Area in the initial operation phases and to the South Area in the latter phases. Further detail of each operational phase is provided below.

- **Phase 1** – Operations will commence north of Charleston Sideroad and an entrance to the Main Area satisfying sightline and access spacing requirements will be installed. This entrance will be located on a designated haul route and may be signalized for additional safety.

  Controlled blasting will be undertaken to extract material. Following each blast, it may also be infrequently necessary to break down the blast rock further using an excavator with a hydraulic rock breaking attachment. Rock from blast piles will then be transported to a temporary mobile crushing and processing plant. Processed materials will be stockpiled for off-site transportation.

  A permanent processing facility will be installed north of Charleston Sideroad and adjacent to the entrance once workings have progressed to the final Site floor level in this area.

- **Phase 2A** – Extraction operations will continue in a counter-clockwise direction in the Main Area. Controlled blasting and hydraulic breaking of blast rock will be undertaken at each active face, if required. Rock from blast piles will then be transported to the permanent processing facility north of Charleston Sideroad.

- **Phase 2B** – The North Area will be accessed with a tunnel under Main Street. Extraction activities will be the same as that carried out in the Main Area with the extracted materials being transported to the permanent processing facility.

- **Phase 3, 4 and 5** – Extraction operations will continue in a counter-clockwise direction in the Main Area.

- **Phase 6** – The South Area will be accessed with a tunnel under Charleston Sideroad. Extraction operations will proceed southwards, and materials will be moved to the permanent processing facility in the Main Area.

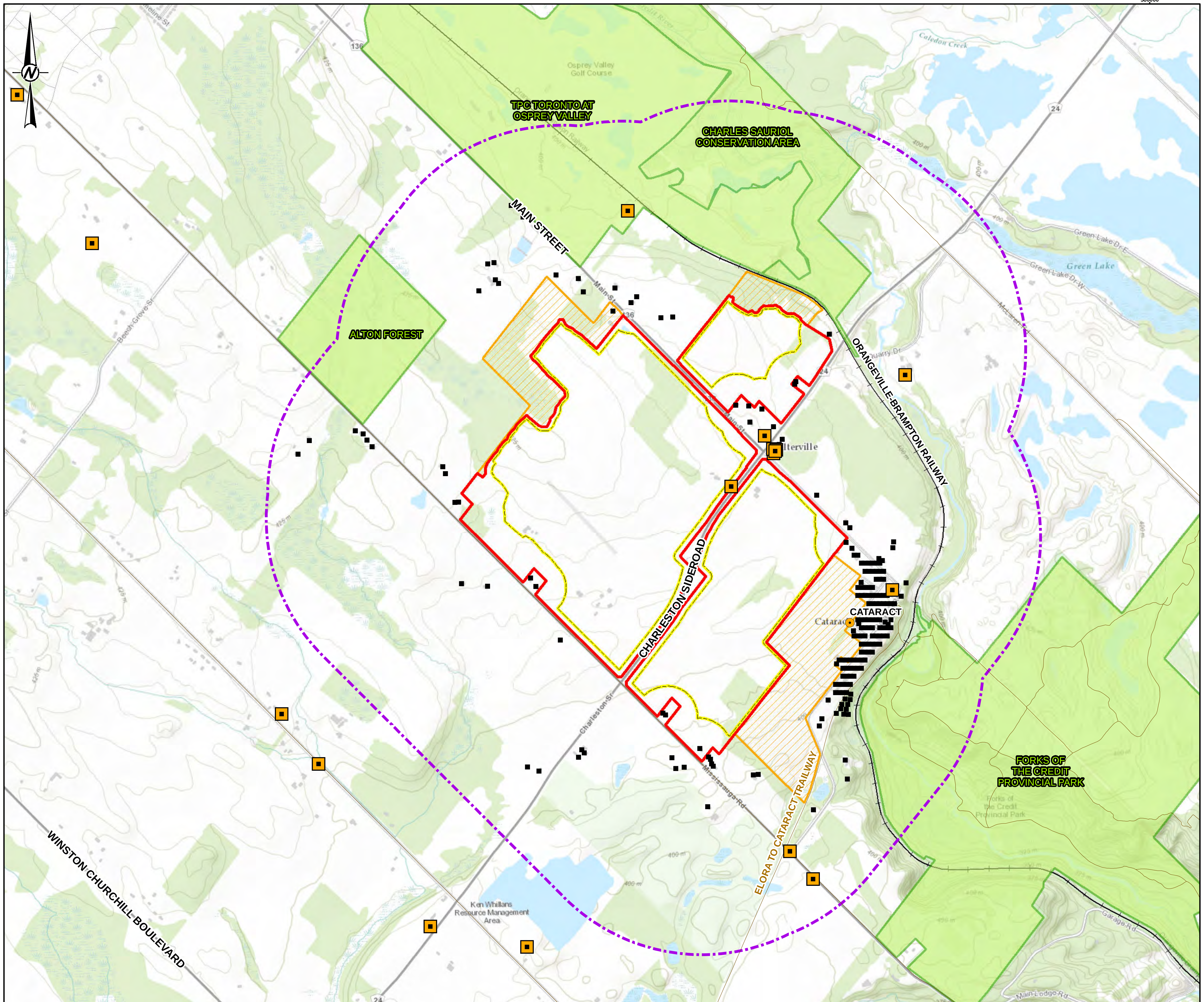
- **Phase 7** – Extraction operations will continue in a southward direction in the South Area and materials will be moved to the permanent processing facility in the Main Area.

1.3 Findings Summary

This report includes the assessment of potential socio-economic effects of the proposed CBM Caledon Pit / Quarry. Based on the implementation of the recommendations found in **Section 7.0** of this report, this assessment found the following:

- Project activities that may cause nuisance effects will be managed to minimize impacts and within the parameters set by the province; and
- The overall project will provide economic benefits at both the local and regional level.

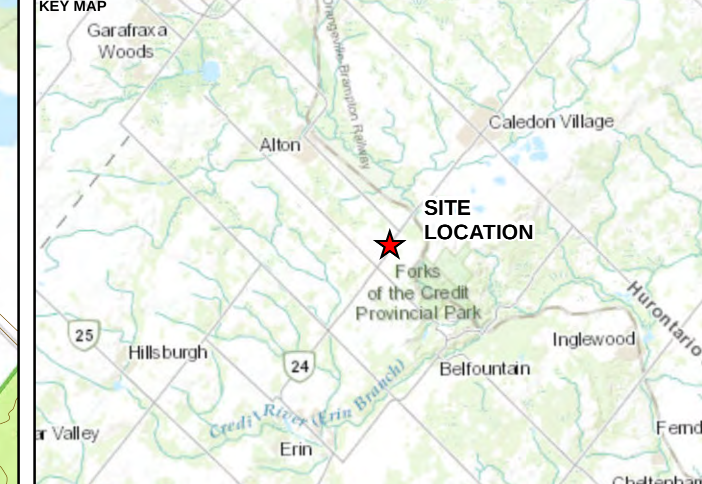
The proposed *Aggregate Resources Act* Site Plans include the recommendations from a series of technical reports to ensure that the site operates in accordance with applicable provincial standards and the applicable policy requirements of the Provincial Policy Statement, Places to Grow Plan, Greenbelt Plan, Region of Peel Official Plan and Town of Caledon Official Plan.



LEGEND

- TOWN/VILLAGE
- RESIDENCES
- BUSINESSES AND ESTABLISHMENTS
- ROAD
- RAILWAY
- TRAIL
- RECREATIONAL AREA
- SOCIO ECONOMIC STUDY AREA
- LIMIT OF EXTRACTION
- LICENCE BOUNDARY
- ADDITIONAL LANDS OWNED / CONTROLLED BY CBM

KEY MAP



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REFERENCE(S)

1. BASE DATA MNRF LIO OBTAINED 2020
2. IMAGERY FIRSTBASE SOLUTIONS SPRING 2021, SPRING 2019 (15CM RESOLUTION) AND SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
3. SITE TOPOGRAPHIC DATA - SPRING 2021, FIRSTBASE SOLUTIONS, 2021
4. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17N

CLIENT
CBM AGGREGATES, A DIVISION OF ST. MARYS CEMENT INC. (CANADA).

PROJECT
CALEDON PIT / QUARRY

TITLE
SOCIO ECONOMIC STUDY AREA

CONSULTANT
GOLDER MEMBER OF WSP

YYYY-MM-DD	2022-12-13
DESIGNED	CGE
PREPARED	CGE
REVIEWED	SJ
APPROVED	HM

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2.0 SCOPE OF THE SOCIO-ECONOMIC ASSESSMENT

The socio-economic assessment examines and evaluates several different factors that may affect the day-to-day lives of individuals who reside within and near the Project study area (detailed in **Section 2.1**), to better understand how any identified effects from other studies undertaken will have implications (positive or negative) for the socio-economic environment. Factors considered within the socio-economic assessment include:

- Environmental nuisance – changes in noise, water supply, air quality and visual quality of the environmental setting as a result of Project activities, and potential nuisance effects to nearby residents and other human receptors.
- Traffic and transportation – changes to traffic volumes along local roads during operations and potential effects to local road use and access which may result in traffic delays for local road users or safety issues.
- Local and provincial economy – potential changes to the local and provincial economy from site operations including employment opportunities, tax revenues and expenses.

The report documents the existing socio-economic environment, which includes features such as residences, schools, healthcare facilities, businesses and recreation facilities within the study area, and identifies key interactions between these socio-economic features and the Project. Additionally, economic modelling will serve to aid in demonstrating the economic benefits of the Project and to help characterize local and wider provincial economic changes.

2.1 Socio-Economic Study Area

The Project site is located within the Town of Caledon and the Region of Peel. It is also located within the Credit River Watershed west of the Erin Branch of the Credit River near Cataract and Coulterville. A socio-economic study area was developed in order to establish the magnitude of effects to residents, businesses, and other community features.

As shown in **Figure 1** a radius of 1 kilometre (km) from the site boundary was established. This study area was determined in consideration of the study areas used for other disciplines studies (i.e., air quality, noise, blasting, water resources and visual assessments) and the area in which concerns have been raised through public engagement (see **Section 4.1**). Additionally, haul routes into and out of the site were considered.

3.0 KEY LEGISLATION AND POLICIES

3.1 Aggregate Resources Act

The purposes of the ARA are to provide a means of management for aggregate resources in Ontario, control and regulate aggregate operations on Crown and private lands, ensure the rehabilitation of land from which aggregates have been excavated and minimize adverse impacts on the environment with respect to aggregate operations.

3.2 Planning Act and Provincial Policy Statement 2020

Within its location in the Province of Ontario, the Project should be consistent with the *Provincial Policy Statement* 2020 (PPS 2020) ((Government of Ontario, 2020)). The *Planning Act* (1990) sets out the foundational rules for how land use planning may occur in Ontario and how the lands are settled, infrastructure is designed and built, and how land and resources are managed. Compliance and conformity with provincial plans are prescribed in Section 5 (b) of the *Planning Act* stating that:

> *"A decision of the council of a municipality, a local board, a planning board, a minister of the Crown and a ministry, board, commission or agency of the government, including Municipal Board, in respect of the exercise of any authority that affects a planning matter, shall conform with the provincial plans that are in effect on that date, or shall not conflict with them, as the case may be."*

A PPS issued on May 1, 2020, in accordance with Section 3 of the *Planning Act* which states that provincial plans should be read in conjunction with the PPS and shall take precedence over other PPS policies in instances of conflict unless another relevant legislature provides otherwise.

Municipalities implement PPS 2020 through an official plan, which may further outline land use planning within the Project study area.

3.3 Region of Peel Regional Official Plan

Approved in 2022, the Region of Peel *Regional Official Plan* (ROP) was developed with the objective to provide the Regional Council with "a long-term policy framework for decision making" that "sets the Regional context for more detailed planning by protecting the environment, managing resources and directing growth". It was drafted in response to the high level of population and employment growth in the Region, which is putting pressure on the ability to provide regional services, the natural landscape and cultural heritage. Its goals include "to create healthy and sustainable regional communities for those living and working in *Peel* which is characterized by…a recognition and preservation of the *region's* natural and cultural heritage" (1.3.6.1) and "to support growth and *development* which takes place in a sustainable manner, and which integrates the environmental, social, economic and cultural responsibilities of the *Region* and the Province" (1.3.6.4) (Region of Peel, 2021; Region of Peel, 2022a).

Chapter 3.3 of the Region of Peel Official Plan titled "*Mineral Aggregate Resources*" contains information regarding the Region of Peel's mineral aggregate resources including sands, gravels, shale, sandstone and dolostone. This includes the high-quality sands and gravels of the Caledon and Credit Valley outwash deposits located in the Town of Caledon.

The objectives of Chapter 3.3 are outlined below:

- Section 3.3.1.1 – To identify high potential mineral aggregate resource areas, to protect them for possible use and to establish policies that allow as much of the resource as is realistically possible to be made available for use to supply resource needs, in a manner consistent with this Plan, the Niagara Escarpment Plan, where applicable, and the area municipal official plans;
- Section 3.3.1.2 – To recognize the Region's mineral aggregate resource industry as an important component of the Region's economic base;
- Section 3.3.1.3 – To achieve a balance between the demand for, and economic benefits of resource extraction activity and the protection of Peel's communities, natural environment, cultural heritage, and other resources; and
- 3.3.1.4 To support initiatives for the rehabilitation of abandoned pits and quarries and to require the progressive rehabilitation of operating pits and quarries.

3.4 Town of Caledon Official Plan

Last consolidated in 2018, the Town's *Official Plan* (OP) provides a "statement of principles, goals, objectives and policies intended to guide future land use, physical development and change, and the effects on the social, economic and natural environment within the Town of Caledon." The plan provides the detailed local basis upon which the Town of Caledon will provide services within the municipality and the basis for preparing zoning and by-laws for land-use policies (Section 1.3). Its role is to "determine the strategic local policy directions and detailed policies for the municipality, in conformity with the overall strategic direction of the ROP" (Section 1.6) (Town of Caledon, 2018).

With respect to social impacts, Section 5.11.2.4.13 states that:

"*Any impact studies required by this Plan, will include, where appropriate, an assessment of social impacts based on predictable, measurable, significant, objective effects on people caused by factors such as noise, dust, traffic levels and vibration. Such studies will be based on Provincial standards, regulations and guidelines and will consider and identify methods of addressing the anticipated impacts in the area affected by the extractive operation."* (Town of Caledon, 2018).

4.0 EXISTING SOCIO-ECONOMIC CONDITIONS

In order to gather information on the existing socio-economic conditions within the Town of Caledon, background information was compiled, and a literature review was conducted to gather data about the local area. This characterization of the existing conditions provides context for the evaluation potential effects on the socio-economic environment. A number of resources including aerial imagery, federal, provincial, and municipal databases were consulted. These sources included:

- High-resolution aerial imagery (i.e., Google Earth and Google Maps);
- Municipal websites and zoning information:

- Region of Peel Official Plan (2022)
- Region of Peel Official Website
- Peel District School Board
- Dufferin – Peel District School Board
- Town of Caledon Official Plan (2018)
- Town of Caledon Official Website
- Ontario Chamber of Commerce Study on Aggregates (2022)

- Statistics Canada;
  - Province of Ontario Census Profile (2021)
  - Town of Caledon Census Profile (2021)
- Findings from public consultation and engagement events; and
- News articles and community websites.

The sources noted above provided a basis for establishing a baseline understanding of the existing conditions within the Project study area.

4.1 Summary of Findings from Public Engagement

Table 1 provides a breakdown of the main concerns noted by local residents/property owners as well as other community stakeholders and interest groups which relate to the socio-economic environment. Based on the summary provided, main concerns relate to ongoing engagement and consultation, general impacts to the environment/hydrological resources, noise/vibrations (including blasting), public health and safety/quality of life (including overall human health), traffic, impacts to personal/private property, rehabilitation, recreational land use and cumulative effects due to significant aggregate developments in the region.

The interest shown from those community members in close proximity to the site helped to form the study area for this report as well as determining the key areas of study to be evaluated. Nuisance effects such as noise, vibration, air quality, water resources and traffic were all noted and are evaluated in this report.

Table 1: Concerns Noted by Stakeholder Groups Through Public Engagement Activities

Stakeholder Group	Type of Concern
Directly Affected and Adjacent Property Owners	▪ Project footprint and setbacks; ▪ Noise and vibrations (including blasting); ▪ Flyrock, dust, emissions, and pollution; ▪ Public health and safety (including overall human health); ▪ Traffic (including truck routes and potential for increased traffic); ▪ Impacts to water quality and groundwater;

Stakeholder Group	Type of Concern
	▪ General impacts to ecosystem health; ▪ Concerns regarding erosion, agriculture, and croplands; ▪ General impacts to quality of life for residents; ▪ Impacts to personal, private properties; ▪ Ongoing engagement and consultation; and ▪ Cumulative effects due to significant aggregate developments in the region.
Community Stakeholders and Interest Groups	▪ Project timeline; ▪ Noise and vibrations; ▪ Public health and safety (including overall human health); ▪ Traffic (including truck routes and potential for increased traffic); ▪ Impacts to personal, private properties; ▪ General impacts to quality of life for residents; ▪ General impacts to the environment; ▪ Dewatering; ▪ Logistics surrounding site rehabilitation; ▪ Ongoing engagement and consultation; and ▪ Recreational land use.

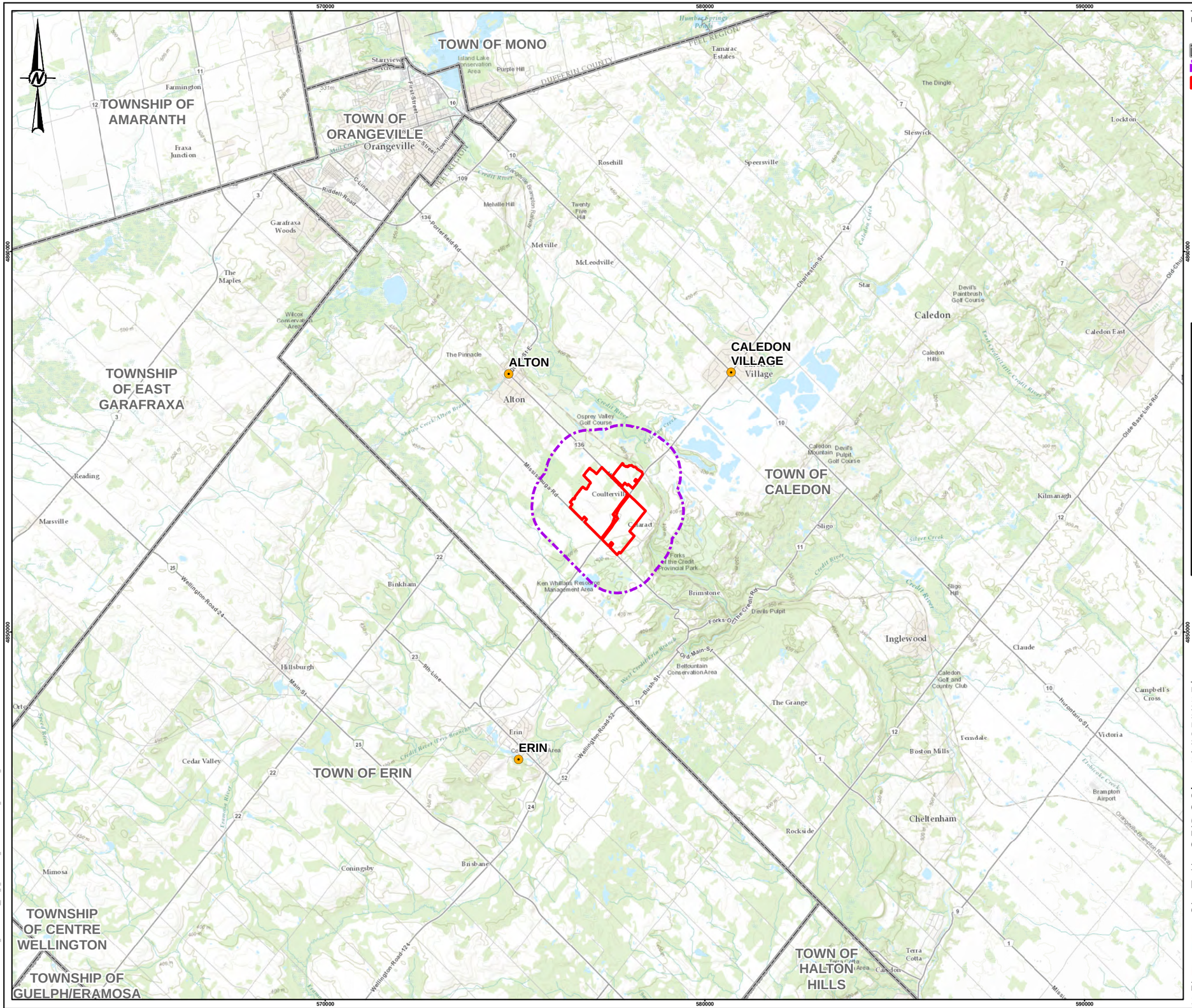
4.2 Population and Demographics

4.2.1 Population

The proposed Project is located in the Town of Caledon, Ontario which has a population of 76,581 individuals according to the 2021 Canadian Census Profile (Statistics Canada, 2022a).The population has increased by 15.2% from 2016 to 2021, with the number of individuals residing within the Town of Caledon growing from 66,502 to 76,581. The total land area covered by the town covers approximately 688.82 square kilometres (sq km) and the total number of private dwellings is 24,795 (the majority of which are owned as opposed to rented). Population density per square kilometre for the Town of Caledon is 111.2 individuals per sq km (Statistics Canada, 2022a).

Population within the Town of Caledon consists of a fairly equal split of male and female residents (50.24% to 49.76% respectively) and a median age of 40.8 years which is slightly lower than the median age for Ontario as a whole (41.6 years). The predominant housing structure in the Town of Caledon is single detached homes which account for 80.68% of all homes which is notably higher than the Ontario provincial average (53.59%) (Statistics Canada, 2022a; Statistics Canada, 2022b).

Figure 2 below shows the municipal boundaries in relation to the Site.



REFERENCE(S)

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3. SITE TOPOGRAPHIC DATA - SPRING 2021, FIRSTBASE SOLUTIONS, 2021
4. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17N

CLIENT
CBM AGGREGATES, A DIVISION OF ST. MARYS CEMENT INC. (CANADA).

PROJECT
CALEDON PIT / QUARRY

TITLE
MUNICIPAL BOUNDARIES

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-12-07
DESIGNED	CGE
PREPARED	CGE
REVIEWED	SJ
APPROVED	HM

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4.2.2 Employment and Income

Table 2 provides a summary of the employment rate, labour force participation (over the age of 15) and median total family income for the Town of Caledon and the Province of Ontario.

The unemployment rate in Caledon is 11.2% which is lower than the provincial rate of 12.2%. The labour force participation rate is 68.5% which is higher than the provincial rate of 62.8%. The median total family income in the Town of Caledon is higher compared to Ontario as a whole ($133,000 compared to $91,000 in 2020 (Statistics Canada, 2022a; Statistics Canada, 2022b).

Table 2: Employment and Income for the Town of Caledon, Ontario

Location	Unemployment Rate	Labour Force Participation	Median Household Income
Town of Caledon	11.2%	68.5%	$133,000
Ontario	12.2%	62.8%	$91,000

Source: (Statistics Canada, 2022a; Statistics Canada, 2022b)

Table 3 provides a breakdown of the industry sectors in which people are employed in the Town of Caledon. The distribution of people employed within goods producing sectors vs. service producing sectors for the Town of Caledon is 23.9% and 76.1% respectively. The majority of people in the Town of Caledon are employed within goods producing sectors including construction (11.4%) and manufacturing (10.7%), and service producing sectors including retail trades (11.4%), transportation and warehousing (9.5%), educational services (8.0%), and professional, scientific, and technical services (8.0%).

The number of people employed within goods producing sectors is higher for the Town of Caledon in comparison to the Province of Ontario (23.9% compared to 19.3%). While the number of people employed within service producing sectors is lower for the Town of Caledon in comparison to the Province of Ontario (76.1% compared to 80.7%).

Table 3: Occupational Sectors and Associated Employment Rates for the Town of Caledon

Occupational Sectors	Town of Caledon		Province of Ontario	
	#	%	#	%
Total Employed – All Occupations	**42,045**	**100.0%**	**7,186,685**	**100.0%**
Goods Producing Sector	**10,045**	**23.9%**	**1,388,760**	**19.3%**
Agriculture, Forestry, Fishing, and Hunting	520	1.2%	104,895	1.5%
Mining/Quarrying, Oil and Gas Extraction	60	0.1%	34,360	0.5%
Utilities	170	0.4%	55,230	0.8%
Construction	4,785	11.4%	538,340	7.5%

Occupational Sectors	Town of Caledon		Province of Ontario	
	#	%	#	%
Manufacturing	4,510	10.7%	655,935	9.1%
Service Producing Sector	**32,000**	**76.1%**	**5,797,925**	**80.7%**
Wholesale Trade	2,065	4.9%	244,910	3.4%
Retail Trade	4,780	11.4%	798,090	11.1%
Transportation and Warehousing	4,010	9.5%	379,485	5.3%
Information and Cultural Industries	725	1.7%	169,120	2.4%
Finance and Insurance	1,870	4.4%	399,030	5.6%
Real Estate and Rental and Leasing	965	2.3%	152,050	2.1%
Professional, Scientific, and Technical Services	3,360	8.0%	681,235	9.5%
Management	180	0.4%	26,240	0.4%
Administrative, Support, Waste, and Remediation	1,765	4.2%	324,285	4.5%
Educational Services	3,365	8.0%	531,260	7.4%
Health Care and Social Assistance	3,235	7.7%	859,910	12.0%
Arts, Entertainment, and Recreation	670	1.6%	130,490	1.8%
Accommodation and Food Services	1,475	3.5%	390,675	5.4%
Other Services	1,745	4.2%	283,115	3.9%
Public Administration	1,790	4.3%	428,030	6.0%

Source: (Statistics Canada, 2022a; Statistics Canada, 2022b)

4.2.3 Education

Two school boards administer education within the Town of Caledon which are the Peel District School Board and the Dufferin – Peel Catholic District School Board (Dufferin-Peel Catholic District School Board, 2022; Peel District School Board, 2022). Caledon Central Public School (elementary) is the closest school to the Project site and is located approximately 5.0 km northeast of the Project site.

Table 4 below provides a breakdown of the highest certificate, diploma or degree achieved for the population aged 15 years and over in private households. The percentage of individuals who have no certificate, degree or diploma within the Town of Caledon is comparable to the Province of Ontario (15% and 15%), while the percentage for completion of secondary/high school diploma (or equivalency certificates) is higher (29% and 27%). The Town of Caledon has a slightly higher percentage of individuals who have obtained an apprenticeship or trades certificate in comparison to the Province of Ontario (6% and 5%). The percentage of individuals in the Town of Caledon who have obtained a college, CEGEP or other non-university certificate or diploma is higher

than the Province of Ontario (21 % and 20%), while the percentage for individuals who have completed a university certificate (including below, at or above bachelor level) is lower (26% and 30%).

Table 4: Highest Certificate, Diploma or Degree Achieved for the Population Aged 15 Years and Over in Private Households for the Town of Caledon

Type of Education	Town of Caledon		Province of Ontario	
	#	%	#	%
Total highest certificate, diploma or degree for the population aged 15 years and over in private households (25% sample data)	62,935	98%	11,782,820	98%
No certificate; diploma or degree	9,520	15%	1,799,980	15%
Secondary (high) school diploma or equivalency certificate	18,470	29%	3,204,170	27%
Apprenticeship or trades certificate or diploma	3,780	6%	592,485	5%
College; CEGEP or other non-university certificate or diploma	13,165	21%	2,389,205	20%
University Certificate (including below, at or above Bachelor level)	16,515	26%	3,528,600	30%

Sources: (Statistics Canada, 2022a; Statistics Canada, 2022b)

Note: Variances in percentages noted in **Table 4** are due to rounding by Statistics Canada.

4.3 Infrastructure, Land Use, and Community Services

The following section provides a breakdown of available infrastructure and community services available within the Town of Caledon and/or available to residents within the Town of Caledon.

4.3.1 Administration

The Town of Caledon falls under the direction of the Mayor and Town Council and is composed of professional staff which oversee the departments such as:

- The Office of the Chief Administrative Council;
- Fire and Emergency Services;
- Operations;
- Corporate Strategy and Innovation;

- Corporate Services
- Planning;
- People Services
- Customer Service and Communications; Finance; and
- Building and Municipal Law Enforcement Services.

The administration of aggregate resources within the Town of Caledon is conducted under the Town of Caledon Official plan which also maintains compliance with the Region of Peel Official Plan, the Niagara Escarpment Plan, the Oak Ridges Moraine Conservation Plan, the Lake Simcoe Protection Plan, and the Greenbelt Plan, and the Growth Plan for the Greater Golden Horseshoe (Town of Caledon, 2018). Section 5.11.1 of the Town of Caledon Official Plan specifies policies related to Town-Wide Aggregate Management Objectives and provides a framework for policies to guide the management and use of aggregate resources.

4.3.2 Land Use Planning, Zoning, and Resource Use

The study area is located within the Town of Caledon and located in the Credit River Watershed west of the Erin Branch of the Credit River near Cataract and Coulterville. The majority of the Study Area is characterized by agricultural fields, with blocks of deciduous, mixed, and coniferous forest, as well as deciduous and mixed swamp. There are also several existing sand and gravel pit operations located east of the site. The entire Project Area is designated as Caledon High Potential Mineral Aggregate Resource Areas (CHPMARA) Aggregate Resource Lands. The hamlet of Cataract lies adjacent to the southeast corner of the Project Area.

Land Classification

Based on zoning information obtained from Schedule A of the Town of Caledon, the Project study area is located primarily within land zoned for either agricultural, rural, or industrial use. Lands in which the Project is located in is primarily composed of either lands that are currently designated “General Agricultural Area,”, “Rural Lands”, and “Environmental Policy Area” on Schedule A (Town of Caledon Land Use Plan) as per the Official Plan” (Town of Caledon, 2018). Lands are currently zoned “A1” (Agricultural) and “EPA2” (Environmental Policy Area 2) per Town’s Comprehensive Zoning By-Law No. 2006-50 (Town of Caledon, 2018).

High Priority Mineral Aggregate Resource Areas

Town of Caledon’s Official Plan and the Region of Peel’s Official Plan also noted that the Project study area is located within the Caledon High Priority Mineral Aggregate Resource Area (CHPMARA). Schedule L of the Town of Caledon Official Plan provides details regarding the CHPMARA Prioritization Plan which includes information about the location of licensed pits/quarries within the Town of Caledon and outlines aggregate resource lands and reserves for aggregate resources including sand & gravel, and bedrock resources. According to Schedule L of the Town of Caledon Official Plan, the Project study area is overlaps both sand & gravel and bedrock resource lands (Town of Caledon, 2018).

Agricultural Lands and Forested Areas

The Town of Caledon has acknowledged the existence of overlap between Caledon’s High Potential Mineral Aggregate Resource Areas and Prime Agricultural Areas within the town. The Agricultural Impact Assessment

report identified that approximately 45.41% of the Project study area is located within Prime Agricultural Lands. The Agricultural Impact Assessment identified that approximately 119.18 ha of CLI Class 2 lands would be lost due to the Project. The majority of agricultural located within the Project study area include soybean, winter wheat, corn, pasture/forage lands and other cultivated land. Additional information on agricultural lands can be found in the Agricultural Impact Assessment Report (Couville Consulting Inc., 2022).

The majority of woodlands located within the Project study area are fragmented by agricultural fields and not large enough to be considered for forestry-related operations. The Project intersects fragments of the Alton Forest north of Charleston Side Road and east of Mississauga Road (MNRF, 2022b).

Protected Areas

There are no protected areas located within the Project study area, however; Forks of the Credit Provincial Park is located approximately 0.5 km away from the Project Licence Boundary, and 0.55 km away from the Limit of Extraction. The portion of Forks of the credit Provincial Park nearest to the Project and is situated south of Cataract Road (shown on **Figure 1**). The Forks of the Credit Provincial Park is part of the Ontario Parks system and is part of the Niagara Escarpment biosphere, as well as situated on the Bruce Trail. The Credit River runs through the park – and to the east of the Project Study Area (MECP, 1990; Ontario Parks, 2022).

4.3.3 Residences and Local Businesses

Information on housing characteristics for the Town of Caledon was obtained from the 2021 Statistics Canada Census Profile. The number of private dwellings in the Town of Caledon are owned as opposed to rented and have increased from 21,255 in 2016 to 23,700 in 2021 (increase of 11.5%).

According to mapping there are 203 residences within the socio-economic study area, shown on **Figure 1**.

Table 5 provides details regarding various local businesses and establishments which are located within the Project study area. These are also shown on **Figure 1**.

Table 5: Local Businesses, Establishments and Recreational Areas within the Project Study Area

Name	Address	Proximity to Extraction Area
360 Towing Service Inc	12679 Mississauga Rd, Alton	0.67 km
Alton Forest	Near 19124 Mississauga Road, Caledon	0.50 km
Burgers N' Burgers Family Restaurant	1521 Charleston Sideroad, Caledon, ON	1 km
Caledon Memorials	1522 Charleston Sideroad, Alton	0.15 km
Charles Sauriol Conservation Area	Concession 2 and 3, Lots 16-20	0.15 km
Cowhide Promotional Wear Inc	1420 Charleston Sideroad, Alton	0 km
ESSO Gas Station	1521 Charleston Sideroad, Alton	1.20 km
Forks of the Credit Inn	1498 Cataract Road, Caledon ON	0.4 km
Forks of the Credit Provincial Park	N/A	0.55 km

Name	Address	Proximity to Extraction Area
Inline Reference Check	1375 Cataract Rd, Alton	0.50 km
Lafarge Caledon, aggregates pit	17952 Mississauga Rd, Alton	0.86 km
LCBO	1521 Charleston Sideroad, Alton	0.125 km
Shawn's Garage	1521 Charleston Sideroad, Alton	1.15 km
Caledon Public Works Yard	N/A	0.85 km
TPC Toronto at Osprey Valley	18821 Main Street, Alton	0.25 km

4.3.4 Emergency and Healthcare Services

The Town of Caledon provides emergency services to its residents including fire services (serviced locally) as well as police services provided by the Ontario Provincial Police (OPP), while paramedic services are provided by the greater Region of Peel Health Services Department. There are two OPP detachments located in the greater area and nine fire stations located in within the Town of Caledon. The nearest fire stations are Station # 301 (located approximately 2.7 km west down Main Street) and Station #309 (located approximately 5.2 km northeast along Charleston Side Road). There are no hospitals located within the Town of Caledon, so residents are supported by facilities located in Orangeville, Brampton, Mississauga, and Toronto (with the closest facilities in Orangeville and Brampton).

There are no medical, healthcare or emergency services located within the study area. Walk-in clinics, long-term care homes and various other medical services such as pharmacies, labs, chiropractors, dentists, and optometrists are available in Bolton on the eastern side of the Town of Caledon (Central West Healthline, 2022; Town of Caledon, 2022a).

4.3.5 Utilities

The Region of Peel for provides utilities and services to the Town of Caledon such as garbage, recycling and organics collection and water/wastewater services. Hydro in the area is provided by Hydro One (Town of Caledon, 2022b). Hydrogeological studies undertaken by Golder as part of the wider site studies showed that approximately 100 private properties with 1km of the site area on private well water/septic systems.

There are no wastewater treatment plants located within the Project Study area. There is one wastewater treatment plant located in the Town of Caledon which is the Inglewood Communal Wastewater Treatment Plant (Region of Peel, 2022b).

There are no landfills located within the Town of Caledon or the proposed Project study area, with the closest provincially approved landfills being located in Brampton, Newmarket, Townships of Amaranth, and the Town of Mono. There are two community recycling centres. The first is the Caledon Community Recycling Centre (Public Works Yard #2) which is located southwest of Caledon Village near McLean Road and Charleston Road, and the second is the Bolton Community Recycling Centre located on Industrial Road, southwest of Albion Vaughan Road in the community of Bolton (Region of Peel, 2022c).

4.3.6 Traffic and Transportation

There are no federal or provincial highways which intersect the Project study area. According to Schedule J of the Town of Caledon Official Plan, the roads surrounding the Project site are classified as High-Capacity Arterial Roads (Main Street, Charleston Side Road), Collector Roads (Mississauga Road, Shaws Creek Road, Beech Grove Side Road), or Local Roads (Cataract Road) (Town of Caledon, 2018).

The main transportation corridors throughout the Town of Caledon are composed of regional roads and provincial highways. Provincial Highway 10 provides the main connection route from the southern edge of the town near Brampton to Orangeville in the northwest. Provincial Highway 9 is located in the most northern extent of the township and also provides a connection to Orangeville to the west and Highway 400 to the east. Regional roads which are located within the Town of Caledon follow a northeast – southwest grid pattern (Region of Peel, 2007).

There are no forms of public transportation located within the proposed Project study area.

There are no railways which intersect the Project study area. The nearest railways are the Canadian Pacific Railway and the former Orangeville – Brampton Railway which is no longer operational and intended for future recreational use (Orangeville Today, 2022; MNRF, 2022a).

4.3.7 Recreation, Tourism and Other Resource Uses

There are no officially recognized recreational trails which intersect the Project study area; however, the Trans Canada Trail (Elora Cataract Trailway) is located just south of Cataract Road and the Project site. This section of the Trans Canada Trail has its eastern portion within Caledon, starting near Forks of the Credit Provincial Park and continues just south of Cataract Road. The trail joins with the Caledon Trailway and provides connection towards the Town of Erin to the southwest and Inglewood to the southeast (Town of Caledon, 2022d). As noted in **Section 4.3.6,** there are also plans by the municipal government to convert the former Orangeville – Brampton Railway corridor (located just east of the Project site) to a trail system which would later be connected to the rest of the Trans Canada Trail system (Orangeville Today, 2022). Additionally, connections to the Bruce Trail are also available within Forks of the Credit Provincial Park; although, both are located outside the Project study area (Town of Caledon, 2022d).

Fishing is not likely to occur within the Project study area as there are no large fish-bearing waterbodies within the Project study area. Fishing may occur within the nearby Credit River and Forks of the Credit Provincial Park which are both located just south of Cataract Road, outside the Project study area. Hunting may occur on agricultural lands owned by private landowners or within woodlands intersecting properties and may include game such as deer, fowl, and coyotes; however, The Town of Caledon By-Law No. 89-63 prohibits the discharge of any firearm – except for farmers whose lands are zoned for agricultural use firearms to protect livestock. The by-law does not prohibit other individuals from using other methods of hunting besides firearms such as bows (Town of Caledon, 1989).

4.3.8 Environmental Setting

Existing sources of noise and other nuisances within the study area are likely to be from agricultural operations and traffic. Outside of the study area are a number of other aggregates sites to the east of the site – including the LaFarge Pit, AECON Construction and Materials and Caledon Sand and Gravel owned by James Dick Construction Ltd. The other areas surrounding the site are agricultural fields and forested areas. Local built

structures within the study area include power lines and poles, local roads and residential streets, residential and commercial structures (e.g., houses, fences, sheds, decks, pools, play structures, a gas station) and agricultural structures. The overall landscape character in the study area ranges from relatively level to undulating, open semi-rural area that includes evidence of agriculture, residential development, and resource extraction activities.

5.0 SOCIO-ECONOMIC EFFECTS EVALUATION

This section describes the potential effects to the socio-economic environment and mitigation measures for the socio-economic environment associated with the Project footprint. A summary of the current socio-economic environment from which changes are assessed can be found in **Section 4.0**.

5.1 Approach

As detailed in **Section 2.0**, three overarching aspects of the socio-economic environment were considered for potential effects. These are:

- Environmental nuisance – changes in noise, water resources, air quality and visual quality of the environmental setting as a result of Project activities, and potential nuisance effects to nearby residents, tourists and other human receptors.
- Traffic and transportation – changes to traffic volumes along local roads during operations and potential effects to local road use and access which may result in traffic delays for local road users or safety issues.
- Local and provincial economy – potential changes to the local and provincial economy from site operations including employment opportunities, tax revenues and expenses.

Potential for effects were evaluated through comparison of changes to the existing socio-economic setting detailed in **Section 4.0**. Technical studies for the relevant pathways of potential effects are cross-referenced, where applicable.

5.2 Environmental Nuisance

As detailed in **Section 4.3.3** there are 203 residences within 1 km of the Project boundary, which are assumed to be occupied year-round. Nuisance effects to these properties from noise, blasting, dust, impacts to water resources (e.g., wells) and visual disturbance resulting from the site have the potential to cause some effects to use and enjoyment of private property and outdoor uses on these properties as well as outdoor recreation and tourism related activities (e.g., hiking, birdwatching etc.).

Site operations will require use of heavy mechanical equipment such as excavators and hydraulic rock breaking equipment as part of extraction, processing, and drilling activities. Studies with respect to air quality, noise, visual disturbance, water resources and blasting were conducted for the proposed site. The findings of these studies were used to evaluate the overall potential impact to the socio-economic setting from nuisance effects.

5.2.1 Noise Levels

Noise levels were modelled to understand changes in noise from operations of the permanent processing plant and extraction equipment. All residential receptor points within 500 m of the site were found to be in compliance with the applicable noise limits set by the Ministry of Environment, Conservation and Parks (MECP). Noise levels

on haul routes into and out of the site were also qualitatively evaluated and it was noted that there would be some change in the noise levels along the haul routes during peak hauling hours, but this change is not expected to be acoustically substantial. Further detail on the assessment of noise can be found in the Noise Impact Report.

To minimise effects from noise several measures will be taken on-site. These include erecting noise barriers, manufacturer installed noise controls on equipment such as drills, proper maintenance of equipment, and on-going audits to ensure compliance with provincial standards. In addition, internal roads within the quarry will be well maintained and kept in good repair in order to limit the amount of noise generated from empty vehicles travelling over potholes. Vehicles will be fitted with back up directional alarms, which are quieter than standard beepers. Truck idling will be limited wherever possible to limit both emissions and noise.

Mitigation measures to minimize noise are comprehensive and with their implementation noise emissions from the proposed operation are not anticipated to cause substantial nuisance effects.

5.2.2 Blasting

An evaluation of blasting activities was conducted for the site and looked at potential effects from vibrations and the ejection of rock fragments (flyrock). Blasting on the site will take place in accordance with the current blasting guidelines published by the MECP (MECP, 1978) and ongoing monitoring will be implemented in accordance with the *Aggregate Resources Act* (MNRF, 2017) conditions in order to ensure compliance with provincial standards. Appropriate design measures have been implemented to ensure that any flyrock will be maintained within the quarry extraction limits, thus eliminating the risk to off-site residences and outdoor areas. As extraction progresses blast designs will be modified, if required.

Blasting activities will be prohibited on weekends and statutory holidays and blasting and vibrations will be monitored regularly to ensure compliance with provincial guidelines and design parameters will be modified accordingly. Blasting will also be scheduled to occur routinely during a specific period of time each day, where possible. CBM will request that any resident who wishes to be notified in advance of blasting activities provide their email address to CBM. Email notification of blasting activities will then be sent letting residents know when the blast will take place. If there is a change to anticipated timing, then notification will be sent out to notify residents.

Results of modelling showed that blasting operations at the site will be performed in compliance with the blasting guidelines published by the MECP (NPC-119) and the level of ground vibration experienced by local residences will be within the guideline amounts.

With adherence to the above best practices and mitigation measures, there is not anticipated to be any significant nuisance effects to local residents from vibrations or blasting.

Further detail on blasting and associated activities can be found in the Blast Impact Assessment.

5.2.3 Air Quality

An air quality impact assessment was conducted for the proposed Caledon Pit / Quarry that took a very conservative approach to the potential impacts to air quality from site operations. When evaluated against indicators that represent good air quality it was found that predicted emissions were below these criteria. Further, the implementation of a site Best Management Practice Plan (BMPP) for dust will help to minimize the effects of fugitive dust at off-site locations. The site will operate in accordance with this plan. Further mitigation of effects will

include the use of water and/or dust suppressant on unpaved roads, regular inspections of roads and re-grading as needed, a speed limit of 25 km/hr on site, stockpiles kept below grade, water sprays used on the processing plant, dust suppression systems on drills, and limiting dust generating work in the event of winds above 40 km/h. A record of visual inspections, dust mitigation measures and complaints will be kept.

Overall, with the appropriate mitigation measures in place it is not anticipated that residences or other off-site features will experience adverse effects from dust.

Further detail on air quality effects can be found in the air quality impact assessment and the Best Management Practices Plan for the Control of Fugitive Dust.

5.2.4 Visual Impact

Throughout the studies and public meetings to support the ARA licence application, stakeholder concerns were raised regarding aesthetics/visual effects to nearby sensitive receptors in the community surrounding the proposed Project. The assessment of visual impacts is also a requirement of the *Planning Act*. Public concern frequently identifies the importance of the visual quality of landscapes to personal and community enjoyment and well-being. Disturbance to the visual landscape may occur where the site is visible from residential or recreational receptors.

In order to minimize visual effects, berms will be designed to mitigate visual effects and shall be constructed along the perimeter of each area. The berms shall be 5 m in height and constructed with material from each extraction area, prior to extraction commencing in the Main Area, North Area and South Area Berms will be in place throughout the operational phase in each of the Main Area and South Area until extraction is completed. Once operations are completed in each Area, the berms shall be removed and the material from the berms shall be used for rehabilitation. Planting of trees will occur within 1 year of the issuance of the licence for the Main Area and North Area and within 5 years of the issuance of the licence for the South Area. Site rehabilitation will involve the contouring of lake shorelines and inclusion of tree stumps and logs to provide habitat structure.

With implementation of the recommendations, the proposed operation has been designed to not result in any unacceptable visual impacts on surrounding land uses; Further, with the implementation of the proposed rehabilitation plan in the long term the Site will result in a visual enhancement compared to existing conditions. Full details can be found in the Visual Impact Assessment report.

5.2.5 Water Resources

Of the approximately 100 water supply wells evaluated a majority of the wells are located at a depth below the proposed pit / quarry floor and they will not be impacted. There are 15 residential wells that have the potential to be impacted during operations by the proposed pit / quarry development. These 15 wells are susceptible to water quantity impacts due to their location relative to the predicted zone of influence of the Site, and their relatively shallow well construction in comparison to other wells in the area.

In all cases, these wells could be deepened to the depth of other wells in the surrounding area to restore the water supply. In the event of a water well complaint there is an established procedure that the licensee must follow which requires an immediate investigation and supply of temporary water if required. In the event that any well is impacted by the proposed pit / quarry operation it is CBMs responsibility to restore the water supply, at their expense.

As part of the operation there will be an extensive on-site and off-site groundwater monitoring program and annual reports that will be submitted to the government agencies and publicly available. As a result of the proposed design of the quarry, the comprehensive groundwater monitoring and reporting requirements and the water well complaint procedure, it is concluded that water supply wells in the surrounding area will be protected.

The assessment was based on well information available from the MECP's Well Water Information System (WWIS) and used conservative assumptions to ensure the impact assessment was protective of groundwater users. A door-to-door private well survey was also conducted in July 2021 in an effort to supplement and help verify the MECP WWIS information. However, there was no public participation in the survey. In an effort to further ensure this assessment was protective of groundwater users, three residential properties near the Site but for which there were no water well records were also screened in this assessment, in order to consider their probable groundwater use.

A follow-up private well survey is proposed upon licence approval and prior to the initiation of aggregate extraction, to confirm details regarding individual water well users. Survey participation will again be voluntary. The objective of the survey would be to confirm water use and well construction details with individual property owners, confirm the static water level in the well, and potentially monitor groundwater levels in the well, if agreed by the property owner.

With the implementation of the recommendations in water resources report, sensitive surface water features and sensitive groundwater features will be protected, improved, and restored during operations and taking into account rehabilitation, there will be a long-term enhancement to the water resources system and features. Further information can be found in the Water Resources Assessment.

5.3 Traffic and Transportation

Potential effects to traffic and transportation include increased traffic volume from employees and trucks entering and exiting the site during operations causing disruption to existing road users as well as additional noise, dust, and odour.

An assessment of future site access for the quarry was undertaken that determined that the safest location for site access was on Charleston Sideroad between Mississauga Road and Main Street. In order to improve road safety any visual obstructions at the site entrance such as low-lying landscapes should be kept clear. Adding traffic signals and dedicated left/right turn lanes will allow for the easier flow of traffic and safer roads surrounding the site.

Approximately 90% of the projected haulage is proposed to travel east on Charleston Sideroad and then south on Hurontario Street (Highway 10). Additionally, 5% of the haulage is proposed to travel east on Charleston Sideroad and then north on Hurontario Street. The remaining 5% is proposed to head west on Charleston Sideroad.

During the morning peak hour, a total of 30 new passenger car trips were estimated consisting of 15 inbound and outbound trips. During the afternoon/evening peak hour, a total of 60 new trips were generated consisting of 25 inbound and 35 outbound trips. No passenger car trips were generated during the Saturday peak hour.

During the morning peak hour, a total of 75 new truck trips were generated consisting of 30 inbound and 45 outbound trips. During each of the afternoon/evening and Saturday peak hours, a total of 60 new truck trips are generated consisting of 30 inbound and 30 outbound trips.

Overall, it is not anticipated that the site will result in inconvenience or safety concerns to existing road users and that the road network is sufficient to support the Project.

Further detail on effects from Project related traffic can be found in the Transportation Impact Study and Haul Route Assessment.

5.4 Local and Regional Economy

Potential effects to the local and regional economy include direct effects such as changes to employment at the site, changes to tax revenues for the Town of Caledon and the Region of Peel from property taxes and aggregate licence fees and indirect benefits such as reduced transportation costs, which in turn reduces the cost of aggregate needed for construction projects and benefits to local school boards through additional provincial tax revenue. In order to evaluate potential effects, input-output modelling was conducted to forecast economic benefits. Full analysis of this is found in Appendix B.

It is anticipated that an approximate total of 22 on-site jobs will be directly employed at the site during site preparation. It is anticipated that these workers would be employed from communities within a 20-minute drive of the site. The site preparation will also support approximately 16 supporting jobs in Ontario through the provision of goods and services and approximately 12 induced jobs from serving consumption activities utilized from income earned by site and supporting workers.

During operations an estimated 30 jobs will be created with approximately 11 additional workers expected to be required to truck the output of the quarry to customers. The jobs created at the site are expected to be well-paid, estimated total direct wages and salaries amount to $2,016,000 during site preparation and $4,083,011 annually in total labour income during ongoing operations. Additional jobs in supporting and induced activities are expected to generate an overall total of approximately 48 jobs annually for workers in nearby communities and approximately 28 induced jobs annually in Ontario. Given the long lifespan of the quarry (approximately 34 years) a substantial share of these jobs are expected to represent stable, long-term employment for workers in the community.

Total tax revenues from the Project are expected to total approximately $128,000 annually over the 34-year lifespan of the site, which is split between the Town of Caledon ($41,000), Region of Peel ($29,000) and the Peel District School Board ($58,000). Aggregate licence fees are anticipated to average $426,000 annually over the life of the site. Aggregate licence fees are split $260,000 to the Town of Caledon, $64,000 to the Region of Peel, $89,000 to the Province of Ontario and $13,000 to the Aggregate Resource Trust. The Aggregate Resource Trust (the Trust) is a fund managed by the Ontario Aggregate Resources Corporation (TOARC) who are responsible for the collection and disbursement of aggregate fees, the rehabilitation of abandoned pits and quarries, the rehabilitation of sites where licenses or permits have been revoked, the collection and publication of production statistics and other information and the education and training of those in or interested in the aggregate industry (TORAC, 2022). The Project will also provide benefits to the wider community through a reduction in transportation costs, by having a source of materials close to their intended use which reduces the distance that materials travel. It is estimated that the cost of transporting one tonne of materials by truck is $0.80 per kilometre (as of 2016). The quality of materials produced at the site will allow for durable infrastructure construction as well as creating spinoff effects that allow public bodies to invest more easily in infrastructure that can positively impact housing value and economic growth. Growth in Caledon will be supported by the Project, and it will also lower costs of materials and Greenhouse Gas (GHG) emissions through providing materials close to market.

According to a study released in June 2022 by the Ontario Chamber of Commerce (The Long Haul: Examining the Implications of Far-From-Market Aggregates) the location of aggregate extractions sites has significant micro- and macro-economic implications. When quarries are sited farther away from market, aggregates must be transported over a longer distance, leading to higher transportation costs and greenhouse gas emissions.

Quality constraints on available dolostone deposits pose a challenge when siting quarries in the Greater Toronto Hamilton Area. High-quality dolostone is required to meet project specifications for high-quality work, including bridges and other major types of infrastructure. The highest-quality reserves are within a 25-50- kilometre radius of the Greater Toronto Hamilton Area (GTHA), however more than 90 percent of nearby reserves have been restricted for use due to zoning and regulation.

The closest-to-market source of dolostone in the GTHA is between Caledon and Guelph at 25-50 kilometres from market. Nearly all of the available dolostone not currently being extracted has been sterilized by zoning and regulation. Grey County has been suggested as the alternative source in some studies, resulting in a total haul distance of 125+ kilometres, or an additional 75+ kilometres farther away from market.

According to the Chamber of Commerce study, this would result in a doubling of transportation costs for aggregate, and a more than doubling of GHG emissions. This poses a particular challenge for Caledon. According to the study Caledon 2020-2030 – An Economic Development Strategy for the Town of Caledon, the town's population is expected to more than double by 2041. Caledon is projected to grow to 160,000 people, a net increase of 93,498. This would make Caledon the fastest-growing area in Peel Region, and require the newest housing, infrastructure, and high-density development.

Relying on far-from market dolostone will more than double the cost of transportation for basic building materials, and double the Town's GHG emissions from aggregate transportation, challenging the Town's 2050 net zero emissions targets.

Overall, numerous economic benefits are anticipated to the local and regional economy through employment and increased municipal and provincial tax revenue.

6.0 COMMITMENTS AND MONITORING

6.1 Complaints Procedure

A complaint protocol will be distributed to the landowners within 500 m of the site and posted on the Site Website. The protocol would include contact details for key personnel at CBM and outline the process that would occur should a complaint be received. The process would include, but not be limited to:

- A phone call or email is received by CBM
- If a message is left, then contact is made within 24 hrs to discuss the issue
- The CBM contact who has reached out to the complainant would investigate the issue internally, and if there is something that needs to be adjusted ensure that a timeframe for completing that action is understood and then communicate back to the complainant with a committed timeframe

- The CBM contact would then discuss the issue with the original complainant to make sure that it has been resolved or if further steps need to be taken.

6.2 Community Liaison Committee

A Community Liaison Committee (CLC) will be formed and will include representatives from the public, agencies and CBM and meet once a year to provide updates on the operation and discuss any topics of interest. This will be an important mechanism whereby local residents can raise concerns with CBM and collaborate on any issues in a safe and impartial forum. There will be a request for volunteers to join the CLC which will be sent out to people within 500m of the site with three months of the application approval.

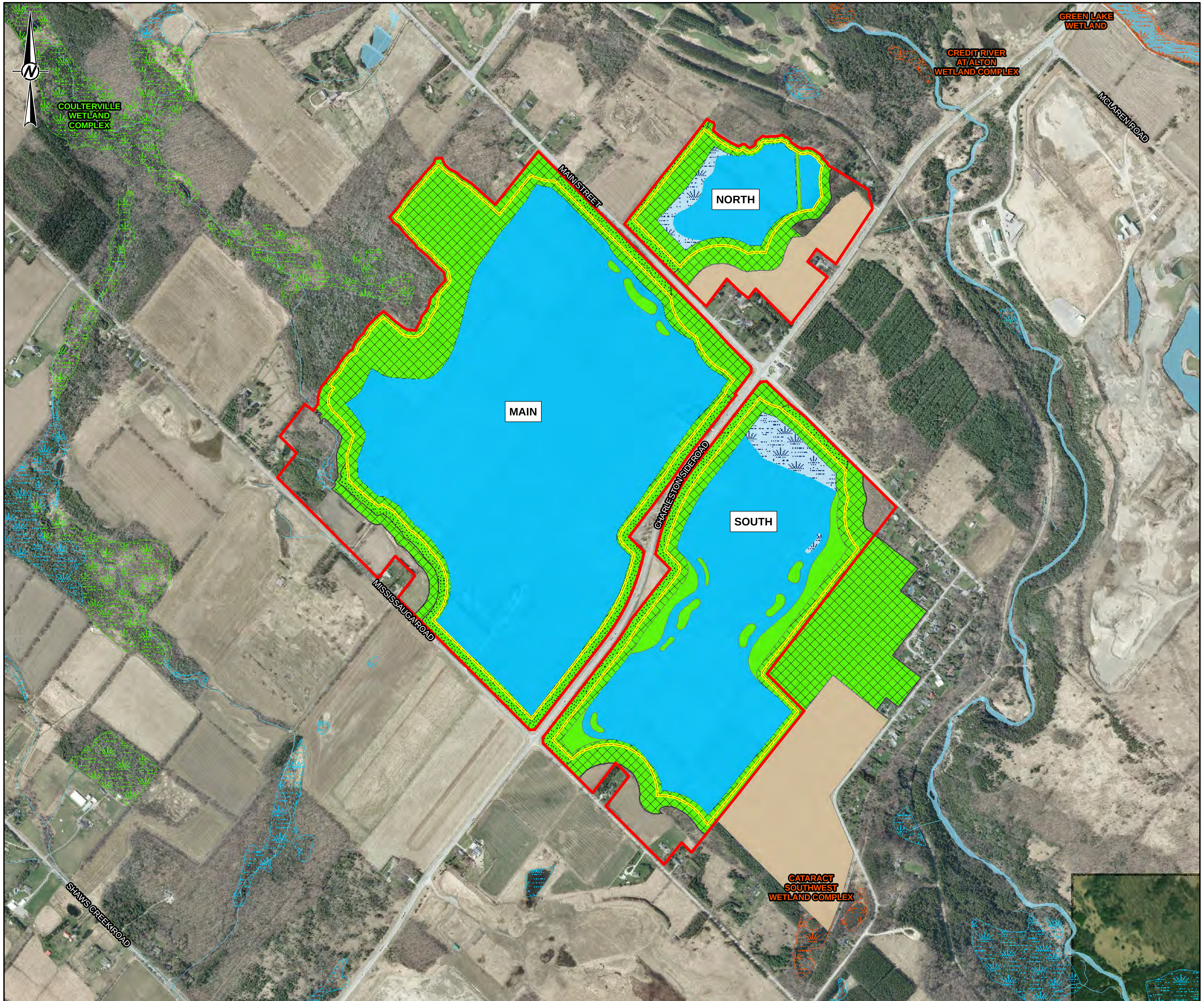
6.3 Site Rehabilitation Plan

6.3.1 Southern Land

In December 2021, CBM announced that the southernmost 35.6 hectares of land would be excluded from any future licence application and for the entirety of the life of any potential quarry that may be approved. These lands are proposed to be redeveloped for community benefit and wildlife habitat. These lands are proposed to be redeveloped as meadow and woodlands which will feature tree and plant species that will provide habitat for wildlife such as eastern meadowlark and bobolink. The objective of this redevelopment is to provide a valuable resource for the community to enjoy while also providing environmental benefits.

6.3.2 Overall Site Rehabilitation

Figure 3 shows the proposed rehabilitation plans for each portion of the site. Final rehabilitation has been designed to fit in to the local landscape, complement adjacent natural features and replace or enhance existing habitats. Within the extraction area the shoreline of the lakes will be contoured where possible, and shoals or islets created to increase habitat diversity. Plantings of trees and shrubs will be conducted on the above-water slopes and in setback areas, in addition to areas of upland forest and meadow habitats. Turtle habitat will be created in the north extraction area, and other wildlife habitat structures such as stumps, logs and boulders will be placed around the lakes. Long-term this will provide a valuable community and environmental resource.



LEGEND

- WATERCOURSE
- WATERBODY
- UNEVALUATED WETLAND
- OTHER EVALUATED WETLAND
- PROVINCIALLY SIGNIFICANT WETLAND
- LIMIT OF EXTRACTION
- LICENCE BOUNDARY

REHABILITATION LANDFORM AND ECOLOGICAL ENHANCEMENT AREAS

- GRADIUAL GRADE OR ISLAND
- GRASSLAND
- LAKE
- MEADOW
- WETLAND
- WOODLAND

0 250 500 750

1:12,500 METRES

NOTE(S)

1. LOCATIONS ARE APPROXIMATE.

REFERENCE(S)

1. BASE DATA MNRF LIO OBTAINED 2020
2. WATERCOURSES OBTAINED FROM CREDIT VALLEY CONSERVATION AUTHORITY OPEN DATA PORTAL, NOVEMBER 2022 IN COMBINATION WITH SITE WATERCOURSE SURVEY PROVIDED BY FIRST BASE SOLUTIONS NOVEMBER 2021.
3. IMAGERY FIRSTBASE SOLUTIONS SPRING 2021, SPRING 2019 (15CM RESOLUTION) AND SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY
4. SITE TOPOGRAPHIC DATA - SPRING 2021, FIRSTBASE SOLUTIONS, 2021
5. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 17N

CLIENT

CBM AGGREGATES, A DIVISION OF ST. MARYS CEMENT INC. (CANADA).

PROJECT

CALEDON PIT / QUARRY

TITLE

REHABILITATION LANDFORM AND ECOLOGICAL ENHANCMENT AREAS

CONSULTANT

GOLDER MEMBER OF WSP

YYYY-MM-DD	2022-12-12
DESIGNED	CGE
PREPARED	CGE
REVIEWED	SJ
APPROVED	HM

PROJECT NO.	CONTROL	REV.	FIGURE
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7.0 CONCLUSIONS AND RECOMMENDATIONS

Aggregate extraction can cause concern amongst local residents and concerns about effects to those living close to the site have been expressed and acknowledged by CBM since the project announcement. Comprehensive studies have been completed to evaluate potential environmental effects from site activities, including those which may result in nuisance effects to local residents and land users. To assess impacts on the surrounding community the proposed CBM Pit / Quarry has been assessed based on predictable, measurable, significant, objective effects on people caused by factors such as noise, dust, traffic levels and vibration in accordance with the Town of Caledon Official Plan requirements. With the implementation of the recommendations from the various technical reports noise, dust, traffic, and vibration levels will be mitigated to minimize impacts and ensure there will not be any unacceptable impacts on the community.

Ongoing engagement with site neighbours to discuss issues and address them early on will be important in maintaining a successful relationship between the site and the community. CBM is committed to the formation of a Community Liaison Committee as well as the implementation of a robust complaints process.

The results of the Socio-Economic Assessment provide the basis for the following technical recommendation to be included on the Aggregate Resources Act Site Plan for the proposed Caledon Pit / Quarry:

- The licensee shall hold an annual Community Liaison Committee meeting once a year. The Community Liaison Committee shall consist of up to 5 members of the public that live within 500 m of the licence area and representatives of the licensee. The Community Liaison Committee is intended to provide a forum for dialogue and exchange of information between the surrounding community and the licensee relative to ongoing operations, rehabilitation, monitoring, reporting and any complaints received and actions taken by the licensee. The licensee shall also invite the MNRF, Town of Caledon, the Region of Peel and the CVC to attend the Community Liaison Committee meetings.

Additionally, the proposed CBM Caledon Pit / Quarry will directly result in significant economic benefits at the regional and local level taking into account the proposed jobs that will be generated, the increase in property taxes for the Town, Region and school boards, and the increase in revenue the Town and Region will receive from the annual aggregate licencing fees. Indirectly, the Region and Town's economy will also benefit due to the proximity of the site to the consumer which results in reduced transportation cost to purchases an essential raw material that is needed for the construction and maintenance of communities.

In light of Caledon's projected population growth and the corresponding need for high-quality dolostone, the implications of importing far-from-market aggregate also needs to be considered. The Ontario Chamber of Commerce report studied the importance of the aggregate industry for construction, and the economic and environmental impacts of longer haul distances, as well as the many benefits associated with close-to-market aggregate production. The study found that an increase in the haul distance for transporting aggregates from pits and quarries to market can have sizeable economic and environmental implications through increased transportation costs borne by home buyers and governments, and GHG emissions.

For Ontario and Caledon to meet their climate targets, there will be a need to significantly reduce GHG emissions from the transportation sector, which is the leading source of emissions in the province. Close-to-market aggregate production from quarries such as the one proposed in Caledon could cost-effectively reduce emissions from transportation.

Copies of CVs for the authors of this document are provided in Appendix C.

Signature Page

Golder Associates Ltd.

Sara Jarrett, BA
Senior Social Scientist

Alyson Beal, PEng
Vice President, Environmental Planning

SJ/AB/HM/mp

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APPENDIX A

Terms of Reference

TECHNICAL MEMORANDUM

DATE August 19, 2022 **Project No.** 19129150

TO David Hanratty, PGeo
CBM Aggregates

CC Jennifer Deleemans, Mike Lebreton

FROM Heather Melcher **EMAIL heather_melcher@golder.com**

PROPOSED CBM CALEDON QUARRY TERMS OF REFERENCE – SOCIO-ECONOMICS

Golder Associates Ltd. (Golder) has been retained by CBM Aggregates (CBM), a division of St. Marys Cement Inc. (Canada) to complete technical studies to accompany an application to the Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF) for a new Class A Quarry Below Water licence under the *Aggregate Resources Act* (ARA) (project). The study will provide an assessment of the application taking into consideration the applicable in-effect policies contained in the relevant Provincial Plans, Region of Peel Official Plan and Town of Caledon Official Plan. The properties to be licensed are located on Charleston Sideroad and Mississauga Road, Town of Caledon, Region of Peel, Ontario (site). The site is approximately 262.4 hectares (ha) in size (Figure 1).

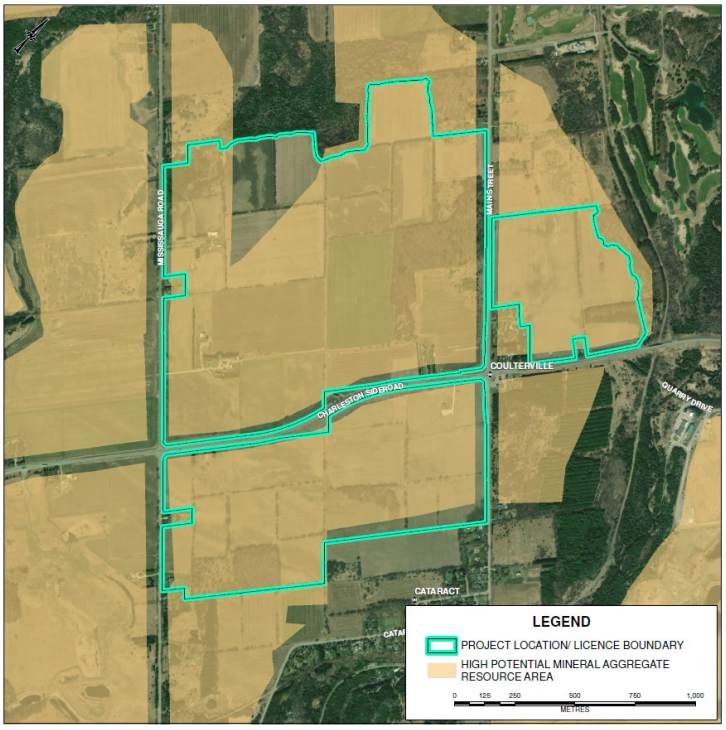

Figure 1: Proposed CBM Caledon Quarry Location

Golder Associates Ltd.
6925 Century Avenue, Suite #100 Mississauga, Ontario, L5N 7K2 Canada T: +1 905 567 4444 +1 905 567 6561

This Terms of Reference (TOR) includes a summary of the assessment and deliverables associated with the socio-economic assessment, a study that CBM commissioned voluntarily to help support the overall application. It should be noted that this study is not a requirement of the ARA or the Planning Act.

1.0 SOCIO-ECONOMIC SCOPE OF WORK

1.1 Objectives of the Socio-economic scope of work

Golder will undertake a work program for a socio-economic assessment of the site. The site consists primarily of open cultivated fields, uncultivated land including overgrown farmland, pastureland and farmstead/residential areas, and wooded areas.

The objectives of the socio-economic assessment are to evaluate the existing socio-economic conditions in the study area and establish whether or not any changes to these conditions will occur as a result of the project.

Conceptually, the socioeconomic environment can be considered in terms of five key “assets”:

- Human Assets (e.g., people)
- Physical Assets (e.g., schools, housing, and roads)
- Natural Assets (e.g., community natural resources and outdoor spaces)
- Cultural Assets (e.g., recreational facilities, cultural resources)
- Economic Assets (e.g., sources of employment and income)

1.2 Methods and Approach

Findings from public engagement activities have highlighted the following topics of concern in the local community:

- Potential for impacts to the natural environment including the Credit River
- Potential for impacts to surrounding properties
- Nuisance effects (e.g., noise, air pollution, vibration)
- Human health effects (e.g., from dust, blasting, water quality)
- Damage to personal property
- Disruption to use and enjoyment of public spaces and personal property
- Effects to tourism

A baseline socio-economic environment will be established from which the magnitude of effects can be determined. A study area will be developed giving consideration to the study areas for the discipline studies noted above as well as the extent of residences within the vicinity of the site. The baseline will be established through a desktop review of existing information, including the following:

- Statistics Canada census data
- Community profiles
- Community and municipal websites and official community plans and bylaws
- Local media articles
- Statistical reports and secondary documentation from local government
- Regional and local growth strategy and land use documents

The main scope of the socio-economic assessment is to address concerns related to these topics, and accordingly will serve as the components for further evaluation in the socio-economic assessment. This includes drawing upon findings from relevant technical studies being completed for this project including (but not limited to) impact assessments related to:

- Natural Environment
- Noise
- Blast Design
- Air Quality
- Water Resources
- Visual and Cultural Heritage
- Traffic

A review of these technical studies and their findings will be conducted to understand how any identified effects from these studies will have implications (positive or negative) for the socio-economic environment, with respect to the concerns listed above.

The extent of effects will be evaluated based on the change to the existing environment due to the project, and will be determined based on existing data, quantitative findings from other studies and professional judgement.

A study on the effect of the proposed change on the financial and economic sustainability of the region will be undertaken. The economic impact assessment will produce multiple output metrics, specifically including a comparison of baseline and estimated impacts over the lifetime of the project in terms of:

- Annual impact on jobs including direct (at the quarry and in transport of aggregate) and indirect (spin-off employment from local expenditure);
- Annual contribution to employment income based on industry norms;
- Annual direct contribution to municipal and county property taxes;
- Annual direct contributions to licence fees, levies, and other negotiated benefits;
- Annual direct contribution to education taxes; and,

- Other economic benefits for the region, including cost reductions for construction materials and output incorporated into the post-life cycle private infrastructure of the region.

These results would be presented at a Provincial, regional, and local level. To inform the analysis of the metrics, this assessment will use public data on regional economic activity, the relationship between output and employment in the aggregate sector, available estimates of transportation costs, and direct research into county and municipal tax policies. In order to calculate tax contributions, the value of the site can be estimated based on output and acreage, although this effort can be replaced by a formal valuation if one is available.

Real cost reductions are expected for regional transportation infrastructure investment from the Project. By combining the public data on existing aggregate producers with public data on transportation networks, it is possible to forecast potential price impacts for nearby population centres. The project case would be compared against a baseline case where aggregate would be shipped from existing pits and quarries over longer distances and at greater expense. The major beneficiary of these changes would be in road construction, which use about 60% of aggregate production (cement prices are driven more by other factor costs) and can be used to advance the argument that the Project can improve the economic sustainability of the Region beyond Project employment.

Potential effects to surrounding properties would be characterized through the on-going technical studies and literature reviews of other relevant studies and local information, coupled with the economic analysis of local benefits and road transportation effects.

1.3 Deliverables

A socio-economic and community interests report will be prepared focused on the identified areas of stakeholder concerns. The report will include the results of the economic study and will characterize effects to the socio-economic environment to residents using the results of technical studies, where possible.

2.0 CLOSURE

We trust that this technical memorandum meets your current needs. Please contact Golder and CBM with any questions or comments.

Golder Associates Ltd.

Sara Jarrett, BA
Senior Human Environment Consultant

Heather Melcher, MSc
Director, Ecology - Ontario

SJ/HM/wlw

APPENDIX B

Economic Impact Report

PRISM
ECONOMICS AND ANALYSIS

Analyzing the Economic Benefits of the CBM Caledon Quarry

Prepared by Prism Economics and Analysis
for
CBM Aggregates

December 2022

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Executive Summary

CBM Aggregates commissioned Prism Economics and Analysis to conduct an assessment on the economic benefits of constructing the CBM Caledon Pit / Quarry, proposed to operate on a site within the Town of Caledon in the Region of Peel. At the site's projected levels of production (2.0 million tonnes per year) and estimated total resource (85 million tonnes) the site has the potential to operate for an estimated 34 years without fully depleting the available resource. The project will bring numerous economic benefits to the region in the form of employment and increased municipal and provincial tax revenue directed to the community, including the school system in the Peel District, throughout the project's lifespan. The construction of a new pit/ quarry in the Region will also have indirect effects on general construction costs, as reduced transport costs for construction aggregate (sand, gravel, crushed stone etc.) will be reflected in the cost of aggregate as a building material.

Employment

- Employment estimates have been produced for site preparation and the project lifespan post-construction. During site preparation and project construction, it is estimated that 22 jobs will be generated directly, and 16 jobs will be generated in support industries that manufacture materials used at CBM Caledon Pit / Quarry.
- The project will also generate employment post-construction during the 34-year lifespan of the operation. It is estimated that the project will support from 25 to 30 jobs directly on-site and a total of approximately 48 jobs in nearby communities, including approximately 11 jobs in transporting the output of the pit / quarry. .
- In nearby communities, labour income from employment is projected to exceed $4,000,000 annually (measured in 2017 dollars and wages) and $8,000,000 across the Province.
- Annual estimates of employer social contributions to pension and benefit plans across the Province are close to $1,400,000 annually.

The Town of Caledon Revenue

- A review of records in the Municipal Property Assessment Corporation (MPAC) PropertyLine Database found assessed values per acre of comparable projects in the range of $7,000 - $14,000. The average assessed value per acre of the comparators was $10,200.
- Property taxes paid to the Town of Caledon based on this average assessed value would average $41,000 annually. This assumes an approximate 0.615% (the current industrial rate) on a land value of $6,605,000.
- The Town will also earn 61% of the revenue from construction aggregate licence fees of 21.3 cents (2022 rate) per metric tonne ("tonne") of aggregate. This would provide an average of $260,000 in annual aggregate fees for the Town of Caledon, and $11,044,000 in total aggregate fees (in constant dollars) over the lifetime of the project.

The Region of Peel Revenue

- Property taxes paid to the Region of Peel based on the average assessed value would average $29,000 annually, assuming a tax rate of 0.446% (the current industrial rate).
- The region will receive 15% of aggregate licence fees, amounting to an average of $64,000 annually over the life of the project.

Peel School Board

- Education property tax to be transferred to the Peel School Board based on the average assessed value would average $58,000 annually. This assumes a 0.88% property tax rate (the industrial rate).

Indirect Benefits

- Transportation costs make up a considerable portion of the price of construction aggregate. The location of the CBM Caledon Pit / Quarry will be advantageous to the region given its close proximity to urban areas and associated infrastructure projected to grow and intensify. Lower transportation costs will therefore be reflected in the cost of construction aggregate thereby reducing the overall cost of construction and increasing the feasibility of infrastructure projects and residential construction. The lower construction costs could also lead to less volatility in housing prices and municipal budgets.

Introduction

Prism Economics and Analysis has been commissioned by CBM Aggregates to conduct an economic benefits study on the construction and operation of CBM Caledon Pit / Quarry in the Town of Caledon in the Peel Region. CBM Caledon Pit / Quarry will benefit construction industries in the region as a nearby source of construction aggregate, a material heavily used in the construction of roads and buildings. The project will also bring numerous economic benefits to the area in the form of employment, increased municipal and provincial tax revenue directed to the community, and indirect effects on the cost of construction.

This study will measure the economic benefits for the duration of the project and will generate estimates of the following:

- employment from site preparation and ongoing employment at the site;
- contributions to tax revenues for the Town of Caledon and the Region of Peel from property tax revenues and aggregate licence fees;
- indirect benefits to the area due to reduced transportation costs reflected in the price of construction aggregate needed for construction projects; and
- indirect benefits for local boards of education through designated property tax revenue.

Quarry Construction Area

CBM Caledon Pit / Quarry site is being proposed within the Town of Caledon. The proposed site is 262.2 hectares or 647.4 acres. The site is strategically located less than 50km drive from both the cities of Brampton and Guelph, Ontario.

In terms of overall output, the estimated total tonnage available at the quarry is 85,000,000 tonnes. With the forecasted annual average production of roughly 2,000,000 tonnes, the site has the potential to operate for a planned 34 years without fully depleting the available resource.

Employment Impact of the Proposed CBM Caledon Pit / Quarry

Employment will be generated during the site preparation phase, and permanent jobs will be in place during the lifespan of the operation. This analysis also estimates regional effects for communities which are local and regional to the site using an analysis based on the economic specializations of nearby communities. Local communities are defined as those within a 20-minute drive to the site, and regional communities those within an hour drive.

Site Preparation Employment

Based on overall expenditure on preparing the site, it is expected that a total of 22 jobs will be directly employed at the site. It is also expected to support an additional 16 jobs in Ontario providing goods and services to these activities, and 12 jobs from serving consumption activities from income earned by site and supporting workers (called “Induced” jobs) as detailed in Table 1 below.

Table 1 - Employment from Site Preparation

Geography	Site	Supporting	Induced	Total
Local	22	2	5	29
Additional Regional	+0	+5	+1	+6
Additional Provincial	+0	+9	+6	+16
Total Provincial	22	17	12	51

Source: Statistics Canada Input-Output Multipliers, 2017, Geographic distribution by Prism Economics and Analysis

The above estimates are for total employment, not annual employment. Estimates of the time required for site preparation range from 12 to 18 months; if the expense associated with site preparation is extended over a longer period the number of jobs supported annually will be lower reflecting the lower annualized expense during this phase.

Ongoing Employment

Production activities will employ, on an ongoing basis, an estimated 30 jobs at the site. An additional 11 workers are expected to be required to truck the output of the pit / quarry to customers (based on output and the type of material produced). Additional jobs in supporting and induced activities are expected to generate an overall total of 48 jobs annually for workers in nearby communities and 116 jobs annually in Ontario. Given the decades-long lifespan of the operation, a substantial share of these jobs is expected to represent stable, long-term employment for workers in the community.

Table 2 - Employment from Ongoing Operations, Annual

Geography	Site	Transport	Supporting	Induced	Total
Local	30	11	2	5	48
Additional Regional	+0	+0	+6	+1	+6
Additional Provincial	+0	+0	+40	+22	+62
Total Provincial	30	11	48	28	116

Source: Statistics Canada Input-Output Multipliers, 2017, Geographic distribution by Prism Economics and Analysis

Site Preparation Labour Income

To estimate income impacts, economic multipliers calculated from Statistics Canada's Supply-Use tables for 2017 were applied to projected output to provide estimates for labour income (including all income times due to the likely participation of self-employed workers in supporting activities), so these values are measured in constant 2017 dollars and wages. Estimated total direct wages and salaries amount to $2,016,000, with employer social contributions (pension and benefit plans) of $204,000 during site preparation.

Table 3 - Labour Income from Site Preparation

Geography	Site	Supporting	Induced	Total
Local	$2,016,000	$124,353	$260,236	$2,400,589
Additional Regional	+0	+$391,569	+$37,546	+$429,115
Additional Provincial	+0	+$636,078	+$314,218	+$950,297
Total Provincial	$2,016,000	$1,152,000	$612,000	$3,780,000

Ongoing Labour Income

The labour incomes for the jobs at the quarry are expected to be well-paid, with average wages of close to $94,000 in 2017 dollars. Total labour income from on-site operations and transport of aggregate output are estimated to be $3,443,000 annually over the full operational life of the project. Including other supporting and induced economic activity the total labour income generated in Ontario is expected to be $8,295,000 annually, as shown in Table 4 below:

Table 4 - Labour Income from Ongoing Operations, Annual

Geography	Site	Transport	Supporting	Induced	Total
Local	$2,801,405	$641,724	$245,366	$394,517	$4,083,011
Additional Regional	+0	+0	+$990,276	+$147,990	+$1,138,265
Additional Provincial	+0	+0	+$2,242,877	+$831,245	+$3,074,122
Total Provincial	$2,801,405	$641,724	$3,478,519	$1,373,752	$8,295,399

Source: *Statistics Canada Input-Output Multipliers, 2017, Geographic distribution by Prism Economics and Analysis*

Tax Revenue from the Proposed CBM Pit / Quarry

The economic activity supported by the CBM Caledon Pit / Quarry will produce revenue for the Provincial and Federal governments from indirect taxes of an estimated $2,800,000 annually. The pit / quarry will also generate revenue for the Region of Peel, benefiting the Region of Peel, the Town of Caledon, and Peel District School Board through the collection of regional property taxes and licence fees for the duration of the project.

Property Taxes

Development of the CBM Caledon Pit / Quarry site will allow the municipality to revalue and levy property taxes on the site as industrial land. A review of records in the Municipal Property Assessment Corporation (MPAC) PropertyLine Database found assessed values per acre of comparable projects in the range of $7,000 - $15,000, although most properties clustered around a value of $10,000 per acre. The average and median assessed value per acre of the comparators was approximately $10,200. With the site encompassing 647.4 acres (262.2 hectares) and using the average assessed land value from

comparable sites the estimated land value would be $6,605,000. Property taxes on the site would be levied by the municipality and distributed to the Town of Caledon, the Region of Peel, and the Peel District School Board as shown on Table 5.

Table 5: Property Tax Revenues

Recipient of Fee	Property Tax Rate	Annual Property Tax Revenue
Town of Caledon	0.61%	$41,000
Region of Peel	0.45%	$29,000
Peel District School Board	0.88%	$58,000

Source: Estimates by Prism Economics and Analysis

The estimated property tax revenue for the Town of Caledon would be $41,000 (in constant dollars) paid annually, $29,000 paid annually to the Region of Peel, and $58,000 distributed annually to the Peel District School Board over the life of the operation.

Aggregate Licence Fees

CBM Caledon Pit / Quarry will also contribute to government revenue through construction aggregate licence fees. In 2022, the fee is 21.3 cents per tonne of aggregate. This amount increases based on Consumer Price Index (CPI). This fee is in constant dollars and is for the year of 2022. Nearly two thirds (61%) of these fees are directed to the Town of Caledon, averaging $260,000 annually while the site is in operation. Table 6 shows the distribution of these fees:

Table 6 - Aggregate Licence Fee Distribution, Annual

Funding Recipient	Aggregate Licence Fee (per tonne)	Annual Revenue
Town of Caledon	0.13	$260,000
Region of Peel	0.03	$64,000
Province of Ontario	0.04	$89,000
Aggregate Resource Trust	0.01	$13,000

Source: Estimates generated by Prism Economics and Analysis

Of the 21.3 cent per tonne of aggregate licence fee, 61% percent to the Town of Caledon and 15% is directed to the Region of Peel (13 cents and 3 cents respectively). On average, $260,000 will be generated for Town of Caledon and $64,000 for the Region of Peel annually while the site is in operation.

Indirect Benefits

Transportation costs make up a large portion of the cost of construction aggregate. Based on the 2017 Supply Use tables for Ontario, transportation accounted for 11% of sand and gravel costs for the road construction industry. Based on an analysis of data from the Canadian Freight Analysis Framework, the estimated marginal cost in Ontario of shipping one tonne of minerals by truck an additional kilometre was $0.08 in 2016. A detailed study published by the Ontario Stone, Sand, and Gravel Association ("OSSGA") identified a per-trip cost of $2.77 plus $0.09 per kilometre travelled in 2019. They found that changing the source of aggregate from a site 35km away to one 110 km away more than doubled transportation costs (a 114 percent increase) and increased transportation's share of overall costs to 50 percent for stone and 65 percent for sand and gravel. The return-on-investment ("ROI") for transportation projects are consequently greatly improved through the ability to locally-source aggregate materials of superior quality. A higher ROI on transportation investment has the potential to produce considerable spinoff effects, since they allow public bodies to invest more easily in infrastructure that in turn positively impact housing value and economic growth. That public transportation infrastructure has a significant positive impact on housing values (through an improvement in GDP) was confirmed by Baako, Mintah, and Zhang (2022) using a dataset across the OECD from the period from 1870 to 2016.

Conclusion

The proposed CBM Aggregates pit / quarry near the Town of Caledon will generate economic activity in the region and raise revenue for governments in the form of direct and indirect taxes, property taxes, and licence fees on production.

Annually the project is expected to support

- 22 on-site jobs, 16 supporting jobs, and 12 jobs induced by economic activity over the site preparation phase;
- 30 on-site jobs, 11 transport worker jobs, 48 supporting jobs, and 28 jobs induced by economic activity annually in Ontario over the operational life of the site;
- property taxes for the Town of Caledon, the Region of Peel, and the Peel District School Board average a total of $128,000 annually over the operation life of the site ; and
- aggregate licence fees for the Town of Caledon, the Region of Peel, the Province of Ontario, and the Aggregate Resource Trust averaging a total of $426,000 annually over the operation life of the site.

Indirect benefits to the region's economy include reduced costs for transporting raw materials essential for the construction and maintenance of transportation infrastructure.

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Ontario Chamber of Commerce, “The Long Haul: Examining the Implications of Far-From-Market Aggregates” . Published by the Ontario Stone, Sand, and Gravel Association.

Property Taxes: City of Local Study Area. (n.d.). Retrieved January 13, 2020, from https://niagarafalls.ca/city-hall/finance/property-taxes/default.aspx

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Appendix A - Curriculum Vitae

PRISM
ECONOMICS AND ANALYSIS

CHEYENNE MARTIN

OVERVIEW

Economist with 20 years of experience specializing on economic modelling, analysis, and impact assessment. Recent quantitative work includes forecasting national and sub-regional trends in demographics and labour markets and how they intersect with specific industries, neighbourhood-level housing market forecasts, and a multi-dimensional analysis of the impact of affordable housing investment in Nunavut. Extensive experience with analyzing labour markets, the socio-economic effects of major resource projects, and policy development with a deep personal interest in how all of these areas intersect with Indigenous communities.

WORK HISTORY

PRISM ECONOMICS AND ANALYSIS, Toronto, ON
Partner (Present), Managing Consultant (2016 – 2020)

- Project lead for Prism on economic studies including: defining and forecasting labour market for environmental employment using textual analysis of online job postings; a comprehensive inventory and stochastic forecast of Ottawa's rental housing market; an analysis of the socio-economic impact of affordable housing investment in Nunavut; a Bayesian tourism impact assessment tool for Bruce County.
- Quantitative/modelling lead on multiple large dataset projects including: developing a comprehensive database of financial data relating to Indigenous governments; development of the CANTRAQ apprenticeship forecasting model; labour supply modelling for FPHRC; Quantitative analyst on housing and labour market policy analyses.
- Economist focusing on economic impact assessment, policy development/evaluation and industry/strategic analysis. Recent analytical projects include analysis of the impact of apprenticeship ratios on training outcomes for OCOT and the development of affordable housing benchmarks for CMHC. Areas of policy focus include housing, infrastructure, energy, Indigenous inclusion, and innovation.

CHEYENNE ECONOMICS, Toronto, ON
President (Present), Consulting Economist (2016)

- Developed a stochastic estimate of financial risk arising from the introduction of carbon pricing on INAC expenditures nationally (electricity, heating and transportation) and the economic effects of the introduction of cap-and-trade on the Ontario economy with EnviroEconomics.
- Performed business, strategic and financial risk assessments as part of the due diligence process for a proposed purchase of the Hudson Bay Railroad and Port of Churchill with Castlemain Group.

GOLDER ASSOCIATES, Toronto, ON
Senior Socio-Economic Specialist (2014 - 2015)

- Socio-economist focusing on financial valuation services, quantitative risk management, socio-economic effects management and assessment.
- Performed stochastic financial analyses, including developing measures of risk- adjusted ROI

analyses of adaptive measures based on climate change modelling for Glencorp and Vale incorporating approaches from Golder's transportation infrastructure quantitative project risk assessment methodology.
- Developed scenario analyses detailing the sectoral economic effects of a cap-and- trade regime on the Ontario economy for the Canadian Steel Producers Association and Canadian Vehicle Manufacturers Association.
- Performed scenario-based social and financial cost-benefit analyses for multiple clients including the MOECC on waste diversion programs.
- Managed multi-disciplinary and multi-region teams for projects and proposals.
- Presenter (conference and client) on social licence risks for major infrastructure projects, particularly as they intersect with Indigenous communities.

AMEC ENVIRONMENT & INFRASTRUCTURE, Mississauga, ON
Economist and Aboriginal Business Specialist (2011 - 2014)

- Economist focusing on socio-economic effects analysis), baseline assessment and labour market analysis, with specialized responsibilities concerning social risk assessment and management, Aboriginal engagement and business development.
- Led the economic impact analysis for multiple mining projects, including those for IAMGOLD's Côte Lake Project and New Gold's Rainy River Project.
- Wrote socio-economic effects assessments for Goldcorp, Western Copper and Gold, others.
- Performed labour studies and helped develop socio-economic effects monitoring programs.
- Led focus groups and performed primary research into barriers facing Aboriginal learners for the Council of Ontario Universities.
- Managed multi-disciplinary and multi-region teams for projects and proposals.

KEWIN CONSULTING, Toronto, ON
Managing Consultant (2010 - 2011)

- Management consultant focusing on financial and economic analysis for a firm focusing on the needs of Aboriginal organizations, businesses and governments.
- Services performed included business plan development, resource industry consultation, institutional engineering, restructuring, and change management.

EDUCATION

MBA Strategic Management, Schulich School of Business, Toronto, 2010

MA Economics, University of Toronto, Toronto, 2007

BA Economics (Specialist) and East Asian Studies (Major), University of Toronto, Toronto, 1997

APPENDIX C

Curriculum Vitaes

Golder Associates Ltd. – Mississauga

Education

B.A.Sc. Civil Engineering (Environmental Option), Queen's University, Kingston, Ontario, 2003

Certifications

Professional Engineers of Ontario

International Association for Public Participation (IAP2), Certificate in Public Participation, Vancouver, British Columbia, 2011

Professional Summary

Alyson Beal, P.Eng., is a Principal and environmental assessment (EA) and permitting specialist in Golder's Mississauga, Ontario office. Alyson has led and participated in both small and large multi-disciplinary environmental studies and permitting projects across multiple sectors, including power (nuclear, transmission, and renewable and non-renewable sources), oil and gas, mining, infrastructure and waste sectors. This includes assessments completed to meet the federal EA requirements of the *Canadian Environmental Assessment Act 2012* (CEAA 2012, and previous versions), the *Nuclear Safety Control Act* (NSCA) and the *National Energy Board (NEB) Act*, as well as provincial EA requirements under the Ontario *Environmental Assessment Act* (Individual EA and screenings/Class EAs). Frequently, her projects are higher profile and complex. To successfully execute these environmental planning and permitting projects, Alyson leads multidisciplinary teams, working with the various technical discipline leads, clients and regulators to integrate environmental activities with other project planning.

Employment History

Golder Associates Ltd. – Mississauga, Ontario
Principal, Project Manager and Environmental Specialist (2003 to Present)

City of Kingston – Kingston, Ontario
Environmental Engineering Assistant (2002)

Smithville Phase IV Bedrock Remediation Program – Smithville, Ontario
Assistant Project Manager (2001)

PROJECT EXPERIENCE – TRANSMISSION AND RELATED INFRASTRUCTURE

Hydro One, Burlington × Westover Pole Replacement Project Hamilton/Halton, Ontario	Project Director for the completion of an environmental screening for the Burlington × Westover Pole Replacement Project to meet the requirements of Hydro One's Class EA Process.
Hydro One, Wood Pole Replacement Projects Various Locations, Ontario	Project Director for the completion of numerous screening reports for Hydro One's annual wood pole replacement projects. Screenings are completed to meet the requirements of Hydro One's Class EA Process.
Glencore, Onaping Transformer Station Onaping, Ontario	Class EA screening for the construction of a new 115 kV Transformer Station, and an approximately 1.6 km long 115 kV transmission line, near the Craig Mine site under the Hydro One Class EA for Minor Transmission Facilities.
Wataynikaneyap Power, Phase 1 and 2 Transmission Line Projects Northwestern Ontario (Pickle Lake, Red Lake and Remote Communities)	Environmental regulatory advice for the assessment of Wataynikaneyap Power's Phase 1 New Transmission Line to Pickle Lake Project and Phase 2 Project to connect 16 remote First Nations Communities north of Red Lake and Pickle Lake.
NextBridge Infrastructure, East-West Tie Project Northern Ontario (Thunder Bay to Wawa)	Environmental regulatory advice for the EA for NextBridge's East-West Tie Project Transmission Project. This project will require more than 400 km of new 230 kV transmission line across Northern Ontario.

PROJECT EXPERIENCE – POWER (NON-NUCLEAR)

Ontario Power Generation, Sir Adam Beck Pump Generating Station Niagara Falls, Ontario	Environmental lead for the OPG Sir Adam Beck Pump Generating Station Remediation Project during detailed design and construction, including assessment of effects and regulatory engagement.
Northland Power, Redpath Cogeneration Project Toronto, Ontario	Project Manager for an EA of a proposed cogeneration facility at Redpath Sugar on Toronto's waterfront. Studies included a screening level EA, municipal planning and zoning requirements, and liaising with regulators.
NRStor / Hydrostor, Compressed Air Energy Storage Project Goderich, Ontario	Project Director for environmental permitting support of NRStor's Compressed Air Energy Storage project at the Compass Minerals site. Golder services include communications and consultation advice, environmental siting requirements, air quality and noise permitting, and ESA.

Various Clients, (RES, Leader, PowerStream, Samsung-Pattern, SWEB, Kruger, Saturn, Capstone), Wind and Solar Projects Various locations, Ontario	Independent Engineer review of 25 Site Considerations Reports for wind and solar projects proposed by various clients. These reports were submitted as part of their Large Renewable Procurement Process applications to the IESO.
NextEra, Elmira and Parry Energy Storage Projects Woolwich and Seguin, Ontario	Project Director for the completion of required environmental and municipal permitting associated with NextEra's proposed Elmira and Parry energy storage projects. Permits required include Environmental Compliance Approvals, archaeological assessments, and zoning amendments.

PROJECT EXPERIENCE – POWER SECTOR – NUCLEAR

Bruce Power, License Renewal for Major Component Replacement and Continued Operations Tiverton, Ontario	Strategic advice related to environmental activities in advance of licence renewal, which includes Major Component Replacement of Units 3 to 8 at the Bruce site and completion of an updated Environmental Risk Assessment, Predictive Effects Assessment and Community Interests reports to meet the needs of an EA under the NSCA.
Ontario Power Generation, Pickering Nuclear License Renewal Stabilization and Safe Storage Pickering, Ontario	Predictive effects assessment lead for the assessment of potential effects of the stabilization and safe storage phase of the Pickering Nuclear Generating Station. Potential effects will be considered in the context of the NSCA, applicable CSA standards, and environmental assessment practice.
Canadian Nuclear Laboratory, Whiteshell WR-1 In Situ Decommissioning Whiteshell, Manitoba	Project Manager for the EA and decommissioning safety assessment of the in situ decommissioning of Whiteshell Reactor 1 (WR 1) at CNL's Whiteshell Laboratories near Pinawa, Manitoba. The assessment is subject to meeting the CNCS's requirements of CEAA 2012 and Regulatory Guidance G-320.
Canadian Nuclear Laboratory, Near Surface Disposal Project Chalk River, Ontario	Project Director for the environmental assessment of a proposed Near Surface Disposal Facility for low-level radioactive waste at the Chalk River site in Eastern Ontario. The EA is subject to meeting the requirements of CEAA 2012.
Ontario Power Generation, Deep Geologic Repository Project Tiverton, Ontario	Project Manager and EA lead (CEAA 2012 Joint Review Panel) and continued environmental support through the regulatory phase, including hearing support, of the proposed Deep Geologic Repository Project for low- and intermediate-level radioactive wastes near Tiverton, Ontario.

Bruce Power
Various Projects
Tiverton and Nanticoke, Ontario

Various roles including project engineering, EA reporting, cumulative effects assessment, project coordination, and public consultation lead for various environmental assessments for Bruce Power under CEAA, including the:

- New Nuclear Power Plant Project at the Bruce Nuclear Site
- New Nuclear Power Plant Project near Nanticoke, Ontario
- Bruce A Refurbishment Project
- Bruce B New Fuel Project
- Hydrogen fuelled transportation applications in southern Ontario

PROJECT EXPERIENCE – MINING / OTHER

Cliffs Natural Resources, Cliffs Chromite Project
Northern Ontario (Greenstone, Sudbury, Ring of Fire

Project Manager with responsibility for implementing studies for the coordinated EA pursuant to federal and provincial Individual EA requirements to facilitate development of Cliffs Natural Resources Chromite Project. The EA included extensive engagement and consultation with Indigenous communities, the general public, and many federal/provincial regulatory agencies.

CBM St. Mary's Cement, Bowmanville Underground Expansion Project
Bowmanville, Ontario

Project Manager for the development of a permitting and environmental assessment roadmap/strategy and EA for a proposed underground quarry below the bottom of Lake Ontario. The assessment must meet the MNDM Class EA process, as well as federal, provincial and local permit requirements.

KGHM International, Temporary Diesel Supply
Sudbury, Ontario

EA lead for the construction of a 4.9 MW of temporary diesel power supply during construction for the completion of an Environmental Screening under the Electricity Projects Regulation.

TransCanada, Vaughan Mainline Expansion / Kings North Connection
Vaughan, Ontario

Project Director for the environmental services (EA, permitting, construction monitoring, hearing support) in support of two new 11 km natural gas pipelines in the City of Vaughan. The projects required s.58 authorizations from the NEB.

Education

BA (hons) Political Science, University of Strathclyde, Glasgow, UK, 2006

Golder Associates Ltd. - Ottawa

Senior Social Scientist

Sara Jarrett is a human environment specialist with over 15 years of experience working in socio-economic impact assessment, social research, statistical analysis, qualitative research and environmental impact assessment. Sara has significant experience in the study of the human environment and the interactions between projects and communities. Sara also has a strong understanding of Indigenous and stakeholder consultation methods and the importance of strong consultation in achieving project success. Sara has considerable project management skills with experience in all phases of the project life cycle including scheduling, budget management, scope change management, invoicing, estimates to complete, earned value and client reporting. Sara's project experience is in a wide variety of client sectors including nuclear power, natural gas, waste, wastewater, aggregates, transportation, biomass, wind energy and renewables, transit and mining.

Employment History

Golder | WSP - Ottawa

Senior Social Scientist (2017 to Present)

Social impact specialist primarily responsible for the preparation and management of Environmental Assessment (EA) reports with particular responsibility for the socio-economic discipline.

AECOM Canada – Markham & Ottawa

Socio-Economic Consultant (2010 to 2017)

Socio-economic consultant responsible for socio-economic impact assessments, community wellbeing assessments, environmental assessment (EA) coordination and general project management support.

AECOM UK – Manchester, UK

Social and Market Research Consultant (2007 to 2010)

Social and Market Research consultant responsible for developing and conducting large scale research projects for government and private clients primarily in the transportation sector. Responsibilities included survey design and implementation, fieldwork management, data analysis and reporting, client presentations and focus group and in-depth interview moderation.

PROJECT EXPERIENCE – ENVIRONMENTAL APPROVALS

NexGen Energy Rook 1 Uranium Mine Project
Saskatchewan, Canada

An Environmental Assessment is being under both federal and provincial EA processes (CEAA 2012 and the Environmental Assessment Act of Saskatchewan). Responsible for the preparation of socio-economic baseline report, Indigenous, Regulatory and Public engagement reporting as well as preparation of engagement materials for ongoing Indigenous engagement meetings and public information sessions.

Global First Power, Micro Modular Reactors Project (MMRP) at Chalk River
Ontario, Canada

Global First Power (GFP) are proposing the development of a Small Modular Reactor (SMR) project using Micro Modular Reactor® (MMR) technology sited at Chalk River, Ontario. An Environmental Assessment is being conducted for the creation of a demonstration facility in accordance with CEAA 2012. Lead consultant on public engagement activities, including the development of virtual engagement tools and materials.

Bruce Power Major Component Replacement EA & License Renewal Application
Ontario, Canada

Bruce Power's Nuclear Generating Plant in Kincardine license renewal as well as conducting an Environmental Assessment to replace major components of the Plant and extend its life span. Part of the license renewal was to prepare supporting documents detailing concerns and issues raised by First Nations and Metis groups and the community near the site during past studies and evaluate how these were addressed and resolved by Bruce Power. Responsible for background research, report preparation and client liaison.

Canadian Nuclear Laboratories, Near Surface Disposal Facility
Ontario, Canada

An Environmental Assessment is being completed under the Canadian Environmental Assessment Act 2012 (CEAA 2012) for the proposed Near Surface Disposal Facility at the Canadian Nuclear Laboratories in Chalk River, Ontario. Responsible for revisions to the socio-economic impact assessment and responding to Information Requests on the report from the Canadian Nuclear Safety Commission (CNSC)

Wataynikaneyap Phase 2 Connecting 17 Remote Communities Environmental Assessment
Ontario, Canada

This Environmental Assessment project in Northern Ontario was prepared to connect 17 remote First Nation communities to the Provincial electricity grid. As co-project manager responsibilities included report preparation and review, coordination of Information Requests, consultation preparation, schedule management, budget tracking and scope changes and responding to client requests.

Enbridge Gas, Almonte Reinforcement Project
Ontario, Canada

Environmental Assessment of a natural gas pipeline Almonte, Ontario. Project manager responsible for the oversight of the Environmental Report and related disciplines including public engagement which involved developing online options for engagement including a virtual open house and project website.

CBM Aggregates Dance Pit ARA
Ontario, Canada

An application under the Aggregates Resource Act (ARA) was prepared to expand the existing Dance aggregates pit in Cambridge, Ontario in order to extract further materials. As lead for aboriginal and public engagement responsibilities include preparing Aboriginal and stakeholder engagement plans, organization of open houses and materials, maintenance of engagement contact lists, preparation of communications, meeting organization and facilitation and reporting.

Clean Harbors Lambton Landfill Expansion Individual Environmental Assessment Ontario, Canada	An individual EA of expansion plans to a hazardous waste landfill, lead consultant on socio-economics discipline responsible for developing and co-ordinating administration of resident and business surveys, municipal interviews, analysis and reporting of socio-economic baseline conditions and coordination of effects assessment.
Edmonton LRT Canadian Environmental Assessment Alberta, Canada	A Federal EA was conducted on the South East portion of the Edmonton Light Rail Transit (LRT) development. Lead consultant on the social impact assessment discipline on the study. Work included establishing existing social features in the study area, documentation of these and determining potential impacts on these features.
City of Sault Ste. Marie Landfill Expansion Environmental Assessment Ontario, Canada	Socio-economic discipline lead responsible for assessment of effects on the social environment from a landfill expansion. Key activities included; residents, business and recreational user survey development and implementation in order to evaluate the potential effects from the construction and operation of the new landfill as part of the wider social impact assessment.
Calgary Airport Parallel Runway Development Project, Public Attitude Research Alberta, Canada	Environmental Assessment of the new runway developments at Calgary Airport. Lead researcher responsible for running a follow up public attitude research project with local residents (surveys with approx. 1600 people). Work included questionnaire design, field implementation and reporting.
Ottawa Road 174/Prescott Russell County Road 17 Environmental Assessment Ontario, Canada	Road improvements Class EA conducted on Ottawa Road 174 and Prescott Russell Road 17. Discipline lead on business impact assessment, responsible for data collection, field studies, reporting of baseline conditions, input into alternative designs and development of mitigation measures to ensure minimal impacts on businesses in the study area.
Billy Bishop Toronto City Airport Runway Expansion Environmental Assessment Ontario, Canada	An Environmental Assessment was conducted to evaluate the impacts of expanding the Toronto City Airport runway to accommodate jet aircraft. Socio-economic lead responsible for evaluating impacts on the local environment including overseeing stakeholder interviews, intercept surveys and phone survey.
Highway 17 Route Planning East of Bonfield Ontario, Canada	A Class EA to assess improvements to a 23 km stretch of Highway 17, east of Bonfield, Ontario. Lead consultant on the socio-economic impact assessment portion of the project including, evaluation of existing socio-economic conditions, input into evaluation of alternative designs and business impact assessment.

PROJECT EXPERIENCE – PUBLIC AND STAKEHOLDER ENGAGEMENT

PWGSC/DFO Whitby Small Craft Harbour Remediation Project
Ontario, Canada

Engagement lead for public consultation program relating to remediation of contaminated sediment in Whitby Small Craft Harbour, a federal waterlot. Responsible for developing the Public Communications Plan and Public Communications Strategy as well as developing and implementing a program of virtual engagement activities including notices, information pamphlet, presentation and Q&A documents to be delivered to stakeholders and the public as well as liaising with the federal client team to meet project objectives.

Parks Canada/Transport Canada Kingston Harbour Sediment Management Plan
Ontario, Canada

Engagement lead for public consultation program related to the implementation of a sediment management plan to address contaminated sediment in Kingston Inner Harbour federally owned waterlots. Responsible for the development of the Stakeholder Engagement Plan and developing and implementing, a program of virtual engagement including notices, virtual open house website, project information brochure and presentation.

Micro Modular Reactors Project
Chalk River, Ontario

Engagement lead for the Micro Modular Reactor (MMR) project, an Environmental Assessment of a demonstration project to develop small nuclear reactors that can be used for generating fuel in remote communities. Responsible for developing remote engagement options and implementing an initial round of engagement with the public and stakeholders.

PROJECT EXPERIENCE – COMMUNITY WELL BEING STUDIES

Community Well Being Evaluation, Nuclear Waste Management Organization (NWMO)
Ontario, Canada

An evaluation and assessment of communities involved in the “Learn More” programme related to the Adaptive Phase Management (APM) project to be host communities for used nuclear waste. Involved in developing evaluation materials, report preparation and review (community profiles and stakeholder mapping), scheduling and general project management.

PROJECT EXPERIENCE – SOCIAL RESEARCH

Bathing Water Quality Study
Ayr, UK

This project evaluated information provision on water quality at beaches in the west of Scotland. Project manager responsible for: recruiting and running 2 focus groups in the area, writing a visitor questionnaire, arranging fieldwork and analysing the results, conducting business interviews and producing the final report for submission.

Bus Interventions
Leicester, UK

This project looked into the effects of improved bus links within deprived areas. The project assessed the impact of such services on social exclusion. Lead researcher responsible for site visits, fieldwork management and questionnaire data analysis.

Cycle Towns
London, UK

A large scale study evaluating investment in cycling improvements and enhancements by the government. Involved in analysing and reporting travel diary findings for over 10,000 respondents.

Iraq Solid Waste Management Masterplan
Anbar, Iraq

This project was commissioned by UNICEF to develop and implement a solid waste management system to Anbar region in Iraq. Lead the social impact report. Provided recommendations on how to address potential social issues arising from the inception of a modern waste management plant.

PROJECT EXPERIENCE – TRADITIONAL KNOWLEDGE STUDIES

Red Sky Métis Independent Nation EA Review and Traditional Knowledge Study
Ontario, Canada

A traditional knowledge study conducted with Métis people in Timmins and Cochrane, Ontario. Lead discussions and mapping exercises to determine traditional use of the land for hunting and gathering in order to gather a wider picture of how Métis use the land and what for.

Traditional Knowledge Study of the James Bay, Abitibi, Temiskaming Traditional Territory
Ontario, Canada

A traditional knowledge study conducted with Métis people in Timmins and Cochrane, Ontario. Lead discussions and mapping exercises to determine traditional use of the land for hunting and gathering in order to gather a wider picture of how Métis use the land and what for.

PROJECT EXPERIENCE – PROJECT MANAGEMENT

Henvey Inlet Wind EA
Ontario, Canada

Project manager responsible for the cost controls on a large, fast paced Environmental Assessment valued in excess of $12 million involving staff from multiple locations. Responsible for budget control, scheduling, client reporting, cost estimates, sub consultant management, document control, staff liaison, change orders and scope management.

Upper York Sewage Solutions Individual Environmental Assessment
Ontario, Canada

An individual Environmental Assessment of a new sewage pipeline in York Region. Project Manager responsible for the financial performance of the project.

Belle River REA
Ontario, Canada

A Renewable Energy Approval (REA) was undertaken to build a new wind farm in Essex County Ontario. Deputy project manager responsible for budget management, scheduling, change orders, contracts, sub consultant management and project document control.

TRAINING

Focus Group Moderation
Association for Qualitative Research, 2008

Indigenous Awareness Training
IAP2, 2018

SUPPLEMENTAL SKILLS

Software: Excel, SPSS
Project Management: Understanding of PMI Project Management Body of Knowledge and experienced in use of SalesForce applications.

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