



FINAL

# Land Use Compatibility/Sensitive Land Use Study Port Colborne Quarries Inc. Pit 3 Extension

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**Part of Lot 17, 18 and 19, Concession 2,  
(formerly Township of Humberstone)  
and Plan 59R-16702  
City of Port Colborne, Ontario**



Prepared for Port Colborne Quarries Inc.  
by IBI Group  
January 8, 2021

(Revised December 15, 2021)

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# 1 Introduction

This Report has been prepared to support applications for the re-designation, rezoning and licensing of lands owned by Port Colborne Quarries Inc. (PCQ) to permit aggregate extraction. The subject lands are located east of the existing PCQ properties (Pit 2 and Pit 3) that are currently licensed under the Aggregate Resources Act (ARA) to operate a Category 2- Class A Quarry Below Water, identified as Licence 4444.

PCQ is requesting approval to extend the existing Pit 3 licensed operation eastward on additional lands owned by PCQ.

In order for extraction to occur on the subject lands, the following approvals are required:

- Amendment to the Region of Niagara Official Plan 2014, to designate the lands as *Licensed Pits and Quarries*.
- Amendment to the City of Port Colborne Official Plan 2017, to re-designate the lands from *Agricultural* to *Mineral Aggregate Operation*.
- Amendment to the City of Port Colborne Zoning By-Law 6575/30/18, to rezone the lands from *Agricultural (A)* to *Mineral Aggregate Operation*. (MAO) and to reduce the minimum setback from a Provincial Highway from 90.0 metres to 30.0 metres.
- Application to the Ministry of Natural Resources, under the Aggregate Resources Act for a Category 2 Licence (Class A Quarry Below Water).

The subject lands are located in the central portion of the City of Port Colborne just outside and to the northeast of the existing built-up area, near the intersection of Miller Road and Highway 3. The lands are bound by Second Concession Road to the north, Highway 3 to the south, existing quarry lands owned by PCQ to the west and rear lot line of homes fronting onto Miller Road to the east.

As specified during the Pre-Submission Consultation Meeting (April 23, 2020) and as part of the Region of Niagara application requirements for a Regional Official Plan Amendment is the completion of a Land Use Compatibility / Sensitive Land Use Study. Furthermore, the study is to be informed by applicable Provincial Guidelines related to air quality, noise and vibration studies.

# 2 Technical Studies Completed

Port Colborne Quarries Inc. retained experts to undertake technical studies related to air quality, noise and vibration as follows:

- a) An Acoustical (Noise) Impact Study has been completed and is attached to the Planning Justification Report as Appendix B. The report was prepared by Golder Associates Inc. and authored by T. Gu; J. Tomaselli dated December 2020 and updated December 2021. The Curriculum Vitae for J. Tomaselli is also attached to that report.
- b) An Air Quality Impact Study has been completed and is attached to the Planning Justification Report as Appendix D. The report was prepared by Golder Associates Inc. authored E. Lau dated December 2020, and updated December 2021. The Curriculum Vitae for E. Lau is also attached to that report.
- c) A Blasting (Vibration) Impact Study has been completed and is attached to the Planning Justification Report as Appendix F. The report was prepared by Golder Associates Inc. and authored by D. Corkery dated July 2020, and updated October 2021. The Curriculum Vitae for D. Corkery is also attached to that report.

### 3 Land Use Compatibility/Sensitive Land Uses

Compared to most industrial land uses, aggregate extraction is unique because traditional land use planning is impractical since a typical planning approach would restrict or limit these activities to be located within a specific or specialized industrial area such as an industrial subdivision along with other similar-based industrial users. Because aggregate extraction must occur where the natural, non-renewable resource was deposited by pre-historic glacial actions, such uses often become sited adjacent to un-similar land uses and ones which are often deemed sensitive land uses (i.e., residential).

The Regional Official Plan (Section 15 – Definitions) utilizes the definition for ‘sensitive land uses’ based on that from the provincial Growth Plan 2017, which states:

***Sensitive Land Uses*** means buildings, amenity areas, or outdoor spaces where routine or normal activities occurring at reasonably expected times would experience one or more adverse effects from contaminant discharges generated by a nearby major facility. Sensitive land uses may be a part of the natural or built environment. Examples may include, but are not limited to: residences, day care centres, and educational and health facilities. (Growth Plan, 2017)

Based on the above, it is recognized that:

- i) Aggregate extraction operations and especially quarry operations do create air quality, noise and vibration that could be determined to be cause negative impacts to surrounding land uses if mitigation techniques and attenuation tools are not implemented, and
- ii) Many of the surrounding land uses abutting the PCQ Pit 3 Extension meet the definition of being sensitive land uses, although the three reports refer to them differently but can be used interchangeably including:
  - Noise Impact Assessment                      Point of Receptor
  - Air Quality Impact Assessment              Sensitive Receptors
  - Blast Impact Assessment                      Receptor

These abutting sensitive receivers include:

- a) A single agricultural lot (1864 Miller Road) abuts the subject lands at its’ northern limit at Second Concession Road. Of note, the farm house associated with the property is sited in close proximity to Miller Road and separated from the Pit 3 Extension by approximately 300.0 metres.
- b) Additional land uses east of the subject lands with frontage onto Miller Road are all non-rural residential with six of the seven abutting the subject lands, and those lots are quite deep (i.e., 400.0 metres). More specifically, all the homes situated on all these lots are positioned in close proximity to Miller Road resulting in the homes being separated from the proposed Pit 3 Extension property boundary by + 300.0 metres. These lots are referenced as follows:
  - 1498 Miller Road
  - 1580 Miller Road
  - 1630 Miller Road
  - 1682 Miller Road
  - 1732 Miller Road
  - 1778 Miller Road
  - 1826 Miller Road
- c) Several agricultural related farms exist east of Miller Road which are within 500.0 metres of the subject site. These farms include 1864 Miller Road, 1591 Miller Road

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and 1369 Miller Road. All the farm houses associated with these farms are located near Miller Road and similarly within 500.0 metres of the site. Of special note is 1369 Miller Road which is closest to the 'east jog' of the subject site as they share frontage along Miller Road.

- d) Immediately south and east of the site is 1838 Main Street (Highway 3) which is a non-farm residence located about 150.0 metres from the Pit 3 Extension lands.
- e) South of the site, all the lands are zoned Agriculture (A) but the specific land uses are a mixture of non-farm residential, small commercial and retail businesses. All these properties are within 120.0 metres of the Pit 3 Extension property limit, and include:
  - 1305 Main Street (Hwy 3)
  - 1331 Main Street (Hwy 3)
  - 1266 Weaver Road
  - 1284 Weaver Road
  - 1577 Main Street (Hwy 3)
  - 1627 Main Street (Hwy 3)
  - 1695 Main Street (Hwy 3)
  - 1751 Main Street (Hwy 3)

Additionally, two receptors front onto Second Concession Road, the first (1246 2<sup>nd</sup> Conc. Rd) but it is +/-540 metres from the nearest extraction limit and 1740 2<sup>nd</sup> Conc. Rd. which is directly across the Conc. Rd from the Proposed Phase 3, but it has been identified as not being a residential use but rather associated with a former private recreational facility.

Since each of the three reports (Noise, Air Quality and Blasting) provides a listing of the sensitive receivers within 120.0 metres of the site, but uses different identifiers, the following table compiles and cross-references these for ease of use for the reader.

Municipal Address	Noise Study - Point of Reception Identifier	Air Quality Study – Sensitive Receptors Identifier	Blasting Impact Assessment – Receptor Identification
1246 2 <sup>nd</sup> Conc. Rd.	POR018	27	62
1740 2 <sup>nd</sup> Conc. Rd	POR019	28	63
2024 Miller Rd.	POR020	29	58
1903 Miller Rd	POR021	30	57
1864 Miller Rd.	POR022	31	56
1826 Miller Rd.	POR023	32	55
1778 Miller Rd.	POR024	33	54
1732 Miller Rd.	POR025	34	53
1682 Miller Rd.	POR026	39	52
1630 Miller Rd.	POR027	40	51
1591 Miller Rd.	N/A	41	50
1580 Miller Rd.	POR028	42	49
1498 Miller Rd.	POR029	43	48
1359 Miller Rd.	POR030	44	47
1838 Main St.	POR031	55	36
1751 Main St.	POR032	56	35
1695 Main St.	POR033	57	34
1627 Main St.	POR034	58	33
1577 Main St.	POR035	59	32
1266 Weaver Rd.	POR036	60	45
1305 Main St.	POR037	61	30

## 4 Technical Study Recommendations

Each of the three technical studies undertaken to address the potential quarry impacts, included modeling and recommendations. The recommendations included:

### 4.1 Noise

1. *The following minimum perimeter berms (or acoustically equivalent measures/barrier) will be implemented prior to extraction:*
  - *A 4 metre high (above existing grade) berm along the south property line.*
  - *A minimum 2 metre high (above existing grade) berm along the east and north property lines of the extension area.*
2. *The location of the berms is shown on the Operational Plan. In addition to 1 above, specific berm requirements, including additional required berm heights, will be determined through both noise and blast monitoring as the areas of extraction move towards the Points of Reception (PORs) as shown on the Operational Plan within the 'Increased Blast Monitoring Zone'.*
3. *Areas requiring additional and/or specific noise controls and/or quieter types of equipment are shown on the Operational Plan as Noise Zone 1, Noise Zone 2 and Noise Zone 3. The local barrier height and alternative controls required to achieve compliance with applicable noise limits within the identified areas are noted below;*

Noise Zone	Equipment Specific Noise Controls
1	<i>Drill – local barrier extending 2.0 m above major noise source associated with the drill.</i>
2	<i>Drill – local barrier extending 3.0 m above major noise source associated with the drill.</i>
3	<i>Drill – attenuated equipment (i.e. reduced noise emissions or replace with quieter equipment)</i>

4. *Extraction and processing operations will occur only during the daytime period (7:00 am – 7:00 pm).*
5. *The general extraction progression to be followed is shown on the Operational Plan.*
6. *Setback distances between the drilling rig / blasting and receptors will be determined/confirmed through the blast monitoring program.*
7. *All existing on-site/ external perimeter berms shall remain in place for the Port Colborne Quarries Inc.: Pit 1, Pit 2 and Pit 3 lands.*
8. *Extraction equipment will not exceed the following Overall Sound Power Levels Equipment list.*

Source Description	Overall Sound Power Levels (dBA)
<i>Screen 115E - Upper deck west</i>	<i>127</i>
<i>Screen 115E – Lower deck west</i>	<i>127</i>
<i>Screen 115E – Upper deck east</i>	<i>123</i>
<i>Screen 115E – Lower deck east</i>	<i>123</i>
<i>Impact Crusher 177 - west</i>	<i>104</i>
<i>Impact Crusher 187 - east</i>	<i>104</i>
<i>Jaw Crusher Norberg</i>	<i>110</i>
<i>Impact Crusher 154</i>	<i>104</i>
<i>Wash plant 155E – west screen top</i>	<i>111</i>

<b>Source Description</b>	<b>Overall Sound Power Levels (dBA)</b>
<i>Wash plant 155E – west screen walls</i>	107
<i>Wash plant 155E – east screen top</i>	111
<i>Wash plant 155E – east side walls</i>	107
<i>Drill</i>	121
<i>Loader Extraction</i>	107
<i>Haul Truck empty</i>	112
<i>Haul Truck full</i>	116
<i>Highway truck</i>	102

9. *On-site haul trucks will not exceed 35 km/h.*
10. *Equipment will be maintained in good condition.*
11. *On-site roadways will be maintained to limit noise resulting from trucks over ruts and pot-holes.*

#### 4.2 Air Quality (Dust) Impact Assessment

1. *The amount of explosive used will be reduced to less than 6,160 kg when meteorological conditions require it, such as wind gusts exceeding 40 km/hr, and/or when the extraction face approaches the property line and/or sensitive receptors. The actual reduced amount of explosive will be determined through the blast monitoring program.*
2. *The amount of material handling at the extraction face will be reduced to less than 4,500 kg per day when meteorological conditions require it, such as wind gusts exceeding 40 km/hr, and/or extraction face approaches the property line and/or sensitive receptors.*
3. *The licensee shall use water as a dust suppressant to control fugitive emissions as necessary and during dry periods.*
4. *The Best Management Practices Plan for the Control of Fugitive Dust (BMPP) prepared by Golder Associates Ltd. dated December 2020, and as amended, shall be posted in the on-site pit administration office. Compliance with the BMPP is deemed to be a Site Plan condition.*

#### 4.3 Blasting Impact Assessment

1. *The initial series of test blasts, occurring with approximately one month of the commencement of blasting shall be monitored at a minimum of five (5) locations at varying distances from each blast to refine the ground and air vibration attenuation characteristics and confirm that MECP – NPC 119 of the Model Municipal Noise control By-law is being met. This will entail establishing monitoring stations between the blast site and neighbouring receptors [residences], during the sinking cut and development of the initial bench face. The site-specific attenuation data developed during this monitoring period shall then be used to better define ground vibration and air concussion effects at the nearest receptors.*
2. *Routine monitoring of all blasting operations shall be carried out in the vicinity of the closest receptor to the proposed blasting operations. As extraction continues with the quarry and blasting operations move, the actual monitoring site shall be routinely and regularly reviewed so that the closest receptor is always being monitored for ground and air vibration effects.*
3. *Maintained a record of all blasting details including a seismic record of the ground and air vibration monitoring results. The blast details and monitoring results shall be made*

*available to the Ministry of Natural Resources and Forestry (MNRF) and the Ministry of Environment, Conservation and Parks (MECP) upon request.*

4. *Prohibit blasting on Saturdays, Sundays and Statutory holidays.*
5. *When blasting within approximately 300.0 metres of adjacent residences, the quarry shall regularly review their blast procedures in conjunction with the blast monitoring results to assess when it is necessary to reduce the maximum explosive weight detonation per delay period with the blast. The termination point for the blasting operations will be governed by the results of the on-site monitoring program.*
6. *Detailed blast records shall be maintained and shall include the following:*
  - a) *Location, date and time of the blast;*
  - b) *Dimensioned sketch including photographs, if necessary, of the location of the blasting operation, and nearest point of reception;*
  - c) *Physical and topographical description of the ground between the source and the receptor location;*
  - d) *Type of material being blasted;*
  - e) *Sub-soil conditions, if known;*
  - f) *Prevailing meteorological conditions including wind speed in m/s, wind direction, air temperature in OC, relative humidity, degree of cloud cover and ground moisture content;*
  - g) *Number of drill holes;*
  - h) *Pattern and pitch of drill holes;*
  - i) *Size of holds;*
  - j) *Depth of drilling;*
  - k) *Depth of collar (or stemming);*
  - l) *Depth of toe-load;*
  - m) *Weight of charge per delay;*
  - n) *Number and times of delays;*
  - o) *The results and calculated value of Peak Pressure Level in dBL and Peak Vibration in mm/s;*
  - p) *Applicable limits; and*
  - q) *The excess, if any over the prescribed limit.*

## 5 Explanation of Thresholds

The parameters/inputs used to develop the computer modeling (used by Golder) for the noise, dust and blasting impacts are all based on 'worst-case-scenarios where extraction was occurring as close to neighbouring sensitive receivers as possible. Further, the supporting documents used multiple layers of conservative constraints that were noted and acknowledged in each of the reports. Therefore, during most of the quarry life when extraction is occurring further from the receivers, and when maximum operational production levels are not occurring, land use impacts will be below provincial thresholds for the surrounding community.

As an example,

### Acoustical (Noise) Impact Assessment

- An annual production of 1,000,000 Tonnes/year: Although PCQ Inc. is anticipating a ramping-up of production to reach this maximum production level, historically they have not. However, the model assumes that the pit is operating at 100% capacity.
- Points of Reception: Noise calculations are based on worst-case scenarios where extraction is assumed to occur as close to the nearest Point of Reception (POR) as



possible within the Extraction Limit, however, for the majority of the quarry life, extraction will occur much further away.

Air Quality (Dust) Assessment:

- An annual production of 1,000,000 tonnes/year: Although PCQ Inc. is anticipating a ramping-up of production to reach this maximum production level, historically they have not. However, the model assumes that the pit is operating at 100% capacity.
- Industrial Emission Sources: The emission data used to determine cumulative impacts was based on sources where more industrial contributions exist than the subject site, and therefore the data used is noted as being, "...likely a conservative representation..."
- Climatic Conditions: To ensure the widest range of climatic conditions possible have been captured, a full five years of data is included.
- Vegetation: All perimeter berms will be vegetated which augments the capture of fugitive dust, but this practical on-site mitigation tool is not part of the modeling mitigation assumptions.

As summarized in the Air Quality (Dust) Assessment under 7.0 Conclusions; "...the maximum cumulative concentrations presented in this assessment are very conservative".

Blasting Impact Assessment

- Because every blast is individually calculated and detonated and then individually monitored, the licensed third-party blasting contractor is able with precision, to make any number of blast parameter changes to ensure that no land use conflicts occur depending on on-site changes such as the rock composition or proximity to sensitive receptors.

## 6 Report Synthesis and Analysis

All three above noted reports were prepared by staff from Golder and although the compilation of these individual reports and their recommendations/conclusions does not necessitate they be from the same firm, certainly internal synchronization can be greatly improved, especially during the preparation of computer modeling parameters. In addition, the Lead Consultant for this project, Sean McFarland is also with Golder, so his ability to coordinate internal meetings had the distinctive advantage.

We can confirm that there was ongoing, consistent and meaningful collaboration between the authors of the i) Noise (Acoustical) Impact Study, ii) Air Quality (Dust) Impact Assessment, and the iii) Blast (Vibration) Impact Assessment.

An example of this is specifically found in the Noise Impact Study wherein it highlights that it has provided minimum height recommendations for perimeter berms and it's findings relative to the drill-rig were related to the noise generated by the equipment as it operates in preparing blasting holes, but also recognized that the above and beyond that, blasting noise would result. As such, the Noise Impact Study referenced the critical recommendations of the Blast Impact Assessment wherein detailed ongoing blast monitoring will occur within 300.0 metres of a sensitive receiver. In response to this, the Noise Study similarly identified Noise Zone 1, 2, and 3 wherein account for both the temporary/increased noise levels of the drill-rig, and the need for input from ongoing blast monitoring results.

Furthermore:

1. Those common recommendations from the noise and blasting reports, as well as the inclusion of ARA Prescribed Conditions for a Category 2 Licence, all which reference matters of 'hours of operation', have been compiled into General Operational Note 2 as follows:

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2. Hours of Operation:

- a. *The hours of operation shall be from 7:00 a.m. to 7:00 p.m. Monday to Friday excluding statutory holidays and 8:00 a.m. to 3:00 p.m. on Saturdays. At no time shall crushing, rock breaking or blasting take place on a Saturday, Sunday or Statutory Holiday, nor any blasting between the hours of 6:00 p.m. and 8:00 a.m. Maintenance operations may take place outside of normal operating hours.*
- b. *Refer to the Recommendations from the Dust Study (Sheet 5 of 8) regarding further restrictions to the operational hours for drilling/blasting.*
- c. *The hours of operation may be extended to the extent necessary to address exceptional circumstance due to:*
  - i) *an emergency situation that is beyond the reasonable control of the operator or*
  - ii) *a special contract that requires material to be produced and/or delivered on an urgent basis, making it necessary to operate outside of normal operating hours, In such an event, the Licensee shall make a record of the exceptional circumstance that gave rise to the need to operate outside normal operating hours.*
- d. *Except where the operator is requested by a public authority to respond to an emergency, any operations outside of normal operating hours are not exempt from compliance with MECP noise guidelines.*

2. Those common recommendations from the noise and blasting report, all which reference matters of 'berms, have been compiled into General Operational Note 16 as follows:

*16. Perimeter Berms: Perimeter berms will be constructed to provide attenuation for noise, dust and visual impacts. The core of the berms will be constructed of overburden clay from the site and then a veneer of subsoil and topsoil applied to the berms. The berms will then be vegetated as specified in General Operational Note 18. If moderate or extensive erosion or gulying occurs during the life of the quarry, that portion is to be re-graded and reseed as necessary. The external (public) side of the berms fronting onto Highway 3 and Miller Road will be constructed with a 4:1 slope to and maintained (cut) on a regular basis. The berms will be constructed to the heights noted on the Plan. Refer also to Berm Sketch – Detail 2 and 3 on Sheet 5 of 8.*

*In locations within the 'blast monitoring zone', perimeter berms will be constructed with a 2.5m flat top to accommodate additional local barriers as determined by the Blasting Monitoring Program and if required.*

As such, there is no conflicts in the report recommendations relative to:

- Proposed berm heights or their locations or design,
- Proposed additional local barriers, (where required),
- Proposed quieter equipment, (where required),
- Use of water trucks for dust mitigation,
- Proposed on-going monitoring programs for noise, dust and blasting.

Given the above, it would be our position that:

- i) Because the individual reports confirmed that they met the prescribed mitigation thresholds for each separate discipline.
- ii) That they collaborated and co-ordinated their modeling and findings, and that their corporate findings dovetail and are synchronized.
- iii) That ongoing noise and blast monitoring will occur in key identified locations as specified on the Site Plans.

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Therefore, the overall results confirm that the significant and key components of land use compatibility have been fully addressed and no further recommendations are required to address issues related to Land Use Compatibility/Sensitive Land Uses.

## 7 Summary

The Noise (Acoustical) Impact Study, the Air Quality (Dust) Impact Study and the Blasting (Vibration) Impact Study were all undertaken by qualified professional engineers in their specific discipline. Each of these reports identified the extent of possible operational impacts, the locations of potential sensitive land uses and provide specific recommendation to ensure that all possible negative impacts would be mitigated to levels to meet provincial guidelines. The report authors also jointly collaborated during the report preparations and in the culmination of their recommendations.

It is our opinion that both individually and jointly, the recommendations relative to noise, dust and blasting have been streamlined and are comprehensive so that all significant key land use compatibility issues have been addressed.

Yours truly

IBI GROUP



David R. Sisco, BA, MCIP, RPP  
Senior Planner

DRS/baw



I hereby certify that this Visual Impact Assessment was prepared by a Registered Professional Planner, within the meaning of the Ontario Professional Planner's Institute Act, 1994.

Jan. 28<sup>th</sup> 2022   
Date David R. Sisco, BA, MCIP, RPP