

SUMMARY STATEMENT

PROPOSED CATEGORY 2 CLASS 'A'
QUARRY BELOW WATER

ELGINBURG QUARRY EXPANSION
LOTS 12 & 13, CONCESSION 5
CITY OF KINGSTON
COUNTY OF FRONTENAC

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July 2017

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ENCLOSED REPORTS

Hydrogeological Investigation: "Level 2 Hydrogeological Impact Assessment for the Expansion of the Cruickshank Elginburg Quarry" prepared by Morrison Hershfield (February 22, 2016)

Natural Environment Technical Report: "Natural Environment, Technical Report: Level I and II Elginburg Quarry" prepared by Ecological Services (January 19, 2017)

Cultural Heritage Resource Investigation: "Stage 1 Archaeological Assessment, Parts of Lots 12 & 13, Concession 5, Kingston Township, Frontenac County, City of Kingston" prepared by Ground Truth Archeology & Abacus Archaeological Services (October 14, 2010)

"Stage 2 Archaeological Assessment of the Elginburg Quarry Expansion, Frontenac County, Ontario" prepared by Ground Truth Archaeology (February 7, 2014)

"Stage 3 Archaeological Assessment of the Albertson Lime Kiln, BbGd-59" prepared by Ground Truth Archaeology (November 17, 2014)

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“Stage 3 Archaeological Assessment of the Albertson Foundation (BbGd-60)” prepared by Ground Truth Archaeology (November 17, 2014)

“Stage 3 Archaeological Assessment of the Donovan Lime Kiln (BbGd-62)” prepared by Ground Truth Archaeology (November 17, 2014)

Noise Assessment Report: “Acoustic Assessment Report, Elginburg Quarry Expansion” prepared by Hugh Williamson Associates Inc. (September 17, 2014)

Blast Design Report: “Blast Impact Analysis, Proposed Elginburg Quarry, City of Kingston, Province of Ontario” prepared by DST Consulting Engineers Inc. (June 2014)

Traffic Report: “Elginburg Quarry (Unity Road) Traffic Review” prepared by IBI Group (November 2013)

Aggregate Assessment: “Aggregate Resource Assessment, Elginburg Quarry, Kingston, Ontario” prepared by Morrison Hershfield (August 15, 2014)

1. INTRODUCTION

This Summary Statement supports an application by Cruickshank Construction Limited (Cruickshank) for a Category 2, Class 'A' Quarry Below Water proposed for Lot 12 and 13, Concession 5, in the City of Kingston. This application will be used to expand the existing Elginburg Quarry (Site ID 2901). The purpose of the expansion is to provide a source of rock suitable to crush for concrete, asphalt stone, and other quality products close to the Kingston market. The following Site Plans have been prepared to detail the proposed quarry development:

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As shown on the site plans, the quarry expansion will have a licensed area of 73.8 ha and an extraction area of 63.4 ha. The expansion will progress in amounts of up to one million tonnes per year from the existing quarry westward, in three lifts. For the protection of water resources, the third lift will be terminated 250 m from the closest house on Unity Road and at the Lot 12/13 boundary.

This Summary Statement, site plans and enclosed technical reports will be shared with reviewing agencies and specifically included in the Official Plan and Zoning amendment applications currently in progress for this site.

2. PLANNING AND LAND USE CONSIDERATIONS

2.1 PHYSIOGRAPHY, TOPOGRAPHY, AND GEOLOGY

The Elginburg Quarry is located in the Napanee Plain physiographic region. This region is characterized by the flat topography of the limestone formations. The defining feature of the study area is a north-east to south-west trending escarpment which is approximately coincident with the south end of the existing and proposed expanded Cruickshank Elginburg quarry. The escarpment marks the edge of the limestone plain. At Unity Road the ground surface is essentially flat in the east-west direction, at approximately 140 mASL.

The surface water features in and around the existing Elginburg Quarry and the expansion area in shown in the Existing Features Site Plan. The main branch of Collins Creek flows northeast to southwest and crossing Bur Brook Road approximately one kilometer west of Silvers Corners. South of the existing quarry and expansion area, Collins Creek turns northwards and flows for approximately 0.5 km on the north side of Bur Brook Road. This section of the Creek is joined by a tributary from the north carrying drainage from the existing quarry and Elginburg village area, and is also the receiver of overland flow from the south part of the expansion area. Drainage from the north part of the expansion area flows overland in the southwesterly direction, discharging to another tributary which joins Collins Creek in a wetland south of Burbrook Road. Collins Creek flows to the south approximately 12 km before draining into Lake Ontario at Collin's Bay.

Most of the expansion lands are underlain directly by bedrock, with very little overburden soil cover. In some low-lying upland areas (coincident with the drainage features), and at the base of the escarpment, there are massive to well-laminated, fine-textured glaciolacustrine deposits of silt and clay with minor sand and gravel. At the top of the escarpment the ground surface is approximately 126 mASL and the bedrock is mapped as the upper member of the Gull River Formation. Below the escarpment the ground surface is at

approximately 90 mASL, and the rock is mapped as Precambrian. On the escarpment itself, the rock is mapped as the middle member of the Gull River Formation, which contains buff and green siltstone, and which appears from the mapping to be approximately 20 m thick.

2.2 QUALITY AND QUANTITY OF AGGREGATE

The field investigations and testing included rock quality testing of a half of a split core remaining from a previous assessment, coring of one borehole and rock quality testing of the core, rock drilling of three boreholes, and geophysical logging of eight open holes. The data analysis included establishment of a layer-cake stratigraphic model based on the core and geophysical logs, assessment of the usefulness of the various parts of the stratigraphy for concrete stone and for granular "A", and estimation of respective volumes considering the planned quarry expansion.

The following two sources of concrete stone for use in structures, sidewalk, curb and gutter, and concrete base were identified:

1. All rock above 115 mAsl in the north extraction area so long as the rock column is effectively mixed during the blasting, loading, and crushing operation. There are approximately 10 million tonnes of this resource.
2. All rock above 128 mAsl in the south extraction area, north of approximately 4907320N. There are approximately 2 million tonnes of this resource.

The remainder of the rock (approximately 40 million tonnes) can be used for Granular A. None of the rock can reliably be considered concrete stone for use in pavement. A program of rock quality testing was recommended at the start of quarrying of the north expansion area, to ensure that effective mixing of the rock column is achieved

Based on projected market demand, the expansion is to be licensed for the removal of up to 1 million tonnes of aggregate per year.

2.3 CURRENT USE

The property is currently not being used. The proposed expansion area has historically been used as pasture and hayfields and is now dominated by trees and marsh.

2.4 PLANNING CONSIDERATIONS

The lands within the site are designated 'Rural Area' and 'Environmental Protection' on Schedule 3-B of the City of Kingston's 2010 Official Plan. A quarry is not a permitted use under the existing designations. A change to the appropriate 'Mineral Resource Area - Q' designation has been requested. Amendments to Schedule 5, Schedule 7-B, and Schedule 8-B of the Official Plan have also been requested, to recognize the actual location of the Rideau Trail and to remove natural heritage features as supported by the findings of the environmental studies conducted as part of this application.

Zoning By-law 76-26 places the expansion lands in the General Agricultural Zone (A2). A quarry is not a permitted use within the existing zoning hence a ZBA is required. The proposal requests quarry lands be in a site-specific Extractive Industrial (M5-X) zone to permit the proposed expansion. A portion of the site at the southern end is proposed to be placed in a site-specific Open Space (OS-X) zone to protect the three archaeological sites that were the subject of Stage 3 archaeological reports and the wooded area along the slope identified as FOD5-8 in the EIS. The quarry expansion will have a licensed area of approximately 73.8 hectares.

Pre-consultation took place in November 2010 to determine the requirements for the City's planning approvals. The City determined that for an OPA and ZBA, the following supporting documents are required: a Conceptual Site Plan, Site Plan drawings (as per the ARA), Tree Inventory and Preservation Study, Traffic Impact Study, Hydrogeology and Hydrology Study, Environmental Impact Study, Noise and/or Vibration Study, Archeological report (Stages 1 and 2), Operational Plan, Landscape and Buffering Plan, Analysis of Quantity and Quality of Aggregate, and a copy of the permit and site plan for the existing quarry.

The application is for an OPA and ZBA to permit the expansion of the existing quarry operated by Cruickshank and permit the uses associated with a quarry such as extraction, crushing, blending, screening, washing, aggregate stock-piling, aggregate recycling, asphalt manufacture, concrete batching were considered in light of the site, existing uses, technical reports and the policy environment.

Based on the technical reports, the proposed quarry expansion:

- Does not create significant off-site adverse impacts as reflected in the supporting technical reports;
- Does not create significant adverse environmental impacts,
- Protects archaeological resources;
- Is along an arterial and the roadway system can absorb the increased traffic,
- No uneconomic extension of infrastructure is required;
- The use is compatible with existing uses and planned land uses for the area,
- Is consistent with the Provincial Policy Statement (PPS);
- Is consistent with the policy tests in the Official Plan (OP) for re-designation the site to Mineral Resource Area – Aggregates; and,
- Is separated from the K & P Trail by 80 metres or more and the intervening lands will be in an Open Space (-X) zone.

The Open Space (-X) zone noted above is intended to protect the significant woodland and contained reptile hibernacula identified outside the south boundary of the site, and also to protect three significant archaeological sites: Albertson Lime Kiln (BbGd-62), Albertson Foundation (BbGd-60) and Donavan Lime Kiln (BbGd-62). The sites are protected under Section 48 of the Ontario Heritage Act R.S.O.c.O.18.

Based on the review, the proposed quarry expansion is appropriate, represents good planning, and is in the public interest.

2.5 CONSIDERATIONS RELATED TO PIPELINE CORRIDOR

A corridor carrying pipelines owned by Enbridge and TransCanada bisects the existing Elginburg Quarry and the proposed quarry expansion. Section 81 of the National Energy Board Act (NEC Act) requires a company to obtain NEB's leave to carry out mining activities within 40 m of a regulated pipeline. The site plans for the existing Elginburg Quarry showed an original set back of 40 m from the pipeline corridor, which, based on approval by the NEB in 2006, was reduced to 20 m. The conditions of approval include blast monitoring and annual reporting.

To address the requirements of Section 81 of the NEB Act, the site plans for the quarry expansion indicate a 40 m setback from the pipeline corridor. Cruickshank will seek leave from the NEB for future reduction of this setback.

3. TECHNICAL REPORTS

Technical reports completed by qualified specialists have been prepared to accompany this application and support the proposed quarry development as follows:

- Hydrogeological Level 2 Investigation;

- Level 1 and 2 Natural Environment Technical Report;
- Cultural Heritage Resource Stage 1, 2, 3 Archaeological Assessment
- Noise Assessment
- Blast Design Report

Each of these Technical Reports are described in more detail in the following sections.

3.1 HYDROGEOLOGICAL LEVEL 2 INVESTIGATION

A study was undertaken to assess the hydrogeological impacts of the westward expansion of the Elginburg Quarry. The study included background data review, site and area inspections, drilling of eight boreholes using a variety of drilling methods over a three year period, hydraulic testing of open holes, geophysical logging, installation of piezometers in select holes, hydraulic testing of the piezometers, groundwater level monitoring, groundwater sampling/analysis, and a domestic well survey of all wells within 500 m of the existing quarry and proposed expansion. The study also included analysis of the collected field data to prepare a conceptual hydrogeological model of the expansion lands and surrounding area, predictive analysis of drawdown cone propagation, impact assessment, and proposal of monitoring and contingency plans.

The following is a list of recommendations made:

1. Monthly groundwater level monitoring is recommended in DDH 10-01, BH 11-02, BH 11-03, BH 11-04, BH 12-01, BH 12-02, BH 12-03, BH 13-01, the domestic well at 2528 Unity Road, and in the following three additional monitoring wells: Future Monitoring Well 1 (FMW-1) on the Lot 12-Lot 13 boundary, approximately 60 m south of BH 13-01, to be drilled prior to extraction within the western half of Lot 13; FMW-2 on the Lot 11-Lot 12 boundary at the northwest corner of the part of the expansion lands in Lot 12, to be drilled prior to extraction within Lot 12; and FMW-3 on the Lot 11-Lot 12 boundary at the southwest corner of the part of the expansion lands in Lot 12, to be drilled prior to extraction within Lot 12.
2. Annual winter photographic seepage face monitoring is recommended on all available extraction faces within 250 m of Unity Road in the western half of Lot 13 and also in Lot 12. This would consist of taking one or more photographs of the rock face from static viewpoints, where possible based on quarry operations. The information will provide a record of seepage into the quarry in the winter when ice will form at key seepage locations.
3. No extraction of the third lift (i.e., below 115 mASL) should occur within 250 m of the property at 2528 Unity Road, and west of the Lot 12/Lot 13 lot line.
4. A grouting pilot study may be considered during extraction of Lift 3 in Lot 13, if suitable conditions exist. (Grouting of individual rock fractures was found to be an appropriate contingency plan in the unlikely event that water wells are affected by the quarry and that pump-lowering and/or well deepening are unsuccessful in restoring the water quantity and quality.)
5. In consultation with the property owner, drainage from 2467 Unity Road must be allowed to discharge at the southern end of this property by way of a culvert(s) or break(s) in the berm.
6. The existing PTTW will be sufficient for dewatering of the existing quarry and the expansion area until its expiry in 2022. Upon renewal, it is recommended to combine the monitoring programs proposed in this report for the quarry expansion with the monitoring program for the existing quarry.

3.2 LEVEL 1 AND 2 NATURAL ENVIRONMENT TECHNICAL REPORT

The Level 1 Technical Report investigated whether or not significant natural heritage features are on or within 120 meters of a proposed project. As possible significant wildlife habitat and significant woodlands were present on site, a Level II report was completed.

The proposed expansion lands are bordered on the north by Unity Rd. and a solar farm, on the east by existing quarry, on the west by woodland and active and abandoned farmland, and on the south by the K&P rail trail, woodland, and farmland. The shallow soils and farming history of the expansion lands have influenced the current mix of ecological communities, which include meadow, thicket, and woodlands. Current cultural constraints include a gas pipeline, a hydro corridor, adjacent landowner dwellings, farmland, adjacent quarry, adjacent solar farm, and an adjacent landowner to store cast-off vehicles and other material.

The determination of significant natural heritage features and functions was determined by site visits between August 2010 and October 2015. The site investigation focused on documenting the presence and/or absence of significant natural features, species of conservation concern, wildlife habitat, and plant and animal species. The presence of reptiles was assessed by examining areas of appropriate habitat such as rock piles, exposed escarpment, and potential basking sites (logs, exposed bedrock).

The following are the mitigation recommendations as part of the Level II Impact Assessment:

Value Feature: Woodland

Mitigation Recommendation 1: Since there are no plans to develop within this FOD5-8 slope woodland or to remove any trees, its value in providing possible hibernacula should continue. As well, there will be a berm wall built between the quarry and the woodland that will further help maintain woodland function. However, it is conceivable that during berm wall construction, inadvertent intrusions by heavy equipment could indirectly impact possible snake hibernacula. As such, it is recommended that the woodland edge should be clearly demarcated with some sort of marking system to prevent this intrusions.

Significant Wildlife Habitat: Habitat for Species of Conservation Concern

Mitigation Recommendation 2: Although there are no plans to intrude into the FOD5-8 woodland south of the quarry, these birds are protected under the Migratory Birds Convention Act and any tree clearing for the pit expansion should take place outside of the breeding season (April to July) in order to prevent the possible loss of active nests.

Significant Wildlife Habitat: Shrub/early successional bird breeding habitat

Significant Wildlife Habitat Recommendation 1: It is recommended that there be no quarry activities (e.g., excavation, land clearing) into Lot 12 until 2024.

Significant Wildlife Habitat Recommendation 2: In order to enhance Recommendation 1, it is also recommended that large tree removal (i.e., trees greater than 2 m tall) occur throughout the FOD5-8 woodland within the expansion lands to make this area more desirable to shrub breeding birds, as this area has a shrub understory. Removal should take place outside of the bird breeding season (September to March) either in 2017 or 2018.

Significant Wildlife Habitat Recommendation 3: It is recommended that Lot 12 be rehabilitated for wildlife use by laying down 20 cm of stockpiled berm soils and planting a commercial pasture seed mix. It is also recommended that the site be allowed to succeed naturally to shrubland, and then to woodland and that human access to the site be restricted by fencing.

3.3 CULTURAL HERITAGE RESOURCE STAGE 1, 2, 3 ARCHAEOLOGICAL ASSESSMENT

A Stage 1 Archaeological Assessment was conducted, including field work on September 24, 2010. No registered archaeological sites were found within 4.5 kilometres of the area however, two features indicating archaeological potential were found. The limestone escarpment in the southern portion of the study area forms the northern edge of the Collins Creek valley and was once a paleo-shoreline. Additionally, a secondary stream feeding into Collins Creek is located adjacent to the southeast corner of the subject property. The Ministry of Tourism and Culture Standards recognize these types of land formations as indicators of significant archaeological potential and therefore required a Stage 2 assessment.

The entire subject property was assessed through a Stage 2 test pit survey at 5m intervals except for an area of standing water in the north and a steep slope on the south. Four archaeological sites were identified, all along the southern edge of the property. These consisted of a lime kiln (BbGd-59), a foundation (BbGd-60), a small Native site (BbGd-61) and a nondomestic activity area (BbGd-62). The small Native site was determined to be an isolated findspot which did not require further archaeological investigation. The other three sites were all of an industrial (non-domestic) nature and appeared to date to the mid to late nineteenth century. They may possibly have been connected to the Kingston and Pembroke (K&P) Railway that ran along the southern edge of the property and was incorporated in 1871. The sites were found to have cultural heritage value and required a Stage 3 archaeological assessment to determine their limits and to further understand their nature. The remainder of the property was found to have no archaeological resources and is considered to have been cleared of all archaeological concerns.

A Stage 3 archaeological assessment was carried out consisting of excavation of 1m² units on a 10m grid centered around the positive Stage 2 test pits and the foundations, with additional units amounting to 40% of the grid unit total placed in areas of interest. The Stage 3 archaeological assessment adhered to the requirements of the 2011 Standards and Guidelines for Consultant Archaeologists.

Lime kilns were once an integral part of the cultural landscape in Eastern Ontario, making use of the shallow underlying limestone bedrock to create a multifunctional product. Lime kilns in eastern Ontario were often crudely constructed, built for a temporary but specific purpose and then abandoned. Few have been archaeologically excavated. As the lime kiln at BbGd-59 and BbGd-62 is relatively well constructed and well preserved, it should continue to be preserved.

The Albertson Foundation, especially taken in conjunction with the kiln and the railway, represents a light industrial use of the landscape of rural Ontario that is not often encountered in the archaeological record. Thus the foundation is considered to be a relatively rare archaeological site and is considered to have cultural heritage value.

The following recommendations were made in the archaeological assessment in regards to BbGd-59, 60 and 62:

- The lime kiln site at BbGd-59 and 62 and the Albertson Foundation site at BbGd-60 should be considered to have cultural heritage value and is recommended for Stage 4 mitigation.
- Avoidance and protection of the site is the preferred option for mitigation.
- If protection and avoidance are not viable for BbGd-59, 60 and/or 62 then the site or portions of the site will require Stage 4 mitigation through excavation and documentation in order to allow whatever subsurface impact that is anticipated by development to proceed.
- If avoidance and protection is chosen as the option for dealing with the archaeological site or portions of the site, it will be necessary to put in place a long term protection strategy for the site. There are two general approaches to this, either to protect the site and its 10m buffer alone or to

put in place a broader protected area within which the site and its 10m buffer is contained. In the case of the “site only” approach it would be necessary to accurately survey the site limits, including a 10m buffer zone, and have this put on the registered plan for the property as a separate part(s) with an associated proscriptive zoning and a restrictive covenant placed on title. This is the option chosen by the proponent for long term site protection

- In the case of avoidance and protection the local approval authority (City of Kingston) should acknowledge their concurrence with the avoidance and protection measures and commit to the application of the proscriptive zoning.
- All on-site construction crews, engineers, architects or others must be issued “no-go” instructions regarding the archaeological site and the proponent must prepare a letter acknowledging the site and committing to its long term protection.
- The location of the area to be avoided must be shown on all contract drawings when applicable, including explicit instructions or labelling to avoid the site. Construction phase fencing should be erected around the buffer zone if construction in the vicinity of the site is necessary.
- If construction is to occur in close proximity to the buffer zone this must be inspected and monitored by a professional archaeologist and a report submitted to the Ministry of Tourism, Culture and Sport documenting the effectiveness of the avoidance strategy in ensuring that the area to be avoided remains intact.

To protect Albertson Lime Kiln (BbGd-62), Albertson Foundation (BbGd-60) and Donavan Lime Kiln (BbGd-62) these three significant archaeological sites are noted on the site plans, and the quarry license area set back from them. Cruickshank surveyed each site, including a 10 m buffer, and is seeking zoning for their protection. The sites are protected under Section 48 of the Ontario Heritage Act R.S.O.c.O.18.

3.4 NOISE ASSESSMENT

An Acoustic Assessment was carried out according to the applicable Ministry of Environment and Climate Change (MOECC) Noise Assessment Guidelines, including NPC-300, published August 2013. The assessment considered the impacts on nearby noise sensitive land uses (residences) of noise generated by all on-site equipment operations, including extraction operations, aggregate processing operations, asphalt production, loading and vehicle movements. The noise and vibration impacts of blasting were considered in the blasting study (see below).

Although the ARA license application and Municipal approval process refer only to the expansion area (in Lots 12 and 13), the acoustical assessment considered noise sources from both the existing and expansion areas, as is appropriate under MOECC guidelines. Assessment included both current and future operations of the expanded quarry.

Noise impacts were predicted and compared to the MOECC sound level limits as set out in NPC-300. Where applicable, noise mitigation measures such as berms were included in the assessment to ensure all operations will be in compliance with the applicable sound level limits.

The following noise mitigation measures were recommended as a result of the acoustical assessment:

1. The operation of the Portable Crushing and Screening Plant (Crusher), may take place only during the daytime period (07:00 – 19:00)
2. The operation of a Standard Hydraulic Rock Drill (Drill), may take place only during the daytime period (07:00 – 19:00)

3. The operation of a Low Noise Rock Drill, such as the Atlas Copco SmartRig ROC D9C or similar, may take place only during the daytime period (07:00 – 19:00) anywhere in the extraction area, above or below grade.
4. The operation of the Wash Plant, may take place only during the daytime period (07:00 – 19:00), and is to be located below grade.
5. The operation of the Asphalt Plant and associated equipment, may take place on 24 hour basis.
6. The loading and shipping of Asphalt and Aggregate product using Highway Trucks, may take place on a 24 hour basis (24 hour). A maximum of two (2) Loaders may be in operation concurrently during the evening and nighttime period (19:00 to 07:00).
7. When operating on-site, Highway Trucks shall not exceed 20 kph and shall not use compression braking (Jake Brakes).
8. Noise Barriers or berms are to be provided as indicated in the assessment.
9. Noise barriers shielding portable equipment may be progressively established to provide shielding from location of operation to the identified noise sensitive point of reception (POR).
10. Noise barriers or berms are to be solid, having no gaps, and are to have a surface density of no less than 20 kg/m²
11. Portable construction equipment used for site preparation (e.g. land clearing and construction of berms) and rehabilitation shall comply with MOECC Publication NPC- 115, Construction Equipment, August 1978. (This publication gives noise standards to be met by construction equipment in Ontario.) Site preparation and rehabilitation activities shall take place only during daytime hours (07:00 – 19:00).
12. If a new process is introduced to the site, then this process shall be assessed by a qualified acoustical consultant as soon as possible after commissioning. Noise mitigation measures shall be reviewed, and altered if necessary, to ensure that MOECC sound level limits are met at all points of reception.

3.5 BLAST DESIGN REPORT

The Blast Impact Analysis report assessed the impact of blasting, and blast induced noise and vibrations on surrounding third party receptors. The report also recommended a site specific “Blast Design” for the proposed quarry. The blasting study considered how the quarry will advance in lifts extracted from east to west, and that drilling and blasting operations will be carefully controlled during the proposed production phases to ensure that no damage occurs to nearby third-party buildings or structures and the natural environment.

Vibration prediction calculations for various standoff distances were carried out based on the worst-case blast parameters scenario and the MOECC vibration and overpressure guidelines for blasting in mines and quarries in the province of Ontario. The resulting calculations indicated that the blasting operations can be carried out safely for all phases of the operations, provided the following recommendations are implemented:

- As it is implied by the regression equations, the most critical factors in controlling the vibrations, and to a lesser degree, overpressure levels from blasting is the distance and the maximum amount of explosives per delay period since the predicted PPV and PSPL are directly proportional to the weight of explosives and inversely proportional to the distance. Since the distance cannot be

changed from a given blast, one can reduce the amount of explosives per delay period to maintain the vibration levels below the acceptable levels. Reducing the amount of explosives per delay period can be achieved by implementing combination or any one of the following measures:

- Reducing the blast-hole depth by a reduction in the bench height,
 - Using multiple deck charges within the same blast-hole, and
 - Reducing the blast-hole diameter with appropriate drill pattern.
- As indicated by the regression curve, provincial guidelines may be complied with when blasting occurs beyond 250 m from the closest inhabited building if blasting procedures remain the same as those being employed at the present Elginburg Quarry. When blasting approaches to within the 250 of receptors, change to the procedure may be required in order to adhere to the provincial guidelines and regulations.
 - All blasts should be monitored for both vibration and overpressure (noise) at the closest building adjacent the site with digital seismographs preferably by a third-party consultant. Compilation of the initial vibration and overpressure data can be used to plan subsequent blasting operations. This will also allow subsequent blasts to be designed specifically for this location and well within MOECC guidelines. All subsequent blasts shall also be monitored by the quarry operator at the closest building to the blast site.
 - The seismograph(s) should be self-triggering units capable of printing a complete waveform for blast overpressure and blast vibrations in three orthogonal directions (Instantel Digital Seismograph or equivalent).
 - Detailed blast records should be maintained.
 - Blasting procedures such as drilling and loading should be monitored or audited on an occasional basis by an independent blasting consultant to ensure full compliance with governing guidelines and regulations.

4. AGRICULTURAL CLASSIFICATION

Using the Canada Land Inventory Classes, the agricultural classification of the proposed site indicates that the site has a low capability to support agricultural land use activities. According to the Stage 2 archaeological report, the soil over all of the development property consists of Farmington loam (FI), a well-drained calcareous stony loam till, generally favorable for farming. Although the soil is suitable, the depth of it is not conducive to good farming conditions. With shallow bedrock, the soils over the entire study area are classed as 6R –Class 6 being soils that are only capable of producing perennial forage crops (such as pasture) and cannot be improved primarily because the terrain is unsuitable for farm machinery; and subclass R being soils where solid bedrock is less than one metre below the surface.

5. TRAFFIC CONSIDERATIONS

IBI Group was retained by Cruickshank to prepare a traffic review for the proposed quarry expansion. The following is a summary of the IBI Group (2013) report:

The entrance to the quarry is from Unity Road. Once the expansion is complete, the entrance to the site from Unity Road will remain the only operating access. Unity Road is a two lane rural road running east/west and is about four kilometers north of Highway 401. The traffic from the site is generated from three sources operating on the site: the Cruickshank Elginburg Quarry, the Cruickshank Kingston Asphalt Plant, and the St. Mary's Cement Plant. All will maintain their current operations after the expansion.

It was concluded that the traffic speed on Unity Road should not create significant conflicts with anticipated site traffic. There are also no significant obstructions to sight lines for vehicles exiting the site. In addition, the current entrance layout features (slip-by lane, right turn lane) on Unity Road is consistent with a design speed of 70 to 80 km/h, but is less than the 100 km/h design speed anticipated for Unity Road.

The future traffic volumes generated by the quarry were projected based on the estimated increase in production of the quarry. The current two way traffic on Unity Road is about 2200 AADT (annual average daily traffic). Westbound traffic by the site is estimated to be in the order of 1000 AADT with approximately 15% truck traffic. It is estimated that the eastbound traffic will be in the order of 1200 AADT with approximately 15% truck traffic. 100-200 trips per day are generated by the site, depending on the time of year. August is the busiest month, with 300 trips per day. Once the quarry expansion is complete, there could be an increase to 150-300 trips per day with 450 trips per day in August. The future traffic should represent 7-14% of the AADT on Unity Road.

6. REHABILITATION

Details of the progressive and final rehabilitation are included in Page 4 of 4 of the Site Plans.

6.1 PROGRESSIVE REHABILITATION

Progressive rehabilitation will start at the east side of the site and continue to the west as conditions permit. The area to be disturbed will be kept to a minimum. Overburden will be used for sloping the side of the quarry at approximately 2:1. Clean fill materials may consist of a combination of concrete, stone, rock, clay fill, and loamy silty clay from off site. If waste rock is used as a base, available overburden and topsoil will be used on the slopes to provide a surface that will grow vegetation. All available on-site topsoil will be used to top-dress the rehabilitation surface. In order to prevent erosion, the vegetation will be seeded with non-maintenance grasses. The sides will be rehabilitated by sloping the faces to a maximum 2:1 slope down to 3 m below the expected water level with stored overburden, waste rock or other approved inert material. Progressive rehabilitation will be implemented as soon as quarrying operation permit it. If there is insufficient overburden to rehabilitate the property, material meeting the definition of “inert fill” may be brought onto the site to assist in the rehabilitation.

6.2 FINAL REHABILITATION

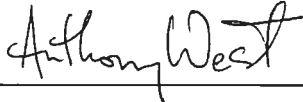
Once quarry operations are complete, and progressive rehabilitation been performed on all slopes, the bottom of the quarry will be allowed to fill with water and lakes will form, north and south of the pipeline. The lake north of the pipeline will fill to an expected elevation of 125 m ASL, and will flow beneath the pipeline either as surface water via the existing culvert on the east side, or as groundwater through the weathered upper part of the bedrock pillar. This water will enter the lake south of the pipeline. This lake is anticipated to fill to expected elevation of 110 m ASL, where water inputs will be in equilibrium with outputs (mainly evaporation and groundwater recharge). There is not anticipated to be overland flow from the lake south of the pipeline.

Since the part of the quarry in Lot 12 will only be extracted to 115 m ASL this part of the quarry floor will remain above the water table. Here, the quarry floor will be rehabilitated with 20 cm of stockpiled berm soils and planting a commercial pasture seed mix. This will allow this part of the rehabilitated quarry to succeed naturally to shrubland, and then to woodland as recommended by the Natural Environment report.

There will be no buildings or structures on site following final rehabilitation except for the electrical transmission towers. Permanent access roads to the towers will be provided either as native rock or re-established after quarrying.

6.3 CLOSURE

This Summary Statement has been prepared by the undersigned.



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