

**Report of the Combined Aggregate Review Team  
(CART):  
Review of the Waterford Sand and Gravel Extension**

**February, 2018**

**Report of the Combined Aggregate Review Team (CART) –  
Review of Waterford Sand and Gravel Quarry Extension  
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## **1.0 Introduction**

Waterford Sand and Gravel has applied for an amendment to the Rural Hamilton Official Plan and City of Hamilton Zoning By-law No. 05-200 to permit an extension to the approved Vinemount Quarry. Waterford has also applied for a Category 2, Class A license under the *Provincial Aggregate Resources Act* (ARA) to permit the quarry extension. The total area proposed to be licensed is 45.2 ha, with the proposed extraction limited to 37.7 ha. The license application is for a 6 day a week operation with a 900,000 tonnage limit for all quarries. The total amount of aggregate to be extracted is 22.0 million tonnes. The proposed quarry extension would operate below the water table, meaning that dewatering activities would occur. The extension is proposed to operate in 3 phases. At the end of the extraction period anticipated to be approximately 25 years, the existing and proposed quarry will be turned into a lake.

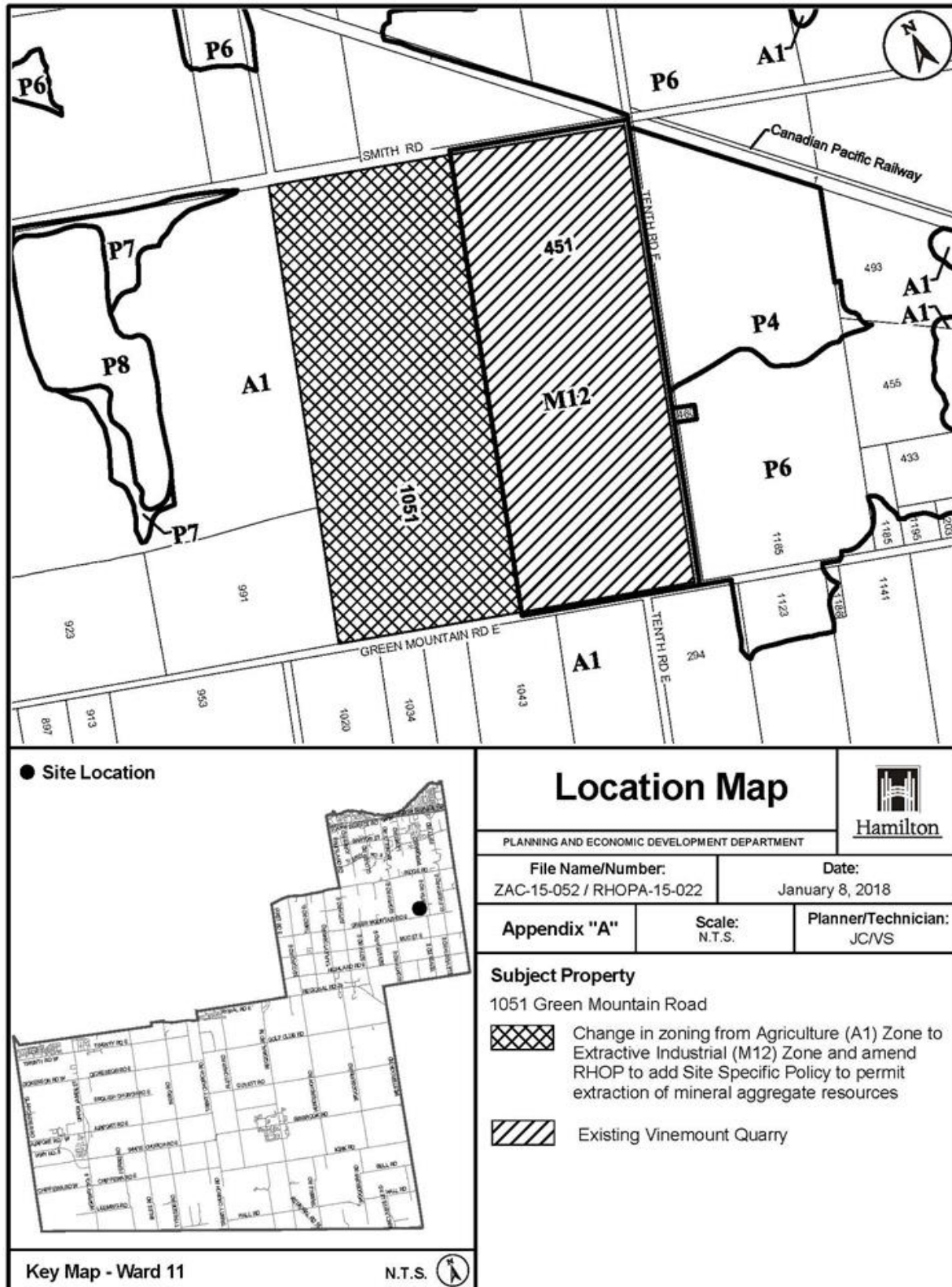
A Combined Agency Review Team (CART) was formed to assist in the review of the applications. The CART process has been successfully used in previous quarry applications that the City has reviewed. The CART was comprised of staff from several City departments and divisions (Planning and Economic Development Department, Planning Division; Source Protection Planning, Hamilton Water, Public Works Department; Health Protection Division, Public Health Services; and Development Approvals, Growth Management), as well as staff from the Niagara Peninsula Conservation Authority. Provincial staff, including from the Ministry of Environment and Climate Change (MOECC) and Ministry of Natural Resources and Forestry (MNR), were kept informed of the CART process and peer reviews, but did not participate as members of CART. Rather than have each agency with an interest in the proposed quarry conduct its own technical reviews, the CART process provides an opportunity for the agencies to be represented on a team that retains expert peer reviews, at the proponent's expense. The CART approach provides a forum for the agencies to share views and perspectives on the applications, and a shared technical resource in the peer review team that they can draw from in reaching their independent positions and decisions.

Significant supporting studies have been prepared by the applicant and were submitted in support of the applications, including the following:

- Planning Summary Report Vinemount Quarry Extension;
- Natural Heritage;
- Water Resources;
- Noise;
- Air Quality;
- Blasting and Vibration; and,
- Built Heritage and Archaeology.

The above noted studies have been reviewed by City staff and members of the Combined Aggregate Resources Team (CART). In addition, peer reviews have been

completed of the Water Resources, Noise Assessment, Air Quality Assessment, and Blasting and Vibration Assessment. A complete summary of these studies and peer review results is included herein.



## **2.0 Natural Heritage**

1. Overview
2. Natural Heritage Features (Existing Conditions)
3. Potential Impacts
4. Mitigation and Monitoring
5. Conclusion

### **Overview**

Natural heritage includes the natural features, such as woodlands, wetlands, and streams, the fish and wildlife that occupy these areas, and the ecological functions (e.g. clean water, biodiversity, flood control) that they provide. Natural heritage also relates to the landscape, soils, geology, air, and water, and how they interact to create an ecological system that supports life.

This section of the report includes a summary of the existing information on the site and the surrounding area, which may be affected by the quarry extension. It also includes a discussion of the potential impacts and mitigation and monitoring measures.

The main sources of information used for assessing natural heritage were:

- Dance Environmental EIS and Level 1 and 2 Natural Environment Technical Reports for the Proposed Vinemount Quarry Extension, Stoney Creek;
- Aquatic Resource Inventory Assessment, WSP Canada, July 2015;
- Dance Environmental Response to City of Hamilton Letter of 15 December 2015, dated February 4, 2017;
- January 30, 2017 letter from IBI Group regarding Follow-up Aquatic Samples;
- May 1, 2017 letter from IBI Group responding to ESAIEG Recommendations;
- Nature Counts, 2003 Inventory of Natural Areas in Hamilton, completed by the Hamilton Naturalists' Club;
- Hydrogeology and Hydrology Technical Report by Golder Associates; and,
- Rural Hamilton Official Plan (RHOP).

Since the natural features on and adjacent to the site were not highly sensitive or extensive, it was agreed that it was not necessary to retain a consultant to peer review the EIS. Instead, the Niagara Peninsula Conservation Authority (NPCA), Ontario Ministry of Natural Resources and Forestry (OMNRF), City of Hamilton, and the Environmentally Significant Areas Impact Evaluation Group (ESAIEG) reviewed and

provided comments. ESAIEG reviewed the Dance Environmental EIS at its meetings on July 14, 2016 and September 8, 2016.

Field studies were completed by Dance Environmental from February to October, 2014 to identify amphibians, fish (electrofishing), plants, snakes, breeding birds, Ecological Land Classification (vegetation communities), incidental wildlife observations, aquatic habitat assessment, crepuscular bird survey (Common Nighthawk and Eastern Whip-poor-will), winter raptors and owls and acoustic bat surveys.

The proposed extension lands contain a variety of habitats, including deciduous forests, a pond, streams, thickets, meadow, agriculture, and hedgerows.

### **Natural Heritage Features**

#### **Physiography**

The site is within the Haldimand Clay Plain physiographic region, which is generally flat, and is located approximately 3 km from the Niagara Escarpment. The ground elevation within the proposed extension is stepped, and the Eramosa scarp separates the two steps at 192 and 197 metres above sea level (masl).

On site, shallow bedrock is overlain by 1 to 5 metres of overburden between the Vinemount Moraine and the Eramosa Scarp. There is no evidence of significant karst features on the extension lands.

#### **Hydrology**

A Level 2 Hydrogeological Study, dated September 14, 2015, was prepared by WSP. Groundwater monitoring wells (continuous data loggers) were installed to monitor baseline water levels. Additional monitors were added later, adjacent to Vinemount South Swamp Complex (VSSC), at the request of NPCA and OMNRF. Groundwater flow is from west to east, consistent with surface flow along Forty Mile Creek.

Since water levels in 87 Acre Pond (within the Vinemount Quarry ESA to the east of the existing quarry) are being maintained despite its proximity to the active quarry, WSP concluded that the quarry has a limited draw-down cone and, as a result, is not affecting the groundwater conditions in the surrounding ESAs. Surface water features are separated from deep groundwater by low permeability clay at the top of the Vinemount shale.

### Streams and Watersheds

The proposed quarry extension is located within the Forty Mile Creek watershed, which is within the jurisdiction of the NPCA.

### On-Site Natural Heritage Features

The proposed quarry extension is located within the Greenbelt Plan Protected Countryside, with the northern portion within the Natural Heritage System. The Hamilton Rural Hamilton Official Plan (RHOP) shows the following Core Areas on the Vinemount Quarry property:

- Woodland;
- Earth Science Area of Natural and Scientific Interest (ANSI); and,
- Stream.

A Woodland was identified by the City of Hamilton in the vicinity of the old quarry (the former quarry is shallow – 3 -4 m deep and approximately 13 ha in size and operated after 1954) on the extension lands which was in operation in the 1800's.. The EIS concluded that it did not meet the criteria for Significant Woodland and milk snake has been delisted as a Species At Risk. OMRF has advised that since the woodland may serve other life cycle functions for the snakes using the hibernaculum, the woodland would contribute to Significant Wildlife Habitat. Based on this, OMNRF recommended treating the woodland as significant, but not considered highly sensitive because it did not meet the minimum of two criteria originally noted which included: 1) proximity to a water source and 2) habitat for a Species of Concern, Eastern Milksnake. This is because, subsequent to original assessments that were conducted, Eastern Milksnake was delisted as a species of concern, and Dance Environmental advised that no other rare species were observed in the woodlot. Planning staff confirmed that the woodlot no longer met the criteria as “significant” or “highly sensitive”.

The Earth Science ANSI was identified for the rock cut of the active face of the existing quarry.

The tributaries of Forty Mile Creek have been channelized and run around the northern and western boundaries of the existing and proposed quarry site and are regulated by NPCA. Forty Mile Creek is a losing stream and a flashy system, which dries out most summers. It provides habitat for a number of tolerant fish species. An intermittent

tributary in the southwest corner of the extension site has been proposed for realignment.

In addition to the Core Areas identified in the RHOP, field studies completed for the EIS determined that the extension site contains:

- Significant Wildlife Habitat – Raptor Wintering Area - Wintering Raptors were found on the berm along the northern boundary of the quarry and proposed extension and in the surrounding marsh and meadow habitat off site;
- Significant Wildlife Habitat – Snake Hibernaculum - A small, abandoned quarry on the extension lands provided a hibernaculum for three species of snakes;
- Significant Wildlife Habitat - Open Country Bird Breeding Habitat – Grassland birds (species at risk and locally rare species) were found breeding on the berms within the existing and proposed quarry and off site;
- Habitat for Bobolink and Eastern Meadowlark, threatened species regulated by the *Endangered Species Act*, 2007;
- Portions of the site contained habitat for Monarch butterfly (milkweed plants); and,
- An on-site pond called West Pond.

#### Off-Site Natural Heritage Features

The following Core Areas are identified in the RHOP, adjacent to the proposed quarry extension:

- Vinemount South Swamp (Provincially Significant Wetland, Environmentally Significant Area, and Significant Woodland) to the west;
- Saltfleet Northeast Woods ESA to the north; and,
- Vinemount Quarry ESA to the east.

Vinemount South Swamp is a 169-hectare natural area which contains interior forest habitat, provides habitat for significant plant and wildlife species, contains rare vegetation communities, and provides significant hydrologic functions. It is located to the west of the proposed quarry extension.

Saltfleet Northeast Woods ESA is approximately 77 hectares in size and contains meadow and deciduous forest communities which provide habitat for significant plant and wildlife species.



Vinemount Quarry ESA includes the City-owned lands (87-Acre Park) and an abandoned quarry pond, just to the east of the existing quarry. It is 38 hectares in size and includes significant earth science bedrock exposures and provides habitat for grassland birds and migrating waterfowl.

### **Potential Impacts**

The main potential impacts from the proposed quarry extension include:

- Blasting noise which may affect wildlife;
- Surface and ground water loss from surrounding natural features to the Quarry;
- Loss of the Significant Woodland:
- Removal of habitat (meadow, thicket, woodland, snake hibernaculum);
- Impacts to birds nesting within the existing quarry (Peregrine Falcon, Common Raven, and Bank Swallow); and,
- Impacts to Species at Risk (Barn Swallow, Eastern Meadowlark, and Bobolink).

Vinemount Quarry typically does 10 to 14 blasts per year, from March to December; there is never more than one blast on a given day. Since blasting is already occurring on site, this is not considered a new impact. The EIS noted that wildlife may be startled by blasts, but they quickly resume their activities. Some species may become habituated to blasts. It is expected that wildlife present will continue to use the site.

Agencies were concerned about the effect that quarry extension and dewatering could have on the adjacent natural areas, including Vinemount South Swamp and Vinemount Quarry ESA. Surface water features are separated from deep groundwater by low permeability clay at the top of the Vinemount shale. Since water levels in 87-Acre Pond (located within Vinemount Quarry ESA to the east of the existing quarry) are maintained despite its proximity to the active quarry, WSP concluded that the quarry has a limited draw-down cone and, as a result, is not affecting the groundwater conditions in the surrounding ESAs. NPCA and OMNRF were satisfied with this conclusion, but monitoring will be required.

Significant cliff-nesting bird species (Peregrine Falcon, Common Raven, and Bank Swallow) are breeding on the west face of the existing quarry wall. These bird species are known to successfully nest at active quarry sites. Since the quarry extension will require removal of the west face, efforts will be made to attract the birds to another location within the quarry where extraction will not occur. For example, a nesting platform has been placed on the east quarry wall to encourage the Peregrine Falcons to

nest there. Also, benches / rock shelves could be installed near the top of the final quarry wall above the high-water line to attract these species after the quarry has been completed and rehabilitated.

OMNRF advised that since the total amount of Bobolink and Eastern Meadowlark habitat is less than 30 hectares, the proposed removal of this habitat must be registered under the *Endangered Species Act*. A Habitat Management Plan will need to be prepared and implemented as a requirement of the registration and exemption process with OMNRF.

### **Mitigation and Monitoring**

Mitigation measures to address potential impacts to natural heritage features and functions include:

- Silt control fencing and inspection;
- Timing windows to avoid impacts to fish and breeding birds;
- Setbacks from Forty Mile Creek and ESAs (which range from 34 to 44 metres);
- Continued discharge of water from the quarry into Forty Mile Creek;
- Creation of new snake hibernaculum and one hectare of woodland;
- Creation of an ecological linkage between the new hibernaculum and the Vinemount South Swamp ESA to the north;
- Management for cliff-nesting birds;
- Dust management plan;
- Temporary plantings and pond habitat on the quarry floor;
- Placement of Peregrine Falcon nest boxes;
- Restoration of disturbed and new berms ; and,
- Management of adjacent Vinemount Meadows Sanctuary for grassland birds and pollinators.

Groundwater levels in the swamp will be monitored to determine if there is any impact on the vegetation or wildlife in the swamp. The NPCA has approved the 'Monitoring Program for the Vinemount-South Swamp: Understorey and Vernal Pool', (dated October 17, 2016) which will be undertaken by an ecologist. Two years of base line monitoring will be followed by on-going monitoring in three year intervals. If quarry dewatering is found to be causing negative impacts to the flora and fauna, remedial action will be initiated. If required, these actions will be done in collaboration with Niagara Peninsula Conservation Authority (NPCA) and include surface water being added to the swamp water balance.

Waterford Sand and Gravel is working with the OMNRF to re-create a new snake hibernaculum on lands to the west of the proposed expansion (991 Green Mountain Road). If the hibernaculum is not successfully created and utilized by snakes, the existing hibernaculum (within the Phase 3 lands) cannot be removed. When the OMNRF determines the replacement hibernaculum site has been functional for three years and the old hibernaculum is decommissioned, extraction within this phase may proceed.

Since the Significant Woodland is to be removed, OMNRF recommended compensation tree planting near the new hibernaculum site. The Rehabilitation Plan now includes one hectare of restored woodland near the new hibernaculum.

Waterford has committed to continuing the ecological habitat enhancement on lands that they own to the north of the subject site. Waterford has partnered with the Hamilton Naturalists’ Club (HNC) to develop the “Vinemount Meadows Sanctuary”, a 26-hectare former agricultural field which is being restored to meadow (grassland bird and pollinator habitat). These lands include important existing grassland bird habitat and 6.6 hectares of agricultural land to be restored. The public will be able to access the site, which will also benefit breeding birds, wintering raptors, reptiles and amphibians, insects and mammals.

Removal of habitat within the extension site is being mitigated by expanding the habitat within the berms (from 4 metres wide to 7 metres wide), planting clusters of vegetation and creating two small ponds on the existing quarry floor to provide temporary habitat. Habitat surrounding the site will be improved by restoration and adding habitat structures (bat roosts and maternity structures and Purple Martin nesting house).

### **Conclusion:**

The natural heritage features and functions on and adjacent to the proposed Vinemount Quarry extension were assessed by Dance Environmental in a Natural Environment Technical Report, dated August 28, 2015. A Level 2 Hydrologic Study (WSP) and an Aquatic Resource Inventory Assessment (WSP) were also reviewed by staff of the City, NPCA, OMNRF, and ESAIEG.

Through the mitigation and monitoring measures provided in the Site Plan Notes, the City of Hamilton is satisfied that the issues related to natural heritage features and functions have been addressed.

### **3.0 Water Resources & Hydrogeology**

Cambium Inc. (Cambium) was retained by the City of Hamilton to provide a technical peer review of the supporting documentation for a proposed expansion of the existing Vinemount Quarry. The peer review focussed primarily on the report titled *Vinemount Quarry Extension, Level 2 Hydrogeological Study* completed by WSP Canada Inc. (WSP) in 2015 (hereafter referred to as the *Hydrogeological Study*). This summary provides an overview of the issues identified in the peer review and how these issues were resolved with the proponent and WSP. Additionally this summary includes comments from other interested parties and the resolutions provided by the proponent and WSP.

The existing quarry (owned by Waterford Sand & Gravel Limited, hereafter referred to as WSG) is located in Lot 5, Concession 5, former Township of Saltfleet in the City of Hamilton and occupies a footprint of approximately 40 hectares. The proposed extension will allow for the extraction of bedrock material on the adjacent property to the west of the existing quarry on Lot 6, Concession 5. Upon approval the expansion lands will be included into the extraction at the current quarry and will not be excavated as a separate quarry, but rather as an extension of the existing excavation. The extension lands cover an area of approximately 40 hectares, there-by doubling the footprint of the current operations (approximately). Extraction in the proposed extension will not extend deeper than the Decew Formation, ~181 metres above sea level (mASL) in the northwest and deeper to the south and east, due to the presence of low quality bedrock source (from an aggregate product perspective) found at depth. The current quarry is developed below the groundwater table, therefore to maintain dry working conditions the excavation is dewatered under Permit to Take Water (PTTW No. 3221-5VVN7L). The extended quarry will be dewatered by the current dewatering infrastructure and it is anticipated that the current PTTW should be able to encompass the addition dewatering volumes. In this summary reference made to the “Site” indicates those lands encompassed by the current excavation and the proposed extension lands.

The Site is located within the Haldimand Clay Plain, between two east-west trending moraines (the Vinemount Moraine and the Niagara Falls Moraine). The Site is also located within the Forty Mile Creek subwatershed, just east of the drainage divide with the Stoney Creek subwatershed. The Eramosa bedrock escarpment is a predominant feature in the area of the Site and creates two relatively flat lying steppes within the proposed extension lands (the lower, more northern steppe occupying the majority of the extension lands footprint). Agricultural lands surround the Site in addition to several Environmentally Sensitive Areas (ESAs) including, the Vinemount Quarry (87–Acre Park), Saltfleet Northeast Woods and Vinemount South Swamp (which includes the

woodlot / wetland complex in Lots 7 and 8, Concession 5). Two branches of the Forty Mile Creek flow through / adjacent to the proposed extension lands. Currently the Forty Mile Creek has been diverted around the Site via a series of berms and ditches and reconnects with the original creek bed just south of the northeastern corner of the existing quarry (WSP Canada Inc., 2015).

The supporting documentation has been reviewed by several different agencies and City staff. Outlined below are the major issues and resolutions reached by the proponent. The list below begins with the issues raised from the peer review completed by Cambium. The issues raised from other agencies and City staff are discussed in the subsequent sections.

#### Issues Raised from the Cambium Peer Review

The peer review completed by Cambium (dated February 22, 2017) outlined several issues regarding the Hydrogeological Study. Many of the issues raised by Cambium were resolved through a subsequent letter by WSP dated June 19, 2017. The noteworthy issues and their resolutions have been outlined in the following sections.

#### Potential Impacts to the Vinemount South Swamp Complex

The Vinemount South Swamp Complex falls within the projected radius of influence of the dewatering that will occur in the proposed quarry extension. WSP had previously installed piezometers in the area of the Vinemount South Swamp Complex and, upon review of the data generated by those piezometers Cambium concluded that a portion of the swamp may be groundwater fed (however, data generated from these piezometers were not reliable from a surface water / groundwater interaction perspective due to their construction).

Since the Vinemount South Swamp Complex may be partially groundwater fed, and that it falls within the projected radius of influence of the proposed extension there is a possibility that the swamp will be impacted from the development of the extension. As such Cambium recommended that WSP complete a pumping test on the western extent of the proposed extension to simulate the dewatered conditions of the proposed quarry extension. WSP agreed to complete a pumping test, the results of which are outlined in the section below, entitled “Pumping Tests”. The pumping test did not adequately represent the effects of dewatering from the quarry. The long term pumping test did influence a drawdown in the shallow bedrock near the swamp complex. Two new piezometers were installed in the swamp complex and had drastically reduced precipitation influenced head fluctuations than the early piezometers, indicating a much

better seal. These two piezometers had no observable impacts from pumping and as such indicate that there is little concern for under draining from the quarry dewatering.

### Extraction Depth

The extraction depth of the proposed expansion should be restricted to the top of the Decew formation, instead of a pre-determined depth. This will reduce the possibility of extracting lower quality material (which had happened in the existing quarry). WSP determined the elevation of the Decew formation from the new pumping well and monitoring wells, and has suggested this contact is at elevation 181 mASL at the northwest extent of the proposed excavation area.

### Groundwater Declines in Deeper Aquifer Systems

Cambium indicated that groundwater declines have been observed in the deeper aquifer systems found in the area, possibly as a response to the existing operations. WSP agreed to monitor the water levels in the deeper aquifer system. The results of the pumping test are outlined in the Pumping Test discussion below. The pump test included a new monitoring well screened in the deeper unit and the pump test monitoring did not suggest an influence to the deeper system.

### Pumping Test

A pumping test report was provided by WSP documenting the methodology and observations of a pump test program that included the installation of two new well monitoring locations, two new drive points in the swamp complex, and a single pumping well. The pumping included a stepped drawdown test that concluded the optimal pumping rate and indicated a poor well efficiency, suggesting the available groundwater in the upper bedrock aquifer and its inflow to the well was limited by the well construction or placement. As such the pumping was a poor indication of dewatering influences expected from the quarry dewatering. The pumping test proceeded for 212 hours, nearly 9 full days, with three interruptions due to equipment malfunction. The pumping rate was a nominal 13.3 L/min, equating to a cumulative pumping volume of roughly 160 m<sup>3</sup> over the 8+ days of pumping. The drawdown effect was reported as a circular cone of influence, however the figures indicated a preferential drawdown in the east-west direction, stemming from the observed drawdown of ~20cm in a well ~340m east of the pumping well (BH 14-17) and a ~4cm drawdown in a well a similar distance south of the pumping well (BH 104). The distance – drawdown plot indicated a cone of influence ~ 224m while the report indicates a radius of influence in the ~400m range. Cambium believes the distance drawdown plot incorporates less than observed drawdown in monitoring wells given it uses the drawdown reported in Table 2.1 (WSP

Hydrogeological Study, 2015) and not the greater drawdown observed from Figure C-2 (WSP Hydrogeological Study, 2015) for the same monitoring wells (MW 14-17 and MW 15-17) and Figure C-6 (WSP Hydrogeological Study) for monitoring well BH 204. Considering the preferential elongation, which Cambium notes coincides with the earlier comments of an east-northeast – west-southwest trending regional joint pattern, coupled with the understated distance drawdown relationship suggests a higher potential for influence in the residential supply wells along 8<sup>th</sup> Road East than reported.

The time-drawdown plot for the pumping well appears to steepen through the course of the pump test while the distance drawdown plot appears to flatten in distance from the well. This suggests the radius of influence intercepted a barrier boundary. The existing quarry 440m to the east presents a plausible barrier and as such Cambium believes the barrier effect is due to the current excavation. This observation suggests the drawdown extends further once the barrier is intercepted as the potential for recharge from this direction is absent.

The effect may include a greater influence in those residential supply wells along Eight Road, East than originally reported. These wells are currently included in the monitoring and mitigation program and if such influences materialize, Cambium is of the opinion that the mitigation solutions will be adequate (well deepening, storage, etc) to maintain sustainable drinking water supplies.

The report suggests the isolation between the surface water (swamp complex and 40 mile creek) and the underlying bedrock is present as earlier presented, and Cambium believes the report adequately addresses these concerns.

#### 87-Acre Park

Cambium recommended that some of the existing wells in 87-Acre Park be monitored as part of the regular monitoring program. WSP agreed with this recommendation and will attempt to reach an agreement with the City of Hamilton to allow for monitoring on 87-Acre Park.

#### Issues Raised By Other Agencies and the City of Hamilton Source Protection

Other agencies and City staff provided comments on the supporting documentation of the proposed quarry extension including the Ministry of Natural Resources and Forestry (MNR), the Ministry of Environment and Climate Change (MOECC), City of Hamilton Source Protection Planning (SPP) and the Niagara Peninsula Conservation Authority (NPCA). The issues raised from each of these parties were relatively minor or were

resolved through subsequent discussions. Some of the resolutions to the issues raised included the following:

- WSP provided NPCA with the construction details of the Forty Mile Creek diversion and clarified well construction details for MW3c;
- WSP provided NPCA with additional details with regards to the water budget;
- WSP updated the bedrock topography map to include recent data; WSP clarified the how wetland features were determined and the extent of water level measurement data prior to extraction (as per MNRF comments); Additionally the stream hydraulics of Forty Mile Creek were discussed in more detail as per SPP comments;
- WSP clarified why the deeper aquifer systems can be monitored by only one well (since the system should not impact the deeper aquifer systems). As per SPP comments;
- The analytical parameters for the dewatering discharge were altered by WSP as per SPP comments; and,
- The MOECC indicated that the water well survey completed by WSP was not completed to the specifications of the “Technical Guidance Document for Hydrogeological Studies in Support of Category 3 Applications for Permit to Take Water”. However WSP considers the water well survey to be in compliance with the aforementioned document. Cambium agrees with WSP on this matter. In addition, Source Protection Planning and Public Health Services have no concerns.

### Summary of Quarry Effects

The MOECC, MNRF, SPP and NPCA initially outlined several issues associated with the proposed extension of the quarry. The issues raised included assumptions / calculations made with insufficient data or monitoring equipment, the extent of the groundwater monitoring program, the proposed extension falls within a Highly Vulnerable Aquifer Zone and mitigation measures pertaining to the Vinemount South Swamp Complex.

WSP indicated that since the publication of the Hydrogeological Study, seven (7) monitoring wells and three (3) drive points were installed west of the Site, and subsequently two new monitoring wells, two new drive points and one pumping well. The results of the installations indicated that downward gradients exist within the Vinemount South Swamp Complex (although Cambium interpreted the information differently, as outlined above). WSP provided clarification with regards to their assumptions / calculations and indicated that there is in-fact sufficient monitoring equipment installed at the Site, particularly in consideration of the new wells and the observed nil pumping effect on the new drive points.



WSP indicates that modelling is not required since the expansion will be almost identical to the current quarry, as such the existing conditions could be assumed to exist within the future development. The monitoring program was further clarified by WSP, that there should be no impact to the groundwater and surface water quality since the only threat to these systems would be spills of fuels or other chemicals (of which there are controls / best management plans in place).

Cambium considers the response of WSP to the comments of the above parties to be satisfactory and through the peer review by Cambium, members of CART are satisfied as well.

### Conclusion

Through the peer review by Cambium, the City of Hamilton is satisfied that appropriate mitigation measures to address surface and groundwater impacts have been identified and included in the updated monitoring and mitigation plan provided by WSP. Further, the improvements to the monitoring and mitigation plan will ensure that all potentially impacted wells will be included in the plans and that appropriate response to the well owner's concern will be provided.

#### **4.0 Noise**

Aercoustics Engineering Limited (Aercoustics) prepared a noise / acoustical assessment of the proposed quarry extension entitled “Proposed Vinemount Quarry Extension – Noise Impact Study” dated June 15, 2015. The noise predictions were conducted by Aercoustics and based on the predictable worst case noise impact for each of the aggregate quarry operation areas at each of the receptors. This represented a design case where the quarry is running at full capacity with all of the equipment operating simultaneously and at locations where noise impact is highest for each receptor. The majority of the time, work would be occurring in other areas of the site with lower associated noise impacts.

The Noise Study was peer reviewed by Jade Acoustics (Jade), dated December 20, 2016. In addition, they also reviewed the Operational Plan prepared by IBI Group, dated October 14, 2014. They found that the noise report was generally prepared in accordance with accepted Ministry of Environment and Climate Change (MOECC) procedures.

Jade’s comments and Aerocoustic’s responses are below:

- Clarification over the use of semi-permanent sound barriers such as stock piles which vary in height and width as material is being moved from the stockpile to trucks. Jade suggested that any mitigation proposed should maintain the same width / extent and height throughout the entire time of the specific operation that is being attenuated. While the use of stockpiles is acceptable on a limited basis, the preference is to use one of the other mitigation measures outlined in the report;

Aerocoustics Response: Generally, the use of local stockpile barriers surrounding a portable processing plant is a common and very effective method of controlling noise in aggregate operations, and they agree that at certain times and at certain sites, a stock At the subject quarry, this is not expected to be an issue for the following reasons:

- As the portable processing plant is repositioned during Phases 1 to 3 in the proposed extension area, it would be moved close to the south quarry face. This quarry face is expected to meet the acoustic barrier requirement at these times. The proposed top of the quarry face is more than 20 m above the proposed quarry floor elevation, which is 10 m higher than the required barrier height.

- While the portable processing plant is in an established location, the operator has confirmed that the required stock piles can be maintained indefinitely without difficulty. Further, the steady preservation of these large stockpiles has been proven during operation of the existing quarry operations. If for any reason a stockpile barrier must be depleted, the operator shall use stacked shipping containers to supplement the acoustic barrier.
- The portable processing plant area has stayed in the same general location for the last three years, and can be expected to be repositioned every four years. Equipment layout may be altered during that time but the general plant area and associated stockpiles would remain.
- The stockpiles can be generated at a rate of 25,000 tonnes per week. Therefore, the acoustic barrier requirements after relocation could be met within a few days or up to about a week, when "full buildout" is reached. As discussed above however, the quarry face should provide the required shielding during plant relocation, so stockpiles are not expected to be required during that time.
- Many of the receptors are located in areas considered to be Class 3 as defined by NPC-300. This requires that 30 m around the dwelling be assessed. It does not appear that the noise analysis has considered these receptors. Please clarify and update the analysis and mitigation measures, if necessary, if these locations have not been analyzed;
- Aerocoustics Response: Aerocoustics generally assumes that the plane of window at an upper story is the worst-case point of reception. Ground-level receptors at a distance of 30 m from the dwellings were modified per the reviewer's request. Aerocoustics confirmed the upper storeys were the worst case locations and all maximum predicted sound levels remained unchanged. Three of the receptors were single-storey dwellings and the 30 m setback distance increased the predicted sound level at one location (R06), during some Phase 3 scenarios, by 1 dB (from approximately 38 dBA to 39 dBA).
- Please explain why R07 and R07-2 are considered to be located in a Class 3 area while R011 which is directly adjacent to R07 and R07-2 is designated as a Class 2 receptor. The same explanation is required for R01 and R10. Based on the response, the analysis will need to be updated and the mitigation may need to be modified;

- Aerocoustics Response: The majority of the receptors in the area should currently be considered Class 2 because of the man-made activities which dominate the background noise, particularly receptors near busy roads and those close to the existing quarry operation.
  - However, since much (but not all) of the man-made noise, such as truck traffic and quarry operations, is generated by the existing quarry, and several of the houses were there first, it was decided to consider them "grandfathered" Class 3 receptors.
  - For the noise sensitive zoned lot (vacant lot) receptors R10 through R12, if a dwelling was constructed it should be considered Class 2 based on the current background noise environment. The maximum predicted sound level at these receptors satisfied both the Class 2 and Class 3 sound level limits, except for receptor R10.
  - To address R10 specifically, the sound levels predicted to be above the Class 3 sound level limits occur only during Phase 1 while the plant is still located on the existing Vinemount #2 Quarry property. Once the operation moves fully into the proposed extension lands, the predicted sound levels would be within the Class 3 limits.
- The Aerocoustic's report provides sound levels for the equipment to be used for the operation. Not all of the equipment was measured at the Vinemount quarries. Therefore, as the sound levels specified for each piece of equipment is part of the mitigation, a procedure needs to be in place to ensure that the equipment to be used will comply with these sound levels;
- Aerocoustic's Response: The reference sound levels for the proposed equipment are based on multiple measurements of equipment both at the existing site and at various other similar operations. The levels are considered conservative and allow for some wear and tear of the existing equipment. If a complaint situation arises in the future, the equipment should be measured then to confirm that it is consistent with the noise study.
- As the proposed extension of the quarry is moving closer to residences (R07, R07-2 and R08), and there are several mitigation measures and restrictions required in the operating procedures to meet the MOECC guidelines, consideration should be given to incorporating a sound monitoring program or a minimum, a protocol for addressing any noise complaints;

- Aerocoustic’s Response: It is Aerocoustic’s position that periodic Acoustic Audits which are not associated with complaints provide minimal benefit. Aerocoustics agrees that a complaint response protocol is appropriate and recommends the following note be added to the Operational Plan:

“The licensee will institute a complaint procedure. As part of this procedure, complainants will be requested to identify the location of the incident, as well as the time of the day that the incident occurred and any other information that they feel is relevant. The licensee will keep a complaints log book containing a record of all complaints as well as all complaint responses, which log book shall be accessible to the MNRF and City on request. A noise consultant may be retained to address complaints, if required.”

- The proposed expansion will require an Environmental Compliance Approval (ECA) from the MOECC. Has an ECA been issued?
- Aerocoustic’s Response: The proposed operation will consist of mobile crushing or screening of aggregate below grade in a quarry. Per O. Reg. 524/98, all proposed equipment is considered exempt from requiring an ECA.

The CART peer reviewer, Jade Acoustics, reviewed the response from aerocoustics, and, in a letter dated September 6, 2017, Jade confirms that the Aerocoustic’s responses above are acceptable.

### Conclusion

Through the peer review by Jade Acoustics, members of CART are satisfied that appropriate mitigation measures to address noise impacts have been identified and included as required notes on the ARA Operational Plan.

## **5.0 Air Quality**

RWDI Ltd. prepared an air quality dust impact assessment “Vinemount Quarry Expansion – Air Quality Assessment” dated May 4, 2015. The report reviews potential air quality emissions resulting from the Vinemount Quarry extension, and compares them to provincial standards to determine if there will be any health or nuisance impacts arising from the proposed extension.

The report assessed fenceline impacts using the standards set out in Ontario Regulation 419 / 05 (O.Reg. 419 / 05). Additionally, the report considered criteria for cumulative contaminant concentrations (i.e., site emission plus background) at sensitive impact locations using criteria established by the Ontario Ministry of the Environment and Climate Change (MOECC), the Canadian Council of Ministers of the Environment (CCME) and the World Health Organization (WHO). For the most part, the emission estimates followed the approaches set in “Procedure for Preparing an Emission Summary and Dispersion Modelling Report”, published by MOE in March 2009.

The assessment included a cumulative assessment inasmuch that the dispersion model was expanded to include not just the processing plant and material handling operations, but also on-site roadways and storage piles. The predicted contaminant concentrations were added to an estimate of the background concentration in the surrounding area. The background concentration used in the assessment was the 90<sup>th</sup> percentile of the most recent complete data recorded at the nearest air quality monitoring station operated by the MOECC.

Since Provincial Standards under the *Aggregate Resources Act* require dust mitigation, and it is RWDI's experience that some level of mitigation is needed, their first iteration of the dispersion model incorporated an initial estimate of the level of mitigation that would be required and readjusted until the predicted concentrations fell within the standards and criteria.

RWDI concluded that Waterford will need to implement the following dust management recommendations all which have been incorporated onto the Site Plans under Recommendations from Technical Studies – Dust.

- Dust will be mitigated on site;
- Water or another provincially approved dust suppressant will be applied to internal haul roads and processing areas as often as required to mitigate dust. The operator must have the capacity to apply water to the unpaved haul roads at a rate of 1.5 Litres M<sup>2</sup>/h during hot, dry, windy conditions. The actual watering rate shall be

adjusted based on weather and road surface moisture conditions, so as to suppress visible dust behind moving vehicles;

- Processing equipment will be equipped with dust suppressing or collection devices;
- The maximum processing rate of 500 tonnes per hour is not exceeded;
- Stripping of overburden should be limited to times when extraction, production and shipping activities are less than 50% of the estimated peak rate of 500 tonnes per hour;
- The processing plant shall be located outside the exclusion areas shown in the Noise Impact Assessment, prepared by Aerocoustics;
- When extraction operations move to within 125 metres of lands not owned by Waterford, blasting operations shall be allowed only when winds are blowing interior to the quarry;
- The paved entrance ramp shall be kept free of accumulations of silt using a combination of the permanent water spray system and wet-sweeping;
- Diesel-powered heavy equipment at the site will meet Tier 1 emission limits; and,
- Diesel-fired electrical generating equipment will meet Tier 2 emission limits.

The Air Quality Assessment report completed by RWDI concluded that MOECC air quality standards due to dust impacts from the Vinemount Quarry Extension, that may impact adjacent sensitive land uses, can be mitigated subject to the inclusion of the 10 recommendations noted above.

The Air Quality Study was peer-reviewed by Pinchin Ltd., the CART peer reviewer, in a letter dated February 27, 2017. Pinchin reviewed the RWDI report to note any gaps or discrepancies observed and reviewed the methodologies employed by RWDI within the report and provide comments on the applicability of those methods compared to common industry standards and practices and Ontario Ministry of the Environment and Climate Change guidelines.

The following conclusions were provided based on Pinchin’s review of the Air Quality Assessment Report:

- The contaminants selected for assessment for airborne dust were reasonable. Though the report did not assess any constituents in the aggregate material beyond

Silica, it has been Pinchin’s experience that the MOECC does not typically request substances beyond Silica be assessed;

- Silica content was based on a 1971 report for the A. Cope and Sons Limited quarry. From this study, it found silica content to be in the range between 1.06% to 4.12% with the average being 1.85%. Based on this RWDI rounded up the average and used 2% in their assessment. The difficulty with this approach is that while 2% may reflect an average value, there is no way to say for certain that the Vinemount quarry silica content is not closer to the maximum 4.12% or that the study from another quarry truly represents the Vinemount site. As such, it may be prudent for the site to conduct an analysis of their own quarry material;
- Nitrogen oxides was the only contaminant assessed from the generator set. Though the MOECC states that nitrogen oxides is the only contaminant that requires assessment for emergency diesel generators, if the generator set is being used for a length of time longer than a typical testing period it may be prudent to assess additional contaminants such as sulphur dioxide and carbon monoxide; and,
- All sources not assessed in report have been rationalized and tabulated. It should be noted that section 3.12.4 references the version of the “Procedure for Preparing an Emission Summary and Dispersion Modelling Report” from 2005 (not 2009). This should be confirmed and corrected.

## Recommendations

Based on the results of the Air Quality Assessment Report Peer Review, the following recommendations were identified:

- Perform an analysis of the quarry material to determine both the content of the material, in order to determine if there are any constituents of concern, but also to obtain a more accurate site-specific percent content of silica. This would also support the use of an average silt loading (8.2 g/m<sup>2</sup>) used in assessing paved haul routes;
- Document the emission estimates used to deem emissions from wind erosion from piles insignificant. Also document the frequency of wind conditions which may result in the generation of emissions (to support that it is infrequent);
- Assess all contaminants from the diesel generator set, including sulphur dioxide and carbon monoxide, or provide further justification for their exclusion from the assessment (as they are not considered insignificant from the MOECC when operated beyond testing scenarios);



- Document, at a regular frequency, the moisture level (i.e., moisture ratio) achieved by watering measures on unpaved roadways to ensure the 90% control applied is reasonable; and,
- Confirm dispersion modelling was completed with the MOECC’s currently accepted version (AERMOD version 14134) to ensure all contaminants remain in compliance.
- RWDI Ltd. responded to the peer review in a letter dated April 24, 2017 and included the following:
  - Samples were taken on March 17 and sent to SGS Lakefield for silt and silica analysis. The results of this sampling were incorporated into the air quality assessment for PM<sub>44</sub>, PM<sub>10</sub>, PM<sub>2.5</sub> and NO<sub>x</sub>. The relevant tables and appendices from the RWDI Air Quality Assessment report have been updated and are attached. Materials sampled included several major products (3/2” clear stone), as well as road surface material from 3 locations within the site. For convenience, updated values have been highlighted in green;
  - The emission factors in Chapter 13.2.5 of AP-42 deal with wind erosion of material from disturbed surfaces. Table 13.2.5-2 provides threshold wind;
  - Velocities at which erosion would occur. While “scoria” (roadbed material) and overburden would be most similar to surfaces at the quarry, the lowest threshold wind speed (for coal dust on a concrete pad, which is highly erodible) a wind speed of 11 m/s is required for erosion to occur. A review of data from Hamilton International Airport for 2011 through 2015 indicates that winds in excess of 11 m/s occur less than 0.5% of the time during the operating season for the quarry. Thus, while short term wind erosion events can occur, they are not significant compared to emissions from blasting, extraction, processing, and vehicle movements;
  - RWDI has undertaken a thorough review of contaminants from diesel-fired engines in both stationary and on-road applications. Relative to the applicable standards or guidelines, nitrogen oxides are always the limiting contaminant. Numerically, the ratio between the relevant emission rate and the applicable criteria show this to be true. As an example, for a generator of this size, with Canadian regulations allowing no more than 0.0015% sulphur in fuel, the emissions are estimated to be 3E-6 g/s, while the relevant short term standard is 275 ug/m<sup>3</sup>. The same logic applies to other contaminants such as carbon monoxide;
  - Waterford will conduct regular visual monitoring of surface of the unpaved roads to ensure the surface is wet. During dry periods, the frequency of this inspection shall

be hourly. Periodic moisture samples will be collected and recorded to support the visual monitoring. The results will be recorded in the log book at the site office; and,

- The facility will implement a record keeping process to ensure that the relevant information is recorded.

### Conclusion

Through the peer review by Pinchin Ltd., members of CART are satisfied that appropriate mitigation measures to address air quality impacts have been identified and included as required notes on the ARA Operational Plan.

## **6.0 Blasting and Vibration**

Explotech Engineering Ltd. prepared a blasting impact assessment entitled “Blasting Impact Assessment – Waterford Sand and Gravel Limited, Vinemount Quarry Extension, dated April 8, 2015. The Report reviews the environmental effects from future blasting operations within the proposed quarry extension, specifically whether or not MOECC guidelines related to ground and air vibration effects can be met.

Vibration levels assessed in the Explotech report are based on the MOECC Model Municipal Noise Control By-law with regard to guidelines for blasting in Mines and quarries. Explotech assessed the area surrounding the proposed license area with regard to potential damage from blasting operations and compliance with the aforementioned by-law document. They also reviewed blast and vibration reports collected at the existing licensed quarry for the operation period 2012 to 2014.

Explotech also undertook a vibration attenuation study at the existing Waterford Quarry from May 2014 to July 2014 with the resultant data being analyzed in order to develop site specific vibration attenuation characteristics and equations.

Explotech concluded that Waterford will need to implement the following to meet MOECC requirements of NPC-199 monitoring plan, all of which have been incorporated into the Site Plan.

The Blasting Impact Assessment was peer reviewed by DST Consulting Engineers, the CART peer reviewer dated December 7, 2016. Following review DST concurs with Explotech’s employment of standard engineering practice for predicting vibration and overpressure levels for the proposed extension and their conclusion that the proposed drilling and blasting can be carried out safely and within the MOECC guidelines.

The quarry operator is advised to follow the recommendations of their drilling and blasting experts and consultants and address any complaints in a timely and professional manner.

The report analysis concludes that vibration and blast impacts from the Vinemount Quarry Extension which could impact adjacent sensitive land uses, will meet MOECC Model Municipal Noise Control By-Law limits.

### **Conclusion**

Through the peer review by DST Consulting Engineers, members of CART are satisfied that appropriate mitigation measures to address blasting impacts have been identified and included as required notes on the ARA Operational Plan.

## **8.0 Archeology**

On July 3, 2014, a Stage 1 and 2 Archaeological Assessment (P089-0034-2013) prepared by Archaeological Research Associates (ARA), was submitted to City staff and the Ministry of Tourism, Culture and Sport (MTCS). As part of the Stage 1 and 2 Archaeological Assessment, four find spots were located, 3 of which were not recommended for further assessment, and one (AhGw-294) where a Stage 3 Assessment was recommended. MTSC subsequently approved a request by Waterford that the required Stage 3 Assessment is not required to be undertaken until after the site is licensed but to ensure protection of the site in the interim. Notes are required to be included on the Site Plans where protective areas were to be instituted (e.g., a 20 metre "no-go" zone until the associated Stage 3 Archaeological Assessment Report (and Stage 4 mitigation report, if required) has been accepted into the Ontario Public Register of Archaeological Reports and a 50 metre protective area where a consultant archaeologist monitors during construction activity).

In congruence with the recommendations made in the report, Planning staff recommended that Findspot 1 (Vinemount 1: AhGw-294) be subject to a Stage 3 site-specific assessment and that the subject property be considered partially cleared for the purposes of development with the exception of Findspot 1 and the corresponding buffer.

As part of these comments, staff initially required that an 'H' Holding Provision be applied to Findspot 1 and its 20 m protective buffer, prohibiting the development of the subject properties until such time that the proponent conducts an archaeological assessment of the subject properties and mitigates, through preservation or resource removal and documentation, adverse impacts to any significant archaeological resources found. Staff also required confirmation that no work will be done within 50 m of the protected area without the supervision of a licensed archaeologist, confirmation that all employees working on site will be informed of the protected area, and lastly confirmation of a commitment that the area will be inspected after the completion of the soil disturbance and that any further information provided to the MTCS is also submitted to municipal staff.

In January of 2016, Planning staff received a letter from Mr. Paul Racher from Archaeological Research Associates Ltd. (ARA) requesting that the City of Hamilton reconsider the application of the proposed 'H' Holding Provision. On July 27, 2017, Planning staff met with the owner / applicant, team specialists, consultants, and other city staff at a project CART meeting. After discussing archaeological considerations with the project team as well as reviewing all relevant documents Planning staff are of the opinion that Findspot 1 will be adequately avoided and protected during any on site disturbance and the previously applied 'H' Holding provision in question need not be

applied. The Stage 1-2 Archaeological Assessment as well as the July 30, 2014 letter from the Ministry of Tourism, Culture, and Sport (MTCS) support partial clearance of the site without the requirement of restrictive zoning.

### Conclusion

As such, the City of Hamilton only require that Findspot 1 (Vinemount 1: AhGw-293) be subject to a Stage 3 site-specific assessment. In concurrence with the view of the MTCS, that the balance of the property may be considered partially cleared for the purposes of development with the exception of Findspot 1 and the corresponding buffer. Planning Staff do not have a Stage 3 site-specific archaeological assessment for Findspot 1 on file and request that the assessment be completed and submitted in order to ensure municipal interests regarding archaeology have been satisfied. Staff also reiterate that Findspot 1 (Vinemount 1: AhGw-293) and its 20m protective buffer should be marked by a temporary barrier (silt fence) prior to the commencement of soil disturbance and that a licensed archaeologist should monitor all construction activities occurring within 50m of protected area.

## **9.0 Built Heritage:**

Planning staff reviewed the surrounding area and subject property for built heritage resources, and, as a result of a review of built heritage resources in the immediate area, Cultural Heritage staff confirm that the property located at 1051 Green Mount Road East, Stoney Creek does not contain any of the following:

- Properties designated under Part IV of the *Ontario Heritage Act*;
- Properties designated under Part V of the *Ontario Heritage Act*;
- Properties protected by a municipal Conservation Easement Agreement;
- Properties protected by a provincial (OHT) Conservation Easement Agreement.
- Properties listed on the City of Hamilton’s *Register of Properties of Cultural Heritage Value or Interest*;
- Properties included in the City of Hamilton’s *Inventory of Buildings of Architectural and / or Historical Interest*; or,
- Properties included within the City of Hamilton’s Cultural Heritage Landscapes.

In addition, Planning staff confirm that there are no built heritage resources, categorized as per the information above, within 50m of the subject property. The following properties included in the City of Hamilton’s *Inventory of Buildings of Architectural and / or Historical Interest* are located within 1km of the subject property:

- 1185 Green Mountain Road – ca. 1865 Gothic Revival Cottage dwelling;
- 953 Mud Street East – ca. 1850 Georgian dwelling;
- 923 Green Mountain Road – ca. 1925 brick dwelling;
- 1342 Ridge Road – ca. 1880 brick dwelling refurbished and modernized;
- 1092 Ridge Road – ca. 1860 frame or brick dwelling; and,
- 1156 Ridge Road – ca. 1862 frame or brick dwelling.

## **Conclusion**

The City of Hamilton is satisfied that inventoried properties of interest within the vicinity of the subject area will be conserved.

## **9.0 CONCLUSIONS:**

A Combined Agency Review Team (CART) was formed to assist in the review of the supporting studies that were submitted with the Vinemount Quarry extension Application. The CART was comprised of staff from several City departments and divisions, as well as staff from the Niagara Peninsula Conservation Authority. The studies included Natural Heritage, Water Resources, Noise, Air Quality, Blasting and Vibration and Built Heritage and Archaeology. The results of the review indicate the following:

Through the mitigation and monitoring measures provided in the Site Plan Notes, the City of Hamilton is satisfied that the issues related to natural heritage features and functions have been addressed.

Through the peer review by Cambium, the City of Hamilton is satisfied that appropriate mitigation measures to address surface and groundwater impacts have been identified and included in the updated monitoring and mitigation plan provided by WSP. Further, the improvements to the monitoring and mitigation plan will ensure that all potentially impacted wells will be included in the plans and that appropriate response to the well owner's concern will be provided.

Through the peer review by Jade Acoustics, members of CART are satisfied that appropriate mitigation measures to address noise impacts have been identified and included as required notes on the ARA Operational Plan.

Through the peer review by Pinchin Ltd., members of CART are satisfied that appropriate mitigation measures to address air quality impacts have been identified and included as required notes on the ARA Operational Plan.

Through the peer review by Pinchin Ltd., members of CART are satisfied that appropriate mitigation measures to address air quality impacts have been identified and included as required notes on the ARA Operational Plan.

With regards to archeology, the City of Hamilton has determined that only Findspot 1 (Vinemount 1: AhGw-293) be subject to a Stage 3 site-specific assessment. In concurrence with the view of the MTCS, that the balance of the property may be considered partially cleared for the purposes of development with the exception of Findspot 1 and the corresponding buffer. Planning Staff do not have a Stage 3 site-specific archaeological assessment for Findspot 1 on file and request that the assessment be completed and submitted in order to ensure municipal interests regarding archaeology have been satisfied. Staff also reiterate that Findspot 1

(Vinemount 1: AhGw-293) and its 20m protective buffer should be marked by a temporary barrier (silt fence) prior to the commencement of soil disturbance and that a licensed archaeologist should monitor all construction activities occurring within 50m of protected area. This requirement is a condition of the Site Plan Notes. With regards to built heritage, The City of Hamilton is satisfied that inventoried properties of interest within the vicinity of the subject area will be conserved.

Through the thorough review of the technical studies noted above, the City has determined that all concerns have been satisfactorily addressed.