

February 5, 2020

David Welwood
Principal Planner
Planning, Development & Legislative Services
Region of Waterloo
150 Frederick St, 8th floor
Kitchener, Ontario N2G 4J3

Dear Mr. Welwood,

RE: Peer Review - Agricultural Impacts Assessment for Shantz Station Pit

Colville Consulting Inc. was retained by the Region of Waterloo on September 26, 2019 to complete a peer review of an agricultural impact assessment (AIA) prepared by McNaughton Hermsen Britton Clarkson (MHBC) for the proposed Shantz Station Pit.

The peer review is a desktop exercise that reviews the Shantz Station Pit AIA (dated March 2019), the associated site plans, and the planning justification report. The following information was provided to us by the Region of Waterloo:

- ◆ Existing Features Plan, Plan 1 of 5 (May 2019);
- ◆ Operational Plan, Plan 2 of 5 (May 2019);
- ◆ Operational Notes, Plan 3 of 5 (May 2019);
- ◆ Rehabilitation Plan, Plan 4 of 5 (May 2019);
- ◆ Cross Sections, Plan 5 of 5 (May 2019); and
- ◆ Planning Justification Report & ARA Summary Statement (May 14, 2019).

In addition, we have reviewed the following provincial and municipal planning documents; agricultural resource data sources; and recent and historical aerial photographic imagery:

- ◆ Provincial Policy Statement (2014);
- ◆ Growth Plan for the Greater Golden Horseshoe (2017);
- ◆ Regional Official Plan (2031), Region of Waterloo June 18, 2015, and associated maps;
- ◆ Township of Woolwich Official Plan (2012);
- ◆ Agricultural Resource Information sources such as:
 - AgMaps - Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), <https://www.gisapplication.lrc.gov.on.ca/AIA/index.html?viewer=AIA.AIA&locale=en-US> (last viewed January 11, 2020);
 - Agricultural Systems Portal – OMAFRA, http://www.omafra.gov.on.ca/english/landuse/gis/WCAG_AGOL/index.html?appid=3cbd2393a1e548949450e21d90646353 (last viewed January 11, 2020);

- ◆ and, Google Earth® and Google Maps imagery.

The peer review will evaluate the AIA and the associated site plans for consistency with provincial policy, provincial guidelines for AIA's and rehabilitation methods.

BACKGROUND

Location

The proposed Shantz Station Pit is located at 1195 Forester Road and 1472 Village View Road in the Township of Woolwich, Region of Waterloo. The lands are located south of the Hamlet of Maryhill on the north side of Forester Road between Shantz Station Road and Village View Road.

Proposed Development

Capital Paving Ltd. (Capital Paving) is applying for a Class 'A' License (Category 3 – Pit Above Water) under the ARA for the proposed Shantz Station Pit. Capital Paving is proposing to licence approximately 93.5 ha, of which approximately 68 ha will be extracted and approximately 63.5 ha will be progressively rehabilitated to the same agricultural quality.

The southern boundary of the licenced area abuts Forester Road. The main processing area is to be located in the northern portion of the property, with extraction beginning in the northern portion of the property and continuing from west to east. The existing farm building cluster on the property is to remain intact. Access to the extraction area will be in the northwest corner of the property connects to Shantz Station Road.

Purpose of the AIA

The stated intent of the AIA is to “satisfy the Growth Plan’s (2017) requirement for submission of an Agricultural Impact Assessment (AIA)” (Policy 4.2.8.3) and to prepare the AIA in accordance with the Province’s Draft Agricultural Impact Assessment Guidelines (March 2018).

PEER REVIEW METHODOLOGY

The peer review was completed by Sean Colville, B.Sc., P.Ag., and Leah Koetsier B.Sc. EMAGP, EPT. whose experience is summarized in their CV's provided in Appendix A.

The peer reviewers read the MHBC's AIA and associated site plans thoroughly. The provincial and municipal policies relevant to aggregate extraction in prime agricultural areas was reviewed to identify the policies that the proposed Shantz Station Pit must adhere to. The intent of this review is to ensure that the AIA fully addresses and complies with the relevant policies.

The Province's Draft AIA Guidelines were also reviewed in simultaneously with the relevant policies and the MHBC AIA report to assess consistency with the intent of the AIA.

The Draft AIA Guidelines outlines the information that is to be included within an AIA being prepared for new or expanding aggregate operations. Based on the Draft AIA Guidelines, we developed a comprehensive checklist to ensure that the Shantz Station Pit AIA is complete. The checklist is located in Appendix B.

Statements and conclusions contained in the AIA were evaluated where possible by reviewing OMAFRA's agricultural resource information sources and aerial photographic imagery available on-line.

POLICY OVERVIEW

The Region of Waterloo Official Plan shows in Map 7 that the lands, including the proposed licensed area, are part of the regions Prime Agricultural Area. The Regional Official Plan does include aggregate operations as a permitted use in Prime Agricultural Areas on an interim basis. Within agricultural areas primarily the same land area consumed as part of an aggregate operation must be rehabilitated back to an agricultural condition.

The Province's Agricultural Systems Portal, which shows the Agricultural Land Base for lands within the Greater Golden Horseshoe, also show that the Shantz Station Pit lands are within a Prime Agricultural Area.

Provincial Policy Statement (2014)

Land Use Policy and development in the province of Ontario is directed by the Provincial Policy Statement (PPS), which was issued under the authority of Section 3 of the Planning Act and came into effect on April 30, 2014. Section 3 of the Planning Act states that decisions affecting planning matters "shall be consistent with" policy statements issued under the Act.

Prime Agricultural Areas

The PPS defines prime agricultural areas as:

"areas where prime agricultural lands predominate. This includes areas of prime agricultural lands and associated Canada Land Inventory Class 4 through 7 lands, and additional areas where there is a local concentration of farms which exhibit characteristics of ongoing agriculture. Prime agricultural areas may be identified by the Ontario Ministry of Agriculture and Food using guidelines developed by the Province as amended from time to time. A prime agricultural area may also be identified through an alternative agricultural land evaluation system approved by the Province."

Prime agricultural land:

"means specialty crop areas and/or Canada Land Inventory Class 1, 2, and 3 lands, as amended from time to time, in this order of priority for protection."

Development, such as the proposed Shantz Station Pit, in prime agricultural areas must be consistent with Section 2.3.6 – Non-Agricultural Uses in Prime Agricultural Areas. Section 2.3.6.1 states that:

"Planning authorities may only permit non-agricultural uses in prime agricultural areas for:

- a) extraction of minerals, petroleum resources and mineral aggregate resources, in accordance with policies 2.4 and 2.5; or
- b) limited non-residential uses, provided that all of the following are demonstrated:

1. the land does not comprise a specialty crop area;
2. the proposed use complies with the minimum distance separation formulae;
3. there is an identified need within the planning horizon provided for in policy 1.1.2 for additional land to be designated to accommodate the proposed use; and
4. alternative locations have been evaluated, and
 - i. there are no reasonable alternative locations which avoid prime agricultural areas; and
 - ii. there are no reasonable alternative locations in prime agricultural areas with lower priority agricultural lands.”

Section 2.3.6.2 states that:

“ Impacts from any new or expanding non-agricultural uses on surrounding agricultural operations and lands are to be mitigated to the extent feasible.”

Section 2.5 of the PPS provides policies regarding mineral aggregate resources. Section 2.5.3.1 states that:

“Progressive and final rehabilitation shall be required to accommodate subsequent land uses, to promote land use compatibility, to recognize the interim nature of extraction, and to mitigate negative impacts to the extent possible. Final rehabilitation shall take surrounding land use and approved land use designations into consideration.

Section 2.5.4.1 specifically outlines the province’s policies regarding extraction in prime agricultural areas. It states:

“In prime agricultural areas, on prime agricultural land, extraction of mineral aggregate resources is permitted as an interim use provided that the site will be rehabilitated back to an agricultural condition.

Complete rehabilitation to an agricultural condition is not required if:

- a) outside of a specialty crop area, there is a substantial quantity of mineral aggregate resources below the water table warranting extraction, or the depth of planned extraction in a quarry makes restoration of pre-extraction agricultural capability unfeasible;
- b) in a specialty crop area, there is a substantial quantity of high quality mineral aggregate resources below the water table warranting extraction, and the depth of planned extraction makes restoration of pre-extraction agricultural capability unfeasible;
- c) other alternatives have been considered by the applicant and found unsuitable. The consideration of other alternatives shall include resources in areas of Canada Land Inventory Class 4 through 7 lands, resources on lands identified as designated growth areas, and resources on prime agricultural lands where rehabilitation is feasible. Where

no other alternatives are found, prime agricultural lands shall be protected in this order of priority: specialty crop areas, Canada Land Inventory Class 1, 2 and 3 lands; and

- d) agricultural rehabilitation in remaining areas is maximized.”

The definition of an *agricultural condition* in the PPS means; “in regard to prime agricultural land outside of specialty crop areas, a condition in which substantially the same areas and same average soil capability for agriculture are restored.”

Growth Plan for the Greater Golden Horseshoe (2017)

The Subject Lands are located within the Greater Golden Horseshoe and are subject to the policies outlined in the Growth Plan. Direction for mineral aggregate extraction under the Growth Plan is provided in Section 4.2.8 Mineral Aggregate Resources. This section states:

1. In prime agricultural areas, applications for new mineral aggregate operations will be supported by an agricultural impact assessment and, where possible, will seek to maintain or improve connectivity of the Agricultural System.
2. For rehabilitation of new mineral aggregate operation sites, the following apply:
 - d. outside the Natural Heritage System, and except as provided in policies 4.2.8.4 a), b) and c), final rehabilitation will appropriately reflect the long-term land use of the general area, taking into account applicable policies of this Plan and, to the extent permitted under this Plan, existing municipal and provincial policies. In prime agricultural areas, the site will be rehabilitated in accordance with policy 2.5.4 of the PPS, 2014.

Regional Municipality of Waterloo

Section 9 of the Regional Official Plan (2031), provides the policy objectives, resource protections and requirements for new mineral aggregate extraction applications for lands within prime agricultural areas. Map 8 of the official plan shows the Mineral Aggregate Resource Areas identified in the Region. The Shantz Station Pit is not located within the identified Mineral Aggregate Resource Areas, however Section 9.A.3 states that:

Extraction of mineral aggregate resources may be permitted outside the Mineral Aggregate Resource Areas as shown on Map 8 where there is a sufficient quantity and quality of resources to warrant extraction as demonstrated to the satisfaction of the Province, the Region and the Area Municipality, subject to the policies in this Plan and Area Municipal official plans.

Section 9.C.3 lists the studies that must be submitted with an application. It does not list an AIA as one of the studies that must be submitted. However, Section 9.F outlines the requirements for aggregate extraction proposals and Section 9.F.1 requires the need to include a rehabilitation plan that will ensure that:

- (a) progressive rehabilitation will be carried out whenever feasible so that depleted areas are restored while extraction continues in other areas of the site;

- (b) final rehabilitation will comply with the land use designations contained in this Plan and Area Municipal official plan, and be compatible with the character of surrounding land uses;
- (c) within the Prime Agricultural Area and Rural Areas designations, rehabilitation to agriculture will be the first priority, as follows:
 - i) within the Prime Agricultural Area, substantially the same land area will be rehabilitated back to an agricultural condition to allow for the same range and productivity of crops common in the area; and
 - ii) within Rural Areas, rehabilitation of the site will be carried out so that substantially the same land area and same average soil quality for agriculture are restored.
- (d) where mineral aggregate extraction has occurred below the water table, rehabilitation will be in accordance with Policy 9.D.1 (c) to protect groundwater quality.

The AIA addresses Section 9.F.1, (a), (b) and (c). Section 9.F.1 (d) does not apply to this application as extraction will remain above the water table.

Section 9.F.2 lists the circumstances when complete agricultural rehabilitation within the Prime Agricultural Area and Rural Areas designations may not be required. Since the proposed Shantz Station Pit proposes to rehabilitate the vast majority of the extraction area, this policy is not applicable to this application.

Township of Woolwich Official Plan 2012

A review of the Township of Woolwich Official Plan shows that the Subject Lands are located within the Rural Land Use designation. Aggregate operations are permitted in rural land use designated areas provided they meet the requirements of the Aggregate Resource Policies of the town's official plan.

The Township Official Plan is similar to that of the Region of Waterloo in that it considers mineral aggregate operations to be an interim use within the Rural Land Use designation. Section 11.1.f) states that:

“the utilization of lands defined in the Regional Official Policies Plan as Prime Agricultural Area for sand and gravel extraction shall only be considered in accordance with the forgoing and after council is satisfied:

- i. that there are no viable alternative sites where the required resource can be obtained in areas not considered to be Prime Agricultural areas;
- ii. that council has considered the impacts of the proposed pit or quarry on adjacent land uses and has concluded that the need for the use of the specific site for sand and gravel extraction outweighs the impacts associated with it, including its impact on the continued operation of the adjacent lands for food production; and
- iii. that maximum rehabilitation of the land for agriculture following extraction is proposed so that they can be used for farming.”

These policies are somewhat addressed in the AIA. MHBC uses the Region's Maps 7 and 8 to demonstrate that the Subject Lands are located in a prime agricultural area and that all of the identified aggregate resource areas are located on prime agricultural lands. Although an alternative site analysis was not completed, MHBC states that "extraction of aggregate resources outside of prime agricultural areas is not possible".

MHBC also addresses the requirement maximum rehabilitation of land for agriculture, stating that given that a high percentage (96%) of the proposed extraction area is to be rehabilitated back to the same average soil capability, a maximum rehabilitation is proposed.

MHBC discusses the impacts of the proposed Shantz Station Pit in Sections 5.0 and 6.0 of the AIA.

The Township's OP (Section 11.7.3) also outlines criteria for council to consider when evaluating new aggregate operations located in Prime Agricultural Areas. Specifically discussing the requirement for adequate buffer space and screening between the extraction area and any road, residence or land use that may be adversely impacted, adequately improved and maintained haul routes, established rehabilitation plan for the property and that the level of the water table not be adversely affected.

MHBC addresses buffer space and screening, and haul routes within the AIA. Given that above water table extraction is proposed for the Shantz Station Pit, no impacts on the water table are anticipated. This is stated in the AIA and confirmed in the Hydrogeological Study completed for the aggregate application.

CONSISTENCY WITH POLICY

The AIA for the Shantz Station Pit recognizes that the Subject Lands are located within a prime agricultural area, but not within a specialty crop area. The AIA recognizes that a sand and gravel extraction operation is a permitted use in prime agricultural areas and, to be consistent with the PPS, The Growth Plan, Regional Official Plan and the Township of Woolwich, there is a need to rehabilitate the lands back to an agricultural condition. A rehabilitation plan has been prepared to address this requirement. The AIA has evaluated the land uses and farm operations within the Primary and Secondary Study Areas and has identified potential impacts. Recommendations have been provided to eliminate and/ or minimize these potential impacts.

We have reviewed the site plans for the Shantz Station Pit prepared by MHBC and we are satisfied that, with some minor amendments, the lands can be successfully returned to an agricultural condition and that the application will be consistent with the policies listed above.

We did identify some policies in the local official plan that in our opinion need some additional explanation.

In the Township of Woolwich's Official Plan, Section 11.1.f) (i), there is a requirement for new sand and gravel extraction proposals to demonstrate that there no viable alternate sites in non-prime agricultural areas. The AIA does address 11.1.f) (i) by saying "...it is noted that all agricultural lands in the Township are designated as prime agricultural land. It is further noted that all designated

aggregate resource areas are also located in prime agricultural land. Therefore, extraction of aggregate resources outside of prime agricultural areas is not possible”.

Recommendation: In our opinion, to be consistent with Section 11.1.f) (i), more needs to be done to adequately address alternative sites. We recommend that the AIA include an assessment of whether there are any locations within non-prime agricultural areas within the township that could accommodate a viable aggregate extraction operation.

Recommendation: The AIA doesn't fully address Section 11.1.f) (ii), specifically the “need for the use”. Given that the impacts of the proposed aggregate extraction operation are expected to be minimal, it should be relatively easy to demonstrate the need outweighs the impacts of the proposed sand and gravel extraction operation. Given that the PPS states in section 2.5.2.1 that “Demonstration of need for mineral aggregate resources, including any type of supply/demand analysis, shall not be required” for extraction of mineral aggregate resources. It is our opinion that a simple statement of the low impact relative to the need for aggregate resources in general would serve to satisfy section 11.1.f) (ii) of the OP.

The AIA does adequately satisfy Section 11.1.f) (iii) by demonstrating that the vast majority of the extraction area will be rehabilitated to an agricultural condition.

CONSISTENCY WITH DRAFT AGRICULTURAL IMPACT ASSESSMENT GUIDELINES

The AIA for the proposed Shantz Station Pit prepared by MHBC generally follows the draft Provincial AIA Guidance Document. The Site Plans appear to be consistent with the information provided in the AIA. We have, however, identified some gaps and improvements to the AIA which in our opinion should be addressed before a decision on approval of the proposed pit can be made.

As mentioned previously, a checklist of the information to be included within an AIA, specifically for applications for new or expanding aggregate operations in prime agricultural areas, was prepared for this peer review. The information contained in the AIA for the Shantz Station Pit was compared to the AIA requirements listed in the checklist (Appendix B).

Layout of AIA

Introduction (AIA Section 1)

The AIA begins with an introduction that includes:

- ◆ confirmation that MHBC was retained by Capital Paving Ltd., although the date of the retainer was not provided in the AIA;
- ◆ a description of the pit location;
- ◆ a short description of the purpose;
- ◆ a list of background materials reviewed;

- ♦ a description of the proposed aggregate licence, features and activities within the area to be licenced;
- ♦ a description of the existing conditions; and
- ♦ the proposed after use.

A figure showing the location of the Shantz Station Pit, the Operational Plan and Rehabilitation Plan are also included in the introduction.

Recommendation: Add date of retainer.

Add complete list of references.

Study Area (AIA Section 2)

Section 2 of the AIA identifies the Primary and Secondary Study Areas and the land uses, farm operations, agricultural investments in infrastructure and land improvements, and cropping patterns are described and shown in a series of photos and on mapping (Figure 4). The AIA for the Shantz Station Pit identified appropriate primary and secondary study areas as recommended in the AIA Guidance Document.

The AIA summarizes land uses within the Primary Study Area and abutting the proposed licenced area. The AIA states that “there does not appear to be significant investment in agricultural infrastructure”. However, we point out that, based on the photos and review of aerial photography, it appears that there has been some recent investment in agricultural infrastructure related to both livestock and horticultural (greenhouse) production at 1065 Forester Road where a new steel roof was installed between July 2018 and June 2019 ; and there is a new steel roofing and board siding on the old back barn located 1472 Village View Road.

The land use information provided in the AIA for the Secondary Study Area is incomplete. There are several farm operations shown in Figure 4 in the Secondary Study Area that have not been acknowledged and described. For example, the entrance to Grootendorst Farms at 1060 Village View Road, is only approximately 340 m from the proposed licenced are. It is a significant and substantial dairy operation. The aerial photography shows a significant investment in agricultural infrastructure including up to six dairy barns, several silage bunkers and three liquid manure tanks.

There are at least six other farm operations in the Secondary Study Area identified in the AIA (Figure 4) that are not described and assessed. Of the six farm operations that are labelled on Figure 4, only the farm at 1158 Forester Road (Hopewell Creek Stables) is described.

Recommendation: We recommend that more details of the surrounding farm operations be included to properly assess the potential impact on these farm operations.

Another minor consideration would be to label the St. John’s Kilmarnock School (a non-farm land use) which is located in the southern portion of the Secondary Study Area.

Section 2 of the AIA concludes with a discussion the Agricultural Census data for the Township of Woolwich.

Field Data Collection (AIA Section 3)

Section 3 is based predominantly on the information provided by DBH Soil Services Inc. in Appendix A. This section describes the soil identified on the Subject Lands from which the Canada Land Inventory (CLI) agricultural capability of the lands is interpreted. The methodology and results of the soil survey appear to be consistent with OMAFRA guidelines. The results confirm that the majority of the Subject Lands consist of CLI Class 1, 2 and 3 lands which are prime agricultural lands.

Section 3 also includes a discussion of the microclimate for specialty crop production. This section (Section 3.2) concludes that the Subject Lands are not subject to special climatic conditions and that they are not identified in the Township of Woolwich, the Regional Municipality of Waterloo as part of a specialty crop area, nor are they recognized by the Province as a specialty crop area.

Planning Policy Framework (AIA Section 4)

Section 4 of the AIA discusses the planning policy framework which we have discussed in detail on pages 3 to 8 of the peer review. Please refer to our assessment for our comments and recommendations regarding compliance with Provincial, Regional and local policies.

Assessment of Impact (AIA Section 5)

This section of the AIA discusses the potential impacts of the proposed sand and gravel extraction. Potential impacts assessed include:

- ♦ The reduction/loss of Agricultural Land and Infrastructure;
- ♦ Fragmentation of Agricultural Lands;
- ♦ Dust;
- ♦ Hydrogeology
- ♦ Traffic; and
- ♦ Noise.

The AIA concludes that each of these potential impacts have either no measurable impact (e.g., fragmentation of agricultural land and hydrogeological impacts) or can be addressed through mitigation (e.g., dust and noise). We are satisfied with the AIA conclusions for all but the traffic impact assessment. However, net impacts are not discussed.

With regard to potential traffic-related impacts, the AIA states that the haul route will include Shantz Station Road south to Highway 7. It is not clear to the reader what are the existing volume of non-farm traffic using Shantz Station Road. The AIA states that “Current agricultural traffic on Shantz Station Road is not anticipated to be high as this type of traffic could generally avoid higher volume routes and be directed towards local/township roads”. While we generally agree that when there are options available, farmer will try to avoid using high volume routes with their slow-moving farm

machinery, the land use mapping (Figure 4) shows that there are five farm operations located along Shantz Station Road. These farms, and any neighbouring farm operations leasing these lands, will not have an option other than using Shantz Station Road. It is also understood that the Paradigm Transportation Solutions report recommends a north-bound, right-turn deceleration lane to be constructed. No details are provided in the AIA which would indicate the length of this turning lane and whether its construction would have an impact on accessibility to the farms near the entrance to the internal haul route.

The Growth Plan for the Greater Golden Horseshoe is discussed in section 4.2 of the AIA, however other than the presence of farm operations identified there is no evidence that other elements of the ``agri-food network`` were identified or evaluated in the Study Area. An extensive list of elements is provided in Section 2.2.1 of the Implementation Procedures for the Agricultural System in Ontario's Greater Golden Horseshoe, OMAFRA Publication 856 (2018).

Recommendation: At a minimum, the AIA should review the Agricultural System Portal to determine whether there are any provincially identified elements of the agri-food network. If any elements are identified, potential impacts should be discussed and mitigation recommended.

Recommendation: The AIA should address the potential for traffic-related impacts to the farm operations located on Shantz Station Road and whether construction of the turning lane will cause any disruption to the farm operations. Consider consulting these farms to understand whether their operations would be sensitive to truck traffic and if so how impacts could be mitigated to the extent possible. The same should be done for any other proposed haul routes associated with the proposed pit.

Recommendation: Provide a plan for trucks when encountering farm-related traffic along the haul route to minimize potential conflicts and maximize road safety.

Recommendation: Include a discussion of the Net Impacts as per the draft AIA Guidance Document as referenced in Section 2.2 (8) of OMAFRA's Draft Guidelines on Net Impacts. Net impacts should be described with respect to their magnitude and extent in the context of the lifespan of the quarry expansion.

Rehabilitation Recommendations (AIA Section 6)

Section 6 of the AIA discusses the proposed progressive rehabilitation plans and provides recommendations for rehabilitation. The Site Plans (Figures 2 and 3) included in the report provide additional information regarding the phasing of the proposed rehabilitation procedures and methodology. Rehabilitation Notes Site Plan 3 of 5 also provides rehabilitation details.

Phasing & Progressive Rehabilitation (Section 6.1)

The AIA states that the lands will be progressively rehabilitated and that the availability of lands for agricultural uses will be maintained as long as possible. The intent is to return the lands to an agricultural condition that is equal to or better than the original condition. As per Section 3 of the

AIA, the lands are predominantly comprised of prime agricultural lands consisting of CLI Class 1 (31.5%), Class 2 (37.8%) and CLI Class 3 (27.8%). The Hoffman Productivity Indices (HPI) were calculated to be 0.80 which is equivalent in productivity to CLI Class 2 lands. Therefore, only 65.6% of the Subject Lands will be restored to an equal or better condition.

The proposed progressive rehabilitation plan will however restore the lands to an agricultural condition (i.e., substantially the same areas and same average soil capability for agriculture are restored). The average soil capability, as determined by the HPI, is equivalent to CLI Class 2 lands.

Recommendation: Reword the first sentence in the second paragraph under Section 6.1 to be more accurate.

Soil Handling and Stripping (Section 6.2)

This section describes the soil handling and stripping recommendations for progressive rehabilitation of Shantz Station Pit. The recommendations are consistent with best practices and the Draft AIA Guidelines.

Create Appropriate Post-Excavation Land Form (AIA Section 6.3)

This section begins with recommendations for the 3:1 side slopes. The AIA recommends approximately 10-15 cm of topsoil be placed on top of subsoil which in turn is placed on the overburden. No recommended depth of subsoil is provided.

The third paragraph in the section recommends replacing topsoil and subsoil depths of 25 and 50 cm, respectively. According to Section 6.2 of the AIA, the depth of the topsoil ranges from 15 to 28 cm and the thickness of the subsoil ranges between 25 and 65 cm. No average depth for either soil resource is provided. It is not clear the volume of topsoil and subsoil is available on site to meet the recommended topsoil and subsoil depths.

Recommendation: Prepare a soil budget based on the DBH soil survey data (Appendix A) that provides an estimate of the topsoil and subsoil volumes expected to be available for rehabilitation of both the side slopes and pit floor for each phase of the operation. A soil budget will confirm that the soil volumes required to be consistent with the AIA's recommended thicknesses of topsoil and subsoil can be met.

The final paragraph in this section recommends contouring the slopes on the pit floor to be as uniform as possible and to ensure that there are no irregular undulations or depressional areas on the rehabilitated pit floor. We agree with these recommendations. However, the slope of the pit floor is not discussed. The Draft AIA Guidelines suggest that the slope of the pit floor should be between 2 and 5% (Draft AIA Guidelines, Pg. 47 & 81). Slopes within this range will be consistent with CLI Class 2 lands and will provide for adequate surface water drainage.

Recommendation: Include a statement that indicating the proposed slopes on the pit floor and include in the notes on the Site Plans.

Soil Compaction (AIA Section 6.4)

The AIA discussed measures to alleviate compaction after topsoil and subsoil have been replaced. The methods recommended are consistent with the Draft AIA Guidelines. The second sentence in this section reads “To the extent possible, travel over soils and rehabilitated areas should be minimized”. We understand the intent of this recommendation but believe that the sentence should be modified similar to the following, *To the extent possible, travel over soils **in the** ~~and~~ rehabilitated areas should be minimized.*

Recommendation: Edit the above sentence as suggested or similar.

Fertility Analysis and Soil Amendments (AIA Section 6.5)

This section recommends sampling the soil after the topsoil has been replaced and that the samples should be sent to an accredited laboratory for analysis. This is consistent with the Draft AIA Guidelines. The purpose of sampling the topsoil is to determine whether fertilizers or soil amendments are required for the cover crop selected for the soil conditioning phase of rehabilitation.

There seems to be some confusion regarding the relationship between soil fertility and CLI agricultural capability classes. The application of fertilizers or other soil amendments have no effect on the CLI Class. Factors such as topography (slope and complexity), drainage, stoniness, depth of constricting layer (related to compaction), evidence of erosion, inundation, and the severity of these factors or limitations influence the CLI Capability Class of a soil. The purpose of sampling the soils prior to excavation and during and post rehabilitation (as part of the monitoring program) is to demonstrate that the soils have been rehabilitated to a condition similar to the pre-extraction conditions. In addition to soil fertility samples, the soils should be sampled to determine the bulk density and hydraulic conductivity, to assess residual levels of soil compaction and porosity, respectively. The depth of topsoil and subsoil during and post-rehabilitation should be measured to ensure that the depths are similar to recommended depths.

Recommendation: Develop a monitoring plan and identify the soil parameters to be measured pre-extraction and post-rehabilitation.

Monitoring Program and Annual Report (AIA Section 6.6)

The monitoring program recommended in the AIA is appropriate and consistent with the Draft AIA Guidelines. As mentioned in the previous section of this peer review, the soil parameters to be measured and the sampling methodology used need to be identified.

Additional information not provided in AIA

The Draft AIA Guidelines provide a series of steps recommended for the rehabilitation of mineral aggregate resource extraction proposals in prime agricultural areas. There are a number of recommendations that are applicable to the Shantz Station Pit that have also been recommended in the AIA. However, there are several that have not been included leaving several questions unanswered. For example,

1. What is the maximum depth of extract above the water table?

2. More than 12 ha of the extraction area are tile drained according to OMAFRA's artificial drainage mapping. There does not appear to be any provision requiring the replacement of tile drainage. Has the need to replace tile drainage in the rehabilitated area been assessed?
3. What is the grade of the final rehabilitated lands?
4. What are the soil parameters to be sampled as part of the monitoring plan?

Answers to these questions should be included within the AIA and on the site plan notes.

Consultation

The AIA for the Shantz Station Pit does not include any documentation of public consultation. The AIA Guidance Document recommends that a pre-consultation meeting take place prior to initiating an AIA. The purpose of the meeting is to review the terms of reference for the study. The draft AIA Guidance Document also says that if "no pre-consultation meeting is held, then confirmation of the study area(s) should be done with those who will be approving the AIA and based on meeting provincial and municipal requirements". The document also says that it is "advisable" to consult with local agricultural organizations where potential impacts to agriculture have been identified; and to consult with surrounding landowners who can provide "valuable local knowledge and understanding of the farming community and potential impacts".

Public consultations are a recommendation and not a requirement for AIA. However, in our opinion, it is important that there be some level of public consultation either prior to the initiation of the AIA, during the preparation of the AIA, or following the completion of the AIA. In the latter case, information should be obtained from agencies and other stakeholders such as; local farmers, adjacent property owners, members of an agricultural advisory group; local agricultural community groups; and/or farm organization and members of the local federation of agriculture. The information should then be used, where appropriate, to modify the recommendations provided to the AIA to address legitimate concerns not originally identified in the AIA. A statement acknowledging that this will occur as part of the Pit approval process should be included within the AIA.

Recommendation: It is understood that some consultations have taken place and are described in the Planning Justification Report & ARA Summary Statement (May 14, 2019). The AIA should include a summary of these consultations or at a minimum refer to them in the AIA.

Recommendation: Consider additional consultations to meet the intent of the consultation process outlined in the Draft AIA Guidelines.

Recommendations (AIA Section 7)

The section of the AIA provides a list of seven recommendations. We agree with these recommendations however we recommend providing some additional information. With regard to Recommendation No.5, we recommend that the same average pre-extraction depth of soil resources be replaced. To do this the average depth of topsoil and subsoil should be calculated.

Recommendation: We recommend that MHBC contact DBH Soil Resources Inc. to confirm that enough data has been collected to provide this information.

With regard to No. 6, we agree that a grass-legume crop be established during the soil conditioning phase of the rehabilitation process. However, we do not believe that it is necessary to plough a perennial cover crop annually. We recommend that the perennial crop include grass and legume species that are appropriate for the site conditions and are persistent over time once established. The perennial crop should be left in place for the duration of the soil conditioning phase (approximately 4-5 years) as long as the grass and legume species are well established and persistent.

Another course of action which will also achieve the same results is by employing an annual cover crops which could be ploughed into the soil annually or drill seeded every year for the duration of the soil conditioning phase. This method would potentially increase the management and costs but would be just as successful and perhaps preferred by the landowner. There are several different annual cover crops which could be used. The attached link provides a list of available from seed sources in Ontario. <http://www.omafra.gov.on.ca/english/crops/resource/covercrp.htm>

The timing of when the soils are to be seeded, the mix selected, and the subsequent management of the site afterwards also needs to be considered as part of the soil conditioning plan. Some species/mixes are best seeded early while others are best sown later in the growing season. Some are more suited to an annual cover while other mixes may be suitable as a perennial cover.

The qualified person monitoring the agricultural rehabilitation procedures should be able to recommend an appropriate seed mix for the site conditions.

Recommendation: Remove the requirement to plough the perennial grass-legume crop annually.

Recommendation: Provide more specific information on recommended seed mixes to be used or state that this will be determined during the initial monitoring of rehabilitation in order to ensure appropriate seed mix is selected for the site conditions. The type of seed mix (perennial or annual species) and management recommendations should be included.

Recommendation No. 8 discusses soil testing.

Recommendation: Retain an agrologist or soil scientist to develop and implement a soil testing program to be used for the monitoring program.

REVIEW OF SITE PLANS

The rehabilitation plan and site plan notes generally appear to be consistent with the information provided in the AIA.

The proposed rehabilitation plan outlines the recommendations for the progressive rehabilitation and is generally consistent with current practice in meeting provincial and municipal policies for Assessment of Shantz Station Pit AIA

aggregate extraction applications in prime agricultural areas. The methods proposed for the stripping and handling of soil resources, surface contouring; soil replacement, alleviating soil compaction, soil conditioning, other best management practices and monitoring of all stages of the rehabilitation process are consistent with the practices outlined in the draft AIA Guidance Document. However, there is some additional information that we believe should be included.

Drainage

The site plans do not clearly address site drainage issues. According to the DBH soil survey of the Subject Lands there are areas of imperfectly drained and poorly drained soils. For common field crops, it is a common practice to install tile drainage in imperfectly and poorly drained lands in cases where the groundwater table periodically rises within the rooting zone. The productivity of these soils benefits from tile drainage installations which, as noted in the AIA, is already in place within portions of the extraction area. The AIA and the site plan do not include any discussion regarding the potential need for tile drainage installations and suitable outlets which we would expect will be needed given the site conditions.

An agricultural drainage engineer or contractor should be able to determine whether tile drainage will be required.

Recommendation: Assess the need for drainage improvements and prepare a drainage plan that includes ensuring that suitable outlets for tile drainage are present.

Inclusion of Subsoil

The AIA and the site plan notes refer to stripping and replacing subsoil and topsoil, however, the headings of the site plan notes only refer to topsoil and overburden and not subsoil. For example, see Notes 1.2.2, 1.2.10 and 1.3.2. Note 1.3.2. also recommends replacing a minimum of 250 mm of topsoil/organic matter. We do not recommend applying a 250 mm layer of organic matter as a replacement for topsoil (a mineral based resource). Overtime organic matter will oxidize and the depth of this layer will substantially reduce. We do recommend that organic matter in the form of a soil amendment added to the topsoil be applied if available in appropriate quantities.

Recommendation: Edit the note headings to include subsoil.

Recommendation: Remove the work organic from topsoil/organic.

Proposed Vegetation and Cover Crop

Note 1.3.3 and 1.4.3 state that the extraction area will be returned to an agricultural afteruse in accordance with the "Pit Floor Agricultural Rehabilitation Sequence" detail. This detail recommends using a grass-legume mix as part of the soil conditioning phase of the rehabilitation process. No species are recommended. We do not have any issues with this as long as the ultimate species list used is appropriate and recommended by a qualified person with knowledge of the anticipated rehabilitated site conditions.

This note does provide a short list of species for planting on the side slopes. The species recommended in our opinion are suitable assuming soil and seasonal conditions are appropriate.

The site plans (3 of 5) under Agricultural Impact Assessment Vegetation No. 6, refers to a perennial cover crop. There is no information as to what species the perennial cover crop is to be comprised of. We recommend that it include both grass and legume species. This note also recommends that the perennial crop be ploughed under annually. We do not recommend this. There is no need to plough a perennial crop annually. The soil conditioning phase using a perennial crop over a five year period will achieve the same purpose of “promoting and increase organic matter”. If MHBC believe that given the soil conditions a more intensive program should be undertaken to achieve this outcome, we would recommend other cover crops dominated by annual species.

Recommendation: Confirm that the perennial cover crop include both grass and legume species.

Recommendation: Do not plough the perennial crop annually. Leave in place for recommended five year period.

Extraction Depth

As mentioned earlier, there is no indication in the AIA or on the site plans as to the proposed depth of extraction relative to the groundwater table.

Recommendation: Include in the site plans and notes the maximum depth of extraction above the groundwater table.

Monitoring

We support the AIA recommendations and notes provided on the site plans for continuous monitoring through all stages of rehabilitation. Following final rehabilitation, monitoring should confirm that soil capability has been restored in accordance with the PPS. This may necessitate several years of monitoring or less if progressive rehabilitation has demonstrated that soil capability has been restored.”

Recommendation: The rehabilitation plan should include a commitment to monitoring consistent with this guidance.

Recommendation: The soil parameters to be tested be determined prior to the commencement of extraction activities and that the testing of these parameters remain consistent throughout the duration of the monitoring program.

SUMMARY OF AIA GUIDELINES CHECKLIST RECOMMENDATIONS

The AIA Guidelines Checklist helps to evaluate whether or not the AIA has met all the requirements set out in the Draft AIA Guidance Document. Our evaluation of the AIA for Shantz Station Pit has identified several areas that are incomplete or missing from the AIA and should be addressed. Our recommendations are as follows.

1. Purpose of the Study
 - a. Include date of retainer in Section 1 when discussing nature of the retainer
 - b. Discuss requirement for an alternative site study and reasoning for its omission in this case

- c. Discuss net impacts. Net impacts are those impacts that remain following the implementation of all mitigation measures that have been proposed to address the potential impacts associated with the proposed development.
2. Description of Development
 - a. Include a description of quality and/or quantity of material to be extracted, the depth of the extraction above water table and extraction rate within Section 1.2 Proposed Aggregate Extraction Operation.
3. Pre-consultation
 - a. Include description of date of pre-consultation meeting as well as who attended and/or refer to Appendix 1 of the Planning Justification Report.
 - b. Include terms of reference or reasoning for omission
 - c. Include list of local landowners, farmers, farming organizations and agricultural advisory committees following any future public consultations or discussion of future consultations planned and how agricultural issues will be dealt with at these consultations.
4. Consultation
 - a. Include list of local landowners, farmers, farming organizations and agricultural advisory committees that were consulted and a record or description of these consultations
5. Study Area
 - a. Include discussion of how the Study Area was defined and who was consulted in order to ensure that the appropriate study area was identified.
6. Data and Information for the Land Use Survey
 - a. Complete land use survey is needed; several farm operations identified by a farm icon on the land use map are not labelled and discussed within the body of the report. All farms identified within the primary and secondary study area should be appropriately labelled and discussed. Of note is a large dairy operation to the east of the primary study area that is not labelled or discussed in the report.
7. Description of Soils and Lands
 - a. As mentioned above, mapping of the land use is incomplete and must be completed in order to properly evaluate potential impacts to agriculture
 - b. Include discussion of the significance of agriculture in the area, specifically in regards to economic and community benefits provided.
8. Assessment of Impacts to Agriculture
 - a. A discussion of how final grading of the rehabilitated surface will ensure the presence of shallow depressional areas will be minimized as much as possible in order to prevent frost pockets.
 - b. Discussion of potential compatibility concerns between the new use (Pit) and normal farming practices. This may include things such as nuisance complaints, vandalism, trespassing etc.

- c. Discuss potential impacts to local farming economy and community including the agri-food network.
 - d. Include statement regarding the importance of the farm operation on the Subject Lands, specifically regarding contiguity of farmland and whether or not it is a significant economic generator in the area
 - e. Discuss whether other farms in the area rely on the farm on the subject lands for services to the surrounding community
 - f. State whether the farm produces a commodity or service that the surrounding agricultural community is reliant upon.
 - g. Discuss whether other farms in the area will struggle economically as a result of the temporary loss of farmland provided the proposed pit is approved.
9. Net Impacts
- a. Discuss magnitude and extent of net impacts after the implementation of mitigation measures, including rehabilitation
 - b. Describe the anticipated net impacts following implementation of mitigation measures
 - c. Describe any net impacts that are dependent on the implementation of specific mitigation measures and how the performance of those mitigation measures will be evaluated.
10. Appendices
- a. Include CV's for MHBC staff who prepared the AIA
 - b. Include a list of people contacted as part of the AIA
 - c. Include complete reference/citation list for the AIA

CONCLUSIONS AND RECOMMENDATIONS

We have identified a number of recommendations that apply to both the AIA and the Site Plans and suggest that these be addressed either by updating the AIA and Site Plans or by preparing an Addendum to the AIA. In our opinion, these recommendations should be addressed prior to final approval of the zone change application.

Please contact either Leah Koetsier or Sean Colville if you have any questions regarding the peer review of the AIA for Shantz Station Pit. We can be reached by phone at 905 935-2161.

Sincerely,



Sean Colville, B.Sc., P.Ag.
Colville Consulting Inc.

Colville Consulting Inc.

APPENDIX A

QUALIFICATIONS

SEAN M. COLVILLE, B.Sc., P.Ag.

404 Queenston St., St. Catharines, ON L2P 2Y2

Tel: 905 935-2161 Email: sean@colvilleconsultinginc.com

EDUCATION

B.Sc. Geology, Acadia University, 1986

Soil Science, University of Guelph, 1984

PROFESSIONAL AFFILIATIONS

Ontario Institute of Agrology

Agricultural Institute of Canada

POSITIONS HELD

2003 – Present	Colville Consulting Inc., St. Catharines, Ontario. President
2001 – 2003:	ESG International Inc., St. Catharines, Senior Project Manager/Office Manager
1998 – 2001:	ESG International Inc., Guelph, Senior Project Manager
1988 – 1998:	ESG International Inc., Guelph, Project Manager
1984 – 1988:	MacLaren Plansearch Ltd., Halifax, Nova Scotia, Soil Scientist
05/1982 - 09/1983:	Nova Scotia Department of Agriculture and Marketing, Nova Scotia, Assistant Soil Scientist

EXPERIENCE

Sean M. Colville, B.Sc., P.Ag., president of Colville Consulting Inc., established the firm in June of 2003 to provide consulting services for clients involving matters related to agriculture and the natural environmental. Sean has over 30 years of consulting experience which includes:

- ♦ agricultural rehabilitation of lands disturbed by construction;
- ♦ soil survey and interpretation of agricultural capability;
- ♦ agricultural impact assessment and alternate site assessments; and
- ♦ agricultural resource evaluation studies (e.g., LEAR studies).

Sean has extensive experience interpreting agricultural land use policies involving development applications, settlement expansion proposals and new or expanding aggregate applications.

Sean is a Professional Agrologist (P.Ag.), and a member of the Ontario Institute of Agrology and the Agricultural Institute of Canada. Sean has been recognized by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) as an expert in the identification of Prime Agricultural Areas and in the interpretation of the Minimum Distance Separation requirements for livestock operations.

Sean has provided expert testimony before the Ontario Municipal Board, the Consolidated Joint Board the Assessment Review Board, Ontario Superior Court proceedings and the Normal Farm Practices Protection Board for projects involving land use planning matters as they relate to agriculture, impact assessment, resource evaluation and soil science.

Agricultural Rehabilitation and Monitoring

Sean has prepared a number of rehabilitation plans for the aggregate industry and for highway and pipeline construction projects. Sean also has experience assessing the economic impacts for compensation related to the temporary or permanent loss of use of agricultural land often associated with the construction of linear facilities. Specific examples agricultural rehabilitation and monitoring studies include:

- ◆ Developed for the Ontario Ministry of Agriculture, Food and Rural Affairs Agricultural Rehabilitation Guidelines and Guidelines for Agricultural Impact Assessments involving new aggregate extraction proposals;
- ◆ Development and implementation of a soil reclamation plan for TransCanada Pipelines. This involved an investigation as to the extent of contamination and debris along a pipeline easement, as well as an analysis of the soil quality, the level of soil degradation and the development of mitigation measures designed to restore the agricultural capability of the lands along the easement for specialty crop production;
- ◆ Soil and crop monitoring, and post construction monitoring of soil and crops for various TransCanada Pipeline, Union Gas, and Enbridge pipeline construction projects. Projects often included the development of restoration recommendations to improve soil conditions and crop yields;
- ◆ Developed agricultural rehabilitation plans required for site alteration permit applications to permit the importation of clean fill in agricultural areas. The purpose of the agricultural rehabilitation plans is to restore the agricultural productivity of lands;
- ◆ Development of progressive agricultural rehabilitation plan for Vineland Quarry and Crushed Stone Limited's quarry expansion project in Vineland, Ontario. The rehabilitation plan included the restoration of a significant portion of the sites climate to a condition suitable for the production of grape and tender fruit trees;
- ◆ Prepared progressive agricultural rehabilitation plans for the expansion of LaFarge's Fonthill pit located on the Fonthill Kame. This area has special soil and microclimatic characteristics that make it suitable for the production of specialty crops. The rehabilitation plans considered both the soils and microclimatic conditions in the design in order to restore the site following extraction to conditions suitable for the production of these specialty crops; and
- ◆ Development of a progressive agricultural rehabilitation plan for Walker Brothers Quarries Ltd. quarry expansion project in Niagara Falls, Ontario. Also prepared and implemented the vegetation screening and naturalization concepts for which annual monitoring reports are prepared for review by the City of Niagara Falls and the Ministry of Natural Resources.

Agricultural Impact Assessment, Alternative Site Studies, Minimum Distance Separation

Sean specializes in agricultural impact assessment and alternative site studies for development applications and urban boundary expansion proposals. His experience includes well over 100 agricultural impact assessments and soil surveys for a wide variety of projects including Class EAs for linear facilities, waste management facilities, municipal services, impact assessments for aggregate operations, residential, commercial, recreational, industrial and institutional developments. Many of these projects require the interpretation of agricultural land use policies, inventory and assessment of the agricultural resources, land use, land tenure, an assessment of conflict potential including determination of minimum distance separation requirements, identification of prime agricultural lands and areas, and interpretation of the agricultural priority of lands proposed for development.

Sean has been retained by both municipalities and private sector clients to prepare agricultural impact assessment for settlement area expansion proposals and the development of secondary plans. Sean has also been retained by municipalities to complete peer review studies of agricultural impacts assessments and minimum distance separation calculations for various development applications.

Soil Survey and Resource Evaluation

As a Pedologist (soil scientist), Sean is highly experienced in completing soil surveys, soil resource evaluations and assessing the productivity of soil for common field crops using the Canada Land Inventory system (CLI) of soil classification and for soil suitability for production of specialty crops using the system developed by the Ontario Ministry of Agriculture and Food. He has extensive experience interpreting the soil landscape, glacial landforms and soil forming processes; is skilled in the use of aerial photography for stereoscopic interpretation and identification of soil landforms for soil map production. Sean is recognized by the Ontario Ministry of Agriculture, Food and Rural Affairs as a Consulting Pedologist and a qualified soil scientist capable of preparing soil capability assessments based on the Canada Land Inventory (CLI) Soil Capability Classification for Agriculture (ARDA, 1965).

Sean has lead and participated in a number of large soil survey programs in Ontario, Nova Scotia and New Brunswick. Sean's soil survey experience includes:

- ◆ conducting well over 200 soil surveys of various size and scale to assess the soil capability for identification of prime and non-prime agricultural lands for agricultural impact assessments and other studies;
- ◆ conducting soil surveys along linear facilities to determine depth of topsoil and subsoil, assess soil capability along the route to determine baseline conditions and identify areas that pose limitations to construction;
- ◆ the preparation of soil maps, CLI maps and reports for solar farm applications to address the Ontario Power Authority's requirements for ground-mounted solar project on agricultural lands;
- ◆ conducting county level soil survey reports that included the delineation, evaluation and mapping of soils series and the assessment of the soil capability for selected areas in Cumberland County, Colchester County, Hants County and Kings County, Nova Scotia;
- ◆ conducting county level soil survey reports that included the delineation, evaluation and mapping of soils series and the assessment of the soil capability for selected areas in Westmoreland County, New Brunswick; and
- ◆ conducting soil surveys for paired watershed studies assessing the benefits and effectiveness of no-till cultivation compared to traditional methods in Oxford County, Ontario.

LEAR Studies

Sean is very familiar with Land Evaluation and Area Review (LEAR) methodologies and has prepared a LEAR study to identify Prime Agricultural Areas in the Town of Mono, County of Dufferin. Sean has also applied LEAR methodologies when completing alternate site studies to assist municipalities identify low priority agricultural lands for settlement area expansion purposes and to assist development proponents justify choice of location, to ensure that proposed settlement area expansion or proposed development applications is consistent with the Provincial Policy Statement.

Publications

Rees, H.W.; Duff, J.P.; Colville, S.; Soley, T. and Chow, T.L. 1995. Soils of selected agricultural areas of Moncton Parish, Westmoreland County, New Brunswick. New Brunswick. Soil Survey Report No. 15. CLBRR Contribution No. 95-13, Research Branch, Agriculture and Agri-Food Canada, Ottawa, Ont.

Rees, H.W.; Duff, J.P.; Soley, T.; Colville, S.; and Chow, T.L. 1996. Soils of selected agricultural areas of Shediac and Botsford parishes, Westmoreland County, New Brunswick. New Brunswick. Soil Survey Report No. 16. CLBRR Contribution No. 95-13, Research Branch, Agriculture and Agri-Food Canada, Ottawa, Ont. 127 pp. with maps.

Colville Consulting Inc.

APPENDIX B

CHECKLIST OF REQUIREMENTS
FOR AGRICULTURAL IMPACT ASSESSMENT

AIA Guidelines Checklist

Project Name	Peer Reviewers	Contact Address & Phone Number
AIA Shantz Station Pit	Sean Colville, B.Sc., P.Ag. Leah Koetsier B.Sc. EMAGP	Colville Consulting Inc. 404 Queenston Street, St. Catharines, Ontario L2P 2Y2
Other Comments		
Introduction	Comments	
Purpose of the Study		
Nature of retainer (who, when, why)	Incomplete. – Mostly covered in Section 1.0, Page 1 of AIA. MHBC was retained by Capital Paving Ltd. but no date of retainer provided. Recommend adding date of retainer.	
Description of proposed aggregate extraction application.	Completed. Section 1.2, Page 2 of AIA	
Purpose of the AIA – to satisfy municipal and provincial planning requirements (or other applicable requirements).	Completed Intent of Study - Section 1.0, Page 1 of AIA Purpose of Study - Section 1.3, Page 4 of AIA	
Objectives of AIA listed.	Completed – Section 1.0, Page 1 of AIA To assess the impacts to agriculture of the proposed aggregate operation and to satisfy the Growth Plans requirement for the submission of an AIA to accompany new mineral aggregate operation applications in prime agricultural areas.	
An explanation of how the AIA will satisfy these objectives.	Completed – Section 1.1, Page 1 of AIA Outlines methodology and lists information sources reviewed	
An evaluation of alternative locations has been undertaken? If not, why not? Explanation required.	Incomplete. An evaluation was not undertaken as part of the AIA. However, on page 26 of the AIA, MHBC states that “extraction of aggregate resources outside of prime agricultural areas is not possible” because all of the rural lands in the Township of Woolwich are part of a prime agricultural area. As a result, an alternate site study was not undertaken.	
Have Potential Impacts been identified, and Mitigation Measures recommended to avoid and/or minimize impacts of extraction?	Completed. Section 5.0, pages 28 – 31.	
Have Net Impacts been determined?	Incomplete. A discussion of Net Impacts was not included in AIA. Recommend adding a statement in AIA to address net impacts.	
Has a monitoring plan and/or performance measures been developed to ensure mitigation measures have long-term effectiveness?	Completed. Section 6.6, pages 34 – 35. Monitoring Plan also included in Site Plan Notes.	
Description of Development – Scope and Location		
Is a description of the nature, application, and rationale for the AIA included?	Completed. Section 1 - Introduction. Pages 1 -4.	
Is the type and purpose of the development proposal, the location, maps that are of an appropriate scale and detail, a general description of agriculture in the area included in description	Completed. Section 1 - Introduction. Pages 1 -4.	
A description of the proposed mineral aggregate operation and an explanation on whether this is a new site or an expansion of an existing operation.	Completed. New Application Section 1 - Introduction. Pages 1 -4.	

AIA Guidelines Checklist

<p>The description includes: the type of operation (e.g. pit, quarry, above water table extraction, etc.), information on the resources to be extracted (e.g. quality and quantity), an outline of the maximum extraction rate (tonnes/year), the proposed after use and an appropriate justification for the proposed after use (e.g. rehabilitation of the site back to an agricultural condition).</p>	<p>Incomplete. No mention of quality or quantity of material. No mention of depth of extraction above water table. No mention of extraction rate (tonnes/year). Note: The AIA does provide a description of the proposed after use with a description of the proposed rehabilitation plan designed to return the site back to an agricultural condition. The AIA should include the additional information listed. Suggest including this information in Section 1.2 Proposed Aggregate Extraction Operation.</p>
<p>Details on the proposed mineral aggregate operation location including a legal description, lot and concession, and the address of the site. Where possible, land use designations and zoning, and a description of the prime agricultural area designations or, if applicable, the agricultural land base, being considered for re-designation should also be included in the description.</p>	<p>Completed. Section 1 – Introduction. Pages 1-4 Section 2 – Study Area. Pages 5-16</p>
<p>Maps of appropriate scale and detail that include the proposed licensed boundary and the proposed limits of extraction.</p>	<p>Completed. Section 1 -Introduction. Page 2 Operational Plan & Rehabilitation Plan. Between Pages 3 & 4</p>
Agricultural Policy Requirements	
<p>Outline of the policy and regulatory framework (provincial and municipal) explaining why and AIA is required and what needs to be done to comply with these requirements.</p>	<p>Completed. Section 4 - Planning Policy Framework. Pages 20 - 28</p>
<p>Is an explanation of the PPS and/or provincial plan policies that apply along with any relevant applicable designations included?</p>	<p>Completed. Section 4 - Planning Policy Framework. Pages 20 - 28</p>
<p>Was a description of the relevant provincial requirements related to the proposed new aggregate operation or existing expansion (i.e. Aggregate Resources Act and Environmental Assessment Act)?</p>	<p>Completed. Section 4 - Planning Policy Framework. Pages 20 - 28</p>
<p>Was an explanation on how the proposal is consistent and/or conforms to the PPS, provincial plans and other applicable requirements provided?</p>	<p>Completed. Section 4 - Planning Policy Framework. Pages 20 – 28 AIA Concludes the application conforms to the policies in the PPS, Growth Plan, Regional Waterloo OP and Township of Woolwich OP. Note: Recommend including a summarizing bullet in Section 8 Summary.</p>
Process	
Pre-consultation	
<p>Has the pre-consultation meeting taken place prior to initiating an AIA? Date: MM/DD/YYYY</p>	<p>Incomplete. Pre-consultation process is only discussed in Section 1.1 of the AIA and that only the landowner was consulted. More details are provided in Planning Justification Report which does include a Pre-consultation record. Note: Recommend that AIA refer to Planning Justification Report for pre-consultation process.</p>
<p>Were the Terms of Reference reviewed?</p>	<p>Incomplete. To our knowledge, Terms of Reference were not prepared and agreed upon for the AIA.</p>
<p>Have the primary and secondary study areas have been confirmed?</p>	<p>Completed. Section 2 – Study Area. Page 5 & 14</p>

AIA Guidelines Checklist

<p>A list of local landowners, farmers, farming organizations and agricultural advisory committees that should be engaged in the AIA has been compiled.</p>	<p>Incomplete. The planning justification report does not appear to include any farmers, local landowners or farming organizations/advisory committees which were consulted. Landowner of the Subject Lands was consulted as mentioned in Section 1 of AIA, he also owns “the majority” of the adjacent lands. Note: Include list of local landowners, farmers, farming organizations and agricultural advisory committees following any future public consultations. Other options could include future consultations. If this is being proposed, a statement should be included in the AIA that addresses any future consultations and how agricultural-related issues will be dealt with.</p>
<p>Consultation</p>	
<p>Has there been a consultation with local agricultural organizations (i.e. municipal agricultural advisory committee, local farm organization, etc.)?</p>	<p>Incomplete. Only consultations with landowner. No other consultations mentioned in AIA.</p>
<p>Approvals</p>	
<p>If applicable, have approvals been obtained for the AIA?</p>	<p>Not applicable</p>
<p>Study Area</p>	
<p>If no pre-consultation meeting is held; was confirmation of the study area(s) provided by those who will be approving the AIA and was the decision made based on meeting provincial and municipal requirements?</p>	<p>Incomplete. Recommend clarification of pre-consultation process.</p>
<p>Primary Study Area (i.e. Subject Lands)</p>	
<p>Do the Subject Lands include the proposed licensed area?</p>	<p>Completed. Yes</p>
<p>Does the evaluation of the Subject Lands include an analysis of impacts based on the area being re-designated to accommodate the new aggregate operation or aggregate expansion?</p>	<p>Completed. Yes</p>
<p>If more than one location is being considered; then each of these areas will need to be identified as a Subject Lands. If this is the case, the AIA must include an evaluation of alternative locations to determine which of the two Subject Lands would have the least amount of impact on agriculture, noting other land use policies and requirements also need to be factored in when selecting a settlement area boundary expansion location.</p>	<p>N/A</p>
<p>Secondary Study Area</p>	
<p>The Secondary Study Area is an appropriate size based on the scale and extent of the proposed mineral aggregate operation; this is also dependant on agriculture in the surrounding area (and within the GGH the Agricultural System). At a minimum there is a 1 km radius from the proposed licensed area for the secondary study area.</p>	<p>Completed. Yes, the Secondary Study Area is a 1 km radius from the proposed licenced area. Section 2 – Study Area which is consistent with the Draft AIA Guidelines.</p>
<p>Have factors such as the anticipated impacts from blasting and/or potential changes to the regional groundwater system and impacts of haul routes been considered when determining the Secondary Study Area?</p>	<p>Completed. Yes.</p>

AIA Guidelines Checklist

Study Methodology	
Background Data Collection and Review	
A complete list of the background materials reviewed, their sources, literature cited and dates are provided?	Completed. Yes Section 1.1 Data Collection and Review, Pages 1 and 2 Appendix A, Section 6, References page 29
Does the list include (but not limited to):	
Relevant provincial land use plans and policy documents (e.g. PPS, the Growth Plan, Greenbelt Plan, ORMCP, NEP, etc.)	Complete. <ul style="list-style-type: none"> • Provincial Policy Statement (2014) • Growth Plan (2017) • Region of Waterloo Official Plan (June 2015); • Township of Woolwich Official Plan (July 2012); • Township of Woolwich Zoning By-law (June 2018).
Municipal planning documents (official plans and zoning by-laws), as well as municipal drains and/or other types of public works or legal instruments such as easements	
Any relevant source protection plan	
Excess Soil Management Policy Framework and Regulatory Proposal	Not relevant
Crop type and yield information (as available)	Completed. Crop type provided in DBH report (Appendix A). Section 1, page 1 No yield information.
Agricultural land base mapping within the GGH, the Agricultural System (provincial and/or municipal)	Completed. Yes, Figure 8 located between pages 23 and 24, Section 4 - Planning Policy Framework
OMAFRA's constructed and agricultural Artificial Drainage Mapping	Completed. Mapping located in DBH report (Appendix A). Section 1, page 3 (Figure 1)
Soil and CLI Capability mapping - The Canada Land Inventory (CLI) soil capability classifications for agriculture (through Land Information Ontario, or OMAFRA's Agricultural Information Atlas).	Completed. Yes, Section 3 – Field Data Collection Also details located in DBH report (Appendix A).
Aerial imagery (historic and recent) with effective user scale of 1:10,000 or smaller	Completed. Yes, recent aerial imagery was used.
Topographic/elevation mapping with effective user scale of 1:10,000 or smaller	Completed. Yes, it was used during field data collection, but mapping was not provided within report.
Other reports prepared to support the application (e.g. planning, hydrological, hydrogeological, noise, vibration, dust, traffic, etc.)	Completed. Yes, list provided in Section 1 – Introduction.
Applicable land use maps.	Completed. Provided in Section 2 – Study Area Figure 4.
Agricultural crop statistics, over several recent census periods (Statistics Canada, Census of Agriculture)	Completed. 2016 Census of Agriculture was reviewed and compared to 2011. Section 2.3 – Census of Agriculture Review Page 16
Parcel mapping and related assessment class information for farm parcels, if readily available from the municipality.	Completed. Report states it was reviewed but no mapping is included.
Data and Information for the Land Use Survey	
An explanation of the operations and agricultural lands within each Study Area is provided.	Incomplete. Section 2 – Study Area. Large dairy farm located within Secondary Study Area is not mentioned or described within the report
This section should include applicable schedules from the municipal official plan indicating the land use designation(s) (e.g. for upper-, single- and lower-tier official plans).	Completed. Yes, within Section 4 - Planning Policy Framework
Schedule from the municipal comprehensive zoning by-law illustrating the municipal zoning.	Completed. Yes, within Section 4 - Planning Policy Framework
Soil capability classifications (the Canada Land Inventory (CLI)) for agriculture outlined for the Subject Lands and Study Area.	Completed. Yes, within Section 3 - Field Collection Data. Further detail within DBH report (Appendix A)
Agricultural resource inventory map combining existing aerial imagery with parcel fabric and identifying the following features within the Study Area.	Completed. Description provided within Section 5.2 Fragmentation of Agricultural Lands. No mapping provided.

AIA Guidelines Checklist

Farmsteads, the location and type of operation with historical and recent information if available (e.g. cluster of farm buildings, with or without dwellings, livestock facilities).	Incomplete. Figure 4, descriptions in Section 2 – Study Area Large dairy farm is shown with icon on the map but not labelled or described in report body
Farm fields with type of crop (e.g. pasture, hay, field or horticultural crop, etc.).	Completed. Figure 4
Agri-food businesses (e.g. chemical, seed, or fertilizer input suppliers, agricultural sales or service, farmers markets, grain dryers, food processors or distributors, etc.).	Completed. Land Use Survey did not identify any agri-food businesses.
Non-farm development (e.g. commercial, industrial, institutional, residential, recreational, etc.).	Completed. Settlement boundary shown in Figure 4
Other land uses and features (e.g. fencerows, roadways, ditches, riparian areas, rough land areas, forests, wetlands, etc.).	Completed. Other land uses shown in Figure 4 – part of aerial photographic image but not labelled.
Agricultural drainage map indicating location of municipal drains, tile outlets and field tile (random or systematic) within the study area(s).	Completed. Surface drainage shown on Site Plans - Existing Conditions. Tile drainage shown in Appendix A, Section 1, Figure 1, page 3
Any specific type and relative level of investment in farm infrastructure (farm related buildings and structures and manure handling/storage facilities) and land improvements (e.g. tile drainage, irrigation); when available.	Completed. Yes, provided in Section 2.0 - Study Area.
If lands are within the GGH, information on the Agricultural System must be included for both the agricultural land base and the agri-food network (infrastructure, services and assets).	Completed.
Field Investigations	
Was a field investigation conducted for the Subject Lands and Secondary Study Area?	Completed. Yes. Land use survey completed for primary and secondary study areas. Soil survey completed on Subject Lands
Was the background data collection verified? I.e. Verification of background data pertaining to agricultural land uses, active farm locations, and the type of operation; farm buildings and other key permanent facilities at each location, etc.	Completed. Yes. Section 2
Was there access to farmlands to complete applicable on-site assessments?	Completed. Access to Subject Lands provided by landowner to complete soil survey.
Local Knowledge and Input	
During land use survey, was there opportunity for farm interviews or meetings to obtain specific information directly from local farmers, farm organization or the local agricultural advisory committee within the primary and secondary study areas?	Uncertain. Land use survey included roadside assessments. No discussion regarding information provided by local farmers, farm organization or the local agricultural advisory committee within the primary and secondary study areas other than perhaps from the landowner.
If interviews or meetings are undertaken, has the additional information collected been provided within the AIA?	Not applicable. No meetings undertaken.
Description of Soils and Lands	
Assessment of CLI Soils Capability for the Primary and Secondary Study Areas has been completed.	Completed. Yes, the soil survey was conducted by DBH and report provided within Appendix A.
Description of the limitations for common field crop production. Include a CLI Capability map that shows the CLI Classes assigned to the soils identified study area(s). As needed, and where possible, on-site investigations can provide more detailed information.	Completed. Yes, within AIA, Section 3.0 and DBH report provided within Appendix A.
Was a soil survey conducted for the Subject Lands?	Completed. Yes, see DBH report Appendix A.
Has additional detail regarding the soil profile (e.g. horizon depths) been collected as well as the collection of soil samples to obtain the baseline conditions of the land?	Completed. Yes, within the DBH report in Appendix A.
Was the soil survey refined to a scale suitable for planning application purposes (i.e. 1:5,000 to 1:10,000)?	Completed. Yes, within both the AIA (Figure 5 and 6) and Appendix A. Soil survey scale shown at 1:7,639.

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A general description of slope and topographic features including a description of any limitations to agricultural capability based on slope are included.	Completed. Yes Appendix A
Any relevant information regarding hydrological and hydrogeological studies applicable to the Subject Lands? Information should include details on drainage; surface drainage features, if drainage infrastructure exists or not, as well as existing or past improvements. If tile drainage exists a description of the system and its status should be provided.	Completed. Yes, Section 5.4 - Hydrogeology
A description of climatic features (only required for specialty crop areas) including Crop Heat Units, number of frost-free days, and the general climatic patterns of the area are provided. A description of any microclimatic conditions particular to the site should be included (e.g. frost pockets). Where applicable.	Completed. Yes. Section 3.2 – Microclimate for Specialty Crop Production
Soil Suitability Ratings (consistent with the ratings assigned by OMAFRA) for crop types historically grown on site or common in the surrounding area should be assessed (only applicable if the Study Area(s) are located within specialty crop areas).	Completed. Yes. Figure 6 & Table 1. Detailed information contained in Appendix A.
Mapping of the land use including but not limited to; farmsteads, farm fields with type of crop (e.g. pasture, hay, field or horticultural crop, etc.); parcel size and form and limitations/opportunities for farming and points of access to farm operations and fields for farm machinery.	Incomplete. Section 2, Figure 4 – Agricultural Land Uses. Missing mapping and description of some farmsteads including one large dairy operation located east of the proposed licenced area.
A description and information on farm operations with historical (e.g. recommended ten years) and existing recent information where available within the Primary and Secondary Study Areas.	Incomplete. Section 2, Missing description of some farmsteads including one large dairy operation located east of the proposed licenced area.
Is there information on Infrastructure and land improvements within the report; such as; type, condition and use of buildings and structures on-site; the level of investment in agricultural facilities and farm infrastructure (farm related buildings and structures, manure handling/storage facilities); description of the improvements;	Completed. Yes. Section 2 – Study Area
Agricultural drainage map indicating location of municipal drains, tile outlets and field tile (random or systematic).	Completed. Yes. Contained in Appendix A.
Information on existing and potential constraints to agriculture (i.e. traffic impacts). Information on any operational relationships between subject lands and adjoining parcels and a description of other relevant features (i.e. fencerows, roadways, ditches, riparian areas etc.).	Completed. Yes. Contained in Section 2 – Study Area
Has the report provided information and descriptions of the local and regional significance of agriculture in terms of economic and community benefits they may provide?	Incomplete. Recommend adding a statement in AIA to address this issue.
Assessment of Impacts to Agriculture	
Consideration should also be given to the potential local and regional impacts of removing the Subject Lands (permanently or temporarily) on agricultural lands, operations and the agri-food sector within the surrounding area and within the GGH to the Agricultural System (the extent of the assessment is based on the secondary study area). For example consider the potential impacts (in addition to others) listed below.	
Interim or permanent loss of agricultural land, including the quality and quantity of farmland lost.	Completed. Temporary loss, a significant portion (96%) of the lands will be rehabilitated to agricultural condition. Post-extraction plans for the Subject Lands include cropland and side slopes. See section 5.1 – Reduction/Loss of Agricultural Land and Infrastructure for details.

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The type of agricultural, agriculture-related or on-farm diversified uses being lost and the significance this has for supporting other agricultural production in the surrounding area	Completed. Temporary loss of agricultural lands. <ul style="list-style-type: none"> - 68 hectares (168 acres) of agricultural lands proposed for extraction, agricultural structures on the Subject lands being preserved - The proposed rehabilitation plan intends to return approximately 65.3 hectares (161 acres) of land back to agriculture. - Negligible permanent loss of agriculture.
Fragmentation of agricultural lands and operations	Completed. Yes, Section 5.2 Fragmentation of Agricultural Lands
The loss of existing and future farming opportunities	Completed. Yes, 5.1 Reduction/Loss of Agricultural Land and Infrastructure. Temporary loss only
The loss of infrastructure, services or assets important to the surrounding agricultural community and agri-food sector	Completed. Yes, 5.1 Reduction/Loss of Agricultural Land and Infrastructure. No loss of infrastructure indicated.
The loss of agricultural investments in structures and land improvements (i.e. artificial drainage)	Completed. Yes, 5.1 Reduction/Loss of Agricultural Land and Infrastructure.
The disruption or loss of function to artificial drainage and irrigation installations	Completed. No disruption anticipated. No tile drainage present on abutting lands, tile is present on subject lands and is assumed to be lost as a result of extraction activities. This loss is not noted in the report. Note: AIA should include a recommendation to replace and/or install tile drainage to improve drainage conditions where necessary post-rehabilitation efforts.
Changes to the soil drainage regime	Completed. Yes, located within Appendix A.
Changes to surface drainage features which could have an effect on adjacent lands	Completed. Yes, located within Appendix A.
Changes to landforms, elevations and slope that could alter microclimatic conditions (e.g. modification to slopes that may reduce or improve cold air drainage opportunities and changes to elevation may have an impact on diurnal temperatures)	Incomplete. While microclimate is not a significant consideration for common field crop production a note on the Rehabilitation Plans should be included to state that final grading of the rehabilitated surface should ensure that the presence of shallow depressional areas be minimized to the extent possible to eliminate frost pockets.
Changes to hydrogeological conditions that could affect neighbouring municipal or private wells, sources of irrigation water and sources of water for livestock	Completed. Addressed in 5.4 Hydrogeology
Disruption to surrounding farm operations, activities and management (e.g. temporary loss of productive agricultural lands, cultivation, seeding, spraying, harvesting, field access, use of road network)	Completed. Yes, temporary loss of productive agricultural lands.
The potential effects of noise, vibration, dust, and traffic on agricultural operations and activities	Completed. Addressed in Section 5.0 Assessment of Impact
Potential compatibility concerns such as normal farm practices facing challenges with e.g. nuisance complaints, vandalism and trespassing that may occur with the new development being established	Incomplete. Recommend adding a statement in AIA to address this issue.
The inability or challenges to move farm vehicles and equipment along roads due to increased traffic caused by haul routes, changes in road design.	Completed. Section 5.5 – traffic Haul route towards Highway 7, AIA concludes agricultural traffic not likely to head in that direction.
Potential impacts in regards to economic and community impacts to the surrounding area and agri-food sector (locally or regionally) as a result of the proposed pit.	Incomplete. Recommend adding a statement in AIA to address this issue.
Is the farm operation an important economic generator in the area, or if there are significant acreages being lost that are important to maintaining the contiguity of farmland in the area?	Incomplete. Recommend adding a statement in AIA to address this issue.

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Does the agricultural, agriculture-related and/or on-farm diversified uses has infrastructure upon which other farms rely and/or services important to the surrounding farm community?	Incomplete. Recommend adding a statement in AIA to address this issue.
Do the agricultural, agriculture-related or on-farm diversified uses produce a commodity or service that surrounding agricultural community is dependent upon?	Incomplete. Recommend adding a statement in AIA to address this issue.
Can any of the agricultural losses be replaced?	Completed. Yes, approximately 96% of the Subject Lands to be extracted within the prime agricultural area will be returned to an agricultural condition. See section
Will other farms struggle economically as a result of the agricultural loss?	Incomplete. Recommend adding a statement in AIA to address this issue.
Mitigation Measures	
Appropriate best management practices and recommended options for implementing mitigation measures will be identified and evaluated based on site- or area- specific conditions.	
Discuss the mitigation measures recommended to avoid, reduce or eliminate the impacts of agricultural loss.	Completed. Yes, Section 7 – Recommendations.
For each mitigation measure the report includes the objective, possible mitigation measure along with a description and the application of each.	Completed. Yes, Section 7 – Recommendations.
The location of the aggregate operation is based on (where possible) avoiding, minimizing and mitigating the impact on the Agricultural System and evaluating and prioritizing alternative locations across the upper- or single-tier municipality in accordance with certain criteria.	Completed. Yes, Section 7 – Recommendations.
Net Impacts	
Net impacts are described with respect to their magnitude and extent in the context of the lifespan of the settlement area boundary expansion or non-agricultural uses.	Incomplete. Net impacts not considered. Recommend addressing in AIA to address this issue.
Descriptions of the anticipated net impacts, after mitigation measures for the proposed mineral aggregate operation are put in place.	Incomplete. Net impacts not considered. Recommend addressing in AIA to address this issue.
The net impacts that are dependent on specific mitigation and performance measures are clearly identified.	Incomplete. Net impacts not considered. Recommend addressing in AIA to address this issue.
Study Conclusions and Recommendations	
Recommendations specific to the proposed aggregate operation including requirements for mitigation measures, including rehabilitation if applicable, that should be implemented to reduce impacts from the proposed development should be outlined in this section.	Completed. Yes, Section 6 – Rehabilitation Recommendations, Section 7 – Recommendations.
Recommendations include mitigation measures that can be put in place pre-development, during development and post-development as appropriate. Monitoring and performance measures are recommended to ensure that the mitigation measures have been successfully implemented.	Completed. Yes, Section 7 – Recommendations.
Conclusion provides an explanation of how the objectives of the AIA have been fulfilled, the net impacts of the proposed aggregate operation and state whether the proposal is consistent with the relevant provincial requirements.	Completed. Yes, Section 8 – Summary provides an explanation of the proposed mineral aggregate extraction on the subject lands, indicates no significant net impacts due to rehabilitation of 96% of lands to agriculture, indicates proposed use is above water table and is consistent with provincial and local policies for mineral aggregate extraction as an interim use.
Appendices (Project Dependant)	
Curriculum Vitae of Study Team	Incomplete. CV's for MHBC staff not included. CV included in DBH soil report.

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<p>All background and study data sources; a description of the methodologies and survey techniques employed in the study, including a description of soil sampling techniques and method of viability assessment, soil survey site investigation data (e.g. soil profile descriptions and slope measurements).</p>	<p>Completed. Listed in the Data section of the report but the only Appendices included is DBH soil survey report and examples of previous rehabilitation work completed by Capital Paving Inc.</p>
<p>A list of people contacted during the AIA study (where appropriate)</p>	<p>Incomplete. Include list of people contacted if any.</p>
<p>Monitoring Plan for implementing the recommendations and mitigation measures (including what should be monitored and the length of time it's being monitored)</p>	<p>Completed. Monitoring plan referenced in Site Plans – Rehabilitation Plan and in Section 6.6, page 34. Annual reporting of all stages of the rehabilitation process should be documented and reported. Random soil testing should also be completed at the beginning of each growing season to analyze soil fertility and structure. Adjustments to cropping practices and/or soil amendments may be required based on the results of the soil testing.</p> <p>An annual rehabilitation practices report should be submitted in order to document agricultural rehabilitation activities and demonstrate compliance in relation to soil stripping, handling and storage; rehabilitation progress, methods and best practices; soil tests; and, post rehabilitation soil capability and farming activity. Does not indicate length of time it should be monitored.</p>
<p>List of References Cited</p>	<p>Incomplete. AIA needs a reference section. Some references are listed in the Introduction of the report (Section 1). References are included in Appendix A for the DBH soil survey and CLI Classification report.</p>