

Summary Report

Tri City Lands Ltd. Spencer Pit

Part Lots 14, 15 and 16,
and Lots 17 and 18, Concession B
Township of Guelph/ Eramosa
County of Wellington

April 2014



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Summary Report

SPENCER PIT

Part of Lots 14- 18, Concession B

Township of Guelph-Eramosa (formerly Guelph Township)

County of Wellington

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- B. Natural Environment Level 1 and 2**
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- C. Archaeological Assessment Stage 1 and 2**
Stantec Consulting Limited
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Conestoga-Rovers & Associates
- E. Traffic Impact Assessment**
GHD
- F. Planning Analysis Report**
Harrington McAvan Ltd
- G. Resource Assessment**
Applicant and Harrington McAvan Ltd
- H. Site Plans**
Harrington McAvan Ltd

1.0 INTRODUCTION

This report has been prepared in support of an application by Tri City Lands Ltd. for a new pit licence. The application is for a Category 3 - Class "A" licence, pit above water, as required under the *Aggregate Resources of Ontario Provincial Standards Version 1.0* developed in support of the Aggregate Resources Act, as amended by Bill 52. It summarizes the information and conclusions of the consultants who have contributed to the preparation of the Site Plans including:

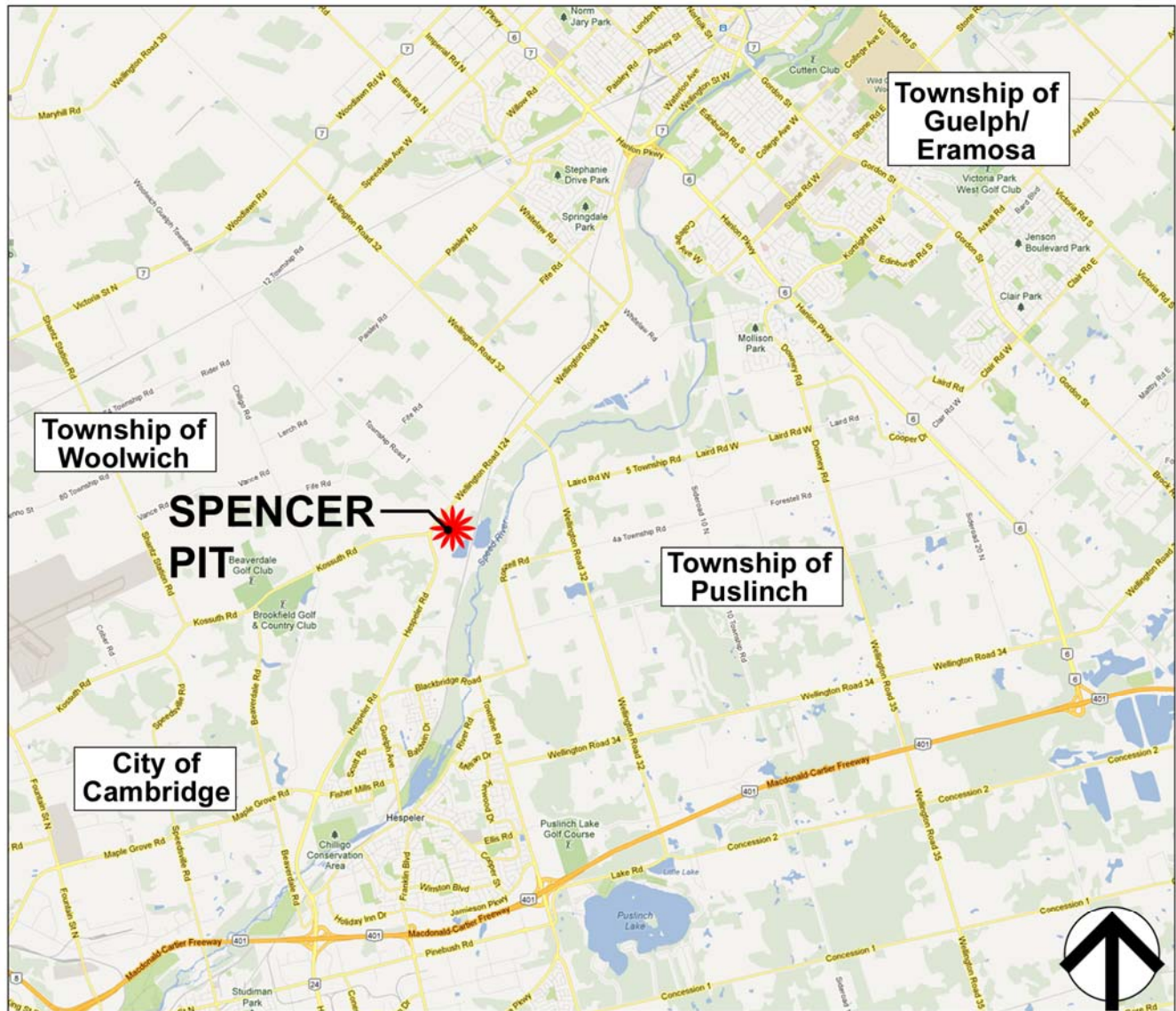
- ◆ Hydrogeology: Groundwater Science Corp.
- ◆ Natural Environment: Stantec Consulting Limited.
- ◆ Archaeological Assessment: Stantec Consulting Limited
- ◆ Noise: Conestoga-Rovers & Associates
- ◆ Traffic: GHD
- ◆ Planning Report: Harrington McAvan Ltd
- ◆ Resource Assessment: Applicant and Harrington McAvan Ltd.

The report is intended to supplement the information contained on the Site Plans which have been prepared by Harrington McAvan Ltd (Appendix G), and to assist in the review of the planning and licencing applications which the company has filed with the Township of Guelph/ Eramosa and the Ministry of Natural Resources.

2.0 SITE DESCRIPTION

The proposed new licence is for 51.16 hectares (126.4 acres) located in Part of Lots 14-18, Concession B, in the Township of Guelph/ Eramosa (formerly Guelph Township), County of Wellington. The site is located in the southwest corner of the municipality, on the south side of Wellington Road 124 and north of the existing Canadian National Railway line. Refer to location map (Figure 1 – Location Map). The area proposed to be extracted is 42.45 hectares (104.9 acres).

The majority of the site consists of level to gently sloping agricultural field used for cash crops (see Figures 2 - photo). There is a wooded area of about 5 hectares (12.4 acres) located in the south-central part of the property. The woodlot is comprised of mainly of deciduous trees, such as maple, ash, cherry, poplars, walnut, etc. (Figure 3 - photo). A mixture of deciduous and coniferous trees are found growing along the property line adjacent to the railway tracks and the northern boundary surrounding the residential property and along the interior fence row. A house, barn and implement sheds are located at the east end of the property and are excluded from the extraction area. There is also a house along the north boundary now also owned by the applicant (Figure 4 - photo). The closest off-site residence is located to the west of the property (Figure 5 – photo). A high voltage hydro transmission corridor runs diagonally from southwest to northeast through the western part of the site (Figure 6 - photo).



"Guelph, Ontario." Map. Google Maps. Google, 30 May 2013. Web. 30 May 2013.

Location Map

0 1km 5km



Figure
1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7

Surrounding land uses are generally agriculture to the north and west of the subject lands, with scattered non-farm residences located along Wellington Road 124 in the vicinity of the property. The adjacent property to the south, within the Township of Puslinch is an inactive quarry, licenced to Carmeuse Lime (Canada) and contain large ponds in the two areas where the bedrock was previously extracted (Figure 7 – photo). A 12 hectare section of the Carmeuse licence located on the east side of the Speed River was previously extracted for the surficial sand and gravel deposit and has been rehabilitated back to agriculture use. There are other licenced and former extraction sites to the south and east of the property within the Township of Puslinch (see Figure 8 Licenced Aggregate Operations Map).

3.0 PLANNING AND LAND USE CONSIDERATIONS

The following section summarizes the planning and land use considerations for this application. The detailed Planning Analysis Report, prepared by Harrington McAvan Ltd. is provided in the Appendix F of this Summary Report.

The Aggregate Resources Act

According to Section 12 of the *Aggregate Resources Act (ARA)*, there is a criterion the Minister employs when considering to issue or refuse a licence.

(a) *the effect of the operation of the pit or quarry on the environment;*

This matter has been addressed within the various technical reports and Site Plans completed in support of this application.

(b) *the effect of the operation of the pit or quarry on nearby communities;*

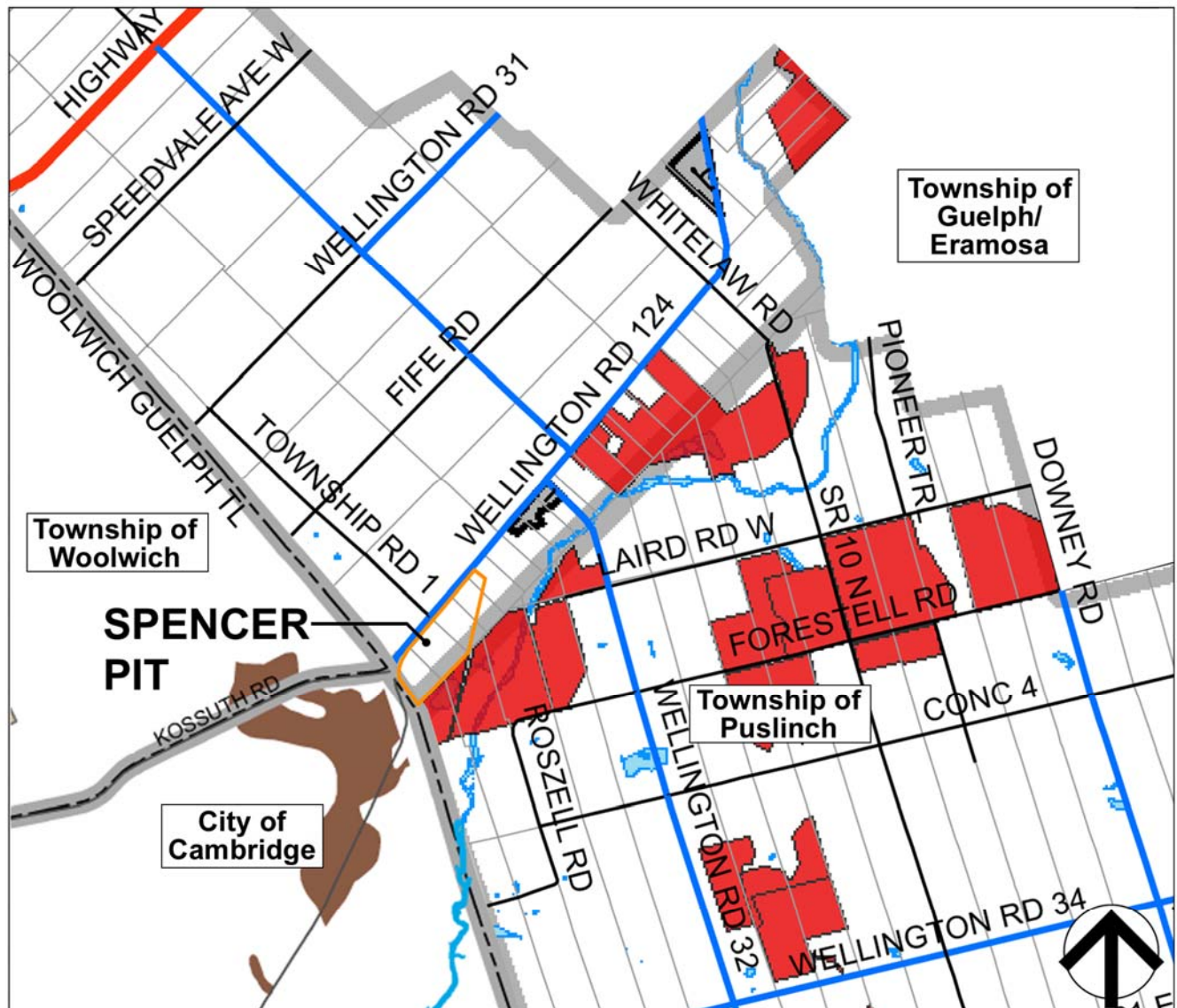
This matter has been addressed within the various technical reports and Site Plans completed in support of the application.

(c) *any comments provided by the municipality in which the site is located;*

To be reviewed during the application process.

(d) *the suitability of the progressive rehabilitation and final rehabilitation plans for the site;*

This application proposes to extract 42.45 hectares from the subject lands. It is proposed that upon completion of the extraction operations, 42.45 hectares of the area extracted will be rehabilitated to agriculture.



County of Wellington - Official Plan, Last revised February 24, 2011, Appendix 2, date printed March 11, 2013
 Region of Waterloo- Official Plan, 2009, Map 8, Mineral Aggregates Resource Areas

Licensed Aggregate Operations Map



0 2000 6000m

Legend

- County of Wellington
Licensed Aggregate Operations
(Sand, Gravel, Bedrock)
- Region of Waterloo
Mineral Aggregates Resource Areas



Figure
8

(e) any possible effects on ground and surface water resources;

This matter has been addressed within the Hydrogeological Assessment report completed in support of this application.

(f) any possible effects of the operation of the pit or quarry on agricultural resources;

According to the Canada Land Inventory Agricultural Capability Map 40P8, available through the Ontario Ministry of Agriculture, Food and Rural Affairs, the majority of the subject land is classified as Class 2FM with a small area of Class 1>3T. See Figure 9 - Soil Capability for Agriculture Map.

Class 2FM lands are comprised of soils having “moderate limitations that reduce the choice of crops, or require moderate conservation practices”, low fertility, and low moisture retention capacities.

Class 1>3T lands are comprised of soils mostly having “no significant limitations in use for crops”, but also contains soils having “moderately severe limitations that reduce the choice of crops or require special conservation practices”, and limitations due to slope steepness and length.

Following extraction operations 100% of the subject land will be rehabilitated to agriculture.

(g) any planning and land use considerations;

This matter has been addressed within the Planning Analysis Report completed in support of the application.

(h) the main haulage routes and proposed truck traffic to and from the site;

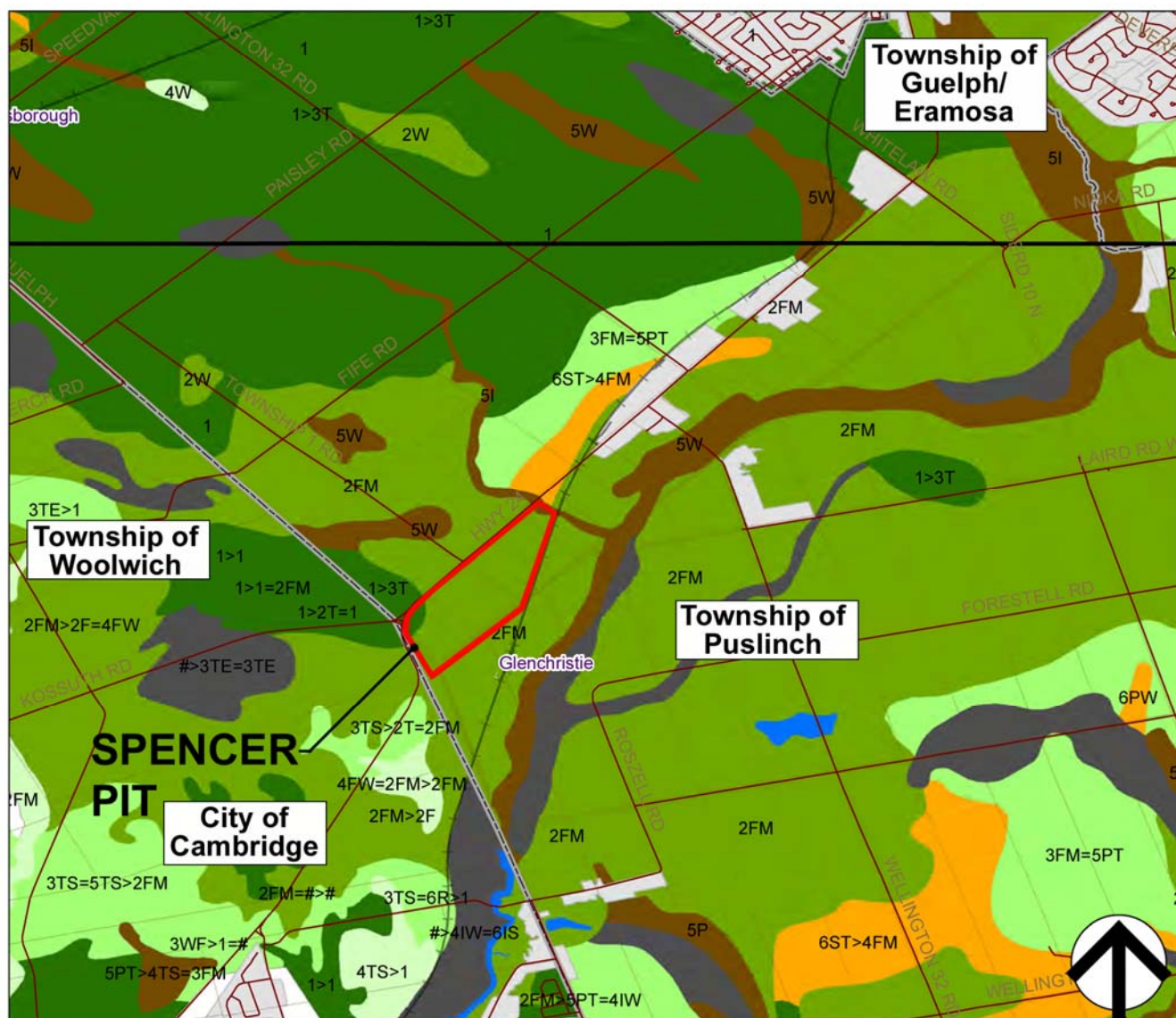
This matter has been addressed within the Traffic Impact Assessment report completed in support of the application.

(i) the quality and quantity of the aggregate on the site;

This matter has been addressed in this summary report.

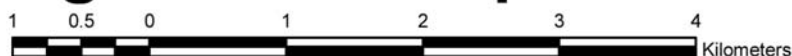
(j) the applicant’s history of compliance with this Act and the regulations, if a licence or permit has previously been issued to the applicant under this Act or a predecessor of this Act; and

Tri City Lands Ltd. has experience in operating licences in Southwestern Ontario.



Canada Land Inventory Agricultural Capability Map, Ontario Ministry of Agriculture, Food and Rural Affairs, Map 40P8, June 2009

Soil Capability for Agriculture Map



Legend

Canada Land Inventory Rating

1	Organics	Settlement
2	N/A	Roads
3	Water	Railways
4		Waterflow Network
5		National Topographic Boundary
6		Lot and Concession Boundary
7		

	Municipal Boundaries
	Built Up Areas-circa 2006



Figure 9

Provincial Policy Statement 2005 (PPS2005)

Section 1.1.1 sets policy for sustaining healthy, liveable, and safe communities. This application will provide employment opportunities. The aggregate will only be extracted as needed, but the additional supply of aggregate will enable the construction industry, which in turn will increase the economic well-being of the Province and the local municipalities. The design of the operations and the rehabilitation of the application will provide appropriate public health and safety measures, and the existing surrounding infrastructure will be able to support the application.

Section 1.1.4 sets policy for rural areas located in municipalities. This application is for a licence under the *Aggregate Resources Act* to remove mineral aggregate resources from the subject land, which will expand the existing land use to the south. The design of the operations and the rehabilitation of the application will be appropriate to the existing infrastructure and will return the land back for agricultural use following extraction operations. This application will provide employment opportunities and an additional source of quality aggregate, which will enable the construction industry and increase the economic well-being of the Province and the local municipalities.

Section 1.6.5 sets policy for Transportation Systems and section 1.6.6 sets policy for protection of planned Transportation and Infrastructure Corridors. This application will make use of the existing and planned infrastructure to safely and efficiently move goods to key market areas. Connectivity within the transportation systems will be maintained and improved, if required, and planned transportation and infrastructure corridors will not be impacted by this application.

Section 1.7.1 sets policy for supporting long-term economic prosperity, including protecting agricultural resources and minimizing land use conflicts. Following extraction operations 100% of the subject land will be rehabilitated to agriculture, minimizing land use conflicts.

Section 2.1 sets policy for the wise use and management of natural heritage resources. This section does not permit development or site alteration to take place in or adjacent to significant natural heritage features and areas. The Hydrogeological Assessment technical report and Natural Environment technical report identified any significant natural heritage features within 120 metres of and on the subject land and assessed any negative impacts of the operations on these natural features or ecological functions. Technical and monitoring recommendations were provided and incorporated into the Site Plans to protect the existing natural features and areas.

Section 2.2 sets the policy for the wise use and management of water resources. The Hydrogeological Assessment assessed the potential negative effects to the surface water and groundwater resources and their functions due to the proposed extraction operations. No adverse effects on these resources will result from these operations.

Section 2.3 sets the policy for the wise use and management of agricultural resources. The majority of the subject land is classified as Class 2FM with a small area of Class 1>3T. Following extraction operations, 100% of the subject land will return to agriculture.

Section 2.5 sets the policy for the wise use and management of mineral aggregate resources. The mineral aggregate resources to be extracted from the subject lands will be made available to nearby market. Mitigation measures from the technical reports completed in support of the application have

been included in the Site Plans to minimize any negative impacts the extraction operations may have on its surroundings. The subject land is to be rehabilitated to agriculture, which will be compatible with the surroundings.

Section 2.6 sets the policy for the wise use and management of cultural heritage and archaeological resources. The Archaeological Assessment was completed for the subject property. There were no significant archaeological resources of cultural heritage value or interest identified on the subject property. Recommendations provided in this document were included in the Site Plans to further ensure that there will be no negative impacts.

Section 3.2 sets the policy for the development on, abutting or adjacent to lands affected by human-made hazards. There is an existing pit/ quarry licence to the southeast of the subject property. This application is to allow for mineral aggregate resource extraction to take place on the subject land, and mitigation and rehabilitation measures will be implemented.

Growth Plan for the Greater Golden Horseshoe

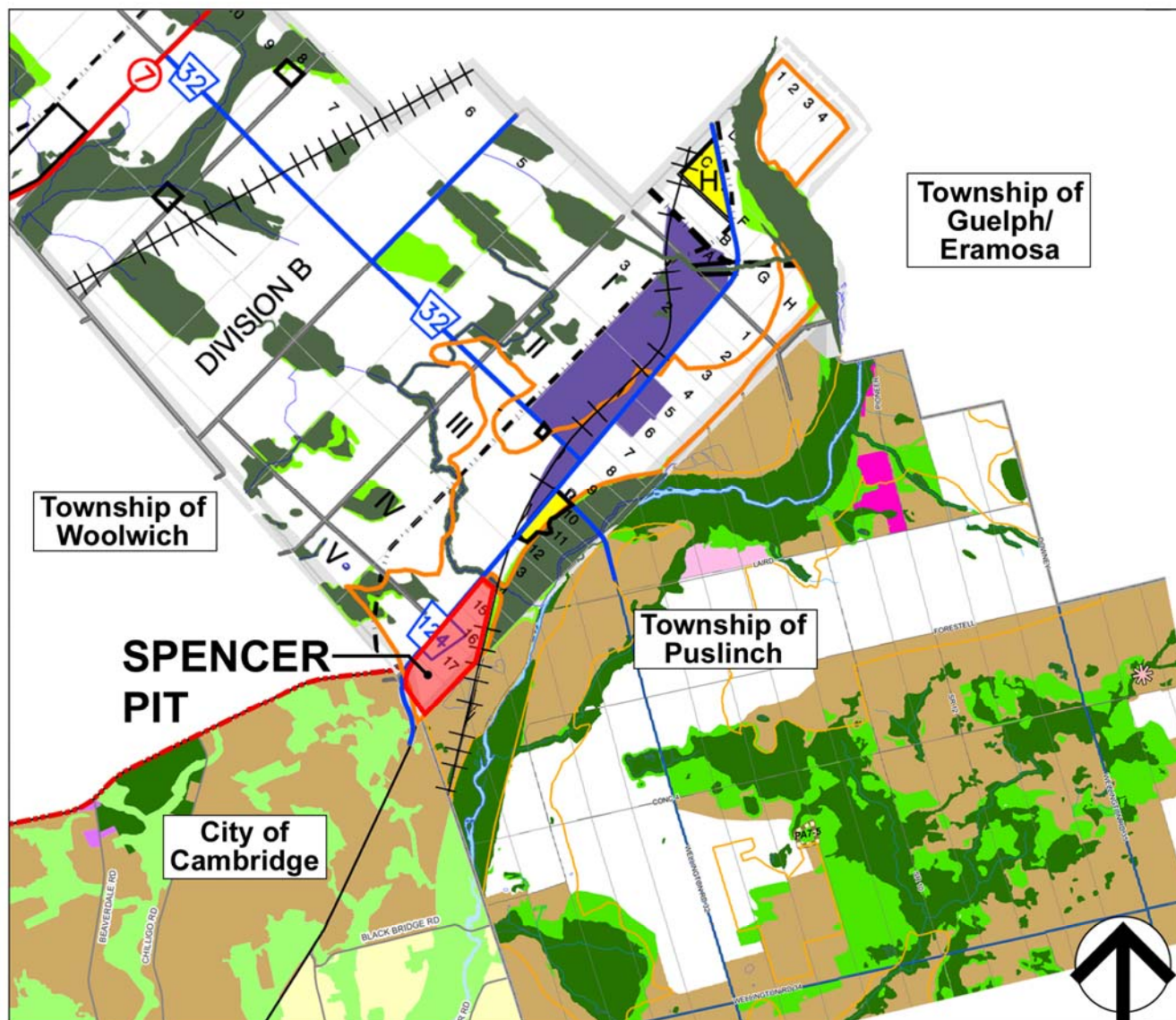
The subject property falls within the Greater Golden Horseshoe Growth Plan Area.

Section 3.2 sets the policy for infrastructure to support growth. The existing infrastructure will be capable of supporting haul routes for the transportation of material from the subject land to key market areas with some roadway improvements recommendations.

Section 4.2 sets the policy for protecting what is valuable. The Natural Environment technical report identified and determined there will be no negative impacts on the natural heritage features and ecological functions on and within 120m of the subject land with the implementation of technical recommendations. The Hydrogeological Assessment identified and assessed surface water and groundwater resources for water conservation. The mineral aggregate resources to be extracted from the subject property will be made available to nearby markets. Trucks travelling short distances on major highways use less fuel and minimize the wear and tear on roads. By providing a variety of sources of material in close proximity the operator can blend pit run to produce an optimal plant feed which makes the most efficient use of the material, therefore, reducing waste. Water or calcium chloride will be applied to internal haul roads and processing areas as often as required to mitigate dust. The Archaeological Assessment was completed for the subject property. There were no significant archaeological resources of cultural heritage value or interest identified on the subject property. Recommendations provided in this document were included in the Site Plans to further ensure that there will be no negative impacts.

Wellington County Official Plan

The subject property sits within Wellington County; therefore, this application must be consistent with the *Wellington County Official Plan*. This plan designates the subject property as Prime Agricultural and Mineral Aggregate Area (Figure 10 – Land Use Map). According to the official plan, aggregate extraction may be permitted on lands designated Mineral Aggregate area through rezoning. Therefore, an Official Plan Amendment is not required and an application for a Zoning By-Law amendment has been submitted.



County of Wellington - Official Plan, Last revised February 24, 2011, Schedule A3, Guelph-Eramosa, Date Printed: February 24, 2011
 Township of Puslinch Schedule A7, updated June 20, 2013, City of Cambridge Official Plan, dated November 21, 2012, Map 2- General Land Use Plan

Land Use Map

0 2000 6000m



Legend

Township of Guelph-Eramosa/
 Township of Puslinch

- Core Greenlands
- Greenlands
- Prime Agricultural
- Mineral Aggregate Area
- Recreational
- Rural Industrial
- Secondary Agriculture
- Country Residential

- H. Hamlet Area
- Proposed Major Roadway
- Railway
- County Roads
- Provincial Highways
- Landfill Site

- City of Cambridge
- Prime Agricultural

- Natural Open Space System
- Recreation, Cemetery and Open Space
- Rural Residential
- Low/ Medium Density Residential
- City Limits



Figure
 10

Section 4.1 sets the policy for the conservation of cultural heritage resources. The Archaeological Assessment did not identify any archaeological resources of cultural heritage value or interest on the subject property.

Section 4.3 sets the policy for the protection of farmland. This application is to allow the subject land to be used on an interim basis for mineral aggregate extraction and will be rehabilitated back for agricultural use following extraction operations.

Section 4.6 sets the policy for impact assessment studies which may be required to be undertaken as part of an environmental assessment, licensing procedure or other planning process. These studies have been completed and are provided in the Appendix in the Summary Report.

Section 4.9 sets the policy for water resources. The Hydrogeological Assessment identified and determined that there will be no adverse negative impacts on groundwater or surface water resources and their ecological functions on and within 120m of the subject land as a result of the proposed extraction operations. There will also be no impacts on any wellhead protection areas from this proposal (see Figure 11 – Wellhead Protection Areas Map).

The lands to the northeast and east of the subject property are designated as Core Greenlands and Greenlands (see Figure 10 – Land Use Map). Sections 5.4 and 5.5 set the policy for Core Greenlands and Greenlands, respectively, and Section 5.6 sets the policy for proposed development on adjacent lands to the Greenland System. The Natural Environment technical report and the Hydrogeological Assessment identified and determined there will be no adverse negative impacts on natural heritage resources and their ecological functions on and within 120m of the subject land as a result of the proposed extraction operations.

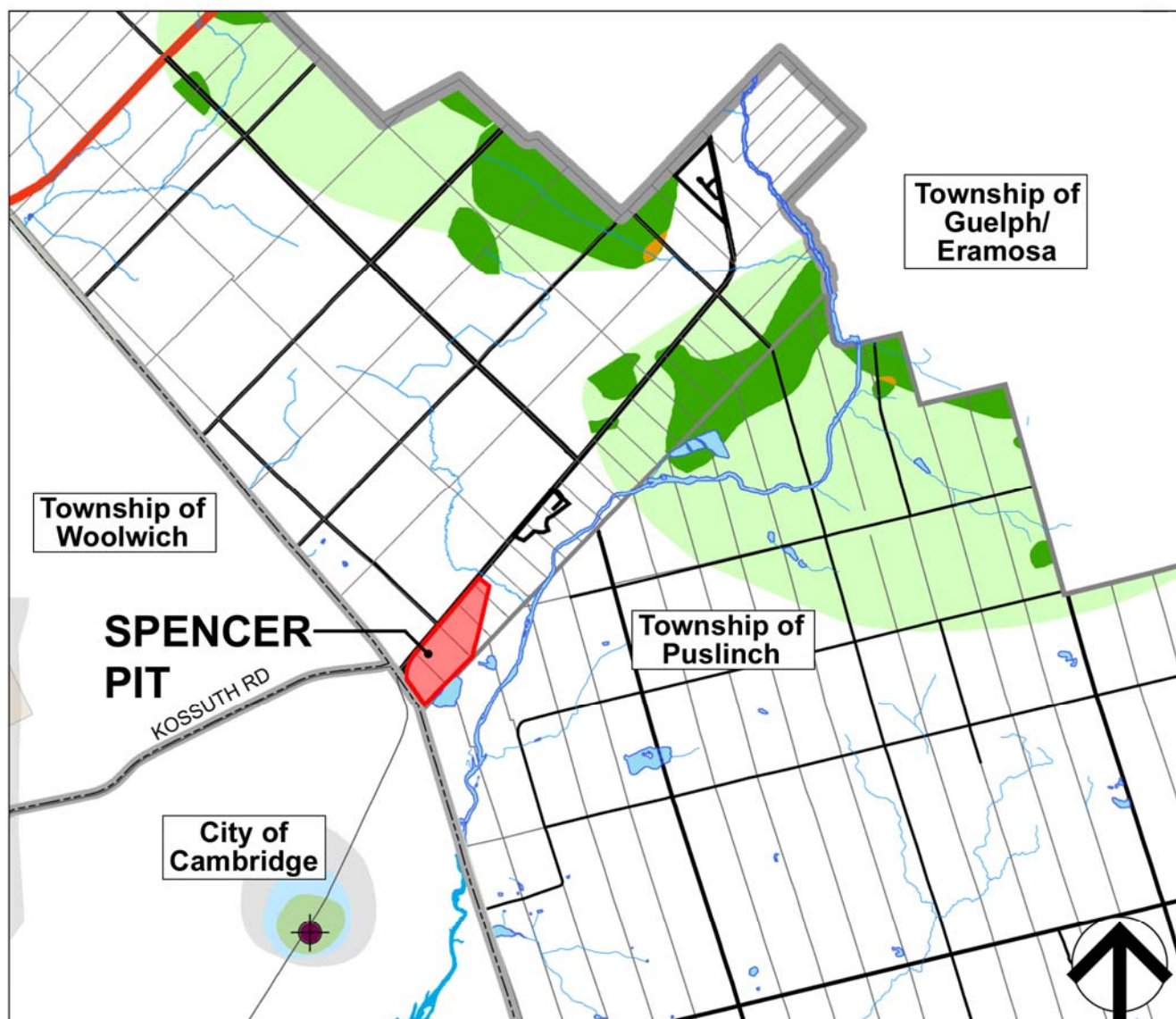
Section 6.4 sets the policy for prime agricultural areas. Mineral aggregate extraction is being proposed as an interim land use with the subject property returning to agriculture following extraction operations. The proposed interim land use and extraction operations will be compatible and not hinder the surrounding agricultural use. Through completion of the various impact assessments it was determined that the proposal will not have any social or environmental impacts. In addition, limits of extraction and regulatory setbacks from sensitive land uses and features have been implemented in the Site Plans.

Section 6.6 sets the policy for mineral aggregate areas. The technical reports prepared in support of this application determined that there will be no adverse negative impacts on the social and natural environment as a result of the proposed extraction operations.

Section 12.5 sets the policy for roadways. The existing infrastructure will be capable of supporting haul routes for the transportation of material from the subject land to key market areas with the implementation of the roadway improvements recommended in the Traffic Impact Assessment Report.

Township of Guelph/ Eramosa Zoning By-law 57/1999

The subject property is currently zoned Agricultural (A) on Schedule 'A' of the *Township of Guelph/ Eramosa Zoning By-law 57/1999* (see Figure 12 – Zoning Map). Therefore, an amendment to the Zoning By-Law is required to allow for the subject property to be used for an aggregate processing facility, and a pit.



County of Wellington - Official Plan, Last revised February 24, 2011, Wellhead Protection Areas, Schedule B3, Guelph-Eramosa Township and Schedule B7, Puslinch Township, Dated February 22, 2007 and Region of Waterloo Official Plan, Township of North Dumfries, Map 6b, Township of Woolwich Source Water Protection Areas Map 6e, 2009

Wellhead Protection Areas Map



0 2000 6000m

Legend

County of Wellington

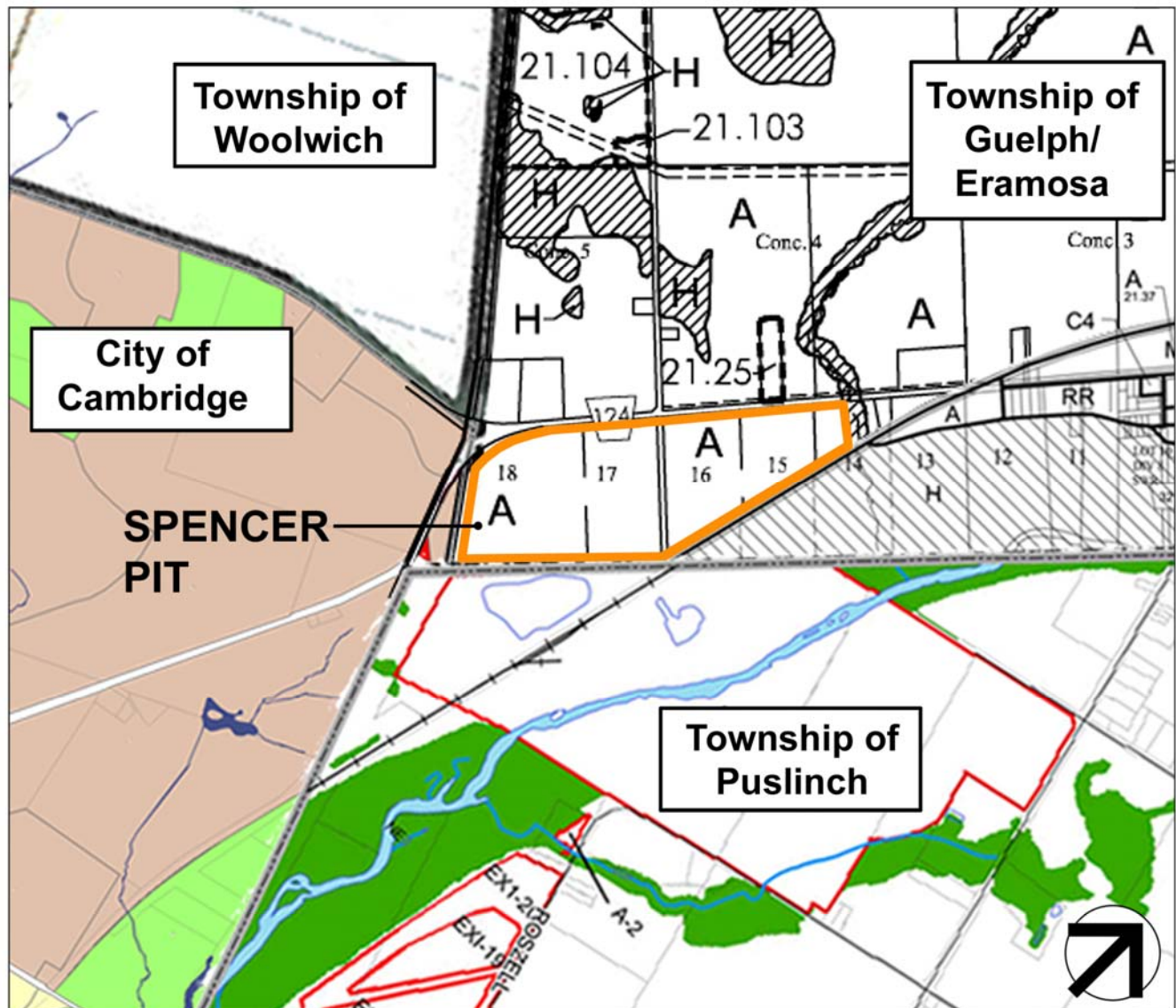
- Wellhead Protection Area 1
- Wellhead Protection Area 2
- Wellhead Protection Area 3

Region of Waterloo

- Wellhead Protection Sensitivity Area 1
- Wellhead Protection Sensitivity Area 4
- Wellhead Protection Sensitivity Area 7
- Wellhead Protection Sensitivity Area 8



Figure 11



Corporation of the Township of Woolwich Zoning By-law No. 55-86, Key Map 'A.2', July 2012; Corporation of the City of Cambridge Zoning By-Law, Cambridge General Zoning Map, February 6, 2013; Township of Guelph/ Eramosa Zoning By-Law 57/1999, Schedule 'A' Map 1 & 18,

Zoning Map



Legend

Township of Woolwich

- Township Boundary
- Unless otherwise indicated lands are zoned Agricultural

Township of Guelph/ Eramosa

- A Agricultural
- RR Rural Residential
- C4 Highway Commercial
- M1 Rural Industrial
- M3 Extractive Industrial
- Hazard
- Special Provisions

City of Cambridge

- Open Space
- Low Density Residential
- Commercial
- Agricultural

Township of Puslinch

- A Agricultural Zone
- EXI Extractive Industrial Zone
- NE Natural Environmental Zone



Figure
12

The Site Plans, this summary report, the planning analysis report, and the technical reports have been completed in support of this application.

Conclusions

The establishment of the Spencer Pit requires licencing under the *Aggregate Resources Act (ARA)* as well as an amendment to the *Township of Guelph/ Eramosa Zoning By-Law 57/1999*.

The Planning Analysis Report reviewed, assessed and concluded that this application for a Category 3 – Class ‘A’ Licence, Pit Above the Water Table to remove more than 20,000 tonnes of aggregate a year conforms to the *Aggregate Resources Act, Provincial Policy Statement, Growth Plan for the Greater Golden Horseshoe, County of Wellington Official Plan, The Wellington County Active Transportation Plan*, and the *Township of Guelph/ Eramosa Zoning By-Law 57/1999*, and represents good planning.

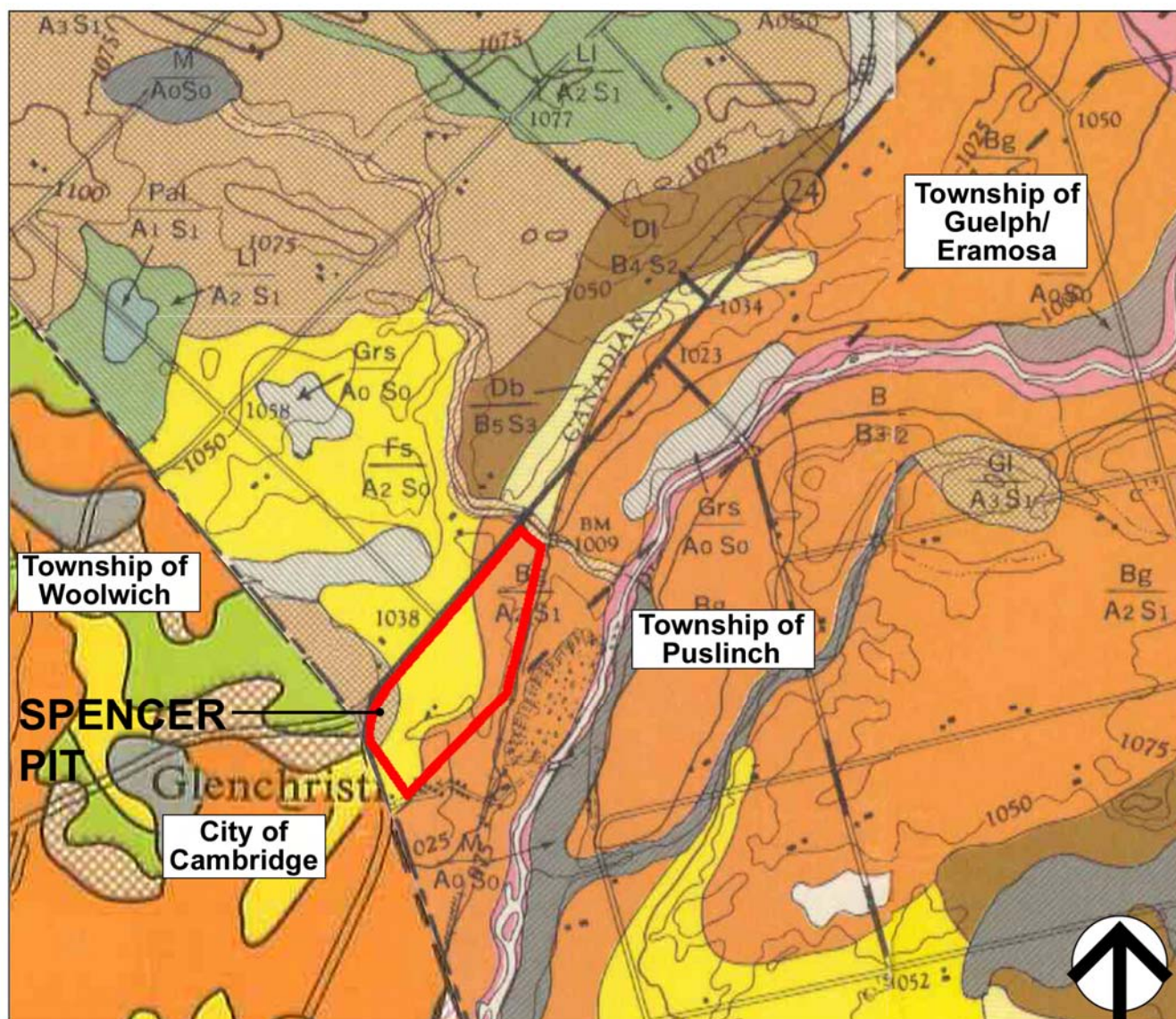
4.0 AGRICULTURAL CLASSIFICATION

Canada Land Inventory mapping of Agricultural Capability shows that the site falls into a classification shown as 2FM with a small area of Class 1>3T (see Figure 9 – Soil Capability for Agriculture Map). Class 2FM lands are comprised of soils having “moderate conservation practices,” low fertility, and low moisture retention capacities. Class 1>3T lands are comprised of soils mostly having “no significant limitations in use for crops,” but also contains soils having “moderately severe limitations that reduce the choice of crops or require special conservation practices,” and limitations due to slope steepness and length.

The *Soil Survey of Wellington County*, Report No. 35 of the Ontario Soil Survey identifies three soil types on the site as follows: 1) Bg - Burford Loam - Smooth very gently sloping lands (A2) and slightly stony (S1). The report states, "*Well drained soils consisting of loam surface horizons on gravel deposits are named Burford. The gravel was deposited by glacial meltwaters in the form of spillways... . The materials vary in size from fine sand to cobbles and where these deposits occur adjacent to the stony till of the Dumfries soils, strata consisting of large stones are found.*" See Figure 13 – Soil Map of Wellington County.

The map in the report shows that the northern portion of the outwash deposit is mapped as follows: 2) Fs (A2/S0) – Fox sandy loam. These soils are smooth, very gently sloping and stone free. On pages 32 of the report, the following description of the soil is given: "*The soil parent material is calcareous sand, deposited as glacial outwash, and in most cases is found beside present-day streams. Although the deposits are dominantly medium sand, fine sands and coarse sands and even gravel sometimes occur as strata with the medium sands. Internal drainage is very rapid because of the open nature of these sandy materials. They are used mainly for growing hay and pasture crops, although winter wheat, oats, mixed grains and silage corn can be grown.*"

3) A small area in the northwest corner of the site is mapped as Gl (A3/S1) – Guelph Loam with smooth gently sloping with slightly stony soils. "*The soil parent material consists of glacial till derived from the grey and brown limestones of the underlying rock strata. The main crops are pasture, hay, mixed grains,*



Soil Map of Wellington County



1miles ½miles 0miles 1miles

Legend

Wellington County

Bg	Burford loam
Db	Donnybrook sandy loam
Di	Dumfries
Fs	Fox sandy loam
Grs	Granby sandy loam
Gl	Guelph loam
Lil	Listowel loam
M	Muck

Pal	Parkhill loam
B.L.	Bottom land

Region of Waterloo

Guelph	Guelph
Freeport- Woolwich	Freeport- Woolwich
Burford- Fox	Burford- Fox
Brant- Waterloo	Brant- Waterloo
Organic	Organic



Figure 13

oats, winter wheat and silage corn. These are among the best agricultural soils in the province.”

The majority of the site is currently in agricultural use and will continue after extraction is completed as proposed rehabilitation techniques will restore the site. There is the potential to improve the agricultural capability in the southern portion of the site by reducing the steepness of the slopes (adverse topography). Extraction will remain a minimum of 1.5 metres above the water table as determined in the Hydrogeological Assessment completed by Groundwater Science Corp. (Appendix A). The rehabilitation techniques will include the following as indicated on the Site Plans (Appendix G):

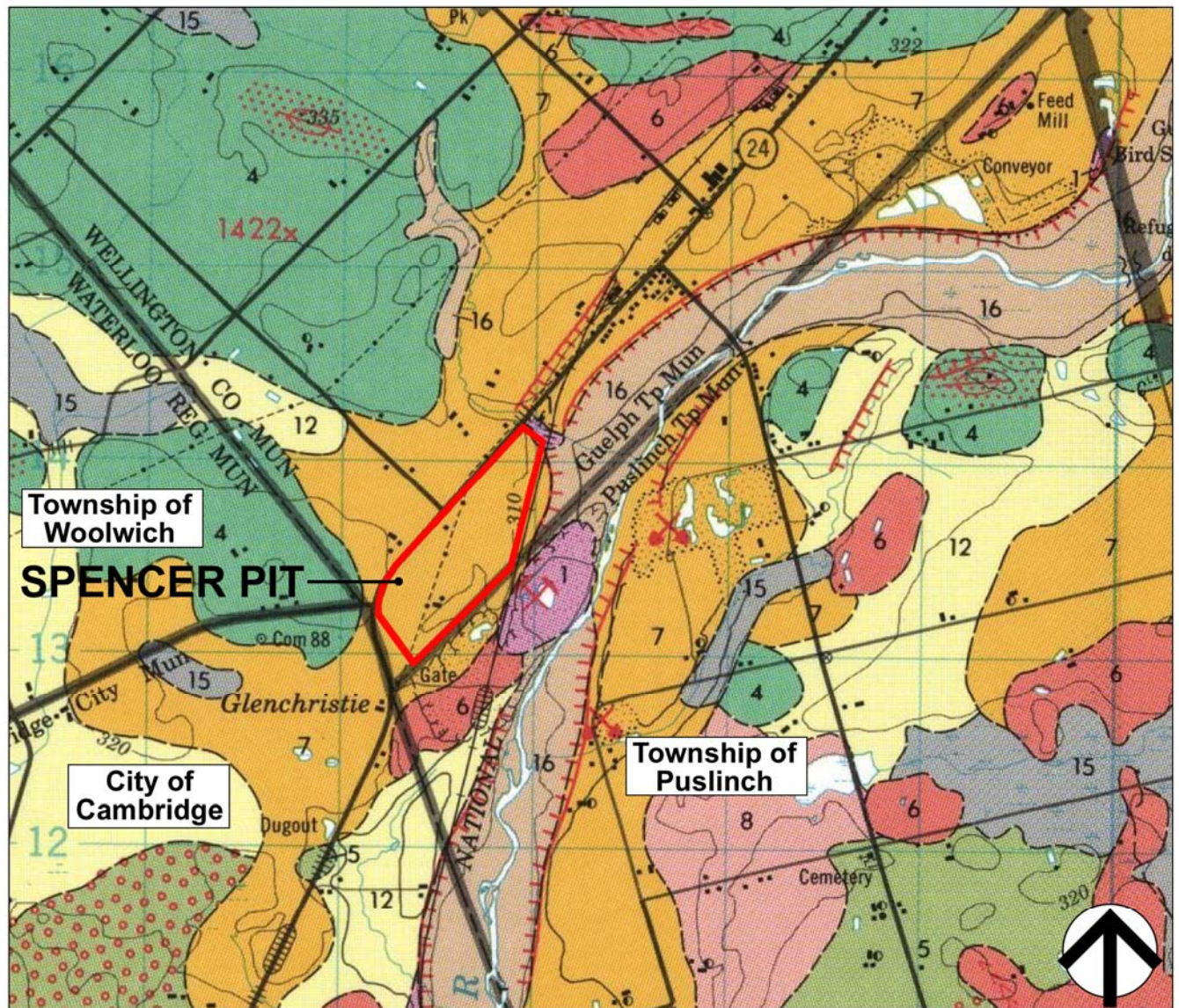
- Side slopes will be built by backfilling or cut/fill method. Side slopes will be graded to 3:1.
- Deep ripping of fields to eliminate compaction and facilitate infiltration, where required.
- Spreading of available subsoil/ overburden and rough grading
- Removal of stones larger than 100 mm
- Spreading a minimum of 150 mm of topsoil and fine grading
- Seeding with an appropriate grass/legume mixture consisting buckwheat, red clover, white clover, tall fescue and annual rye
- Material from other properties (eg. Manure and/ topsoil) may be imported into the site for soil enhancement using standard agricultural practices.

The rehabilitation of the Class 2 lands on site back to the same agricultural capability complies with Section 2.2.3.6 of the Provincial Policy Statement (2005) which states, *"In prime agricultural areas, on prime agricultural land, extraction of mineral aggregates is permitted as an interim use provided that rehabilitation of the site will be carried out whereby substantially the same areas and same average soil quality for agriculture are restored"*.

5.0 QUALITY AND QUANTITY OF AGGREGATE ON SITE

The site is located within the western part of the “Guelph Drumlin Field” physiographic region as described by Chapman and Putnam (1966) in, *The Physiography of Southern Ontario*. This region is described as having a number of smooth streamlined drumlins (hills) comprised of till and interconnected valleys where the outwash deposits are located. See figure 14 – Quaternary Geology Map.

The property falls within an outwash deposit no 3 of primary significance, with a stone content greater than 35% and a depth of 3-6 metres as shown on Map 2 in the *Aggregate Resources Inventory of the City of Guelph and Guelph Township, Paper 88, 1985, Ministry of Northern Affairs and Mines* (see Figure 15 – Sand and Gravel Resource Area Map). On pages 12 and 13 of the ARIP the deposit is described as follows: *“Selected Resource Area 3 consists of a terraced outwash deposit, again part of the former spillway or valley outwash system along the Speed River. It has also been selected as a primary resource area in Puslinch Township. The lower terrace has a thickness of 30 feet (9m) or more of well stratified sand and gravel with a stone content of 60 percent. Although parts of the deposit can grade dirty for some uses, road sub-base products such as G.B.C. A, B and C can be produced (Deike 1981). The gravels are also suitable for 16 mm crushed stone, hot-laid asphalt and concrete uses, provided that suitable processing is carried out. Most of the deposit area is licensed to Standard Aggregates (pit no 4) as both a pit and quarry. This large commercial operation has washing and asphalt facilities to supply a wide range of products for the Guelph and Cambridge markets (Trauffer 1976).*



Quaternary Geology Cambridge Area, MAP 2508, Ministry of Northern Development and Mines, 1987

Quaternary Geology Map



Legend

PHANEROZOIC - CENOZOIC -
QUATERNARY - RECENT

16 Stream deposits; gravel, sand, silt and clay

15 Peat and muck

PHANEROZOIC - LATE WISCONSINAN

12 Lacustrine and outwash sand

8 Ice-contact sand: kames and eskers

7 Outwash gravel

6 Ice-contact gravel: kames and eskers

5 Wentworth Till: stony, sandy, silt till

4 Port Stanley Till: silt to sandy silt till

PALEOZOIC - ORDOVICIAN
AND SILURIAN

1 Shale and dolomite

SYMBOLS

Drumlin

Eroded scarp

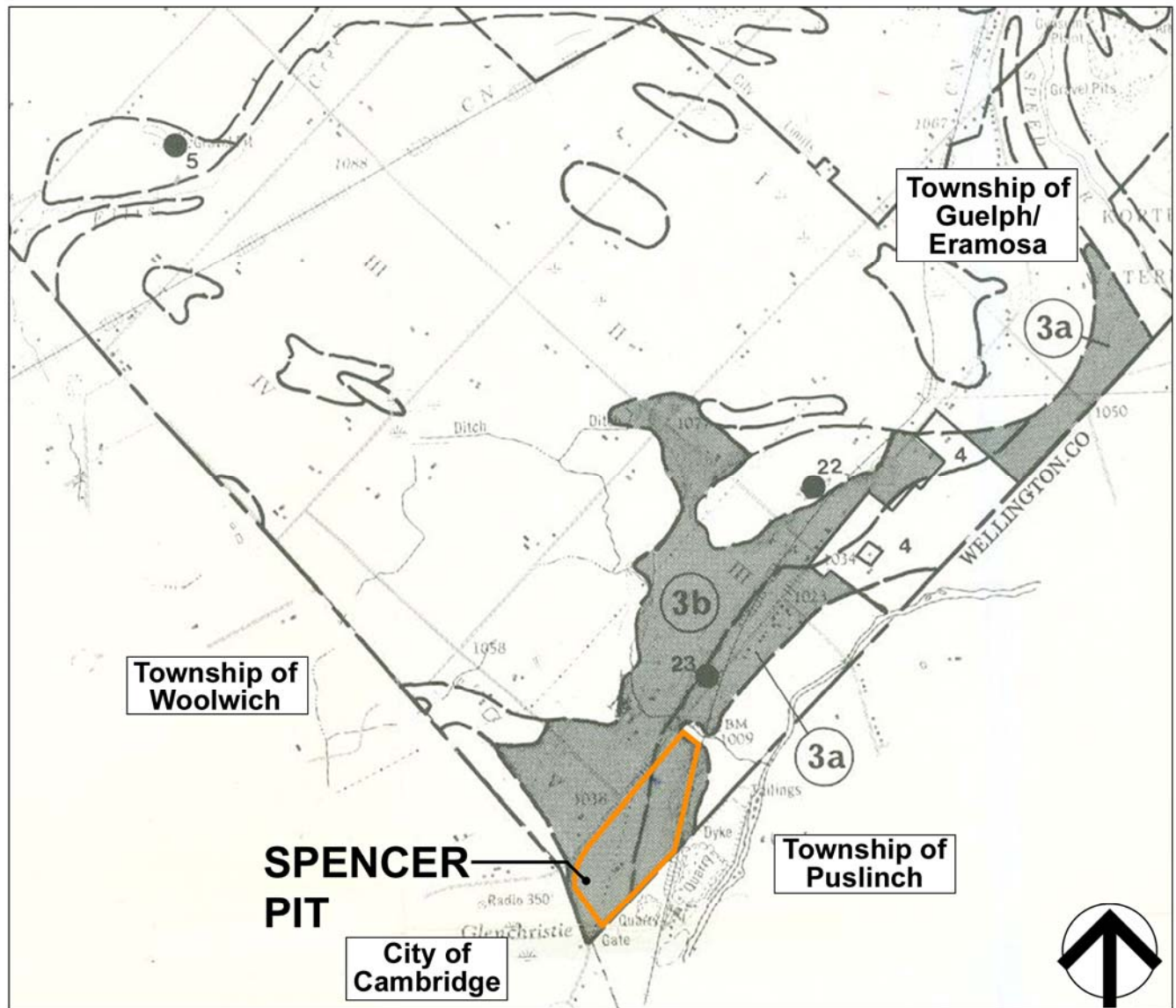
Hummocky topography

Sand or gravel pit

Rock quarry



Figure
14



Ministry of Northern Affairs and Mines, Aggregates Resource Inventory Paper 88, City of Guelph and Guelph Township, 1985

Sand and Gravel Resource Area Map



N.T.S.

Legend

- Geological and Aggregate Thickness Boundary
- Selected Sand and Gravel Resource Area; Primary Significance
- Selected Sand and Gravel Resource Area; Secondary Significance
- Selected Sand and Gravel Resource Area; Tertiary Significance

- Licenced Property Boundary; Property Number

- Unlicensed Property Boundary; Property Number



Figure
15

The larger upper terrace is notably thinner (about 15 feet (5 m)) and sandier (stone content 20 percent). Existing pits have only supplied road sub-base materials in the past and detailed test information is not available.”

The south eastern part of the property is also mapped within Selected Bedrock Resource Area 2 and consists of the Guelph Formation dolostone covered by less than 25 feet (8 m) of overburden. The underlying bedrock was found in some of the test pits dug on the property in 2010 and 2012.

On page 14 of the ARIP the following is stated, *“It is part of the larger resource area found straddling the Speed River in Puslinch Township and the City of Cambridge reports (Ontario Geologic Survey 1982; in prep).*

Part of Area 2 is licensed to Standard Aggregates for quarry purposes but at present only unconsolidated material is being excavated. This resource area lies adjacent to Domtar Chemicals Group, Lime Division, Glenchristie quarry (Lots 1, 2 and 3, Concession 4, Puslinch Township) which has been operated since the turn of the century. The quarry has produced dolomitic lime, hydrated lime and limestone.

On map 2508 found in the *Ontario Ministry of Northern Development and Mines, Quaternary Geology of the Cambridge Area Report 255, 1987*, by P.F. Karrow, the site has been mapped within unit #7, outwash gravel to the north of the Paris Moraine (see Figure 14 – Quaternary Geology Map). On page 20 of Report 255 the author states: *“Outwash gravel and sand are characterized by level to undulating surfaces marked here and there by stream channels and sometimes by kettles where stranded ice blocks melted. The greatest bulk of outwash deposits appear to be associated directly or indirectly with the Paris and Galt Moraines.”*

The applicant undertook test pitting of the site in November 2010 and October and November 2012 to determine the quantity and quality of the sand and gravel resources. Drilling of boreholes and installation of monitoring wells took place in August and September 2013 to determine the elevation(s) of the water table. Refer to Existing Features Plan of the Site Plans (Appendix G) for location of the fifty two test pits and three boreholes drilled on site. Based on the results of the geotechnical investigations, it has been determined that there is a minimum of 2.0 million tonnes of sand and gravel above the water table in the property. The projected life of the Spencer pit, including the proposed extension, is estimated to be between 5 to 7 years.

Beneath the sand and gravel surficial deposit there is dolostone bedrock consisting of the Guelph Formation and Amabel Formation at depth. The ARIP mapping shows a primary bedrock resource with 1-8 m of overburden in the area to the south and east of the hydro corridor that runs through the property. The top of the bedrock was found at elevations of ±311-312 m asl in test pits 13-15 in the southwest and ±303-304 m asl in test pits 43 and 44 to the east. The Guelph Formation dolostone is a high purity chemical stone and may be suitable for construction aggregate but is too soft for high specification aggregate uses.

The hydrogeology of the site is documented in the report completed by Groundwater Science Corp. dated February 2014. The water table is interpreted to be located within the bedrock at elevations ranging from of approximately 295 to 309 m AMSL. The proposed maximum depth of extraction will remain a minimum of 1.5 metres above the water table as shown on the Site Plans.

6.0 HAUL ROUTES AND TRUCK TRAFFIC

A new entrance/exit with traffic lights is proposed near the northwest corner of the site with access onto Wellington Road 124 opposite Kossuth Road and will be designed according to County standards. *“The site access driveway will create a new four-legged intersection”* with Wellington Road 124. The Traffic Study completed by GHD (see Appendix E) states that the new site access will operate at acceptable levels of service.

The following information is presented in the report:

“The proposed Spencer pit licence proposes an annual maximum material extraction of 650,000 tonnes. This translates into an hourly truck traffic generation of up to 6 inbound and 9 outbound trucks during the am peak hour and 9 inbound and 6 outbound trips during the pm peak hour during peak summertime operations.

The primary haul route will be east and west respectively along Wellington Road 124 and Hespeler Road (Waterloo Regional Road 24), as well as west on Kossuth Road (Waterloo Regional Road 31). All routes satisfy the Wellington County and Waterloo Region’s Official Plan requirements with respect to heavy vehicle goods movement.

The results of our analysis indicates that the 2015 background traffic growth, plus the trips associated with the proposed Spencer pit can be accommodated by the existing roadway system with the implementation of exclusive turn lane configurations at the intersection of Wellington Road 124/ Kossuth Road as recommended herein. The intersection is expected to operate at ‘good’ levels of services (LOS ‘C’) and within its capacity assuming Wellington Road 124 is still only one lane in each direction”.

7.0 PROGRESSIVE AND FINAL REHABILITATION

The rehabilitation of this property will be back to an agricultural after use. The 3:1 side slopes will be built to facilitate the use of farm machinery on the slopes, if left in permanent pasture. All existing topsoil and overburden on site will be stripped and stockpiled separately in berms or stockpiles and replaced as quickly as possible in the progressive rehabilitation process. However, acoustic berms required to attenuate noise will remain in place for each phase as specified in the noise report before being removed and used for rehabilitation of the site.

Side slopes may be built from till materials or with off spec materials found on site or with off-site inert fill imported for this purpose. In order to facilitate both maximum resource utilization as well as timely progressive rehabilitation of the property (see Section 2.5.3.1 of PPS), importation of clean inert fill (eg. topsoil and/or overburden) may be imported to construct the 3:1 side slopes. Only sufficient materials to create final grades as shown may be imported. Imported materials shall meet the Ministry of Environment’s parameters under Table “1” as per MNR revised policy no. 6.00.03. Refer to notes on the Site Plan (Appendix G) and “Agricultural Classification” in this report for details of the progressive and final rehabilitation of the site. Based on the elevations of the water table presented in the

Hydrogeological Assessment, the maximum depth of extraction will remain 1.5 metres above the established water table.

As noted in the Hydrogeological Assessment by Groundwater Science Corp., the site acts as a recharge area, with groundwater flow contributing to the regional bedrock system. Excavation of the proposed pit will internalize all overland runoff and convert it into infiltration and groundwater recharge in the base of the pit. Final surface drainage will be internal and directed to the infiltration areas on the pit floor as shown on the Rehabilitation Plan (refer to Site Plans – Appendix G).

8.0 SURFACE WATER

There is an intermittent drainage course shown in the western part of the area to be licenced that directs surface water flows from the west into the southwest fields (refer to Hydrogeological Assessment in Appendix A). However, there is no permanent connection of the out flow to other nearby surface water features. The highly permeable sand and gravel soils underlying the site allow fairly rapid infiltration, and as a result, there are no permanent surface water drainage courses on the site. Refer to the Hydrogeological Assessment and Site Plans for details. There will be relatively little surface runoff expected from the site except during heavy rainfall events and spring snow melt over frozen ground, which restricts the infiltration of surface water into the underlying soil and bedrock. Surface drainage is either internal or directed to the north or south to the lower areas within the fields to contribute to groundwater recharge. A small surface water course, located approximately 30 metres east of the site, flows under Wellington Road 124 and the CNR tracks towards the Speed River. The Speed River and associated wetlands are located on the south side of the railway tracks (see Figure 16 – Provincially Significant Wetlands Map).

9.0 ELEVATION OF GROUNDWATER TABLE

The water table is located within the bedrock at elevations ranging from approximately 295 MASL to 309 MASL as presented in the Hydrogeological Assessment. Based on these estimated water table elevations, the proposed aggregate extraction will be restricted to near the top of the bedrock which varies from 3 to 4 m below the surface near Wellington Road 124 and 4 to 6 m below the surface along the southeast and east edges of the site.



County of Wellington - Official Plan, Last revised February 24, 2011, Appendix 3, date printed May 15, 2013 and Region of Waterloo Official Plan, Map 4 Greenlands Network, 2009

Provincially Significant Wetlands Map



0 2000 6000m

Legend

- Provincially Significant Wetlands Class 1, 2, 3)
- Significant Valleys
- Core Environmental Features includes: Provincially Significant Wetlands; Environmentally Sensitive Policy Areas; Regional Forests; Forests greater than 4 ha; and Significant Valley Features



Figure 16

10.0 TECHNICAL REPORTS

10.1 Hydrogeological Assessment: Groundwater Science Corp. (Appendix A)

Based on the results of the Level 1 Hydrogeological Investigation for the proposed Spencer pit, the following conclusions and recommendations are provided:

No significant change in groundwater conditions is expected at local natural environment features or water supply wells due to the proposed extraction. Therefore the proposed monitoring plan is limited to monthly water level monitoring for one year to confirm the seasonal high water table elevation, in addition to the quarterly water level measurements during the first three years of extraction to confirm groundwater conditions.

The following monitoring plan is recommended to be shown on the site plans:

- *Water level measurements shall be obtained at the existing on-site monitoring well locations (as accessible) BH1, BH2, BH3 and Barn well on a monthly basis for one year.*
- *Subsequent water level measurements shall be obtained on a quarterly basis at the existing on-site monitoring well locations (as accessible) BH1, BH2, BH3 and Barn well during the first three years of extraction operations.*
- *The Barn well is within a proposed extraction area and should be abandoned in accordance with applicable regulations if the well is not utilized as a monitor or water supply well.*
- *At the end of three years of monitoring the data shall be summarized in a report provided to the Ministry of Natural Resources. The monitoring program shall be discontinued if no groundwater impacts are observed after 3 years.*

The following conclusions are presented in the report:

Based on the results of this assessment, there are no potential for adverse effects to groundwater and surface water resources and their uses; and, no potential significant impact to local natural environment features or water wells associated with the Spencer pit extraction as proposed.

10.2 Natural Environment Level One and Two: Stantec Consulting Limited (Appendix B)

The Natural Environmental Level 1 screening and supporting Level 2 Natural Environment Technical assessment has concluded the following.

- *Habitat for Barn Swallow (Threatened) is present in the old barn in the north end of the proposed licence area. This feature is outside of the extraction limits.*
- *Significant features within 120 m of the proposed licence area include:*
 - *Habitat for Butternut (Endangered);*
 - *Fish Habitat;*
 - *The Speed River PSW;*
 - *Deer Wintering Area; and,*
 - *Amphibian breeding habitat (woodland)*

- *There will be no direct impacts to significant features in or within 120 m of the proposed license area.*
- *Potential indirect impacts to significant features within 120 m will be mitigated through appropriate measures specified in the Site Plans.*

The phased approach and progressive restoration strategy being proposed by Tri City Lands will ensure that potential impacts to natural heritage features within 120 m of the proposed Spencer Pit will be mitigated. The features and ecological functions of the Speed River PSW (including woodland amphibian breeding habitat) will be maintained over the long-term.

The following recommendations are presented:

1. *Clearing of the onsite woodlands shall be avoided during the breeding bird season from May 1 through July 31 to protect nests under the federal Migratory Birds Convention Act and the provincial Fish and Wildlife Conservation Act. If cutting is necessary during this window, a nest survey as required by the Canadian Wildlife Service (CWS), shall be conducted. This survey must occur no more than 72 hours before any cutting activity. If the proposed cutting is not completed within 72 hours of the nest search, the search must be repeated. If a nest is found, a no-touch buffer surrounding the nest (the width of which is determined by the species nesting) must be enforced until the young have naturally fledged.*

10.3 Cultural Heritage Resource Stage 1 and 2: Stantec Consulting Limited (Appendix C)

The Ministry of Tourism, Culture and Sport in their November 28, 2013 concurrence letter have stated the following:

“Based on the information contained in the report, the ministry is satisfied that the fieldwork and reporting for the archaeological assessment are consistent with the ministry’s 2011 Standards and Guidelines for Consultant Archaeologists and the terms and conditions for archaeological licences. This report has been entered into the Ontario Public Register of Archaeological Reports.”

The following recommendations are presented in the report:

“Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the Ontario Heritage Act.

The Cemeteries Act, R.S.O. 1990 c. C.4 and the Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ontario Ministry of Consumer Services.”

10.4 Noise Assessment Report: Conestoga-Rovers & Associates (Appendix D)

The following recommendations and conclusions are presented in the report:

1. *Construction of perimeter berms/staged operations – berms shall be constructed along the license boundary/limit of extraction as outlined in the site plans prepared by Harrington McAvan Ltd.*
2. *Berms 1 and 3 Construction – constructed to the required height and prior to the start of Site extraction operations and shall remain until the end of operations.*
3. *Berm 2 Construction –constructed to the required height and prior to start of extraction operations in Area 3 and shall remain until the end of Site operations.*
4. *Time of Operations – daily extraction activities commence at 7:00 a.m. and must cease not later than 7:00 p.m.*
5. *Process equipment – any changes to the equipment used on the site which might increase noise generation will be reviewed and approved by a competent professional prior to operation.*

10.5 Traffic Study: GHD (Appendix E)

The following findings and recommendations are presented in the study:

The results of our analysis indicates that the 2015 background traffic growth, plus the trips associated with the proposed Spencer pit can be accommodated by the existing roadway system with the implementation of exclusive turn lane configurations at the intersection of Wellington Road 124/ Kossuth Road as recommended herein. The intersection is expected to operate at ‘good’ levels of service (LOS ‘C’) and within its capacity assuming Wellington Road 124 still only one lane in each direction.

Based on our study findings, we recommend the following improvements:

- *By 2015, the following improvements are recommended at the Wellington Road 124/Kossuth intersection to accommodate Spencer pit-related traffic:*
 - *A southbound exclusive left turn lane to serve inbound truck trips from the northeast and to separate these turns from the heavy southbound through movement flows*
 - *Northbound right turn taper to provide a deceleration facility for inbound trucks to the Pit, and to separate these movements from the heavy northbound traffic flow*
 - *A new site access opposite from, and aligned with, Kossuth Road*
 - *Associated signalized intersection infrastructure (poles, heads, etc.) to accommodate above*
 - *The recommended pit access lane configurations shall be incorporated into the site plans upon*

acceptance by the road authority

- *By 2020, based on the predicted background traffic growth (and unrelated to the Spencer Pit impacts), the widening of Wellington Road 124 and Hespeler Road to four lanes through the Kossuth Road intersection is recommended*

10.6 Planning Analysis Report: Harrington McAvan Ltd (Appendix F)

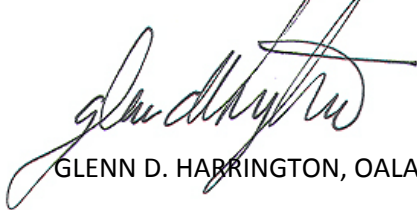
10.7 Resource Assessment : Applicant and Harrington McAvan Ltd (Appendix G)

10.8 Site Plans: Harrington McAvan Ltd (Appendix H)

11.0 CONCLUSION

With the investigation and planning, which has been prepared to support the extraction and rehabilitation of this site, we are confident that the Site Plans, as prepared, adequately address and mitigate any potential adverse impacts of the proposed operation on the surrounding land uses while maximizing the utilization of the aggregate resources and the after use potential of the property. We believe that the application for this pit extension should be approved.

HARRINGTON MCAVAN LTD



GLENN D. HARRINGTON, OALA, FCSLA

BJ/wp

STATEMENT OF QUALIFICATIONS

Harrington McAvan Ltd

Glenn D. Harrington, OALA, FCSLA

Bernhard Janssen, B.E.S.

Harrington McAvan Ltd is a firm of landscape architects practicing in Ontario for the past thirty-six years. The firm has expertise in landscape architecture, earth sciences, and biology, with a focus on stream and wetland restoration and rehabilitation projects.

Harrington McAvan Ltd (previously Harrington and Hoyle Ltd.) have been producing Site Plans for aggregate licences for the past thirty years and in that time have prepared well over 150 successful plans. The firm has consulted to the Ontario Ministry of Natural Resources on a variety of legislative initiatives and was retained in 1990 to prepare the *Generic 'Class A' Site Plans* as examples of new standards required under the Aggregate Resources Act (ARA). The firm is an associate member of the Ontario Stone, Sand & Gravel Association (formerly Aggregate Producers' Association of Ontario).

Mr. Glenn Harrington is a full member of the Ontario Association of Landscape Architects and a Fellow of the Canadian Society of Landscape Architects. He has been coordinating applications and preparing Site Plans for over thirty years for pits and quarries across the province.

Mr. Harrington has served on numerous provincial advisory committees including the State of the Aggregate Resources Report, and the Aggregate Strategy Working Group.

Mr. Bernie Janssen received his Bachelor of Environmental Studies degree from the University of Waterloo in 1983. He had over fourteen years' experience working in MNR's aggregate program in the greater Toronto and London areas, dealing with plans, licence applications, and reports before joining Harrington McAvan Ltd in 1997.

Mr. Janssen specializes in compliance assessments and reports under the ARA, operations planning, and aggregate resource assessment. In 1998 he was granted approval by the Ministry of Natural Resources to prepare Site Plans under the Aggregate Resources Act.

2014

