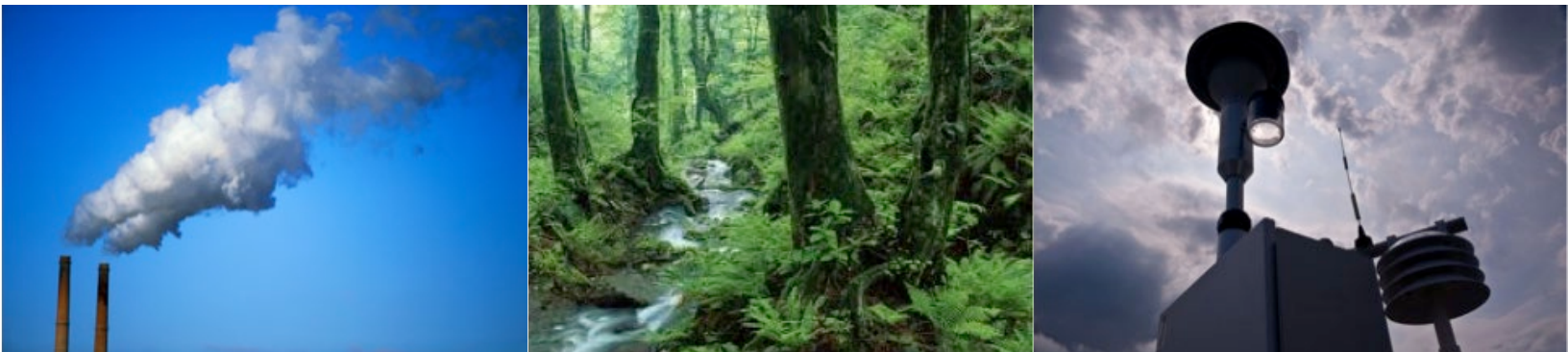




Report:

Tribute/Sorbara Arthur Holdings Inc.
Air Quality Study
Arthur, Wellington North, Ontario

Date: February 26, 2025



Report:

Tribute/Sorbara Arthur Holdings Inc. Air Quality Study Arthur, Wellington North, Ontario

Submitted to: Susan Zucchero, Director of Development
Tribute/Sorbara Arthur Holdings Inc.
1815 Ironstone Manor, Unit 1, Pickering, Ontario L1W 3W9
Tel: (905) 839-3500, Ext. 384
E-mail: susan.z@mytribute.ca

Prepared by: Ibrahim Syed, P.Eng., Senior Project Manager
Alliance Technical Group (Alliance), formerly ORTECH Consulting Inc.
804 Southdown Road, Mississauga, Ontario L5J 2Y4
Tel: (905) 822-4120, Ext. 238
E-mail: ibrahim.syed@alliancetg.com

Reviewed by: Scott Manser, P.Eng., Project Director
Alliance Technical Group (Alliance), formerly ORTECH Consulting Inc.
804 Southdown Road, Mississauga, Ontario L5J 2Y4
Tel: (519) 966-8798
E-mail: scott.manser@alliancetg.com

Report No.: 92897
19 pages, 6 Appendices

Version Control

Version	Date	Summary Changes/Purpose of Revision
1	February 26, 2025	Original

NOTICE:

This proposal was prepared solely for the purpose of tendering and submitted to the potential client identified above. This document remains the property of Alliance Technical Group (Alliance), formerly ORTECH Consulting Inc. and may not be used in whole or in part by any person for any purpose other than that specified without the express written consent of Alliance. Alliance will not assume any liability to any Third Party that makes use of this document and the potential client and any Third Party will indemnify and hold Alliance harmless for any loss, damage or expense from any such use. The Terms and Conditions related to this proposal and the execution of the scope of work described herein are attached.

Table of Contents

	Page
EXECUTIVE SUMMARY	5
1. INTRODUCTION.....	7
1.1 Description of the Site and the Study Area	7
2. RELEVANT REGULATIONS AND GUIDELINES.....	7
2.1 MECP’s D-6 Guidelines.....	7
2.2 Ontario Environmental Protection Act (EPA) and Ontario Regulation 419/05	8
2.3 Minimum Distance Separation (MDS) Document	9
3. COMPATIBILITY ASSESSMENT.....	9
3.1 Existing Industrial Land Uses.....	9
3.1.1 <i>Clark Brothers Contracting (CBC)</i>	9
3.1.2 <i>Dan Saunders Farm (DSF)</i>	9
3.1.3 <i>Other Industrial Facilities</i>	10
3.2 Existing Livestock Farms	10
3.3 Proposed Teeswater Concrete Plant	12
3.4 Proposed Sanitary Pumping Station (SPS)	12
4. EMISSIONS ESTIMATION.....	13
4.1 Air Emissions Estimation.....	13
4.1.1 <i>CBC’s Aggregate Facility</i>	13
4.1.2 <i>Teeswater’s Proposed Concrete Plant</i>	13
4.1.3 <i>DSF’s Waste Disposal Facility</i>	15
4.1.4 <i>Proposed Sanitary Pumping Station (SPS)</i>	15
5. DISPERSION MODELLING	16
5.1 Physical Characterization of Emission Sources.....	16
5.2 Contaminant Emission Rates	16
5.3 Receptors	16
5.4 Meteorological Data	16
5.5 Terrain Data	16
6. RESULTS AND DISCUSSIONS.....	17
6.1 Background Air Quality	17
6.2 Cumulative Air Quality Impacts	17
6.2 Odour Impacts	18
6.2 Wind Rose Plot.....	18
7. GENERAL MITIGATION STRATEGIES.....	18
8. CONCLUSIONS AND RECOMMENDATIONS.....	18
9. LIMITATIONS.....	19

Table of Contents

	Page
Table 1 Minimum Separation Distances and the Potential Influence Areas from Sensitive Land Uses	8
Table 2 Active Industrial Facilities with Air Emission Sources within 1000 meters of the Site.....	11
Table 3 Active Livestock Farms within 1500 m of the Site	11
Table 4 Assumed Exhaust Parameters for Dust Collectors	14
Table 5 Cumulative Air Quality Impacts	17
APPENDIX A Arthur Concept Plan	
APPENDIX B Current Land Use in the Study Area	
APPENDIX C Emissions Calculations	
APPENDIX D AERMOD Layouts	
APPENDIX E Wind Rose Plot	
APPENDIX F MDS I Reports	

EXECUTIVE SUMMARY

Tribute/Sorbara Arthur Holdings Inc. (Tribute) retained Alliance Technical Group (Alliance), formerly ORTECH Consulting Inc. to conduct an air quality study for a proposed residential development in Arthur, Ontario. The municipal address of the development property on the east side of Eliza Street is 665 Eliza Street. On the west side of Eliza Street, the property is bounded by Wells Street, Macauley Street (to be constructed as part of the development) and Eliza Street, with no municipal address. These development properties are collectively referred to as the “Site” in this report. The proposed development consists of detached, semi-detached and freehold townhouses, parks and a Sanitary Pumping Station (SPS). The purpose of this study is to address the air quality and odour impacts from the existing industrial and agricultural operations in the neighbouring areas. The latest concept plan is shown in Appendix A.

This study was conducted in consideration of the following resources:

- The Ministry of Environment, Conservation and Parks’ (MECP’s) D-6 Guidelines.
- The Ontario Environmental Protection Act (EPA) and Ontario Regulation 419/05 (O. Reg. 419/05).
- Methodology for Modeling Assessments of Contaminants with 10 Minute Average Standards and Guidelines under O. Reg. 419/05.
- The Ontario Ministry of Food, Agriculture and Rural Affairs (OMFRA) Minimum Distance Separation (MDS) Document Formulae and Guidelines for Livestock Facility and Anaerobic Digester Odour Setbacks (Publication 853).
- Ontario’s Ambient Air Quality Criteria (AAQC)
- Canadian Ambient Air Quality Standards (CAAQS)

The location of the Site and the boundaries of the study areas, consisting of the MECP D-6 1000-meter and the OMFRA 1500-meter criteria, are shown in Appendix B. Based on a review of existing land uses within the study area, potential existing sources of air contaminant and odour emissions were identified within the study areas as shown in Table 2. Further, a ready-mix concrete plant has been proposed by Teeswater Concrete Ltd. on lands severed from an existing aggregate supply facility located immediately south of the Site, operated by Clark Brothers Contracting.

The following potentially significant sources of air contaminant and odour emissions were identified:

- An aggregate crusher operated by Clark Brothers Contracting (CBC)
- A ready-mix concrete plant proposed by Teeswater Concrete Ltd. (Teeswater)
- A waste disposal site at Dan Saunder Farm (DSF)
- Proposed SPS at the Site

The impact of air emissions from these sources on the Site was further studied by using AERMOD (version 22112), a regulatory dispersion model approved by the MECP. Air emissions from the significant air emission sources identified above were estimated based on publicly available information such as the planning documentation and public information presentation for the Teeswater facility, satellite imagery, observations during the filed survey and Alliance’s experience with similar facilities.

The initial modelling indicated some potential for off-property impacts of dust emissions from the CBC facility and future Teeswater facility up to an approximate distance of 85 meters. This area of impact encroaches on the proposed development Site. To mitigate the dust impacts at the Site, the residential units at the Site are proposed to be separated conservatively by a distance of 100 meters from the CBC and Teeswater facility by parks.

The odour emissions from the DSF's waste disposal tank and the proposed SPS were estimated based on Alliance's in-house odour emissions inventory data. The SPS is assumed to be equipped with a carbon filtration system for odour control. The AERMOD modelling of combined odour emissions from the DSF's waste disposal tank and the SPS predicted the maximum odour concentrations of 1.5 OU at the nearest proposed residential unit. However, the exceedance of 1 OU was predicted to be less than 0.5 percent of time on an annual basis. This meets the MECP guidelines for odour assessments in Ontario.

Further, the MDS I was calculated for a dairy cow farm located at 8135 Line 2 and a goat dairy farm located at 8102 Wellington County Road 109 in Arthur, using OMAFRA's AgriSuite software. Both the building base distances and the storage base distances were found to be less than the actual separation distances of the Site from the livestock barns and manure storages of each dairy farm, respectively. Hence, the separation distances between the Site and the dairy farms are considered to be sufficient enough to prevent adverse odour impacts at the Site.

Therefore, the proposed development is considered to be sufficiently separated from the existing industrial and agricultural operations to prevent adverse air quality and odour impacts. Also, the creation of a buffer distance using parks between the proposed residential units at the Site and the adjacent sources of dust emissions (CBC and Teeswater) is expected to mitigate the future air quality impacts at the Site.

1. INTRODUCTION

Tribute/Sorbara Arthur Holdings Inc. (Tribute) retained Alliance Technical Group (Alliance), formerly ORTECH Consulting Inc. to conduct an air quality study for a proposed residential development in Arthur, Ontario. The municipal address of the development property on the east side of Eliza Street is 665 Eliza Street. On the west side of Eliza Street, the property is bounded by Wells Street, Macauley Street (to be constructed as part of the development) and Eliza Street, with no municipal address. These development properties are collectively referred to as the “Site” in this report. The purpose of this study is to address the air quality and odour impacts from the existing industrial and agricultural operations in the neighbouring areas.

1.1 Description of the Site and the Study Area

The proposed development consists of multiple detached, semi-detached and freehold townhouses, parks and a Sanitary Pumping Station (SPS). The latest development plans are shown in Appendix A. The predominant land use within the Study Area is agricultural. A cow and a goat dairy farm operate within 1,500 meters of the Site. Some of the key current and future land use features in the study area are:

- An existing aggregate supplier (CBC) immediately south of the Site, across Macauley Street.
- Teeswater proposed a ready-mix concrete plant on the land to be severed from the CBC facility.
- Cachet Developments’ residential community development application for the lands immediately west of the current CBC facility.
- A waste disposal facility operates 100 meters north of the Site.
- A trucking company is located adjoining the northeast corner of the Site.

2. RELEVANT REGULATIONS AND GUIDELINES

2.1 MECP’s D-6 Guidelines

MECP’s D-6 guidelines (the “Guidelines”) recommend a 1000-meter study area for land use proposals, define three classes of industrial facilities: Class I, Class II and Class III (see definitions below), and define Sensitive Land Uses. Guideline D-6 also defines Minimum Recommended Separation Distances (MSDs) and Potential Area of Influence (AOI) between industrial facilities, and sensitive land uses for each Class, as shown in Table 1. The class designations are based on the potential for noise, dust and odours.

A Class I Industrial Facility is “A place of business for a small scale, self-contained plant or building which produces/stores a product which is contained in a package and has low probability of fugitive emissions. Outputs are infrequent and could be point source or fugitive emissions for any of the following: noise, odour, dust and/or vibration. There are daytime operations only, with infrequent movement of products and/or heavy trucks and no outside storage”.

A Class II Industrial Facility is “A place of business for medium scale processing and manufacturing with outdoor storage of wastes or materials and/or there are periodic outputs of minor annoyance. There are occasional outputs of either point source or fugitive emissions for any of the following: noise, odour, dust and/or vibration, and low probability of fugitive emissions. Shift operations are permitted and there is frequent movement of products and/or heavy trucks during daytime hours”.

A Class III Industrial Facility is “A place of business for large scale manufacturing or processing, business characterized by: large physical size, outside storage of raw and finished products, large production volumes and continuous movement of products and employees during daily shift operations. It has frequent outputs of major annoyance and there is a high probability of fugitive emissions”.

Table 1: Minimum Separation Distances and the Potential Influence Areas from Sensitive Land Uses

Class	Recommended Minimum Separation Distance (m)	Potential Influence Area (m)
I	20	70
II	70	300
III	300	1000

Although Guideline D-6 suggests that distances are normally measured from property line to property line, there is an allowance for measuring from a specific source to sensitive receptors. Guideline D-6 also discusses reducing the minimum separation distance required based on mitigation at industrial sites and provides for exceptions to the Recommended Minimum Separation Distances for some development sites including infilling.

Facilities that do not meet the definition of any one of the three classes are expected to have virtually no potential for creating noise, odour, dust or vibration that would give rise to complaints. The definitions and examples in the MECP Guidelines relevant to air quality concerns were used to characterize each of the nearby facilities. The D-6 Guideline includes “residences, senior citizens homes, schools, daycare facilities, hospitals, churches and other institutional uses” as sensitive land uses.

2.2 Ontario Environmental Protection Act (EPA) and Ontario Regulation 419/05

Environmental Compliance Approvals (ECA) and Environmental Activity and Sector Registry (EASR) are two permitting instruments for industrial facilities, under Section 9 of the EPA, which follow the requirements of Ontario Regulation 419/05 (O. Reg. 419/05) and Ontario Regulation 1/17 (O. Reg. 1/17). In general, low risk industries follow the EASR process while more complex industrial operations require an ECA.

Per O. Reg. 419/05, facilities emitting air contaminants are required to comply with MECP’s air quality standards at all off-site receptor points. Odours, which are categorized as a nuisance, are regulated at sensitive receptors such as schools, residences, long-term care homes, etc., either through the air quality criteria in O. Reg. 419/05 or through specific terms and conditions in the ECA or EASR documentation. Industrial facilities with existing permits (ECAs or EASRs), as identified in Table 2, are expected to meet the MECP’s air quality standards at the nearest off-site receptors.

2.3 Minimum Distance Separation (MDS) Document

The Ontario Ministry of Food, Agriculture and Rural Affairs (OMFRA) MDS document recommends a 1500-meter area of study for establishing the MDS I setbacks from the livestock facilities, aiming to mitigate land use conflicts and minimize nuisance complaints associated with odours. Guidance on the MDS formulae is documented in OMAFRA's MDS Document, 2017.

3. COMPATIBILITY ASSESSMENT

The land use compatibility assessment was based on readily available information, such as conceptual site plans, satellite imagery, Access Environment website (MECP's map-based tool), etc., and direct observations conducted during the site visit on September 30, 2024.

As noted in Section 2.1 of this report, the Guidelines are based on the potential for noise, dust and odours. This study addresses dust, odour sources and other air contaminants but does not address environmental noise or vibration. The industrial land uses within the study area of the proposed development are shown in Table 2.

3.1 Existing Industrial Land Uses

Table 2 summarizes various industrial facilities within the 1000-meter study area per MECP's D-6 guidelines. Facility-specific discussions are presented below.

3.1.1 Clark Brothers Contracting (CBC)

CBC is an aggregate supplier located at 510 Eliza Street in Arthur. Based on the satellite imagery and the observations made during the site visit, it appears that CBC operates a crusher, a screener and a loader at their facility. These operations are sources of fugitive dust emissions. The CBC facility will be separated from the Site property by a future road (Macauley Street), 20 meters wide. CBC facility would be classified as a Class II – III facility, with an AOI ranging from 300 meters to 1000 meters. Therefore, the emissions from the CBC facility were modelled using the AERMOD model. In the absence of CBC's operational information required for running the AERMOD model, Alliance has made technical assumptions based on experience with similar facilities. During the site visit, the crushing, screening or aggregate handling operations were not active.

3.1.2 Dan Saunders Farm (DSF)

Per ECA #4716-6ZNPQU, DSF is permitted to operate a waste disposal site (transfer) which includes a 1,589 cubic meter concrete storage tank to be used for the storage and transfer of the following types of waste: liquid non-hazardous waste, specifically waste from food processing/preparation operations and waste approved for management under Ontario Waste Management System Approval number R-004-4385702934 and NASM materials in accordance with OMAFRA approval number 22466.

Based on the description in the ECA, the DSF facility is only allowed to store and transfer liquid non-hazardous waste. The treatment and final disposal of the waste is not allowed at the DSF facility. From the satellite imagery, the storage tank appears to be an open circular tank.

However, the open liquid waste tank is considered an odour source and the odour emissions from the DSF facility were modelled using the AERMOD model. In the absence of odour data from the DSF facility, Alliance has made technical assumptions based on experience with similar facilities. During the site visit, no livestock operations were noted at the DSF facility, and there were no noticeable odours near the DSF facility along Eliza Street.

3.1.3 Other Industrial Facilities

Per Table 2, all other industrial facilities within the study area are at adequate separation distances to prevent adverse air quality impacts at the Site. The Site shares the property line of the Ivan Armstrong Trucking (IAT) facility. Per satellite imagery and the observations during the site visit, it appears that the truck maintenance operations at the IAT facility are carried out indoors. The nearest structure at the IAT facility is approximately 170 meters from the Site property. The yard at the IAT facility, abutting the Site property, is used for storage of containers. So, IAT would be classified as a Class I facility with an AOI of 70 meters. Therefore, in Alliance's opinion, the adverse air quality impacts from IAT are not anticipated at the Site. However, Alliance recommends including a warning clause in the sale agreements of the residential units proposed near the IAT property for potential intermittent air quality impacts from the IAT facility.

3.2 Existing Livestock Farms

Two existing livestock farms were identified within a 1500-meter study area, as shown in Table 3. These are licensed dairy production farms, per the Province of Ontario's open datasets. Per OMAFRA, the Minimum Distance Separation (MDS) setbacks are intended to mitigate concerns arising from potential impacts of agricultural operations, such as odours, noise, and traffic, with a specific emphasis on livestock facilities near residential areas.

The MDS formulae and guidelines consider the following land use type for calculating the setback distances:

- Type A Land Uses (Less Sensitive), characterized by lower density human occupancy, including industrial uses, and less densely populated areas.
- Type B Land Uses (More Sensitive), characterized by higher density human occupancy, including new or expanding settlement area boundaries.

Table 2: Active Industrial Facilities with Air Emission Sources within 1000 meters of the Site

Active Facilities Within Study Area	Address	Operations	Permit Type	Distance to the Site	D-6 Classification	Within AOI?	Within MSD?	Modelled?	Comments
Clark Brothers Contracting	510 Eliza St.	Aggregate supplier	None	20	II-III	Yes	Yes	Yes	Potential for dust impacts at the Site
Dan Saunders Farm	8566 Wellington Rd. 14	Waste disposal facility	ECA	70	I-II	Yes	Yes	Yes	Potential for odour impacts anticipated at the Site
Ivan Armstrong Trucking	8035 Line 2	Trucking facility	None	170	I	No	No	No	Adverse air quality impacts not anticipated at the Site
Krown Rust Control	490 Eliza St.	Autobody shop	None	215	I	No	No	No	Adverse air quality impacts not anticipated at the Site
Jim's Auto Service	327 Tucker St.	Autobody shop	None	295	I	No	No	No	Adverse air quality impacts not anticipated at the Site
Musashi Auto Parts Inc.	333 and 500 Domville Street	Auto parts manufacturer	ECA	660	II	No	No	No	Adverse air quality impacts not anticipated at the Site
Lafarge Canada Inc.	9300 Airport Road	Ready mix concrete manufacturer	ECA	1000	III	No	No	No	Adverse air quality impacts not anticipated at the Site

Table 3: Active Livestock Farms within 1500 m of the Site

Active Livestock Farms	Address	Operations	Distance to the Site	Comments
Rosegaar Feed Farm	8135 Line 2	Cow dairy farm	825	Outdoor liquid manure storage tank visible from satellite imagery; Adequate separation distance to prevent air quality impacts based on MDS I calculations
Rivers Edge Goat Dairy	8102 Wellington County Rd. 109	Goat dairy farm	1250	Outdoor solid manure storage shed visible from satellite imagery; Adequate separation distance to prevent air quality impacts based on MDS I calculations

Typically, Type B Land Uses tend to generate MDS setbacks that are twice the distance of MDS Type A Land Use setbacks. The Proposed Development is considered to be a Type B Land Use. The nature of farm operations (Table 3), i.e., type of livestock or type of crop, the capacity of the farms, etc., are not fully known at this stage. Alliance has made technical assumptions based on experience with similar facilities. A copy of MDS I calculations for both dairy farms is provided in Appendix F. Based on MDS I calculations, adverse air quality impacts are not anticipated at the Site, as both farms are adequately separated from the Site.

3.3 Proposed Teeswater Concrete Plant

Per publicly available municipal planning documents and the information provided by Tribute, the CBC facility intends to sever and sell the west portion of their property, which is proposed to be utilized by Teeswater for operating a ready-mix concrete plant. The capacity and operational information of the proposed concrete plant are unknown. However, Teeswater has indicated in public documents that the proposed concrete plant near the Site will be similar to Teeswater's Hanover concrete plant but more enclosed than the Hanover plant. Teeswater intends to apply for the ECA by completing the ESDM report and preparing a dust Best Management Practices Plan (BMPP) for the proposed concrete plant.

A successful ESDM report would confirm the compliance of the proposed concrete plant with MECP's air quality limits. The enclosures around material handling operations and an effective dust BMPP will minimize the potential of fugitive dust emissions from the proposed concrete plant. Subject to issuance of ECA by MECP, Teeswater's proposed concrete plant will be considered in compliance with the air quality limits at the plant property line, ground level receptors (such as proposed detached and semi-detached houses at the Site) and the nearest existing two-storey residential unit, approximately 80 meters south of the proposed concrete plant site.

The tallest residential buildings proposed at the Site are three-storey townhouses. AERMOD dispersion modelling was done for the dust emissions from the proposed concrete plant. In the absence of the concrete plant's operational information, Alliance made technical assumptions based on publicly available information about the plant.

3.4 Proposed Sanitary Pumping Station (SPS)

Tribute is proposing an SPS in the northern portion of the Site, along Eliza Street (see Appendix A), to service the proposed development at the Site. The conceptual design of the proposed SPS includes a wet well of 3.6 meters in diameter and 10 meters in depth, with 12 air changes per hour and a sewage overflow level of 40 cubic meters. The SPS will be equipped with a carbon filtration system to control odour emissions from the SPS. Alliance utilized published literature for estimating odour emission intensities from the wet well. The odour emissions from the SPS were modelled using the AERMOD model.

4. EMISSIONS ESTIMATION

US EPA AERMOD model (version 22112) is the current regulatory dispersion model in Ontario, as adopted by MECP. AERMOD requires data inputs such as emission intensity (grams/unit time) for an emission source (example roads, rail lines, stacks, etc.) and meteorological data (wind speed, temperature, etc.) to calculate the dispersion of contaminants towards receptor points (residence, schools, etc.).

4.1 Air Emissions Estimation

4.1.1 CBC's Aggregate Facility

For the purpose of this report, Alliance assumed the retained lands after the proposed severance to be the CBC property. The following assumptions were made for CBC facility operations.

- Maximum daily operational time of 10 hours per day, between 7 am and 7 pm (due to excessive noise emissions from aggregate handling equipment, the CBC facility is not expected to operate at nighttime).
- Maximum 20 trucks of uncrushed material delivered to CBC facility per day.
- Based on 20 metric tons (MT) truck capacity, the maximum uncrushed material delivered is assumed to be 40 MT/hr or 400 MT/day.
- Due to the limited storage space of the proposed severed parcel and the footprint of the crushing train, the maximum crushing rate was assumed to be 600 MT/day or 50 MT/hr.

The dust emission rates, i.e., emission rates of total suspended particulate matter (TSP), particulate matter less than 10 microns (PM10) and particulate matter less than 2.5 microns (PM2.5), were estimated based on the guidance provided in the US EPA's AP-42 documentation. A snapshot spreadsheet calculation of dust emissions from the CBC facility is provided in Appendix C. The crushers are typically equipped with water sprinklers. For conservatism, it was assumed that CBC does not follow any additional dust BMPs, such as water suppression for loading and unloading crushed or uncrushed aggregate. Hence, no dust control efficiencies were utilized for the estimation of dust emissions from the CBC facility. Further, the on-site roads were assumed to remain unpaved.

The drop points, such as the loading and unloading of aggregate were modelled as volume sources, the screener was modelled as a surface area source and the unpaved road was modelled as a line volume source.

4.1.2 Teeswater's Proposed Concrete Plant

For the purpose of this report, Alliance assumed the proposed severed lands to be the Teeswater's property. The following assumptions were made for the proposed concrete plant operations.

- Per municipal documents, the proposed concrete plant is expected to make a maximum of 32 trips per day of concrete trucks.
- Typically, each concrete truck carries 6 to 10 cubic meters of concrete. Conservatively, assuming 10 m³ of concrete per truck, the maximum concrete delivery per day is estimated to be 320 m³.
- Assuming a typical concrete density of 2400 kg/m³, the maximum concrete production per day is estimated to be 768 MT, which is more than the capacity of Teeswater’s Hanover concrete plant.
- Maximum daily operating time of 12 hours per day, between 7 am and 7 pm was assumed (due to excessive noise emissions from concrete plant operations, it is not expected to operate at nighttime). Hence, the maximum hourly concrete production rate is estimated to be 70 MT/hr (10% safety factor applied).
- Assuming standard concrete mix (1:2:3) with a water/cement ratio of 0.4, i.e., 11 MT of cement, 22 MT of sand, 33 MT of aggregate and 4 MT of water, is required for producing 70 MT of concrete in an hour.
- Based on 20 MT aggregate truck capacity and 40 MT cement trailer capacity, a reasonably conservative truck traffic scenario for the proposed concrete plant is 1 cement delivery/hr (3/day), 2 sand deliveries/hr (12/day) and 3 aggregates deliveries/hr (18/day).
- The conveyor system and conveyor bins were assumed to be enclosed.
- A typical enclosed batch tower was assumed with indoor loading of ready-mix concrete trucks. The batch tower is typically equipped with a dust collector (see Table 4).
- The cement silo and the additive silo were assumed to be equipped with individual dust collectors (see Table 4).
- The on-site roads were assumed to be unpaved.

The dust collectors were modelled as point sources, the drop points were modelled as volume sources and the unpaved road was modelled as a line volume source. The dust emission rates were estimated based on the guidance provided in the US EPA’s AP-42 documentation. A snapshot spreadsheet calculation of dust emissions from the proposed concrete plant is provided in Appendix C.

Table 4: Assumed Exhaust Parameters for Dust Collectors

Equipment	Flow rate (m ³ /s)	Exhaust diameter (m)	Exhaust Height (m)	Comments
For batch tower	4.72	0.601	24	flow rate and diameter assumed based on experience; Exhaust height provided by Tribute
For cement silo	1.00	0.305	25	flow rate, diameter and exhaust height assumed based on experience
For additive silo	1.00	0.601	21	flow rate, diameter and exhaust height assumed based on experience

4.1.3 DSF's Waste Disposal Facility

Per DSF's ECA, a concrete tank is used for the storage and transfer of liquid non-hazardous waste. From the satellite imagery, an outdoor open circular tank is visible at the DSF facility. In the absence of odour emissions data for the DSF facility, the odour potential of a primary clarifier at a typical municipal wastewater treatment plant was assumed to be representative of odours from the waste storage tank at the DSF facility. In Alliance's experience, the typical odour emission rate from a primary clarifier is 0.5 OU/m²/s. The waste tank was modelled as a circular area source.

4.1.4 Proposed Sanitary Pumping Station (SPS)

An SPS with one wet well and a carbon filtration unit is proposed at the Site for servicing the proposed residential units, as described in Section 3.4 of this report. Site-specific odour emissions data is unavailable for the proposed SPS at the Site. Based on the literature review, the odour emission factors were adopted from "Odor Threshold Emission Factors for Common WWTP Processes" (McGinley and McGinley, 2008). This review paper documents a statistical summary of odour sampling results from 15 pump stations and 17 wet wells. The third quartile of odour emission intensity data, 3,650 OU/m³, for wet wells was used for emissions estimation.

Based on the wet well dimensions, sewage overflow level and the number of air changes, the uncontrolled odour emission rate from the well is estimated to be 752 OU/s. Applying 95% control efficiency (design concept) for the carbon filtration system, the controlled odour emission rate from the SPS is 38 OU/s. The current design concept assumes a 6-inch diameter exhaust stack from the carbon filtration system, with an exhaust flow rate of 0.21 m³/s and a height of 3.5 meters above ground level.

5. DISPERSION MODELLING

This section describes the methodology of selecting model inputs and its rationale, modelling scenarios and model setup.

5.1 Physical Characterization of Emission Sources

The physical characteristics of the modelled emissions sources are described in Section 4.

5.2 Contaminant Emission Rates

The contaminant emission rates from the CBC and Teeswater facilities are provided in Appendix C and the contaminant emission rates from the DSF facility and the proposed SPS are provided in Section 4.

5.3 Receptors

Alliance used the following approach to set up elevated receptor points around the buildings, consistent for each building type identified in Appendix A.

- Receptors were set up vertically at Ground Level (GL), at 1.5 meters above GL and at each subsequent floor along the Site property and the periphery of residential blocks.

5.4 Meteorological Data

MECP's regional meteorological data (version April 2023) processed with AERMET 22112 for the West Central Region (London) was used, as made available on the Ministry's website. The CROPS dataset was selected for conservatism.

5.5 Terrain Data

MECP's NED GeoTIFF file "cdem_dem_040P.tif" was used as digital terrain input to the AERMAP. The US EPA recommended elevation data import technique was used to import the elevations for receptors, sources and buildings.

6. RESULTS AND DISCUSSIONS

6.1 Background Air Quality

Background air concentration represents cumulative levels of air contaminants released from various emission sources, such as industrial sources, roadways, railways, etc., in the vicinity of an air monitoring station where the background air quality levels are recorded. This report addresses the air quality impacts from industrial emission sources within 1 km of the Site.

Background air quality conditions were established by reviewing publicly available historical ambient air monitoring data from NAPS air monitoring stations. The selection of a representative NAPS station is critical to establish background air quality. NAPS #61802 (Guelph) is located approximately 40 km from the Site. Due to the urban land use characteristics of Guelph and the presence of quarries nearby, Guelph is not considered to be representative of the Site. NAPS #62601 is located in Simcoe, which resembles the land use characteristics of Arthur. So, the background air quality of Simcoe was adopted in this report as representative of Arthur. Table 5 shows the three-year (2020-2022) averaged background air quality data for the contaminants.

6.2 Cumulative Air Quality Impacts

AERMOD modelling results of significant sources of air emissions near the Site are presented in Table 5, along with background air quality levels and cumulative contaminant concentrations. The cumulative air quality impact at the Site is shown in Table 5, which is the sum of background air quality levels and modelled contaminant concentrations. It can be observed from Table 5 that the cumulative contaminant concentrations are below the air quality limits (MECP, AAQC and CAAQS).

Table 5: Cumulative Air Quality Impacts

Contaminant	Avg. Period	Modelled Concentration $\mu\text{g}/\text{m}^3$	Background Concentration $\mu\text{g}/\text{m}^3$	Cumulative Concentration $\mu\text{g}/\text{m}^3$	Threshold Value $\mu\text{g}/\text{m}^3$	Reference	% Threshold Value
TSP	24-hr	25.94	33.33	59.27	120	MECP	49.39%
PM10	24-hr	25.11	18	43.11	50	AAQC	86.22%
PM2.5	24-hr	2.55	10	12.55	27	CAAQS (2025)	46.48%
PM2.5	Annual	0.51	6	6.51	8.8	CAAQS (2025)	73.98%

Note 1: TSP and PM₁₀ background air quality levels were not available. A ratio of PM_{2.5}/PM₁₀ of 0.54 and PM_{2.5}/TSP of 0.3 was used (US EPA).

Note 2: TSP emissions modelling was refined by using the dry depletion option in AERMOD.

6.3 Odour Impacts

The combined odour impacts at the Site due to the emissions from the proposed SPS and the waste storage tank at the DSF facility were predicted using the AERMOD model. The maximum odour level of 1.5 OU was predicted at the residential unit immediately adjacent to the proposed SPS. A maximum of 79 hours were predicted with odour levels greater than or equal to 1 OU in a 5-year period, which is less than 0.2% of the time on an annual basis. These odour modelling results meet the MECP requirements of not exceeding 1 OU more than 0.5% of the time on an annual basis.

6.4 Wind Rose Plot

Appendix E shows the wind rose plot for the MECP's regional meteorological data (London). The predominant wind direction is from west to east. Approximately 20% of the time in a year, the wind blows from the north, where the DSF facility is located, and approximately 40% of the time in a year, the wind blows from the south, where the CBC facility is located. The impacts of this higher frequency of winds blowing from the emission sources to the Site are accounted for in the AERMOD modelling results (Table 5). Due to inherent uncertainties involved in the dispersion modelling, Alliance recommends the inclusion of warning clauses in the sale agreement of the residential units at the Site (See Section 8).

7. GENERAL MITIGATION STRATEGIES

One of the common mitigation strategies to reduce air quality impacts at sensitive receptors is to create a greater separation distance between the emission source and the sensitive receptors. The results presented in Table 5 are based on the 100-meter buffer distance created by locating parks between the proposed residential blocks at the Site and the CBC property. The CBC currently uses its property for aggregate supply business which includes aggregate crushing operations. The future scenario of the potential ready-mix concrete plant on the severed parcel of land from the CBC property was accounted for in this report.

8. CONCLUSIONS AND RECOMMENDATIONS

Alliance completed this air quality study for the proposed residential development in Arthur. The municipal address of the development property on the east side of Eliza Street is 665 Eliza Street. On the west side of Eliza Street, the property is bounded by Wells Street, Macauley Street (to be constructed as part of the development) and Eliza Street, with no municipal address. Based on relevant land use compatibility guidelines, municipal documents, and publicly available records of MECP's environmental (Air) permits the proposed development at the Site is considered to be feasible with the existing and future industrial land uses and the current farming activities within the study area.

The development plan was designed to include additional buffers between the CBC property and the proposed residential blocks at the Site to minimize the potential dust impacts from the aggregate supply facility operations and the proposed ready-mix concrete plant. The AERMOD modelling results presented in Table 5 show that the cumulative air quality impacts at the Site are predicted to be below air quality limits. The combined odour levels at the Site, from the operations of the proposed SPS at the Site and the waste storage tank at the DSF facility, are expected to meet the Province of Ontario requirements, i.e., exceedance of 1 OU less than 0.5 percent of the time on an annual basis. Further, the MDS I calculations for two dairy farms within the study area indicate that the separation distances between the Site and the farms is sufficient to prevent adverse air quality impacts at the Site.

Alliance recommends warning clauses should be included in the sale agreement of residential units in consultation with the legal counsel, which clearly states:

- Intermittent, and slight, odours could be detectable at the residential units near the proposed SPS and the DSF facility, especially in open areas such as front and back yards, balconies and the park.
- Intermittent dust and odour impacts are possible at the residential units abutting the agricultural lands and near the CBC facility, especially in open areas such as front and back yards, balconies and the park.

9. LIMITATIONS

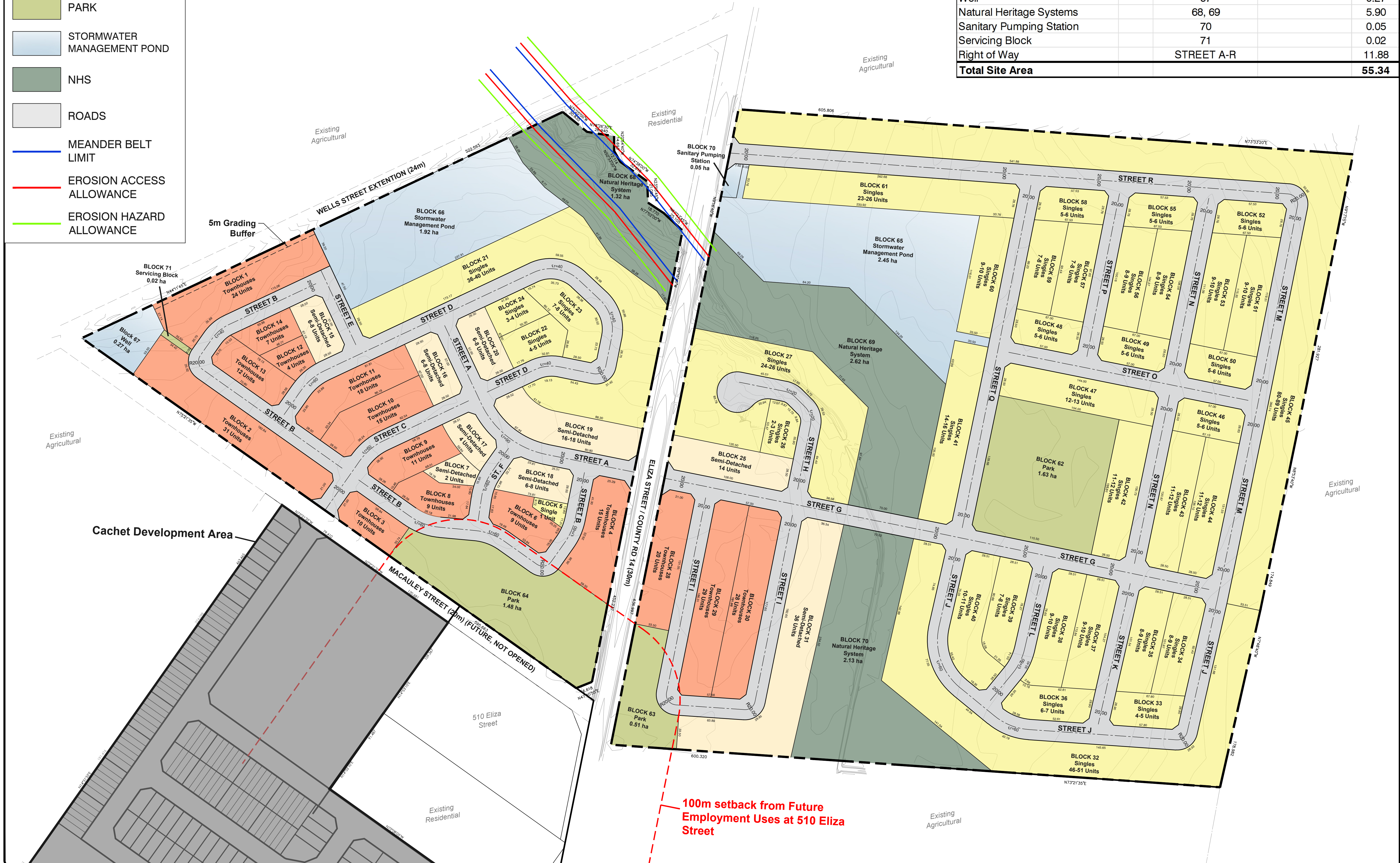
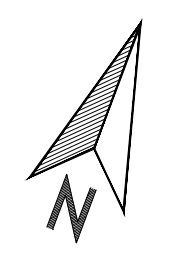
The assessment, conclusion and recommendations in this report are based on the information provided by Tribute, documented technical guidance from regulatory bodies such as MECP and US EPA, and Alliance's professional opinion. This report is prepared for the exclusive use of Tribute, their representatives and stakeholders of the development plan (Appendix A). The assessment presented in this report does not apply to other sites. Any changes to the site plan may require revision of this assessment. The report should not be misconstrued as a comprehensive air quality report for the Site and relies on professional opinions in some places to quantify emissions. In addition to the emission sources identified in this report, other sources, such as agricultural tilling operations, etc., may or may not impact the proposed development.

APPENDIX A

**Arthur Concept Plan
(1 page)**

LEGEND

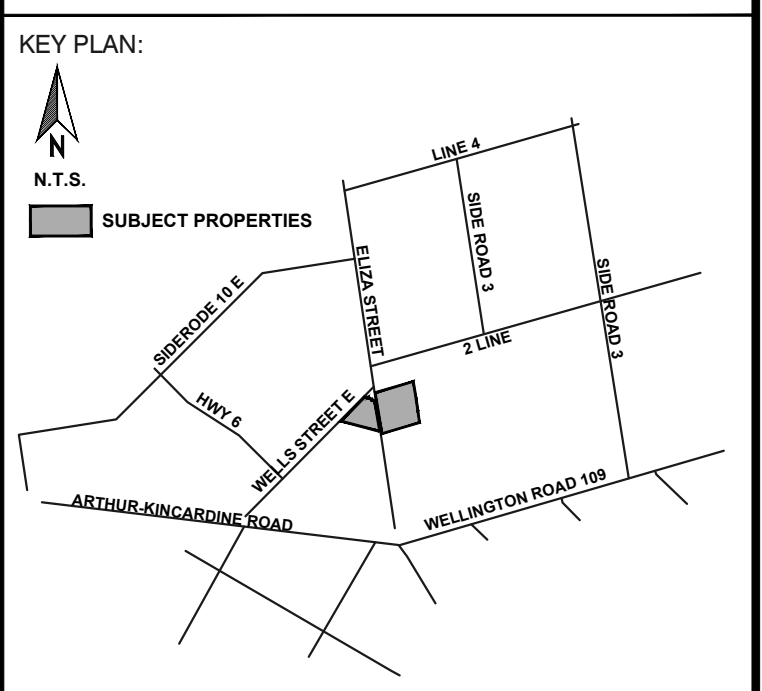
- 36' AND 40' SINGLES
- 20' FREEHOLD TH
- 25' SEMIS
- PARK
- STORMWATER MANAGEMENT POND
- NHS
- ROADS
- MEANDER BELT LIMIT
- EROSION ACCESS ALLOWANCE
- EROSION HAZARD ALLOWANCE



Schedule of Land Use			
Description	Lot / Block No.	Residential Units	Area (ha)
Single Detached Residential	5, 21-24, 26, 27, 32-61	454-504	19.96
Semi-Detached	7, 15-20, 25, 31	112-113	3.21
Street Townhouse	1-4, 6, 8-14, 28-30	249	6.05
Net Developable Total		815-866	29.22
Park	62-64		3.62
Stormwater Management Pond	65, 66		4.38
Well	67		0.27
Natural Heritage Systems	68, 69		5.90
Sanitary Pumping Station	70		0.05
Servicing Block	71		0.02
Right of Way	STREET A-R		11.88
Total Site Area			55.34

TITLE:
DRAFT PLAN OF SUBDIVISION

LEGAL DESCRIPTION:
PART OF PARK LOTS 1 AND 2
NORTH OF MACAULEY STREET
CROWN SURVEY
AND
PART LOT 1 CONCESSION 2
WEST LUTHER AS IN R0N174408
TOWNSHIP OF WELLINGTON NORTH
COUNTY OF WELLINGTON



REQUIRED INFORMATION:
AS REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT R.S.O. 1990.

(a) SEE PLAN (g) SEE PLAN
(b) SEE PLAN (h) PIPED WATER TO BE PROVIDED
(c) SEE KEY MAP (i) SILTY CLAY, SILTY SAND, GLACIAL TILL
(d) SEE SCHEDULE OF LAND USE (j) SEE PLAN
(e) SEE PLAN (k) SANITARY & STORM SEWERS TO BE PROVIDED
(f) SEE PLAN (l) SEE PLAN
NOTE: CONTOURS RELATE TO CANADIAN GEODETIC DATUM

SURVEYOR'S CERTIFICATE:
I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATE AND CORRECTLY SHOWN IN ACCORDANCE WITH A PLAN OF SURVEY PREPARED BY J.D. BARNES LIMITED

RAYMOND J. SIBTHORP O.L.S.
DATE

OWNER'S CERTIFICATE:
I HEREBY AUTHORIZE THE BIGLIERI GROUP LTD. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE COUNTY OF WELLINGTON

TRIBUTE/SORBARA ARTHUR HOLDINGS INC.
DATE

ARTHUR, WELLINGTON NORTH DEVELOPMENT

APPROVAL STAMP:

TRIBUTE/SORBARA ARTHUR HOLDINGS INC.

REVISIONS

No.	Description	Date	Int.
3			
2			
1			

PROJECT No.: 22853
DATE: January 14, 2025
SCALE: 1:1750
DRAFTED BY: EC CHECKED BY: MP
DRAWING No.: **DP-01**

BIGLIERI GROUP

2472 Kingston Road, Toronto
21 King Street W. Suite 1100, Hamilton
(416) 693-6165
thebiglierigroup.com

100m setback from Future Employment Uses at 510 Eliza Street


APPENDIX B

**Current Land Use in the Study Area
(1 page)**

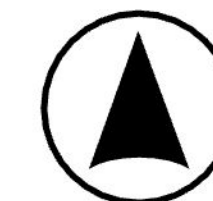
PROJECT TITLE:

Land Use Map

LEGEND:

-  Property Boundary
-  Active Facilities
-  Macauley Street
-  20m Buffer
-  70m Buffer
-  300m Buffer
-  1000m Buffer
-  1500m Buffer

NORTH ARROW:



SCALE BAR:



COMPANY NAME:

Alliance Technical Group



PREPARED BY:

Jenoshan Sivakumar

PREPARED DATE:

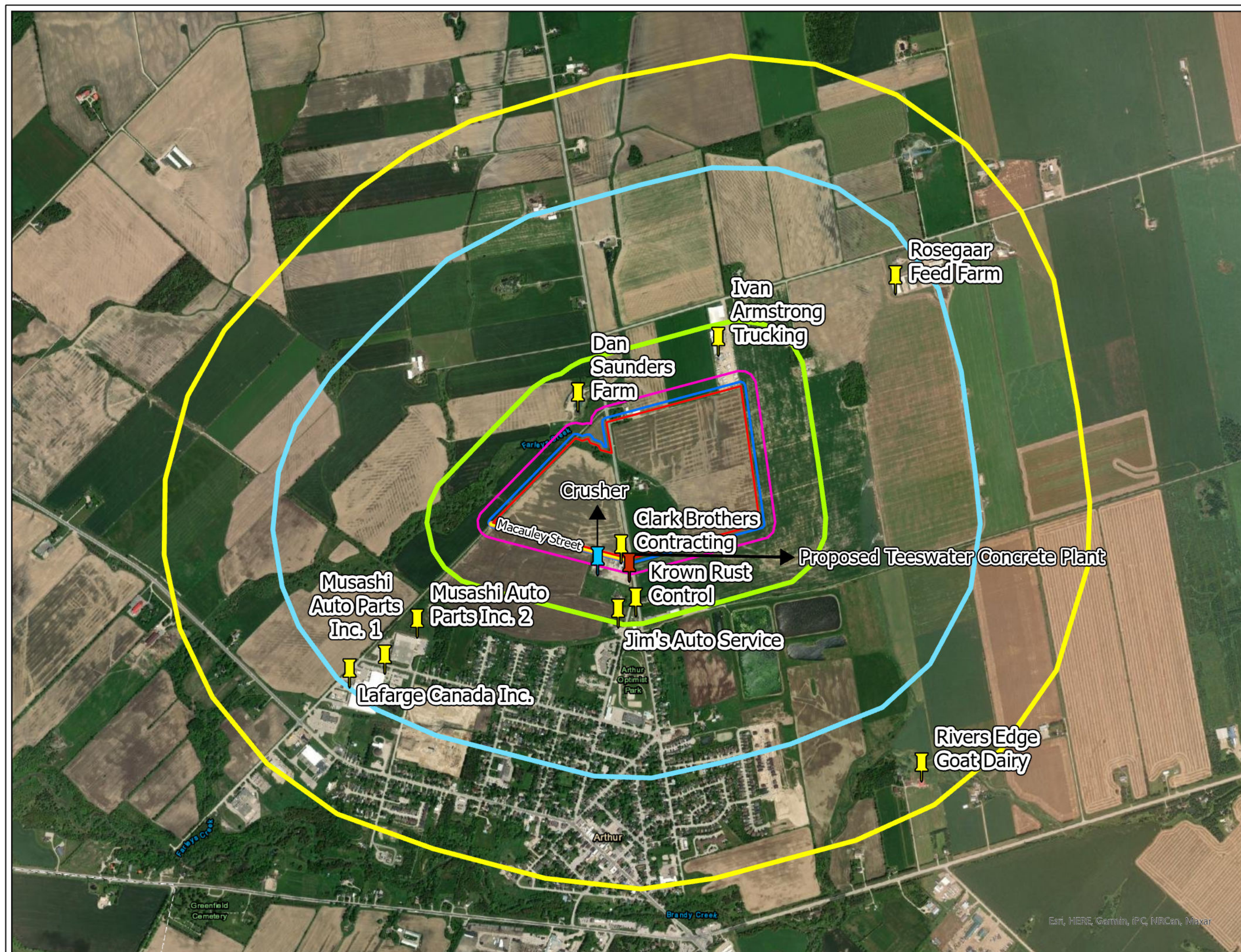
13/02/2025

SOURCE:

City of Arthur
Datum: WGS 1984 UTM Zone 17N

PROJECT NUMBER: 92897

CLIENT: TRIBUTE/SORBARA
ARTHUR HOLDINGS INC.



APPENDIX C

**Emissions Calculations
(4 pages)**

Teeswater Ready-Mix Concrete Plant

Source Description	AP42 Description	Contaminant	Emission Factor at Wind Speed 4 m/s (kg/MT)	Processing Rate (MT/hour)	Control	Dust Control Method	1-hr TSP Emission Rate (g/s)	1-hr PM10 Emission Rate (g/s)	1-hr PM2.5 Emission Rate (g/s)
Unloading of Aggregate Delivery Trucks	Aggregate Drop Operation	TSP	3.30E-03	60	0%	No Control	5.51E-02	2.41E-02	3.65E-03
		PM10	1.45E-03	60	0%				
		PM2.5	2.19E-04	60	0%				
Unloading of Sand Delivery Trucks	Aggregate Drop Operation	TSP	9.95E-04	40	0%	No Control	1.11E-02	4.84E-03	7.33E-04
		PM10	4.35E-04	40	0%				
		PM2.5	6.59E-05	40	0%				
Loading of Aggregate to Conveyor Bins	Aggregate Drop Operation	TSP	3.30E-03	33	75%	Three Sided Enclosure	7.57E-03	3.31E-03	5.02E-04
		PM10	1.45E-03	33	75%				
		PM2.5	2.19E-04	33	75%				
Loading of Sand to Conveyor Bins	Aggregate Drop Operation	TSP	9.95E-04	22	75%	Three Sided Enclosure	1.52E-03	6.65E-04	1.01E-04
		PM10	4.35E-04	22	75%				
		PM2.5	6.59E-05	22	75%				
unloading of Aggregate from Conveyor Bins onto conveyor	Aggregate Drop Operation	TSP	3.30E-03	33	75%	Three Sided Enclosure	7.57E-03	3.31E-03	5.02E-04
		PM10	1.45E-03	33	75%				
		PM2.5	2.19E-04	33	75%				
unloading of Sand from Conveyor Bins onto conveyor	Aggregate Drop Operation	TSP	9.95E-04	22	75%	Three Sided Enclosure	1.52E-03	6.65E-04	1.01E-04
		PM10	4.35E-04	22	75%				
		PM2.5	6.59E-05	22	75%				

Clark Brothers Contracting

Source Description	AP42 Description	Contaminant	Emission Factor at Wind Speed 4 m/s (kg/MT)	Processing Rate (MT/hour)	Control Efficiency %	Dust Control Method	1-hr TSP Emission Rate (g/s)	1-hr PM10 Emission Rate (g/s)	1-hr PM2.5 Emission Rate (g/s)
Unloading of Uncrushed Aggregate Delivery Trucks	Aggregate Drop Operation	TSP	3.30E-03	40	0%	No Control	3.67E-02	1.61E-02	2.43E-03
		PM10	1.45E-03	40	0%				
		PM2.5	2.19E-04	40	0%				
Crusher loading	Aggregate Drop Operation	TSP	3.30E-03	50	0%	No Control	4.59E-02	2.01E-02	3.04E-03
		PM10	1.45E-03	50	0%				
		PM2.5	2.19E-04	50	0%				
Crusher stockpile	Aggregate Drop Operation	TSP	3.30E-03	50	0%	No Control	4.59E-02	2.01E-02	3.04E-03
		PM10	1.45E-03	50	0%				
		PM2.5	2.19E-04	50	0%				
Truck Loading	Aggregate Drop Operation	TSP	3.30E-03	50	0%	No Control	4.59E-02	2.01E-02	3.04E-03
		PM10	1.45E-03	50	0%				
		PM2.5	2.19E-04	50	0%				

Note 1: Emission factors were calculated by using Equation 1 provided in AP-42 Chapter 13.2.4 Aggregate Handling And Storage Piles

Note 2: Moisture contents for aggregate and sand were assumed to be 1.77% and 4.17%, based on historical MECP guidance

Note 3: A 75% control efficiency was applied for three-sided enclosures (WRAP Fugitive Dust Handbook, 2006)

Dust Collectors

DC	Flow rate (m ³ /s)	Outlet Loading mg/m ³	Operating Time (hours/day)	24-hr ER g/s
Batch tower	4.72	20	12	4.72E-02
Cement silo	1.00	10	2	8.33E-04
Additive silo	1.00	10	1	4.17E-04

Note 1: Dust collector outlet loading values were adopted based on guidance provided in MECP's Guideline A-10.

Crusher Emissions

Activity	Contaminant	AP-42 EF kg/MT	MT/day	ER g/s
Crushing	TSP	0.0006	600	4.17E-03
	PM10	0.00027	600	1.88E-03
	PM2.5	0.00005	600	3.47E-04
Screening	TSP	0.0011	600	7.64E-03
	PM10	0.00037	600	2.57E-03
	PM2.5	0.000025	600	1.74E-04

Note 1: Emission factors were adopted from Table 11.19.2-1 of AP-42 Chapter 11.19.2 Crushed Stone Processing and Pulverized Mineral Processing

Unpaved Roads

Teeswater	PM	PM10	PM2.5
k	4.9	1.5	0.15
a	0.7	0.9	0.9
b	0.45	0.45	0.45

s	4.8	sand and gravel processing plant road
W	30	tons (assumed)

E lb/VMT	7.27	1.85	0.19
E g/VKT	2049.90	522.44	52.24
ER g/s	1.85E-01	4.72E-02	4.72E-03

CBC	PM	PM10	PM2.5
k	4.9	1.5	0.15
a	0.7	0.9	0.9
b	0.45	0.45	0.45

s	4.8	sand and gravel processing plant road
W	30	tons (assumed)

E lb/VMT	7.27	1.85	0.19
E g/VKT	2049.90	522.44	52.24

ER g/s	8.16E-02	2.08E-02	2.08E-03
--------	----------	----------	----------

Note 1: Emission factors were calculated by using Equation 1a provided in AP-42 Chapter 13.2.2 Unpaved Roads

Note 2: Maverage silt content of 4.8% (Sand and gravel processing plant road) was adopted from Table 13.2.2-1 of AP-42 Chapter 13.2.2 Unpaved Roads

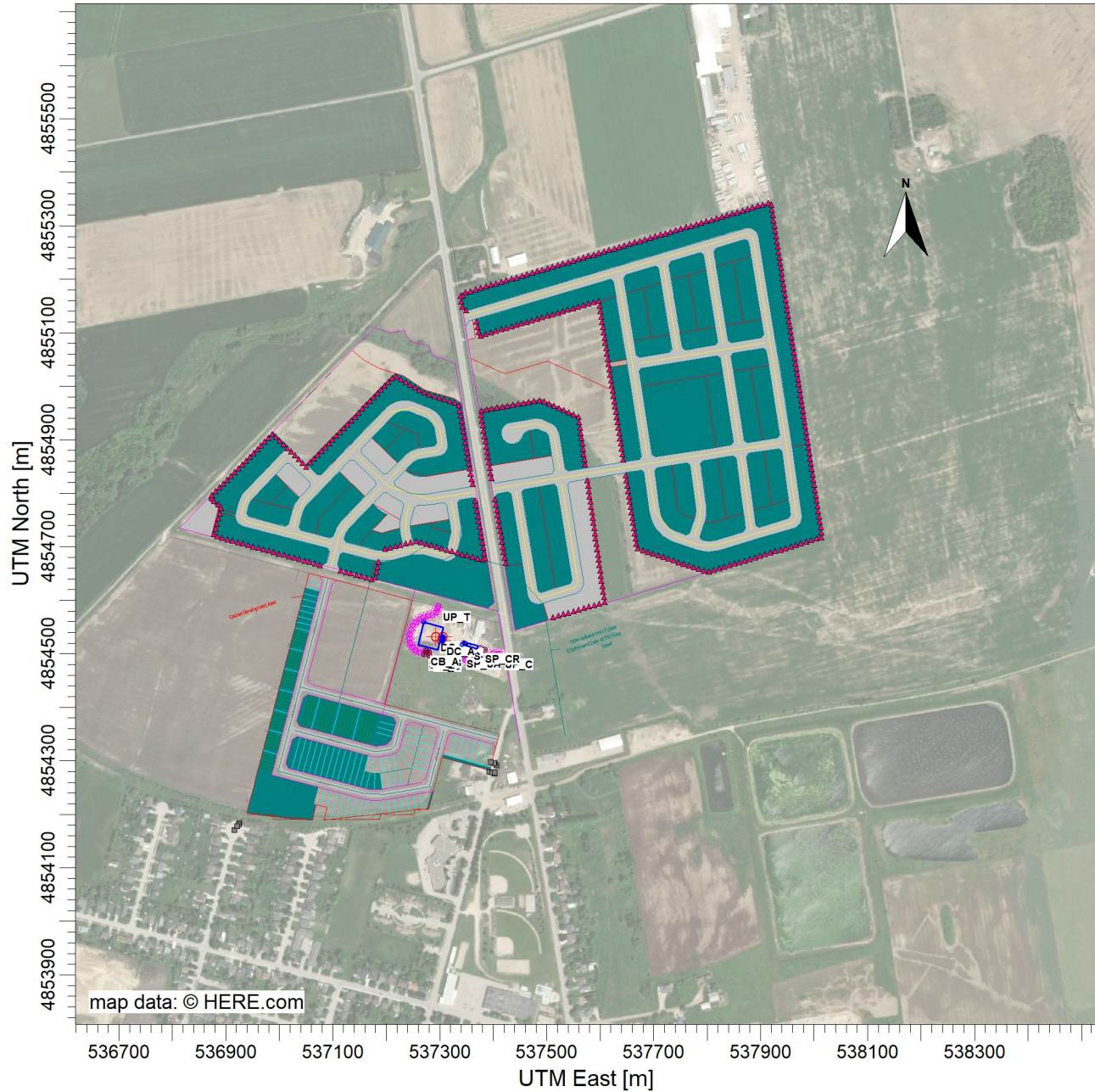
Note 3: Total estimated truck volume at Teeswater is 30/day and at CBC is 20/day

APPENDIX D

**AERMOD Layout
(2 pages)**

PROJECT TITLE:

Tribute/Sorbara Arthur Holdings Inc. □
AERMOD Layout - Dust



COMMENTS:

SOURCES:

15

COMPANY NAME:

Alliance Technical Group

RECEPTORS:

2118

SCALE:

1:12,000

0

0.4 km



DATE:

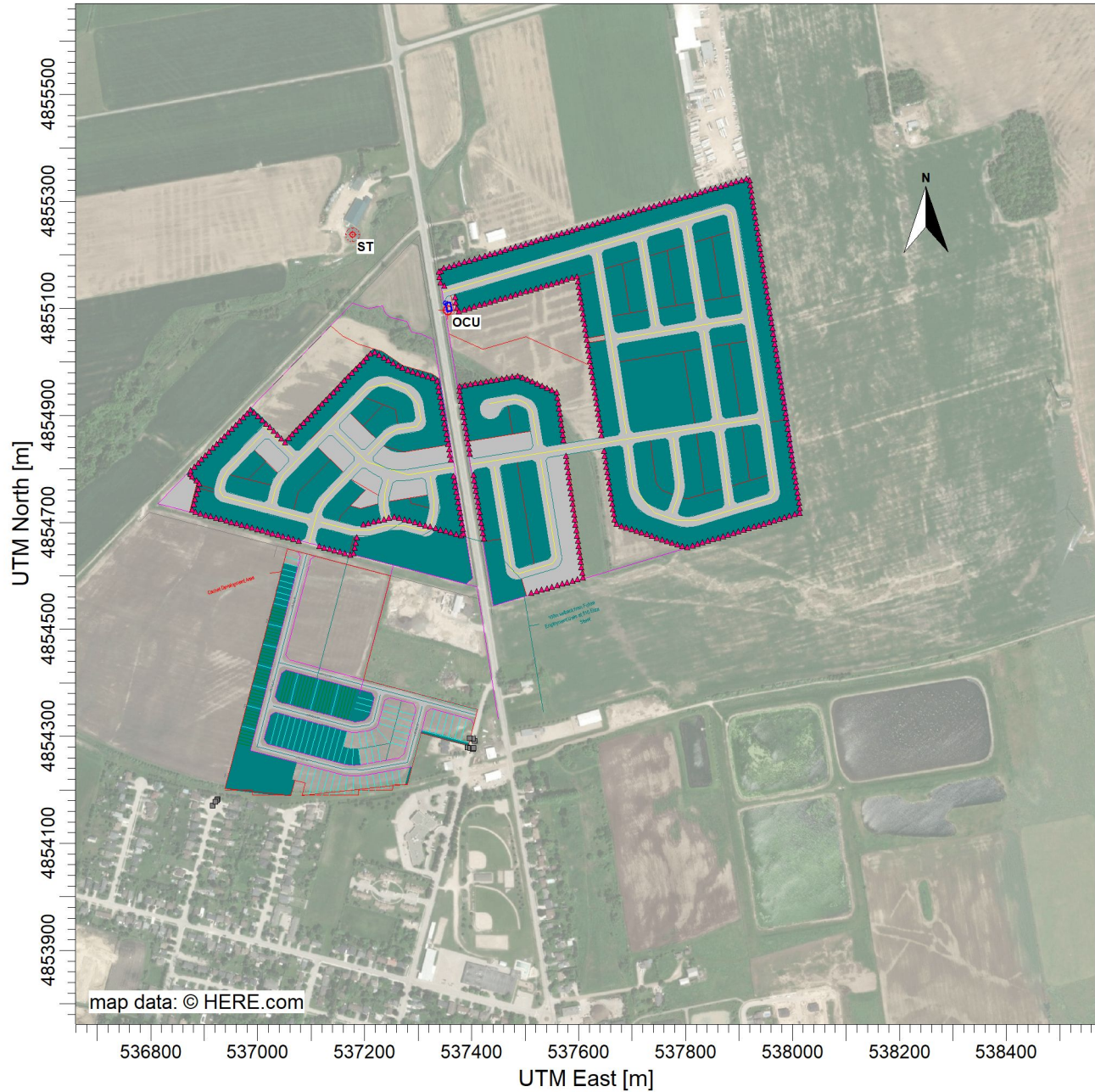
2025-02-14

PROJECT NO.:

92897

PROJECT TITLE:

**Tribute/Sorbara Arthur Holdings Inc.
AERMOD Layout - Odours**



COMMENTS:

SOURCES:

2

COMPANY NAME:

Alliance Technical Group

RECEPTORS:

2118

SCALE:

1:12,000

0

0.4 km



DATE:

2025-02-14

PROJECT NO.:

92897

APPENDIX E

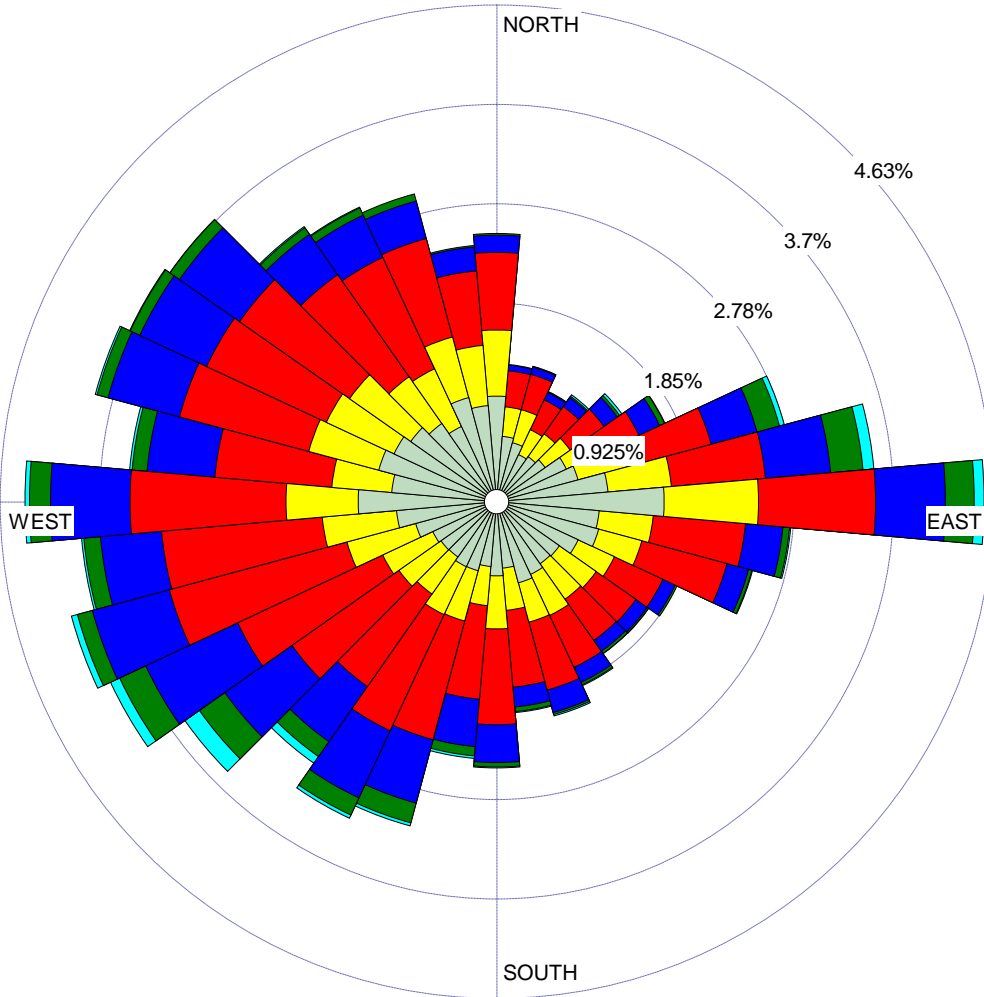
**Wind Rose Plot
(1 page)**

WIND ROSE PLOT:

Wind Rose Plot
MECP's Regional Meteorological Data (London)

DISPLAY:

Wind Speed
Direction (blowing from)



WIND SPEED
(m/s)

- >= 11.10
- 8.80 - 11.10
- 5.70 - 8.80
- 3.60 - 5.70
- 2.10 - 3.60
- 0.50 - 2.10

Calms: 0.00%

COMMENTS:

COMPANY NAME:

Alliance Technical Group

CALM WINDS:

0.00%

TOTAL COUNT:

43026 hrs.

AVG. WIND SPEED:

3.69 m/s



PROJECT NO.:

92897

APPENDIX F

**MDS I Reports
(6 pages)**

MDS I

General information

Application date

Jan 15, 2025


Municipal file number

Proposed application

New or expanding settlement area boundary

Applicant contact information

Tribute Arthur
ON

Location of subject lands 

County of Wellington
Township of Wellington North
ARTHUR
Roll number: 2349

Calculations

Rivers Edge Goat Dairy

Farm contact information

Rivers Edge Goat Dairy
8102 Wellington County Road 109
Arthur, ON
NOG 1A0

Location of existing livestock facility or anaerobic digester

County of Wellington
Township of Wellington North
ARTHUR
Roll number: 2349

Total lot size

0.25 ha

Livestock/manure summary

Manure Form	Type of livestock/manure	Existing maximum number	Existing maximum number (NU)	Estimated livestock barn area
Solid	Goats, Does & bucks (for dairy; includes unweaned offspring)	75	9.4 NU	139 m ²



Confirm Livestock/Manure Information (Rivers Edge Goat Dairy)

The livestock/manure information has not been confirmed with the property owner and/or farm operator.

Setback summary

Existing manure storage	V3. Solid, outside, no cover, >= 30% DM		
Design capacity	9.4 NU		
Potential design capacity	9.4 NU		
Factor A (odour potential)	0.7	Factor B (design capacity)	164.6
Factor D (manure type)	0.7	Factor E (encroaching land use)	2.2
Building base distance 'F' (A x B x D x E) (minimum distance from livestock barn)			178 m (584 ft)
Actual distance from livestock barn			1350 m (4429 ft)
Storage base distance 'S' (minimum distance from manure storage)			178 m (584 ft)
Actual distance from manure storage			1390 m (4560 ft)

Preparer signoff & disclaimer

Preparer contact information

Ibrahim Syed
ON

MDS I

General information

Application date

Jan 15, 2025


Municipal file number

Proposed application

New or expanding settlement area boundary

Applicant contact information

Tribute Arthur
ON

Location of subject lands 

County of Wellington
Township of Wellington North
ARTHUR

Calculations

Tribute Subdivision

Farm contact information

Rosegaar Feed
8135 Line 2
Arthur, ON

Location of existing livestock facility or anaerobic digester

County of Wellington
Township of Wellington North
ARTHUR
Roll number: 2349

Total lot size

6.25 ha

Livestock/manure summary

Manure Form	Type of livestock/manure	Existing maximum number	Existing maximum number (NU)	Estimated livestock barn area
Liquid	Dairy, Milking-age Cows (dry or milking) Large Frame (545 - 658 kg) (eg. Holsteins), 3 Row Free Stall	400	571.4 NU	3902 m ²



Confirm Livestock/Manure Information (Tribute Subdivision)

The livestock/manure information has not been confirmed with the property owner and/or farm operator.

Setback summary

Existing manure storage	M1. Liquid, outside, no cover, straight-walled storage		
Design capacity	571.4 NU		
Potential design capacity	571.4 NU		
Factor A (odour potential)	0.7	Factor B (design capacity)	581.14
Factor D (manure type)	0.8	Factor E (encroaching land use)	2.2
Building base distance 'F' (A x B x D x E) (minimum distance from livestock barn)	716 m (2349 ft)		
Actual distance from livestock barn	825 m (2707 ft)		
Storage base distance 'S' (minimum distance from manure storage)	745 m (2444 ft)		
Actual distance from manure storage	985 m (3232 ft)		

Preparer signoff & disclaimer

Preparer contact information

Ibrahim Syed
ON

Signature of preparer

Ibrahim Syed

Date (mmm-dd-yyyy)

Note to the user

The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) has developed this software program for distribution and use with the Minimum Distance Separation (MDS) Formulae as a public service to assist farmers, consultants, and the general public. This version of the software distributed by OMAFRA will be considered to be the official version for purposes of calculating MDS. OMAFRA is not responsible for errors due to inaccurate or incorrect data or information; mistakes in calculation; errors arising out of modification of the software, or errors arising out of incorrect inputting of data. All data and calculations should be verified before acting on them.

© King's Printer for Ontario, 2012-25

Signature of preparer

Ibrahim Syed

Date (mmm-dd-yyyy)

Note to the user

The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) has developed this software program for distribution and use with the Minimum Distance Separation (MDS) Formulae as a public service to assist farmers, consultants, and the general public. This version of the software distributed by OMAFRA will be considered to be the official version for purposes of calculating MDS. OMAFRA is not responsible for errors due to inaccurate or incorrect data or information; mistakes in calculation; errors arising out of modification of the software, or errors arising out of incorrect inputting of data. All data and calculations should be verified before acting on them.

© King's Printer for Ontario, 2012-25