

# Law Crushed Stone Extension


## Township of Wainfleet

### Traffic Impact Study for Waterford Sand & Gravel Limited

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John Northcote, P.Eng.  
Professional License #: 100124071



**ENGINEERING**

**JD Northcote Engineering Inc.**  
86 Cumberland Street  
Barrie, ON  
705.725.4035  
[www.JDEngineering.ca](http://www.JDEngineering.ca)

## Legal Notification

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## Executive Summary

This report summarizes the traffic impact study for a proposed extension to an existing quarry [Subject Site], located on a site municipally known as 10546 Highway 3, in the Township of Wainfleet [Township]. The report assesses the impact of traffic related to the quarry operations on the adjacent roadway and provides recommendations to accommodate this traffic in a safe and efficient manner.

The existing quarry (licensed under the Aggregate Resources Act) is 72.3 hectares with a maximum annual extraction rate of 800,000 tonnes per year. The proposed extension will include extraction from the lands at the northwest corner of the Highway 3 / Biederman Road intersection (65.1 hectare area extracted).

No increase in the average annual tonnage rate between the new license and existing license is anticipated as the proposed extension is meant to replace the depleted reserves of the existing quarry.

The proposed extension will be internally connected to the existing quarry and will utilize the existing Law Quarry scales, entrance onto Highway 3 [Site Access] and truck haul routes. Biederman Road is located within the proposed extension extraction area and may be removed subject to securing the appropriate municipal approvals.

The scope of this analysis includes a review of the following intersections:

- Highway 3 / Site Access.

## Conclusions

1. The quarry operations are estimated to generate 88 AM and 88 PM peak hour trips from the Subject Site.
2. Background traffic and pedestrian counts were obtained from the MTO at the Highway 3 / Golf Course Road intersection on Wednesday November 7<sup>th</sup>, 2018.
3. An estimate of the amount of traffic that would be generated by the proposed quarry operations was prepared and assigned to the study area streets and intersection.
4. An intersection operation analysis was completed under total (2022) traffic volumes with the proposed quarry operational at the study area intersections. The existing infrastructure in the study area will be able to efficiently convey the total (2022) traffic volumes.
5. The proposed Site Access driveway will operate efficiently as a full-movement access, with one-way stop control for egress movements. A single lane for ingress and egress movements at the Site Access will provide the necessary capacity to convey the traffic volume generated by the proposed quarry operations.
6. The sight distance available for at the Site Access meets the intersection sight distance and minimum stopping sight distance requirements.
7. Truck traffic is directed away from settlement areas to the maximum extent feasible and is directed to Provincial and Regional road networks. Highway 3 provides primary access to all traffic accessing the proposed quarry.
8. In summary the proposed expansion will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

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# 1 Introduction

## 1.1 Background

Waterford Sand & Gravel Limited [the Client] is applying for a proposed extension to an existing quarry [Subject Site], located on a site municipally known as 10546 Highway 3, in the Township of Wainfleet [Township].

The existing quarry (licensed under the Aggregate Resources Act) is 72.3 hectares with a maximum annual extraction rate of 800,000 tonnes per year. The proposed extension will include extraction from the lands at the northwest corner of the Highway 3 / Biederman Road intersection (65.1 hectare area extracted).

No increase in the average annual tonnage rate between the new license and existing license is anticipated as the proposed extension is meant to replace the depleted reserves of the existing quarry.

The proposed extension will be internally connected to the existing quarry and will utilize the existing Law Quarry scales, entrance onto Highway 3 [Site Access] and truck haul routes. Biederman Road is located within the proposed extension extraction area and may be removed subject to securing the appropriate municipal approvals.

The Client has retained **JD Engineering Inc.** [JD Engineering] to prepare this traffic impact study in support of the proposed quarry extension.

## 1.2 Study Area

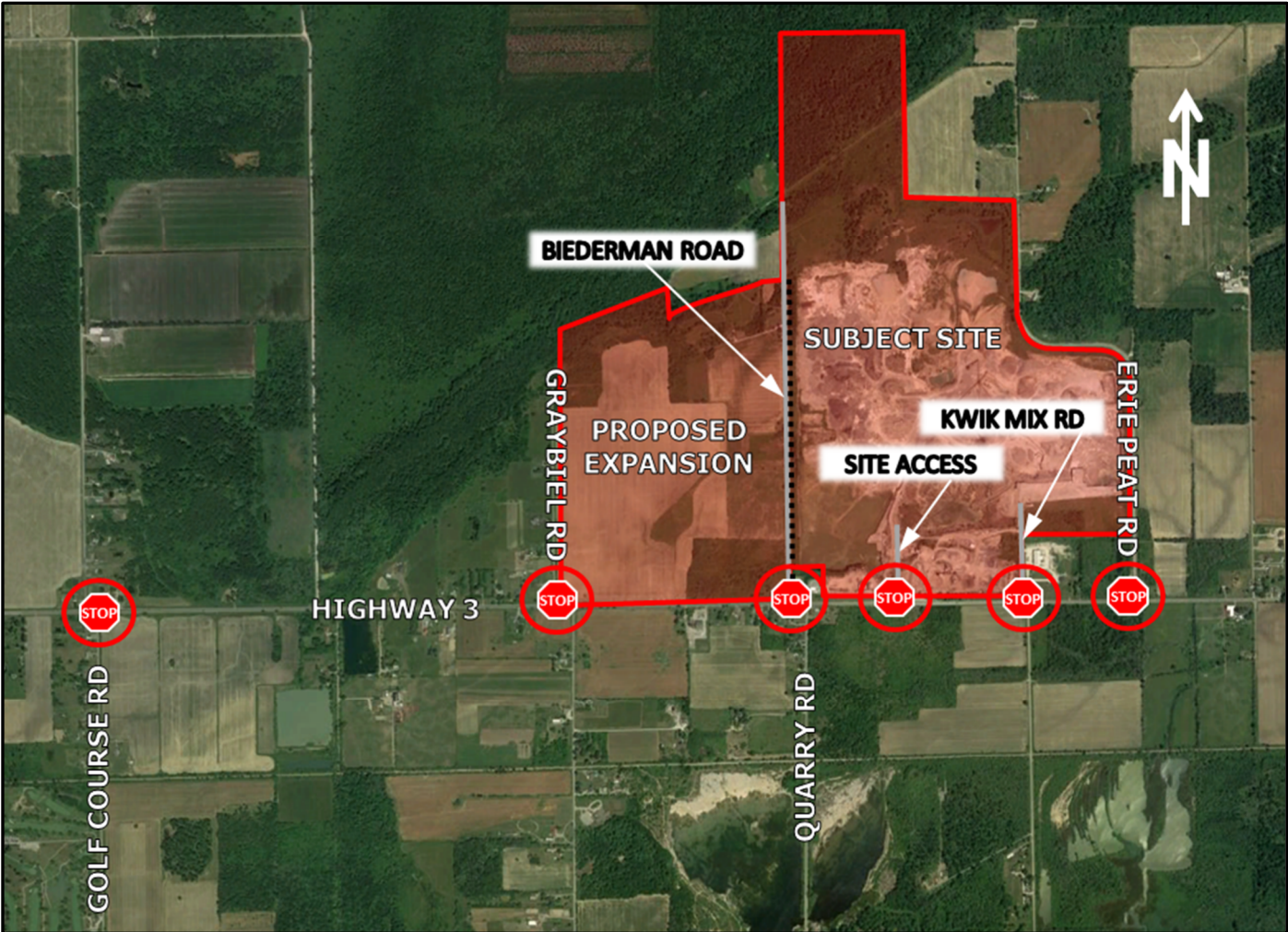
**Figure 1** illustrates the location of the Subject Site and study area intersections, in relation to the surrounding area. The conceptual quarry layout, as provided by the Client, is included in **Appendix A**.

The Subject Site is bound by Highway 3 to the south, Erie Peat Road to the east, Graybiel Road to the west and undeveloped rural lands, agricultural lands and environmentally protected lands to the north

Based on our correspondence with the Township and Region, the following intersections are included as part of the study:

- Highway 3 / Site Access.

Figure 1 – Proposed Site Location and Study Area



### 1.3 Study Scope and Objectives

The purpose of this study is to identify the potential impacts to traffic flow at the site access on the surrounding roadway network. The study analysis includes the following tasks:

- Determine existing traffic volumes and circulation patterns;
- Estimate future traffic volumes if the proposed quarry expansion was not permitted, including the impact of additional proposed developments in the area;
- Estimate the amount of traffic that would be generated by the proposed quarry operations and assign to the roadway network;
- Complete LOS analysis of horizon year (with the proposed quarry operations) traffic conditions and identify additional operational deficiencies;
- Identify improvement options to address operational deficiencies;
- Review the existing haul routes in the study area for truck access to the site; and
- Document findings and recommendations in a final report.

### 1.4 Horizon Year and Analysis Periods

Traffic scenarios for the existing year (2022) was selected for analysis of traffic operations in the study area. The weekday morning [AM] and afternoon [PM] peak hours were selected as the analysis periods for this study.

The peak hours analysed in this study generally align with the peak hours of operation for the Subject Site.

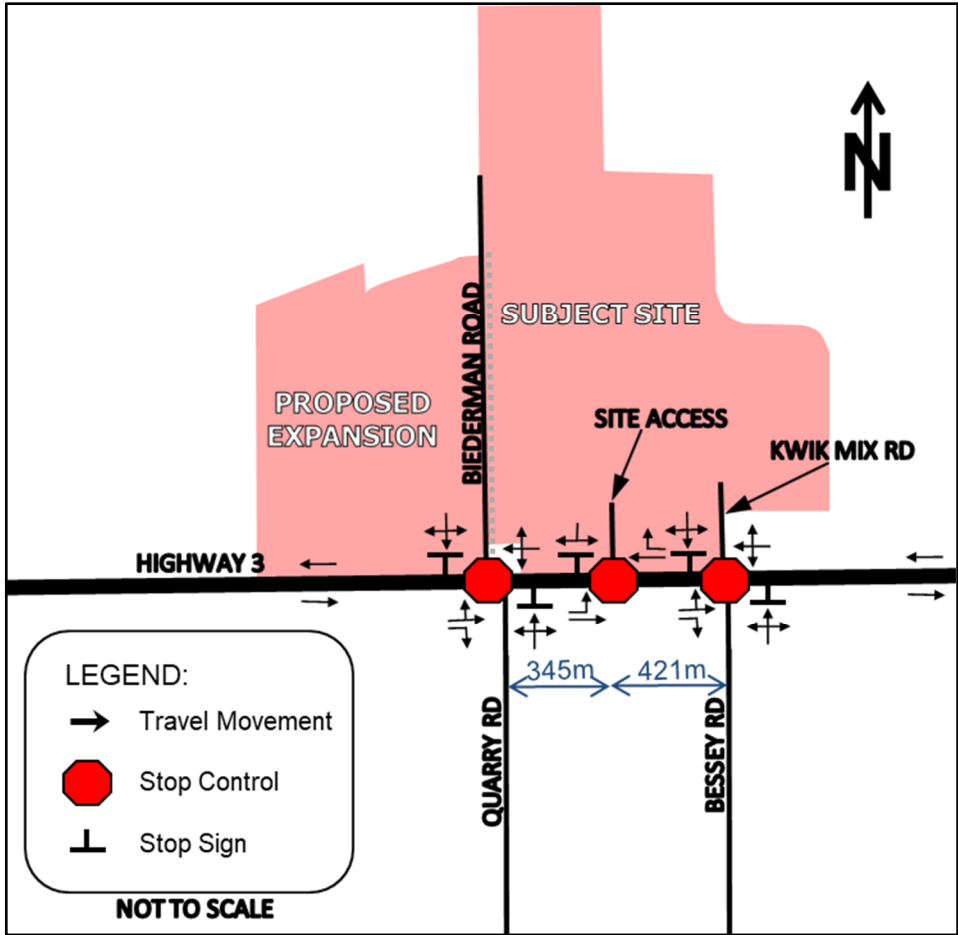
## 2 Information Gathering

### 2.1 Street and Intersection Characteristics

**Highway 3** is a Class 2B arterial provincial highway with a rural cross-section and gravel shoulders. The posted speed limit on Highway 3 is 80km/h and is under jurisdiction of the Ontario Ministry of Transportation [MTO].

The existing intersection spacing and lane configuration within the study area is illustrated in **Figure 2**.

Figure 2 - Existing Intersection Lane Configuration within Study Area



## 2.2 Local Transportation Infrastructure Improvements

Based on a review of the MTO's Highways Programs interactive map there are currently no planned infrastructure improvements that would impact traffic capacity in the study area.

## 2.3 Transit Access

There is no municipal transit currently available to service the study area.

## 2.4 Other Developments within Study Area

Based on our correspondence with the Township of Wainfleet and City of Port Colborne, there are no other developments currently planned near the study area that will have a notable impact on the local traffic volumes.

## 2.5 Background Traffic Growth

The background traffic growth rate on Highway 3 was calculated based on historic traffic volume data from the MTO between 2006 – 2016 in the study area. A background traffic growth rate of 0% was calculated on Highway 3; for the purposes of our analysis, we have assumed a general 2% background traffic growth rate.

## 2.6 Traffic Counts

Detailed turning movements traffic and pedestrian counts were obtained at the Highway 3 / Golf Course Road intersection from the MTO.

**Table 1** summarizes the traffic count data collection information.

**Table 1 - Traffic Count Data**

Intersection (E-W Street / N-S Street)	Count Date	AM Peak Hour	PM Peak Hour	Source
Highway 3 / Golf Course Road	Wednesday, November 7 <sup>th</sup> , 2018	07:45 - 08:45	15:00 – 16:00	MTO

Detailed traffic count data can be found in **Appendix B**. The AM peak hour of traffic generation for the study area intersection generally aligned with the anticipated AM peak hour of traffic generation for the quarry operations. Quarry operations typically slow down at the end of the day; however, the PM peak hour traffic on Highway 3 forms the critical period for overall traffic operations in the study area.

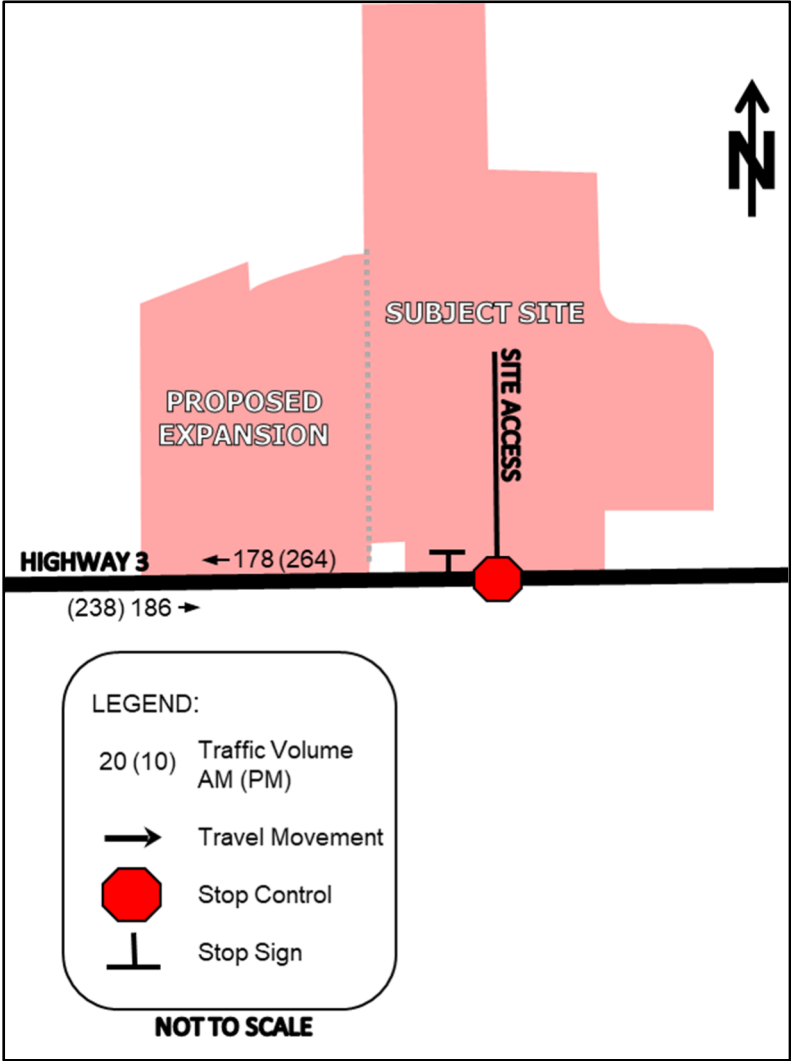
It was assumed that the volume of traffic at the east leg of the Highway 3 / Golf Course Road intersection would be similar to the volume of traffic on Highway 3 at the Site Access.

Heavy vehicle percentages and pedestrian crossings from the traffic count data have also been included in the Synchro analysis.

The traffic counts have been factored by the background traffic growth rate noted in Section 2.5 to estimate the existing (2022) traffic volumes.

**Figure 3** illustrates the existing (2022) AM and PM peak hour traffic volumes on Highway 3. The traffic volumes at the Site Access is discussed in Section 4.

Figure 3 – Existing (2022) Traffic Volumes





## 3 Proposed Quarry Traffic Generation and Assignment

### 3.1 Traffic Generation

The traffic generation for the proposed quarry operations has been based on historic load data information between January 2020 – February 2022 as provided by the Client (historic sales information provided in **Appendix C**).

As noted in Section 1.1, the existing quarry has an annual extraction rate of a maximum 800,000 tonnes per year. The proposed extension will extract from the lands at the northwest corner of the Highway 3 / Biederman Road intersection. No increase in the average annual tonnage rate between the new license and existing license is anticipated as the proposed extension is meant to replace the depleted reserves of the existing quarry.

The quarry operates between 07:00 – 19:00<sup>1</sup> from Monday to Sunday.

Load data for monthly operations between January 2020 – February 2022 and daily operations between June 1<sup>st</sup> 2021 and September 30<sup>th</sup> 2021 were provided by the Client. Based on our review of the monthly load data, the Subject Site received a peak monthly volume of 204 loads per day<sup>2</sup> or 22 loads per hour. Reviewing the daily load data, the Subject Site received a peak daily volume of 237 loads per day<sup>3</sup> or 25 loads per hour.

For the purpose of this analysis we have considered the critical case by applying the peak daily volume of 25 loads per hour. To consider peak hour operations during the day, the average hourly volumes have been increased by a factor 1.5. This translates to an AM and PM peak hour volume of 38 loads per hour, with the remaining 161 trips distributed over the remaining 7.5 hours of the operating day.

Further consideration has been given to on-site staff of the pit & quarry. It has been assumed that all staff will arrive and depart to/from the subject site in separate private vehicles during the AM (inbound) and PM (outbound) peak hours. Based on correspondence with the Client, 12 employees work at the Subject Site.

The estimated trip generation for the pit & quarry operations is illustrated below in **Table 2** and **3**.

**Table 2 – Pit & Quarry Truck Volumes**

Daily Truck Loads	Hourly Truck Loads*	
	Average	Peak
237	25	38**

\* Based on 9.5 hours of an operating day.

\*\* Peak hour volumes have been rounded up to the nearest whole number

<sup>1</sup> The shipping and sales for the quarry generally operate between 07:30 – 16:00 from January to March and 07:00 – 16:30 from April to December.

<sup>2</sup> Based on load data from December 2021.

<sup>3</sup> Based on load data on Monday September 27<sup>th</sup>, 2021.



**Table 3 – Total Estimated Traffic Generation of Proposed Quarry**

Generator	AM Peak Hour			PM Peak Hour		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Trucks	38	38	76	38	38	76
Employees	12	0	12	0	12	12
<b>Total</b>	<b>50</b>	<b>38</b>	<b>88</b>	<b>38</b>	<b>50</b>	<b>88</b>

As indicated, the proposed operations are conservatively estimated at 88 AM and PM peak hour trips (total of inbound and outbound trips).

### 3.2 Traffic Assignment

The traffic assignment for the truck traffic generated by the proposed quarry is based on a review of the existing truck routes and origins / destinations of expected clientele (as provided by the Client). **Table 4** illustrates the traffic distribution for the truck traffic generated by the Subject Site.

**Table 4 – Proposed Quarry Traffic Distribution (Truck Traffic)**

Travel Direction (to / from)	Percent of Total Traffic Generation
East via Highway 3	85%
West via Highway 3	15%
<b>TOTAL</b>	<b>100%</b>

The traffic assignment for the employee traffic in the development is based on the 2016 Transportation Tomorrow Survey [TTS] data for the Township’s planning district, retrieved using the TTS Internet Data Retrieval System [IDRS] (output attached as **Appendix D**). TTS data provides historical origin and destination work trip percentages for specific areas within the Town and southern Ontario.

Traffic distribution for the employee trips generated by the proposed quarry during the AM and PM peak hour is expected to generally follow commuter travel patterns. Our analysis is based on ingress traffic during the AM peak hour. Logically, the distribution of ingress traffic will follow the inverse of the exiting traffic distribution. For each of the individual areas identified in the TTS data, we have selected the probable route of travel, assuming that people will select their route primarily based on travel time.

**Table 5** illustrates the traffic distribution for the automobile trips from the proposed quarry, using the methodology outlined above.

**Table 5 – Proposed Quarry Traffic Distribution (Employee Traffic)**

<b>Travel Direction (to / from)</b>	<b>Percent of Total Traffic Generation</b>
<b>East</b> via Highway 3	42%
<b>West</b> via Highway 3	58%
<b>TOTAL</b>	<b>100%</b>

The truck and employee traffic assignment for the proposed quarry expansion for the AM and PM peak hour is illustrated in **Figures 4** and **5** respectively.

### **3.3 Total Horizon Year Traffic Volumes with the Proposed Quarry**

The total (2022) horizon year traffic volumes at the Highway 3 / Site Access intersection was estimated based on the existing Highway 3 traffic volumes and the proposed quarry. The proposed quarry expansion will potentially remove Biederman Road, which is located within the proposed extension extraction area. Although there will be a minor reduction in traffic in the area with the removal of the existing two residential units on Biederman Road, for the purposes of our study, the existing traffic on Biederman Road has not been removed from the study area.

The resulting total (2022) horizon year traffic volumes for the AM and PM peak hour are illustrated in **Figure 6**.

Figure 4 – Site Traffic Assignment (Truck Traffic)

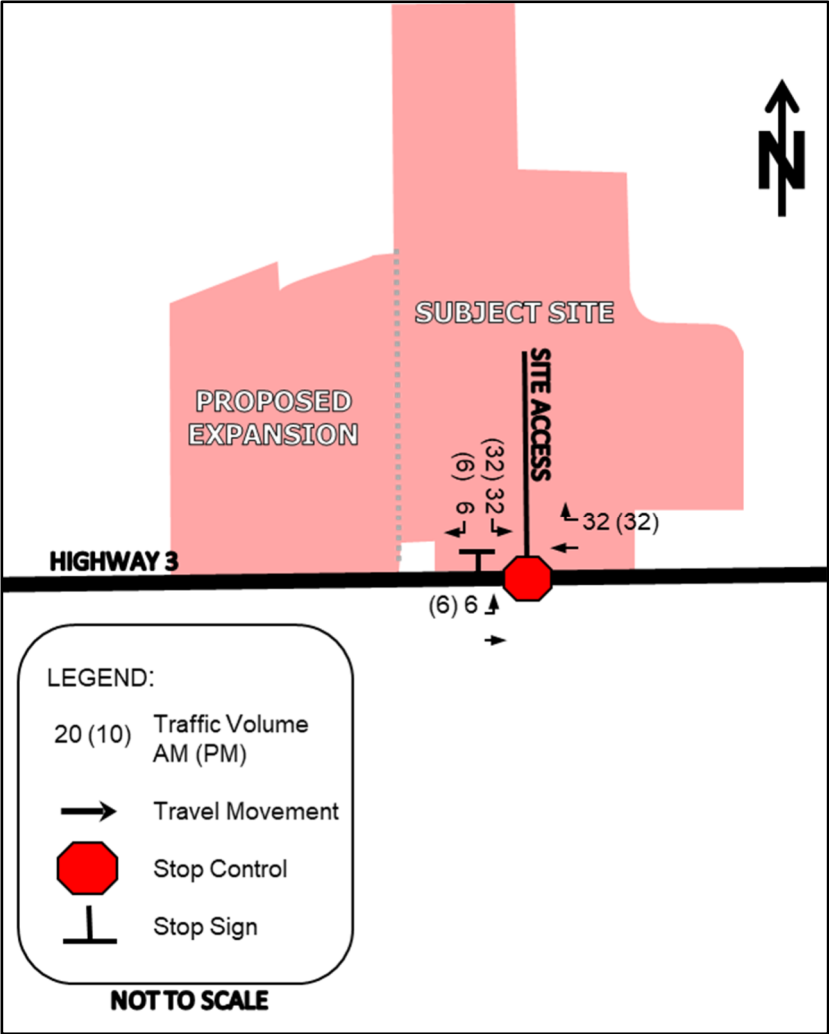


Figure 5 – Site Traffic Assignment (Automobile Traffic)

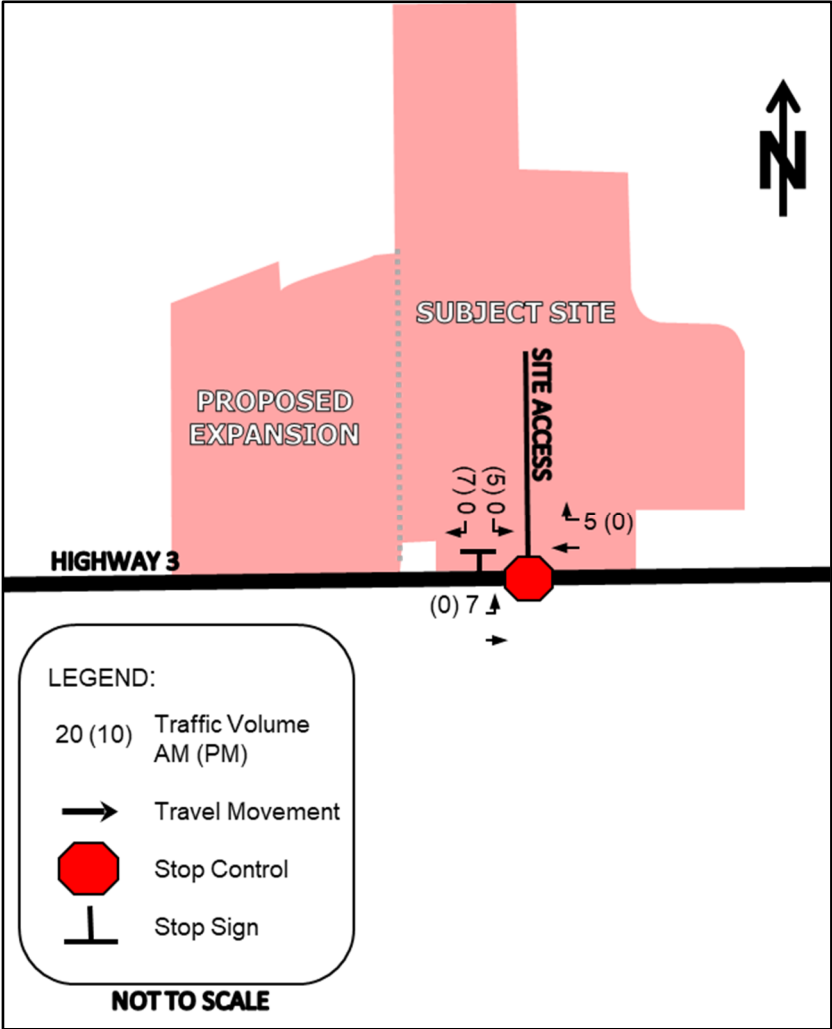
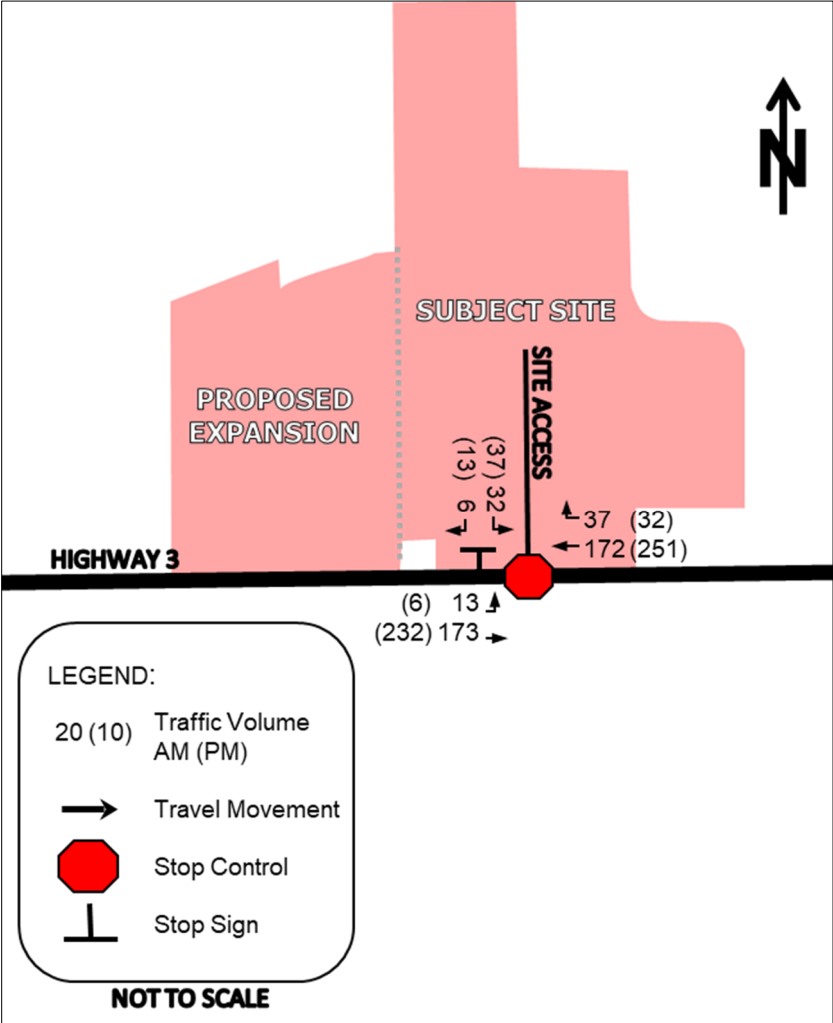


Figure 6 – Total (2022) Traffic Volumes



## 4 Intersection Operation with Proposed Quarry

### 4.1 Intersection Capacity Analysis Criteria

Intersection performance was measured using the traffic analysis software, Synchro 11, a deterministic model that employs Highway Capacity Manual and Intersection Capacity Utilization methodologies for analysing intersection operations. These procedures are accepted by provincial and municipal agencies throughout North America.

Synchro 11 enables the study area to be graphically defined in terms of streets and intersections, along with their geometric and traffic control characteristics. The user is able to evaluate both signalized and unsignalized intersections in relation to each other, thus not only providing level of service for the individual intersections, but also enabling an assessment of the impact the various intersections in a network have on each other in terms of spacing, traffic congestion, delay, and queuing.

Individual turning movements with a volume-to-capacity [V/C] ratio of 0.85 or greater are considered to be critical movements and have been highlighted in the LOS tables.

The intersection operations were also evaluated in terms of the LOS. LOS is a common measure of the quality of performance at an intersection and is defined in terms of vehicular delay. This delay includes deceleration delay, queue move-up time, stopped delay, and acceleration delay. LOS is expressed on a scale of A through F, where LOS A represents very little delay (i.e. less than 10 seconds per vehicle) and LOS F represents very high delay (i.e. greater than 50 seconds per vehicle for a stop sign controlled intersection and greater than 80 seconds per vehicle for a signalized intersection).

The LOS criteria for signalized and stop sign controlled intersections are shown in **Table 6**. description of traffic performance characteristics is included for each LOS.

**Table 6 – Level of Service Criteria for Intersections**

LOS	LOS Description	Control Delay (seconds per vehicle)	
		Signalized Intersections	Stop Controlled Intersections
A	Very low delay; most vehicles do not stop ( <b>Excellent</b> )	less than 10.0	less than 10.0
B	Higher delay; more vehicles stop ( <b>Very Good</b> )	between 10.0 and 20.0	between 10.0 and 15.0
C	Higher level of congestion; number of vehicles stopping is significant, although many still pass through intersection without stopping ( <b>Good</b> )	between 20.0 and 35.0	between 15.0 and 25.0
D	Congestion becomes noticeable; vehicles must sometimes wait through more than one red light; many vehicles stop ( <b>Satisfactory</b> )	between 35.0 and 55.0	between 25.0 and 35.0
E	Vehicles must often wait through more than one red light; considered by many agencies to be the limit of <b>acceptable</b> delay	between 55.0 and 80.0	between 35.0 and 50.0
F	This level is considered to be unacceptable to most drivers; occurs when arrival flow rates exceed the capacity of the intersection ( <b>Unacceptable</b> )	greater than 80.0	greater than 50.0

## 4.2 Total (2022) Intersection Operation

The results of the LOS analysis under total (2022) traffic volumes during the AM and PM peak hours can be found below in **Table 7**. Existing intersection geometry and traffic control have been utilized for this scenario. Detailed output of the Synchro analysis can be found in **Appendix E**.

**Table 7 – Total (2022) LOS**

Location (E-W Street / N-S Street)	Weekday AM Peak Hour					Weekday PM Peak Hour				
	V/C	Delay (s)	LOS	95% Queue (m)		V/C	Delay (s)	LOS	95% Queue (m)	
				Model	Storage				Model	Storage
Highway 3 / Site Access (unsignalized)	-	1.4	A	-	-	-	1.4	A	-	-
EBL	0.01	8.3	A	1	-	0.02	9.0	A	1	-
EBT	0.11	0.0	A	0	-	0.12	0.0	A	0	-
WBT	0.11	0.0	A	0	-	0.11	0.0	A	0	-
WBR	0.02	0.0	A	0	-	0.02	0.0	A	0	-
SB	0.09	13.4	B	3	-	0.09	13.2	B	3	-

The results of the LOS analysis indicate that the Highway 3 / Site Access intersection and movements are operating within the typical design limits noted in Section 3.1.

There are no issues regarding the anticipated queuing for all movements in the study area.

A review of the need for additional auxiliary right turn lanes at the Highway 3 / Site Access intersection was completed as part of our analysis. The results of the Synchro analysis indicate that there is excess capacity for all movements; consequently, additional auxiliary right or left turn lanes are not recommended.

Based on the Ontario Traffic Manual Book 12 *Signal Justification*, traffic signals are not warranted at the Highway 3 / Site Access intersection (results are provided in **Appendix F**).

No improvements are recommended within the study area.

## 4.3 Sight Distance Review

A review of the available sight distance for the proposed Site Access was completed as part of this analysis.

The sight distance east and west of the Site Access (greater than 250 metres) is significantly greater than the minimum stopping sight distance and intersection sight distance requirements as identified in the Transportation Association of Canada *Design Guide for Canadian Roads* (2017) [TAC Guidelines] for a design speed of 100km/h (185 metres and 210 metres respectively).

There are no issues with the sight distance available for the proposed Site Access.

## 4.4 Site Access

The Site Access will continue to operate efficiently as a full-movement access, with one-way stop control for egress movements. A single ingress and egress lane at the Site Access driveway will provide the necessary capacity to service the proposed quarry operations.

The spacing between the Site Access and Quarry Road (345 metres measured centre of driveway to centre of roadway) and between the Site Access and Kwik Mix Road (421 metres measured centre of driveway to centre of roadway) is less than the minimum intersection spacing requirements as identified in the MTO's Highway Corridor Management Manual (2018) [HCMM] – Table 4.6.1 (Spacing and Density of Various Access Connection Types) – 800 metres for a Class 2B arterial road; however, there will be negligible traffic interaction between the Subject Site and the adjacent roadways and negligible queuing between the roadways as illustrated in the total (2022) scenario traffic analysis in Section 4.2. Consequently, there are no issues with the existing driveway spacing.

## 4.5 Truck Haul Route Review

Truck traffic is directed away from settlement areas to the maximum extent feasible and is directed to Provincial and Regional road networks.

Highway 3 provides primary access to all traffic accessing the Site Access. Highway 3 provides direct connections to other Provincial Highways (Hwy 58 and 140) and Regional Roads (RR 5, 24, 84, 98, and 116), which provides access to the greater Township to the west, City of Port Colborne to the east and the City of Welland to the north. These municipalities are the primary market for the Subject Site. Highway 3 will connect to the future Niagara-Hamilton Trade Corridor (as identified in Niagara Region's Transportation Master Plan), which is currently planned north of Highway 3. The future Niagara-Hamilton Trade Corridor provides a strategic link between Niagara Region and the GTHA, providing an alternative for the at-capacity QEW highway.

As noted in Section 4.1 the proposed quarry expansion will include 76 heavy vehicles in the AM and PM peak hour, along the Highway 3. As noted in Section 5.2 the truck traffic generated by the proposed expansion will not significantly impact traffic operations in the study area.

## 5 Summary

**Waterford Sand & Gravel Limited** retained **JD Engineering** to prepare this traffic impact study in support of a proposed extension to an existing quarry [Subject Site], located on a site municipally known as 10546 Highway 3, in the Township of Wainfleet [Township]. The conceptual quarry layout is included in **Appendix A**. This chapter summarizes the conclusions and recommendations from the study.

The existing quarry (licensed under the Aggregate Resources Act) is 72.3 hectares with a maximum annual extraction rate of 800,000 tonnes per year. The proposed extension will include extraction from the lands at the northwest corner of the Highway 3 / Biederman Road intersection (65.1 hectare area extracted).

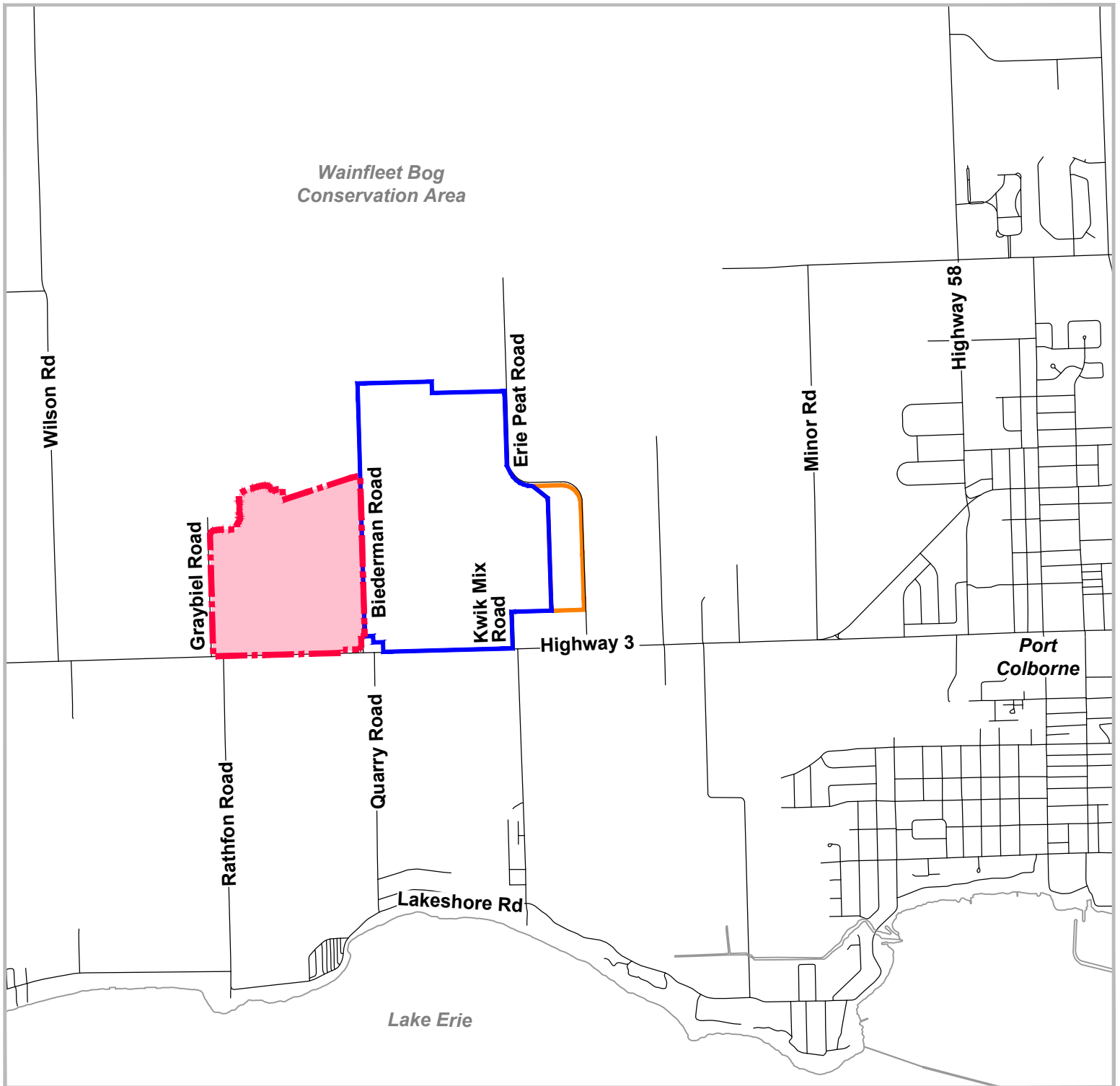
No increase in the average annual tonnage rate between the new license and existing license is anticipated as the proposed extension is meant to replace the depleted reserves of the existing quarry.

1. The quarry operations are estimated to generate 88 AM and 88 PM peak hour trips from the Subject Site.
2. Background traffic and pedestrian counts were obtained from the MTO at the Highway 3 / Golf Course Road intersection on Wednesday November 7<sup>th</sup>, 2018.
3. An estimate of the amount of traffic that would be generated by the proposed quarry operations was prepared and assigned to the study area streets and intersection.
4. An intersection operation analysis was completed under total (2022) traffic volumes with the proposed quarry operational at the study area intersections. The existing infrastructure in the study area will be able to efficiently convey the total (2022) traffic volumes.






5. The proposed Site Access driveway will operate efficiently as a full-movement access, with one-way stop control for egress movements. A single lane for ingress and egress movements at the Site Access will provide the necessary capacity to convey the traffic volume generated by the proposed quarry operations.
6. The sight distance available for at the Site Access meets the intersection sight distance and minimum stopping sight distance requirements.
7. Truck traffic is directed away from settlement areas to the maximum extent feasible and is directed to Provincial and Regional road networks. Highway 3 provides primary access to all traffic accessing the proposed quarry.
8. In summary the proposed expansion will not cause any operational issues and will not add significant delay or congestion to the local roadway network.

## **Appendix A – Conceptual Quarry Layout**



## Location Map

### LEGEND

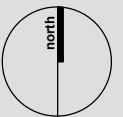
-  Proposed Licensed Boundary
-  Existing Law Quarry (Licence #4464)
-  Existing Law Quarry (Licence #607541)

DATE: November 2020

FILE: 0956B

SCALE: 1:50,000

DRAWN: CAC/DGS



K:\0956C-WATERFORD SAND AND GRAVEL LIMITED LAW QUARRY EXTENSION\RPT\PLANNING JUSTIFICATION REPORT\LOCATION.DWG

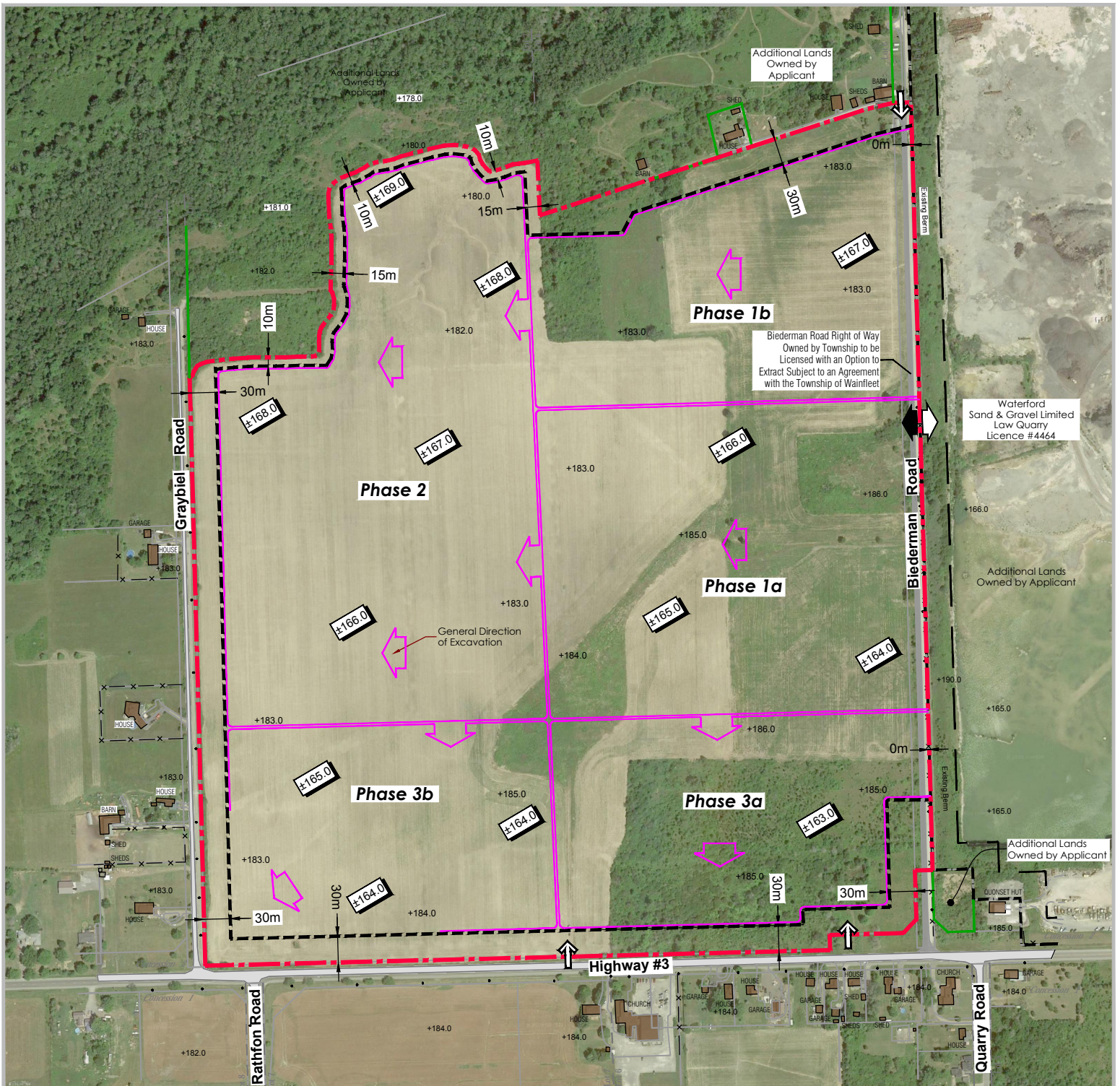
### Waterford Sand & Gravel Limited

Part of Lots 6 & 7, Concession 2  
 Part of Road Allowance Between Lots 5 & 6,  
 Concession 2,  
 Township of Wainfleet  
 Regional Municipality of Niagara



200-540 BINGEMANS CENTRE DR. KITCHENER, ON, N2B 3X9  
 P: 519.576.3650 F: 519.576.0121 | WWW.MHBCPLAN.COM










# Law Quarry Extension Operational Concept Plan

**Waterford Sand & Gravel Limited**  
 Part of Lots 6 & 7, Concession 2  
 Part of Road Allowance Between Lots 5 & 6, Concession 2,  
 Township of Wainfleet  
 Regional Municipality of Niagara

## LEGEND

-  Proposed Licensed Boundary
-  Proposed Limit of Extraction
-  Proposed Phase Limits
-  Existing Spot Elevation
-  Proposed Spot Elevation  
Quarry Floor - Bottom of Falkirk Formation

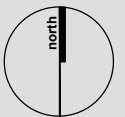
Base Plan Source:  
 Air Photo - Google (2018)

DATE: November 2020

FILE: 0956B

SCALE: NTS

DRAWN: DGS



K:\0956C-WATERFORD SAND AND GRAVEL LIMITED-LAW QUARRY EXTENSION\RPT\SEQUENCE OF OPERATIONS SIMPLIFIED.DWG

**MHBC** PLANNING  
 URBAN DESIGN  
 & LANDSCAPE  
 ARCHITECTURE

200-540 BINGEMANS CENTRE DR. KITCHENER, ON, N2B 3X9  
 P: 519.576.3650 F: 519.576.0121 | WWW.MHBCPLAN.COM

## **Appendix B – Traffic Count Data**





# Intersection Layout Sheet

Contract # 8015-E-0008  
Work Order # 035

Date: November 07 Day: Wed / Hrs: 7 - 9 + 11 - 14 + 15 - 18

Location: HWY 3 & Golf Course Rd - Morgan PT. Rd Ramps: 1

Reg/Mun: CR Town/City: Wainfleet Area: \_\_\_\_\_

File Name: 0117400610 Device: Gretch / Jamar Unit # 16 / Interval 1: (AM) / NN / PM

Observer: Alexa Mariyskaya Weather: Cloudy / Cloudy Road Condition: Dry / Dry

LHRS & O/S: 11790 6:10 Comments: \_\_\_\_\_

GPS: G-Star IV

Datum: WGS 84 (Y) / N

Lat: 42.891130

Long: -78.335883

**SIGNALIZED Y / (N)**

If intersection is unsignalized; (km/hr)

Sign Type: Stop / Yield

Sign Size: 60 cm x 60 cm

Sign Condition:

NA: New / Good / Poor / Missing

SA: New / (Good) / Poor / Missing

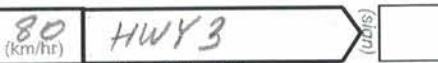
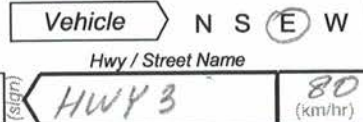
WA: New / Good / Poor / Missing

EA: New / Good / Poor / Missing

Photograph all approach's including all Signs (Y) / N



INDICATE LOCATION & DIRECTION OF VEHICLE



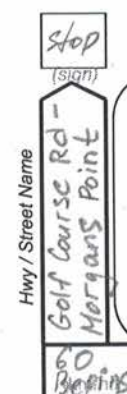
**Note:** Hwy / Street Name

Show all lanes approaching and leaving the intersection.

Show all channelization

If there are two or more through lane in one direction, indicate if these lanes are not continuous

Show pedestrian crosswalks



Layout of "Special Condition"





**TVIS II - Traffic Volume Information System**  
**Turning Movement 15 Minute Report**

Description: **Golf Course Rd - Morgan Pt. Rd**

Region: **CENTRAL**

Survey Type: **TM - Intersection**

Hwy: **3**

Start Date: **07-Nov-2018 (Wed)**

I/C Side:

LHRS: **11740**

End Date: **07-Nov-2018 (Wed)**

Int. Type: **T - S**

Offset: **6.100**

Schedule Summary: **TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00**

Start Time	Major Road Approaches										Minor Road Approaches										Total Veh.												
	East Hwy 3					West Hwy 3					South Golf Course Rd-Morgan Pt Rd					Not Configured																	
	←	↑	→	←	↑	→	←	↑	→	←	↑	→	←	↑	→	←	↑	→	←	↑		→	←	↑	→	←	↑	→	←	↑	→		
Period 1																																	
07:00	2	31	0	0	1	0	0	5	0	0	0	16	0	0	0	0	4	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	68
07:15	3	30	0	0	0	0	0	4	0	0	0	20	2	0	0	0	4	0	0	2	0	9	0	0	0	0	0	1	0	0	0	75	
07:30	0	32	0	0	1	0	0	3	0	0	0	29	1	0	1	0	0	8	1	0	0	17	0	0	0	0	0	0	0	0	0	93	
07:45	3	35	0	0	0	0	0	4	0	0	0	30	2	0	0	0	0	0	0	0	1	0	11	0	0	0	0	0	0	0	0	86	
08:00	1	27	0	0	0	0	1	8	0	0	0	32	0	0	0	0	0	2	0	0	1	0	13	0	0	1	0	0	0	0	0	86	
08:15	3	30	0	0	2	0	0	4	0	0	0	25	0	0	1	0	0	3	0	0	0	7	0	0	0	0	0	0	0	0	0	75	
08:30	4	35	0	0	2	0	0	5	0	0	0	29	0	0	3	0	0	3	0	0	1	0	9	0	0	1	1	0	1	0	0	94	
08:45	8	22	0	0	1	0	0	6	0	0	0	28	0	0	1	0	0	4	0	0	1	0	12	0	0	0	0	0	0	0	0	83	
Period 2																																	
11:00	7	31	0	0	3	0	0	1	0	0	0	22	0	0	3	1	0	3	0	0	1	0	7	0	0	1	0	0	0	0	0	80	
11:15	7	22	0	0	2	0	0	6	0	0	0	24	1	0	2	0	0	4	0	0	1	0	6	0	0	0	0	0	0	0	0	75	
11:30	10	38	0	1	0	0	0	7	0	0	0	33	0	0	5	0	0	5	0	0	2	0	8	0	0	0	0	0	0	0	0	109	
11:45	8	26	0	1	2	0	0	3	0	0	0	21	3	0	1	0	0	2	0	0	0	4	0	0	1	0	0	0	0	0	0	72	
12:00	11	32	0	1	2	0	0	2	0	0	0	43	2	0	2	0	0	5	0	0	1	0	2	0	0	0	0	0	0	0	0	103	
12:15	11	23	0	0	2	0	0	1	0	0	0	35	0	0	1	0	0	3	0	0	0	10	0	0	2	0	0	0	0	0	0	88	
12:30	3	34	0	0	2	0	0	7	0	0	0	20	0	0	1	0	0	4	0	0	0	8	0	0	0	0	0	0	0	0	0	79	
12:45	3	21	0	0	3	0	0	2	0	0	0	30	1	0	1	0	0	3	0	0	3	0	10	1	0	1	0	0	0	0	0	79	
13:00	6	29	0	1	2	0	0	0	0	0	0	29	1	0	1	0	0	6	0	0	1	0	13	0	0	0	0	0	0	0	0	89	
13:15	9	16	0	0	3	0	0	2	0	0	0	28	0	0	0	1	0	5	0	0	0	7	0	0	1	0	0	0	0	0	0	72	
13:30	6	19	0	0	4	0	0	3	0	0	0	29	0	0	1	0	0	4	0	0	1	0	16	0	0	0	0	0	1	0	0	84	
13:45	14	34	0	0	2	0	0	5	0	0	0	28	3	0	5	0	0	5	0	0	1	0	1	0	0	0	0	0	1	0	0	99	
Period 3																																	
15:00	13	34	0	0	2	0	0	3	0	0	0	37	1	0	0	0	0	3	0	0	0	5	0	0	0	0	0	1	0	0	0	99	
15:15	8	46	0	1	0	0	1	6	0	0	0	52	2	0	0	0	0	2	0	0	1	0	9	0	0	0	0	0	0	0	0	128	





**TVIS II - Traffic Volume Information System**  
**Turning Movement 15 Minute Report**

Description: **Golf Course Rd - Morgan Pt. Rd**

Region: **CENTRAL**

Survey Type: **TM – Intersection**

Hwy: **3**

Start Date: **07-Nov-2018 (Wed)**

I/C Side:

LHRS: **11740**

End Date: **07-Nov-2018 (Wed)**

Int. Type: **T - S**

Offset: **6.100**

Schedule Summary: **TUES-THURS, 07:00-09:00, 11:00-14:00, 15:00-18:00**

Start Time	Major Road Approaches													Minor Road Approaches												Total Veh.								
	East Hwy 3						West Hwy 3						South Golf Course Rd-Morgan Pt Rd						Not Configured															
	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Long Trucks			Ped	Cars			Trucks			Heavy Trucks			Ped				
←	↑	→	←	↑	→	←	↑	→	←		↑	→	←	↑	→	←	↑	→	←		↑	→	←	↑	→	←	↑	→	←		↑	→		
15:30	5	55	0	0	0	0	0	1	0	0	0	42	1	0	3	0	0	2	1	0	2	0	4	0	0	0	0	0	0	0	0	0	0	116
15:45	10	52	0	0	4	0	1	1	0	0	0	46	0	0	2	0	0	2	0	0	1	0	9	0	0	0	0	0	0	0	0	0	0	128
16:00	11	32	0	0	0	0	0	5	0	0	0	37	2	0	0	0	0	0	0	0	1	0	5	0	0	0	1	0	1	0	95			
16:15	15	32	0	1	1	0	0	1	0	0	0	36	0	0	0	0	0	1	0	0	3	0	15	0	0	0	0	0	0	0	0	0	0	105
16:30	9	54	0	0	1	0	0	1	0	0	0	44	3	0	1	0	0	3	0	0	2	0	5	0	0	1	0	0	0	0	0	0	0	124
16:45	7	35	0	0	0	0	0	1	0	0	0	43	2	0	1	0	0	4	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	104
17:00	11	46	0	0	0	0	0	1	0	0	0	39	2	0	1	0	0	0	0	0	0	0	6	1	0	0	0	0	0	0	0	0	0	107
17:15	18	30	0	1	0	0	0	1	0	0	0	33	1	0	0	0	0	4	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	91
17:30	10	25	0	0	0	0	0	0	0	0	0	38	2	0	1	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	79
17:45	15	30	0	0	0	0	0	0	0	0	0	34	2	0	0	0	0	0	0	0	1	0	5	0	0	0	0	0	0	0	0	0	0	87

## **Appendix C – Quarry Historic Sales Information**

**Law Annual Sales 2020**

Month	Load Count	Tonnage	Hours of Operation	# of Days of Operation	# of Hours of Operation
January	1,206	23,459.13	7:30 - 4:00	20	170
February	1,695	32,366.01	7:30 - 4:00	19	162
March	2,342	46,058.53	7:30 - 4:00	22	187
April	2,089	41,201.15	7:00 - 4:30	20	190
May	2,119	43,777.16	7:00 - 4:30	20	190
June	2,550	49,193.44	7:00 - 4:30	22	209
July	1,776	37,253.49	7:00 - 4:30	22	209
August	2,350	51,286.52	7:00 - 4:30	20	190
September	1,562	34,122.52	7:00 - 4:30	22	209
October	3,071	63,494.06	7:00 - 4:30	21	200
November	2,966	61,493.13	7:00 - 4:30	21	200
December	1,583	27,529.33	7:00 - 4:30	18	171
<b>Total 2020</b>	<b>25,309</b>	<b>511,234.47</b>		<b>247</b>	<b>2286</b>

**Law Annual Sales 2021**

Month	Load Count	Tonnage	Hours of Operation	# of Days of Operation	# of Hours of Operation
January	1,751	32,989.98	7:30 - 4:00	20	170
February	1,114	22,273.63	7:30 - 4:00	19	162
March	1,513	30,812.45	7:30 - 4:00	23	196
April	1,492	30,280.36	7:00 - 4:30	21	200
May	1,871	41,068.52	7:00 - 4:30	20	190
June	2,600	59,755.99	7:00 - 4:30	22	209
July	2,173	51,300.57	7:00 - 4:30	21	200
August	3,000	59,973.25	7:00 - 4:30	21	200
September	3,348	60,154.00	7:00 - 4:30	21	200
October	3,183	63,426.74	7:00 - 4:30	20	190
November	3,390	71,714.11	7:00 - 4:30	22	209
December	3,456	65,329.51	7:00 - 4:30	17	162
<b>Total 2021</b>	<b>28,891</b>	<b>589,079.11</b>		<b>247</b>	<b>2285</b>

**Law Annual Sales 2022**

Month	Load Count	Tonnage	Hours of Operation	# of Days of Operation	# of Hours of Operation
January	1,822	31,163.32	7:30 - 4:00	21	179
February	2,043	31,417.08	7:30 - 4:00	19	162
March			7:30 - 4:00		
April			7:00 - 4:30		
May			7:00 - 4:30		
June			7:00 - 4:30		
July			7:00 - 4:30		
August			7:00 - 4:30		
September			7:00 - 4:30		
October			7:00 - 4:30		
November			7:00 - 4:30		

December			7:00 - 4:30		
<b>Total 2022</b>	<b>3,865</b>	<b>62,580.40</b>		<b>40</b>	<b>340</b>

<b>Ticket Date</b>	<b>Ticket Number</b>	<b>Net Weight - KG</b>	<b>Net Weight - Tonnes</b>
09-27-2021 07:11	521037	16,110.00	16.11
09-27-2021 07:14	521038	22,390.00	22.39
09-27-2021 07:16	521039	21,650.00	21.65
09-27-2021 07:25	521040	34,310.00	34.31
09-27-2021 07:27	521041	12,040.00	12.04
09-27-2021 07:29	521042	21,170.00	21.17
09-27-2021 07:32	521043	23,430.00	23.43
09-27-2021 07:34	521044	36,900.00	36.90
09-27-2021 07:36	521045	11,090.00	11.09
09-27-2021 07:41	521046	34,190.00	34.19
09-27-2021 07:43	521047	22,290.00	22.29
09-27-2021 07:46	521048	23,450.00	23.45
09-27-2021 07:47	521049	20,600.00	20.60
09-27-2021 07:50	521050	6,770.00	6.77
09-27-2021 07:53	521051	34,750.00	34.75
09-27-2021 07:55	521052	20,670.00	20.67
09-27-2021 07:57	521053	21,230.00	21.23
09-27-2021 08:01	521054	21,000.00	21.00
09-27-2021 08:10	521055	21,990.00	21.99
09-27-2021 08:17	521057	22,440.00	22.44
09-27-2021 08:19	521058	14,230.00	14.23
09-27-2021 08:25	521059	16,180.00	16.18
09-27-2021 08:27	521060	9,990.00	9.99
09-27-2021 08:32	521061	22,340.00	22.34
09-27-2021 08:34	521062	21,230.00	21.23
09-27-2021 08:35	521063	23,540.00	23.54
09-27-2021 08:40	521064	12,290.00	12.29
09-27-2021 08:41	521065	12,410.00	12.41
09-27-2021 08:43	521066	22,350.00	22.35
09-27-2021 08:44	521067	23,500.00	23.50
09-27-2021 08:46	521068	33,910.00	33.91
09-27-2021 08:49	521070	12,210.00	12.21
09-27-2021 08:51	521071	20,090.00	20.09
09-27-2021 08:53	521072	35,110.00	35.11
09-27-2021 08:55	521073	21,690.00	21.69
09-27-2021 08:58	521074	1,480.00	1.48
09-27-2021 08:59	521075	21,160.00	21.16
09-27-2021 09:01	521077	11,640.00	11.64
09-27-2021 09:03	521078	20,960.00	20.96
09-27-2021 09:04	521079	22,220.00	22.22
09-27-2021 09:05	521080	21,610.00	21.61
09-27-2021 09:07	521081	20,780.00	20.78
09-27-2021 09:08	521082	11,290.00	11.29
09-27-2021 09:09	521083	34,550.00	34.55
09-27-2021 09:11	521084	13,150.00	13.15
09-27-2021 09:12	521085	20,670.00	20.67

<b>Ticket Date</b>	<b>Ticket Number</b>	<b>Net Weight - KG</b>	<b>Net Weight - Tonnes</b>
09-27-2021 09:13	521086	37,010.00	37.01
09-27-2021 09:15	521087	4,440.00	4.44
09-27-2021 09:19	521088	22,240.00	22.24
09-27-2021 09:21	521089	22,020.00	22.02
09-27-2021 09:23	521090	21,010.00	21.01
09-27-2021 09:26	521091	21,370.00	21.37
09-27-2021 09:28	521092	22,310.00	22.31
09-27-2021 09:31	521093	22,730.00	22.73
09-27-2021 09:33	521094	12,350.00	12.35
09-27-2021 09:35	521095	23,630.00	23.63
09-27-2021 09:38	521096	14,900.00	14.90
09-27-2021 09:43	521097	22,500.00	22.50
09-27-2021 09:44	521098	23,430.00	23.43
09-27-2021 09:46	521099	21,400.00	21.40
09-27-2021 09:47	521100	18,420.00	18.42
09-27-2021 09:49	521101	21,030.00	21.03
09-27-2021 09:50	521102	13,980.00	13.98
09-27-2021 09:51	521103	35,470.00	35.47
09-27-2021 09:53	521104	10,520.00	10.52
09-27-2021 09:56	521105	22,640.00	22.64
09-27-2021 10:00	521106	21,020.00	21.02
09-27-2021 10:04	521107	22,170.00	22.17
09-27-2021 10:05	521108	11,380.00	11.38
09-27-2021 10:07	521109	33,310.00	33.31
09-27-2021 10:10	521110	22,370.00	22.37
09-27-2021 10:17	521112	16,250.00	16.25
09-27-2021 10:20	521113	22,160.00	22.16
09-27-2021 10:23	521114	22,300.00	22.30
09-27-2021 10:25	521115	21,650.00	21.65
09-27-2021 10:29	521116	21,160.00	21.16
09-27-2021 10:31	521117	21,410.00	21.41
09-27-2021 10:35	521118	23,380.00	23.38
09-27-2021 10:36	521119	13,420.00	13.42
09-27-2021 10:38	521120	34,480.00	34.48
09-27-2021 10:40	521121	21,830.00	21.83
09-27-2021 10:41	521122	22,490.00	22.49
09-27-2021 10:42	521123	13,310.00	13.31
09-27-2021 10:44	521124	23,500.00	23.50
09-27-2021 10:46	521125	37,170.00	37.17
09-27-2021 10:47	521126	15,780.00	15.78
09-27-2021 10:49	521127	13,570.00	13.57
09-27-2021 10:50	521128	11,830.00	11.83
09-27-2021 10:52	521129	7,160.00	7.16
09-27-2021 10:53	521130	34,860.00	34.86
09-27-2021 10:55	521131	14,480.00	14.48
09-27-2021 10:57	521132	22,280.00	22.28

<b>Ticket Date</b>	<b>Ticket Number</b>	<b>Net Weight - KG</b>	<b>Net Weight - Tonnes</b>
09-27-2021 10:59	521133	20,720.00	20.72
09-27-2021 11:02	521134	21,530.00	21.53
09-27-2021 11:03	521135	4,450.00	4.45
09-27-2021 11:05	521136	22,330.00	22.33
09-27-2021 11:09	521137	21,540.00	21.54
09-27-2021 11:10	521138	21,230.00	21.23
09-27-2021 11:13	521139	14,710.00	14.71
09-27-2021 11:15	521140	20,540.00	20.54
09-27-2021 11:16	521141	21,770.00	21.77
09-27-2021 11:18	521142	7,990.00	7.99
09-27-2021 11:22	521143	34,080.00	34.08
09-27-2021 11:27	521144	20,450.00	20.45
09-27-2021 11:29	521145	7,230.00	7.23
09-27-2021 11:30	521146	22,190.00	22.19
09-27-2021 11:32	521147	21,690.00	21.69
09-27-2021 11:33	521148	23,620.00	23.62
09-27-2021 11:35	521149	22,300.00	22.30
09-27-2021 11:37	521150	22,060.00	22.06
09-27-2021 11:45	521151	14,820.00	14.82
09-27-2021 11:48	521152	20,800.00	20.80
09-27-2021 11:50	521153	22,860.00	22.86
09-27-2021 11:51	521154	12,430.00	12.43
09-27-2021 11:52	521155	35,120.00	35.12
09-27-2021 11:54	521156	21,430.00	21.43
09-27-2021 11:55	521157	20,990.00	20.99
09-27-2021 11:57	521158	20,500.00	20.50
09-27-2021 11:58	521159	12,670.00	12.67
09-27-2021 11:59	521160	16,330.00	16.33
09-27-2021 12:01	521161	22,180.00	22.18
09-27-2021 12:02	521162	21,960.00	21.96
09-27-2021 12:07	521163	17,070.00	17.07
09-27-2021 12:09	521164	22,150.00	22.15
09-27-2021 12:12	521165	37,150.00	37.15
09-27-2021 12:14	521167	17,480.00	17.48
09-27-2021 12:17	521168	4,880.00	4.88
09-27-2021 12:20	521169	34,570.00	34.57
09-27-2021 12:21	521170	21,600.00	21.60
09-27-2021 12:23	521171	22,450.00	22.45
09-27-2021 12:24	521172	22,250.00	22.25
09-27-2021 12:26	521173	33,940.00	33.94
09-27-2021 12:28	521174	21,510.00	21.51
09-27-2021 12:30	521175	3,160.00	3.16
09-27-2021 12:31	521176	11,520.00	11.52
09-27-2021 12:32	521177	23,450.00	23.45
09-27-2021 12:34	521178	22,620.00	22.62
09-27-2021 12:37	521179	21,860.00	21.86

<b>Ticket Date</b>	<b>Ticket Number</b>	<b>Net Weight - KG</b>	<b>Net Weight - Tonnes</b>
09-27-2021 12:40	521180	22,350.00	22.35
09-27-2021 12:41	521181	10,480.00	10.48
09-27-2021 12:44	521182	21,260.00	21.26
09-27-2021 12:45	521183	1,960.00	1.96
09-27-2021 12:47	521184	23,550.00	23.55
09-27-2021 12:48	521185	22,110.00	22.11
09-27-2021 12:50	521186	21,150.00	21.15
09-27-2021 12:51	521187	8,050.00	8.05
09-27-2021 12:57	521188	35,420.00	35.42
09-27-2021 12:59	521189	15,040.00	15.04
09-27-2021 13:00	521190	21,090.00	21.09
09-27-2021 13:02	521191	13,480.00	13.48
09-27-2021 13:03	521192	22,150.00	22.15
09-27-2021 13:05	521193	21,120.00	21.12
09-27-2021 13:06	521194	17,060.00	17.06
09-27-2021 13:08	521195	18,060.00	18.06
09-27-2021 13:16	521196	21,650.00	21.65
09-27-2021 13:19	521197	13,750.00	13.75
09-27-2021 13:20	521198	21,370.00	21.37
09-27-2021 13:24	521199	34,070.00	34.07
09-27-2021 13:26	521200	23,750.00	23.75
09-27-2021 13:28	521201	21,430.00	21.43
09-27-2021 13:32	521202	13,940.00	13.94
09-27-2021 13:34	521203	20,710.00	20.71
09-27-2021 13:35	521204	22,430.00	22.43
09-27-2021 13:37	521205	20,150.00	20.15
09-27-2021 13:40	521206	21,480.00	21.48
09-27-2021 13:42	521207	21,070.00	21.07
09-27-2021 13:45	521208	10,840.00	10.84
09-27-2021 13:48	521209	23,550.00	23.55
09-27-2021 13:49	521210	35,910.00	35.91
09-27-2021 13:51	521211	22,270.00	22.27
09-27-2021 13:53	521212	21,880.00	21.88
09-27-2021 13:55	521213	9,680.00	9.68
09-27-2021 13:57	521214	34,440.00	34.44
09-27-2021 14:03	521215	34,800.00	34.80
09-27-2021 14:05	521216	21,140.00	21.14
09-27-2021 14:10	521217	21,500.00	21.50
09-27-2021 14:16	521218	610.00	0.61
09-27-2021 14:18	521219	22,190.00	22.19
09-27-2021 14:19	521220	21,620.00	21.62
09-27-2021 14:21	521221	19,560.00	19.56
09-27-2021 14:22	521222	20,700.00	20.70
09-27-2021 14:24	521223	23,460.00	23.46
09-27-2021 14:26	521224	21,200.00	21.20
09-27-2021 14:27	521225	13,860.00	13.86



<b>Ticket Date</b>	<b>Ticket Number</b>	<b>Net Weight - KG</b>	<b>Net Weight - Tonnes</b>
09-27-2021 14:28	521226	21,530.00	21.53
09-27-2021 14:33	521227	10,030.00	10.03
09-27-2021 14:36	521228	21,460.00	21.46
09-27-2021 14:37	521229	15,140.00	15.14
09-27-2021 14:38	521230	22,530.00	22.53
09-27-2021 14:41	521231	21,700.00	21.70
09-27-2021 14:43	521232	16,520.00	16.52
09-27-2021 14:44	521233	13,990.00	13.99
09-27-2021 14:45	521234	23,500.00	23.50
09-27-2021 14:47	521235	12,700.00	12.70
09-27-2021 14:48	521236	23,100.00	23.10
09-27-2021 14:50	521237	33,910.00	33.91
09-27-2021 14:51	521238	21,390.00	21.39
09-27-2021 14:52	521239	35,570.00	35.57
09-27-2021 14:56	521240	35,330.00	35.33
09-27-2021 14:58	521241	20,860.00	20.86
09-27-2021 15:00	521242	20,140.00	20.14
09-27-2021 15:01	521243	16,130.00	16.13
09-27-2021 15:02	521244	21,630.00	21.63
09-27-2021 15:07	521245	22,340.00	22.34
09-27-2021 15:10	521246	11,400.00	11.40
09-27-2021 15:11	521247	36,520.00	36.52
09-27-2021 15:14	521248	34,380.00	34.38
09-27-2021 15:15	521249	13,700.00	13.70
09-27-2021 15:16	521250	21,200.00	21.20
09-27-2021 15:18	521251	19,730.00	19.73
09-27-2021 15:20	521252	21,880.00	21.88
09-27-2021 15:22	521253	15,940.00	15.94
09-27-2021 15:26	521254	21,880.00	21.88
09-27-2021 15:27	521255	23,330.00	23.33
09-27-2021 15:29	521256	21,310.00	21.31
09-27-2021 15:33	521257	20,660.00	20.66
09-27-2021 15:36	521258	20,040.00	20.04
09-27-2021 15:38	521259	16,190.00	16.19
09-27-2021 15:43	521260	13,410.00	13.41
09-27-2021 15:46	521261	33,910.00	33.91
09-27-2021 15:48	521262	12,570.00	12.57
09-27-2021 15:49	521263	15,950.00	15.95
09-27-2021 15:51	521264	35,360.00	35.36
09-27-2021 15:53	521265	18,230.00	18.23
09-27-2021 15:54	521266	17,770.00	17.77
09-27-2021 15:56	521267	21,040.00	21.04
09-27-2021 16:04	521268	5,110.00	5.11
09-27-2021 16:12	521269	21,280.00	21.28
09-27-2021 16:14	521270	22,350.00	22.35
09-27-2021 16:16	521271	20,550.00	20.55

<b>Ticket Date</b>	<b>Ticket Number</b>	<b>Net Weight - KG</b>	<b>Net Weight - Tonnes</b>
09-27-2021 16:17	521272	23,480.00	23.48
09-27-2021 16:18	521273	22,570.00	22.57
09-27-2021 16:19	521274	21,060.00	21.06
09-27-2021 16:21	521275	21,460.00	21.46
09-27-2021 16:22	521276	21,880.00	21.88
09-27-2021 16:23	521277	22,940.00	22.94
09-27-2021 16:25	521278	14,280.00	14.28

## **Appendix D – TTS Data Output**

Thu Mar 24 2022 16:45:25 GMT-0400 (Eastern Daylight Time) - Run Time: 2400ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of household - pd\_hhld

Column: Planning district of destination - pd\_dest

Filters:

(Planning district of destination - pd\_dest In 62); and

(Start time of trip - start\_time In 700 - 900); and

(Trip purpose of destination - purp\_dest In W, R)

Trip 2016

ROW : pd\_orig

COLUMN : pd\_dest

## Cross Tabulation Query Form - Trip - 2016 v1.1

### Filter Variables

### Group Attributes

Grouping file:  No file chosen

### Filter Selection +

Planning district of destination In

And

Start time of trip In

And

Trip purpose of destination In

### Output

Comma-delimited table  Column format

Expansion Factor On

Tue Apr 26 2022 10:32:33 GMT-0400 (Eastern Daylight Time) - Run Time: 2666ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of household - pd\_hhld

Column: Planning district of destination - pd\_dest

Filters:

Planning district of destination - pd\_dest In 62

and

Start time of trip - start\_time In 700 - 900

and

Trip purpose of destination - purp\_dest In W, R

Trip 2016

Table:

,Wainfleet

Lincoln,5

Pelham,46

Welland,158

Port Colborne,77

Fort Erie,12

Wainfleet,294

## **Appendix E – Synchro Analysis Output**

Waterford Wainfleet Quarry  
1: Highway 3 & Site Access

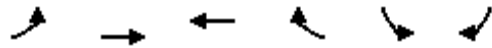
HCM Unsignalized Intersection Capacity Analysis  
Total (2022) AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↗	↖	↙	↘
Traffic Volume (veh/h)	13	173	172	37	32	6
Future Volume (Veh/h)	13	173	172	37	32	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	188	187	40	35	7
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	227			403	187	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	227			403	187	
tC, single (s)	4.6			7.4	7.2	
tC, 2 stage (s)						
tF (s)	2.6			4.4	4.2	
p0 queue free %	99			92	99	
cM capacity (veh/h)	1121			447	656	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>SB 1</b>	
Volume Total	14	188	187	40	42	
Volume Left	14	0	0	0	35	
Volume Right	0	0	0	40	7	
cSH	1121	1700	1700	1700	472	
Volume to Capacity	0.01	0.11	0.11	0.02	0.09	
Queue Length 95th (m)	0.3	0.0	0.0	0.0	2.3	
Control Delay (s)	8.3	0.0	0.0	0.0	13.4	
Lane LOS	A				B	
Approach Delay (s)	0.6	0.0			13.4	
Approach LOS					B	
<b>Intersection Summary</b>						
Average Delay			1.4			
Intersection Capacity Utilization			20.8%	ICU Level of Service	A	
Analysis Period (min)			15			

Waterford Wainfleet Quarry  
1: Highway 3 & Site Access

HCM Unsignalized Intersection Capacity Analysis  
Total (2022) PM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	→	↗	←	↙	↘
Traffic Volume (veh/h)	13	186	178	37	32	6
Future Volume (Veh/h)	13	186	178	37	32	6
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	202	193	40	35	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	233				423	193
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	233				423	193
tC, single (s)	5.1				7.3	6.7
tC, 2 stage (s)						
tF (s)	3.1				4.3	3.7
p0 queue free %	98				92	99
cM capacity (veh/h)	921				450	748
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	14	202	193	40	42	
Volume Left	14	0	0	0	35	
Volume Right	0	0	0	40	7	
cSH	921	1700	1700	1700	482	
Volume to Capacity	0.02	0.12	0.11	0.02	0.09	
Queue Length 95th (m)	0.4	0.0	0.0	0.0	2.3	
Control Delay (s)	9.0	0.0	0.0	0.0	13.2	
Lane LOS	A				B	
Approach Delay (s)	0.6		0.0		13.2	
Approach LOS					B	
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			20.8%		ICU Level of Service	A
Analysis Period (min)			15			



## **Appendix F – OTM Signal Justification Sheets**

**Justification No. 7 - 2022 Total Traffic**

Highway 3 / Site Access

Justification	Description	Compliance			Signal Warrant	Underground Provisions Warrant
		Free Flow	Sectional			
			Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	251	52%	10%	NO
	B. Vehicle volume, along minor streets (average hour)	180	22	12%		NO
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	480	212	44%	29%	NO
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	17	35%		NO