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MEMORANDUM

TO: Capital Contracting, (5009823 Ontario Inc.) **RVA:** 216026

FROM: Adam Mildenberger, Transportation Planner, R.V. Anderson Associates Ltd.

DATE: October 15, 2021

SUBJECT: Town Traffic Brief for Proposed Residential Development
Black Creek Road

1.0 Introduction

R.V. Anderson Associates Limited (RVA) has been retained by Capital Contracting (5009823 Ontario Inc.) to undertake a Traffic Brief for the proposed residential development located on the western side of Black Creek Road, opposite Lawrence Avenue, in the Town of Fort Erie. This Traffic Brief has been requested by Town staff as a condition of approval.

The primary objectives of this study as requested by Town staff are as follows:

- Determine if the proposed site intersections/driveways on Black Creek Road conform to the access spacing guidelines per the Transportation Association of Canada (TAC) Geometric Design Guidelines for Canadian Roads;
- Determine if the intersection of Lawrence Avenue at Black Creek Road warrants all-way stop control upon build-out of the subject development per the Ontario Traffic Manual (OTM) All-way Stop Control Warrant methodology; and
- Determine if there is expected to be a sightline concern at the internal site intersection of Steet “A” at Street “C” due to the proposed horizontal curve just west of the intersection, and recommended mitigation measures if required.

As shown in **Figure 1**, the subject property is currently vacant, situated along the west side of Black Creek Road, opposite Lawrence Avenue. The immediate area is predominantly residential to the east, with the Faith Reformed Church immediately to the north, QEW to the south, and Netherby Road to the west.

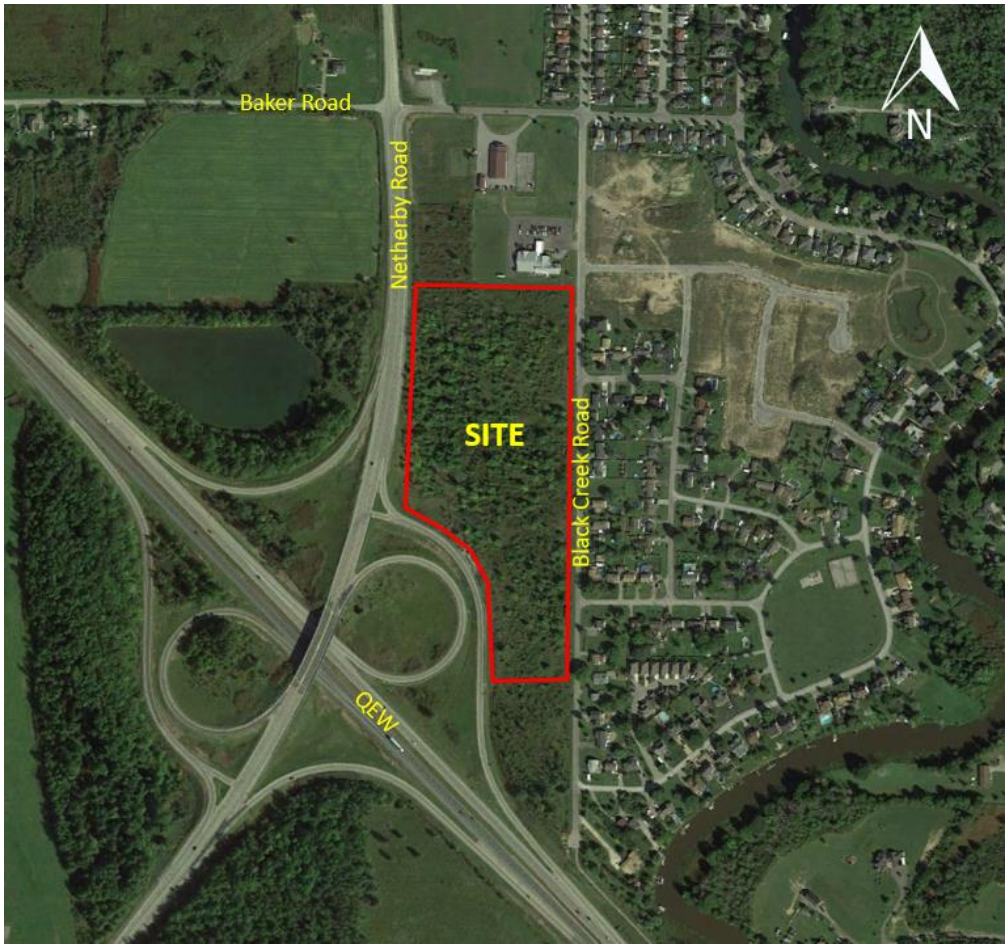


Figure 1: Site Location

2.0 Existing Road Network

Black Creek Road is a north-south roadway under the jurisdiction of the Town of Fort Erie with a two-lane urban and rural cross sections (one lane per direction) and an assumed speed limit of 50km/h. In the vicinity of the site, Black Creek Road intersects an un-signalized T-intersection at Lawrence Avenue. No pedestrian sidewalks, on-street bike lanes, or transit stops are located along Black Creek Road.

Lawrence Avenue is an east-west roadway under the jurisdiction of the Town of Fort Erie with a two-lane rural cross section (one lane per direction) and an assumed speed limit of 50km/h. In the vicinity of the site, Lawrence Avenue intersects an unsignalized T-intersection at Black Creek Road. No pedestrian sidewalks, on-street bike lanes, or transit stops are located along Lawrence Avenue.

3.0 Existing Traffic Volumes

No historical (pre-COVID) traffic count data was available for the intersection of Black Creek Road at Lawrence Avenue at the time of the study. Peak hour traffic volumes entering/exiting Black Creek Road at Lawrence Avenue were therefore estimated by utilizing the Institute of Transportation Engineer's (ITE) *Trip Generation Manual, 10th Edition*, referencing the ITE Land Use Code (LUC) #210 for "Single-Family Detached Housing".

Based on our review of the existing lotting and road network layout, the existing residential neighbourhood was divided into two "zones" for the purpose of trip generation and distribution analysis, as shown in Figure 2. It is expected traffic generated from Zone 1 will generally utilize the north and east approaches at the intersection of Lawrence Avenue at Black Creek Road, and traffic generated from Zone 2 will generally utilize the north and south approaches of the intersection.

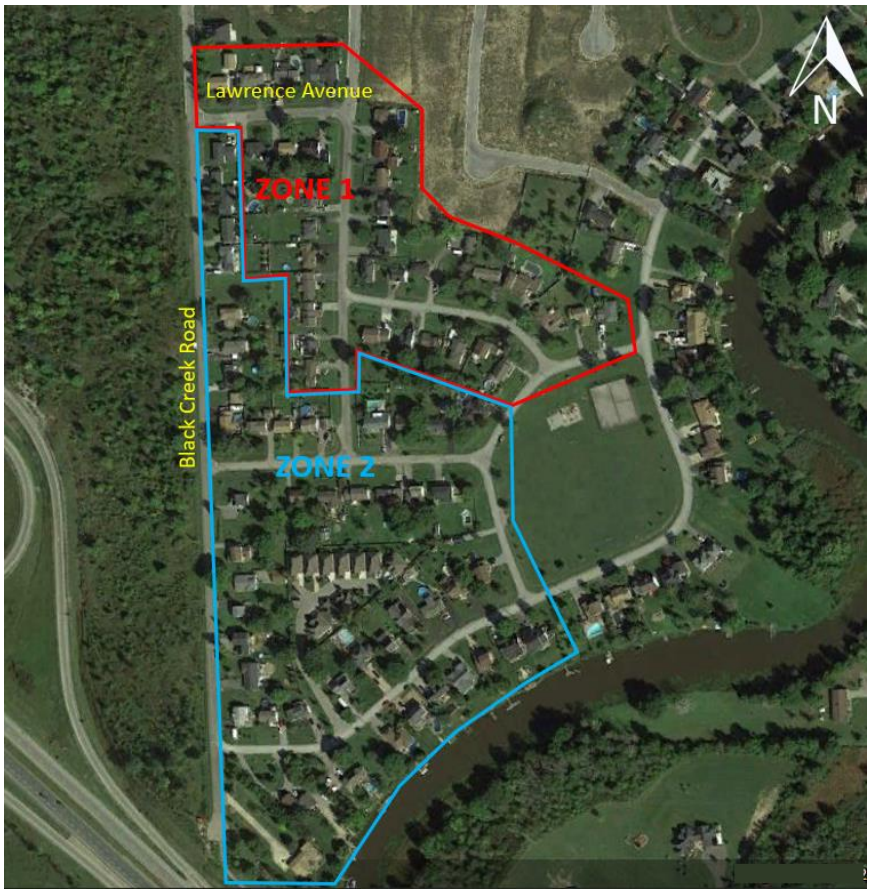


Figure 2: Existing Lotting and Residential Neighbourhood

Table 1 presents the trip generation estimates for Zones 1 and 2, with the expected assignment of the generated traffic to the subject intersection illustrated in **Figure 3**.

Table 1: Background Traffic - Trip Generation Summary

Zone	Unit Count	Peak Hour	Trip Rate	Total Trips	Inbound / Outbound
1	34 units	Weekday a.m.	0.74	26	7 / 19
		Weekday p.m.	0.99	34	21 / 13
2	60 units	Weekday a.m.	0.74	45	11 / 34
		Weekday p.m.	0.99	60	38 / 22
			Total	**a.m.**	**18 / 53**
				p.m.	**59 / 35**

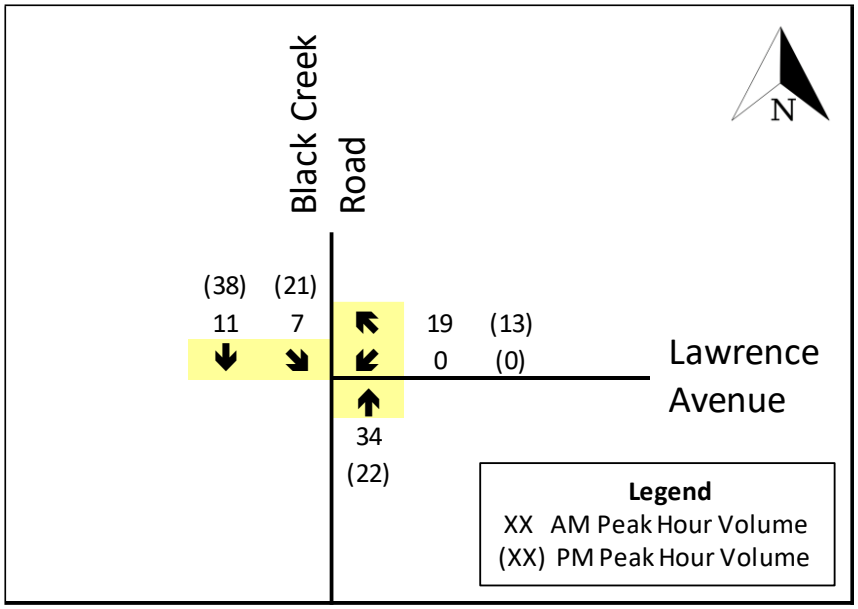


Figure 3: 2021 Existing Traffic Volumes

4.0 Development Proposal

The Draft Plan of Subdivision is provided in **Appendix A**. The development proposal consists of a 4-storey apartment building with 74 apartments/stacked townhomes, 16 block townhomes, 59 street townhomes, 16 semi-detached residential townhomes and 52

single-detached homes. Trip Generation from the subject site was estimated utilizing ITE *Trip Generation Manual, 10th Edition*, referencing the ITE Land Use Codes (LUC) #210 for "Single-Family Detached Housing", LUC # 220 for "Multi-Family Housing (Low-Rise)", LUC 221 for "Multifamily Housing (Mid-Rise)". As shown in **Table 2**, the proposed development is estimated to generate approximately 111 trips during the a.m. peak hour (27 inbound and 84 outbound) and approximately 138 trips during the p.m. peak hour (86 inbound and 52 outbound).

Table 2: Site Traffic - Trip Generation Summary

Land Use	Unit Count	Peak Hour	Trip Rate	Total Trips	Inbound / Outbound
Block 74	16 units	Weekday a.m.	0.46	8	2 / 6
		Weekday p.m.	0.56	9	6 / 3
Block 75	80 units	Weekday a.m.	0.36	29	7 / 22
		Weekday p.m.	0.44	35	21 / 14
Single-Family Detached	52 units	Weekday a.m.	0.74	39	10 / 29
		Weekday p.m.	0.99	52	33 / 19
Blocks 53-73	75 units	Weekday a.m.	0.46	35	8 / 27
		Weekday p.m.	0.56	42	26 / 16
			Total	**a.m.**	**27 / 84**
				p.m.	**86 / 52**

The estimated site traffic volumes during the weekday a.m. and p.m. peak hours are shown in **Figure 4**.

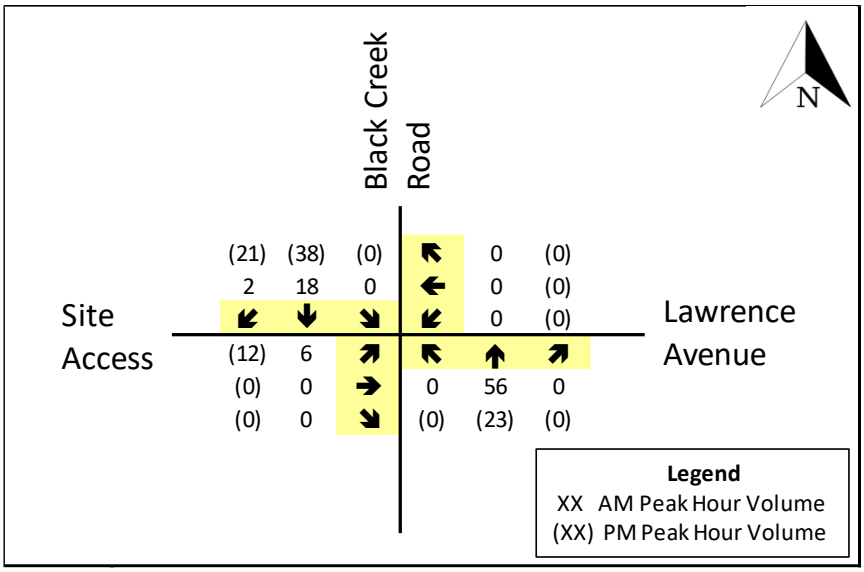


Figure 4: Estimated Site Traffic

5.0 Future Traffic Volumes

Future projected volumes for the intersection of Lawrence Avenue at Black Creek Road were estimated by adding the estimated site generated traffic to the 2021 existing traffic volumes. The resulting estimated future peak hour intersection traffic volumes are shown in **Figure 5.**

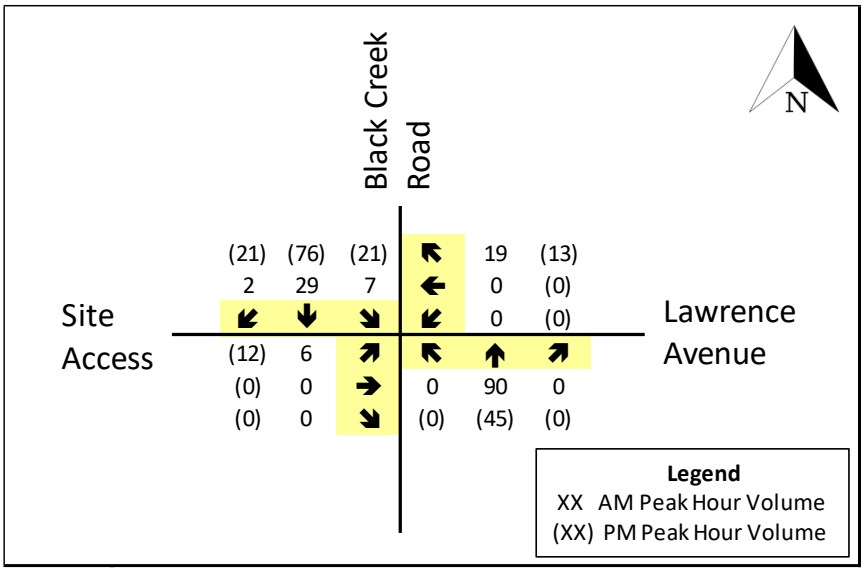


Figure 5: Future Traffic Volumes

6.0 All-Way Stop Control Warrant

RVA has completed the OTM all-way stop control (AWSC) warrant for the intersection of Lawrence Avenue at Black Creek Road upon build-out of the subject development, to confirm if AWSC will be warranted. The results of the warrant are shown below in **Table 3**, indicating that AWSC is not warranted at the intersection due to insufficient peak hour intersection volumes and the directional split of approach traffic being too heavily skewed to the north-south approaches compared to the east-west approaches. The recommended intersection control is two-way stop control (free-flow for the north-south approaches, stop controlled for the east-west approaches).

Table 3: OTM All-Way Stop-Control Warrant

JUSTIFICATION 1 (MINIMUM VEHICLE VOLUME)	JUSTIFICATION 2 (VOLUME SPLIT)
Required: Minimum 350 vehicles at intersection during peak hour. **Projected:** Approximately 153 vehicles during the a.m. peak hour, and 188 vehicles during the p.m. peak hour. **Result:** Not warranted. Intersection volumes during p.m. peak hour would need to increase by 86% from current estimates.	**Required:** Directional split (north-south vs. east-west) not to exceed 65/35 during peak hour. **Projected:** Directional split during p.m. peak hour estimated at 87/13 (87% north-south vs. 13% east-west). **Result:** Not warranted. Directional splits too heavily skewed.

7.0 Sightlines at Internal Site Intersection of Street “A” at Street “C”

There is a proposed horizontal curve on Street “A” just west of the proposed intersection of Street “A” at Street “C” internal to the site. Per TAC guidelines, the recommended intersection sight distance for a vehicle turning left from Street “C” onto Street “A” is 105 metres for a 50 km/h design speed, and 130 metres for a 60 km/h design speed. This means that a motorist turning left from Street “C” onto Street “A” should have at least 105 metres (or 130 metres, depending on the Town’s preferred design speed assumption for this local road) of unobstructed visibility when looking westwards from the intersection towards Street “C”.

Based on our desktop review of the proposed Draft Plan of Subdivision drawing, these left-turning vehicles will not have sufficient sight distance to meet TAC guidelines, due to the horizontal curvature of the Street “A” and potential other visibility obstructions (i.e., home, cars, trees) on Lot 33.

To address the deficient sight distances for Street “C” traffic, it is recommended that the Town consider configuring this intersection as an all-way stop.

8.0 Access Management

RVA has reviewed the proposed Draft Plan of Subdivision against the driveway and intersection spacing guidelines per the TAC Geometric Design Guide for Canadian Roads.

TAC recommends driveways have a minimum separation of 5 metres from an intersecting roadway, and 3 metres from an adjacent driveway.

TAC recommends local road T-intersections have a minimum spacing of 40 metres (measured centreline-to-centreline) along local roadways.

The proposed driveway and intersection locations are shown in **Figure 6 (Appendix B)**, indicating that all proposed driveways and intersections exceed the minimum TAC spacing guidelines.

9.0 Summary of Findings

The main findings of our review are summarized as follows:

- The proposed residential development is estimated to generate approximately 111 trips during the a.m. peak hour (27 inbound and 84 outbound) and approximately 138 trips during the p.m. peak hour (86 inbound and 52 outbound);
- All-way stop control is not warranted at the intersection of Lawrence Avenue at Black Creek Road upon build-out of the subject development based on the OTM All-Way Stop Control Warrant;
- It is expected the available intersection sight distance (for Street “C” traffic) at the future intersection of Street “A” and Street “C” will not meet the recommended minimum sight distance per TAC guidelines;
- All proposed driveways and intersections on Black Creek Road exceed the minimum TAC spacing guidelines.

10.0 Summary of Recommendations

Our recommendations based on the study findings are as follows:

- The intersection of Lawrence Avenue at Black Creek Road be two-way stop controlled (free-flow for the north-south approaches, stop controlled for the east-west approaches) upon build-out of the subject development; and
- The future intersection of Street “A” and Street “C” should be considered for an all-way stop, to mitigate sightline concern on the west approach.

11.0 Closing

Thank you for providing us with the opportunity to undertake this study. If there is any query related to this report, please feel free to contact Adam Mildenberger at 905-818-2542 or by email at AMildenberger@rvanderson.com.

Yours very truly,

R.V. ANDERSON ASSOCIATES LIMITED

Adam Mildenberger, B.A., C.E.T.
Project Manager

Sian Younan, Dipl.T.
Transportation Planner

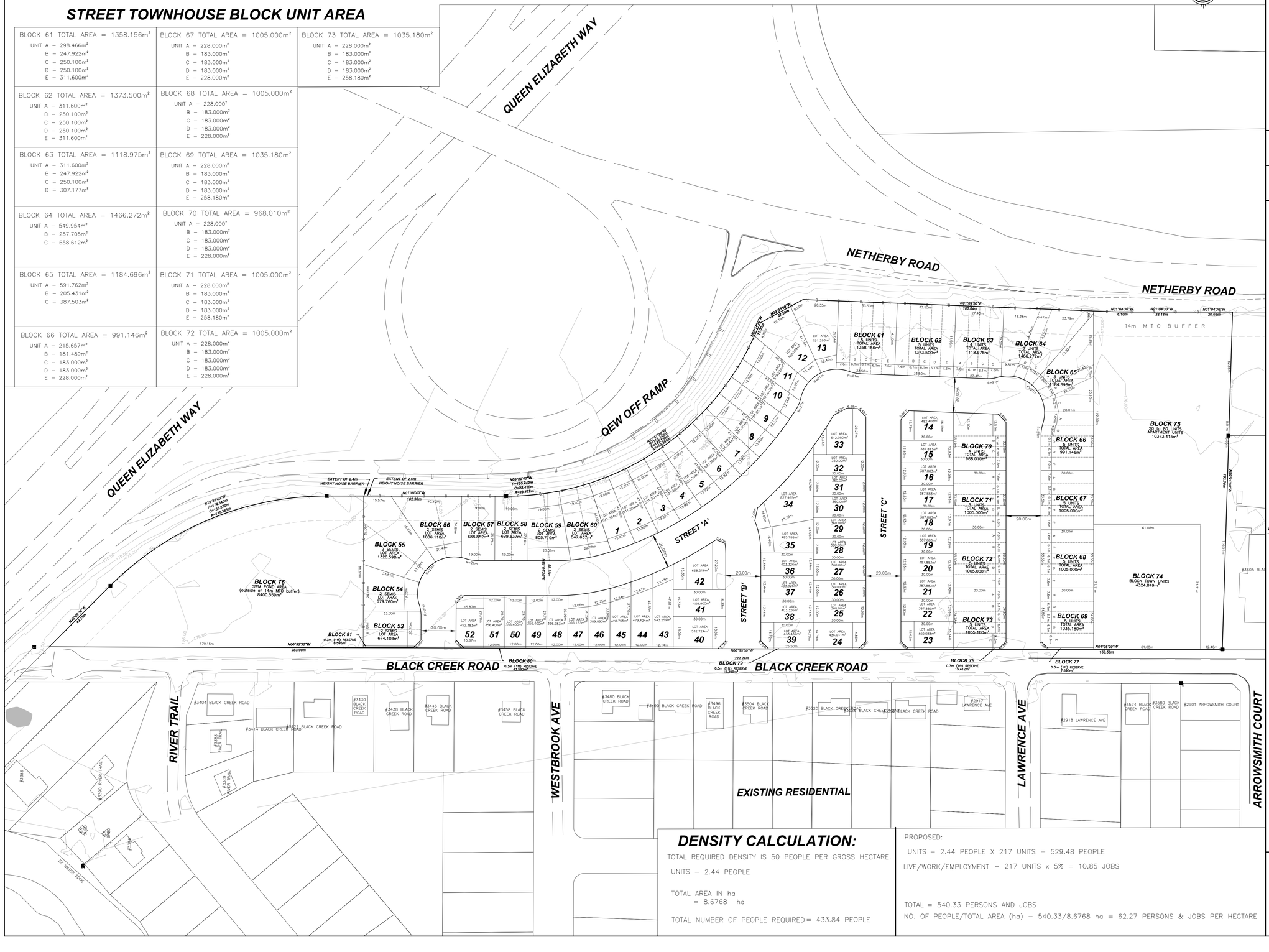
APPENDIX A

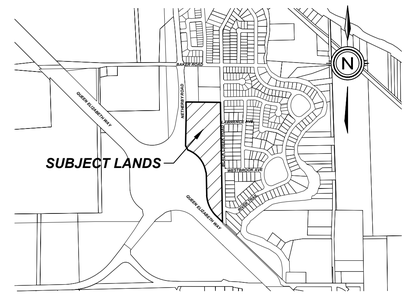
DRAFT PLAN OF SUBDIVISION

BLACK CREEK ROAD SUBDIVISION
TOWN OF FORT ERIE

STREET TOWNHOUSE BLOCK UNIT AREA

BLOCK 61 TOTAL AREA = 1358.156m² UNIT A – 298.466m² B – 247.922m² C – 250.100m² D – 250.100m² E – 311.600m²	BLOCK 67 TOTAL AREA = 1005.000m² UNIT A – 228.000m² B – 183.000m² C – 183.000m² D – 183.000m² E – 228.000m²	BLOCK 73 TOTAL AREA = 1035.180m² UNIT A – 228.000m² B – 183.000m² C – 183.000m² D – 183.000m² E – 258.180m²
BLOCK 62 TOTAL AREA = 1373.500m² UNIT A – 311.600m² B – 250.100m² C – 250.100m² D – 250.100m² E – 311.600m²	BLOCK 68 TOTAL AREA = 1005.000m² UNIT A – 228.000² B – 183.000m² C – 183.000m² D – 183.000m² E – 228.000m²	
BLOCK 63 TOTAL AREA = 1118.975m² UNIT A – 311.600m² B – 247.922m² C – 250.100m² D – 307.177m²	BLOCK 69 TOTAL AREA = 1035.180m² UNIT A – 228.000m² B – 183.000m² C – 183.000m² D – 183.000m² E – 258.180m²	
BLOCK 64 TOTAL AREA = 1466.272m² UNIT A – 549.954m² B – 257.705m² C – 658.612m²	BLOCK 70 TOTAL AREA = 968.010m² UNIT A – 228.000² B – 183.000m² C – 183.000m² D – 183.000m² E – 228.000m²	
BLOCK 65 TOTAL AREA = 1184.696m² UNIT A – 591.762m² B – 205.431m² C – 387.503m²	BLOCK 71 TOTAL AREA = 1005.000m² UNIT A – 228.000m² B – 183.000m² C – 183.000m² D – 183.000m² E – 258.180m²	
BLOCK 66 TOTAL AREA = 991.146m² UNIT A – 215.657m² B – 181.489m² C – 183.000m² D – 183.000m² E – 228.000m²	BLOCK 72 TOTAL AREA = 1005.000m² UNIT A – 228.000m² B – 183.000m² C – 183.000m² D – 183.000m² E – 228.000m²	





KEY PLAN
N.T.S.

DRAFT PLAN OF SUBDIVISION

LEGAL DESCRIPTION

PART OF LOT 19

BROKEN FRONT CONCESSION AT SOUTHEAST ANGLE

GEOGRAPHIC TOWNSHIP OF WILLOUGHBY, COUNTY OF WELLAND NOW IN THE TOWN OF FORT ERIE

OWNER'S CERTIFICATE

BEING THE REGISTERED OWNER, I HEREBY AUTHORIZE UPPER CANADA CONSULTANTS TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE TOWN OF FORT ERIE FOR APPROVAL.

5009823 Ontario Inc. (Mitch Williams) DATE

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED ARE CORRECTLY SHOWN.

DATE

J.D BARNES LTD.

REQUIREMENTS OF SECTION 51(17) OF THE PLANNING ACT

a) SEE PLAN
b) SEE PLAN
c) SEE PLAN
d) SEE PLAN
e) SEE PLAN
f) SEE PLAN
g) SEE PLAN
h) MUNICIPAL WATER
i) CLAY LOAM
j) SEE PLAN
k) FULL SERVICE
l) SEE PLAN

LAND USE SCHEDULE

LAND USE	LOT/BLOCK	# OF UNITS	AREA(ha)	AREA(%)
SINGLE LOT RESIDENTIAL	LOT 1–52	52	2.3965	27.61
SEMI–DETACHED RESIDENTIAL	BLOCK 53–60	16	0.6724	7.74
STREET TOWNHOUSE	BLOCK 61–73	59	1.4550	16.76
BLOCK TOWNHOUSE	BLOCK 74	16	0.4343	5.00
APARTMENT/STACKED TOWNS	BLOCK 75	74	1.0377	11.95
SWM POND	BLOCK 76		1.1127	12.82
ROADWAY			1.5589	17.96
0.3m RESSERVE	BLOCK 77–81		0.0090	0.10
TOTAL		217	8.6768	100.00

DEVELOPABLE AREA: 8.6768 ha
DEVELOPABLE DENSITY: 25.00 units/ha

.	.	.	.
.	.	.	.
0	CIRCULATED FOR REVIEW	2021–10–07	MK/AV
#	REVISION	DATE	INIT

UPPER CANADA CONSULTANTS
ENGINEERS / PLANNERS

DENSITY CALCULATION:

TOTAL REQUIRED DENSITY IS 50 PEOPLE PER GROSS HECTARE.

UNITS – 2.44 PEOPLE

TOTAL AREA IN ha
= 8.6768 ha

TOTAL NUMBER OF PEOPLE REQUIRED = 433.84 PEOPLE

PROPOSED:

UNITS – 2.44 PEOPLE X 217 UNITS = 529.48 PEOPLE

LIVE/WORK/EMPLOYMENT – 217 UNITS x 5% = 10.85 JOBS

TOTAL = 540.33 PERSONS AND JOBS

NO. OF PEOPLE/TOTAL AREA (ha) – 540.33/8.6768 ha = 62.27 PERSONS & JOBS PER HECTARE

DRAWING TITLE

DRAFT PLAN OF SUBDIVISION

DRAFTING	MK/AV
DATE	OCTOBER 7, 2021
PRINTED	OCTOBER 7, 2021
SCALE	1:1000
DWG No.	REV
20174-DP	**0**

APPENDIX B

PROPOSED DRIVEWAY AND INTERSECTION LOCATIONS

INTERSECTIONS MEET TAC 40m SPACING GUIDELINE FOR LOCAL ROAD

DRIVEWAY WILL MEET TAC SPACING GUIDELINE (MIN 5m FROM ADJACENT ROADWAY)

DRIVEWAY WILL MEET TAC SPACING GUIDELINE (MIN 3m FROM ADJACENT DRIVEWAY)

QEW OFF RAMP

14m MTO BUFFER

BLACK CREEK ROAD

WESTBROOK AVE

LAWRENCE AVE

ARROWSMITH COURT

STREET 'A'

STREET 'B'

STREET 'C'

EXISTING RESIDENTIAL

BLACK CREEK ROAD TRAFFIC STUDY

FIGURE 6: PROPOSED DRIVEWAY AND INTERSECTION LOCATIONS

SCALE: NTS

DATE: OCTOBER 12, 2021

arva