

520 & 526 Big Bay Point Road

City of Barrie

Traffic Brief for Morriello Construction Ltd.

Type of Document:
Final Report

Project Number:
JDE – 20114

Date Submitted:
April 13th, 2021



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



JD Northcote Engineering Inc.
86 Cumberland Street
Barrie, ON
705.725.4035
www.JDEngineering.ca

Legal Notification

This report was prepared by **JD Northcote Engineering Inc.** for the account of **Morriello Construction Ltd.**

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. **JD Northcote Engineering Inc.** accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.

Table of Contents

1	Introduction.....	5
1.1	Background.....	5
1.2	Study Area	5
1.3	Study Scope and Objectives	7
1.4	Horizon Year and Analysis Periods	7
2	Information Gathering.....	7
2.1	Street and Intersection Characteristics	7
2.2	Local Transportation Infrastructure Improvements.....	9
2.3	Other Developments within Study Area	9
2.4	Projected Traffic Volumes	9
3	Proposed Development Traffic Generation and Assignment	10
3.1	Traffic Generation	10
3.2	Traffic Assignment	10
4	Intersection Operation with Proposed Development	12
4.1	Traffic Impact Analysis	12
4.2	Sight Distance Review.....	12
4.3	Site Access	12
4.4	Parking Review.....	13
5	Summary	14

List of Tables

Table 1 – Big Bay Point Road 2031 Traffic Volumes within the Study Area	9
Table 2 – Estimated Traffic Generation of Proposed Development.....	10
Table 3 – Proposed Development Traffic Distribution Summary	11
Table 4 - Zoning By-law Parking Requirements.....	13

List of Figures

Figure 1 – Proposed Site Location and Study Area	6
Figure 2 – Existing Intersection Lane Configuration within Study Area	8
Figure 3 – Traffic Assignment for Proposed Development	11

List of Appendices

APPENDIX A – Site Plan

APPENDIX B – Transportation Tomorrow Survey Excerpts

1 Introduction

1.1 Background

Morriello Construction Ltd. [The Client] is proposing a residential development on a site municipally known as 520 and 526 Big Bay Point Road, located on the north side of Big Bay Point Road midblock between Yonge Street and Montgomery Drive in the City of Barrie [City]. The proposed development is anticipated to consist of 6-storey apartment building with 46 residential units. The proposed development will include 57 parking spaces.

The proposed development will include a full-movement access driveway onto Big Bay Point Road [Site Access].

The Client has retained **JD Engineering Inc.** [JD Engineering] to prepare this traffic brief in support of the proposed Site Plan application.

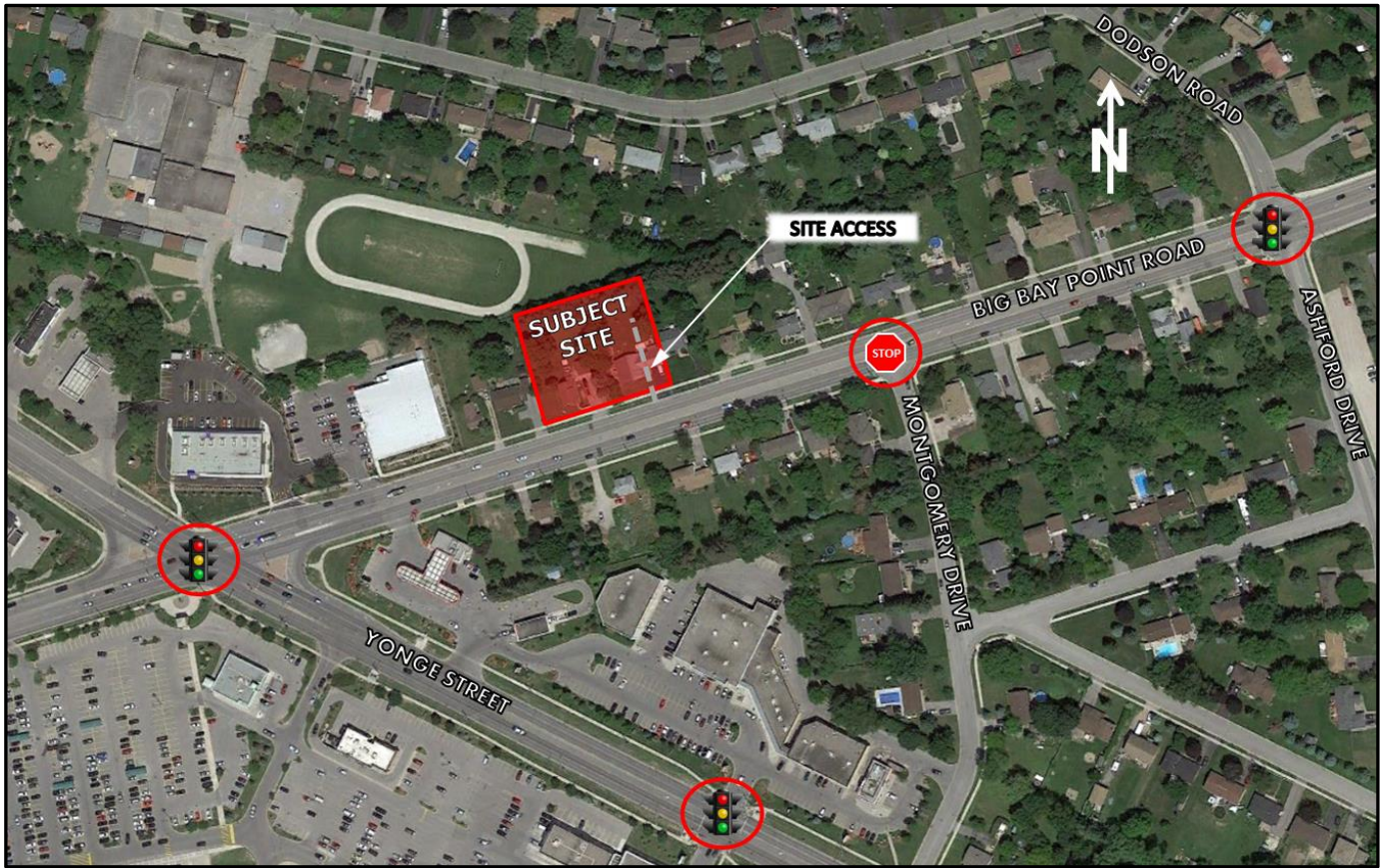
1.2 Study Area

Figure 1 illustrates the location of the subject site and study area intersections, in relation to the surrounding area. The Site Plan by ISM Architects Inc. is provided in **Appendix A**.

The subject site is bound by Big Bay Point Road to the south, existing residential lands to the east and west and Warnica Public School to the north.

Based on our correspondence with the City, a functional review of the Big Bay Point Road / Site Access intersection is included in this study.

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 and 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 development was not constructed, including the impact of additional proposed developments in the area;
- Estimate the amount of traffic that would be generated by the proposed development and assign to the roadway network;
- Identify improvement options to address operational deficiencies;
- Review the available sight distance at the Site Access driveway;
- Review the proposed parking supply and assess the suitability for the proposed development; and
- Document findings and recommendations in a final report.

1.4 Horizon Year and Analysis Periods

The 2031 planning horizon year traffic scenario was selected for analysis of traffic operations in the study area. The weekday morning [AM] and weekday afternoon [PM] peak hours have been selected as the analysis periods for this study.

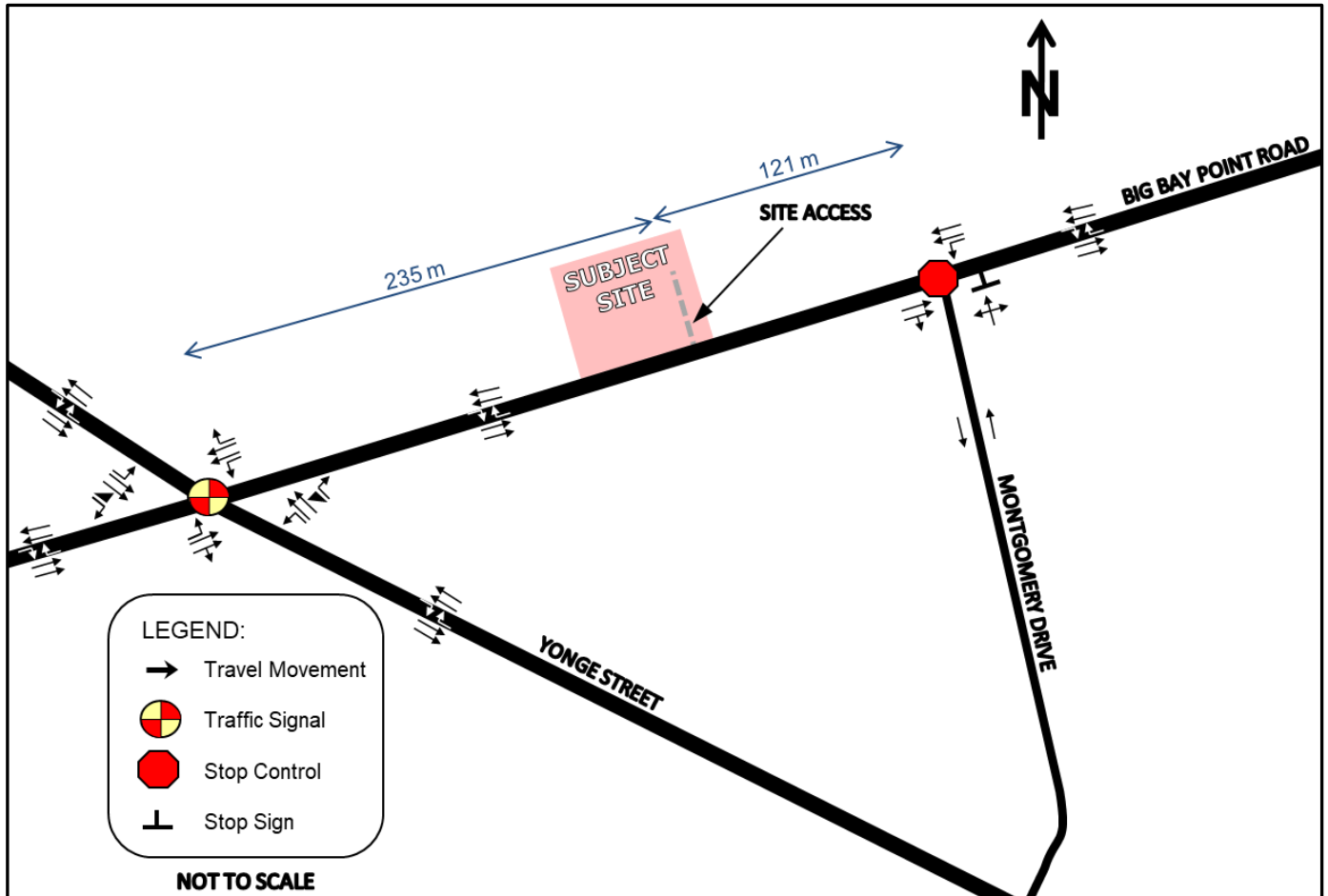
2 Information Gathering

2.1 Street and Intersection Characteristics

Big Bay Point Road is a five-lane arterial road with an urban cross-section and a sidewalk on both sides of the road, within the study area. Big Bay Point Road has a posted speed limit of 50 km/h in the study area and is under the jurisdiction of the City.

The existing intersection 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 City's Transportation Master Plan (2019) [TMP] there are no road improvements that will impact local traffic capacity or distribution of traffic. The City TMP did note cycle tracks are planned for Yonge Street in the medium-term (2024 – 2031) and for Big Bay Point Road in the long-term horizon (2032 - 2041).

No other infrastructure improvements are planned within the study area.

2.3 Other Developments within Study Area

Based on the City's development map, the 521 - 531 Big Bay Point Development is the only adjacent development that will impact traffic volumes in the study area.

2440511 Ontario Inc. is developing a residential development on a site municipally at 521, 527 and 531 Big Bay Point Road located on the south side of Big Bay Point Road midblock between Yonge Street and Montgomery Drive [521 – 531 Big Bay Point Development]. The 521 – 531 Big Bay Point Development will consist of 58 back-to-back townhouse units and will include a single full-movement driveway onto Big Bay Point Road (located approximately 6 metres west of the Site Access). JD Engineering completed a traffic letter for the 521 – 531 Big Bay Point Development (dated September 2017). The 521 – 531 Big Bay Point Development is site plan approved, however, there is no timeline for build-out.

It is anticipated that there will be redevelopment of the existing residential lots located east and west of the proposed development [Future Residential Development]. Although there are currently no plans for the Future Residential Development to access the municipal road network via the Site Access, we have included consideration for this alternative. It is anticipated that some of the Future Residential Development to the east of the subject site would include a full movement access driveway onto Big Bay Point Road across Montgomery Drive. As noted above, an application has not been submitted and there are currently no detailed plans for the Future Residential Development.

2.4 Projected Traffic Volumes

For the purpose of our analysis, the future traffic volumes on Big Bay Point Road have been estimated based on the City's TMP 2031 Emme Model Output. These traffic projections include the additional traffic generated by the anticipated development in and around the City (including the annexed lands) and also take into account the impact of changes to the road network (i.e.. Harvie Road / Big Bay Point Road overpass). **Table 1** illustrates the traffic volumes anticipated on Big Bay Point Road within the study area in the 2031 horizon year.

Table 1 – Big Bay Point Road 2031 Traffic Volumes within the Study Area

Direction	AM Peak Hour	PM Peak Hour
Eastbound	511	916
Westbound	849	529

3 Proposed Development Traffic Generation and Assignment

3.1 Traffic Generation

The traffic generation for the subject site has been based on the Institute of Transportation Engineers [ITE] Trip generation Manual (10th Edition) [ITE Trip Generation Manual]. The following ITE land uses have been applied to estimate the traffic from the subject site:

- ITE land use #220 (Multifamily Housing (Mid-Rise)) – General Urban/Suburban Setting

The estimated trip generation for the proposed development is illustrated below in **Table 2**. The AM and PM peak traffic generation for the proposed development is not expected to exactly align with the AM and PM peak hour in the EMME Model Output; consequently, we have applied the peak hour of adjacent street traffic values provided in the ITE Trip Generation Manual.

Table 2 – Estimated Traffic Generation of Proposed Development

Land Use	Size	AM Peak Hour			PM Peak Hour		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Multifamily Housing (Mid-Rise) ITE Land Use: 221	46 units*	4	13	17	13	8	21

* The proposed development will displace two single-detached units. We have not removed traffic from these two units as the impact to traffic will be negligible

No transportation modal split has been applied to the above-noted traffic generation calculation.

3.2 Traffic Assignment

For the purposes of this study, it has been assumed that all traffic generated by the proposed development will be new traffic and would not be in the study area if the development was not constructed.

The ITE data provides the anticipated percentage of new residential traffic entering and exiting during the peak hour.

The distribution of the proposed development traffic beyond the local area has been calculated based on the 2016 Transportation Tomorrow Survey [TTS] data for zone 8528, retrieved using the Internet Data Retrieval System [IDRS] (result provided in **Appendix B**). TTS data provides surveyed origin and destination trip data for specific zones within the City and the Greater Toronto and Hamilton Area [GTHA].

Traffic distribution for the trips generated by the subject site during the AM and PM peak hour is expected to generally follow commuter travel patterns. Our analysis is based on egress 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.

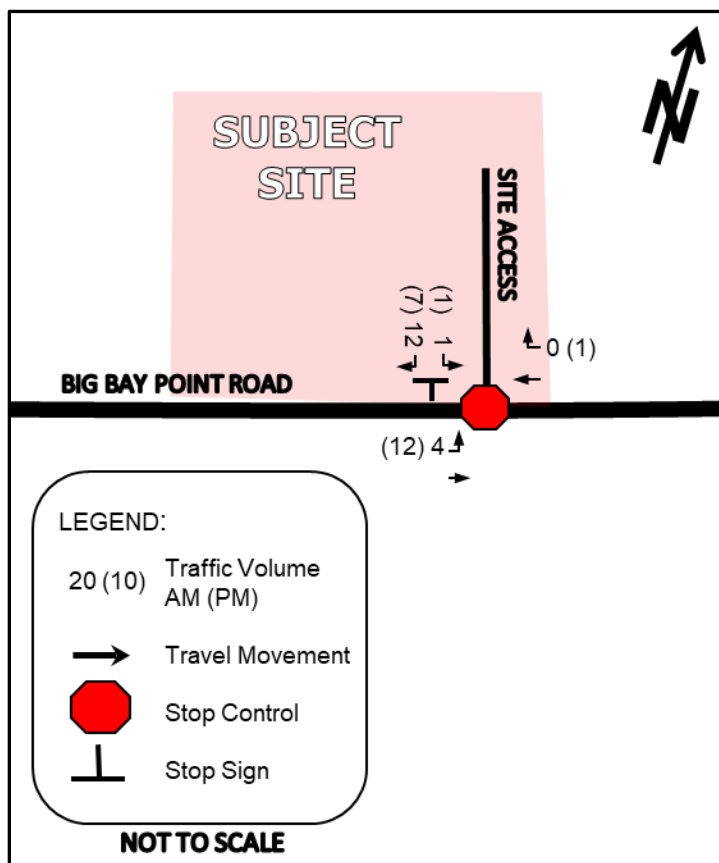
Table 3 summarizes the trip distribution for the proposed development.

Table 3 – Proposed Development Traffic Distribution Summary

Travel Direction (to/from)	Percent of Total Traffic Generation
West via Big Bay Point Road	90%
East via Big Bay Point Road	10%
Total	100%

Using the traffic distributions pattern noted above, the traffic assignment for the proposed development was calculated for the AM and PM peak hour and is illustrated in **Figure 3**.

Figure 3 – Traffic Assignment for Proposed Development



4 Intersection Operation with Proposed Development

4.1 Traffic Impact Analysis

Based on the City TMP, a five-lane arterial road has a lane auto capacity of 850 vehicles per hour. Consequently, the design capacity for Big Bay Point Road is 1,700 vehicles per hour in each of the eastbound and westbound directions.

The proposed development will generate approximately 17 AM and 21 PM peak hour trips.

Based on our review of the future traffic volumes on Big Bay Point Road at the subject site, as identified in the City's TMP 2031 Emme Model Output, Big Bay Point Road will be operating with a volume to capacity [V/C] ratio of between 0.11 to 0.35 during the AM and PM peak hour in the 2031 horizon year. This includes consideration for the Future Development lands, which we have assumed to have the same a traffic generation as the subject site. This indicates that the existing road provides significant excess capacity over the 11 year horizon to accommodate the additional traffic generated by the ultimate development of the subject site and the Future Development.

The proposed driveway configuration with a single ingress and egress lane and southbound stop control at the Site Access will provide sufficient capacity to service the proposed development.

4.2 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 (greater than 400 metres) and west (greater than 240 metres) of the Site Access is greater than the minimum stopping 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 60km/h (85 metres and 130 metres).

Consequently, there are no issues with the sight distance for the proposed Site Access driveway.

4.3 Site Access

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

The proposed spacing between the Site Access and Yonge Street (measured edge of driveway to edge of roadway) is in excess of the suggested minimum corner clearance requirements for a driveway as identified in the TAC Guidelines – Figure 8.8.2 (Suggested Minimum Corner Clearances to Accesses or Public Lanes at Major Intersections) – 70 metres for signalized condition

The proposed spacing between the Site Access and Montgomery Drive (measured edge of driveway to edge of roadway) is in excess of the suggested minimum corner clearance requirements for a driveway as identified in the TAC Guidelines – Figure 8.8.2 (Suggested Minimum Corner Clearances to Accesses or Public Lanes at Major Intersections) – 35 metres for unsignalized condition

The proposed Site Access is approximately 6 metres east of the proposed 521 – 531 Big Bay Point Development driveway (measured centre to centre of intersections). Generally speaking, offset intersections are not favorable as they can create overlapping turn and increase points of conflict; however, the number of movements between the Site Access and the proposed 521 – 531 Big Bay Point Development driveway is anticipated to be a negligible.

Consequently, the proposed configuration is acceptable for the intended use.

4.4 Parking Review

The Zoning By-law parking requirement for the subject site is summarized in Table 4. The subject site is zoned RA1-2.

Table 4 - Zoning By-law Parking Requirements

Category	Zoning By-Law Section	Parking Standard	Size	Parking	
				Required	Provided
Residential Parking	4.6	1.5 spaces / unit	46 units	69 spaces	57 spaces
Accessibility Parking	4.6.4	For required parking between 51 to 75 spaces, 1 Type A and 2 Type B parking spaces are required.	-	Type A: 1 space Type B: 2 spaces	Type A: 1 space Type B: 2 spaces

As outlined above, the subject site does not meet the parking requirement for the RA1-2 zoning; however, the proposed parking supply (1.24 spaces per unit) meets the City Zoning By-law parking requirement for a mixed-use development. The Mixed-Use Zoning By-law Amendment (By-law 2015-097), amended the City's parking table (Table 4.6) to state that residential uses located within a Mixed Use zone require 1 space per dwelling unit.

The subject site is not proposed as a mixed-use development; however, the area surrounding the subject site includes a mix of residential and commercial uses, consequently, the area surrounding the subject site has the attributes of a mixed-use development, when considered in aggregate. Furthermore, the subject site is located near the intersection of Yonge Street / Big Bay Point Road, which is identified as an intensification node in the City's Official Plan.

The existing development surrounding the subject site supports a car-free lifestyle. Within 500 metres of the subject site, there is an existing supermarket, pharmacy, post office, library, bank, restaurants, parks, elementary school, high school and a variety of other commercial uses. The subject site is well serviced by transit. City of Barrie Transit Route No. 3, Route No. 4 and Route No. 8 all pass through the intersection of Yonge Street / Big Bay Point Road, with transit stops for all directions of travel within 300 metres of the subject site. The Route No. 8 bus provides access to the Barrie South GO Station, with branching rail and bus service to the Greater Toronto Area.

Big Bay Point Road and Yonge Street both have existing sidewalk on both sides of the road. There is currently no dedicated bicycle infrastructure in the study area. However, as noted in Section 2.2. The City TMP recommends the installation of cycle tracks for Yonge Street in the medium-term (2024 – 2031) and for Big Bay Point Road in the long-term horizon (2032 - 2041).

The proposed parking supply provides one parking space per residential unit (46 spaces) and will reserve the remaining 11 parking spaces (0.24 spaces per unit) for visitor parking. The allocated

resident parking will be unbundled from the sale of the residential units, which will provide a financial disincentive to the use of residential parking.

The proposed visitor parking supply (11 spaces) is generally consistent with the residential visitor parking required for a number of similar municipalities. The Town of Collingwood, Town of Newmarket, Town of Bradford and Town of Orangeville all require 0.25 visitor parking spaces per unit for residential apartments. Applying this rate, the proposed development would require 11.5 visitor parking spaces per unit. Given the access to transit and the mixed-use nature of the area surrounding the subject site, the proposed 11 visitor parking spaces are anticipated to be sufficient to service the demand from the subject site.

Based on the ITE Parking Generation data (4th Edition), the average peak period parking demand for low-/mid-rise apartment units, during the critical period (weekday), is 1.23 spaces per unit for a suburban location and 1.20 for an urban location. This indicates that the proposed parking supply (1.24 spaces per unit) will exceed the anticipated average parking demand.

In order to provide additional incentive for reduced car dependence, the developer has committed to providing the following transportation demand management measures:

- An information display board will be provided in a central location in the apartment buildings to display travel information such as bicycle maps, local transit map/schedule and other relevant information;
- Information packages will be distributed to new residents including transit and cycling maps.

In summary, based on our review of the proposed development and the surrounding area, and in consideration of the recommended transportation demand management measures, the proposed parking supply of 46 resident parking spaces and 11 visitor parking spaces (1.24 parking spaces per unit) is acceptable for the intended use.

5 Summary

Morriello Construction Ltd. retained **JD Engineering** to prepare this traffic brief in support of the proposed residential development on a site municipally known as 520 and 526 Big Bay Point Road in the City of Barrie. The proposed Site Plan is provided in **Appendix A**. This chapter summarizes the conclusions and recommendations from the study.

The proposed development will consist of 46 apartment units, with 46 resident parking spaces and 11 visitor parking spaces.

1. The proposed development is expected to generate 17 AM and 21 PM new peak hour trips in the study area.
2. An estimate of the amount of traffic that would be generated by the proposed development was prepared and assigned to the study area streets and intersections.
3. An intersection operation analysis was completed at the study area intersections based on the City's TMP 2031 Emme Model Output, with the proposed development traffic. No additional infrastructure improvements are recommended within the study area as a result of the proposed development.
4. The proposed Site Access will operate efficiently with one-way stop control for southbound movements. A single lane for ingress and egress movements at the Site Access driveway will provide the necessary capacity to convey the traffic volume generated by the proposed development.

5. The sight distance available for the Site Access meets the minimum stopping sight distance requirements.
6. The proposed parking supply (46 resident parking spaces and 11 visitor parking spaces) is sufficient for the intended use.
7. The developer has committed to providing the following transportation demand management measures:
 - Residential parking spaces will be unbundled from the sale of the residential units;
 - An information display board will be provided in a central location in the apartment buildings to display travel information such as bicycle maps, local transit map/schedule and other relevant information;
 - Information packages will be distributed to new residents including transit and cycling maps.
8. In summary, the proposed development will not cause any operational issues and will not have a notable impact on the traffic operations on the local roadway network.

Appendix A – Site Plan

Appendix B – Transportation Tomorrow Survey Excerpts

Tue Nov 24 2020 15:34:37 GMT-0500 (Eastern Standard Time) - Run Time: 2192ms Cross Tabulation Query Form - Trip - 2016 v1.1 Row: Planning district of destination - pd_dest Column: 2006 GTA zone of household - gta06_hhld Filters: (2006 GTA zone of household - gta06_hhld In 8528); and (Start time of trip - start_time In 700 - 900); and (Trip purpose of destination - purp_dest In W, R) Trip 2016 ROW : pd_dest COLUMN : gta06_hhld	Tue Mar 17 2020 14:14:24 GMT-0400 (Eastern Daylight Time) - Run Time: 2227ms Cross Tabulation Query Form - Trip - 2016 v1.1 Row: 2006 GTA zone of household - gta06_hhld Column: 2006 GTA zone of destination - gta06_dest Filters: (2006 GTA zone of household - gta06_hhld In 8528); and (Start time of trip - start_time In 700 - 900); and (Trip purpose of destination - purp_dest In W, R); and (Planning district of destination - pd_dest In 81)
--	---

Cross Tabulation Query Form - Trip - 2016 v1.1

Filter Variables

Planning district of desti... x ▾

2006 GTA zone of hous... x ▾

(Optional) Table Attribute ▾

Group Attributes

Row Grouping

Column Grouping

Table Grouping

Grouping file: Choose File No file chosen

Filter Selection +

☐ 2006 GTA zone of household ▾ In ▾

8528

And ▾

☐ Start time of trip ▾ In ▾

700 - 900

And ▾

☐ Trip purpose of destination ▾ In ▾

W, R

And ▾

☐ Regional municipality of household ▾ In ▾

Add

Delete

Output

☒ Comma-delimited table ☐ Column format

Expansion Factor On

Click to Select Load

Load

Execute Query

Select All

Save As

Tue Nov 24 2020 15:34:37 GMT-0500 (Eastern Standard Time) - Run Time: 2192ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of destination - pd_dest

Column: 2006 GTA zone of household - gta06_hhld

Filters:

2006 GTA zone of household - gta06_hhld In 8528

and

Start time of trip - start_time In 700 - 900

and

Trip purpose of destination - purp_dest In W, R

Trip 2016

Table:

,8528

PD 1 of Toronto,53

PD 10 of Toronto,16

Newmarket,28

Aurora,22

Vaughan,51

Mississauga,43

Barrie,841

Innisfil,7

Bradford-West Gwillimbury,34

New Tecumseth,8

Essa,50

Springwater,7

Oro-Medonte,59

Cross Tabulation Query Form - Trip - 2016 v1.1

Filter Variables

2006 GTA zone of desti... ✕ ▼

2006 GTA zone of hous... ✕ ▼

(Optional) Table Attribute ▼

Group Attributes

Row Grouping

Column Grouping

Table Grouping

Grouping file: Choose File No file chosen

Filter Selection +

☐ 2006 GTA zone of household ▼ In ▼

8528

And ▼

☐ Start time of trip ▼ In ▼

700 - 900

And ▼

☐ Trip purpose of destination ▼ In ▼

W, R

And ▼

☐ Planning district of destination ▼ In ▼

81

Add

Delete

Output

☒ Comma-delimited table☐ Column format

Expansion Factor On

Click to Select Load

Load

Execute Query

Select All

Save As

Tue Nov 24 2020 15:38:59 GMT-0500 (Eastern Standard Time) - Run Time: 2266ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: 2006 GTA zone of destination - gta06_dest

Column: 2006 GTA zone of household - gta06_hhld

Filters:

2006 GTA zone of household - gta06_hhld In 8528
and

Start time of trip - start_time In 700 - 900

and

Trip purpose of destination - purp_dest In W, R

and

Planning district of destination - pd_dest In 81

Trip 2016

Table:

,8528
 8501,82
 8504,41
 8508,47
 8509,22
 8510,110
 8511,52
 8514,75
 8516,19
 8521,22
 8523,23
 8524,121
 8526,7
 8527,172
 8528,11
 8529,8
 8530,14
 8532,15