

20 January 2022
Project: 200384

Nicole Cimadamore
Development Associate
New Horizon
200-3170 Harvester Road
Burlington ON L7N 3W8

Dear Ms. Cimadamore:

RE: ADDENDUM LETTER: 1842 KING STREET EAST RESIDENTIAL REDEVELOPMENT, TRANSPORTATION IMPACT STUDY, TDM OPTIONS AND ACCESS AND CIRCULATION REVIEW

Subsequent to submission of the above-noted report prepared by Paradigm¹, New Horizon (the Applicant) updated the site plan to address comments received from City of Hamilton Transportation Planning Staff.

This addendum letter has been prepared to outline the change in trip generation and resulting traffic impacts arising out of the change, if any.

Proposed Site Plan – April 2021

The April 2021 site plan proposed a two-phase development containing a total of 1,461 units: 1,381 condominium units in four 12-storey buildings and 80 stacked townhouse units:

- ▶ Phase 1:
 - 40 stacked townhouses; and
 - 665 high-rise apartments units.

Buildout of Phase 1 was expected in 2022.

- ▶ Phase 2:
 - 40 stacked townhouses; and
 - 716 high-rise apartment units

¹ 1842 King Street East, Residential Redevelopment Transportation Impact Study, TDM Options and Access and Circulation Review Paradigm, April 2021.

Buildout of Phase 2 was expected in 2025.

Access to the redeveloped site was proposed via one driveway connection to King Street East (Phases 1 and 2) and one driveway connection to Lawrence Road (Phase 2).

A total of 1,688 parking spaces were proposed to service the redeveloped site.

Trip Generation

The site was estimated to generate a total of 449 AM peak hour trips and 533 PM peak hour trips (**Table 1**).

TABLE 1: ORIGINAL TRIP GENERATION

Land Use Code	Units	AM Peak Hour				PM Peak Hour				
		Rate	In	Out	Total	Rate	In	Out	Total	
PHASE 1										
LUC 221 - Multifamily Housing (Mid-Rise)	40	FCE ¹	4	10	14	FCE ²	11	7	18	
LUC 222 - Multifamily Housing (High-Rise)	665	0.31	48	151	199	0.36	146	93	239	
Phase 1 Trip Generation			52	161	213		157	100	257	
PHASE 2										
LUC 221 - Multifamily Housing (Mid-Rise)	40	FCE ¹	4	10	14	FCE ²	11	7	18	
LUC 222 - Multifamily Housing (High-Rise)	716	0.31	53	169	222	0.36	157	101	258	
Phase 2 Trip Generation			57	179	236		168	108	276	
Total Site Trip Generation				109	340	449		325	208	533

$$^1\text{Ln}(T) = 0.98 \text{ Ln}(X) - 0.98$$

$$^2\text{Ln}(T) = 0.96 \text{ Ln}(X) - 0.63$$



Updated Site Plan (January 2022)

Site Statistics

The updated (January 2022) site plan proposes a two-phase development containing a total of 1,351 units: 1,271 condominium units in four buildings varying in height from seven stories (21 metres) to 13 stories (39 metres), and 80 stacked townhouse units located within four, four-storey buildings:

- ▶ Phase 1:
 - 40 stacked townhouses; and
 - 643 high-rise apartments units.

Buildout of Phase 1 is tentatively expected in 2026.

- ▶ Phase 2:
 - 40 stacked townhouses; and
 - 668 high-rise apartment units

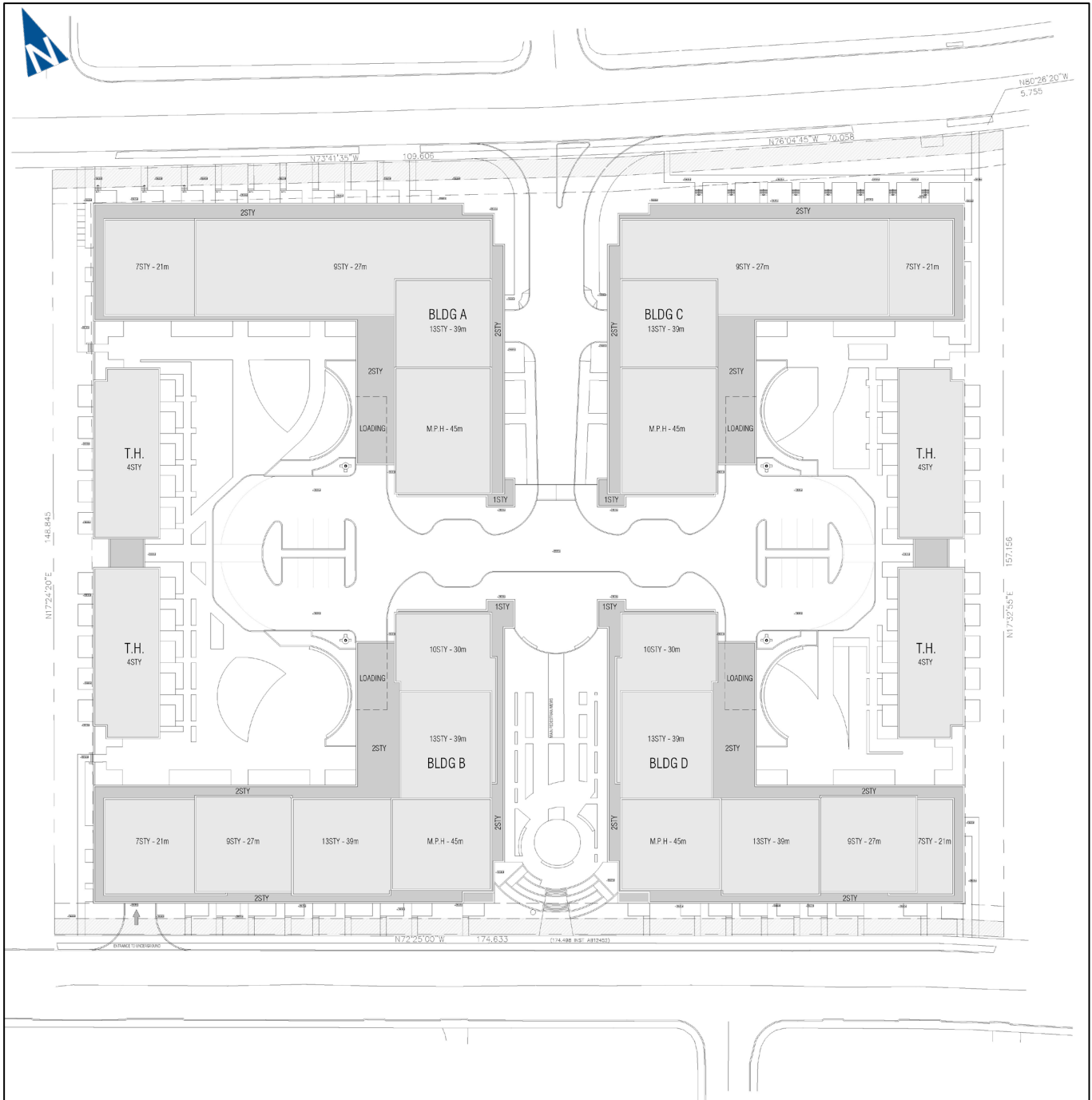
Buildout of Phase 2 is tentatively expected in 2028.

Access to the redeveloped site is proposed via one driveway connection to King Street East (Phases 1 and 2) and one driveway connection to Lawrence Road (Phase 2).

A total of 1,675 parking spaces are proposed to service the redeveloped site.

Figure 1 illustrates the January 2022 site plan.





Proposed Site Plan

Trip Generation

The following Institute of Transportation Engineers (ITE) Trip Generation Manual 11th Edition² Land Use Codes (LUC) were utilized in this study:

- ▶ **LUC 221 – Multifamily Housing (Mid-Rise):** Apartments and condominiums that have between four and 10 floors of living space; and
- ▶ **LUC 222 – Multifamily Housing (High-Rise):** Apartments, townhouses, and condominiums in buildings that have more than 10 floors of living space.

The average rates were used for LUC 221 since criteria for use of the equation rates were not met. Equation rates were used for LUC 222 since criteria for their use were met.

It should be noted that these trip generation estimates have been prepared using the updated 11th Edition of the ITE Trip Generation Manual whereas the trip generation estimates for the original site plan (April 2021) were prepared using the 10th Edition rates.

The site is estimated to generate 348 AM peak hour trips and 409 PM peak hour trips.

Table 2 outlines the base trip generation for the site.

TABLE 2: UPDATED TRIP GENERATION

Land Use Code	Units	AM Peak Hour				PM Peak Hour				
		Rate	In	Out	Total	Rate	In	Out	Total	
PHASE 1										
LUC 221 - Multifamily Housing (Mid-Rise)	40	0.37	3	12	15	0.39	10	6	16	
LUC 222 - Multifamily Housing (High-Rise)	603	FC ¹	52	100	152	FC ²	101	79	180	
Phase 1 Trip Generation			55	112	167		111	85	196	
PHASE 2										
LUC 221 - Multifamily Housing (Mid-Rise)	40	0.37	3	12	15	0.39	10	6	16	
LUC 222 - Multifamily Housing (High-Rise)	668	FC ¹	56	110	166	FC ²	110	87	197	
Phase 2 Trip Generation			59	122	181		120	93	213	
Total Site Trip Generation				114	234	348		231	178	409

$$^1 T = 0.22(X) + 18.85$$

$$^2 T = 0.26(X) + 23.12$$

Appendix A contains the ITE 11th Edition trip generation graphs.

² Institute of Transportation Engineers. *Trip Generation Manual, 11th Edition*. 2021.



Trip Generation Comparison

The updated site plan results in a reduction of 101 trips, or about 22%, in the AM peak hour and 59 trips, or about 23%, in the PM peak hour when compared to the April 2021 trip generation.

Table 5 outlines the trip generation comparison.

TABLE 5: TRIP GENERATION COMPARISON

Site Plan Scenario	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
April 2021	109	340	449	325	208	533
January 2022	114	234	348	231	178	409
Trip Difference	5	-106	-101	-94	-30	-124

Site Traffic Impacts

The reduction in site trip generation will result in lower impacts on the surrounding road network than forecast in the 2021 report. Additionally, if the study horizon years were adjusted for five years beyond buildout of each phase (now 2031 and 2033 respectively), as is required to conform to the City's *Transportation Impact Study Guidelines*, the site traffic will account for a lower percentage of the overall traffic than forecast in April 2021 report, resulting in and even lower degree of impacts than realized solely through the trip generation reduction. Note that updated forecasts and analyses are not required (as per the City's comments) since the proposed site density has decreased.

Given the above, the following conclusions and recommendations regarding the site traffic impacts outlined in the April 2021 report are conservative and should be considered valid and applicable to the updated site plan:

April 2021 Conclusions:

- ▶ **2027 Future Total Traffic Operations:** The study area intersections are forecast to continue operating at overall acceptable levels of service and within capacity.

The site street approached on Cameron Avenue South and Barons Avenue South are forecast to operate at LOS F during the peak hours, with v/c ratios of 0.50 to 1.83 during the peak hours.

Inclusion of the site generated traffic increases delay at the study area intersections by 6 seconds or less during the AM peak hour and by 20 seconds or less during the PM peak hour. The largest increases in delay occur at King Street East and Barons Avenue South/Site Access 1 where all site traffic is assigned to the south approach.



- ▶ **2032 Future Total Traffic Operations:** The study area intersections are forecast to continue operating at overall acceptable levels of service and within capacity.

The site street approached on Cameron Avenue South and Barons Avenue South are forecast to operate at LOS D or LOS F with v/c ratios of 0.66 to 4.74 and greater during the peak hours.

Inclusion of the site generated traffic increases delay at the study area intersections by 2 seconds or less during the AM and PM peak hours. Significant increases in delay (>700 seconds) are forecast at King Street East and Barons Avenue South/Site Access 1 here all site traffic is assigned to the south approach.

- ▶ **Remedial Measures:** No offsite remedial measures are required to support redevelopment of the site.
- ▶ **Site Driveway Operations:** Limiting the site driveway to right-turn out only was the preferred alternative selected for further assessment to improve operations of the King Street East Site Access.
- ▶ **2027 Future Total Traffic Operations – with Trip Re-assignment:** The study area intersections are forecast to continue operating at overall acceptable levels of service and within capacity.

The southbound approaches on Cameron Avenue South and Barons Avenue South are forecast to operate at LOS F with v/c ratios of 0.45 to 1.87 during the peak hours.

- ▶ **2030 Future Total Traffic Operations – with Trip Re-assignment:** The study area intersections are forecast to continue operating at overall acceptable levels of service and within capacity.

The southbound approaches on Cameron Avenue South and Barons Avenue South are forecast to operate at LOS F with v/c ratios of 0.59 to an undefined value (PM peak hour at Barons Avenue South).

Overall, restricting the King Street East Site Access to right-turn out only will provide adequate levels of service on the driveway as well as the study area intersections.

April 2021 Recommendations:

- ▶ The City of Hamilton recognize the conclusions drawn above; and
- ▶ The site be permitted to develop with the site access turning restriction.

Conclusions and Recommendations

Conclusions

- ▶ Based on the updated plan, the site is forecast to generate 348 AM peak hour trips and 409 PM peak hour trips;
- ▶ The updated site plan results in a reduction of 101 trips (22%) in the AM peak hour and 124 trips (23%) in the PM peak hour when compared to the 2021 site plan; and



- ▶ The reduced trip generation for the site will result in lower impacts on the surrounding road network than forecast in the 2021 report; therefore, the findings of the 2021 report should be considered valid and applicable to the updated site plan.

Recommendations

- ▶ The City consider the findings of the April 2021 Traffic Impact Study applicable to the updated site plan.

Yours very truly,

PARADIGM TRANSPORTATION SOLUTIONS LIMITED



Jill Juhlke
C.E.T.
Senior Project Manager



Appendix A

Trip Generation Graphs



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

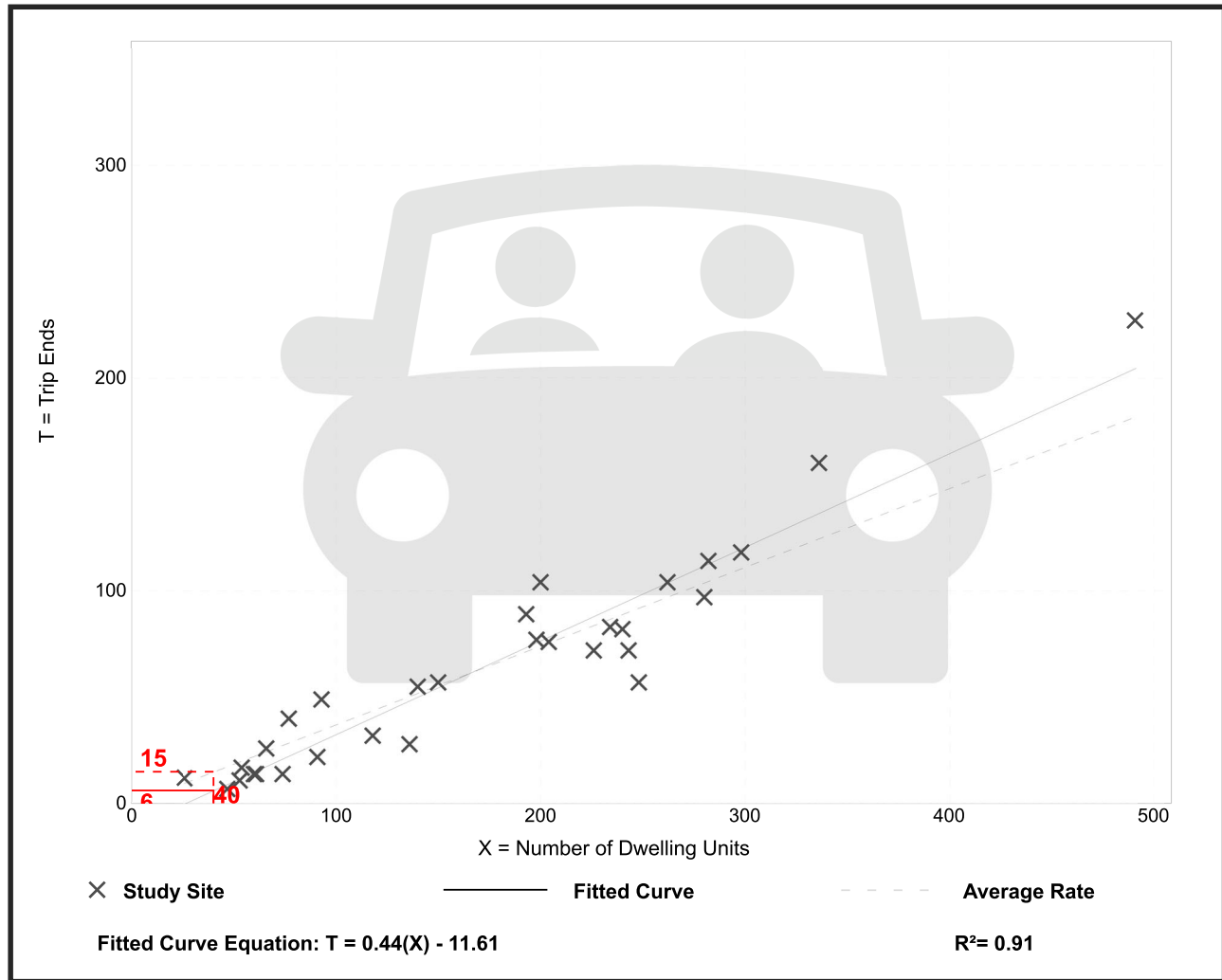
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 30
 Avg. Num. of Dwelling Units: 173
 Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.37	0.15 - 0.53	0.09

Data Plot and Equation



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

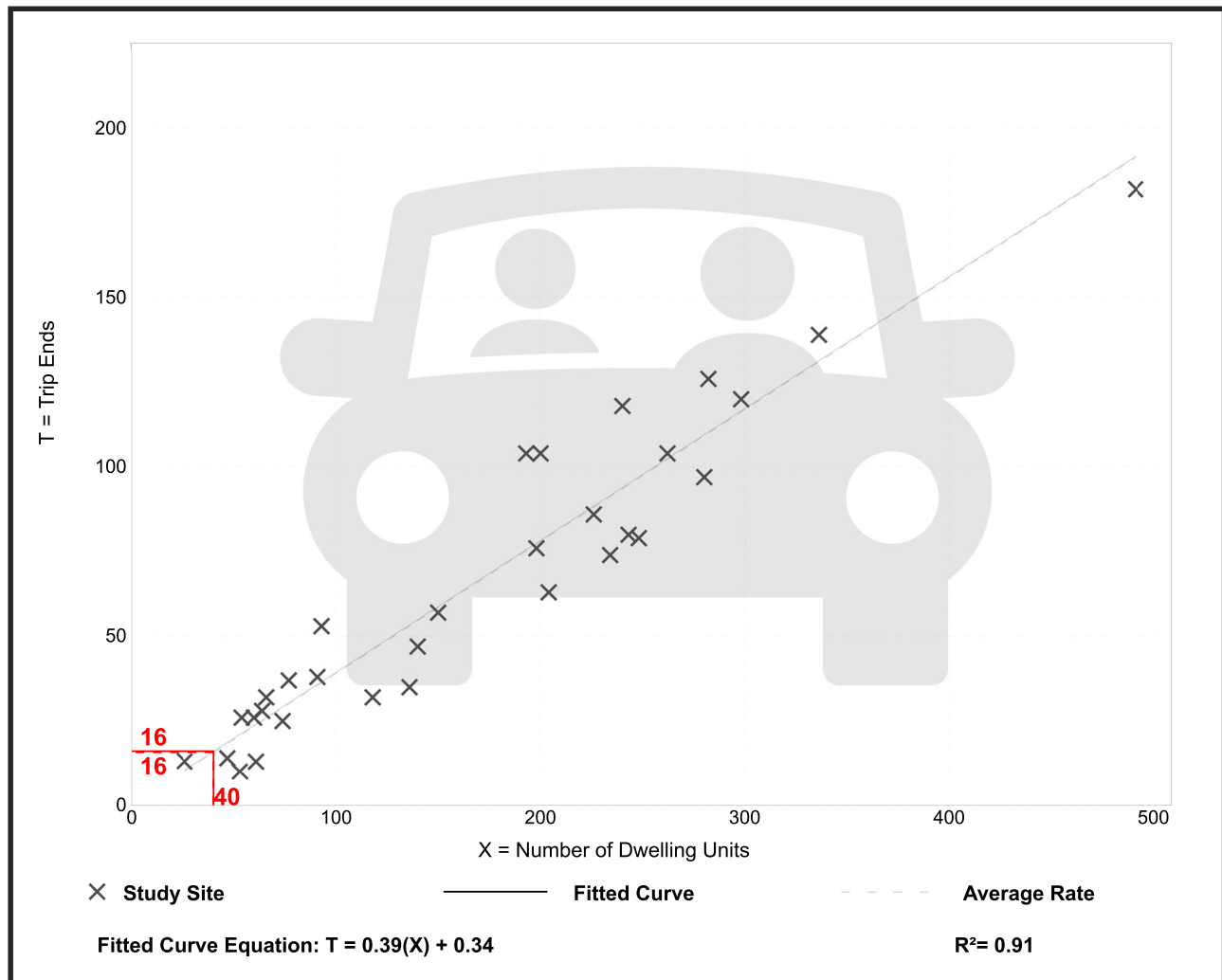
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 31
 Avg. Num. of Dwelling Units: 169
 Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.19 - 0.57	0.08

Data Plot and Equation



Multifamily Housing (High-Rise) Not Close to Rail Transit (222)

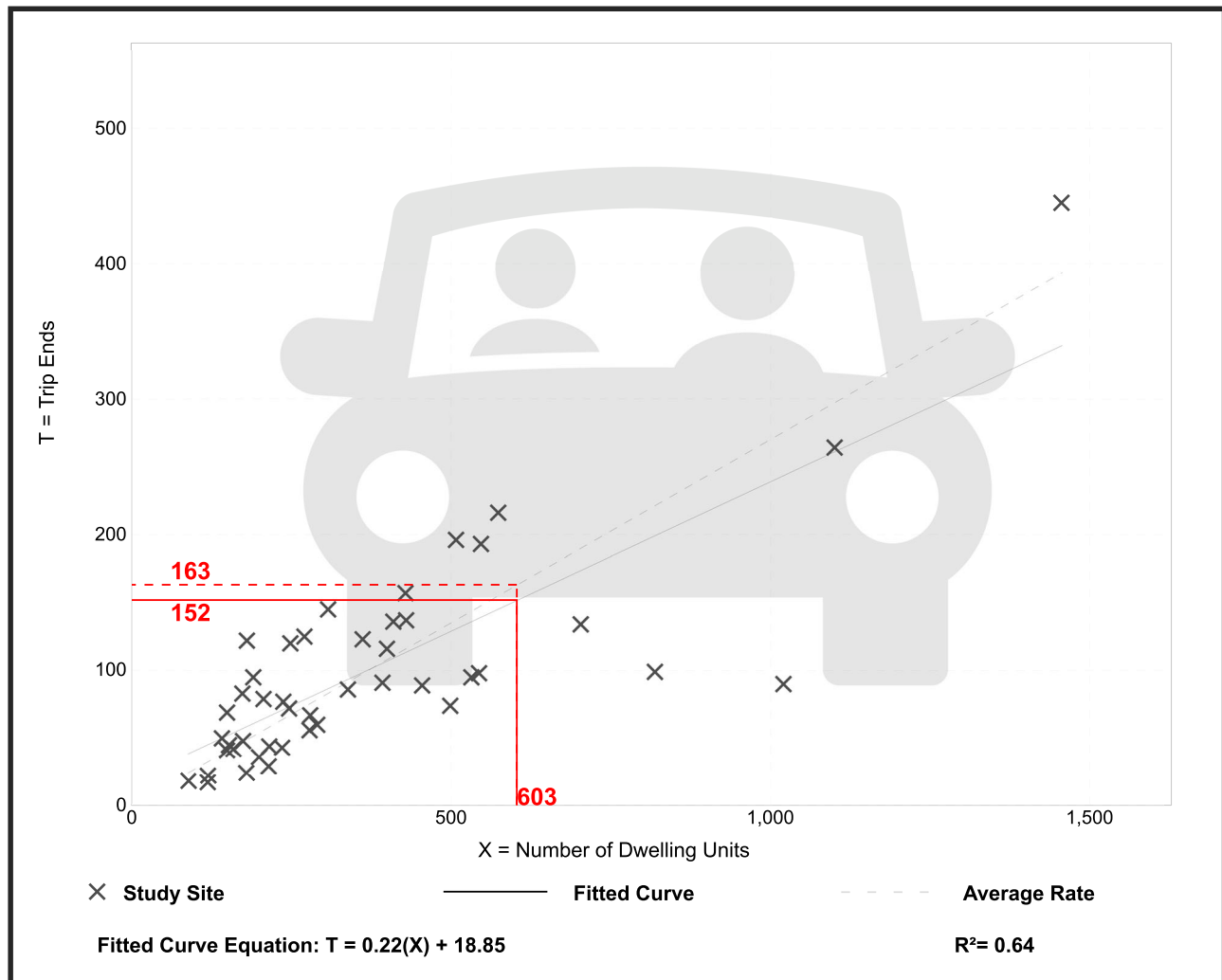
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 45
 Avg. Num. of Dwelling Units: 372
 Directional Distribution: 34% entering, 66% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.27	0.09 - 0.67	0.11

Data Plot and Equation



Multifamily Housing (High-Rise) Not Close to Rail Transit (222)

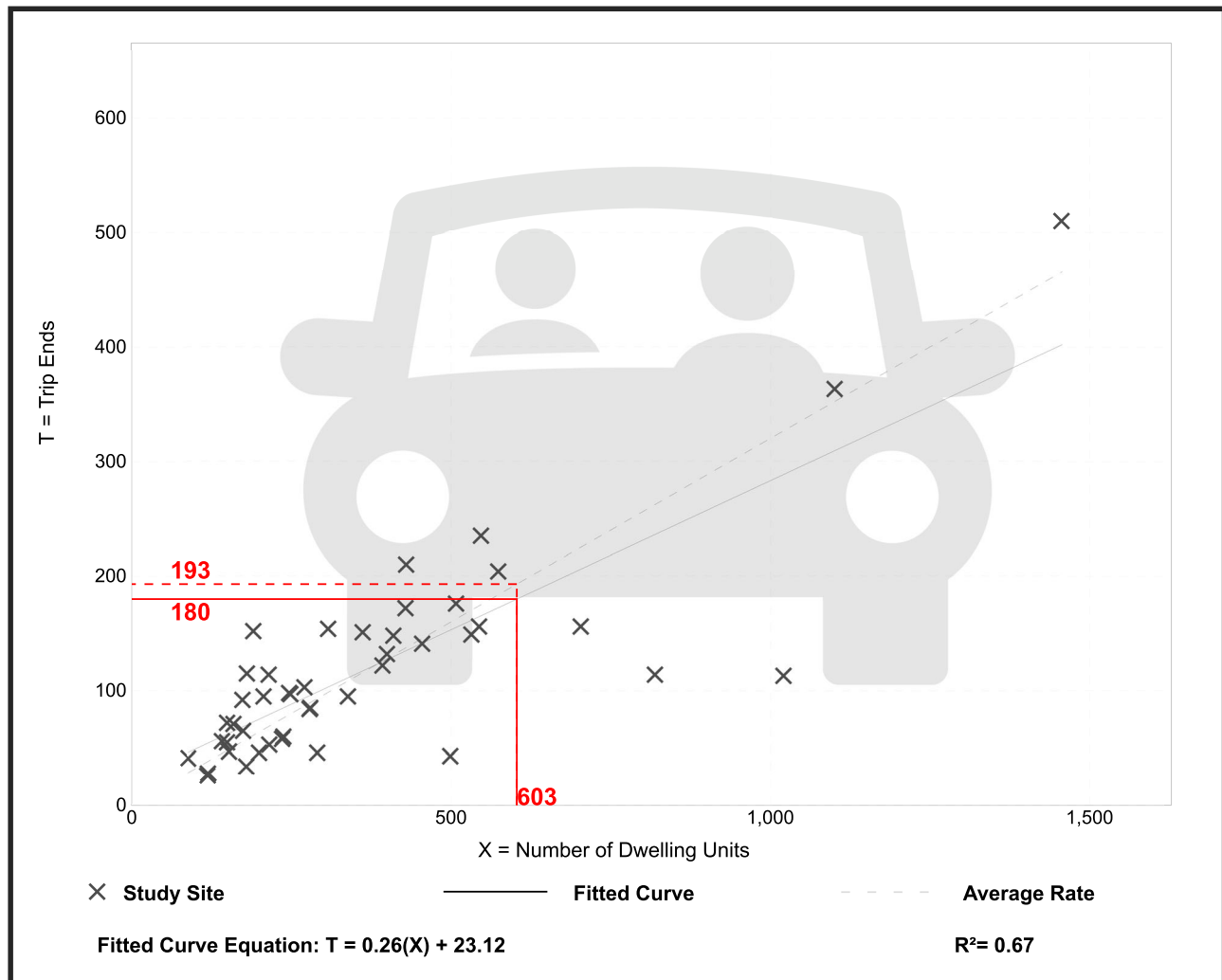
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 45
 Avg. Num. of Dwelling Units: 372
 Directional Distribution: 56% entering, 44% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.32	0.09 - 0.80	0.13

Data Plot and Equation



Multifamily Housing (High-Rise) Not Close to Rail Transit (222)

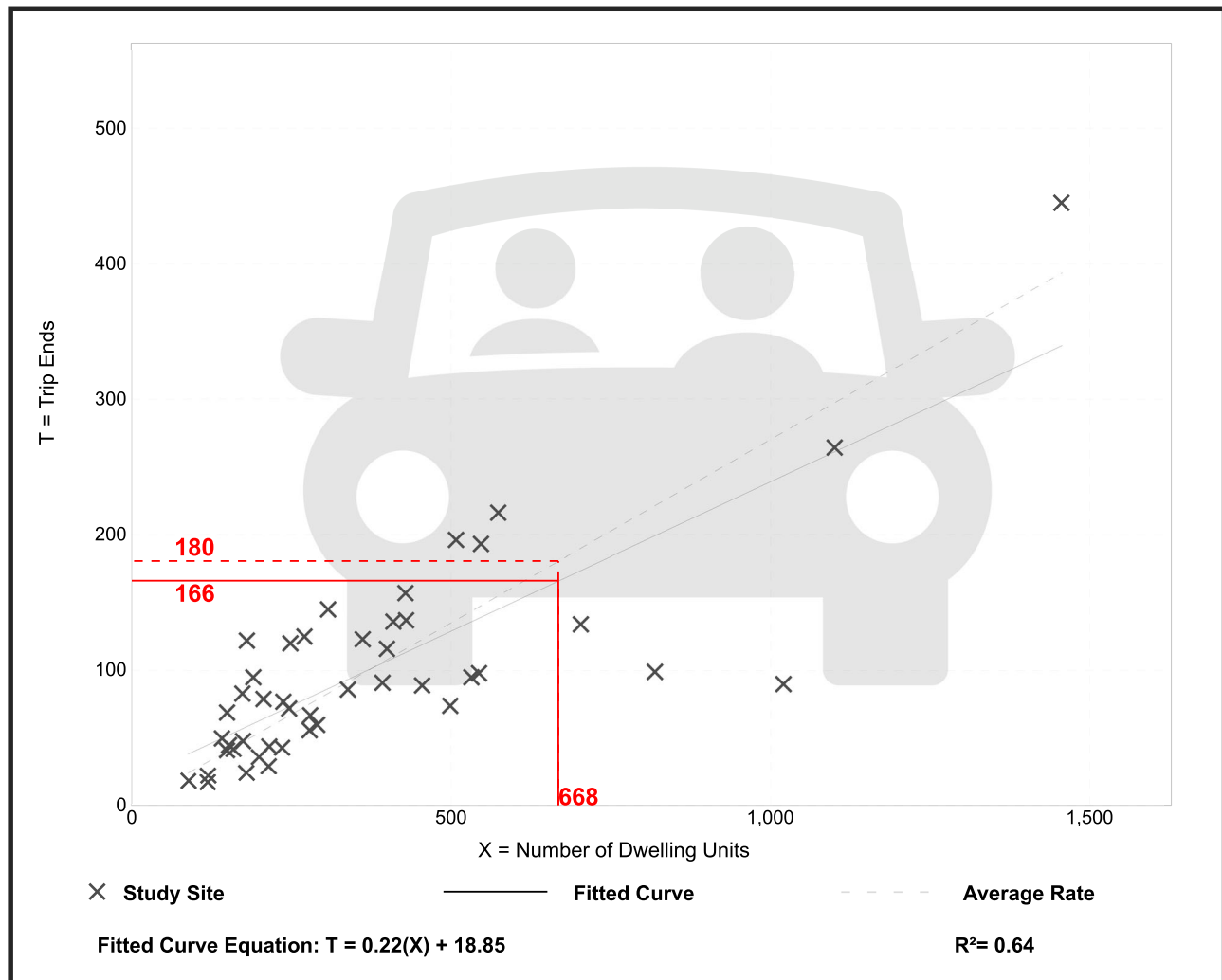
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 45
 Avg. Num. of Dwelling Units: 372
 Directional Distribution: 34% entering, 66% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.27	0.09 - 0.67	0.11

Data Plot and Equation



Multifamily Housing (High-Rise) Not Close to Rail Transit (222)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban
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 Avg. Num. of Dwelling Units: 372
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Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.32	0.09 - 0.80	0.13

Data Plot and Equation

