

January 09, 2024

Mr. David Hill

Beachcroft Investments Inc.
6-20 Cachet woods Court
Markham, ON
L6C 3G1

**Re: Proposed Residential Subdivision
63 and 63A Trafalgar Road (Wellington Road 24)
Town of Erin, County of Wellington
REVISED Transportation Study**

CGE Transportation Consulting is pleased to submit this REVISED Transportation Study for the above noted development. This report documents the transportation impacts and needs for the proposed residential subdivision Draft Plan of Subdivision situated on a parcel of land located on the east side of Trafalgar Road (Wellington Road 24), north of Wellington Road 22, in the Town of Erin, County of Wellington.

It is noted this is a scoped transportation study reflecting the early planning stages of the development of the Draft Plan of Subdivision and is being prepared in advance of the transportation functional design study and the draft plan approval.

Should you have any questions regarding this study, please do not hesitate to contact the undersigned.

Yours truly,

CGE TRANSPORTATION CONSULTING



Casey Ge, P.Eng.
President

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2023 Existing Condition

2031 Background Condition

2031 Full Build Condition

2036 Future Year Condition

1.0 INTRODUCTION

CGE Transportation Consulting was retained by Beachcroft Investments Inc. to prepare a Transportation Study for a proposed Draft Plan of Subdivision located on of land located on the east side of Trafalgar Road (Wellington Road 24), north of Wellington Road 22, in the Town of Erin, County of Wellington.

Existing Site Description:

The site is bounded by Trafalgar Road (Wellington Road 24) to the east, the Barbour Fields to the west, residential developments to the north and vacant land to the south. The site is presently vacant and is currently zoned as a *Future Development (FD) Zone*.

The location of the proposed development is illustrated in **Figure 1**.

Development Proposal Description:

Based on the most recent version of the proposed Draft Plan of Subdivision, dated November 14th, 2023, the proposal comprises of 376 single-family detached homes (including a heritage house) and 286 units of low-rise multifamily housing, totaling 662 residential units.

The Draft Plan of Subdivision also designates certain lands for future development. Notably, blocks 423 and 424 are under consideration for potential development as low-rise senior housing, with an estimated 75 low-rise senior townhouse units in block 423 and 188 senior mixed-use apartment units in block 424. Discussions with the property owner suggest that the development timeline for these future blocks extends beyond the scope of this current study. However, in response to feedback received during the initial submission, the anticipated traffic generated by these future blocks has been included for a conservative analysis.

The proposed development features five external access connections. These include a connection to Wellington Road via Street “1”, two connections to Trafalgar Road (Wellington Road 24) via Street “2” and Market Street/Street “16”, an access connection to Spruce Street via Street “3”, an access connection to Currie Drive via Street “4”.

The proposed Draft Plan of Subdivision is provided in **Figure 2**.

Scope of Work:

The purpose of this transportation study is to assess the effects of the development on the study area roadways and evaluate the need for auxiliary lanes at the proposed project accesses from Trafalgar Road (Wellington Road 24) and Wellington Road 22.

As previously mentioned, the scope of this transportation study aligns with the preliminary planning stages of the Draft Plan of Subdivision. It has been developed in anticipation of the transportation functional design study and the draft plan approval.

REVISED Transportation Study – 63 and 63A Trafalgar Road (Wellington Road 24)

The study area includes the following intersections, due to the expected low traffic volumes at the Spruce Street and Currie Street access points, these accesses were not included in the analysis.

- Wellington Road 22 & Trafalgar Road (Wellington Road 24)
- Wellington Road 22 & East Collector Road/Street “1”
- Trafalgar Road (Wellington Road 24) & Station Street/ Street “2”
- Trafalgar Road (Wellington Road 24) & Market Street/ Street “16”

The study analyzed the following scenarios:

- Existing 2023 Conditions
- Future Background 2031 Conditions
- Full Build 2031 Conditions
- Future Year 2036 Conditions

The analysis is developed for the weekday AM and weekday PM peak hours.



Notice of development on site

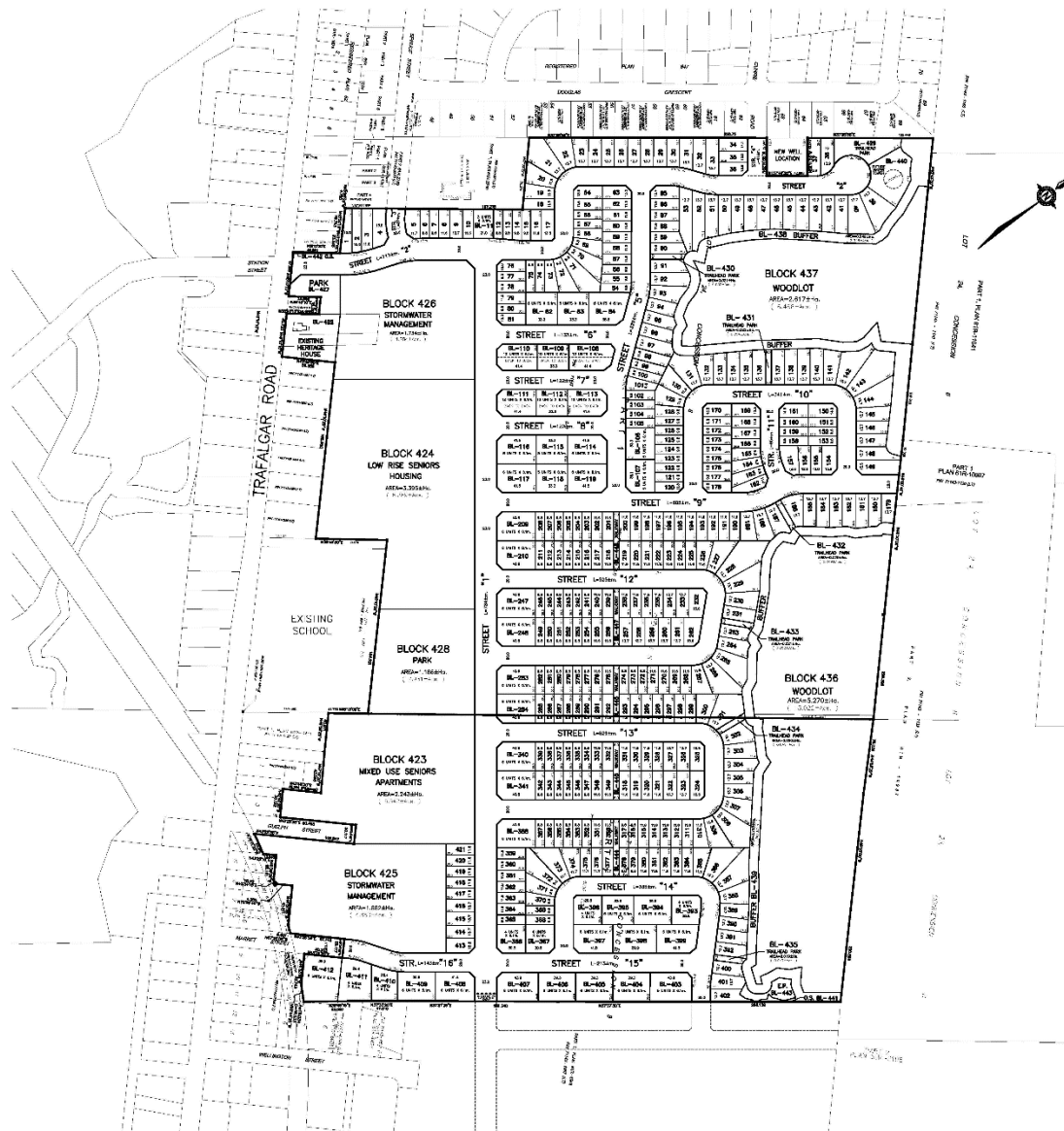
Figure 1 Site Location



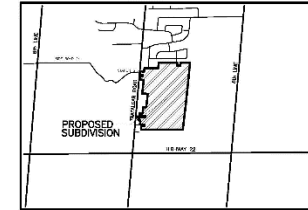
Source: Google Maps (N.T.S)

Figure 2 Proposed Draft Plan of Subdivision

DRAFT PLAN OF SUBDIVISION
 PART OF LOTS 23 AND 24, CONCESSION 8
 (GEOGRAPHICAL TOWNSHIP OF ERIN)
 PART OF LOTS 11 & 12 EAST OF MARKET STREET, PART OF LOT 14
 ALL OF LOTS 15 & 16 WEST OF MARKET STREET, PART OF LOTS 4
 AND 17, ALL OF LOTS 18, 19 AND 20, EAST OF GUELPH STREET,
 PART OF LOTS 21 & 22, ALL OF LOTS 23 & 24, WEST OF
 GUELPH STREET, REGISTERED PLAN 95
 (FORMERLY VILLAGE OF HILLSBURGH)
 NOW IN THE TOWN OF ERIN
 COUNTY OF WELLINGTON
 SCALE 1:2000



DRAFT PLAN 23T-



KEY PLAN

SECTION 51, PLANNING ACT,
 ADDITIONAL INFORMATION

- A. AS SHOWN ON DRAFT PLAN
- B. AS SHOWN ON DRAFT PLAN
- C. AS SHOWN ON DRAFT PLAN
- D. SEE SCHEDULE OF LAND USE
- E. AS SHOWN ON DRAFT PLAN
- F. AS SHOWN ON DRAFT PLAN
- G. AS SHOWN ON DRAFT PLAN
- H. MUNICIPAL PIPED WATER AVAILABLE AT TIME OF DEVELOPMENT
- I. CLAY-LOAM
- J. AS SHOWN ON DRAFT PLAN
- K. SANITARY AND STORM SEWERS, GARBAGE COLLECTION, FIRE PROTECTION
- L. AS SHOWN ON DRAFT PLAN

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE
 SUBDIVIDED AS SHOWN ON THIS PLAN, AND THEIR RELATIONSHIP TO
 THE ADJACENT LAND ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: _____, 2023

RAYMOND J. SETHORP
 C.E., D.P., R.S.

OWNER'S CERTIFICATE

I AUTHORIZE KLM PLANNING PARTNERS INC. TO PREPARE AND SUBMIT
 THIS DRAFT PLAN OF SUBDIVISION TO THE TOWN OF ERIN FOR APPROVAL.

OWNER

BEACHCROFT INVESTMENTS INC.

C/O
 BALLANTYNE HOMES
 20 CACKET WOODS COURT
 SUITE 8, MARKHAM ONTARIO
 L3C 3G1

DAVID HILL
 PRESIDENT

TOTAL AREA OF LAND TO BE SUBDIVIDED = 52.272±Hc. (129.186±Ac)

SCHEDULE OF LAND USE

DETACHED DWELLINGS	BLOCKS	LOTS	UNITS	#Hc.	±Ac.
LOTS 9, 21-24, 37-53, 81-97, 131-149, 154, 179-189, 228-234, 257-285, 300-306, 322-327, 365-362, 400- 402, and 413-418 WE LOT FRONTAGE = 63m WE LOT WIDTH = 112m.			116	116	8.002 14.831
LOTS 3-4, 8, 10, 16-20, 35-36, 67-65, 79-79, 85-90, 98, 129-130, 150, 155-157, 161, 167-170, 190-202, 217-227, 235-240, 255-256, 267-271, 275-278, 291-299, 308-315, 318-321, 325-333, 348-351, 359-364, 373-377, 380-385 and 417- 421 WE LOT FRONTAGE = 63m WE LOT WIDTH = 112m.			131	131	5.110 12.627
LOTS 1-2, 5-7, 12-15, 54-56, 66-77, 80-81, 89-105, 120-128, 151-153, 158-160, 162-166, 171-178, 203-208, 211-216, 241-246, 248-254, 272-274, 277-282, 285-290, 318-317, 334-339, 340-347, 352-357, 365, 368-372 and 378-379 WE LOT FRONTAGE = 63m WE LOT WIDTH = 112m.			128	128	4.170 10.304
STREET TOWNHOUSE DWELLINGS					
BLOCKS 11, 82-84, 106-107, 114-119, 209- 215, 247-248, 283-284, 340-341, 358, 368-367, 383-388 and 403-412 WE LOT FRONTAGE = 63m			40	218	4.734 11.669
BACK TO BACK TOWNHOUSE DWELLINGS					
BLOCKS 108-113 WE LOT FRONTAGE = 63m			6	68	6.654 1.616
EXISTING HERITAGE HOUSE					
LOT 422 WE LOT FRONTAGE = 63m			1	1	0.276 0.662
SUBTOTAL			46	376	662 20.945 51.759
BLOCK 423 - MIXED USE SENIORS HOUSING			1		2.243 5.542
BLOCK 424 - LOW RISE SENIORS HOUSING			1		3.395 8.389
BLOCKS 425-426 - STORM WATER MANAGEMENT			2		3.616 8.635
BLOCKS 427-428 - PARK			2		1.343 3.310
BLOCKS 429-430 - TRAILHEAD PARK			7		0.265 0.655
BLOCKS 436-437 - WOODLOT			2		7.867 19.408
BLOCKS 438-438 - BUTTER			2		1.702 4.205
BLOCK 440 - FUTURE WATER TOWER			1		0.191 0.472
BLOCKS 441-442 - OPEN SPACE			2		0.016 0.040
BLOCK 443 - ENVIRONMENTAL PROTECTION			1		0.074 0.183
BLOCKS 444-448 - WALKWAY			5		0.163 0.452
STREETS					10.411 25.728
23.0m WIDE: 10m LANE+10m+10m+10m+10m+10m 23.0m WIDE: 10m LANE+10m+10m+10m+10m+10m					
TOTAL			72	376	662 52.272 129.166

NOTE - ELEVATIONS RELATED TO
 CANADIAN GEODETIC DATUM

NOTE - SPECIAL DESIGN UNITS

KLM PROJECT No. P-3304
 SCALE 1:2000 NOV 14, 2023
 (3304-DES12) X-REF: (3304MAS & 3304MTOPO)
DWG. No. - 23:2
 PLANNING PARTNERS INC. 84 JARDIN DRIVE - UNIT 18, CONCORD ONTARIO L4K 3P8
 TEL: (905)669-4058 FAX: (905)669-0597 design@klmplanning.com
 Planning • Design • Development

(Not to Scale)

2.0 EXISTING AREA

2.1 Existing Roadway Conditions

A summary of the existing roadway conditions in the study area is presented below.

Trafalgar Road (Wellington Road 24) is a north-south arterial road under the jurisdictional control of the County. The roadway consists of two general-purpose lanes and maintains a posted speed limit of 40 km/h. The sidewalks along Trafalgar Road (Wellington Road 24) within the study area are not continuous.

Wellington Road 22 is an east-west arterial road under the jurisdictional control of the County. The roadway consists of two general-purpose lanes and maintains a posted speed limit of 80 km/h east of Trafalgar Road (Wellington Road 24) and 70 km/h west of Trafalgar Road.

Station Street is an east-west collector road under the jurisdictional control of the Town. The roadway comprises of two general-purpose lanes, and sidewalks are available on the north side of the roadway near the site.

Market Street is an east-west local road under the jurisdictional control of the Town. The roadway consists of two general-purpose lanes with no sidewalks.

2.2 Intersection Geometry

Wellington Road 22 & Trafalgar Road (Wellington Road 24) is a signalized intersection. The eastbound and westbound approaches consist of a single lane. The northbound and southbound approaches consist of a left-turn lane and a shared through-right lane.

Trafalgar Road (Wellington Road 24) & Station Street is a stop-controlled T-intersection. All approaches consist of a single lane.

Trafalgar Road (Wellington Road 24) & Market Street is a stop-controlled T-intersection. All approaches consist of a single lane.

Street “1” is proposed to be a full access connection to the proposed East Collector Road at Wellington Road 22. The East Collector Road will be located approximately 350 metres east of Trafalgar Road (Wellington Road 24).

Street “2” is proposed to be a full access connection to Trafalgar Road (Wellington Road 24). It is located approximately one kilometer north at Wellington Road 22 and will constitute the fourth leg of the existing Trafalgar Road (Wellington Road 24) & Station Street intersection.

Street “3” is proposed to be a full access connection to Spruce Street and will constitute the third leg of the Spruce Street & Douglas Crescent intersection. The conceptual draft plan suggests that the Spruce Street access connection will serve a low unit count and is in close proximity to other access points. This proximity suggests that the traffic volume would be low or negligible (less than 10 vehicles per hour). Consequently, this access has been excluded from the analysis.

Street “4” is proposed to be a full access connection to Currie Street and will constitute the fourth leg of the Douglas Crescent & Currie Drive intersection. Similarly, the draft plan suggests that the

Currie Drive access connection will serve a low unit count and is in close proximity to other access points, which would result in low or insignificant traffic volumes (approximately 4ph). Consequently, this access has been excluded from the analysis.

Street '16' is proposed to be a full access connection to Market Street at Trafalgar Road (Wellington Road 24). It is located approximately 250 metres north of Wellington Road 22.

2.3 Transit Services

There is no transit service in the vicinity of the site.

2.4 Traffic Volumes

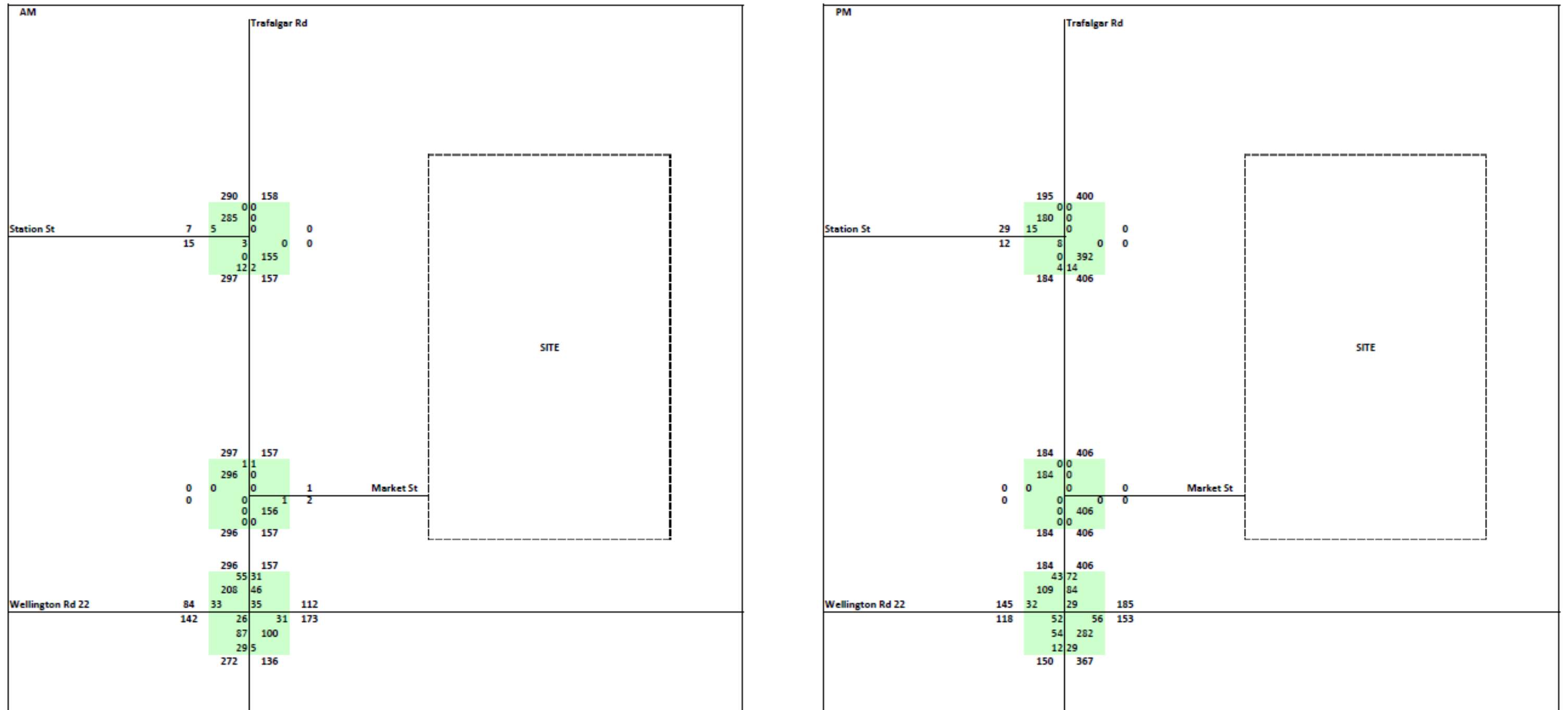
Traffic data collection for the study area intersections was performed on February 08, 2023. These volumes can be found in **Appendix A**.

Figure 3 displays existing traffic (balanced) volumes.



Posted 40km/h speed limit on Trafalgar Rd

Figure 3 Existing Traffic Volumes



(Not to Scale)

3.0 METHODOLOGY

3.1 Base Assumptions

Intersection capacity analysis was conducted using Synchro v11.0. Trip generation was calculated using the 11th edition of the Institute of Transportation Engineers (ITE) *Trip Generation Manual*.

Turn lane requirements were examined using the Transportation Association of Canada's (TAC) *Geometric Design Guide for Canadian Roads* as well as the *Geometric Design Standards for Ontario Highways by the Ministry of Transportation, Ontario*.

The signal timing plans for the Wellington Road 22 & Trafalgar Road (Wellington Road 24) intersection were retrieved from the *Hillsburgh Heights Inc Traffic Impact Study*.

3.2 Background Growth

As stated in the *Hillsburgh Heights Inc. Traffic Impact Study*, the County provided an annual growth rate of 2% for Trafalgar Road (Wellington Road 24) and Wellington Road 22 that was obtained from the County of Wellington. For a consistent analysis, the study increased the existing traffic volumes by 2% each year to approximate the background growth for future year conditions.

3.3 Background Trips

The *Hillsburgh Heights Inc. Traffic Impact Study* pertains to a site located immediately west of Trafalgar Road (Wellington Road 24) and approximately two kilometers north of Wellington Road 22. The most recent addendum to the study, dated February 2023, notes that Full Build conditions of the proposed residential subdivision development are expected to occur in 2026. In addition to this proposed development, the study accounts for background development trips from Carson Reid Homes Ltd., Thomasfield Homes Ltd., Chantler and another subdivision owned by Hillsburgh Heights Inc all located in the vicinity of the site. The map showing the location of the background developments is included in the appendices. The transportation study analysis includes trips generated by both the proposed and background development (**See Figures 4-8**).

The *Empire Erin Eighth Line Residential Subdivision Development Traffic Impact Study* pertains to a site at the existing Erin Heights Golf Course, located on the east side of Eighth Line Road, between Sideroad 17 and Dundas Street West. The most recent addendum to this study is dated October 2023. This transportation study analysis includes trips generated by the proposed development (**Figure 9**).

According to the pre-consultation meeting with Town officials, the Town is currently developing an expansion plan for the Barbour Fields Sports Plex (approximately 66 acres), situated east of the subject site. The proposed Draft Plan of Subdivision exhibits the roadway connections

between the two locations. The Barbour Field Multi-Use Community Centre conceptual plan includes a public park with various facilities, such as ball fields, basketball courts, soccer fields, picnic areas, dog parks, ice pads, and more, covering approximately 66 acres.

In order to estimate the projected trips that the centre will generate, the ITE Trip Generation Manual, 11th Edition, was utilized and the results have been included in the analysis. The trip generation graphs are also included in the appendices for reference. This transportation study analysis includes the trips generated by proposed fields expansion (**Figure 10**).

The Town of Erin's Official Plan proposes a minor collector road that will link Trafalgar Road (Wellington Road 24) to Wellington Road 22 and will pass through the proposed subdivision. The *Hillsburgh Heights Inc. Traffic Impact Study* referred to this new collector road as the "East Collector Road", which the study expects to be built by their 2026 horizon year. This new collector road has been included in the analysis.

As of December 2023, aside from the background developments totaled in **Figure 11**, the Regions and Towns Planning Website does not currently provide information regarding any additional anticipated background developments in the Hillsburgh Urban Area that could impact traffic in the study area.

3.4 Site Trip Generation

The updated plan proposes 376 single-family detached homes (inclusive of a heritage house) and 286 units of low-rise multifamily housing, for a total of 662 residential units.

The Draft Plan of Subdivision also designates certain lands for future development. Notably, blocks 423 and 424 are under consideration for potential development as low-rise senior housing, with an estimated 75 low-rise senior townhouse units in block 423 and 188 senior mixed-use apartment units in block 424. Discussions with the property owner suggest that the development timeline for these future blocks extends beyond the scope of this current study. However, in response to feedback received during the initial submission, the anticipated traffic generated by these future blocks has been included for a conservative analysis.

The *ITE Trip Generation Manual, 11th Edition* was used to estimate the projected trips by this development. **Table 1** contains the summary of the land uses and sizes used for trip generation estimates. The trip generation graphs are also included in the appendices for reference.

Table 1 Estimated Traffic Generation

AM Peak Hour						
Land Use & Data Source	Size		Method	Entry	Exit	Total
			Rate/Equation	Split%	Split%	
220 – Multifamily Housing (Low-Rise) – Not Close to Rail Transit	Dwelling Units	286	Best Fit (LIN)	27	85	112
			$T = 0.31(X) + 22.85$	24%	76%	
210 – Single-Family Detached Housing	Dwelling Units	376	Best Fit (LOG)	62	187	249
			$\ln(T) = 0.91\ln(X) + 0.12$	25%	75%	
251 – Senior Adult Housing – Single-Family	Dwelling Units	75	Best Fit (LOG)	10	21	31
			$\ln(T) = 0.76 \ln(X) + 0.16$	33%	67%	
252 – Senior Adult Housing – Multifamily	Dwelling Units	188	Best Fit (LIN)	12	25	37
			$T = 0.19(X) + 0.90$	34%	66%	
Total						429
PM Peak Hour						
Land Use & Data Source	IV	Size	Method	Entry	Exit	Total
			Rate/Equation	Split%	Split%	
220 – Multifamily Housing (Low-Rise) – Not Close to Rail Transit	Dwelling Units	286	Best Fit (LIN)	90	54	144
			$T = 0.43(X) + 20.55$	63%	37%	
210 – Single-Family Detached Housing	Dwelling Units	376	Best Fit (LOG)	217	128	345
			$\ln(T) = 0.94\ln(X) + 0.27$	63%	37%	
251 – Senior Adult Housing – Single-Family	Dwelling Units	75	Best Fit (LOG)	22	13	35
			$\ln(T) = 0.78 \ln(X) + 0.20$	61%	39%	
252 – Senior Adult Housing – Multifamily	Dwelling Units	188	Best Fit (LIN)	26	21	47
			$T = 0.25(X) + 0.07$	56%	44%	
Total						571

3.5 Trip Distribution

Trips for this proposed development were assigned to the surrounding roadway network based on existing traffic patterns and surrounding land uses.

The proposed trip distribution for this project in the AM peak hour is:

- 35% to/from south of Trafalgar Road (Wellington Road 24)
- 35% to/from east of Wellington Road 22
- 20% to/from north of Trafalgar Road (Wellington Road 24)
- 5% to/from west of Wellington Road 22
- 5% to/from west of Station Street

The proposed trip distribution for this project in the PM peak hour is:

- 35% to/from north of Trafalgar Road (Wellington Road 24)
- 25% to/from west of Wellington Road 22
- 10% to/from west of Station Street
- 20% to/from south of Trafalgar Road (Wellington Road 24)
- 10% to/from east of Wellington Road 22

Trips assignment was based on the location of the proposed access and is shown **Figure 12**. Future Background volumes for 2031 are shown in **Figure 13**. Future Total 2031 volumes are shown in **Figure 14**. Future Year 2036 volumes are shown in **Figure 15**.



Wellington Road 22 & Trafalgar Road (Wellington Road 24) – looking east (google image)

Figure 4 Carson Reid Homes Ltd Trips

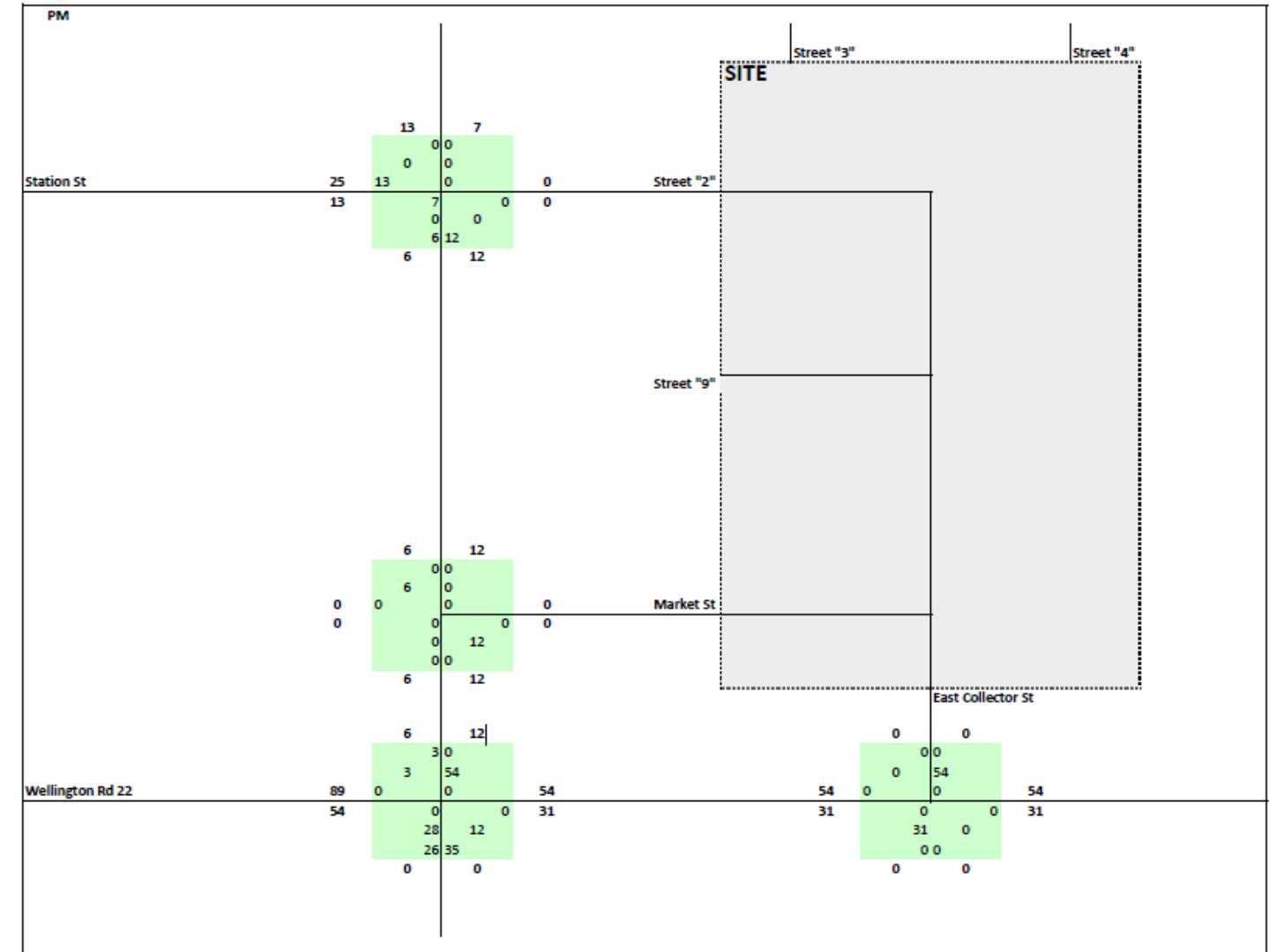
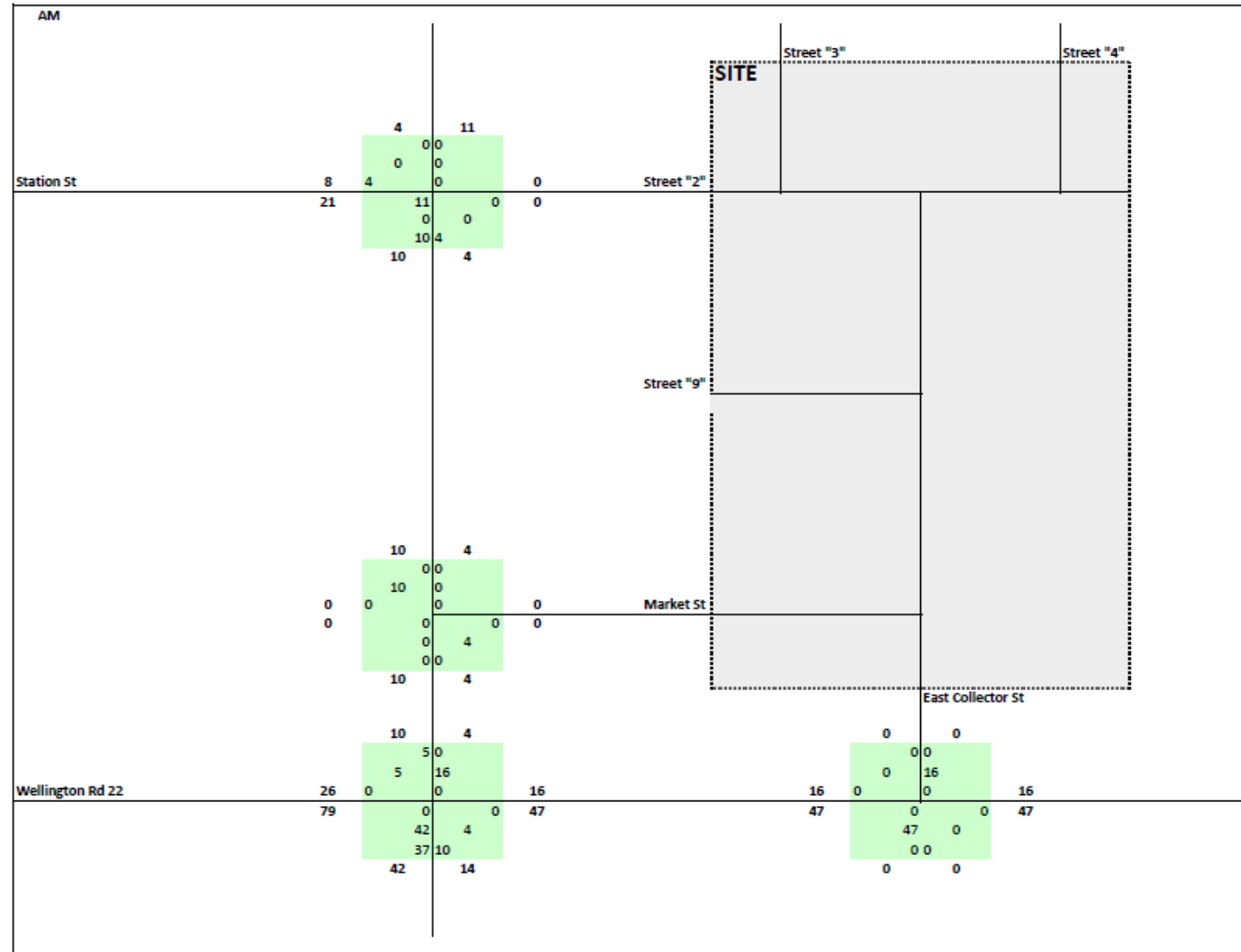


Figure 5 Thomas Field Homes Trips

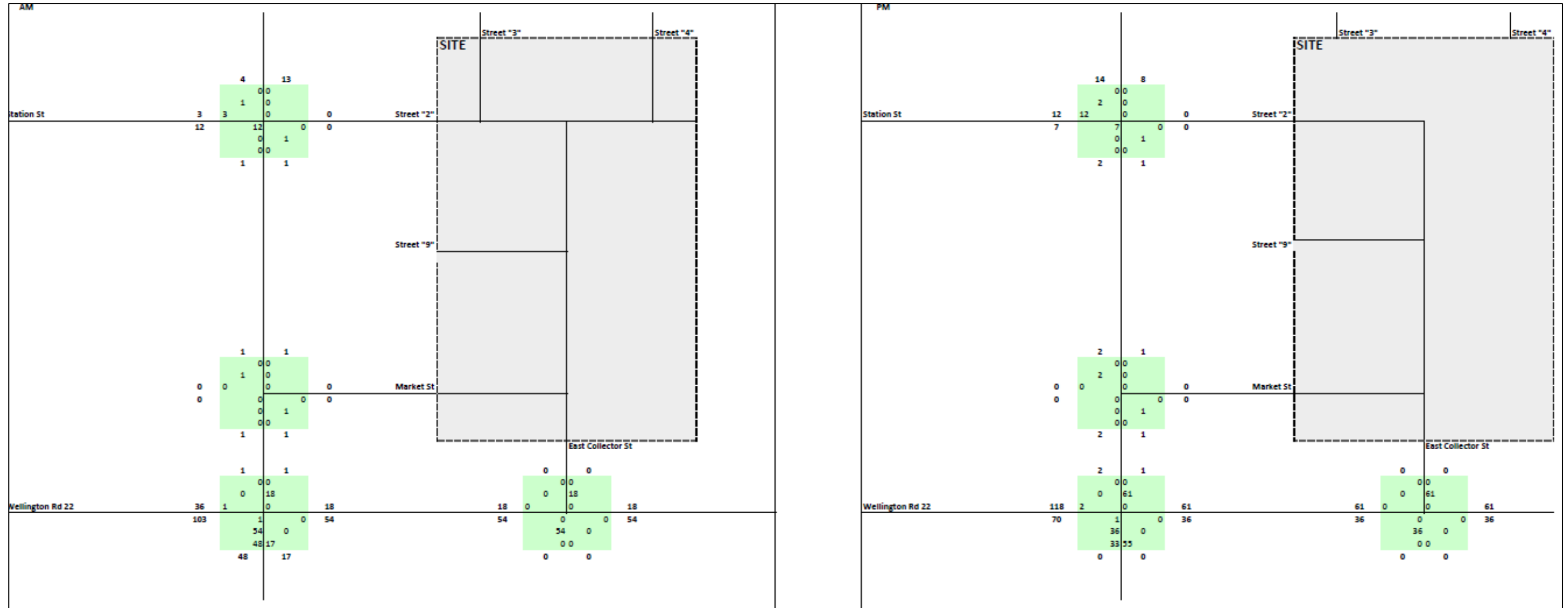


Figure 6 Chantler Trips

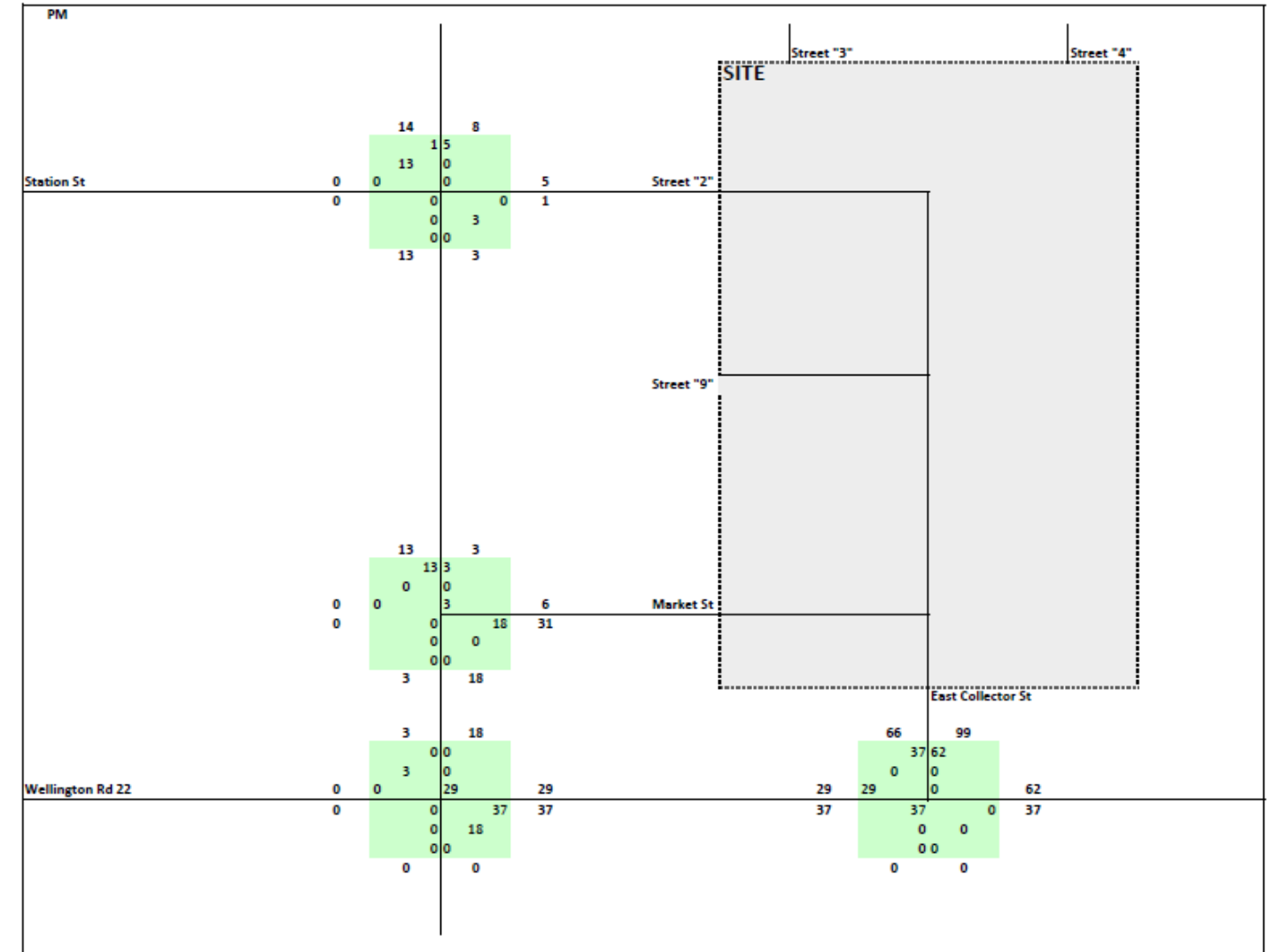
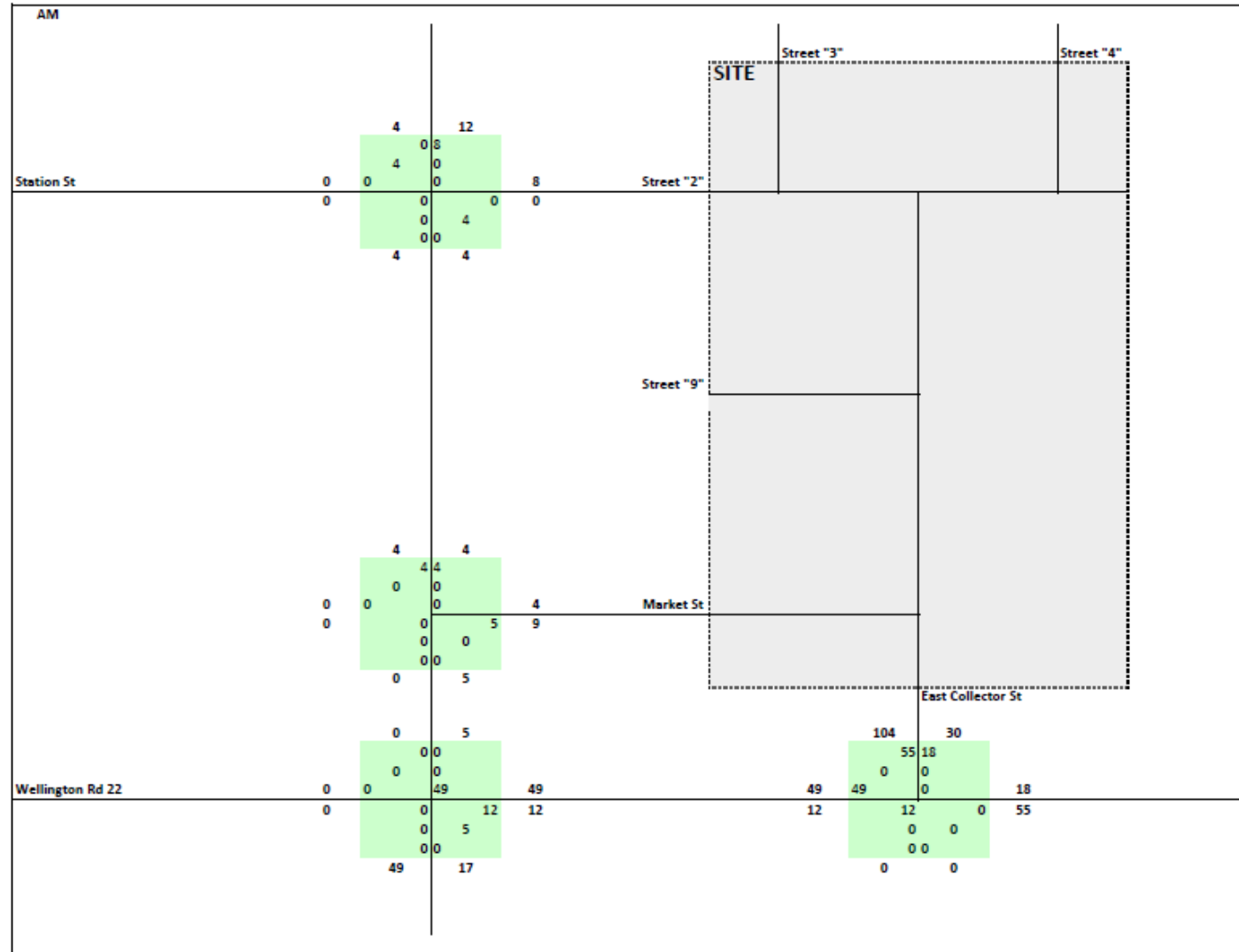


Figure 7 Hillburgh Heights (Property One) Trips

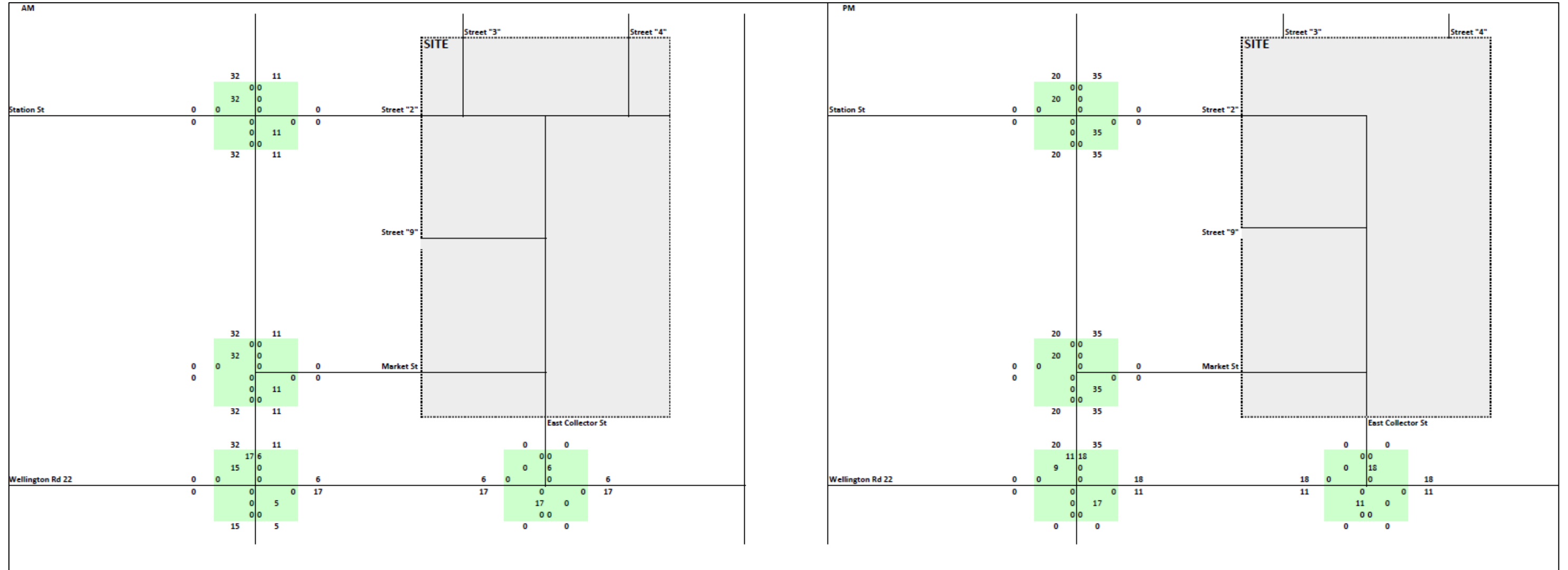


Figure 8 Hillburgh Heights (Property Two) Trips

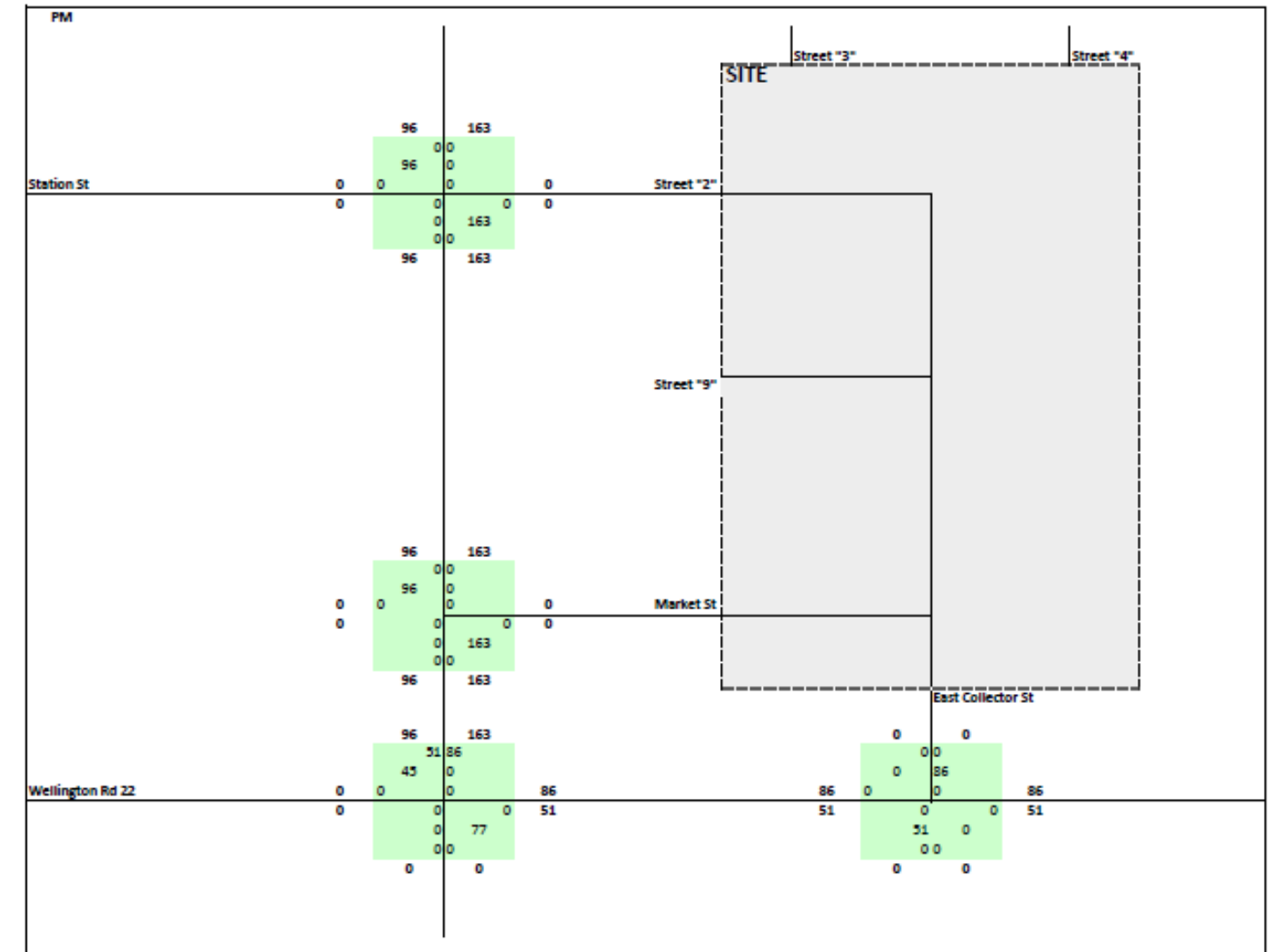
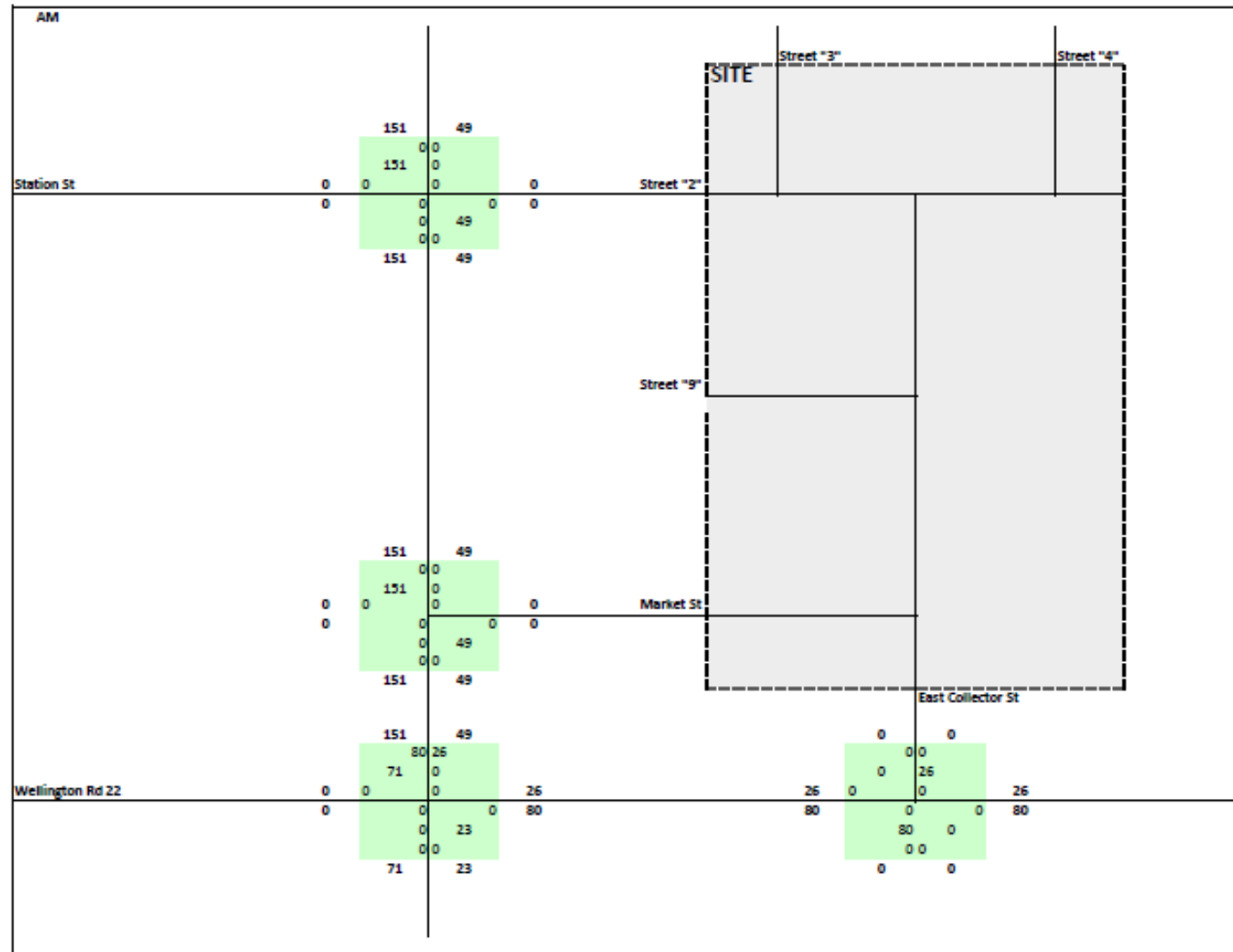


Figure 9 Empire Erin Eighth Line Residential Subdivision Development Trips

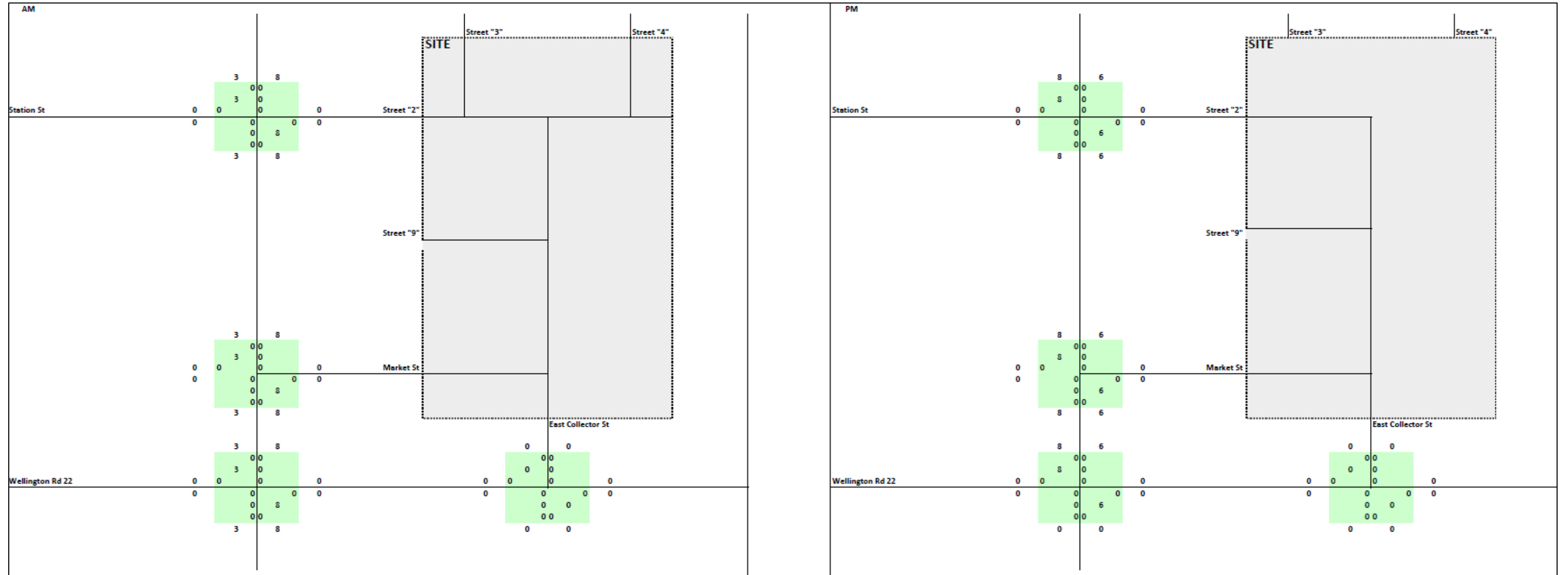


Figure 10 Barbour Field Sports Plex

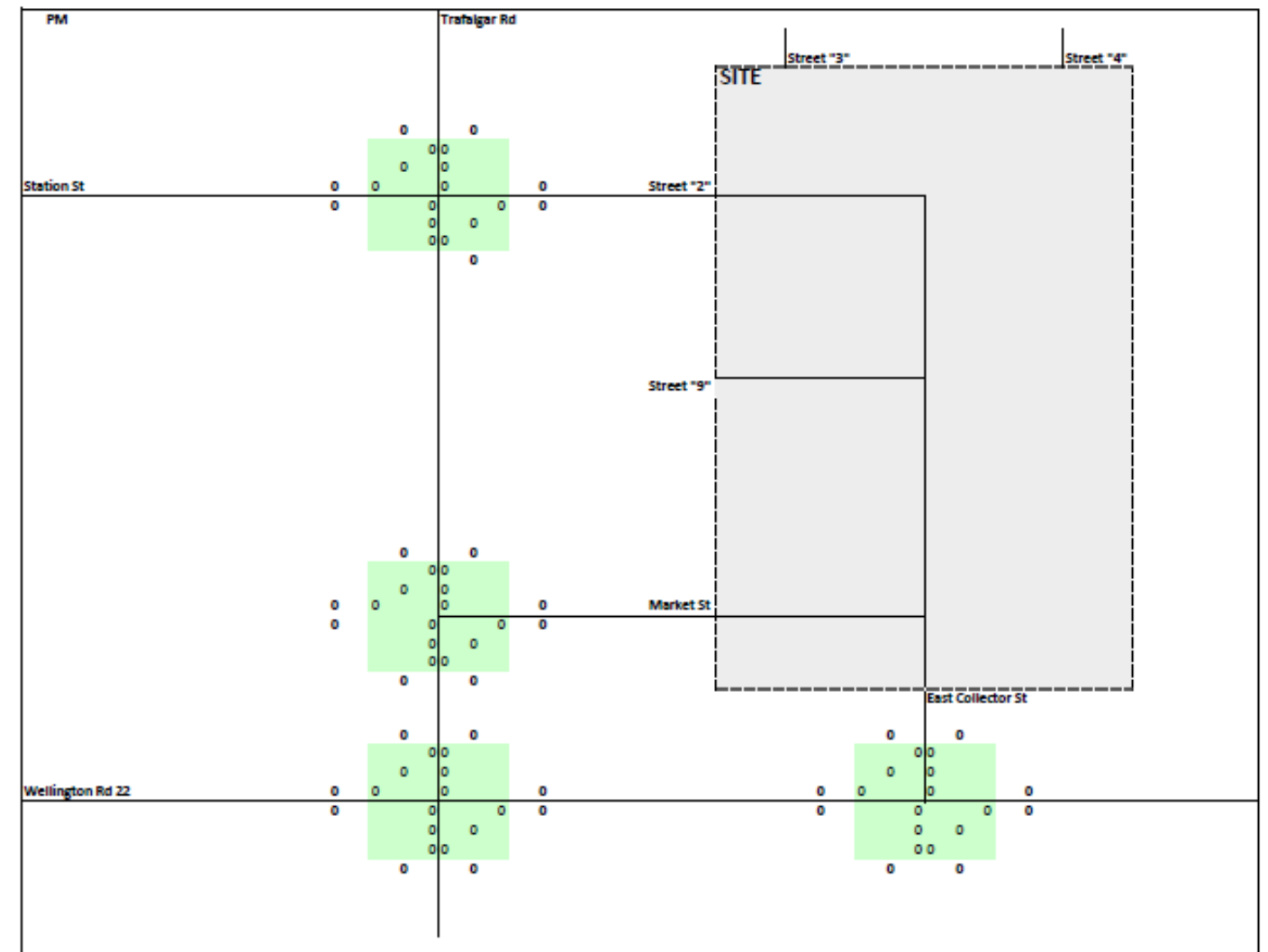
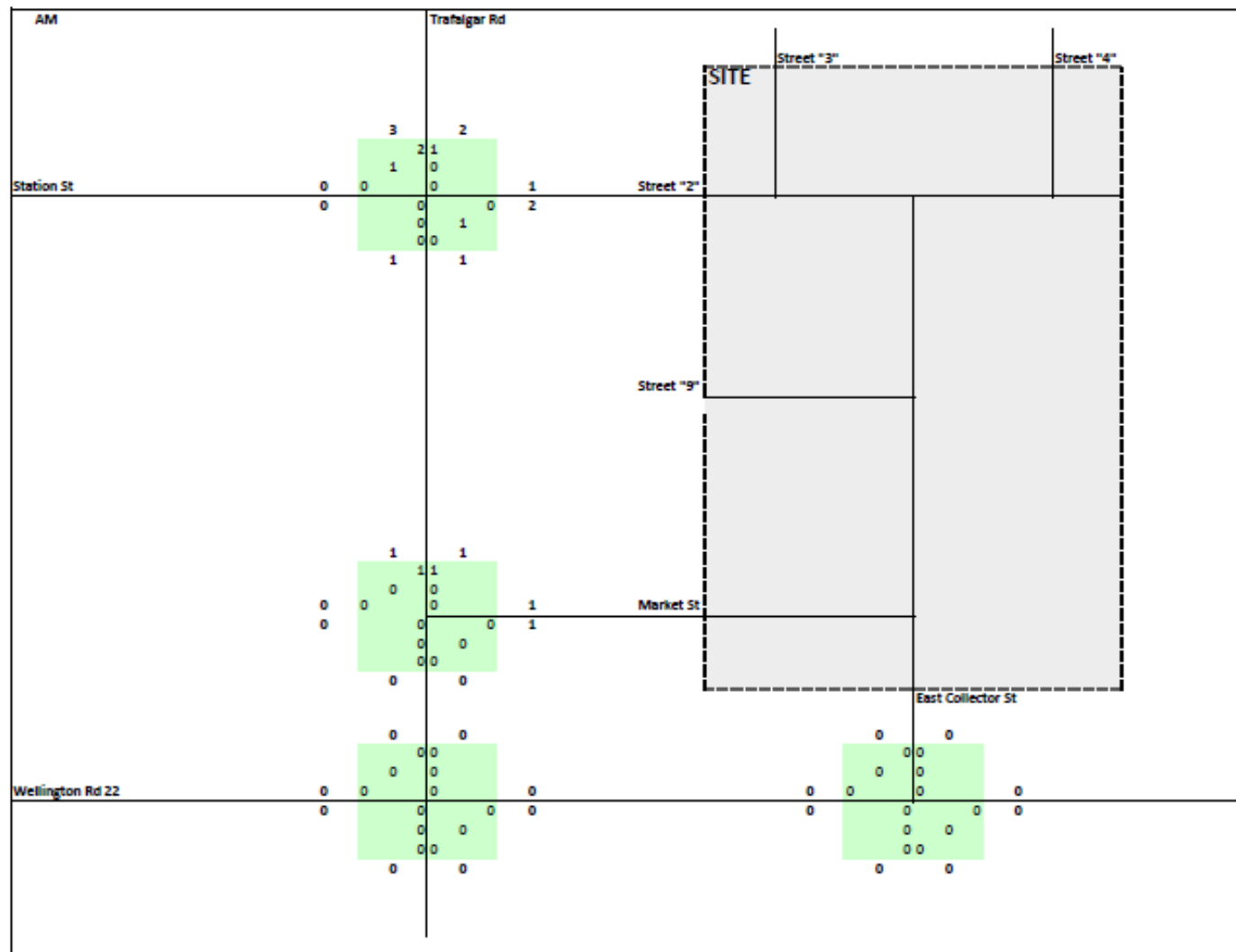


Figure 11 Background Development Site Trips

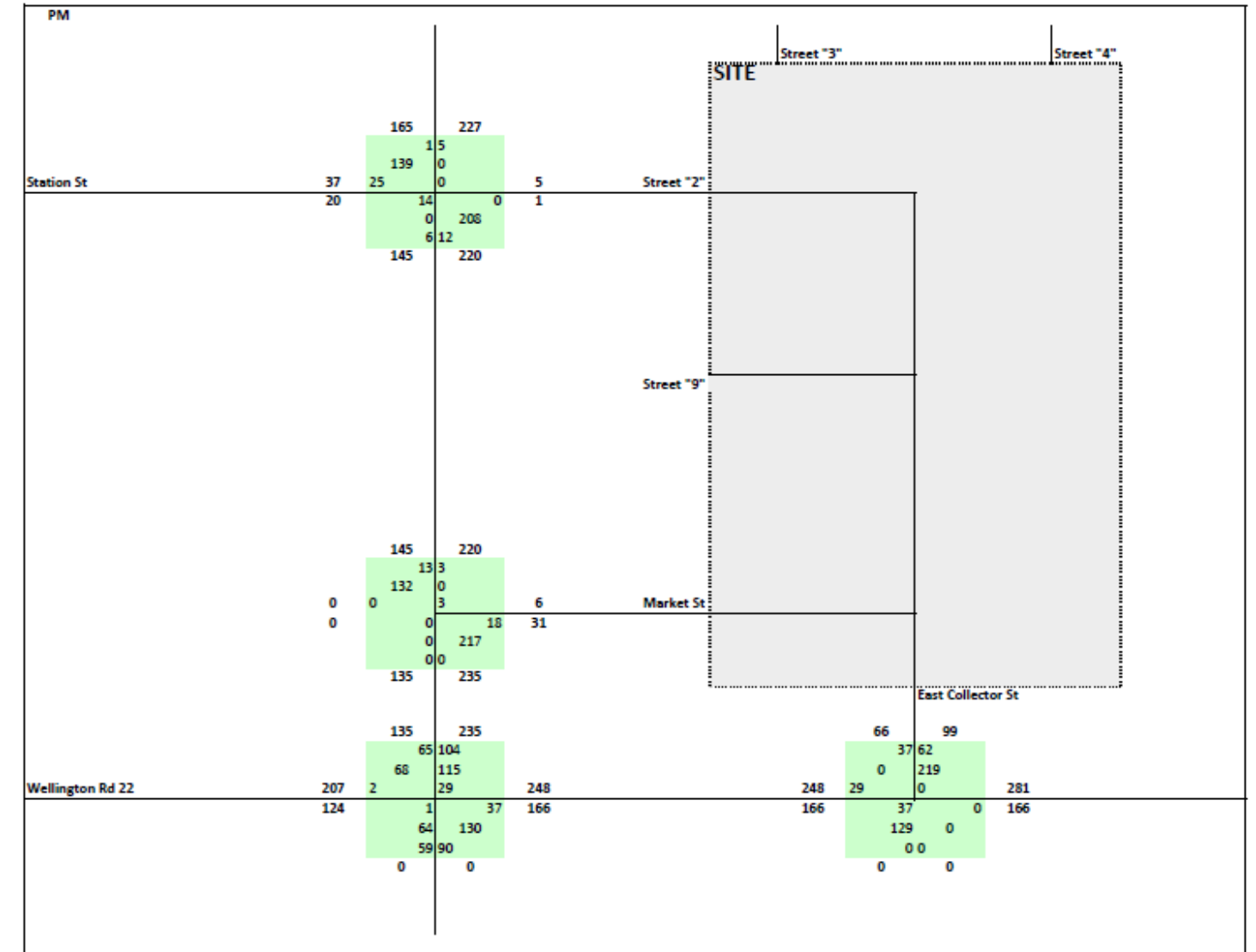
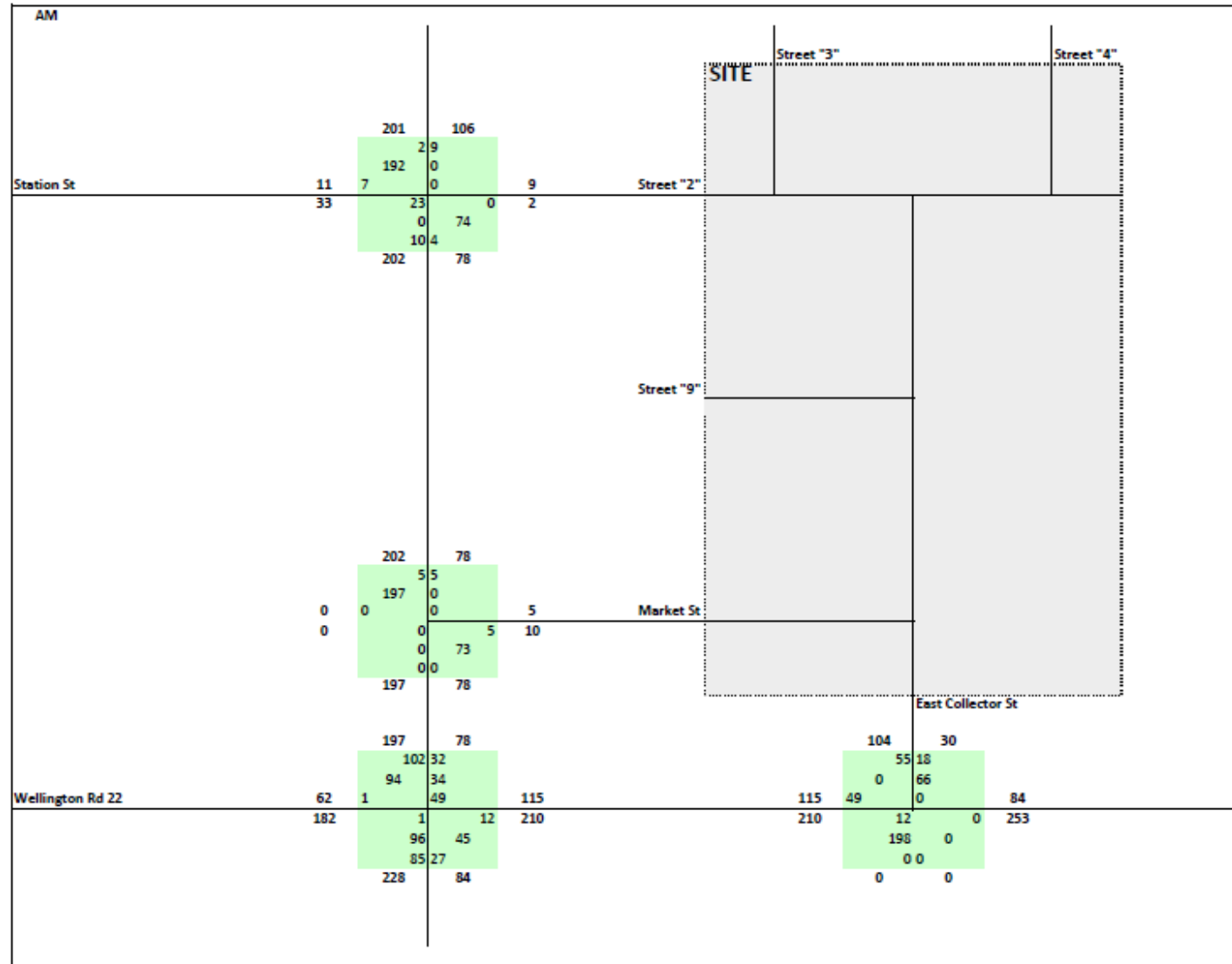


Figure 12 Site Trips

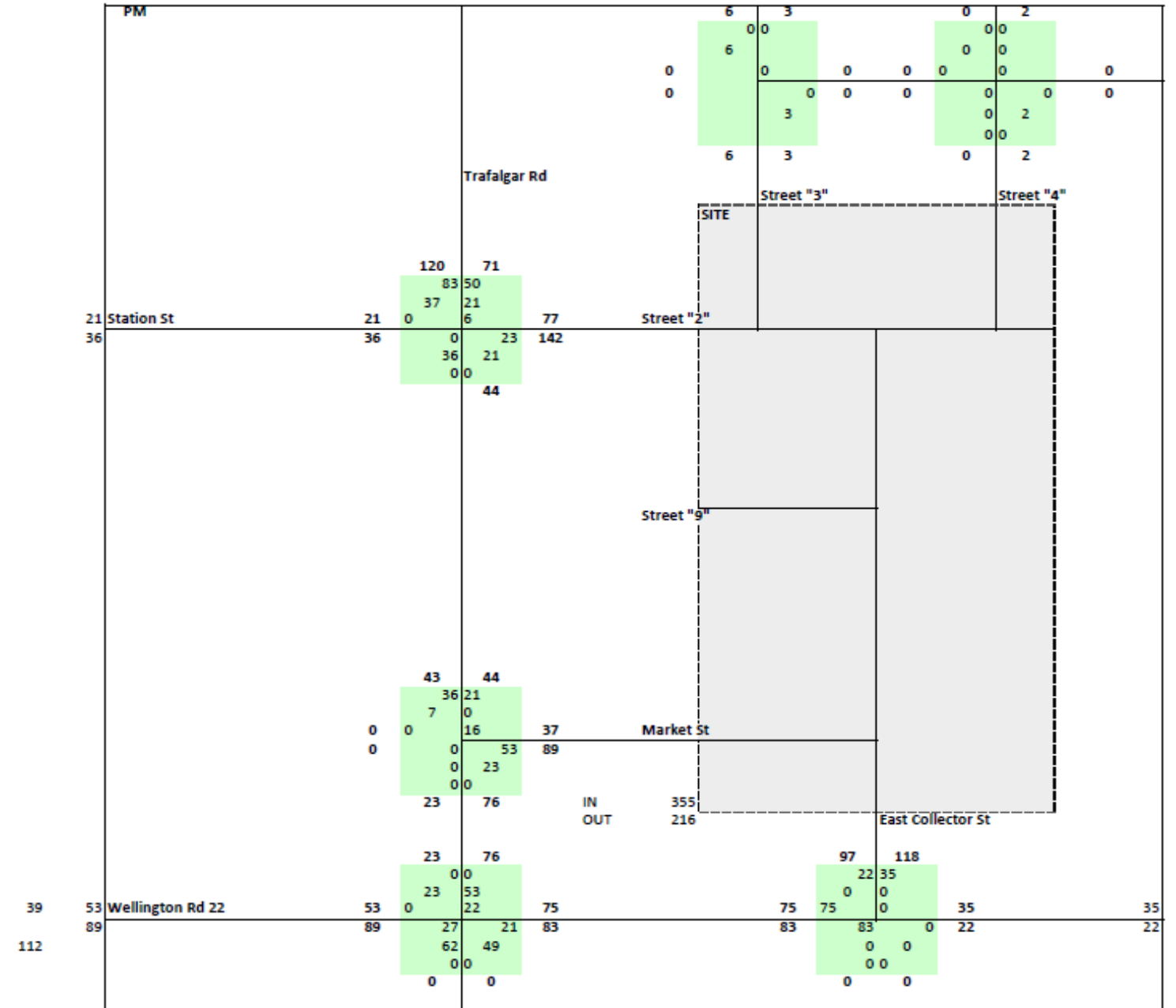
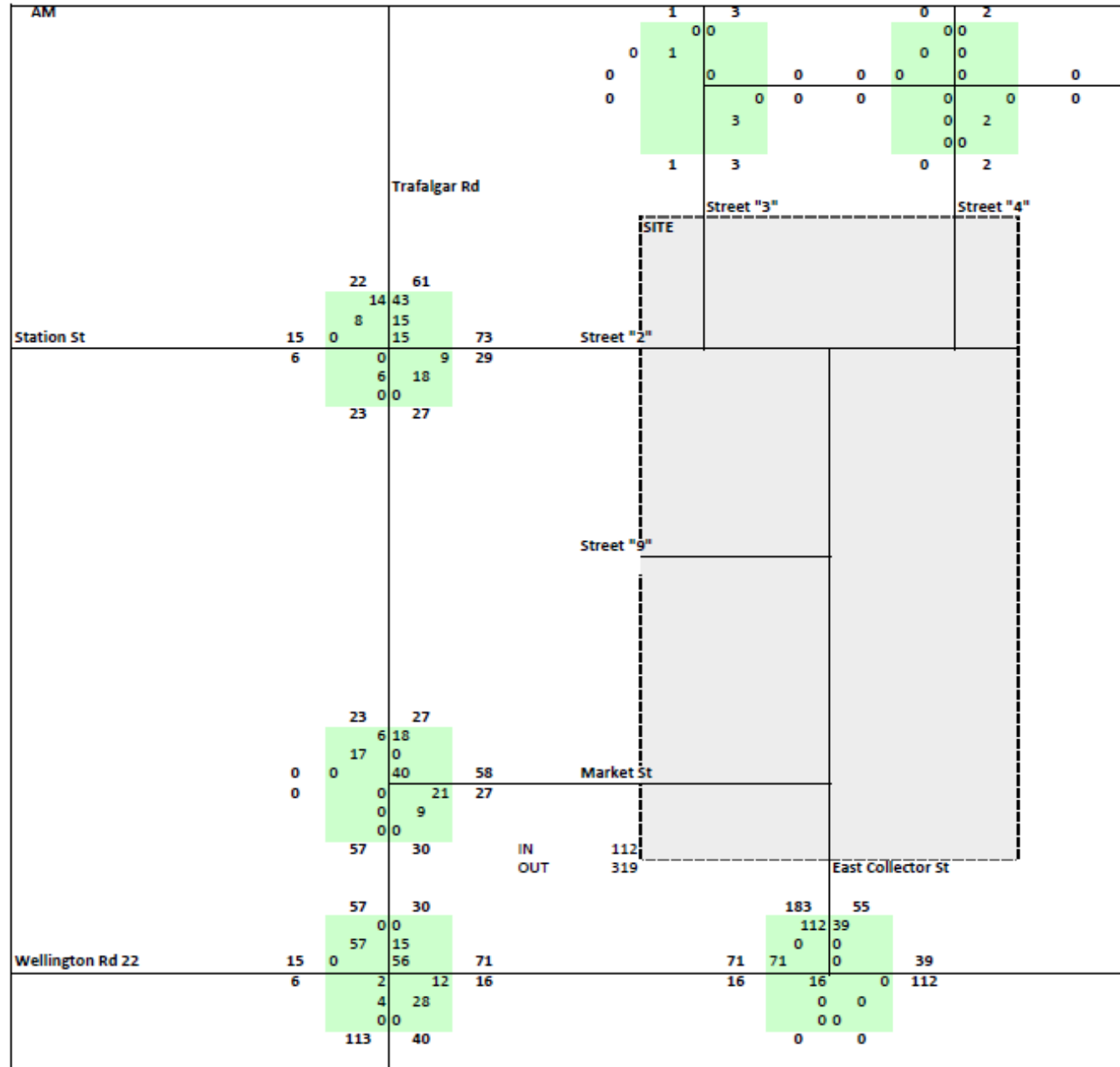
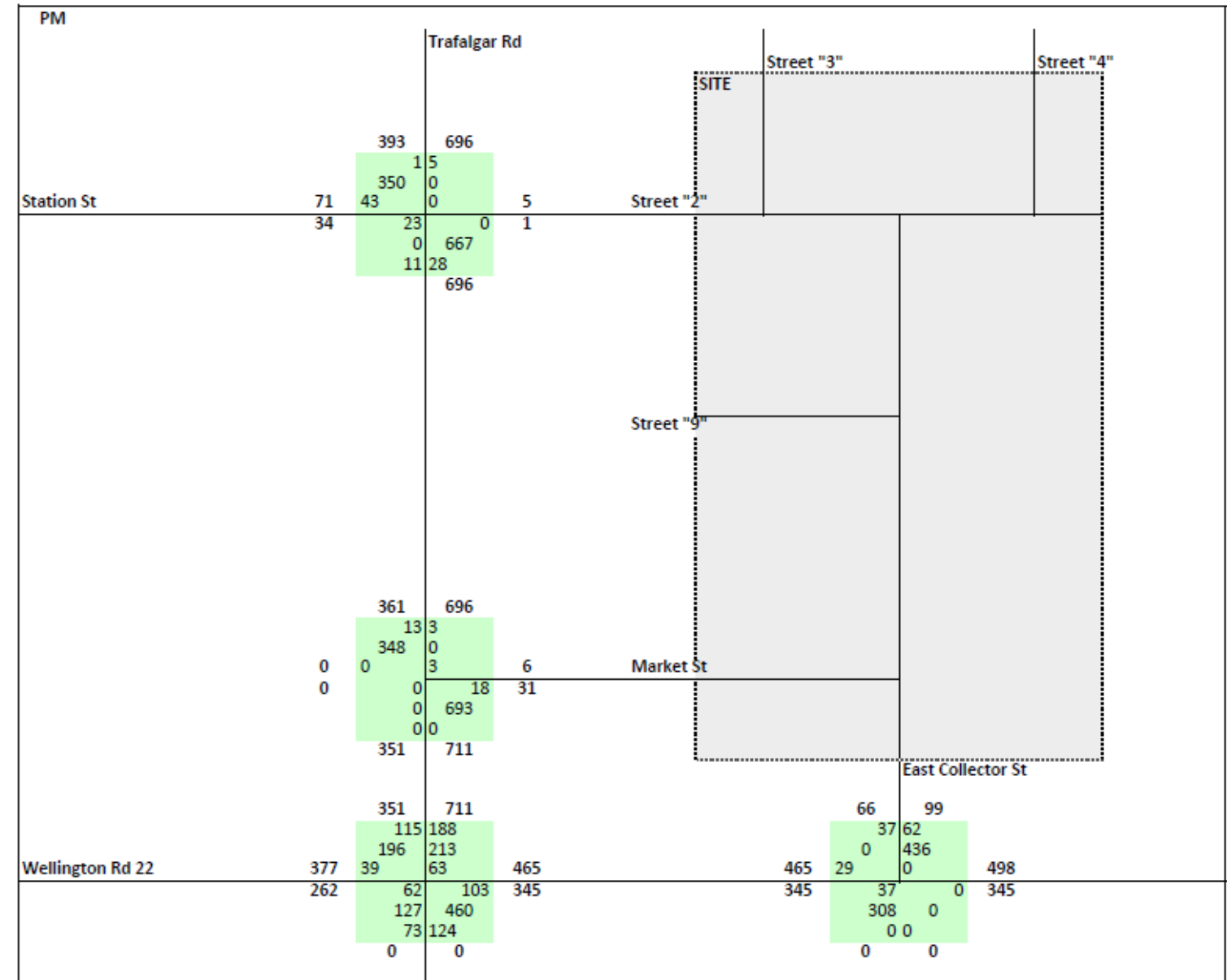
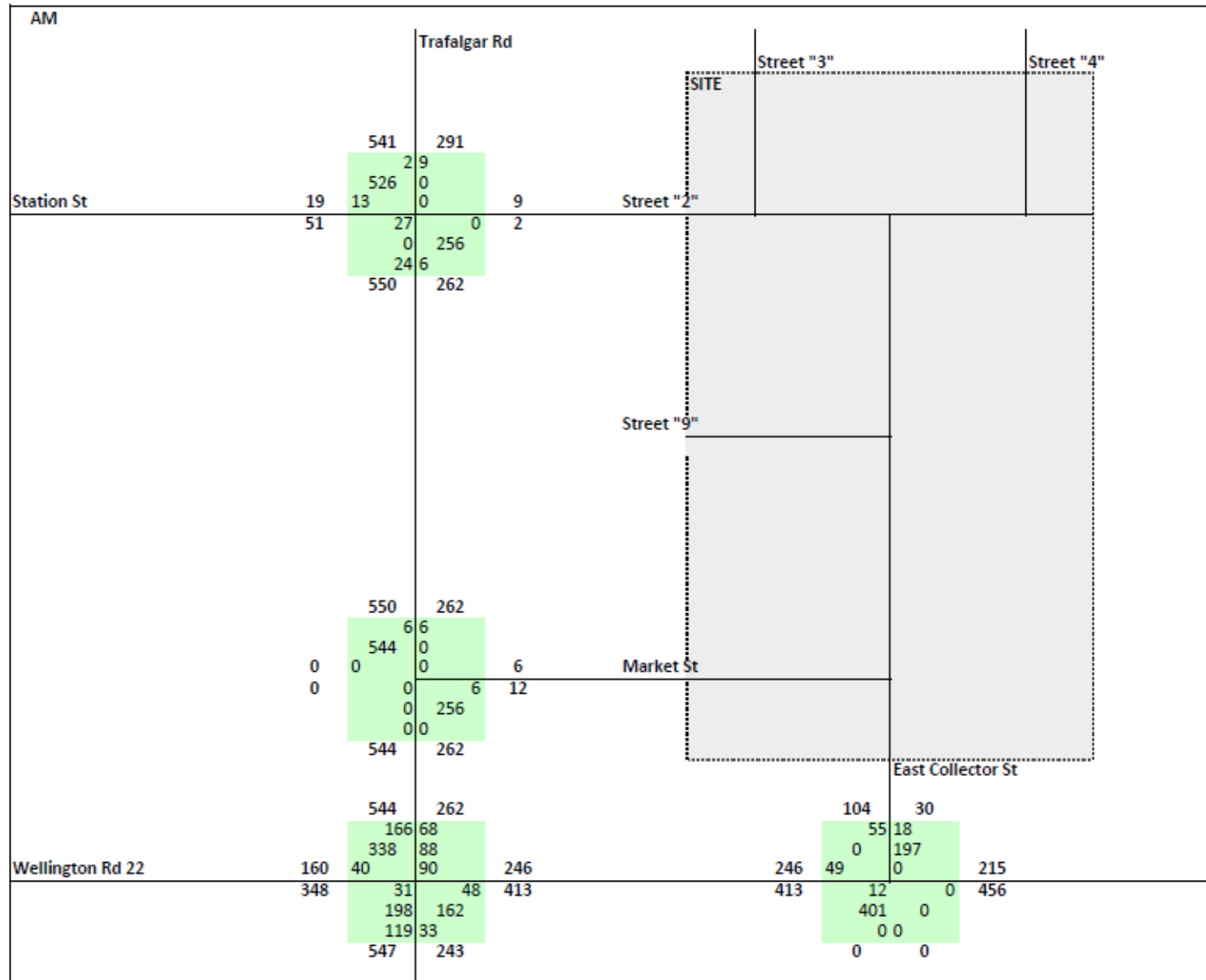
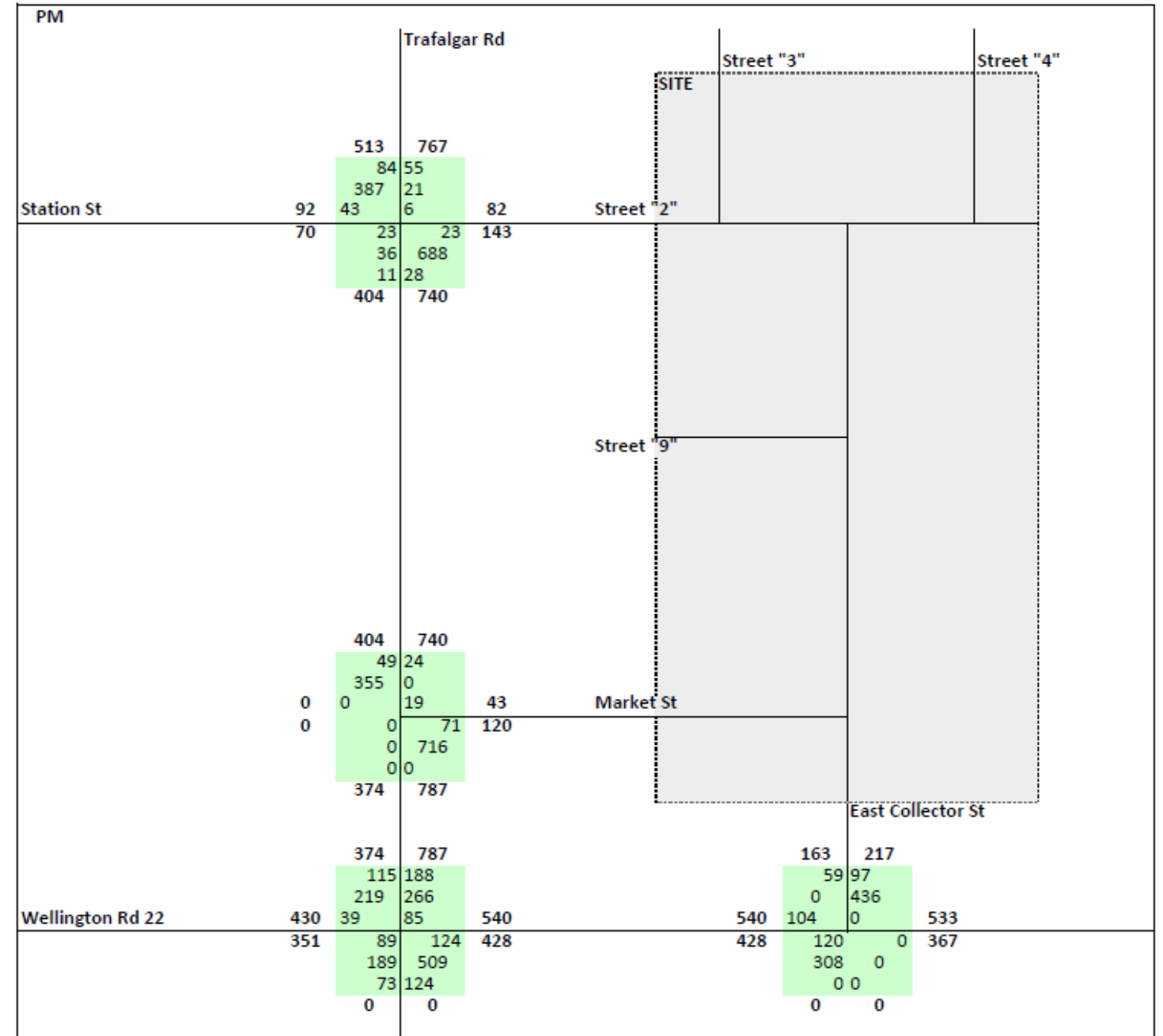
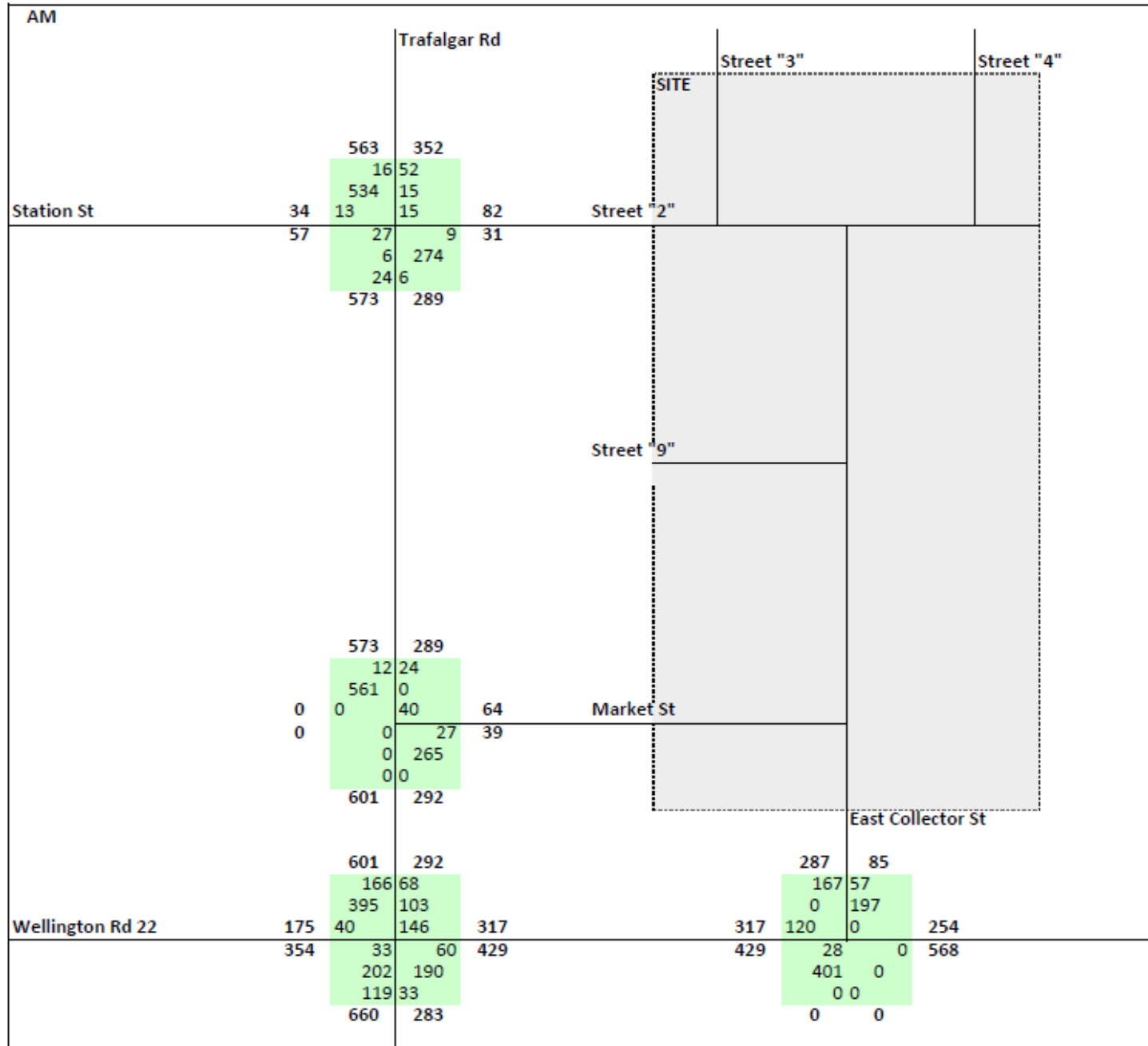


Figure 13 Future Background 2031 Volumes



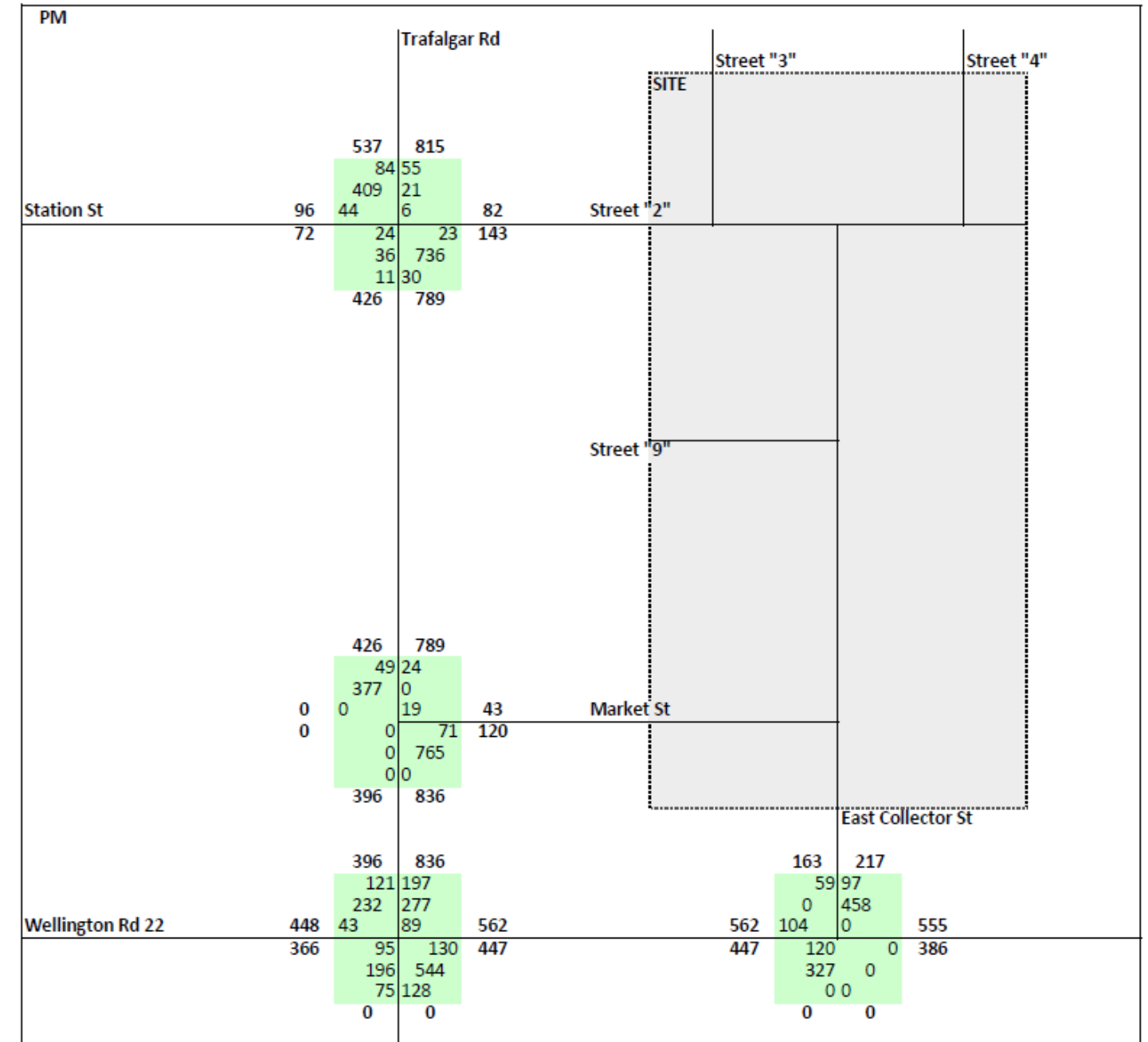
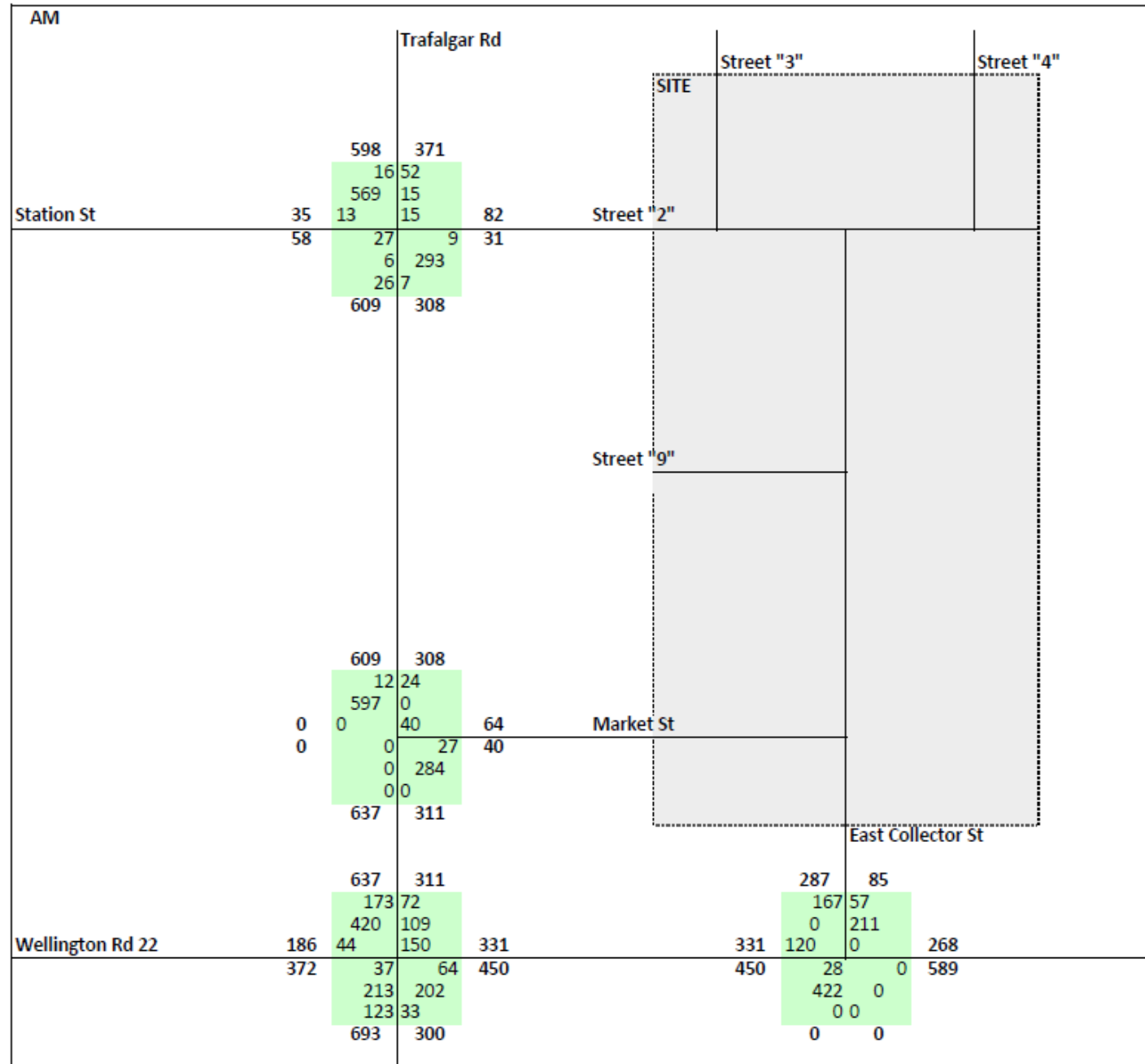
(Not to Scale)

Figure 14 Future Total 2031 Volumes



(Not to Scale)

Figure 15 Future Year 2036 Volumes



4.0 TURN LANE/ACCESS MANAGEMENT

4.1 Right-Turn Lanes

The TAC *Geometric Design Guide for Canadian Roads* recommends the use of an exclusive right-turn lane when the volume of decelerating or accelerating vehicles compared with the through traffic volume causes undue hazard.

In general, an exclusive right-turn lane may be considered when the volume of right-turning vehicles is between 10 to 20 percent of the through volume, subject to a minimum of 60 vehicles per hour in the design hour.

Table 2 shows the Full Build 2031 and Future Year 2036 volumes used in the analysis.

Intersection	Horizon	Approach	AM Volume			PM Volume			Hourly Threshold	Threshold met?
			Thru	Right	% RT	Thru	Right	% RT		
Wellington Rd 22 & East Collector Rd	2031	WB	197	57	29%	436	97	22%	60	Yes
	2036		211	57	27%	458	97	21%	60	Yes
Trafalgar Rd & Market St / St "16"	2031	NB	265	27	10%	716	71	10%	60	Yes
	2036		284	27	10%	765	71	9%	60	Yes
Trafalgar Rd & Station St/ St "2"	2031	NB	274	9	3%	688	33	3%	60	No
	2036		293	9	3%	736	23	3%	60	No

Analysis shows that based on both Full Build 2031 and Future Year 2036 volumes, minimum thresholds are met for a right-turn lane from Wellington Road 22 at the proposed East Collector Road and from Trafalgar Road (Wellington Road 24) at Market Street/ Street "16". It is **recommended** to construct the following:

- A westbound right-turn lane at Wellington Road 22 and the proposed East Collector Road intersection.
- A northbound right-turn lane at the Trafalgar Road (Wellington Road 24) at Market Street/ Street "16 intersection.

4.2 Left-Turn Lanes

The warrant for left turn lanes was based on *Chapter E, Section E.B.1 of the Geometric Design Standards for Ontario Highways by the Ministry of Transportation, Ontario* for 2-lane undivided roadways. The graphs are included in the Appendices.

Table 3 shows the Full Build 2031 and Future Year 2036 volumes used in the analysis.

Table 3 Left-Turn Lane Analysis								
Full Build 2031 Volumes								
Driveway	Design Speed	Peak	Approach	Advancing Volume	Opposing Volume	Left-Turn Vol	Left-Turn %	Threshold met?
Wellington Rd 22 & East Collector Rd	90 km/h	AM	EB	429	254	28	7%	No
		PM		428	533	120	28%	Yes
Trafalgar Rd & Market St / St "16"	50 km/h	AM	SB	573	292	12	2%	No
		PM		404	787	49	12%	Yes
Trafalgar Rd & Station St/ St "2"	50 km/h	AM	SB	563	289	16	3%	No
		PM		513	740	84	16%	Yes
Future Year 2036 Volumes								
Wellington Rd 22 & East Collector Rd	90 km/h	AM	EB	450	268	28	6%	No
		PM		447	555	120	27%	Yes
Trafalgar Rd & Market St / St "16"	50 km/h	AM	SB	609	311	12	2%	No
		PM		426	836	49	12%	Yes
Trafalgar Rd & Station St/ St "2"	50 km/h	AM	SB	598	308	16	3%	No
		PM		537	789	84	16%	Yes

Analysis shows that based on both Full Build 2031 and Future Year 2036 volumes, minimum thresholds are met for a left-turn lane from Wellington Road 22 at the proposed East Collector Road and from Trafalgar Road (Wellington Road 24) at Market Street/ Street "16" as well as Station Street/Street "2". It is **recommended** to construct the following:

- An eastbound left-turn lane at Wellington Road 22 and the proposed East Collector Road intersection with a storage length of 30 metres.
- A southbound left-turn lane at the Trafalgar Road (Wellington Road 24) at Market Street/ Street "16" intersection with a storage length of 25 metres.
- A southbound left-turn lane at the Trafalgar Road (Wellington Road 24) at Station Street/ Street "2" intersection with a storage length of 40 metres.

4.3 Intersection/Decision Sight Distance

Minimum sight distance requirements were evaluated based on the guidelines provided in the Transportation Association of Canada’s *Geometric Design Guide for Canadian Roads, Chapter 9, Intersections (2017)*. The sight distance evaluation was conducted using a design speed of 90 km/h on Wellington Road 22 and 50 km/h on Trafalgar Road (Wellington Road 24).

$$ISD = 0.278 V_{\text{major}} t_g \quad (9.9.1)$$

Where:

- ISD = intersection sight distance (length of the leg of sight triangle along the major road) (m)
- V_{major} = design speed of the major road (km/h)
- t_g = time gap for minor road vehicle to enter the major road (s)

Design Vehicle	Time Gap (t_g)(s) at Design Speed of Major Road
Passenger car	7.5
Single-unit truck	9.5
Combination truck (WB 19 and WB 20)	11.5
Longer truck	To be established by road authority

The calculated intersection sight distance using the above formula and parameters results in the following:

- Passenger vehicle
 - $0.278 \times 90 \times 7.5 = 187.65$ metres
 - $0.278 \times 50 \times 7.5 = 104.25$ metres

Table 4 summarized the minimum sightline requirements and the proposed sightline distance at the proposed accesses.

Table 4 Sightline Distance Review

Intersection	Speed		Decision Sightline	
	Posted	Design	Required	Meets Requirements?
Wellington Rd 22 & East Collector Rd	80 km/h	90 km/h	188 m	Looking East – Yes: 220 m Looking West – Yes: 200 m
Trafalgar Rd & Market St / St “16”	40 km/h	50 km/h	105 m	Looking North – Yes: +250 m Looking South – Yes: 250 m
Trafalgar Rd & Station St/ St “2”	40 km/h	50 km/h	105 m	Looking North – Yes: +250 m Looking South – Yes: 120 m

Field observations show that there are no obstructions within the required sight distance at both accesses.



Wellington Road 22 at East Collector Rd – looking east



Wellington Road 22 at East Collector Rd – looking west



Trafalgar Road (Wellington Road 24) at Market Street – looking north



Trafalgar Road (Wellington Road 24) at Market Street – looking south



Trafalgar Road (Wellington Road 24) at Station Street – looking north



Trafalgar Road (Wellington Road 24) at Station Street – looking south

4.1 Traffic Signal Warrant Analysis

Based on the comments received, a signal warrant analysis was conducted for the Trafalgar Road (Wellington Road 24) at Market Street /Street “16” and Trafalgar Road (Wellington Road 24) at Station Street/ Street “2” intersections, using projected traffic volumes for the year 2036. This analysis was based on the criteria outlined in Justification 7 of the *Ontario Traffic Manual (OTM) Book 12*, which specifically considers projected traffic volumes in determining the need for traffic signalization.

Analysis shows that the projected average traffic volumes at these intersections do not satisfy the requirements of Justification 7. The analysis is included in the appendices.



Trafalgar Road (Wellington Road 24) at Station Street looking east (google image)

5.0 INTERNAL FUNCTIONAL DESIGN STUDY

As mentioned, following the review of this transportation study report, a transportation functional design study will be completed in support of the Draft Plan of Subdivision approval. The report will document the design requirements for the internal road network and transportation elements for the proposed development.

The functional design study will include the following elements and will be informed by the *Design Criteria for the Township of Mono* (1992), *Geometric Design Guide for Canadian Roads* (TAC), the *Ontario traffic Manual*, among others:

- Internal Road Classification (ROW, Driveway Dimensions etc) and Hierarchy
- Internal Design Elements such as Curb Radii, Sight Daylight Triangles, Intersection spacing and horizontal curves.
- Potential Roundabout Locations
- Potential Transit Facilities Plan
- Pedestrians and Sidewalk Plan
- On-street Parking Plan
- Traffic Calming Plan and strategies
- Transportation Demand Management (TDM) plan

6.0 CAPACITY ANALYSIS

The Transportation Research Board’s Highway Capacity Manual (HCM) utilizes a term “level of service” (LOS) to measure how traffic operates in intersections. There are currently six levels of service ranging from A to F. Level of Service “A” represents the best conditions and Level of Service “F” represents the worst. Synchro software was used to determine the level of service for intersections in the study area. All worksheet reports from the analyses can be found in the Appendix.

Table 6 shows the control delay per vehicle associated with LOS A through F for signalized and unsignalized intersections.

Table 5 Highway Capacity Manual Levels of Service and Control Delay			
Signalized Intersection		Unsignalized Intersection	
Level of Service	Control Delay per Vehicle (sec)	Level of Service	Control Delay per Vehicle (sec)
A	≤ 10	A	≤ 10
B	> 10 and ≤ 20	B	> 10 and ≤ 15
C	> 20 and ≤ 35	C	> 15 and ≤ 25
D	> 35 and ≤ 55	D	> 25 and ≤ 35
E	> 55 and ≤ 80	E	> 35 and ≤ 50
F	> 80	F	> 50

The following improvements were included in the Future Total 2031 and 2036 analysis:

- A westbound right-turn lane at Wellington Road 22 and the proposed East Collector Road intersection.
- An eastbound left-turn lane at Wellington Road 22 and the proposed East Collector Road intersection with a storage length of 30 metres.
- A northbound right-turn lane at the Trafalgar Road (Wellington Road 24) at Market Street/ Street “16” intersection.
- A southbound left-turn lane at the Trafalgar Road (Wellington Road 24) at Market Street/ Street “16” intersection with a storage length of 25 metres.
- A southbound left-turn lane at the Trafalgar Road (Wellington Road 24) at Station Street/ Street “2” intersection with a storage length of 40 metres.

7.0 CONCLUSIONS

This study serves as an analysis of the traffic impacts from the proposed Draft Plan of Subdivision situated on a parcel of land located on the east side of Trafalgar Road (Wellington Road 24), north of Wellington Road 22, in the Town of Erin, County of Wellington.

This analysis was conducted to assess the impacts and necessary improvements required to accommodate additional traffic volumes generated by the proposed Draft Plan of Subdivision. This plan includes 376 single-family detached homes (incorporating a heritage house), 286 units of low-rise multifamily housing, 75 low-rise senior townhouse units, and 188 senior mixed-use apartment units.

Trip Generation

The proposed new development is expected to generate 429 trips in the AM peak hour, and 571 trips in the PM peak hour.

Turn Lanes

Analysis shows that projected volumes at the proposed accesses meet thresholds for right-turn and left-turn lanes, the following are recommended at Full Build Conditions:

- A westbound right-turn lane at Wellington Road 22 and the proposed East Collector Road intersection.
- An eastbound left-turn lane at Wellington Road 22 and the proposed East Collector Road intersection with a storage length of 30 metres.
- A northbound right-turn lane at the Trafalgar Road (Wellington Road 24) at Market Street/ Street “16” intersection.
- A southbound left-turn lane at the Trafalgar Road (Wellington Road 24) at Market Street/ Street “16” intersection with a storage length of 25 metres.
- A southbound left-turn lane at the Trafalgar Road (Wellington Road 24) at Station Street/ Street “2” intersection with a storage length of 40 metres.

Traffic Impacts

Wellington Road 22 & Trafalgar Road (Wellington Road 24)

Wellington Road 22 & Trafalgar Road (Wellington Road 24) is an existing signalized intersection. Under Future 2031 conditions, the single-lane approaches for both eastbound and westbound traffic are expected to experience a poor Level of Service (LOS), particularly during the PM peak hour. Additionally, the queue length for the southbound left turn exceeds the existing storage capacity.

Recommended Improvement

It is recommended to construct an eastbound left-turn lane with a storage length of 45 metres, a westbound left-turn lane with a storage length of 55 metres, and to extend the southbound left-turn lane to 55 metres.

Trafalgar Road (Wellington Road 24) & Station Street/ Street “2”

Trafalgar Road (Wellington Road 24) & Station Street/ Street “2” is an existing unsignalized T-intersection. The future four-legged intersection is expected to operate with delay constraints for the eastbound and westbound approaches but will maintain acceptable capacities. Only a southbound left-turn lane is warranted, which has been included in the analysis as recommended.

Recommended Improvement

Based on the projected future traffic volumes, a traffic signal is currently not warranted. However, it is recommended that the intersection be monitored in the future, post full build, to assess the need for potential signalization.

Internal Functional Design Study

A transportation functional design study will be completed in support of the Draft Plan of Subdivision approval. The report will document the design requirements for the internal road network and transportation elements for the proposed development.

Appendix A:

Existing Traffic Data and Signal Timing Plan



Appendix B:

Background Developments Map



Appendix C:

Trip Generation Graphs – Barbour Fields



Appendix D:

Trip Generation Graphs – Subject Site



Appendix E:

Left-Turn Graphs



Appendix F:

Signal Warrants



Appendix G:

Synchro Outputs

