

Townsville Ocean Terminal

- Additional Traffic Modelling

Prepared for
City Pacific Pty. Ltd.

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(06-050)

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Project Name	Project No.	Report Name	Version	Date	Author
Townsville Ocean Terminal	06-050	Additional Traffic Modelling	V.2	26 May 2008	G. Hunter

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1.0 Introduction

1.1 Background

The Townsville Ocean Terminal Project involves the proposed development of a cruise ship terminal and associated facilities, and a waterfront residential development within the site identified as the 'Future Development Area' in the *Breakwater Island Casino Agreement Act 1984*.

A statutory requirement under that Act is for an Environmental Impact Statement (EIS), which assesses the potential impacts on the environment as a result of the construction and operation of the TOT Project, to be produced. Such an EIS was finalised and submitted to the Queensland Government in November 2007.

Veitch Lister Consulting (VLC) assisted with the preparation of that EIS, by producing traffic forecasts on roads in the Townsville area for scenarios in 2011 and 2025, both with and without the subject development in the FDA. Holland Traffic Consulting (HTC) subsequently utilised those traffic forecasts to assess the impacts of the Project on roads and intersections in the area.

VLC's assumptions, methods and their resulting traffic forecasts were documented in a report entitled *Townsville Ocean Terminal – Traffic Modelling*, dated August 2007, which was included as Attachment C of HTC's *Traffic Report*, which was itself included as Appendix 9 of the EIS documents.

A subsequent traffic report, produced by C & G Horman Pty. Ltd. for the Townsville City Council in December 2007, assessed the traffic generation and impacts of potential development in a broader 'Breakwater Area'. Several of this report's estimates of potential future development in this broader area were noted to be inconsistent with the future assumptions used by VLC in their 'base case' or 'without development' traffic forecasts. Additionally, the 'Horman report' raised a new issue - that Townsville City Council are proposing to reopen the Flinders Street Pedestrian Mall to traffic (albeit in a low speed, low capacity environment), which VLC had been unaware of when producing their traffic forecasts for the TOT EIS.

As described more fully in the next chapter, VLC were re-engaged by City Pacific to produce further traffic forecasts for amended land use and road network scenarios.

1.3 Contents of this Report

This report consists of 3 chapters and 1 appendix. The remaining contents are as follows:

- **Chapter 2** describes and documents the 2 new scenarios, for which VLC were requested to produce new traffic forecasts.
- **Chapter 3** presents the resulting traffic forecasts for these 2 scenarios.
- **Appendix A** contains Figures.

2.0 Definition of the New Scenarios

2.1 Overview of the Amendments

The new scenarios for which VLC have now produced new traffic forecasts take account of the following issues and corrections:

External Land Use Assumptions

The 'Horman Report' identified a number of potential new developments in the general Breakwater Area, which had not been accounted for in the original VLC traffic forecasts produced for the EIS. The extent of development, which the Townsville City Council is potentially considering, was shown in Horman's Figure 2, which is reproduced as **Figure 2.1**, herein.

A review of these potential developments by City Pacific's advisers identified some that they agreed as being reasonable and likely to eventuate, but also some that have not progressed in their planning as far as the TOT project and were considered 'possible' rather than 'probable'. Accordingly, VLC were asked to produce new 'base case' or 'reference' traffic forecasts for a 2025 scenario in which these 'probable' developments exist.

Assumed Land Use on the 'Further Development Area'

Preparation of the EIS took over a year. During this time, options for the form of the reclamation were examined and a preferred arrangement identified. As a result, the extent of residential development proposed in the FDA increased marginally from what VLC had actually assumed for modelling purposes.

Accordingly, the new 'with FDA development' forecasts presented herein use the corrected number of dwellings (200 detached houses and 500 apartments) and a modified (average) household profile. The assumed employment in the FDA, which is largely related to the cruise ship terminal, is unchanged.

Flinders Street Pedestrian Mall

Acknowledging Council's intent to reopen the Flinders Street Mall to traffic, VLC's 'base case' model road network for 2025 was amended to include the 2 new street sections (with low speed and capacity).

One-way Section of 'The Strand'

The Horman Report mentioned previous studies for Council, which suggested the one-way circulation system that currently operates on the easternmost sections of The Strand and Flinders Street would better revert to 2-way traffic. Without having sighted these previous studies, the operational benefits of such a change cannot be fully appreciated by VLC.

However, it seems clearly sensible (in the potential situation of a bridge being constructed across Ross Creek to connect The Strand to Archer Street in South Townsville) that the current one-way section of The Strand, at least, should revert to 2-way traffic. Accordingly, VLC were asked to include this amendment in future model road networks in which the bridge is assumed to be constructed.

2.2 Details of the Modified Scenarios

The 2 new scenarios that VLC were asked to produce traffic forecasts for were as follows:

1. A Modified 2025 Base Case – in which:
 - The land use in the broader 'Breakwater Area' was amended to account for the 'probable' future developments.
 - The Flinders Street Mall was reopened to traffic, and
 - No bridge constructed from The Strand to Archer Street.
 Application of these forecasts would be to potentially confirm a need for the bridge (or otherwise).

2. A Modified 2025 'With FDA Development' scenario, as above, but with:
 - The corrected land use assumptions in the FDA
 - A bridge connecting The Strand to Archer Street, and
 - The one-way section of The Strand converted to 2-way operation.
 Application of these forecasts would be to assess the alternative traffic conditions in the area.

The actual changes made to the assumed levels of development in the broader Breakwater Area, in 2025, are summarised in Table 2.1, below. **Figure 2.2**, attached, provides a key to the modelled zones referred to in this table.

Table 2.1 : Revised Demographic Assumptions for the 'Breakwater Area'

VLC Zone	Population		Households		Employment	
	Previous	New	Previous	New	Previous	New
A ⁽¹⁾	1,216	1,550	665	700	140	140
B	1,197	859	672	470	1,037	652
C	325	478	183	269	141	141
D	678	678	381	381	1,636	1,636
E	968	968	583	583	397	397
F	96	5,124	48	2,548	70	280
G	470	1,572	256	856	1,367	1,367
H	666	916	339	467	4,240	4,460
J	282	602	142	303	1,731	2,752

Notes : 1. Only used in the 'With FDA Development' scenario

The following is a summary of the decision-making and hence assumptions made in respect of the various developments shown in Horman's Figure 2:

Zone A : Future Development Area – The residential development is corrected to 700 dwellings. The commercial development is unchanged (comprising small marina =1,500m² GFA plus kiosks/café and maintenance staff at the terminal).

Zone B : Surplus Casino Land (Sir Leslie Thiess Dr)

Assumed future development = 400 additional residential units, but only ancillary commercial development (1 or 2 'convenience shops and a café / restaurant)

Zone B : Breakwater Quays/Villas and Restaurant – Existing development = 69 units & Restaurant retained

Zone B : Ross Creek West – this was categorised as 'possible' rather than 'probable', and not included in these new scenarios.

Zone C : Mariner's Drive – full residential development per Horman, but no new commercial development other than expansion of marina by 45 berths.

Zone D : Strand-Flinders-Wickham – Horman development already accounted for in original model.

Zone E : Ross Creek East - this was also categorised as 'possible' rather than 'probable', and not included in these new scenarios.

Additionally, as a result of new information, assumptions as to the levels of development expected to exist in the CBD and its fringes were revised as follows:

Zone F : Railway Estate – demographics amended to account for planned residential development.

Zone G : Railway Land (Nth) - demographics amended to account for planned residential development.

Zone H : CBD West - demographics increased to reflect planned residential units.

Zone J : CBD - demographics increased to reflect new shopping centre by Lancini Group and planned residential units.

Further, the 'traffic zone' system utilised in the CBD area in the original traffic model had been relatively coarse. For these new models, several of the zones (and their associated demographics) were split, per the 'green' lines in Figure 2.2, so as to more accurately reflect local access route choices.

3.0 The New Traffic Forecasts

3.1 Modified Base Case, 2025

The average weekday traffic volumes forecast of the road network in the broader Breakwater Area are shown in the following attached figures:

- **Figure 3.1** : Total Daily volumes
- **Figure 3.1a** : AM Peak 2 hour volumes
- **Figure 3.1b** : PM Peak 2 hour volumes

The turning movements forecast at the intersection of Flinders Street, Dean Street and Denham St are shown in:

- **Figure 3.2** : Total Daily turning movements
- **Figure 3.2a** : AM Peak 2 hour turning movements
- **Figure 3.2b** : PM Peak 2 hour turning movements

3.2 Modified 'With FDA Development' Scenario, 2025

The average weekday traffic volumes forecast of the road network in the broader Breakwater Area, in 2025, are shown in the following attached figures:

- **Figure 3.3** : Total Daily volumes
- **Figure 3.3a** : AM Peak 2 hour volumes
- **Figure 3.3b** : PM Peak 2 hour volumes

The turning movements forecast at the intersection of Flinders Street, Dean Street and Denham St are shown in:

- **Figure 3.4** : Total Daily turning movements
- **Figure 3.4a** : AM Peak 2 hour turning movements
- **Figure 3.4b** : PM Peak 2 hour turning movements

Additionally, this model was used to produce route choice diagrams for 2 'selected links' as follows:

- **Figure 3.5a** : Distribution of daily traffic generated by the FDA developments (ie. outbound)
- **Figure 3.5b** : Origin and destination of traffic forecast to use the bridge in an eastbound direction.

3.3 Accuracy of Peak Period Forecasts

VLC's travel demand model of the Townsville/Thuringowa region has only been calibrated against daily levels of observed traffic, as very few peak hour counts were available. Additionally, it should be noted that the T&T model uses peak period factors, for differing trip purposes, derived from Household Travel Surveys undertaken in South-east Queensland in 2003/04. These may not be directly transferable to Townsville.

Accordingly, VLC's peak 2-hour volume and turning movement forecasts must be considered indicative only. Peak 1-hour volumes and turning movements in the area of interest are best estimated by applying observed, local peak hour factors to VLC's daily forecasts.

Appendix A: Figures

FIGURE 2

Collage of Updated Master-Plan of the Townsville Breakwater Area (April 2007)

FUTURE DEVELOPMENT AREA^A

<u>Ocean Terminal</u>		<u>Breakwater Cove</u>	
Café	20m ² GFA	Detached House	240
Kiosks	30m ² GFA	Units	350
Office	105m ² GFA	Commercial	3,200m ² GFA
Visiting cruise ships	8/yr ^B	Marina	50 berths
Visiting naval ships	50/yr ^B	Marina Club	unknown

**SURPLUS CASINO LAND^C
(SIR LESLIE THIESS DRIVE)**

Multiple Dwelling
(Sector I - M)
Units 297
Commercial/retail 22,920m² GFA

Dwelling House
(Sector H)
Detached House 31

**SURPLUS CASINO LAND^C
(MARINER'S DRIVE)**

Sailing Club
(Sector A&B)
Units 19
Commercial/retail 1,400m² GFA

Multiple Dwelling
(Sector C - F)
Units 166
Commercial/retail 13,272m² GFA

Marina
Shops & Office 600m² GFA

CASINO^D
21,001 m² floor area, inclusive of 194 hotel rooms

ENTERTAINMENT CENTER
9,435m² floor area

RESTAURANT^D

MARINERS NORTH^D
70 units

BREAKWATER MARINA^D
≈210 Berths

ROSS CREEK WEST
2.5Ha, Commercial/retail & units.
5 storeys over basement car parks, 100 units in stage 1^E. Short term accommodation^G

Assume:
80% max. cover,
40% gnd flr commercial/retail
plot ratio 2 & 120m²/unit

=Commercial/retail 8,000m² GFA
=Units 250
= 4 to 5 storey ?

BREAKWATER QJAYS^D
50 units

BREAKWATER VILLAS 2
17 units

BREAKWATER VILLAS
2 units

ROSS CREEK EAST
Approx. 8 Ha, commerce, offices & ferry terminal - 300 parking bays^E and 20 storey office tower^F

Assume:
Ferry terminal 1 Ha
10% for access
10% for boardwalk
80% max. site cover
Plot ratio 1.5

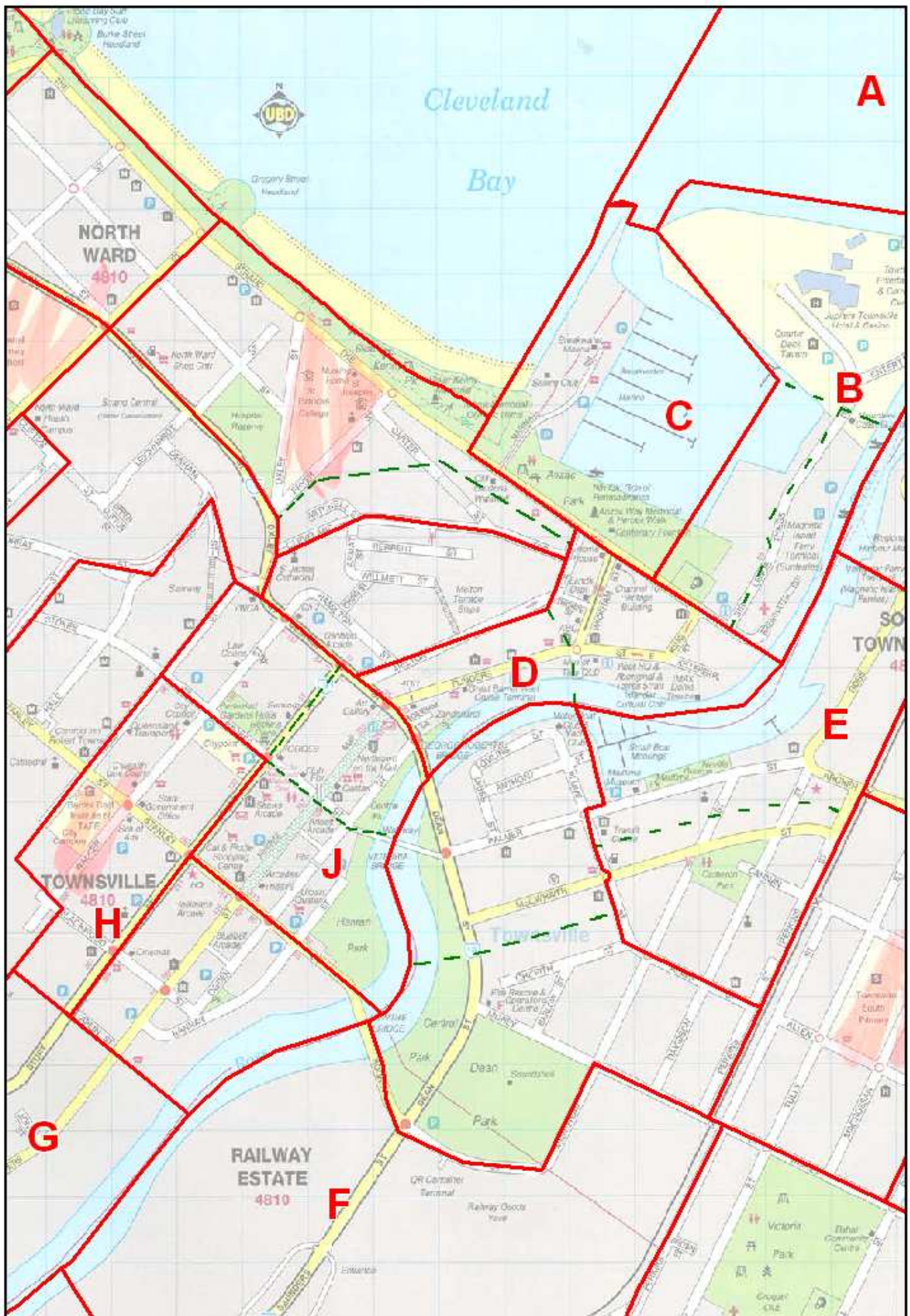
= Commercial/offices 66,000m² GFA
= 2 to 4 storey ?

STRAND-FLINDERS-WICKHAM^F
2.8Ha
Units 226
Commercial/ restaurant 18,500m² GFA

^A As per internal report to Townsville City Council: 'Revised Traffic Projections for Breakwater Developments', Irwin 2007, with exception of ship visits.
^B 'Cruise marketing push', *Townsville Bulletin*, 6 Jan. 2007.
^C As per internal report to Townsville City Council: 'Breakwater Road Network Headworks - Expanding to Charge Rest of City Future Users', Irwin 2007.
^D As per Townsville City Council property management database (Townsville Intranet Mapping Service), March 2007.
^E 'Townsville Waterways Redevelopment Project Board of Directors Background Paper', Townsville Port Authority, May 2004.
^F 'Planning Report - Land Use Options on Behalf of Townsville City Council on Surrounding Lands to Breakwater Area', Brazier Motti, March 2007.
^G Draft Townsville City/Port Strategic Plan, Department of Infrastructure, Q.D government, January 2007.

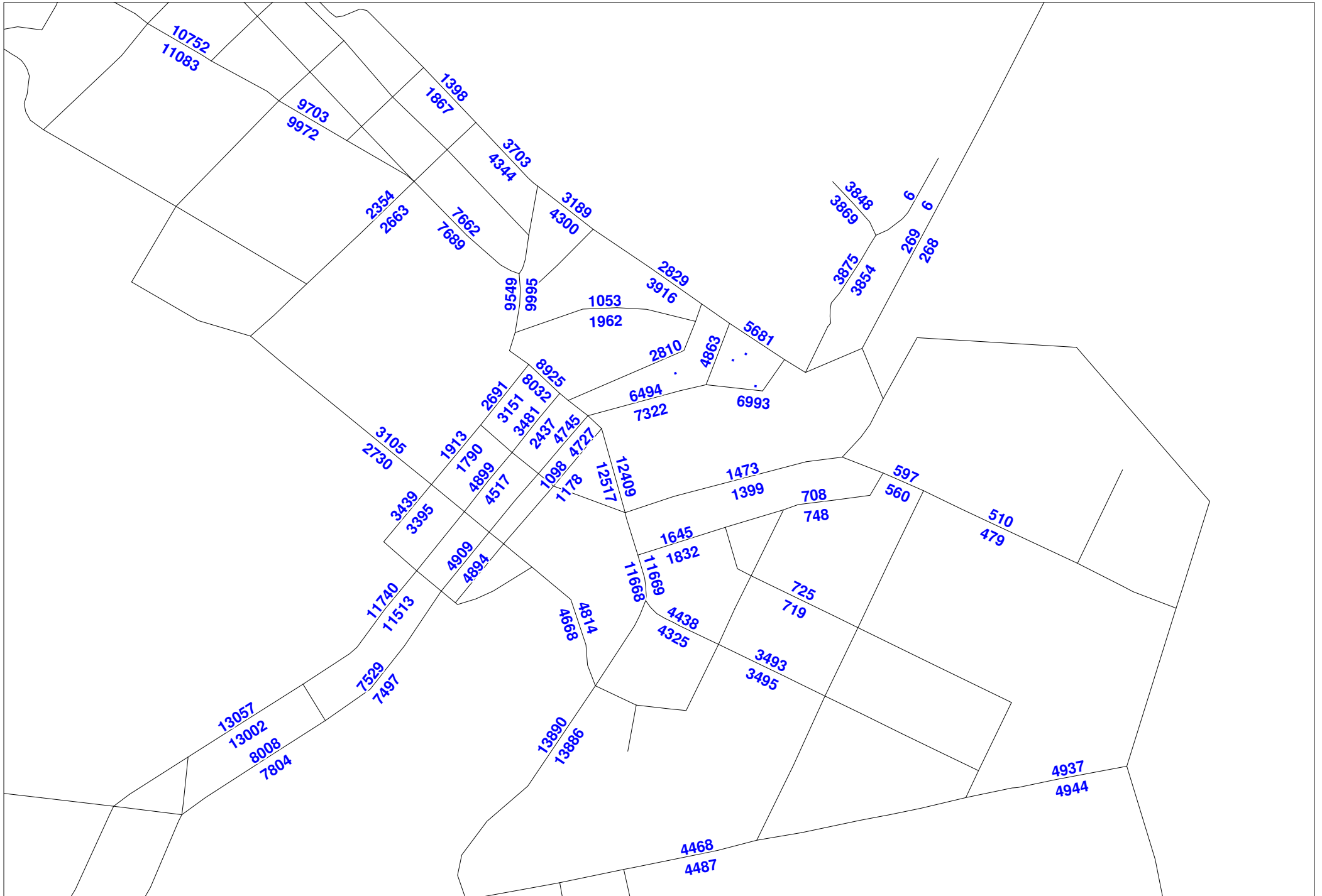
Potential Development – Breakwater Area (ex Horman)

Figure 2.1



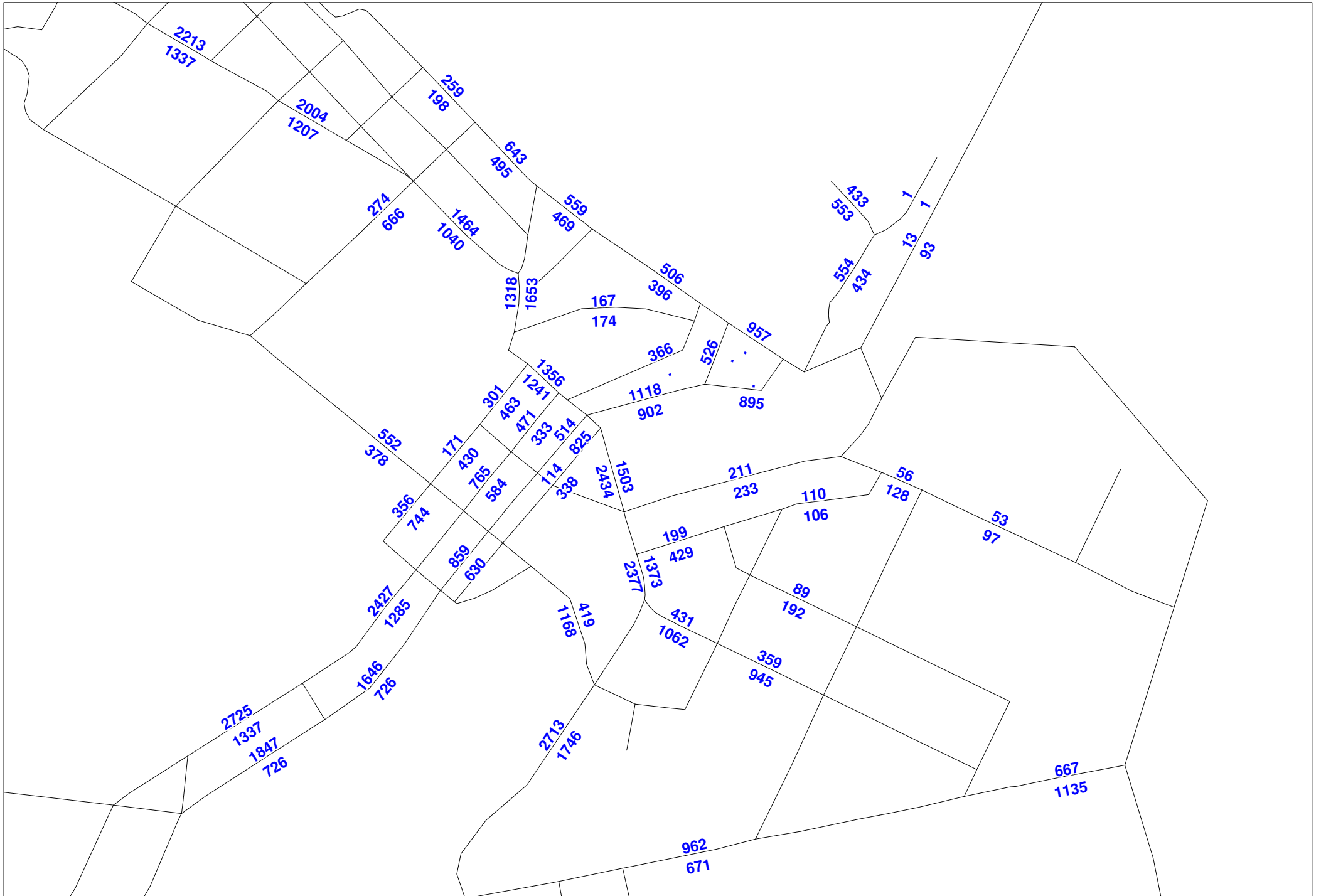
Zones with Modified Demographic Data

Figure 2.2



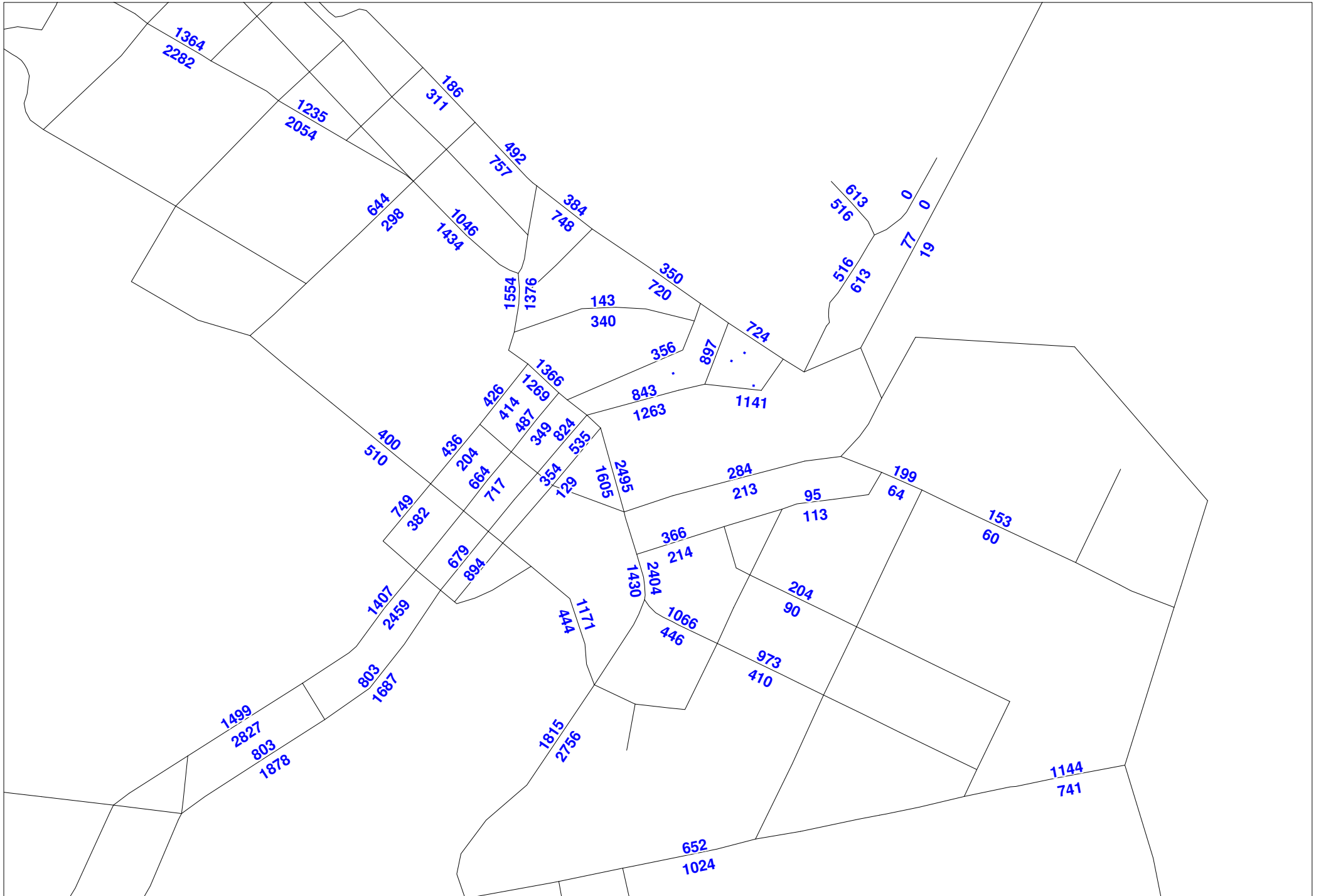
2025 Revised Base (No Bridge)
Total Daily Volume

Figure 3.1



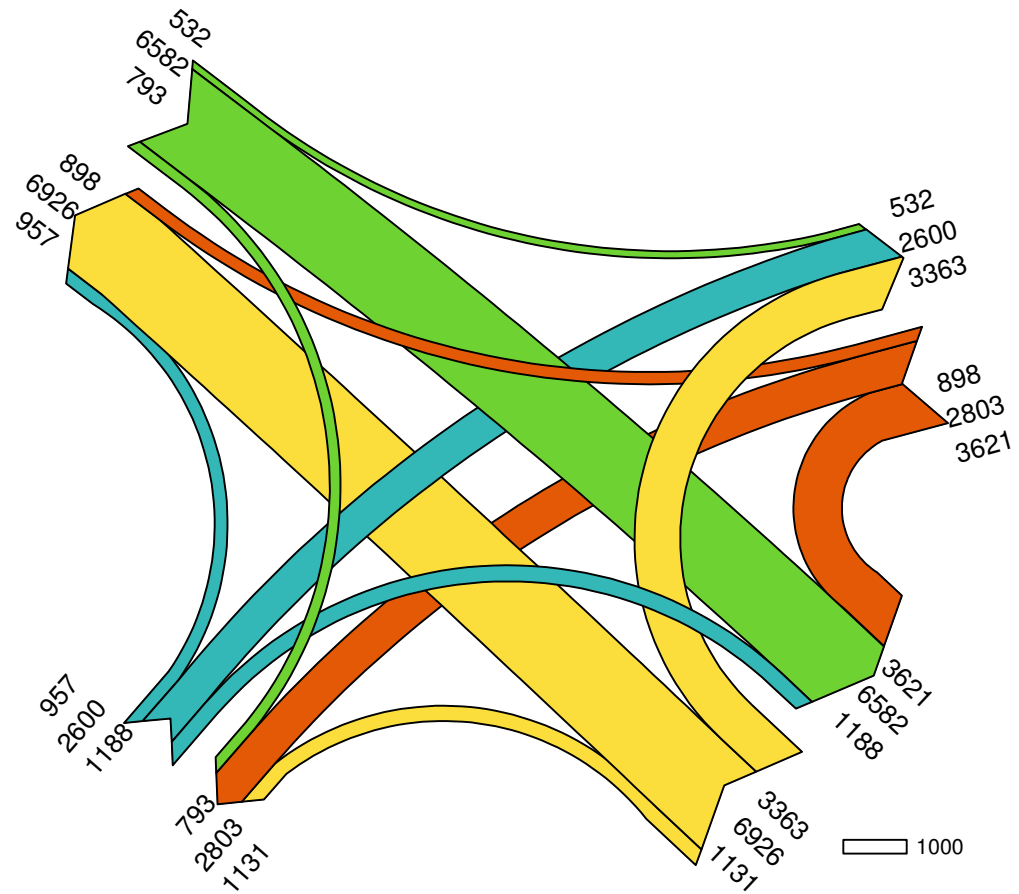
2025 Revised Base (No Bridge)
Total AM 2 Hour Volume

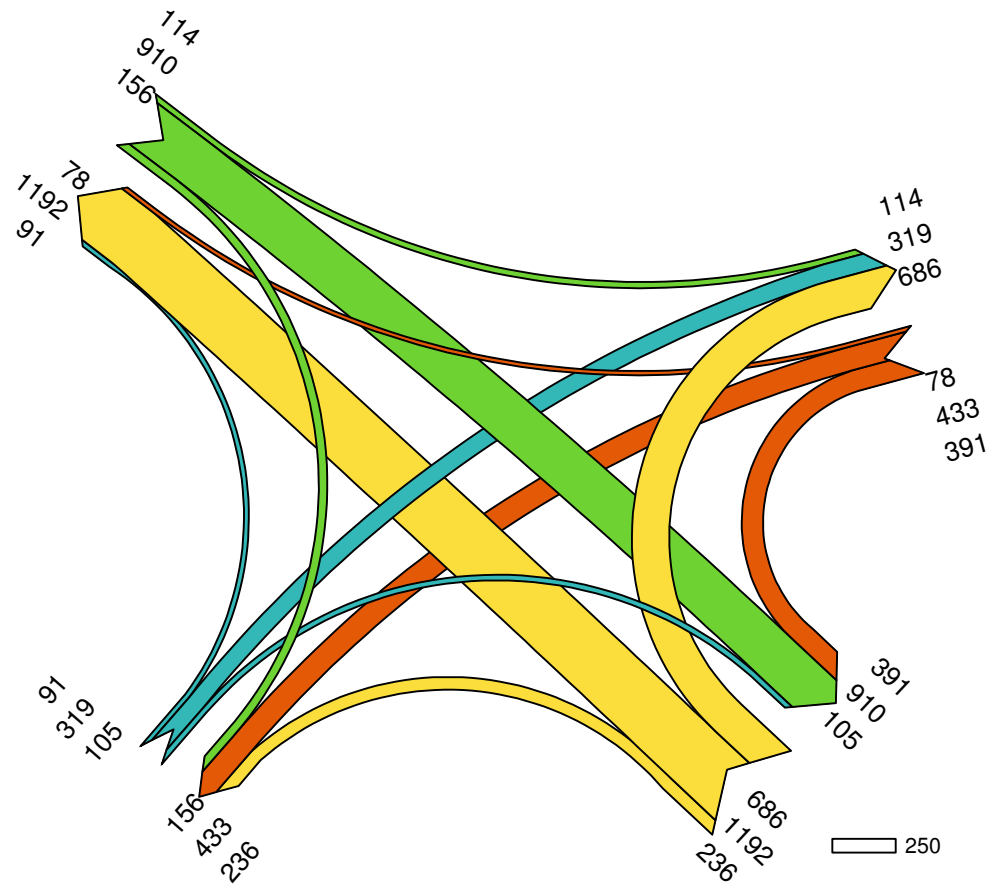
Figure 3.1a

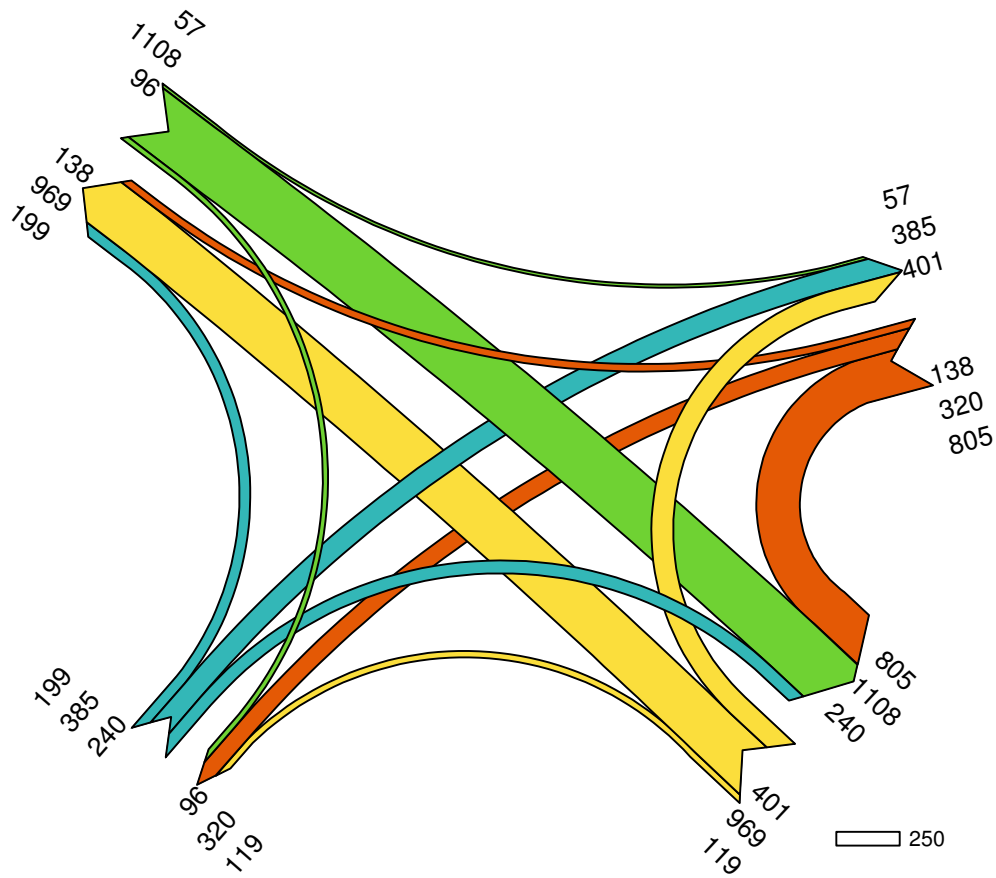


2025 Base
Total PM 2 Hour Volume

Figure 3.1b



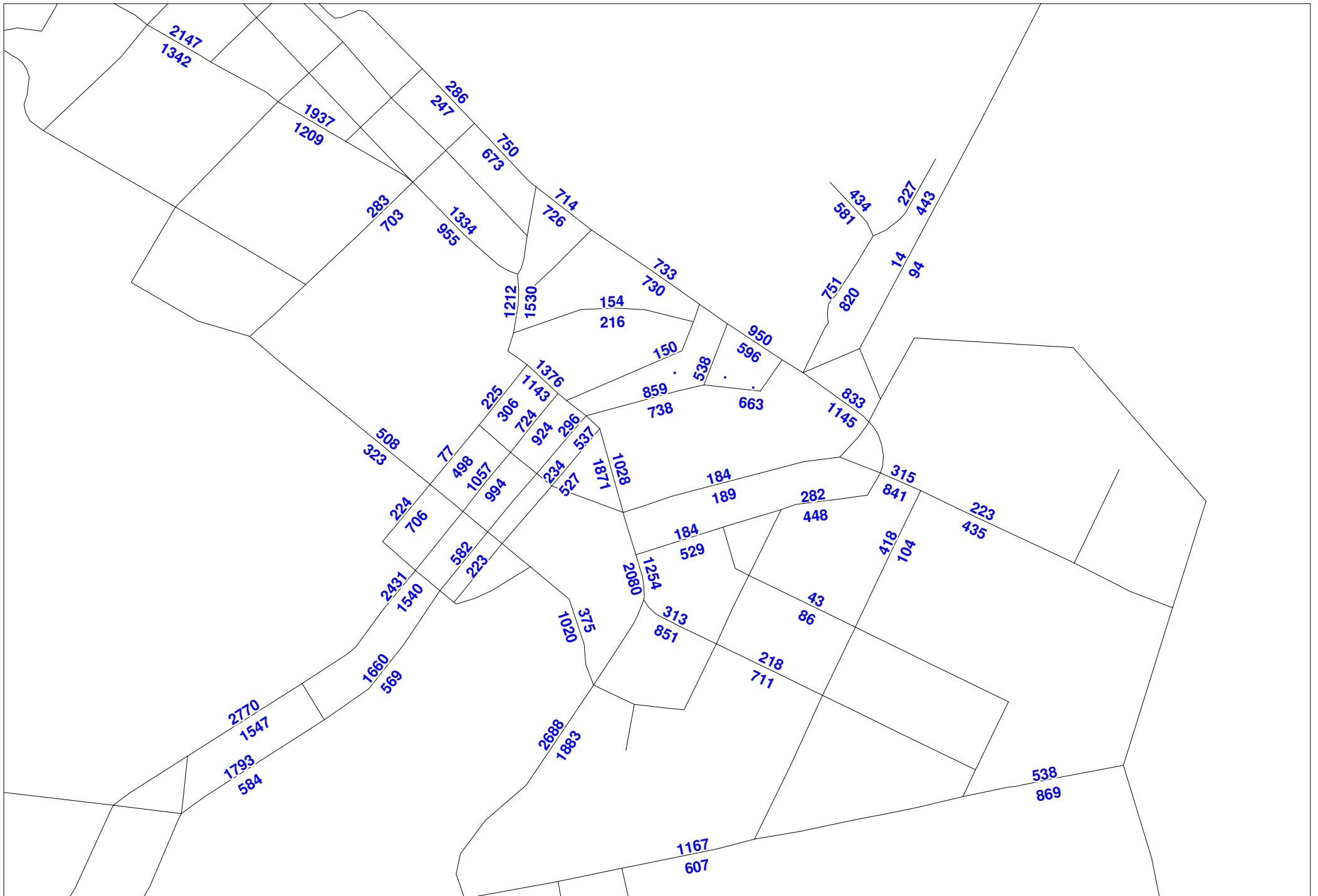






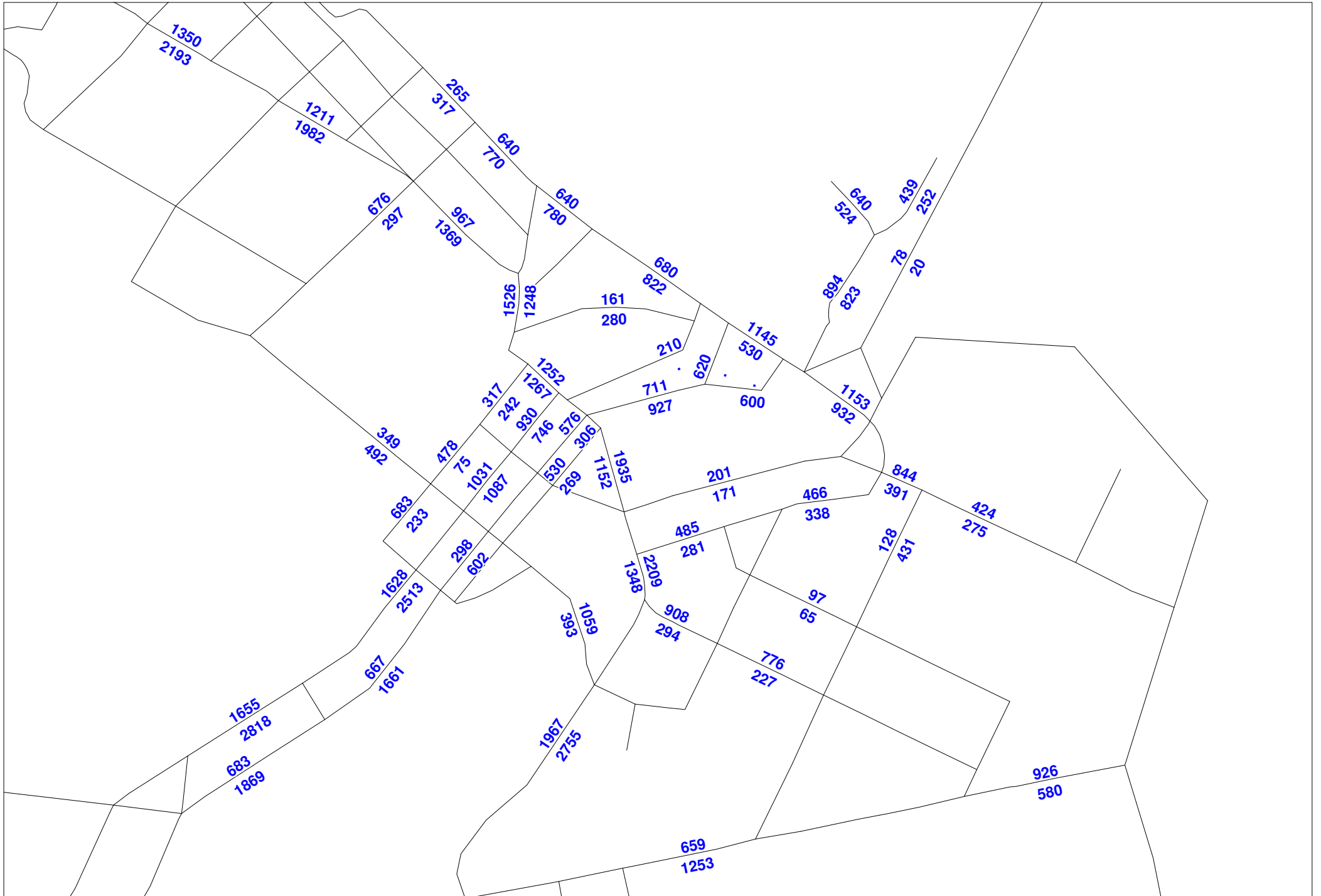
2025 with FDA & Bridge
Total Daily Volume

Figure 3.3



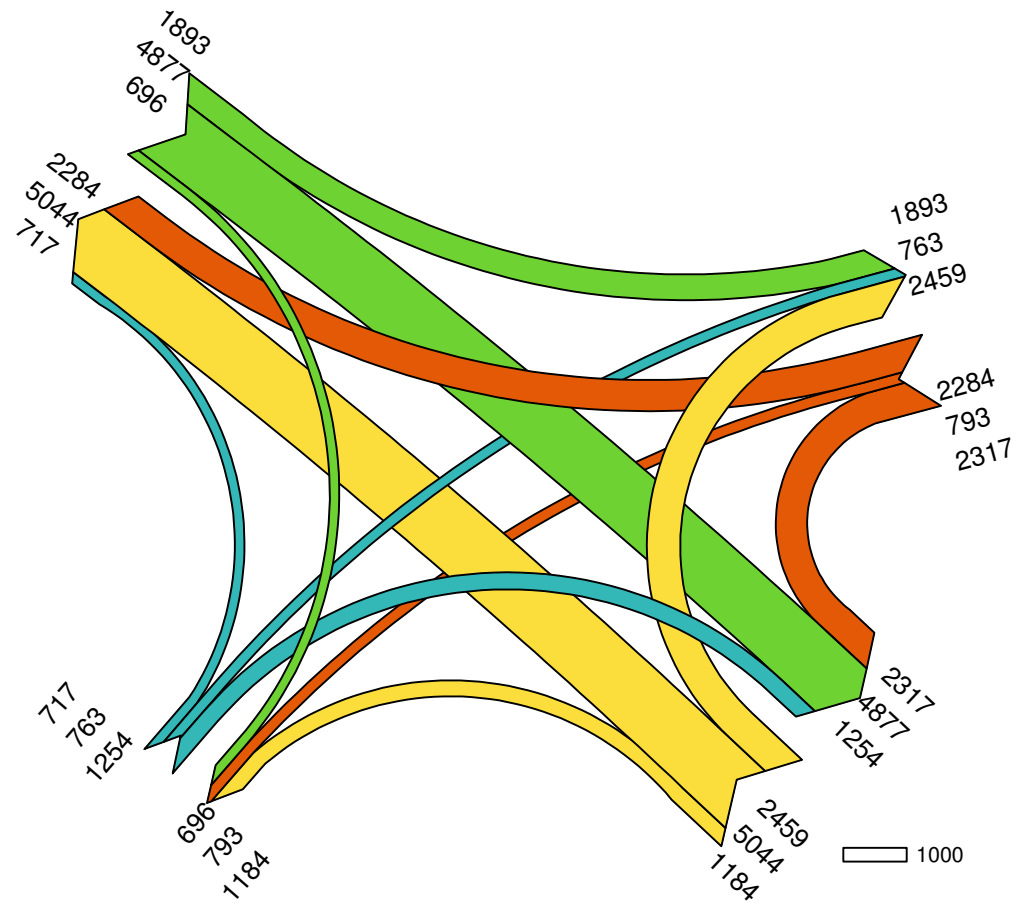
2025 with FDA & Bridge
Total AM 2 Hour Volume

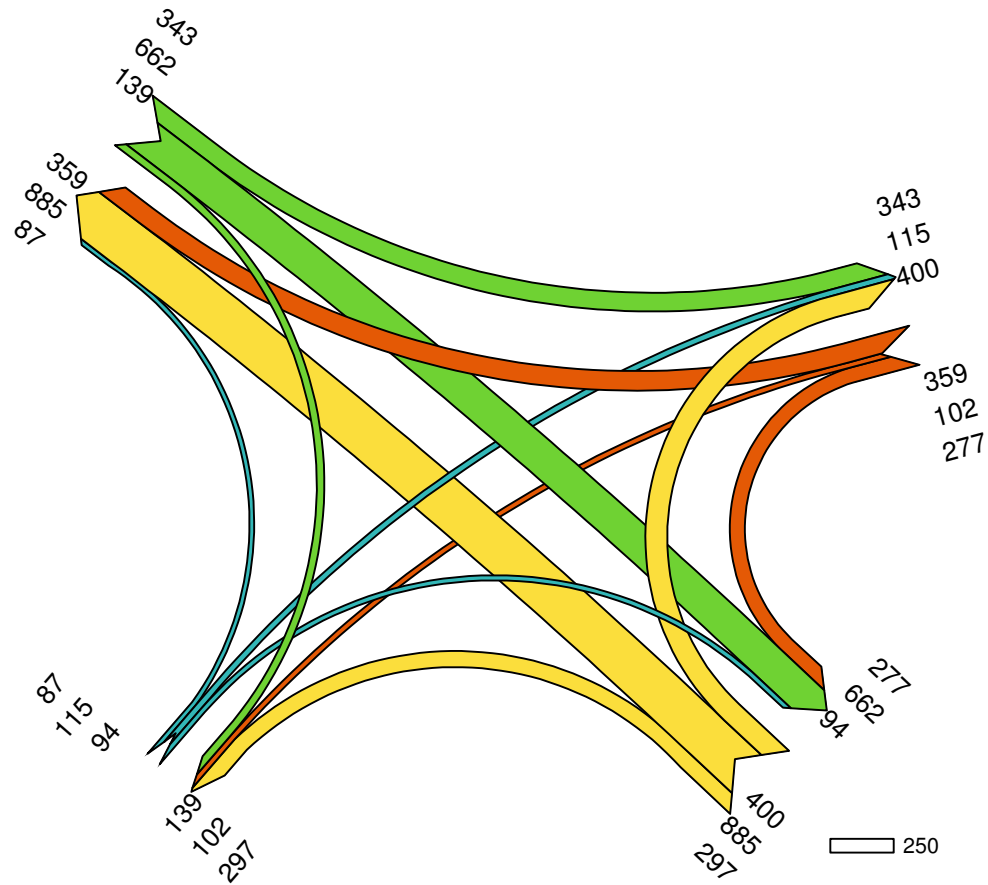
Figure 3.3a

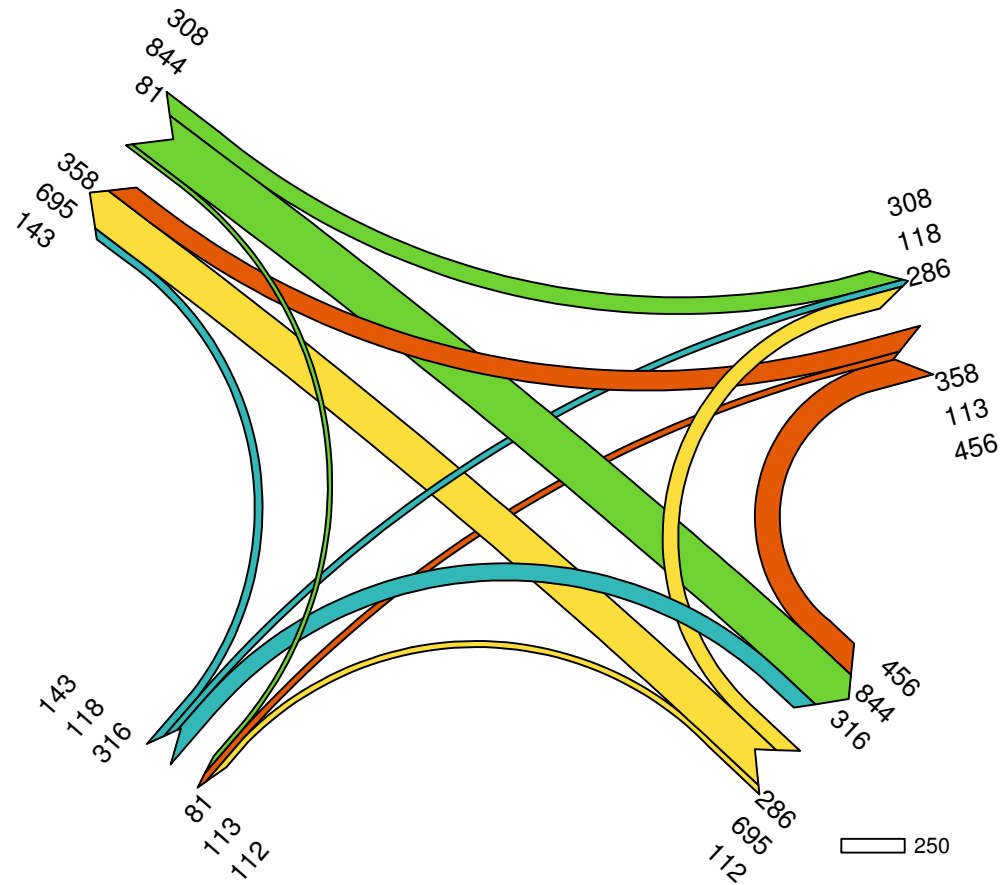


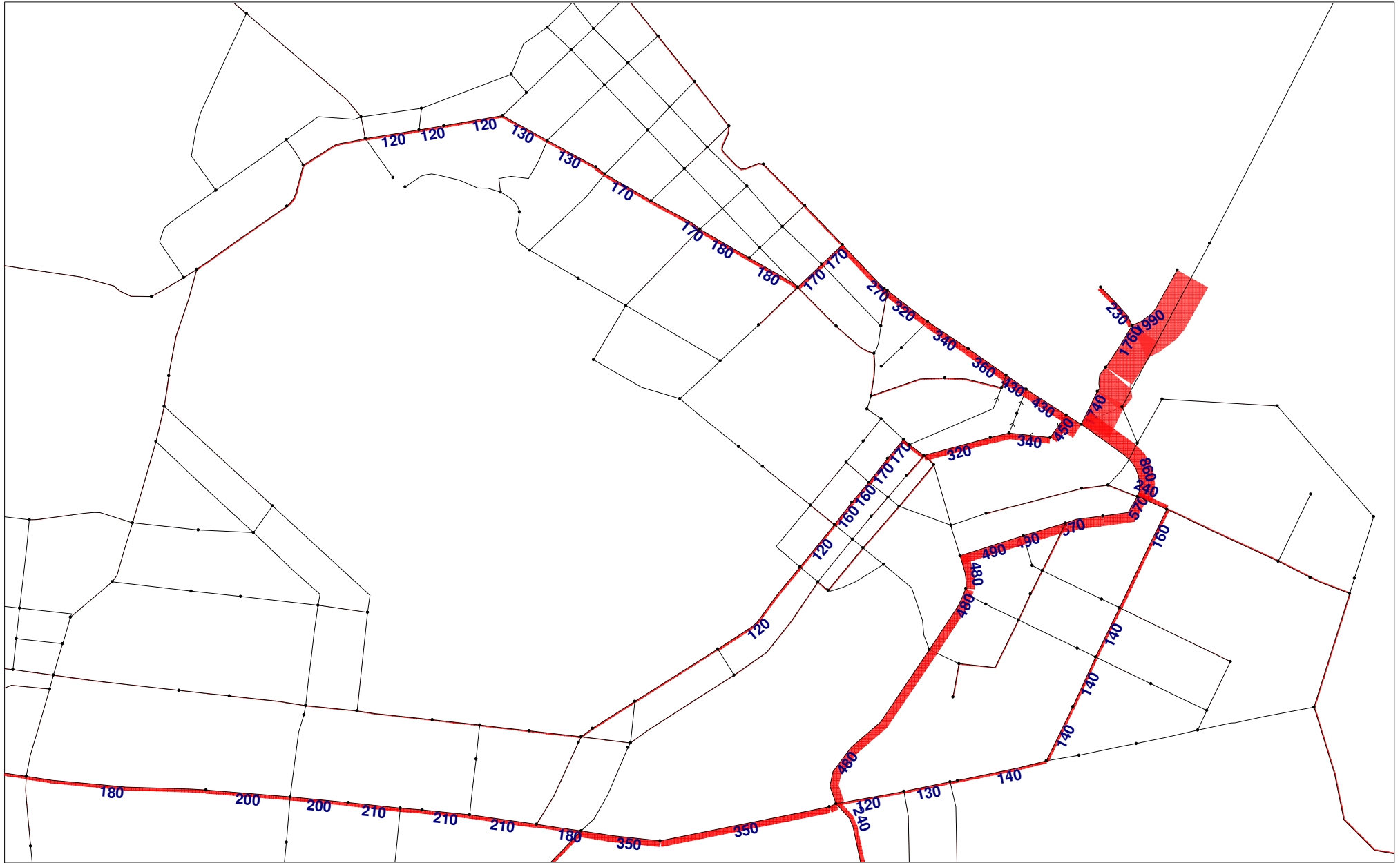
2025 with FDA & Bridge
Total PM 2 Hour Volume

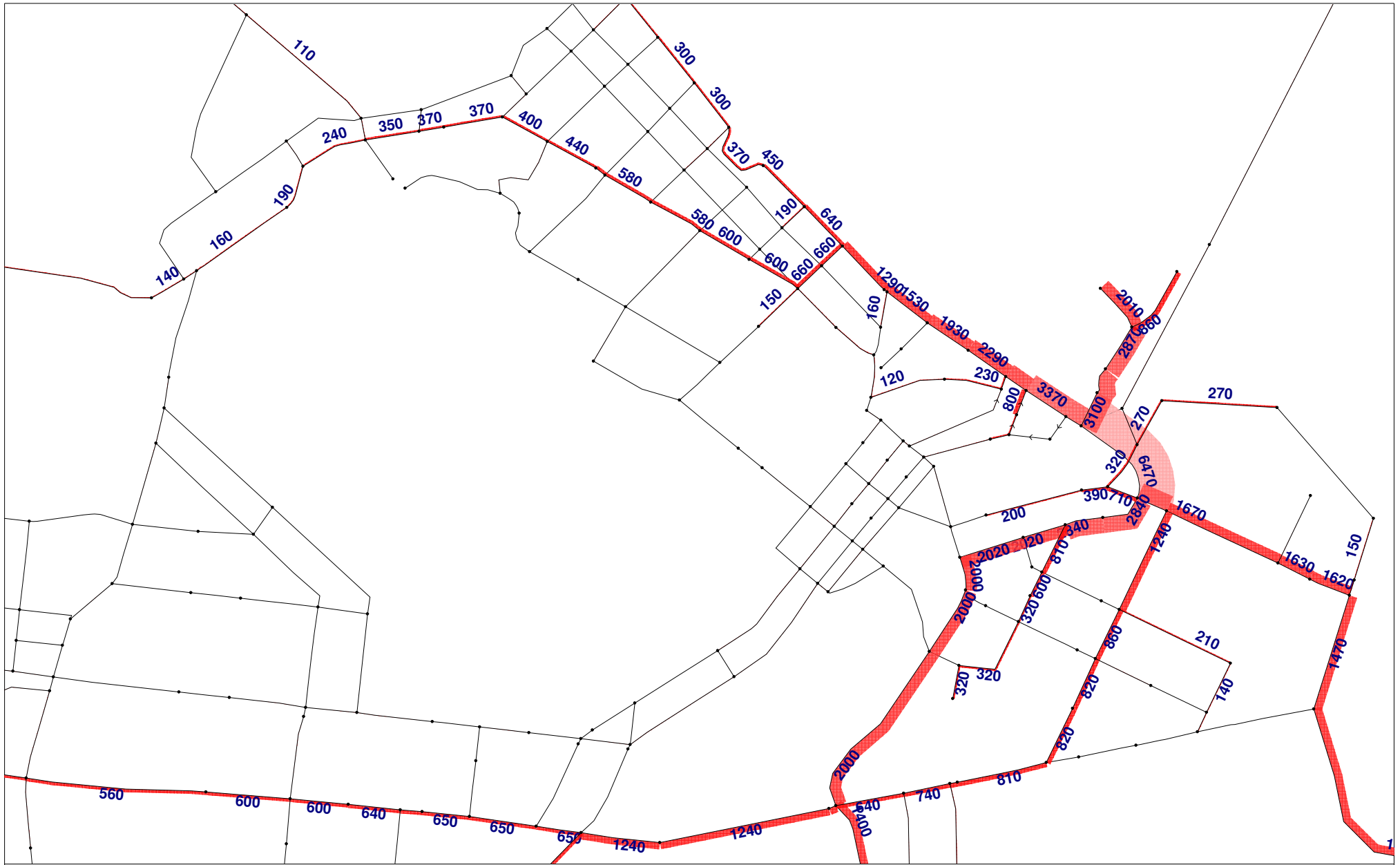
Figure 3.3b

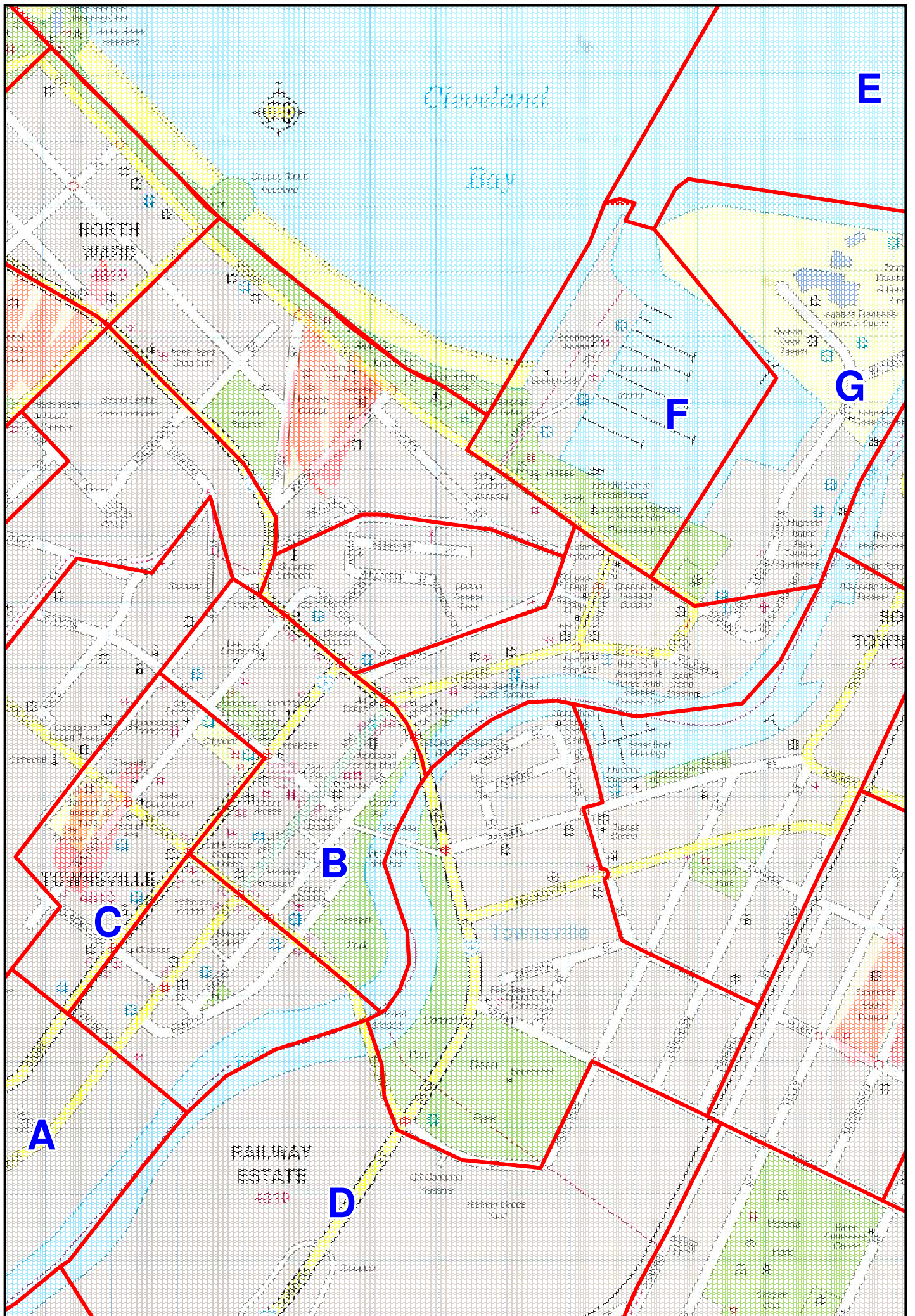












Zones with modified Demographic Data