# Why or Why Not DTA?
## Case-Studies of Macro and Micro-Simulation Modelling

**Scott Johnston & Golnaz Ghafghazi**
**IBI GROUP**
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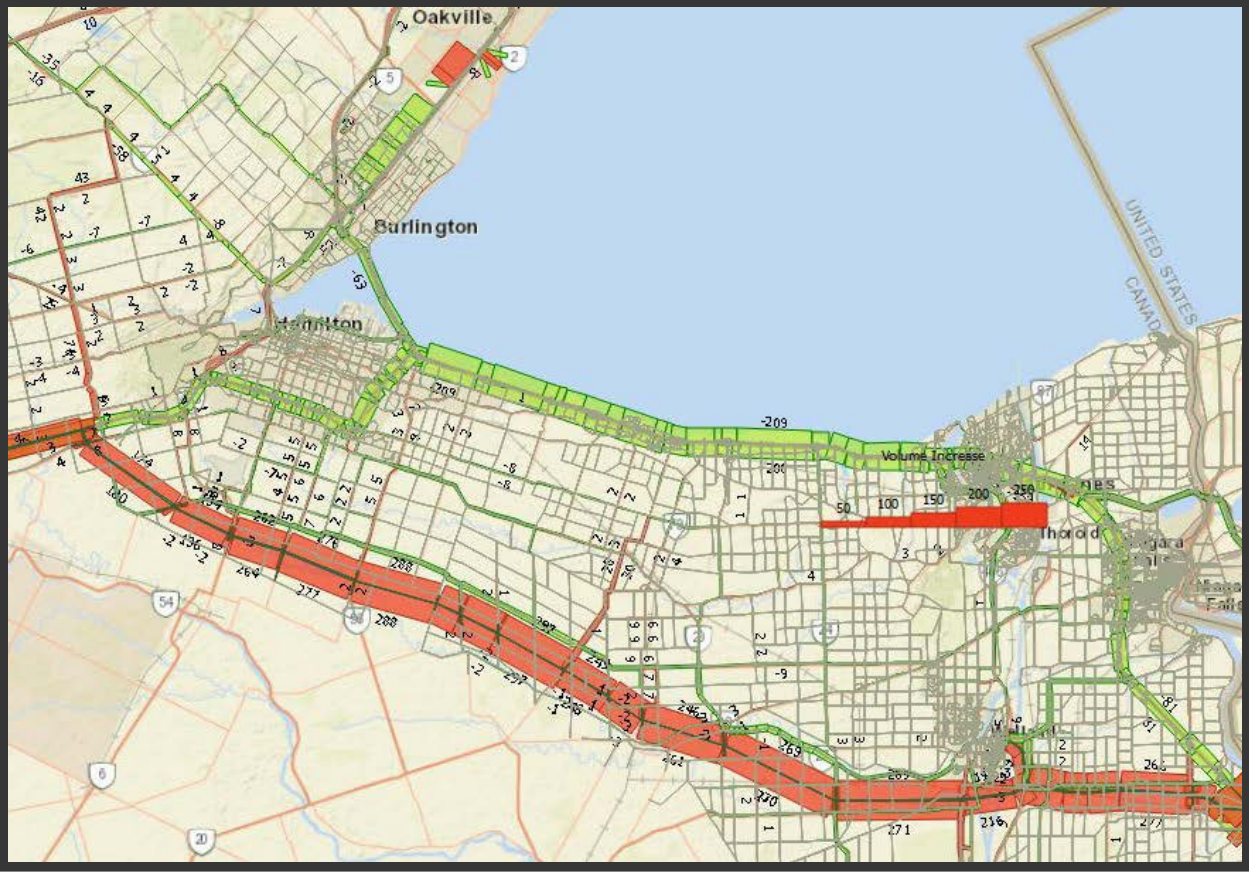
# Presentation Outline

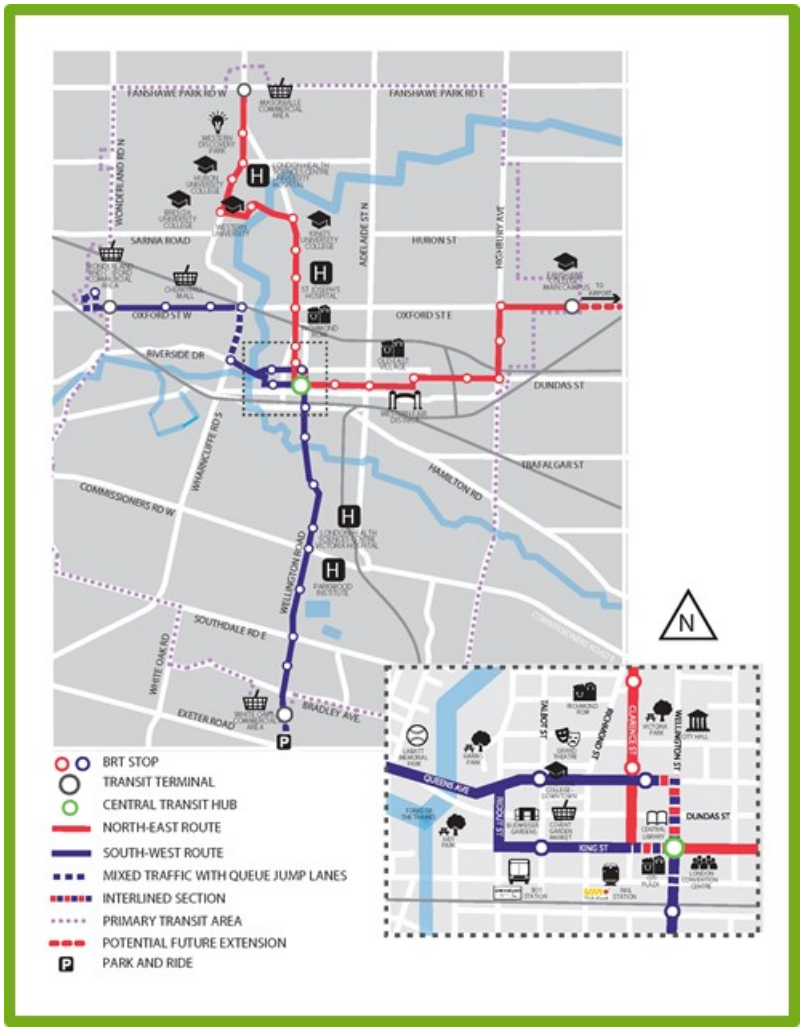
- Macro Models - Case Studies
- Micro-Simulation Models - Case Studies
- To DTA or Not to DTA?




# Macro Models

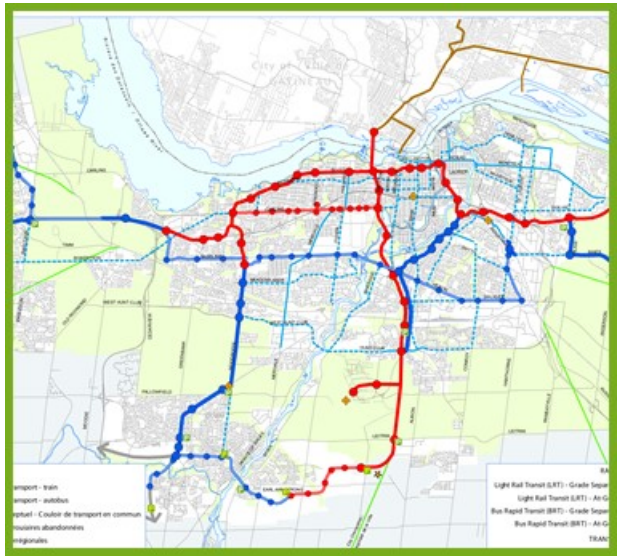
## London Model

- IBI Group conducted travel survey in the City of London
- Also conducted a targeted post secondary survey
- Developed a daily tour-based model in Visum utilizing the survey data
- A new traffic zone system was developed for higher resolution
- Model has been used in forecasting for the London BRT and for the London Development Charge Study



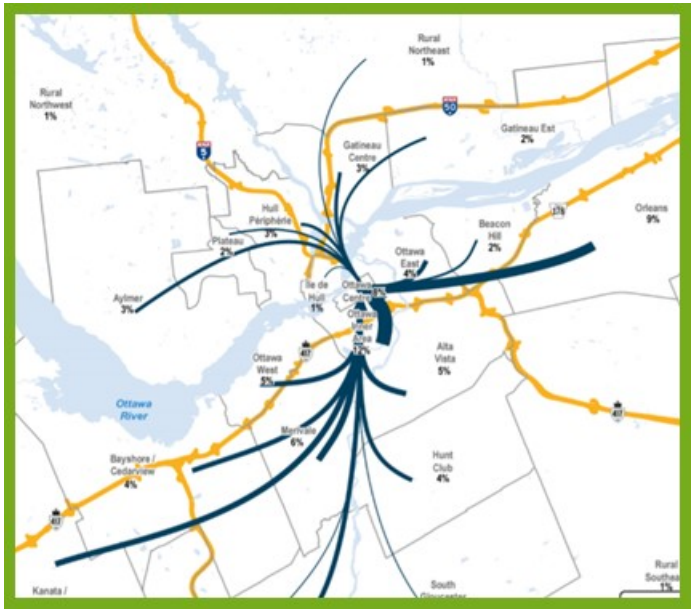
# Ottawa Special Generators Model

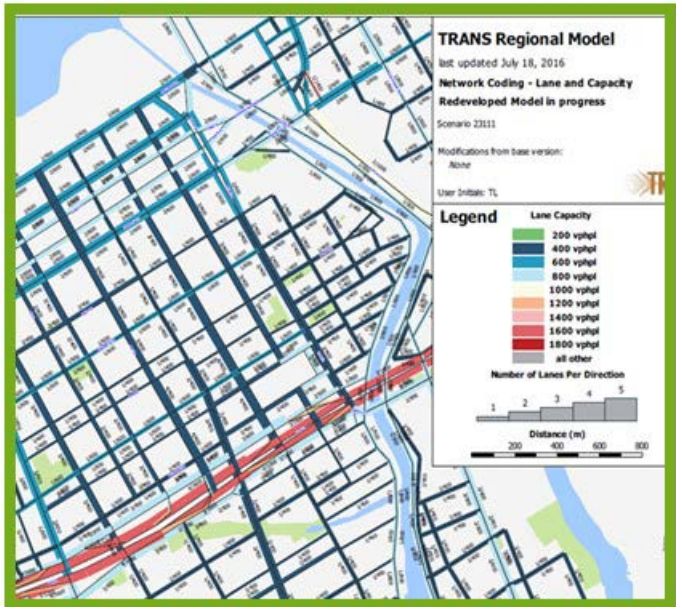
- General household surveys have gaps, where visitors or non-home based special trips are missed
- City of Ottawa conducted Special Generators Survey (SGS) to collect data from post-secondary schools, inter-city transportation hubs, as well as at key recreational facilities and hotels to fill in these gaps



# Ottawa Special Generators Model

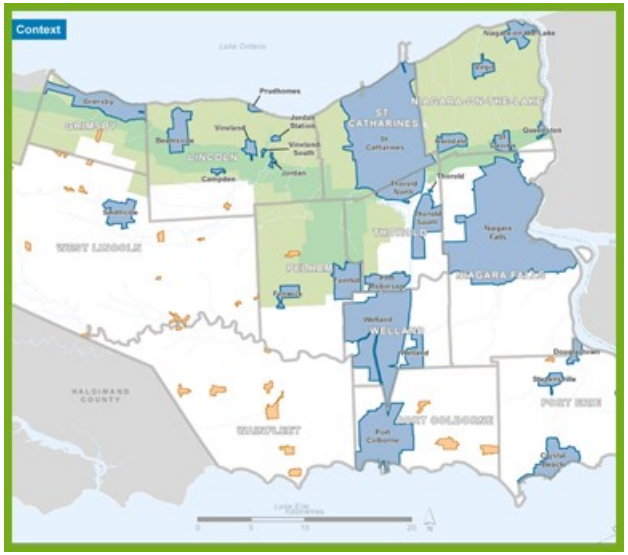
- IBI Group developing sub-model to model trips from special generators (e.g. universities, hotels, sport/entertainment venues, transportation terminals)
- Sub-model integrates with the overall transportation modelling system



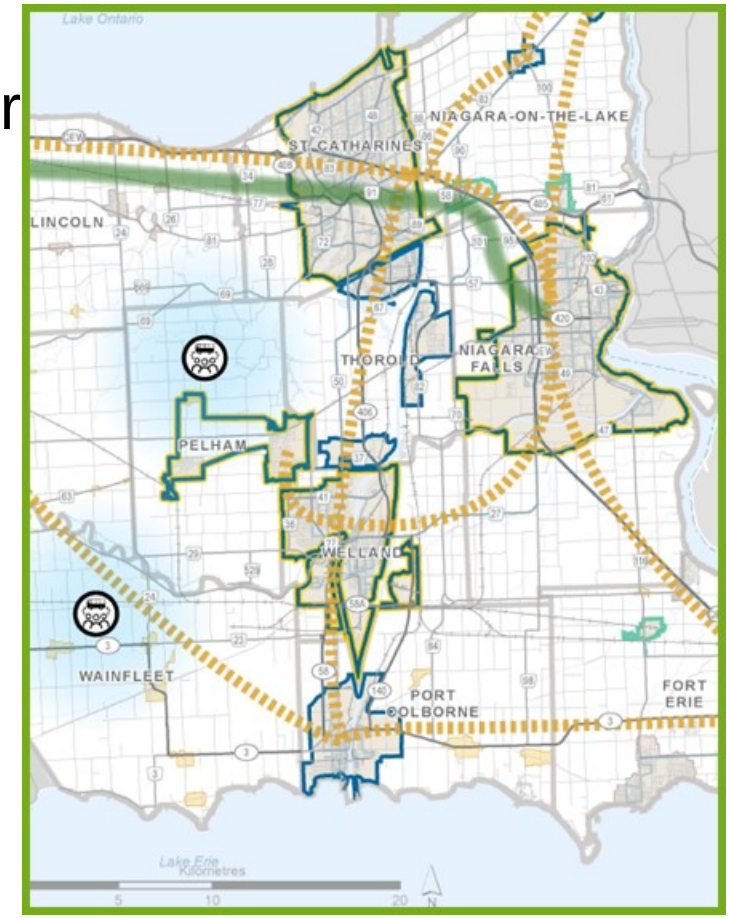
## Niagara Region Model

- Developed model for the Multi-Modal Transportation Master Plan for Niagara Region
- New traffic zone system for additional resolution around areas with future growth
- Developed new road and transit network
- Transit network and route schedule was developed using GTFS data



# Niagara Region Model

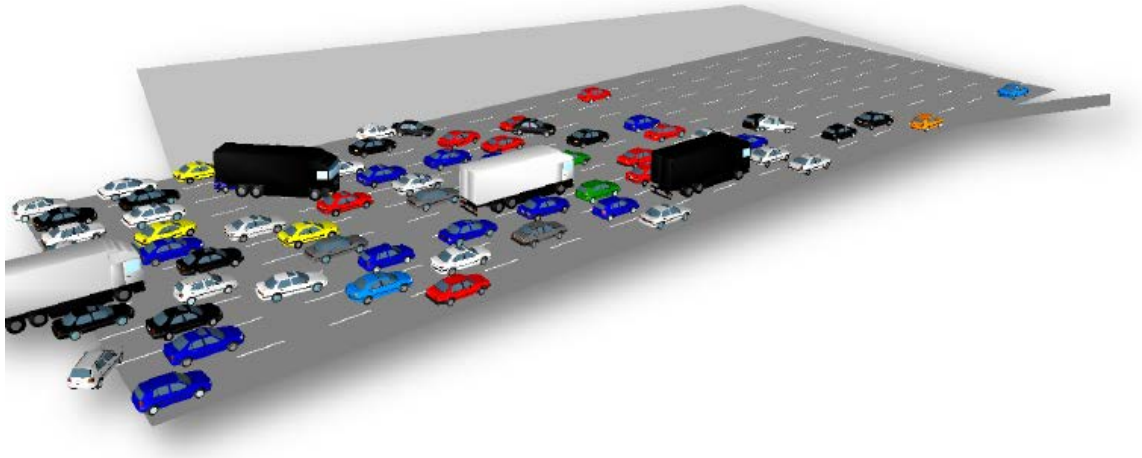
- TTS data was re-expanded to improve consistency with the higher resolution zones and account for under-reporting factors
- Simplified tour-based model structure similar to London
- Predicts GO Rail ridership through logit mode choice model
- LOS sensitive external model for trips to the GTA
- Used for input to sub-area studies



# Micro-Simulation Models

## Micro-Simulation

- An excellent tool to explore all the dynamics involved in traffic analysis, such as shockwaves, queues, signal timing, behavioral sensitivity, etc.
- Displays road users and their interactions in one platform



## Type of Traffic Assignments

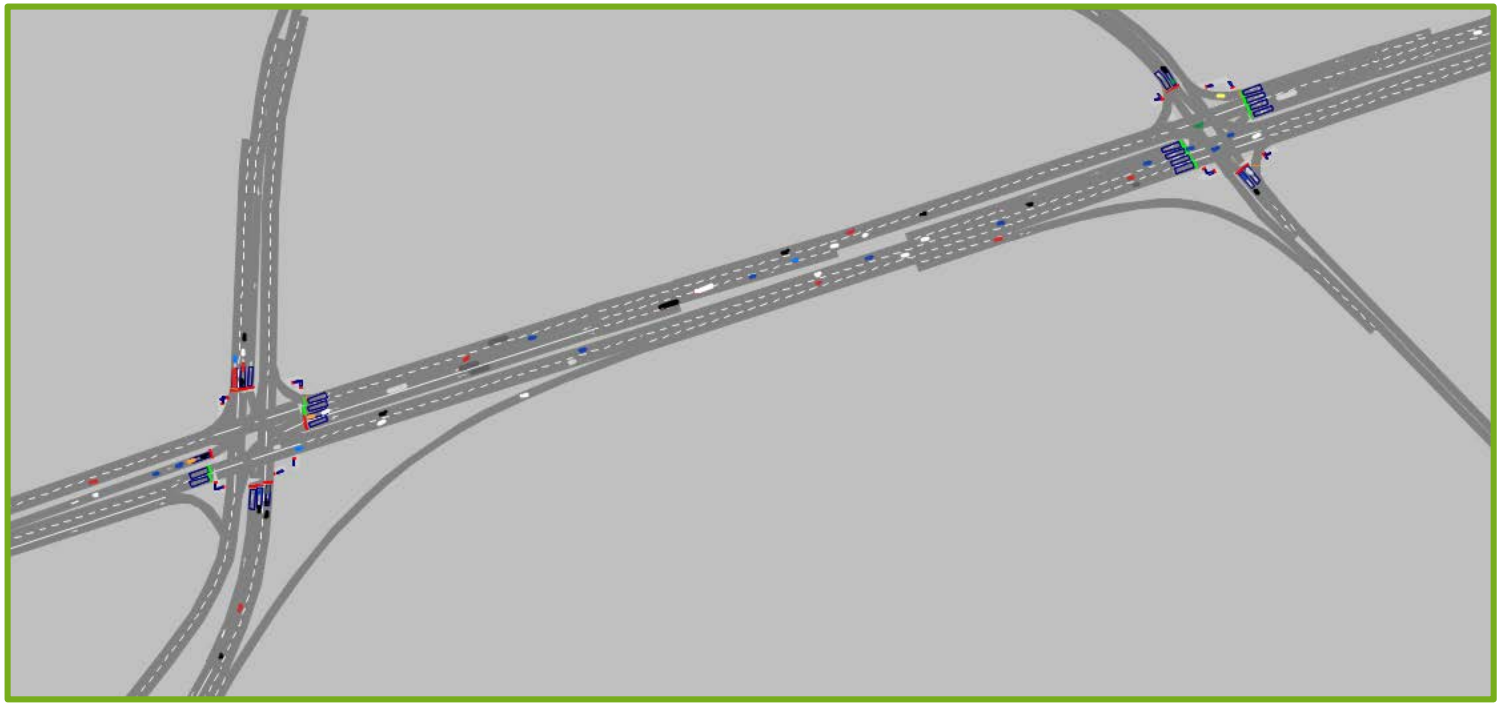
- Dynamic Traffic Assignment
- Static Traffic Assignment

## Type of Projects

- Intersection level
- Corridor level
- Network level

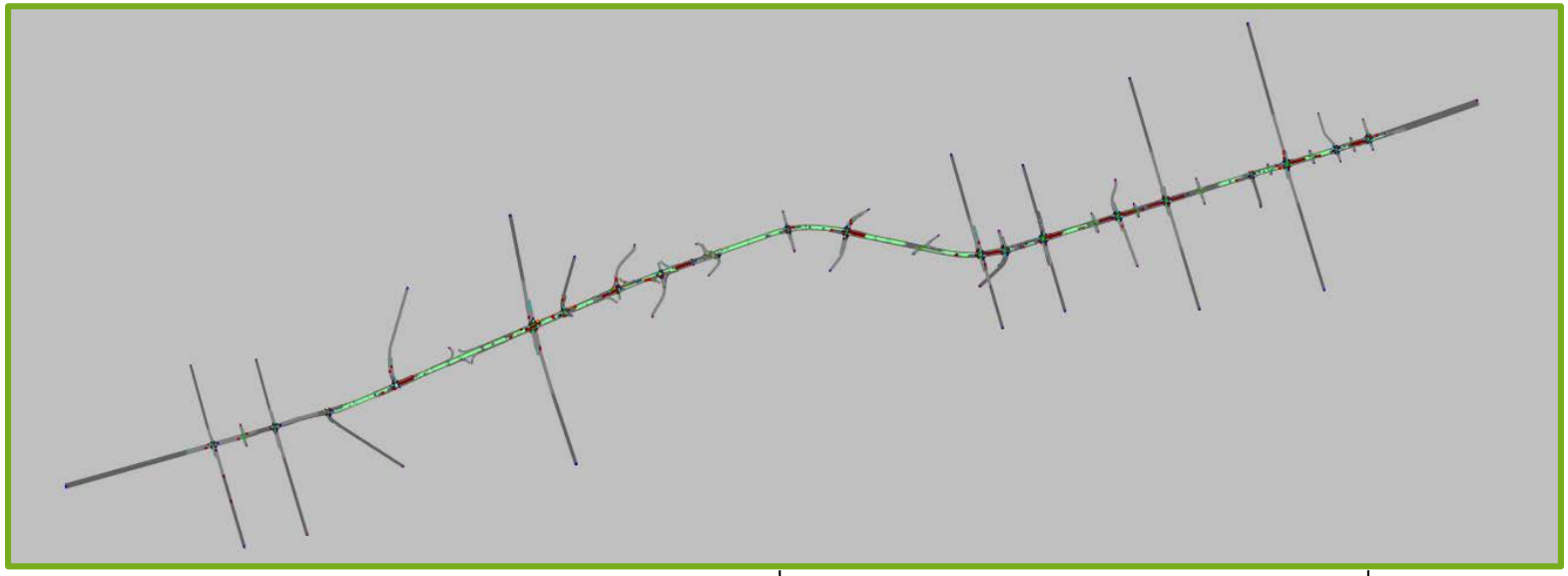
# MTO Eastern Region Assignments

- Evaluated traffic operations of existing and future conditions under 5 alternatives at Hwy 7/115 at Lansdowne St in Peterborough, ON
- *VISSIM – Intersection Level*



# Eglinton Crosstown LRT

- Developing a micro-simulation model for at-grade LRT operations
- To evaluate the impact of TSP on road users and to inform the design of traffic signal timings and TSP parameters
- *VISSIM – Corridor Level*

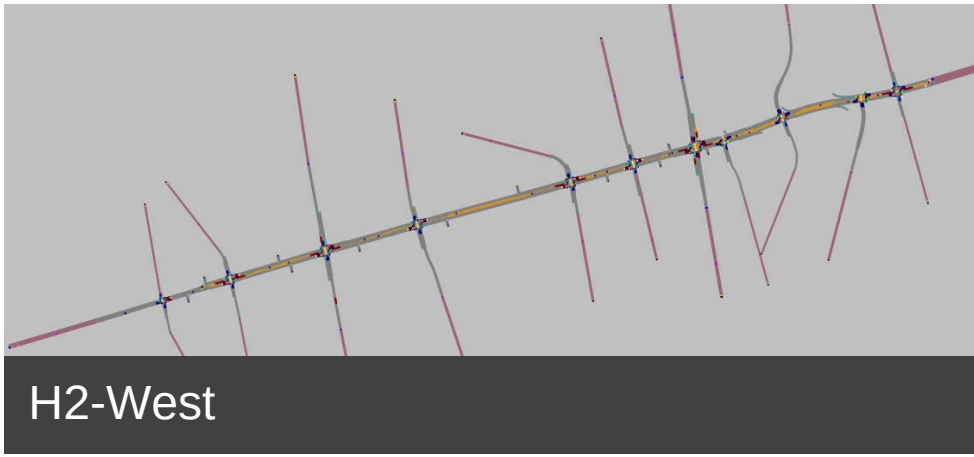


# York Region vivaNext Bus Rapid Transit

- Developed micro simulation models for different segments of vivaNext BRT, including H2 Extended segments
- To evaluate the impact of TSP on road users and to inform the design of traffic signal timings and TSP parameters

- *VISSIM – Corridor Level*

H2-East

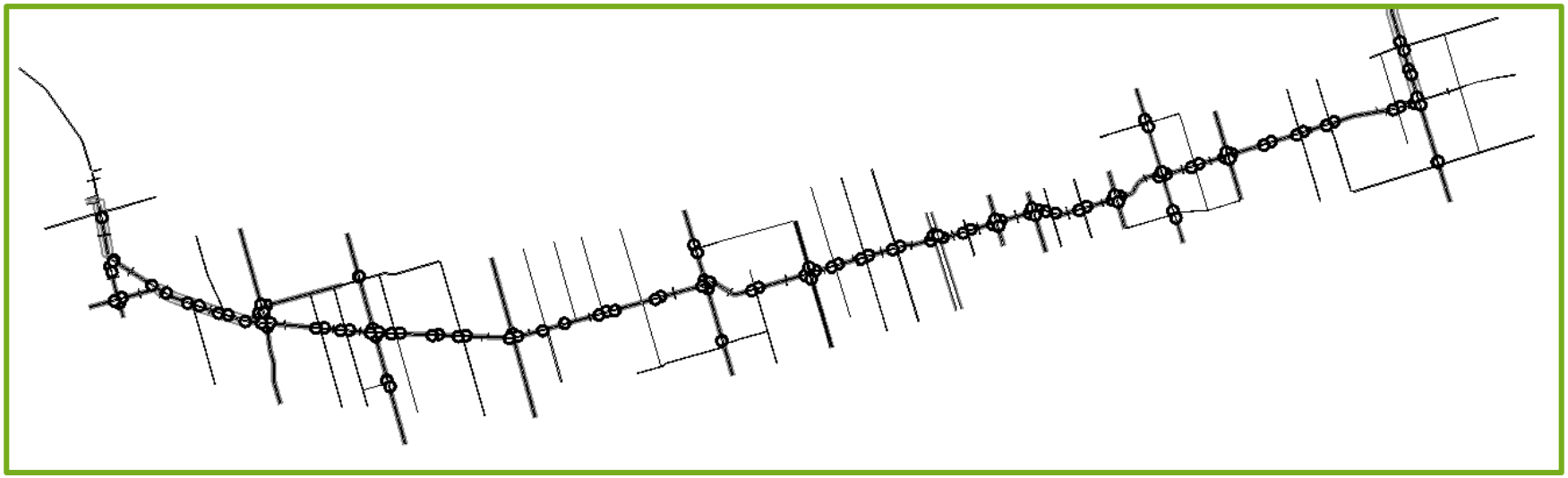


H2-West

# City of Toronto Traffic Signal Coordination

- Developed a micro-simulation model and evaluated a new set of traffic signal timings to improve traffic flow and to assess the effects of TSP on traffic/transit operations along the Dundas St corridor

- *Aimsun – Corridor Level*



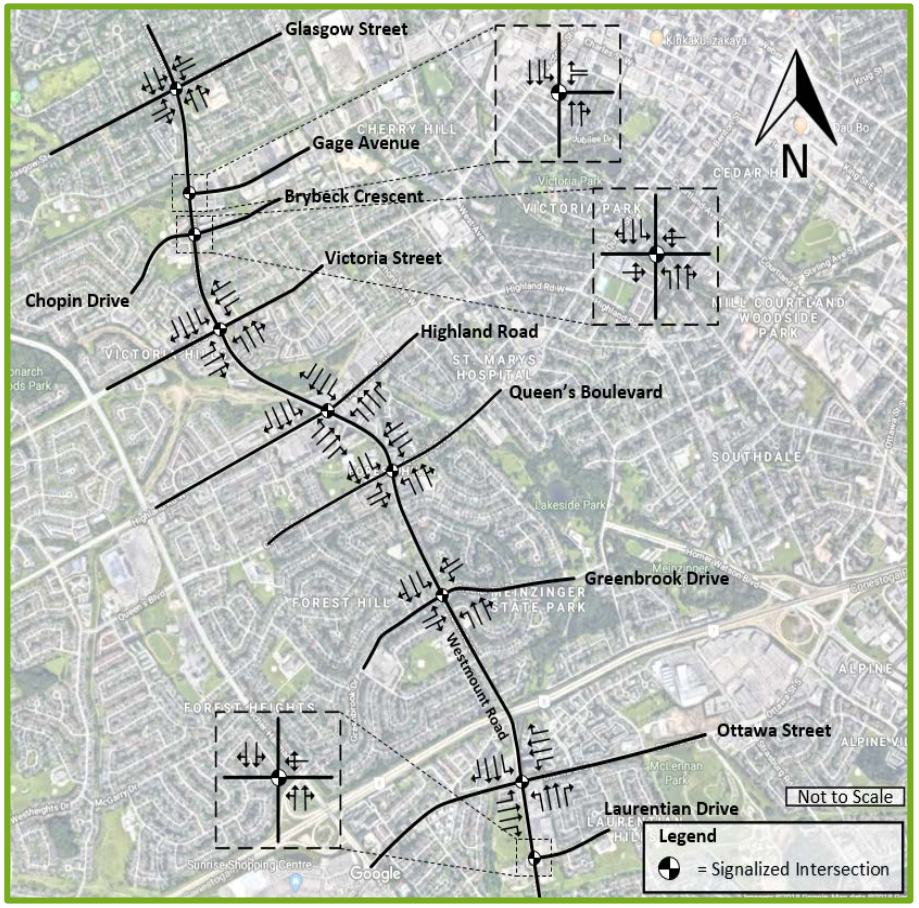
# MTO Eastern Region Assignments

- Conducted an operational review of a 12 km section of Hwy 401 in Port Hope, included 3 interchanges with 7 intersections, under existing conditions and future horizons
- *Aimsun – Corridor Level*

# Greenhouse Gas Emissions Modelling

- Reviewed the potential GHG emissions benefits from implementing regular signal optimization along Westmount Rd Corridor in the Region of Waterloo

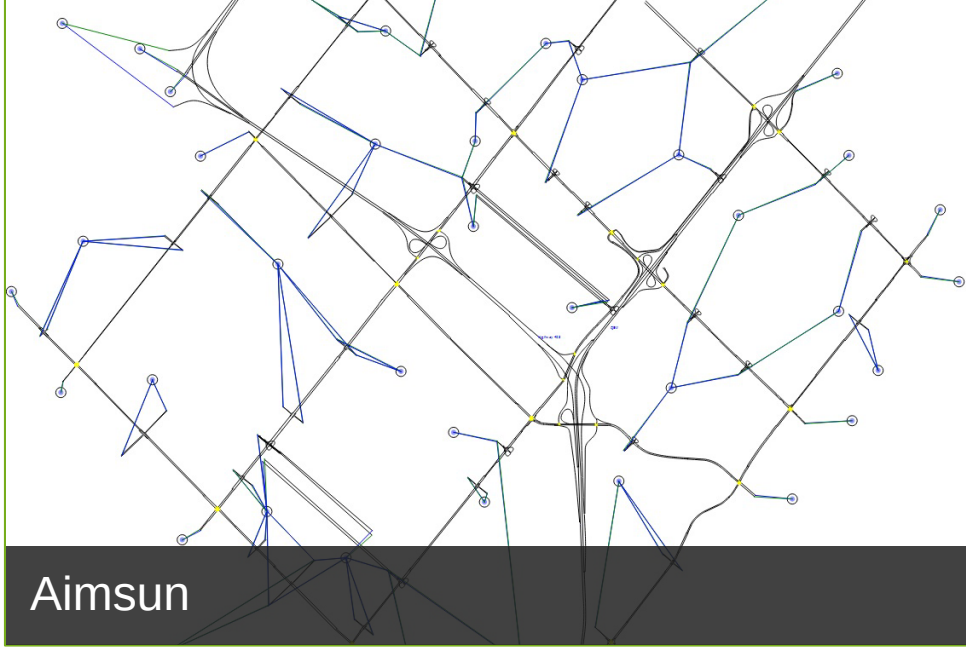
- *VISSIM – Corridor Level*
- *MOVES – Emissions Model*



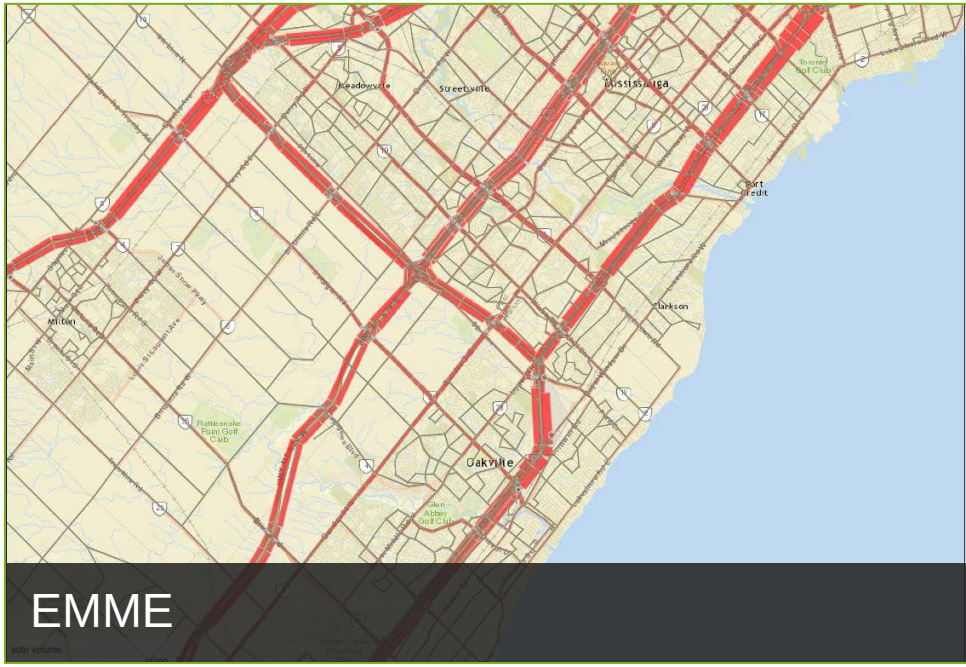
# QEW/Hwy 403 Structures Rehabilitation

- Conducted traffic engineering services in support of the rehabilitation of bridge and culvert structures along QEW/Hwy 403
- Evaluated various rehabilitation staging scenarios

- *Aimsun – Network/Corridor Level*



Aimsun




EMME

# DTA or Not DTA?

- Review the project objectives and the questions that the modelling is answering
  - Operations vs. design vs. planning stage
  - Short-term vs. medium-term vs. long-term evaluation
  - Network-wide vs. localized impact

- Time-sensitive analysis, incident management, and major traffic management projects

# Thank you!