Traffic Study 2015 / 2016

Activities To-date
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- Support Traffic / Rapid Transit Task Team
  - Inform
  - Advise

- Benchmark existing conditions
  - Characterize vehicular traffic
  - Quantify transit activity

- Characterize road use
  - “Linked trips” or “Kiss-n-Ride” activity
  - “Cut-through” activity

- Model future “Master Plan” scenarios
  - Reduction / elimination of motor vehicles within campus core
Data Collection

- **Five boundary intersections**
  - Western Road @ Sarnia Road/Philip Aziz Avenue;
  - Western Road @ Lambton Road;
  - Western Road @ Elgin Drive;
  - Windermere Road @ Perth Drive; and
  - Richmond Street @ University Drive.

- **Intersection Turning Movements** – summaries of all vehicles, cyclists, pedestrians entering intersection, and their departing route

- **Automated Vehicle Tracking** - movements of individual inbound and outbound vehicles with time-stamps
Data Collection Locations

Note:
• Boundary access points exclusively reserved for active transportation (i.e. multi-use, pedestrian, and cycling facilities) were not counted as part of this study.
Data Collection Period

- Tuesday, December 2nd; Wednesday, December 3rd; and Tuesday, December 8th 2015

- Data from December 2nd and 3rd used to confirm December 8th was a “typical” day for traffic – just prior to exams

- Peak Periods
  - Morning Peak Period – 07:00-10:00
  - Noon Peak Period – 12:00-14:00 (2 PM)
  - Evening Peak Period – 15:00-19:00 (3 PM to 7 PM)

- Peak Hours
  - AM Peak Hour – 08:00-09:00
  - Noon Peak Hour – 12:00-13:00 (12 PM to 1 PM)
  - PM Peak Hour – 16:00-17:00 (4 PM to 5 PM)
FINDINGS
Turning Movement Studies

Inbound and Outbound Traffic
All Motor Vehicles

<table>
<thead>
<tr>
<th>All Vehicles</th>
<th>All Peak Periods—Nine (9) hours total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windermere Rd</td>
<td>3,388 - 2,548</td>
</tr>
<tr>
<td>Perth Dr</td>
<td>2,179 - 775</td>
</tr>
<tr>
<td>Richmond St</td>
<td>3,967 - 3,401</td>
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<tr>
<td>A City Within a City:</td>
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<tr>
<td>• 13,500 inbound vehicles</td>
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<tr>
<td>• 12,278 outbound vehicles</td>
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<td>• More daily traffic than the City of</td>
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<tr>
<td>Port Colborne (Niagara Region – Urban Pop. 13,000)</td>
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Buses and Trucks

All Peak Periods—Nine (9) hours total

A Transit Hub:
- 1,212 bus trips
- 606 buses serving 13 routes
- Almost exclusively London Transit (shuttle buses)
Context – City of Guelph / University

City of Guelph
• Pop. 120,000 (2012)
• Total of 26 Transit Routes (plus GO)
• Guelph University Centre – Hub for 13 Routes
• Dedicated platforms and exclusive bus loop
Pedestrians and Cyclists

- Plenty of Pedestrians:
  - Intersections with 2000+ pedestrian crossings are typically associated with city centres.
  - Intersections approaching 9,000 pedestrian crossings are typically associated with Downtown Toronto!

Map highlights:
- Windermere Rd: 536 Crossings
- Elgin Rd: 2,276 Crossings
- Brescia Ln / Lambton Dr: 3,059 Crossings
- Sarnia Rd / Philip Aziz Ave: 8,975 Crossings
- Perth Dr: 43
- Richmond St: 1,673 Crossings

All Peak Periods – Nine (9) hours total
Average Daily Traffic (Road Sections)

A very busy place:
- Roads with average daily traffic of:
  - 1,000 – 3,000 are classed as “local”
  - Up to 8,000 as “collectors”
  - Above 8,000 as “arterials”
- By way of comparison, Oxford St is a major arterial within the City’s network – it carries between 10-40,000 vehicles per day
AM Peak Hour (08:00-09:00)

Approaching Capacity
- Two-lane, two-way roadways typically have a capacity of 700-900 vehicles per lane, per hour
- Some campus roadways are reaching their capacity, resulting in congestion
FINDINGS
Vehicle Tracking

07:00-10:00; 12:00-14:00; and 15:00-17:00
Nine (9) Hours
Origin-Destination Tracking

- Matched inbound and outbound movements of vehicles which entered / left campus within nine (9) hour study period
  - Entering time and location
  - Departing time and location
  - Derived “dwell” time on-campus
Definitions

“Linked” or Multi-purpose Trips – (thought to include “Kiss-n-Ride” (i.e. person picked-up or dropped-off on-campus)

- In-and-out
- Origin and destination off-campus
- Short dwell time on-campus
Definitions

- “Cut-through” or Short-cutting Trips,
  - No “business” on-campus
  - Pass-through (origin and destination off-campus)
  - Very short dwell time on-campus

- Cannot separate from linked trip w/o interview
Turn-over Rate

- **Turn-over rate** - about nine of ten vehicles (89%) arriving during the study period, also left during the study period.

- When vehicles arriving on-campus which left less than twenty (20) minutes later are isolated, they represent about 51% of all trips.

- In other words, about half of all vehicle trips into and out of campus have a duration of less than 20 minutes.
FINDINGS
Short-term Inbound – Outbound Activity

3-7 minutes dwell time
Inbound @ Philip Aziz Avenue

- 3,161 vehicles entered at Philip Aziz
- Of these, 1,706 or 53% departed at another intersection within 3-7 minutes
- Of that 1,706 vehicles, 86% left via University Drive
Inbound @ Lambton Drive

- 2,160 vehicles entered at Lambton Drive
- Of these, 609 or 28% departed at another intersection within 3-7 minutes
- 214 departed the same way they came in within 3-7 minutes
Inbound @ University Drive

- 3,967 vehicles entered at University Drive
- Of these, 1,872 or 47% departed at another intersection within 3-7 minutes
- Another 117 departed the same way they came in, in 3-7 minutes

- 213 (11%) at Perth Dr
- 509 (27%) at Windermere Rd
- 148 (8%) at Brescia Ln / Lambton Dr
- 1,003 (54%) at Sarnia Rd / Philip Aziz Ave
Inbound @ Elgin Road

Confidential Information
3,388 vehicles entered at Perth Drive
• Of these, 513 or 20% departed at another intersection within 3-7 minutes
• Another 174 departed the same way they came in, in 3-7 minutes
Summary

- 5,361 vehicles (40%) left within 3-7 minutes
  - 4,701 (35%) left by a different entrance
  - 660 (5%) left by the same entrance

- This cohort is assumed to include:
  - “Linked” or Multi-purpose (Kiss-n-Ride) Trips - pick-up and drop-offs on-campus
  - “Cut-through” or Short-cutting Trips, with no “business” on-campus
Observations

- **If all linked trips and cut-through trips** were eliminated, campus traffic would be reduced by almost 5,400 vehicles per day, or 40%.

- **If all transit trips** were shifted to peripheral roads, with curb-side stops, campus traffic would be reduced by another 600 trips or 5%.

- In total, this would represent a 45% reduction in vehicles using campus roads.
Observations

- Moving these trips onto public streets (i.e. Western Road, Windermere Road, and Richmond Street) may add to congestion on these roads – particularly at key intersections.

- Turn-outs for stopping/standing on these roads, and/or an off-road transit hub and/or kiss-n-ride facility would be needed to:
  - Preserve / free up road capacity; and
  - Improve the safety of vulnerable road users boarding and alighting from vehicles.
Possibilities

1. **Existing linked trips and cut-through traffic** could “go around” campus via Western Road, Windermere Road, and Richmond Street (-5,360 trips)

2. **Pick-ups / drop-offs** could occur at the (improved) curb on public roadways or at a dedicated Kiss-n-Ride Loop (-660 trips)

3. **Transit vehicles** could also go around, and pick-up and drop-off along public roadways or at a dedicated bus loop (-606 trips)

4. **Movements on-campus between points of access could be restricted** (e.g. to / from University Dr. @ Richmond St.)
   - The remaining motorized traffic entering / exiting campus would then consist of:
     1. Those permitted to park in on-campus, located at the periphery of a motor-vehicle-free zone (enter / exit at same location)
     2. Deliveries (enter / exit at same location)
     3. Campus vehicles (unrestricted)
     4. Emergency vehicles (access provisions)
Possibilities (Consultant Blue-sky)

- Possible RT Alignment
- Possible Bus Loop (one-way)
- Possible Kiss-n-Ride Loops
- Possible Transit Terminal
- Motorized Vehicle Free Area

Future City
Intersection Improvements
Shared Opportunities

- The University, LHSC, the City, and London Transit all have a stake in safe and efficient traffic operations on and off-campus.

- Coordinated planning and execution is essential to the success of:
  - Western’s Master Plan goals,
  - LHSC’s expansion aspirations, and
  - the City and Transit Authority’s introduction / integration of Rapid Transit.