Purpose of Presentation

- Outline key principles for traffic and transit management
- Implementation strategies for Segment W-1
- Tunney’s to Dominion....how to replace the Transitway while LRT/Dominion Station is under construction?
- Describe options developed, rationale for short-listed traffic options, prescribed detour in this area
- Noise, vibration and forthcoming air quality analysis
- Identification of specific mitigation measures
- Respond to concerns from Workman Working Group
- Reinstatement requirements for affected areas
- Next steps in the process
Confederation West Construction Segments
Traffic Management Principles

- Maintain existing transit services as closely as possible to current level/quality of service
- Maximize use of existing BRT
- Minimize travel time variability
- Minimize travel time/transfers
- Minimize operating, throw away and capital costs
- Minimize disruption to other road users and adjacent properties
- Minimize additional bus traffic in residential areas
- CONTEXT - this section of BRT one of the busiest in the City
Recommended Traffic and Transit Detour
Transitway Detour Schedule / Durations

- Trillium Line shutdown (2020-2021) will be prescribed
- Extra buses needed to replace Trillium Line operations
- Tunney’s-Dominion temporary Transitway will use these buses in 2021-2023 after shutdown is over
- Construction of Tunney’s to Dominion portion of project delayed until Trillium buses available:
  - Construction of Scott Street detour in 2021
  - Operation of temporary Scott Street detour not until Q4 2021
  - In place for 26 months to revenue service (end of 2023)
# BRT Detour Schedule and Durations

| Line & Segment       | BRT Detours Description | Duration       | Date (mths) | Q3 2019 | Q4 2019 | Q1 2020 | Q2 2020 | Q3 2020 | Q4 2020 | Q1 2021 | Q2 2021 | Q3 2021 | Q4 2021 | Q1 2022 | Q2 2022 | Q3 2022 | Q4 2022 | Q1 2023 | Q2 2023 | Q3 2023 | Q4 2023 |
|----------------------|-------------------------|----------------|-------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Confederation West  | W-1: EB & WB            | Tunney’s - Dominion | Nov. 2021 - Dec. 2023 | 26      |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|                      |                         |                |             |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Trillium Line        | Existing Trillium       | Bayview - Greenboro | May 2020 - Aug. 2021 | 16      |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|                      |                         |                |             |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
Preliminary engineering concept outlines one way of doing things but not the only way.

Specifications outline contractual requirements but proponents pick the best detour option.

UNLESS.....there is only one feasible/cost effective way to implement detours in a particular area;
- Prescribe the detour to the contractor.

Benefits of prescribed detours;
- Mitigation measures committed in advance
- Public consultation can address community concerns
- OC can plan/budget to buy buses for prescribed detours

Tunney’s to Dominion detour will be prescribed.
Recommended BRT Service Plan - Tunney’s to Dominion

- Scott Street including extension from Churchill to SJAM for revenue bus service
- Deadhead buses on SJAMP includes bridge rehabilitation of two NCC bridges
- Requires temporary bridge across Transitway near Dominion Station
- MUP connectivity maintained but Roosevelt pedestrian bridge to be closed, demolished and rebuilt
- Noise and vibration analysis completed
- Air quality analysis underway
Map of Recommended BRT Service Plan

- **Legend**
  - Existing Transitway
  - LRT Stage 2 Alignment
  - LRT Stage 1 Station
  - LRT Stage 2 Station - BRT to LRT Conversion
  - Revenue Detour Alternative G(b)
  - Datehead Detour Alternative 6(b)
  - New Road Extension
  - Traffic signal

- **Notes**
  1. Scott Street in an arterial roadway
  2. Eastbound Bus-Only Lane between west of Leneve Avenue and east of Island Park Drive
  3. Scott Street busway extension across Church
  4. Crossing of LRT alignment to the north at proposed location using a Bailey Bridge has been confirmed to offer adequate vertical clearance
Initial Screening of Options

- Long list of options developed regardless of feasibility/cost/community impacts
- Some options screened out as unworkable
- Remaining options subject to costing analysis/assessment of community impacts/mitigation
Dominion to Tunney's-Initial Screening of Options

- **Alternative 3** - High bus volumes & noise levels on a local road (Workman Ave)
- **Alternative 4** - Longer detour route that doesn't benefit from relatively free flow conditions on SJAMP west of Dominion Station
**Other Alternatives Screened Out**

- **Full closure of Scott St to general traffic (buses only)**
  - Requires significant traffic diversion to other roads
  - Restricts access to businesses and residences on Scott

- **Detour buses to Scott St, Churchill Ave, Sir John A Macdonald Parkway**
  - Churchill Ave a local road, with 48 homes fronting on Churchill Ave
  - Significant backtracking for buses (0.7 km).
  - Requires northerly extension of Churchill Ave through NCC “no go” zone.
  - Traffic signal at Churchill Ave/SJAMP and upgraded all way stops.
  - Traffic calming measures on Churchill Ave indicates previous community concerns

- **Convert two existing lanes on SJAMP to transit only**
  - Conversion of one general purpose lane in each direction to transit only/major diversion of traffic to local road network
  - Intersection of Sir John A Parkway / Island Park fails with this option
Detour Alternatives Carried Forward for Future Analysis
## Analysis of Detour Alternatives

<table>
<thead>
<tr>
<th>Alt</th>
<th>Route</th>
<th>Stations Served</th>
<th>Buses</th>
<th>Bus Operation</th>
<th>Road Widen</th>
<th>Road Ext</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Westboro</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
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<td>Revenue</td>
<td></td>
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<td>Express</td>
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<td>Non Express</td>
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<td></td>
<td>Deadhead</td>
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</tr>
<tr>
<td></td>
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<td>Mixed Traffic</td>
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<td></td>
<td></td>
<td>Exclusive Lane</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shared Lane</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1 (a)</td>
<td>Sir John A Pkwy / Goldenrod Dwy</td>
<td>Indirect$^2$</td>
<td>Indirect$^1$</td>
<td>X</td>
<td>X</td>
<td>-</td>
</tr>
<tr>
<td>1 (b)</td>
<td>Sir John A Pkwy / Goldenrod Dwy</td>
<td>Indirect$^2$</td>
<td>Indirect$^1$</td>
<td>X</td>
<td>X</td>
<td>-</td>
</tr>
<tr>
<td>2 (b)</td>
<td>Scott St + extension (revenue buses only)</td>
<td>Direct</td>
<td>Direct</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
<tr>
<td>2 (c)</td>
<td>4-lane Scott (Goldenrod to Lanark) / 3-lane Scott (Lanark to Churchill)</td>
<td>Direct</td>
<td>Direct</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
<tr>
<td>2 (d)</td>
<td>4-lane Scott St + extension</td>
<td>Direct</td>
<td>Direct</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
<tr>
<td>5</td>
<td>Sir John A Pkwy / Parkdale Ave</td>
<td>Indirect$^2$</td>
<td>Indirect$^1$</td>
<td>X</td>
<td>X</td>
<td>-</td>
</tr>
<tr>
<td>6 (a)</td>
<td>Partial Scott St widening + extension with non-express buses only</td>
<td>Direct</td>
<td>Direct</td>
<td>-</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>6 (b)</td>
<td>Partial Scott St widening + extension with revenue buses</td>
<td>Direct</td>
<td>Direct</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
</tbody>
</table>

### Footnotes

1. Temporary bus stops could be set up on the Parkway, while Dominion Station is under construction. This assumes that the pedestrian underpass is completed ahead of the temporary bus stops being put into service.
2. Temporary transit service plan could be designed to provide limited service to Westboro Station.
## Analysis of Detour Alternatives – Bus Running Times (PM Rush Hour)

<table>
<thead>
<tr>
<th>Alt</th>
<th>Route Configuration</th>
<th>Bus Running Times/Minutes</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eastbound</td>
<td>Westbound</td>
</tr>
<tr>
<td>1 (a)</td>
<td>SJAM Parkway/Goldenrod (Mixed)</td>
<td>8.06 m</td>
<td>9.09 m</td>
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<tr>
<td>1 (b)</td>
<td>SJAM Parkway/Goldenrod (Exclusive)</td>
<td>6.32 m</td>
<td>5.07 m</td>
<td></td>
</tr>
<tr>
<td>2 (b)</td>
<td>Scott St + extension (revenue buses only)</td>
<td>6.39 m</td>
<td>4.44 m</td>
<td></td>
</tr>
<tr>
<td>2 (c)</td>
<td>4-lane Scott (Goldenrod to Lanark) / 3-lane Scott (Lanark to Churchill)</td>
<td>5.05 m</td>
<td>3.48 m</td>
<td></td>
</tr>
<tr>
<td>2 (d)</td>
<td>4-lane Scott St + extension</td>
<td>4.39 m</td>
<td>3.15 m</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SJAM Parkway / Parkdale Ave</td>
<td>18.17 m</td>
<td>14.26 m</td>
<td></td>
</tr>
<tr>
<td>6 (a)</td>
<td>Partial Scott St widening + extension with non-express buses only on Scott</td>
<td>5.58 m</td>
<td>3.22 m</td>
<td></td>
</tr>
<tr>
<td>6 (b)</td>
<td>Partial Scott St widening + extension with revenue buses only on Scott</td>
<td>6.22 m</td>
<td>3.33 m</td>
<td></td>
</tr>
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</table>

- **Worst Performers**
- **Best Performers**
## Detour Alternatives - Cost Comparison

<table>
<thead>
<tr>
<th>Alt</th>
<th>Route</th>
<th>Configuration</th>
<th>Capital Cost</th>
<th>Bus Operating Cost (1)</th>
<th>Fleet Cost (1)</th>
<th>Usage/Access Fee (2)</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (a)</td>
<td>SJAM Parkway/ Goldenrod</td>
<td>All, mixed traffic</td>
<td>$1.2 M</td>
<td>$18.3 M</td>
<td>$6.9 M</td>
<td>$1.4 M</td>
<td>$27.8</td>
</tr>
<tr>
<td>1 (b)</td>
<td>SJAM Parkway/ Goldenrod</td>
<td>All, bus only lanes</td>
<td>$1.7 M</td>
<td>$13.0 M</td>
<td>$4.0 M</td>
<td>$1.4 M</td>
<td>$20.1</td>
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<tr>
<td>2 (b)</td>
<td>Scott St + extension</td>
<td>Revenue buses only in mixed traffic</td>
<td>$3.5 M</td>
<td>$13.0 M</td>
<td>$3.6 M</td>
<td>$0.2 M</td>
<td>$20.3</td>
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<tr>
<td>2 (c)</td>
<td>4-lane Scott (Goldenrod to Lanark) / 3-lane Scott (Lanark to Churchill)</td>
<td>All buses</td>
<td>$5.8 M</td>
<td>$6.8 M</td>
<td>$2.3 M</td>
<td>$0.2 M</td>
<td>$15.1</td>
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<td>4-lane Scott St + extension</td>
<td>All buses</td>
<td>$7.2 M</td>
<td>$6.2 M</td>
<td>$1.8 M</td>
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<tr>
<td>5</td>
<td>SJAM Parkway / Parkdale Ave</td>
<td>All buses</td>
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<td>$38.5 M</td>
<td>$14.8 M</td>
<td>$1.3 M</td>
<td>$55.9</td>
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<td>6 (a)</td>
<td>Partial Scott St widening + extension</td>
<td>Express buses only</td>
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<td>$9.2 M</td>
<td>$3.9 M</td>
<td>$1.4 M</td>
<td>$18.7</td>
</tr>
<tr>
<td>6 (b)</td>
<td>Partial Scott St widening + extension</td>
<td>Revenue buses only</td>
<td>$4.2 M</td>
<td>$8.4 M</td>
<td>$2.8 M</td>
<td>$0.2 M</td>
<td>$15.6</td>
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</table>

### Worst Performers

### Best Performers
## Rationale for Screening of Options

<table>
<thead>
<tr>
<th>Alt</th>
<th>Route</th>
<th>Service to Existing Stations</th>
<th>Running Times for Bus/ Quality</th>
<th>Total Costs</th>
<th>Community Impacts</th>
<th>SJAMP Impacts</th>
<th>Retain</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (a)/1(b)</td>
<td>SJAM Parkway / Goldenrod</td>
<td>Indirect</td>
<td>Poor</td>
<td>High</td>
<td>Moderate</td>
<td>Medium</td>
<td>No</td>
</tr>
<tr>
<td>2 (b)</td>
<td>Scott St + extension (revenue buses only)</td>
<td>Direct</td>
<td>Fair</td>
<td>Medium</td>
<td>Moderate</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>2 (c)</td>
<td>4-lane Scott (Goldenrod to Lanark) / 3-lane Scott (Lanark to Churchill)</td>
<td>Direct</td>
<td>Good</td>
<td>Lowest</td>
<td>Moderate – High</td>
<td>Low</td>
<td>Yes</td>
</tr>
<tr>
<td>2 (d)</td>
<td>4-lane Scott St + extension</td>
<td>Direct</td>
<td>Good</td>
<td>Low</td>
<td>Moderate – High</td>
<td>Low</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>SJAM Parkway / Parkdale Ave</td>
<td>Indirect</td>
<td>Poorest</td>
<td>Highest</td>
<td>Moderate</td>
<td>Medium</td>
<td>No</td>
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<tr>
<td>6 (a)</td>
<td>Partial Scott St widening + extension with non-express buses only</td>
<td>Direct</td>
<td>Good</td>
<td>Medium</td>
<td>Moderate</td>
<td>Low</td>
<td>No</td>
</tr>
<tr>
<td>6 (b)</td>
<td>Partial Scott St widening + extension with revenue buses only</td>
<td>Direct</td>
<td>Good</td>
<td>Low</td>
<td>Moderate</td>
<td>Low--</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Rationale for Preferred Option

Option 2C/2D
- 3 lane/4 lane Scott Street options bring new lanes closer to homes/businesses on south side of Scott
- Little or no benefit in running times for buses with widened road
- Overall cost savings is $0.5 M compared to Option 6b.

Option 6b
- Capital cost savings (due to intersection improvements only) almost offsets operating cost premium
- Intersection improvement approach lessens impact on residents/businesses of new lanes

CONCLUSION:
- Option 6b preferred, slightly higher cost ($0.3-$0.5 m) worth it to reduce community impacts of full widening throughout.
Preferred Scott St Extension Detour

- Sir John A Macdonald Parkway
- Temporary Transitway Detour
- Existing Transitway/LRT Alignment
- Temporary Pedestrian Pathway
- At-Grade Temporary Pedestrian Crossing of LRT Construction Area
- Closure of Roosevelt Pedestrian Bridge
- Temporary Bus Stop Location

STAGE 2
Intersection Improvements at Scott Street and Lanark Ave / Island Park Dr
Bridge Rehabilitation on SJAMP
Preferred Option – Identified Construction Issues

- Noise and vibration ..... mitigation measures
- Connectivity during construction/operations
- Roosevelt bridge reconstruction
- Air quality impacts
- Construction site staging/mobilization
- Re-landscaping of green space on west side of Workman occupied by temporary bus detour
- Scott Street/Island Park Drive WB to NB right-turn
- Improved cycling and pedestrian facilities implemented as part of detour construction
- Left in place and enhanced following removal of detour
Scott Street/Island Park Intersection

Question: Is it feasible to introduce a WB to NB right turn lane?

Answer: YES, PM peak hour que lengths reduced from 181 m to 105 m

Conclusion: To be implemented as part of Stage 2 LRT intersection improvements
Intersection Improvements at Scott St / Island Park Dr
Post 2023 MUP Connections
Roosevelt Bridge Reinstatement

Existing Pedestrian Bridge
(Looking South from Workman Ave.)

Proposed Pedestrian Bridge Section

2.4 m HIGH NON-CLIMBABLE DECORATIVE FENCE
PARAPET WALL
ASPHALT AND WATERPROOFING SYSTEM
BRIDGE STRUCTURE
Protection of Trees/ Tree Replacement/Scott St Improvements

- Loss of some trees west of Workman Ave to build temporary BRT is unavoidable
- Trees may be impacted to some degree if noise barriers are implemented on west side of Workman Ave
- Tree protection plan to be developed
- Landscape and tree compensation plan to be developed in consultation with local community
- Will be implemented following LRT construction
- Scott St intersection changes to be reinstated to accommodate future Scott St design(post 2030)
Impact of Scott St detour is temporary for 26 months

Assessment of Scott St Stage 2 detour undertaken based on MOECC/City noise and vibration criteria for permanent impacts

Mitigation required if:

- Noise impact is more than 5 dBA (MOECC)
- Predicted sound level is greater than 60 dBA (Ottawa)

Noise control measures should be “economically and technically feasible”

Front yards of homes difficult to mitigate
## Temporary Noise Mitigation

<table>
<thead>
<tr>
<th>Location</th>
<th>Overall Traffic Noise (dBA)</th>
<th>Projected Noise Impact</th>
<th>Mitigation Requirement – City of Ottawa</th>
<th>Mitigation Requirement – MTO/MOE</th>
<th>Mitigation Required</th>
<th>dbA with Mitigation (1)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>No Project</td>
<td>With Project</td>
<td>Change (dB)</td>
<td>&gt; 60 dBA</td>
<td>≥5 dB impact and between 55 and 60 dBA</td>
<td>&gt; 5 dB Impact</td>
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<td>Site 1</td>
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<td>&gt;60</td>
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<td>65.31</td>
<td>4.67</td>
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<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

(1) 2.0 metre high noise wall
Recommended Noise Mitigation
Potential Noise Mitigation

- **SITE 3**: Proposed Barrier
- **SITE 4**: Proposed Barrier

Legend:
- Red: Recommended Noise Barrier
- Green: Temporary Transitway Detour
- Blue: Existing Transitway
### Current vs Temporary Bus Volumes

<table>
<thead>
<tr>
<th>Scenario</th>
<th>AM Peak Hour</th>
<th></th>
<th></th>
<th>PM Peak Hour</th>
<th></th>
<th></th>
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<tr>
<td></td>
<td>EB</td>
<td>WB</td>
<td>Total</td>
<td>EB</td>
<td>WB</td>
<td>Total</td>
</tr>
<tr>
<td>Existing Transitway in Trench</td>
<td>133</td>
<td>98</td>
<td>231</td>
<td>97</td>
<td>129</td>
<td>226</td>
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<tr>
<td>Scott St Temporary Detour (Option 6b)</td>
<td>154</td>
<td>54</td>
<td>208</td>
<td>65</td>
<td>160</td>
<td>225</td>
</tr>
</tbody>
</table>

**Summary**

- AM Peak Hour – temporary bus detour on Scott St extension will have 10% fewer buses than present Transitway bus service
- PM Peak Hour – existing and temporary volumes are the same as present
Air quality analysis of Scott St detour is underway

As deadhead buses that are currently in the BRT trench will use SJAMP, total bus volumes at Dominion in AM peak hour reduced during construction

Offset by slightly closer proximity of temporary BRT out of trench

Net air quality analysis will be available by mid April

This is a temporary condition.....

Permanent condition replaces diesel buses with electrically powered LRT vehicles

Construction air quality impact is greater than bus operations based on Stage 1 Scott St experience
Dominion Station - Existing Conditions
Dominion Station - Phase 1
Dominion Station - Phase 2

Legend:
- Under Construction
- Platform/Bus
- Buses Only
- General Traffic Circulation
- Railway
- Pedestrian
- Bicycle
- Lane/Pathway
- Street
- Train/Transitway

Notes:
1. The Bailey Bridge can be installed within a 24-hour period on a Sunday.
Dominion Station - Phase 3
Dominion Station - Revenue Service
Project Schedule

- Start of in market period: June 2017
- Bids submitted to City: February 2018
- Award of Contract: May 2018
- Earliest Construction Start: Spring 2019
- Construction constrained by availability of Trillium Line buses after shutdown is finished in Fall 2021
- Construction will not start on detour until Spring 2021
- Detour is in place for about 26 months from Nov 2021 to commencement of revenue service in Dec 2023
Next Steps

1. Address feedback from the community in upcoming RFP including Dominion/Workman Working Group
2. RFP out to tender, June 9, 2017
3. RFP bids received, February 2018
4. Award of Stage 2 contract, May 2018
5. Construction start for project, late 2018/early 2019
6. Construction start for Scott St detour, 2021, in place until revenue service
7. Confederation West LRT open for revenue service, end of 2023
Questions ?