

The Ottawa Hospital to Dow's Lake LRT Station Multi-Use Connection Environmental Assessment (EA) Study

Consultation Group Meetings #1

October 3, 2023



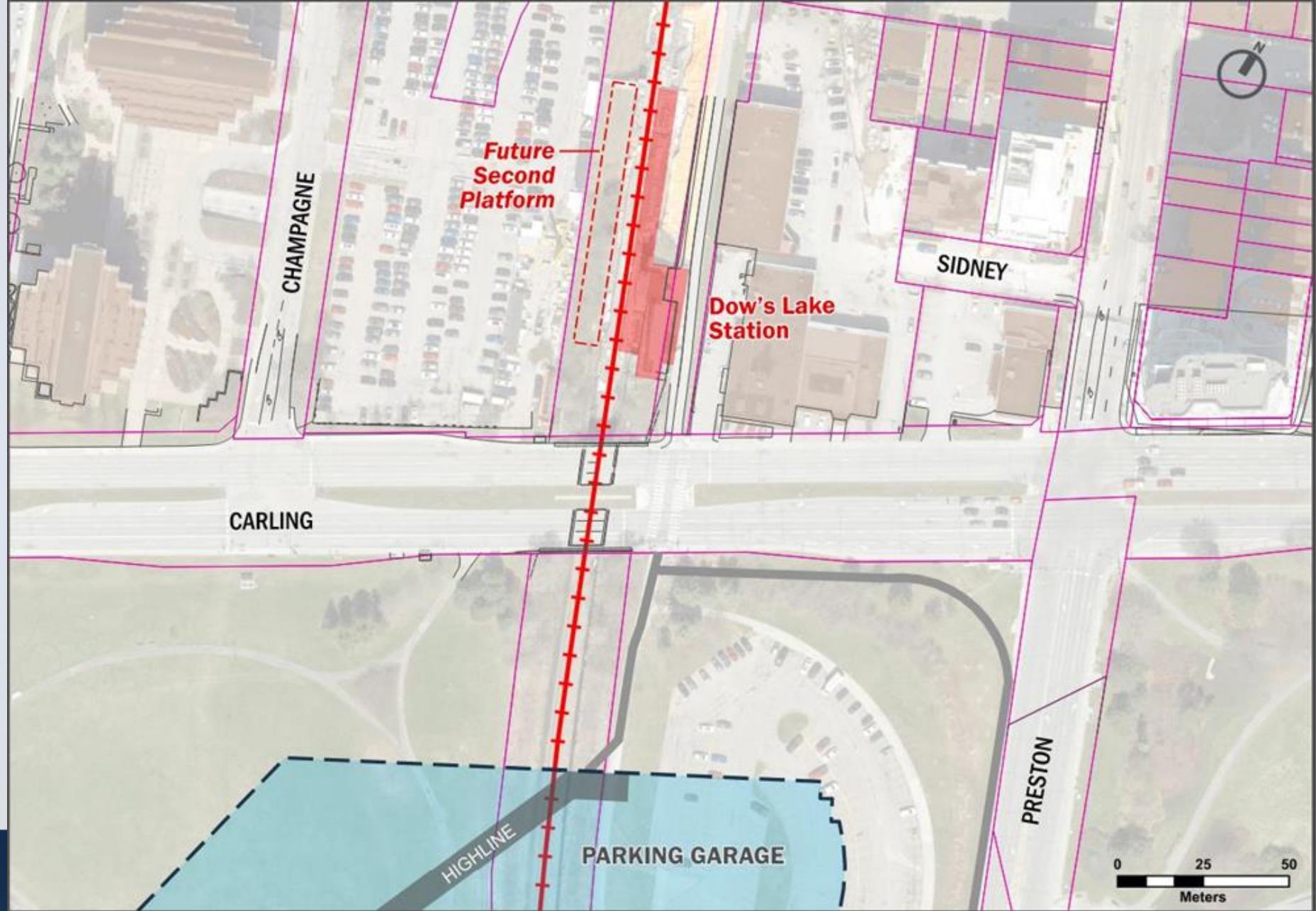
Introduction

Agenda

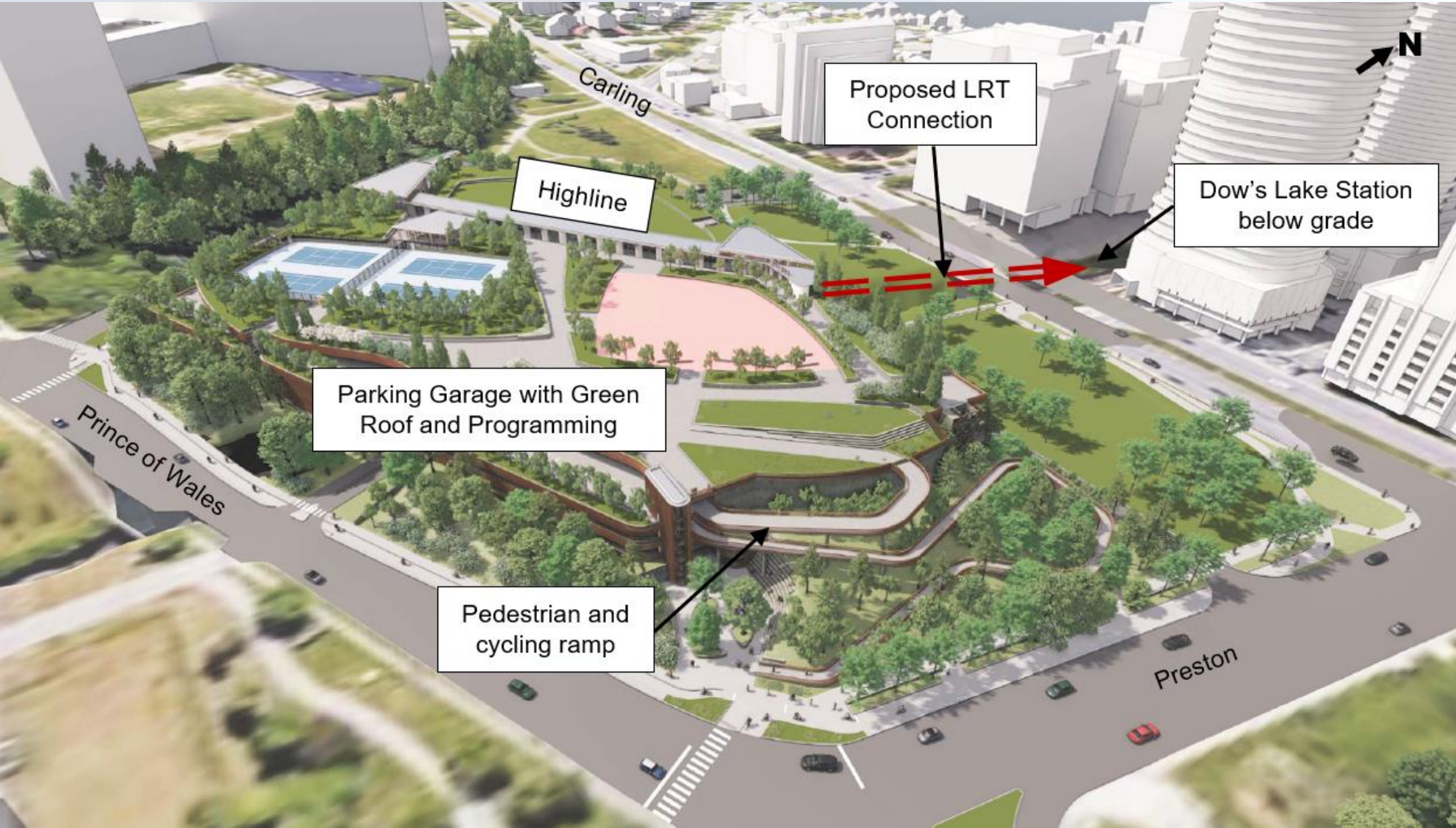
1. Introduction
2. Project Background
3. Existing Conditions
4. Alternative Solutions
5. Alternative Alignments
6. Alternative Designs
7. Next Steps

Project Background

Study Area



TOH Parking Garage and Highline



Study Scope

City of Ottawa – Master Site Plan Condition:

31. Light Rail Station Integration

c) Prior to occupancy of the main Hospital Building, the Owner acknowledges and agrees to integrate the Carling Light Rail Transit Station (future Dow's LRT Station) into the Master Site Plan and future implementing phases in the following ways:

- i. Direct connection
- ii. Accessible connection
- iii. Weather protected connection
- iv. Provide adequate, secure and highly visible bicycle parking
- v. Provide adequate wayfinding throughout the site to the O-Train Station

Study Scope Continued

National Capital Commission – Master Site Plan Condition:

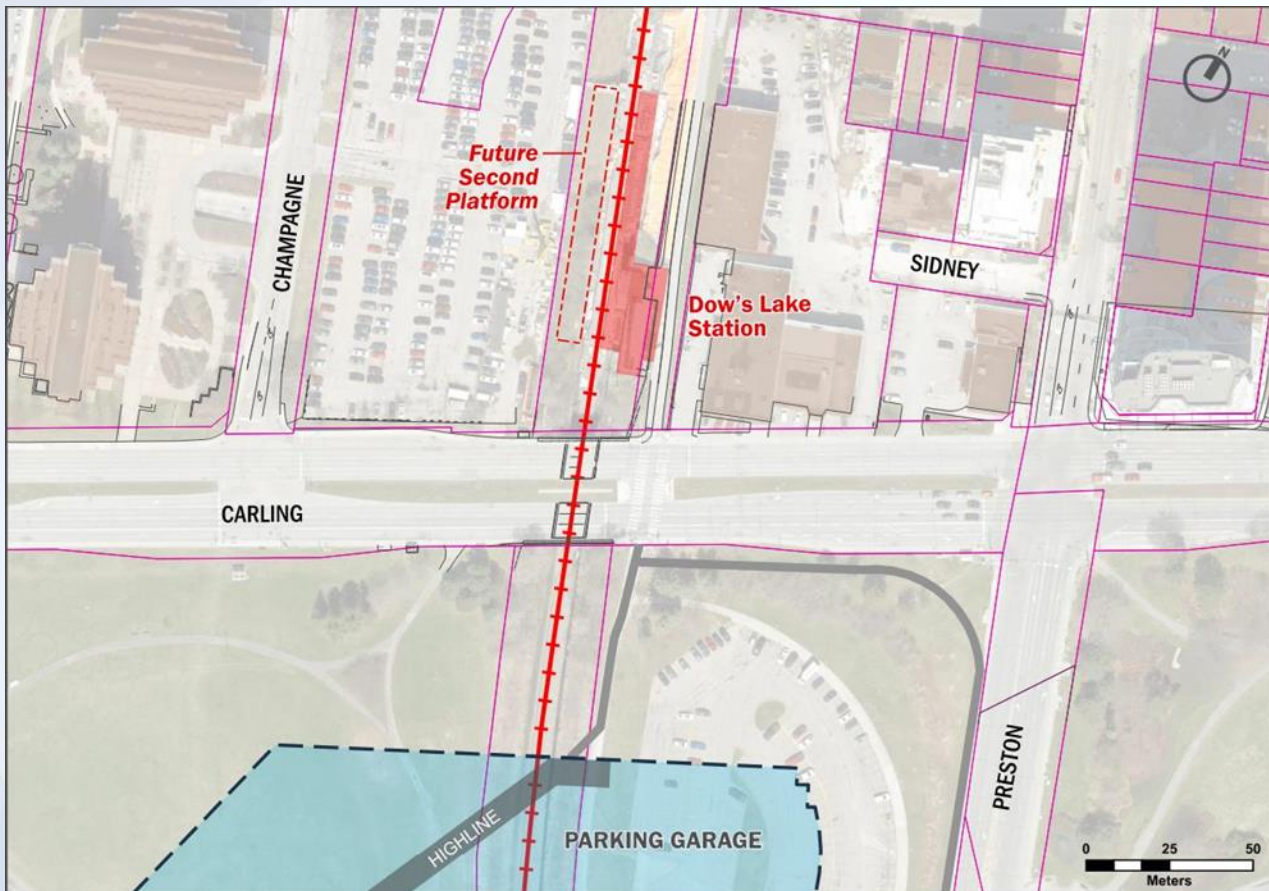
2.3 in collaboration with the City of Ottawa, the Proponent must provide universally accessible, seamless, intuitive and weather-protected connectivity between Dow's Lake LRT Station and the hospital's main entrance when it opens in 2028. Grade-separated public access from the LRT station to the south side of Carling Avenue including public access to the street (Carling Avenue) shall also be provided.

Key Considerations

- Bridge or tunnel multi-Use Connection crossing Carling Ave
- Integration with Dow's Lake Station
- Integration with Hospital parking garage
- Connectivity to Bus Rapid Transit along Carling
- 2028 – hospital opening day / existing O-Train

Future

- Dual track of Trillium Line and station expansion
- Ultimate Carling Avenue Rapid Transit



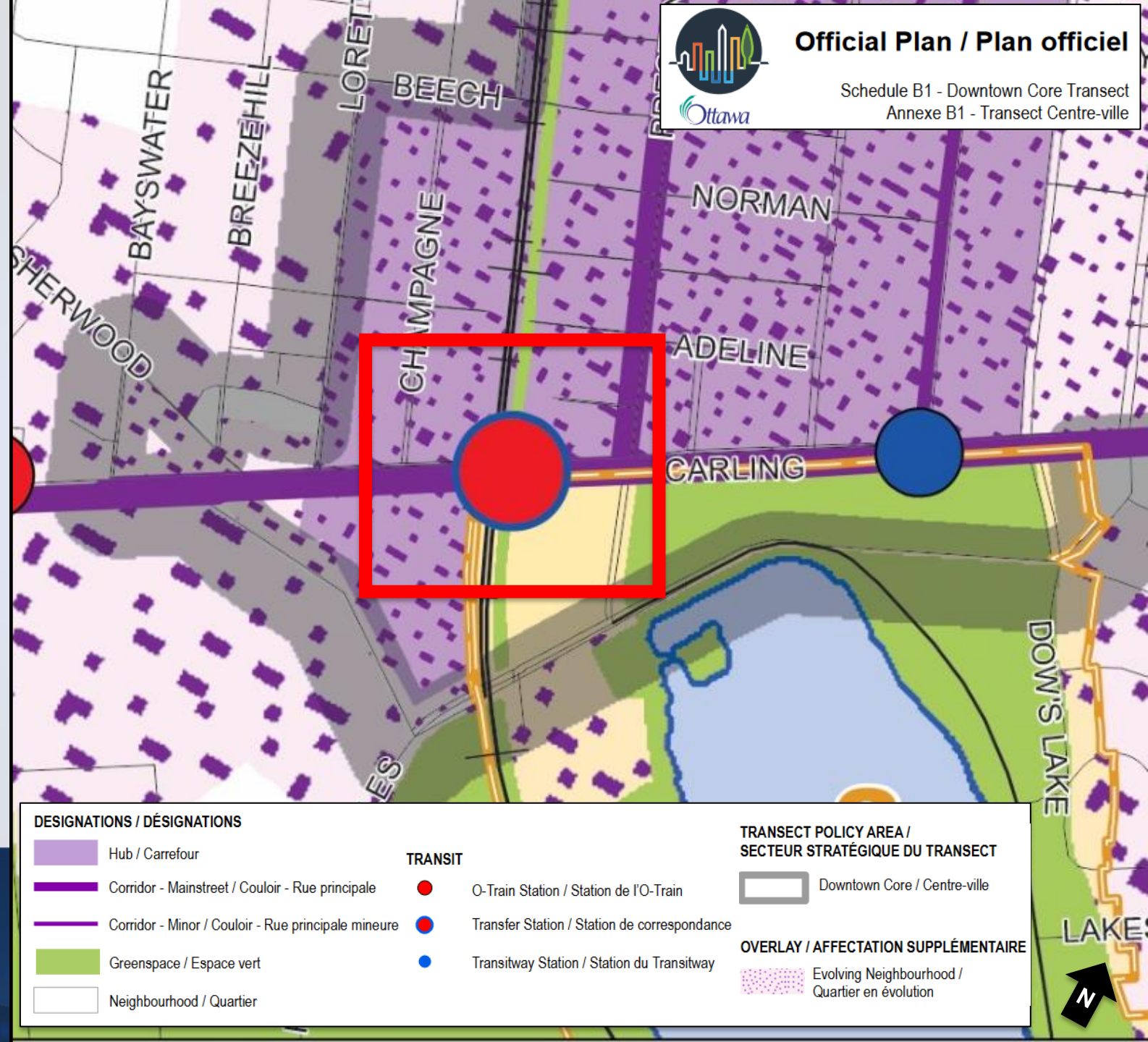
Environmental Assessment Process

- For the protection, conservation and wise management of the environment
- Following the amended Municipal Class EA Schedule B process
- Key features:
 - Consultation
 - Developing a reasonable range of bridge and tunnel alignment options
 - Assessment of environmental effects
 - Systematic evaluation of options, leading to selection of preferred option
 - Clear documentation and traceable decision making
- Develop functional design and capital cost

Official Plan: Designations

Hub designation

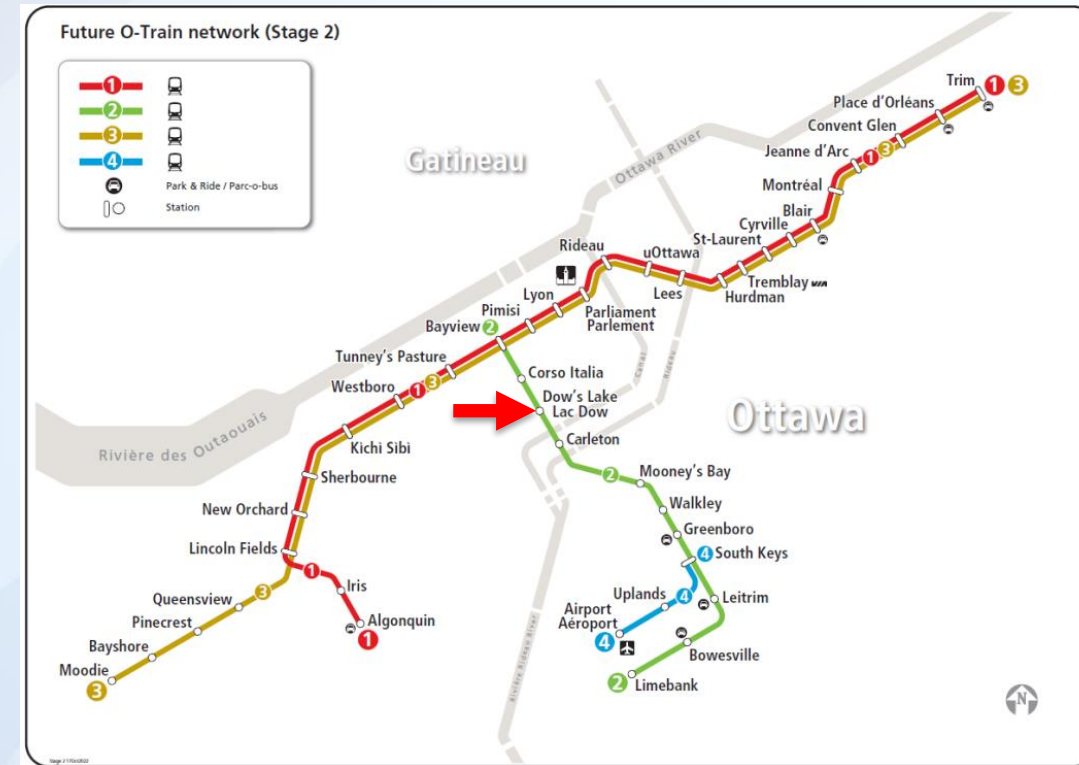
- Areas centered on planned or existing rapid transit stations for higher level connectivity
- To concentrate a diversity of functions, higher density development, greater degree of mixed uses



Existing Conditions

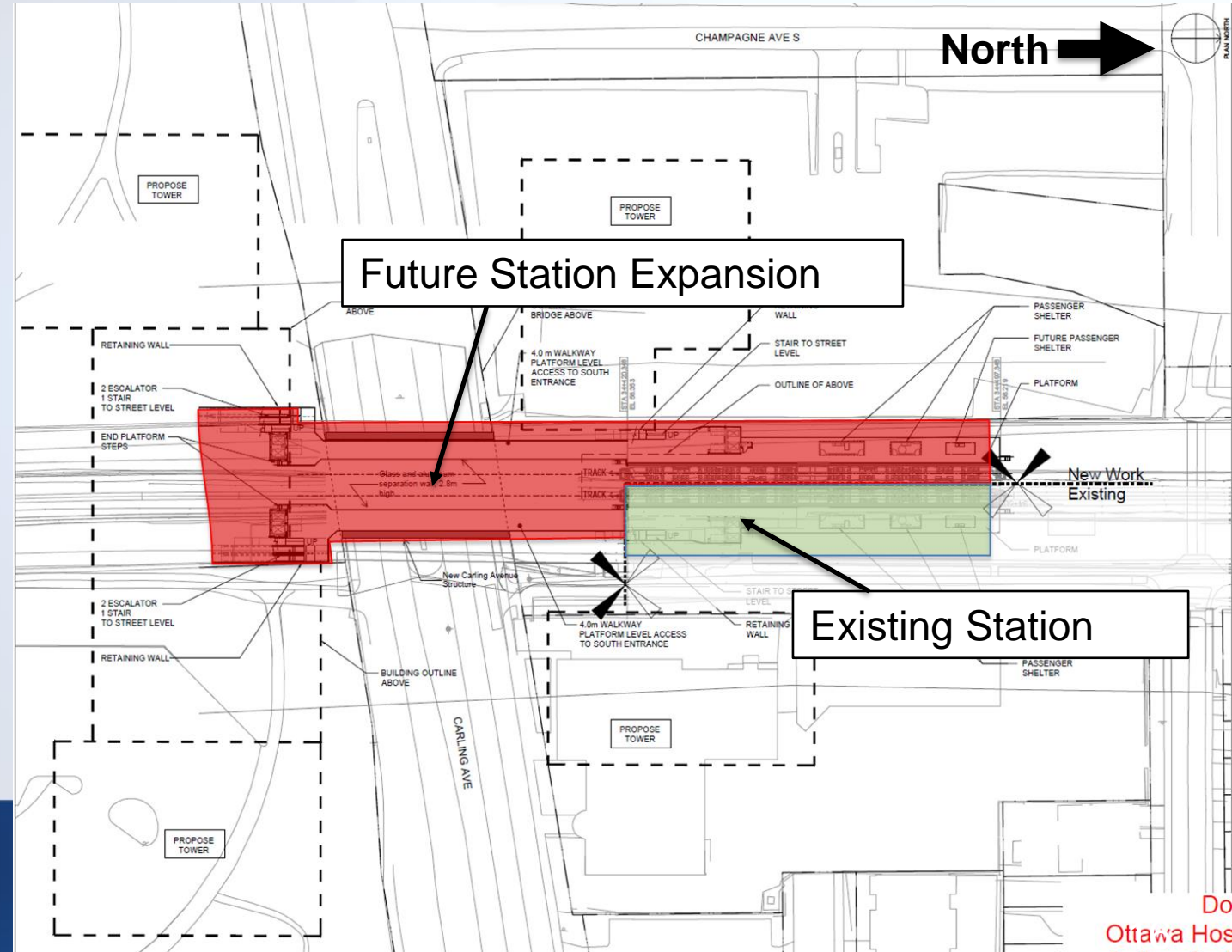
Dow's Lake Station

- Single track rail corridor running north-south
- Below-grade platform located on east side of track
- Station entrance off Trillium Pathway (approximately 30 m north of Carling Ave)
- Bus stops along Carling Ave serve station



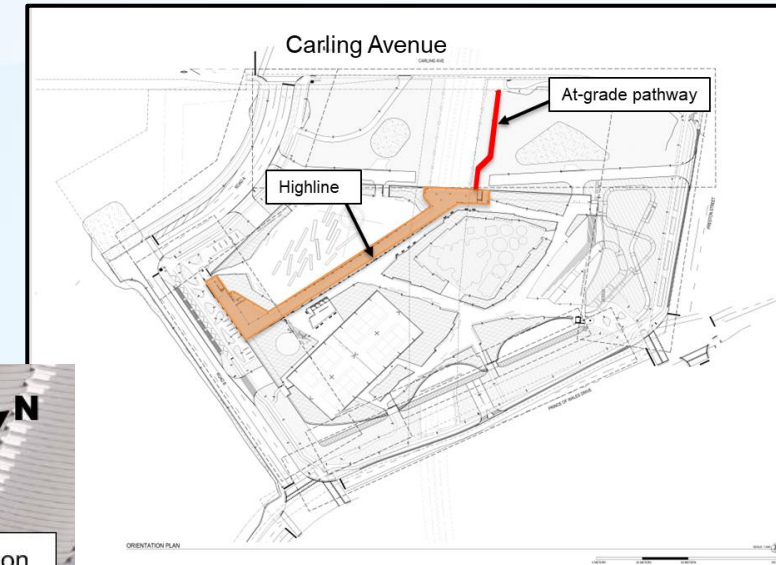
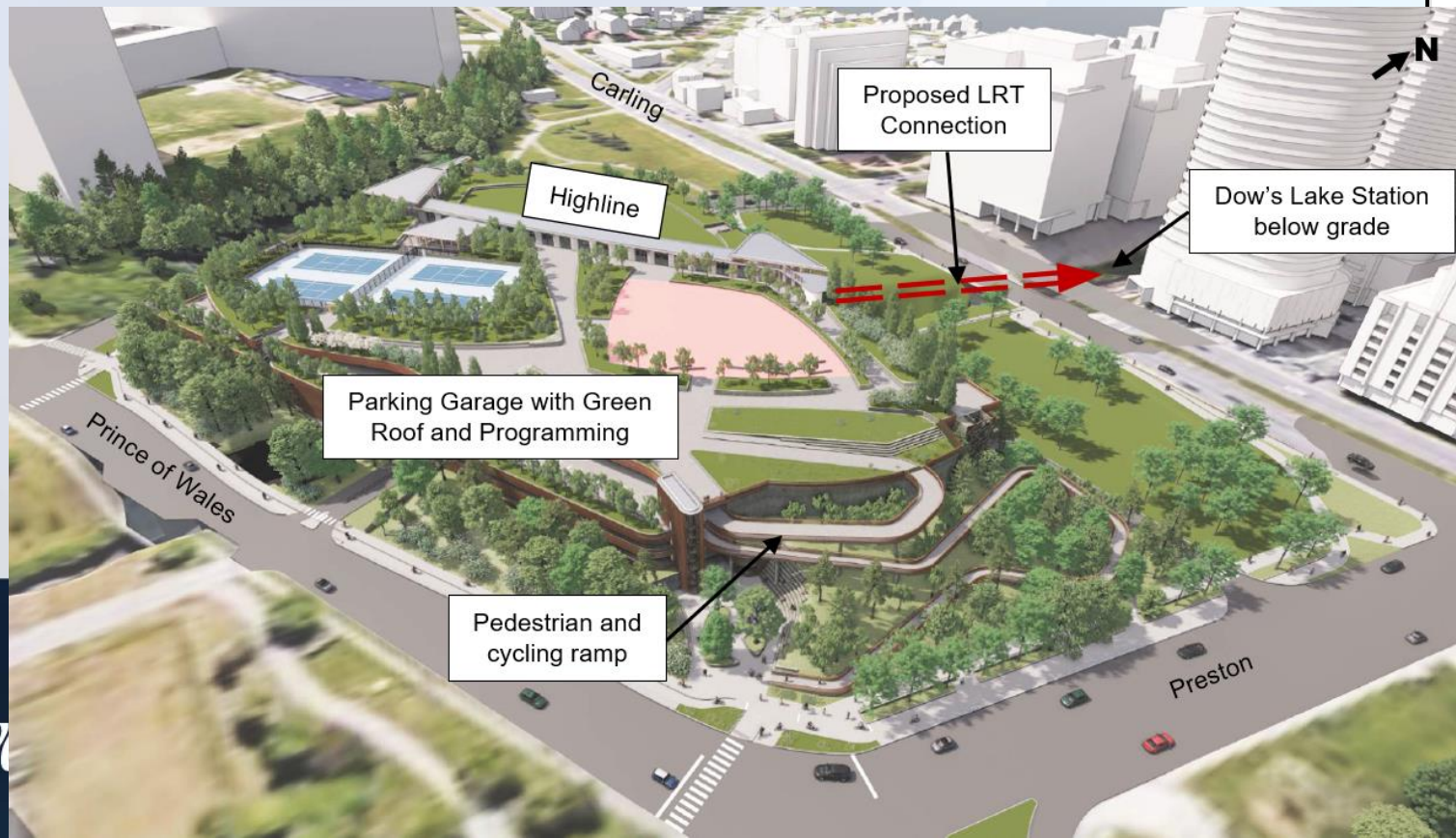
Dow's Lake Station (Long-Term Concept)

- Subject to further study prior to implementation
- Two separate below-grade connections under Carling Ave
- Station headhouse with vertical circulation and faregates on south side of Carling Ave
- Impacts existing Carling Ave overpass at LRT; replacement required



The Ottawa Hospital New Campus Development

- Main building located ~ 400 m from LRT station
- ~ 120 m from LRT station to Hospital parking garage
- At-grade pathway from Carling Ave to Hospital parking garage proposed
- Highline on roof of parking garage with enclosed pedestrian walkway to main building



Existing Mid-Block Crossing of Carling

- Poses challenges to traffic operations and road safety but needed:
 - To connect to the median Bus Rapid Transit
 - For commuters destined beyond the Hospital and LRT station
- Design to encourage use of grade-separated crossing
- Design for Carling to mitigate traffic issues / address road safety



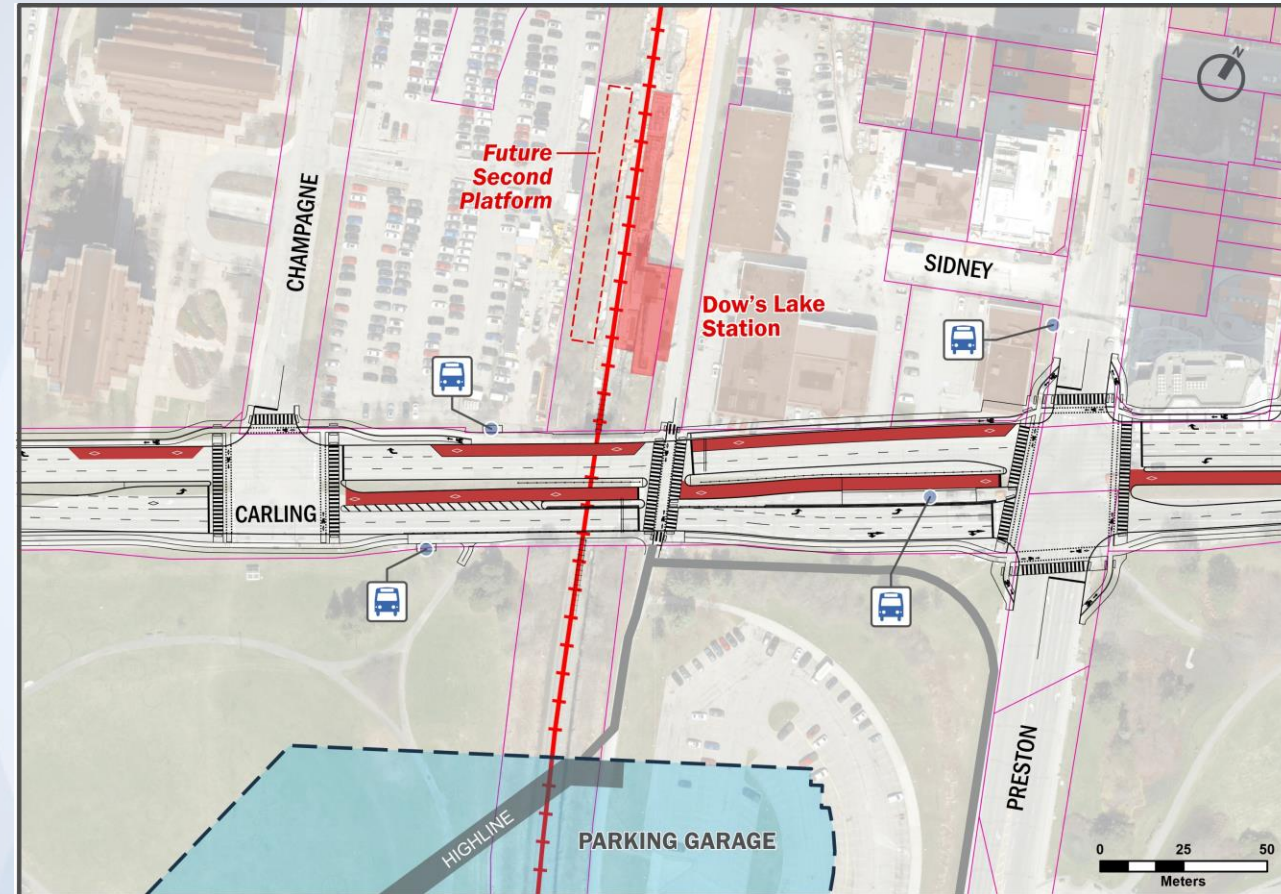
Carling Avenue Rapid Transit

Initial Phase – Bus Rapid Transit

- Westbound curbside lane
- Eastbound median lane

Ultimate Phase – Technology Choice

- Subject to further study prior to implementation
- Bus Rapid Transit or Light Rail Transit (tram)
- Median platforms in both directions?
- Protecting space / future proofing for ultimate configuration



Legend



Trillium Line



Highline



Parking Garage



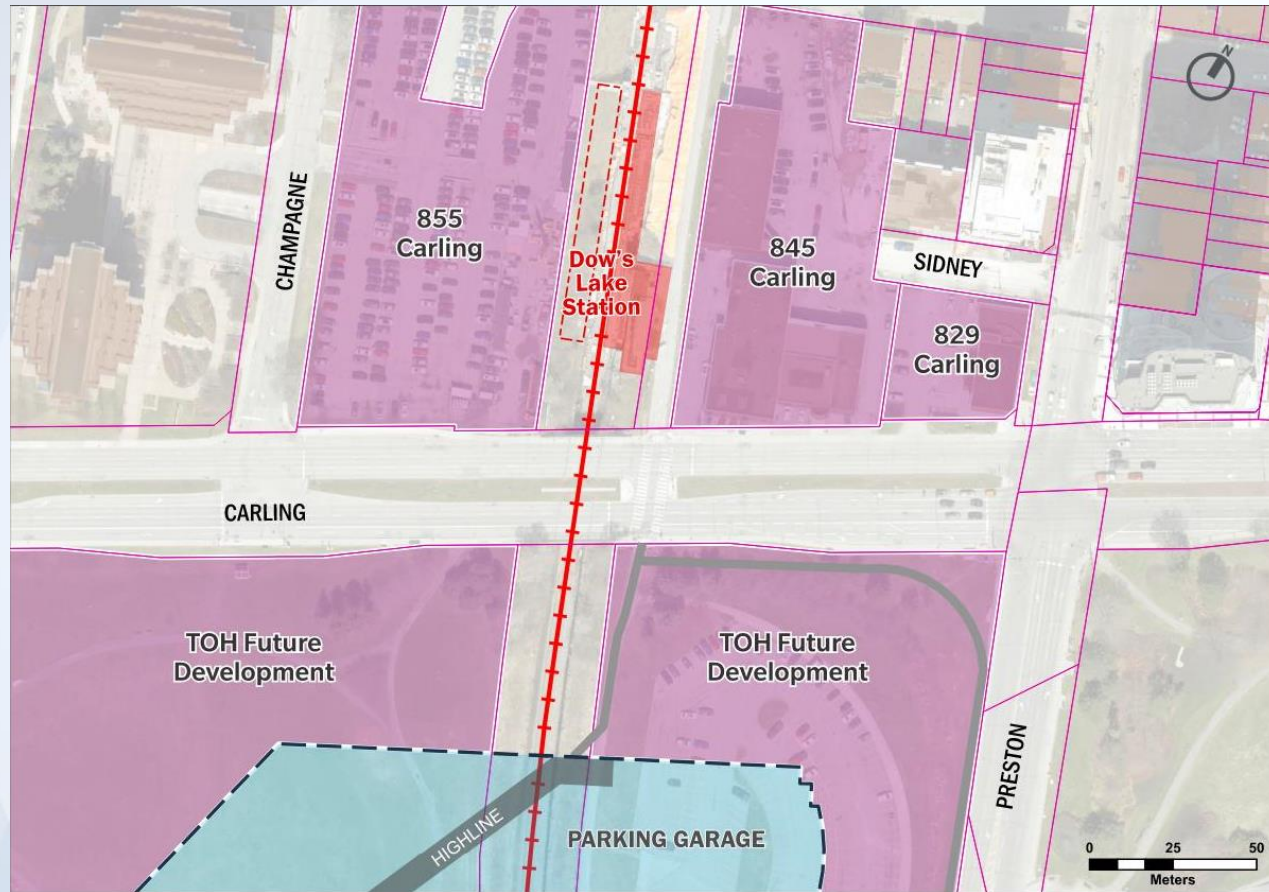
Proposed TOH Pathway



Bus Stop

Other Development Opportunities

- 855 Carling – no active development plans
- 845 Carling – inactive development plan (2013). 3 high-rise buildings (two at 48-storeys, 1 at 18-storeys)
- 829 Carling – active development plan. 40-storey mixed use building. Ground-floor commercial
- Hospital future development – phased development including 2-storey podium, two towers (8-12 storeys)



Legend

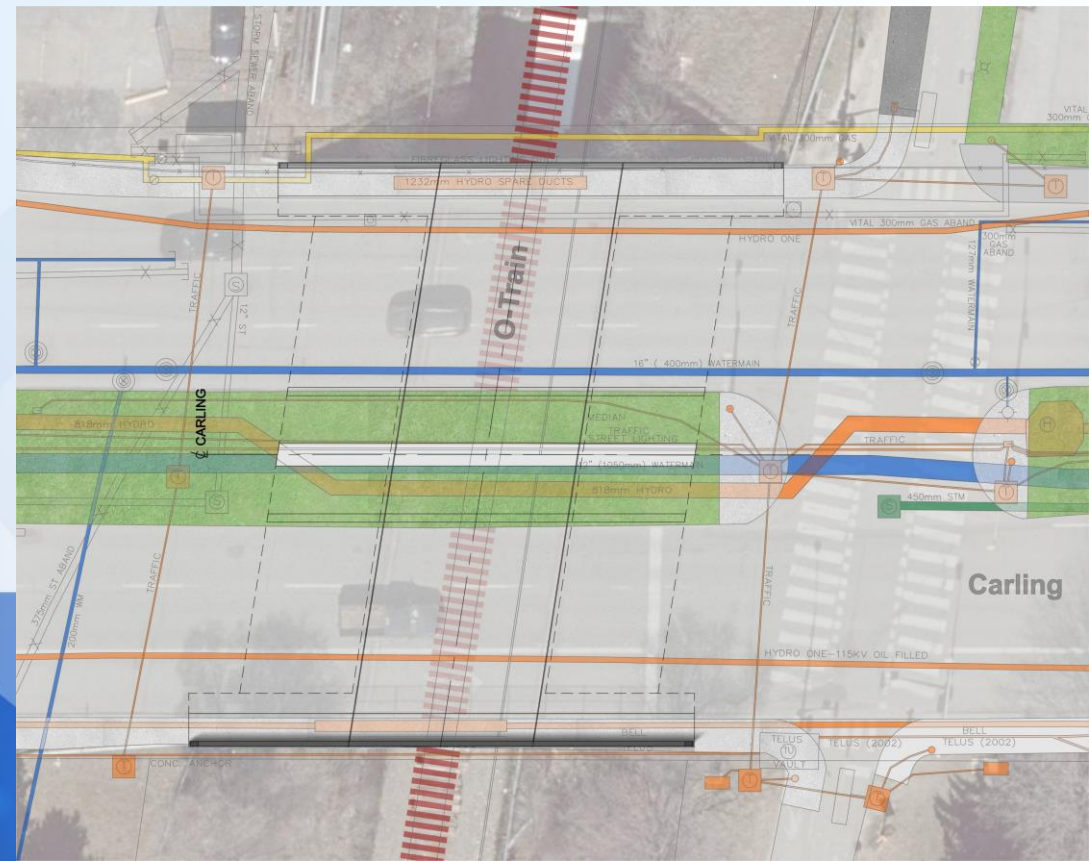
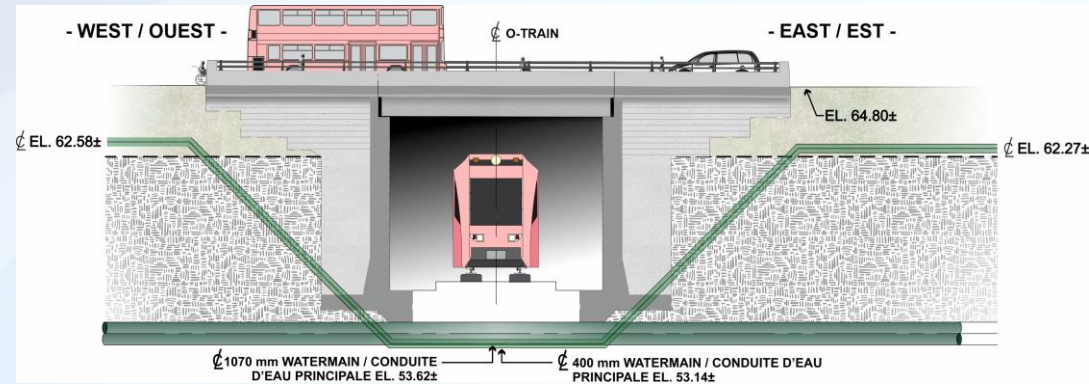
- +— Trillium Line
- Highline
- ▨ Parking Garage
- Proposed TOH Pathway
- Adjacent potential Developments

Geotechnical

- Shallow bedrock (3-5 m below ground)
- Groundwater levels 2-5 m below ground
- Cut and cover preferred methodology if tunnel is selected option

Utilities

- Major gas, water, cable and hydro facilities present under Carling Ave



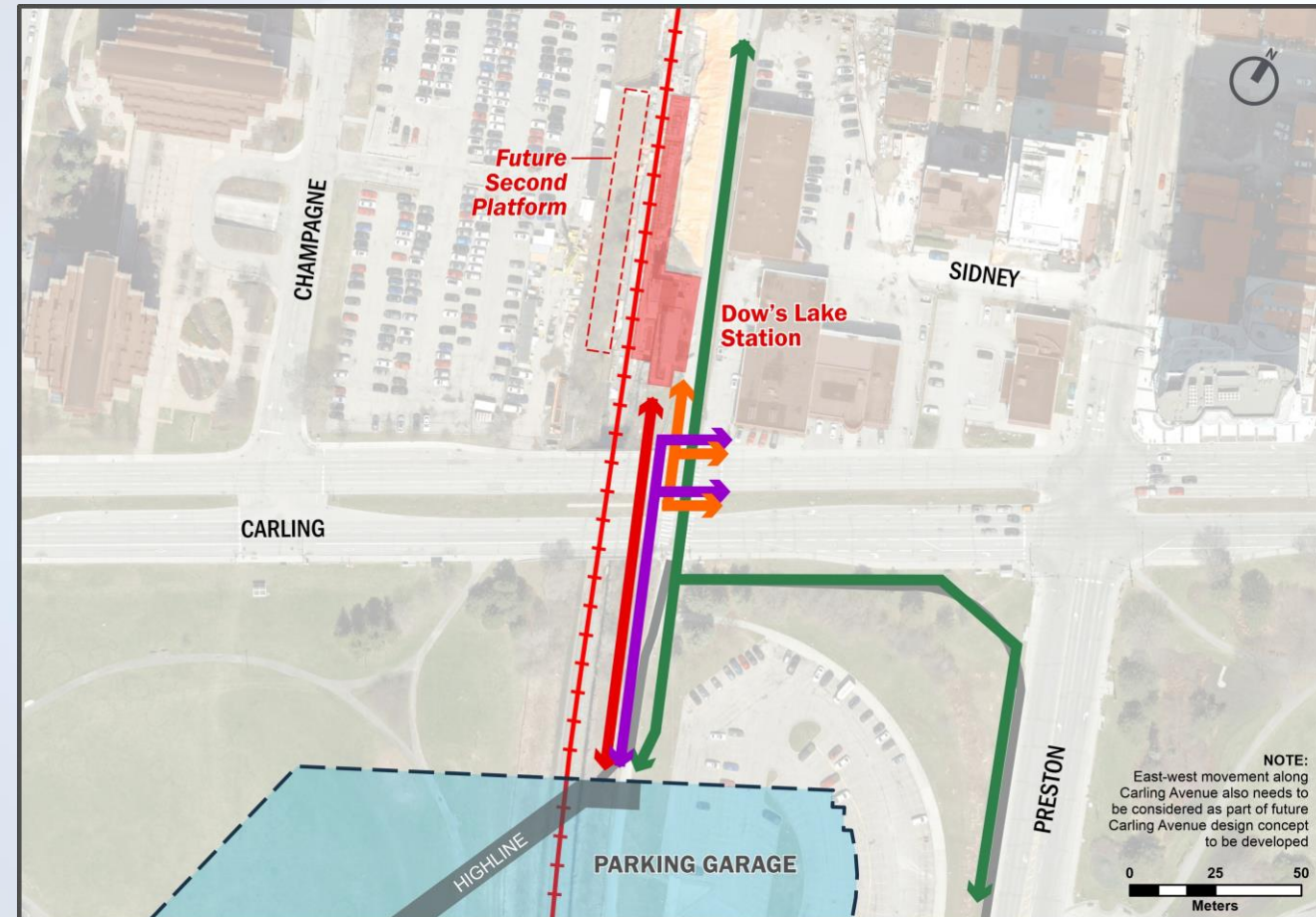
Evaluation of Alternative Solutions

Alternative Solutions

EA Study requires developing and evaluating a range of reasonable alternative solutions:

1. Improve existing at-grade signalized crossing
 - Road safety modifications
 - Weather protection
2. Grade-separated connection with ramps
3. Grade-separated connection without ramps

Major Circulation / Flow Across Carling Avenue



Legend

- | | | | |
|---|----------------|---|------------------------------------|
| + | Trillium Line | ■ | LRT station to TOH Highline |
| ■ | Highline | ■ | LRT station to Carling BRT |
| ■ | Parking Garage | ■ | Carling BRT to TOH Highline |
| | | ■ | Trillium MUP to TOH/Dow's Lake MUP |

Assessment and Evaluation of Alternative Solutions

- Only Alternatives 2 and 3 meet the condition of approval for the project
- Alternative solution 1 screened out - does not meet the required condition of approval (segregated facility from traffic, weather protected)

	Does it meet the required Condition of Approval
Alternative Solution 1 – Improve at-grade crossing	X No
Alternative Solution 2 – Connection with ramps	✓ Yes
Alternative Solution 3 – Connection without ramps	✓ Yes

Preliminary Preferred Solution

- Alternative 2 - Space for ramps challenging due to limited space; existing signalized mid-block crossing remains
- Alternative 3 - Connection without ramps requires less space, easier to integrate with LRT station and adjacent development
- Enhance active transportation connectivity by providing new MUP crossing of LRT trench on south side of Carling Ave



Bike Trough
Image from Cycle-Works

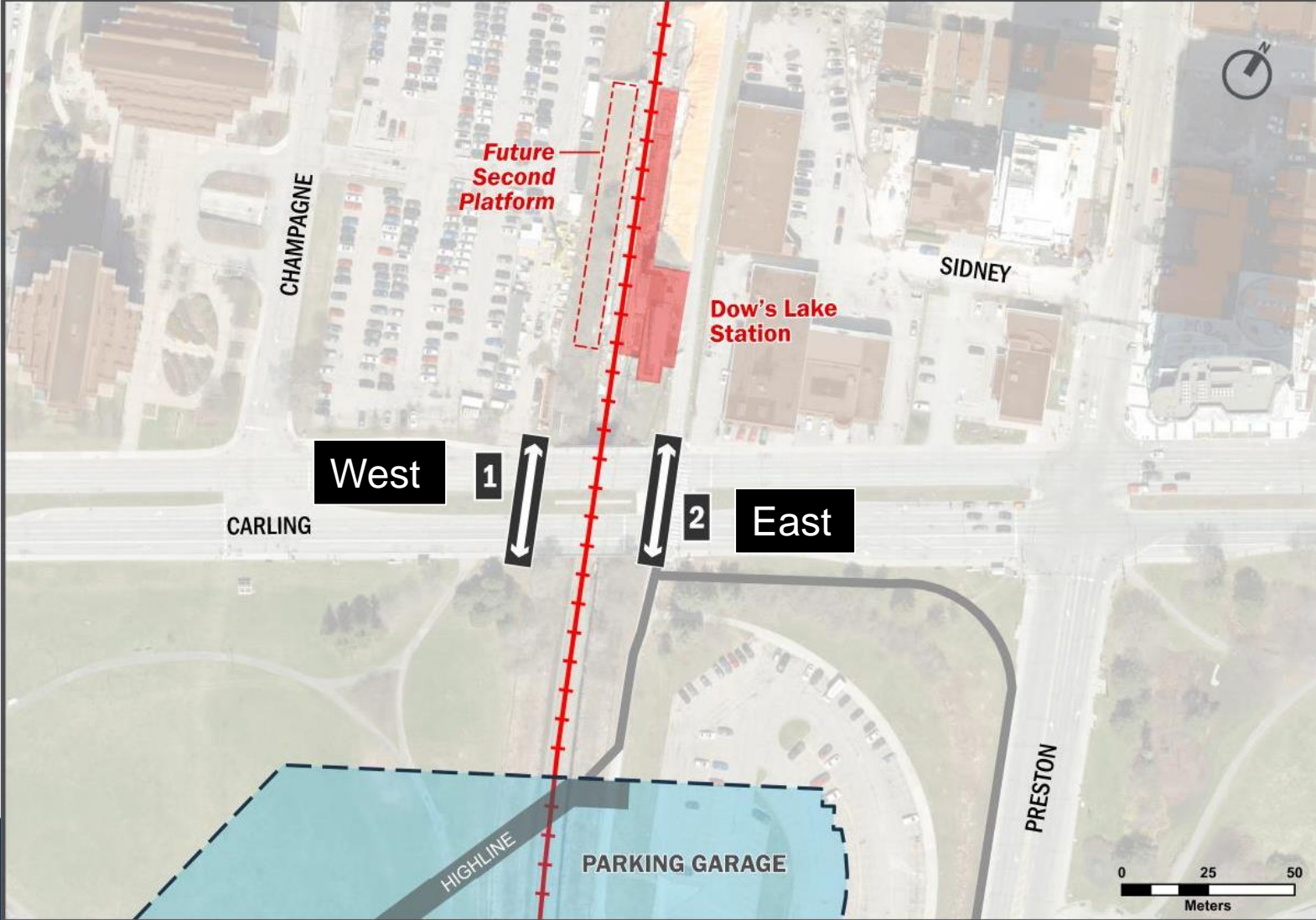


Alternative Alignments

Alternative Alignments Considered

Alternative 1 – West side

Alternative 2 – East side



Evaluation of Alternative Alignments

Criteria	East Side ✓	West Side
Directness	Direct, short connection, avoids crossing LRT trench	Requires crossing/recrossing of LRT trench lengthening path of travel
Intuitiveness	Intuitive connection, no interference with LRT trench	Not intuitive path of travel
Integration potential with LRT	Existing LRT platform connection point located east of LRT trench Need to consider how to connect to future southbound LRT platform	Future Trillium Line expansion/widening towards the west could pose constraints/conflicts and timing is unknown
Integration potential with BRT	Best connects to future BRT platforms	Opportunity for integration with future southbound platform
Integration potential with Hospital	Existing Hospital connection point located east of LRT trench	Requires additional infrastructure to integrate with Hospital infrastructure
Property impacts	Less property impacts, disruption to development	Significant property impact to accommodate vertical circulation on north side of Carling

Based on the screening, the east side is the preferred alignment

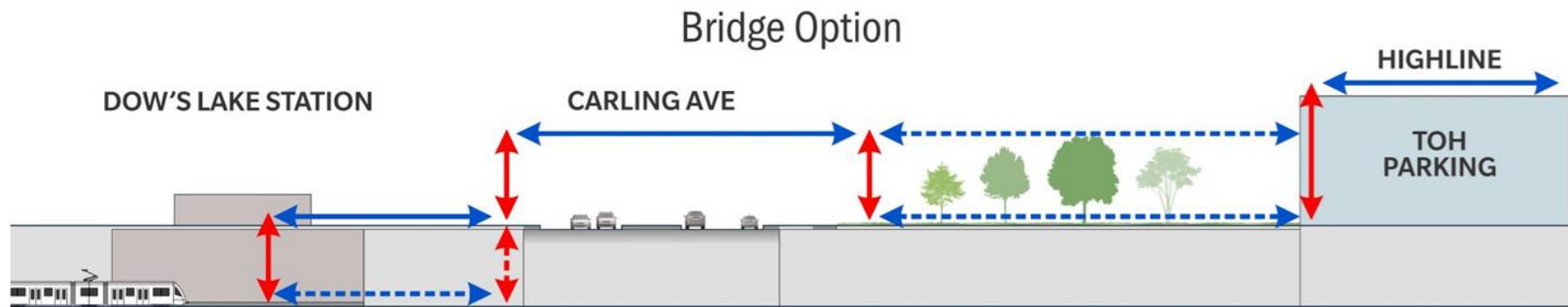
Alternative Alignments Considered

Bridge or Tunnel?

- Bridge and tunnel options on the east side of the LRT carried forward
- Criteria to be used in the evaluation:
 - Directness
 - Intuitiveness
 - Integration potential with LRT, TOH and BRT
 - Weather protection
 - Public realm enhancement opportunities
 - Visual environment impacts
 - Property impacts
 - Wayfinding
 - Capital Costs
 - Operating and Maintenance costs
 - Construction complexity
 - Perceived safety (CPTED)

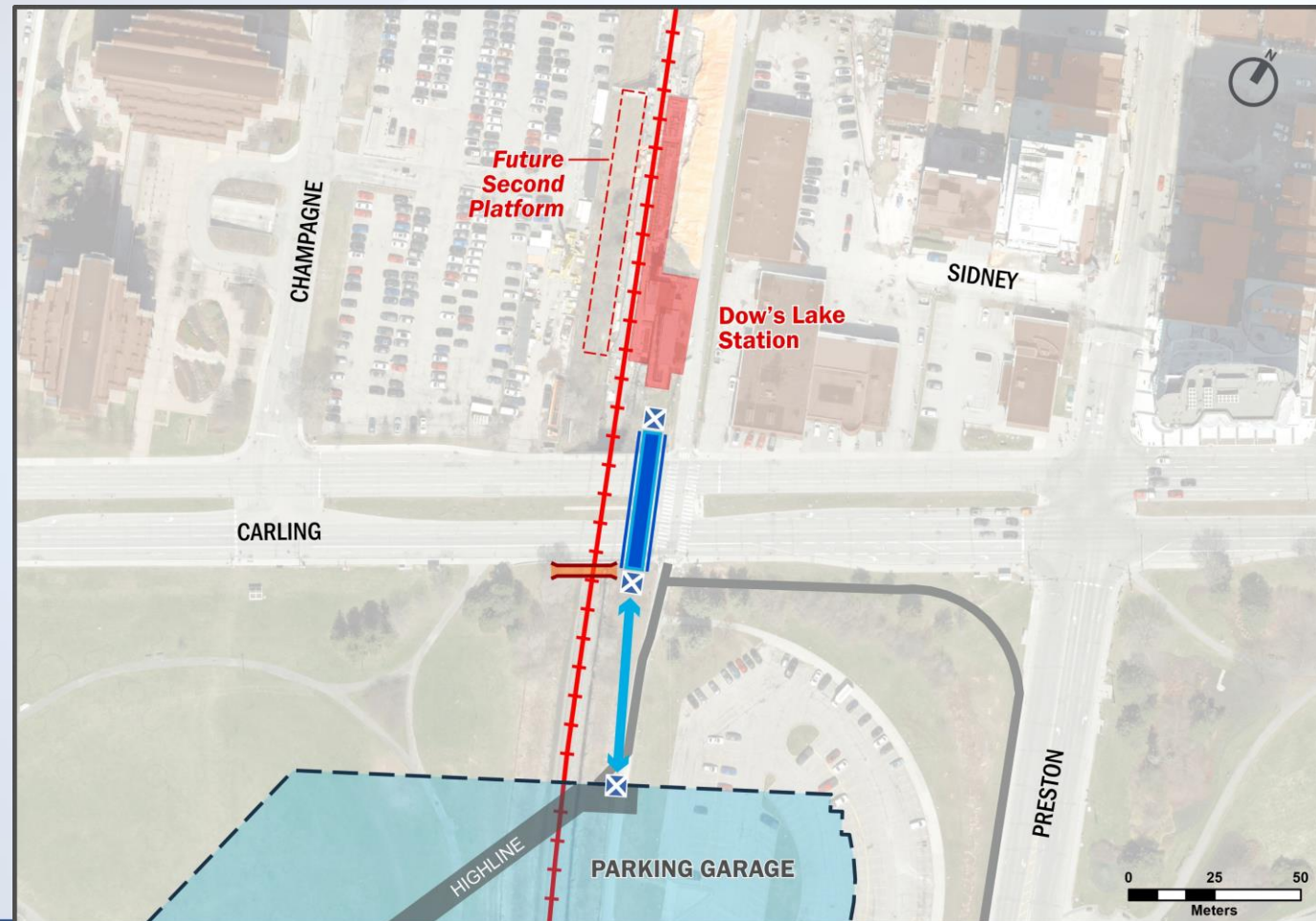
Bridge Connection Option

- Vertical circulation and pedestrian flow – more complex
- LRT station integration – likely easier to integrate with existing / future station
- Unless paths are enclosed, weather protection is limited to the bridge itself
- Maintenance, operations and cost considerations associated with stairs/elevators
- Hospital integration – direct connection would be at elevation but preferred to reduce vertical changes
- Visual impact – sightlines for signalized crossing, visual impact of overhead structure



Bridge Connection Option Continued

- Cost/constructability – generally more straightforward
- Development integration – more complex to integrate with future development south of Carling?
- Carling BRT integration – not useful due to vertical changes required
- Overhead crossing helps with wayfinding due to clear sight lines



Legend

- | | |
|----------------------|--|
| Trillium Line | Bridge |
| Highline | Vertical Circulation (Stairs/Elevators) |
| Dow's Lake Station | Connection Design to be Determined |
| Parking Garage | Proposed Active Transportation Bridge over LRT |
| Proposed TOH Pathway | |

Tunnel Connection Option

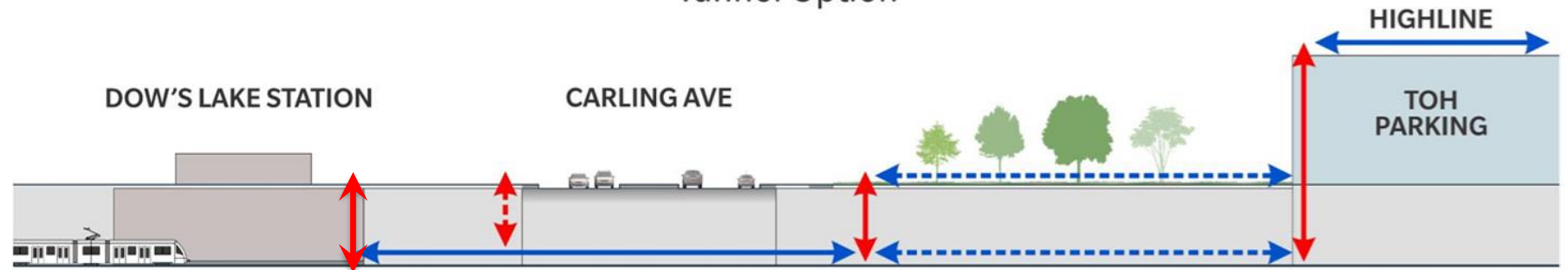
- Vertical circulation and pedestrian flow – simpler / fewer changes needed
- LRT station integration – more intuitive; but future station configuration could be more challenging (requires second crossing of Carling west of LRT trench)
- Carling BRT integration – somewhat more useful; at-grade circulation likely preferred
- Hospital integration – choice of coming up to grade or staying in tunnel



Image from Rail Fans Canada

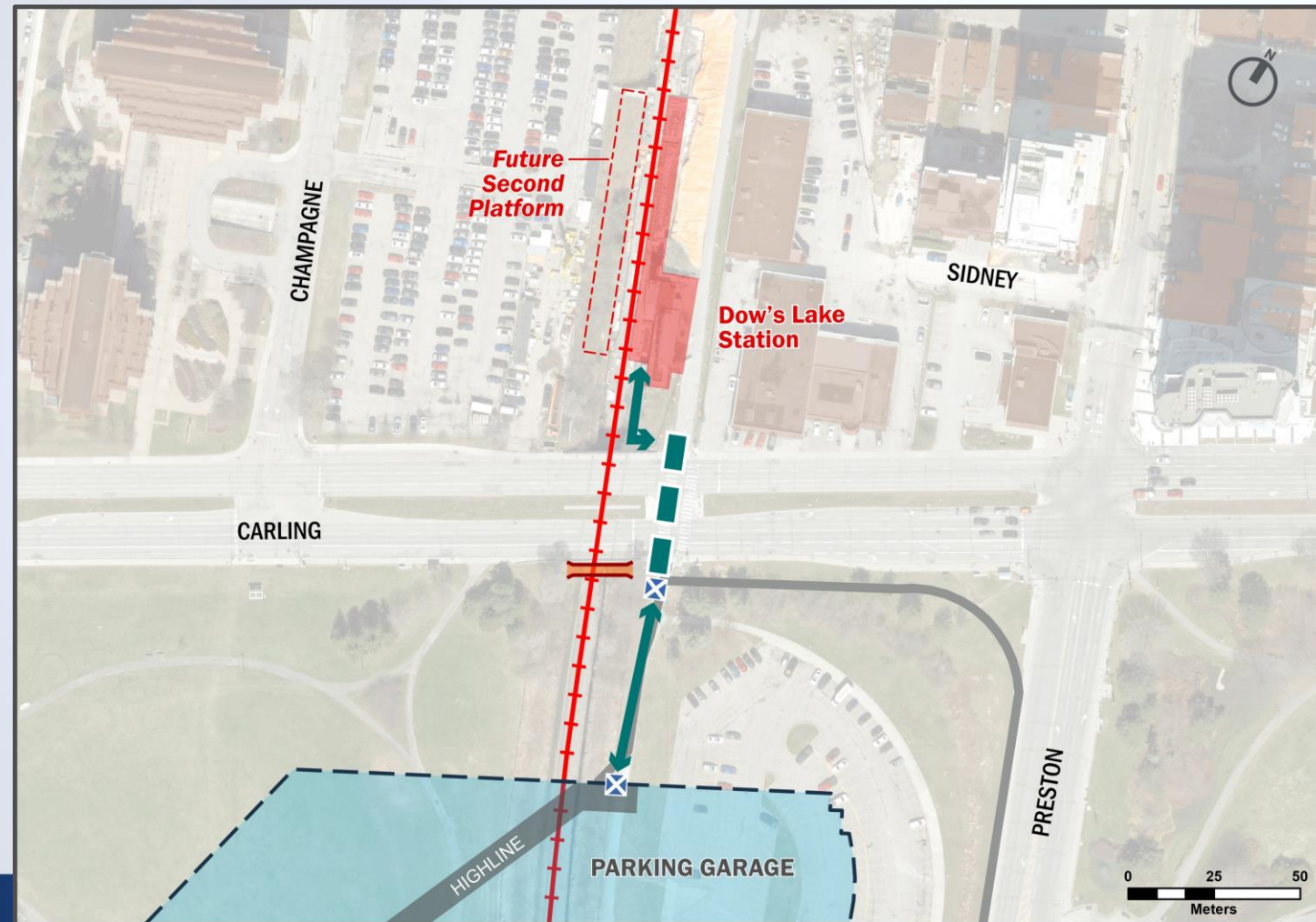


Tunnel Option



Tunnel Connection Option Continued

- Cost/constructability – LRT proximity, geotechnical and utility challenges
- Development integration – could be staged
- Weather protection provided from tunnel design
- No visual impact



Legend

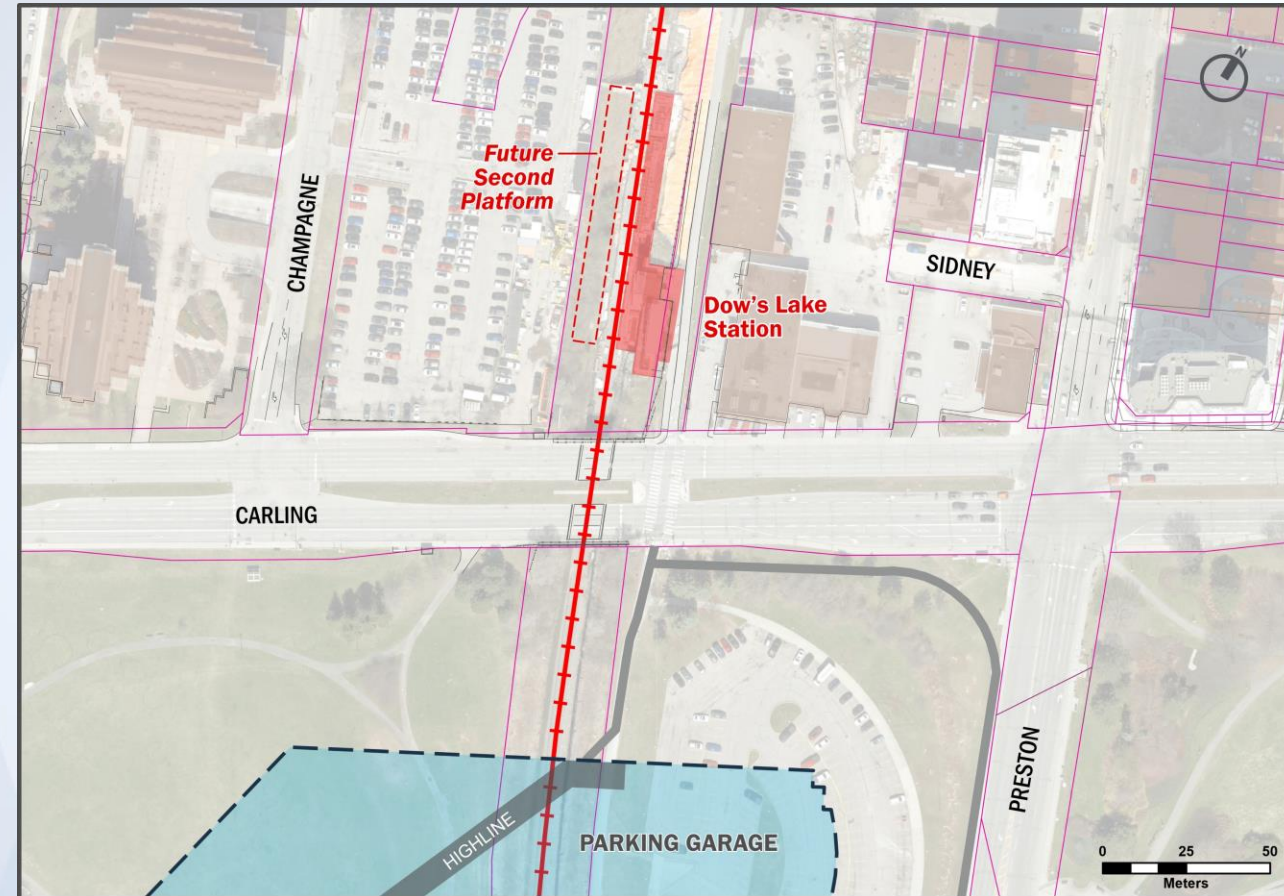
- +— Trillium Line
- Highline
- Dow's Lake Station
- Parking Garage
- Proposed TOH Pathway

- Tunnel
- Proposed Active Transportation Bridge over LRT
- ⊗ Vertical Circulation (Stairs/Elevators)
- ↔ Connection Design to be Determined
- Proposed Active Transportation Bridge over LRT

Alternative Designs

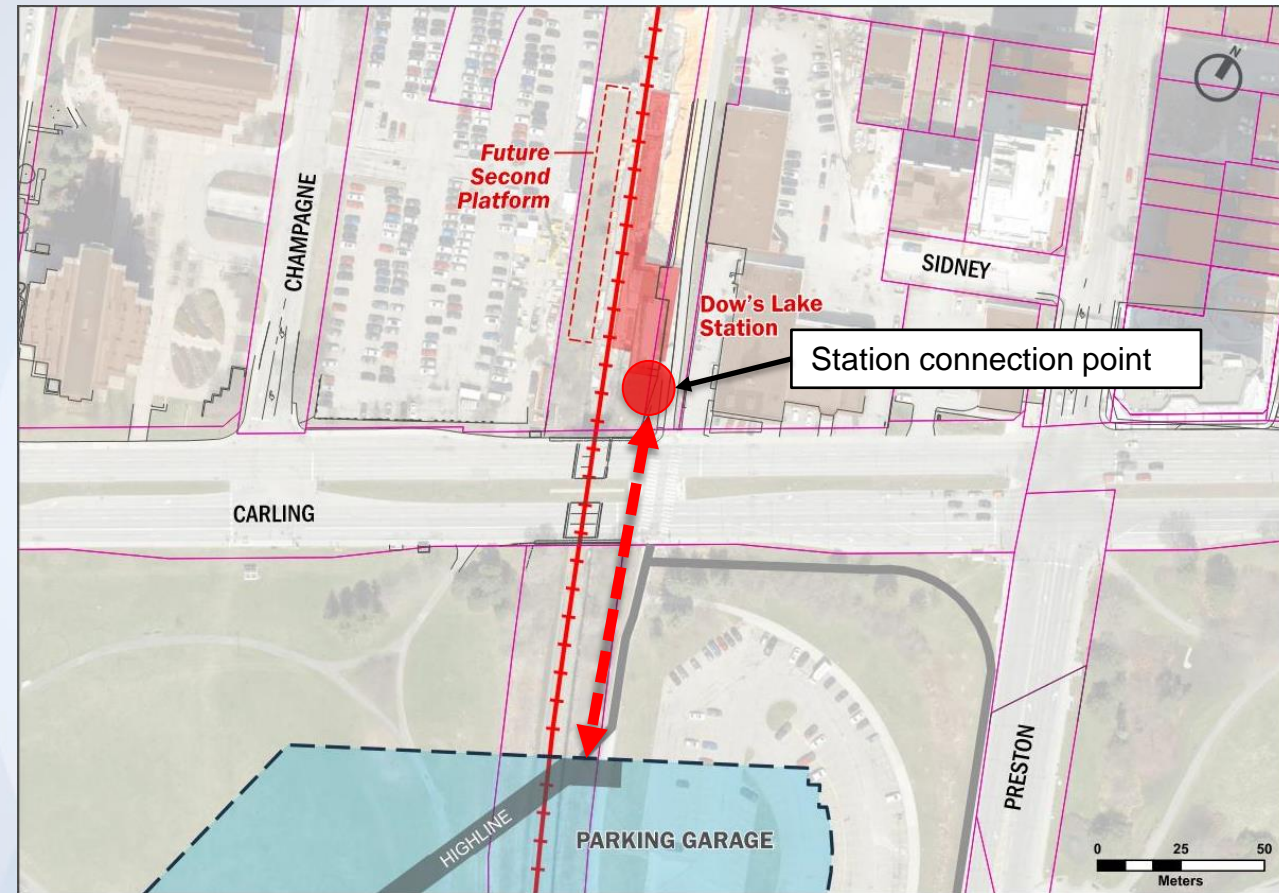
Design Considerations

- Issues to be considered as part of the identification and evaluation of alternative designs include integration with:
 - Dow's Lake LRT Station
 - Hospital Parking Garage
 - Carling Avenue Rapid Transit
 - Active transportation facilities
 - Adjacent development



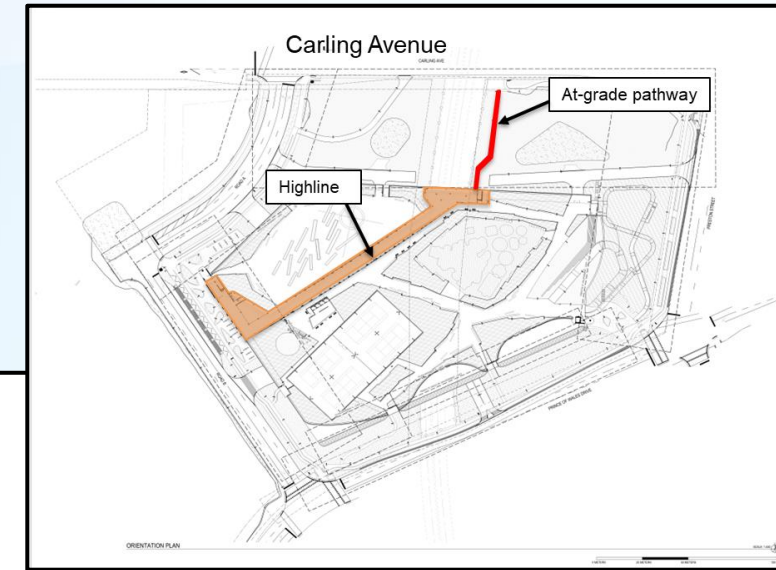
Dow's Lake LRT Station Integration

- Use of existing station infrastructure and/or ability/feasibility of modifying
- Fare paid zone location - preferred at the station
- Pedestrian circulation
- Space available on north side of Carling for vertical circulation
 - Radio tower
 - Rock excavation
 - LRT proximity and construction impacts
- Future station expansion and connection to ultimate southbound platform on west side of LRT
- Connections to local transit / Carling BRT



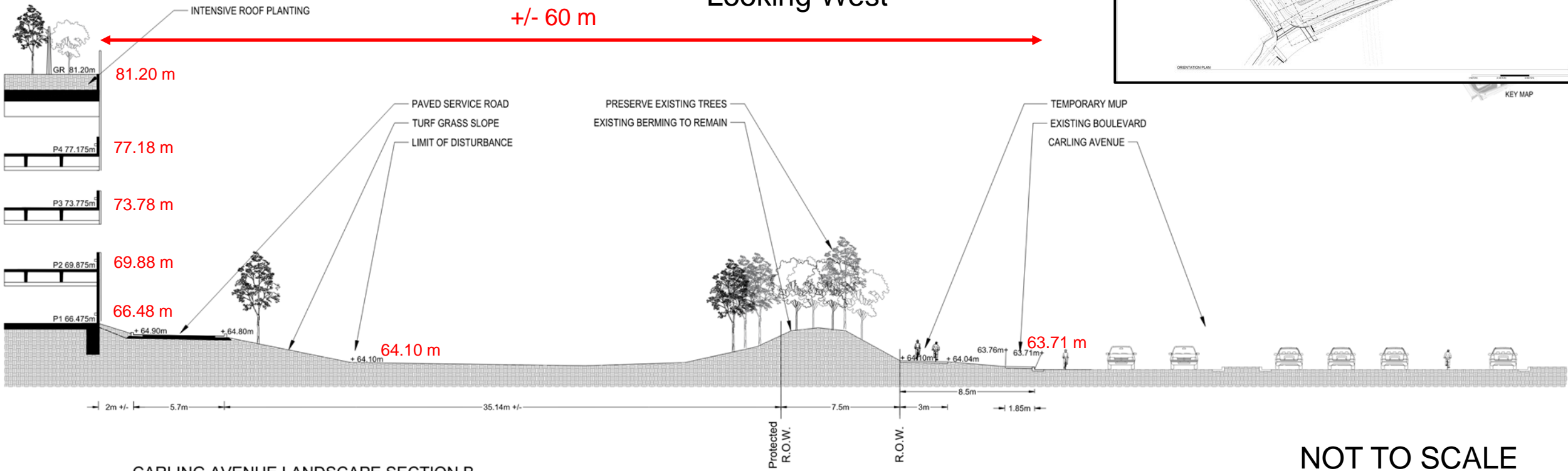
Hospital Parking Garage Integration

- Location of connection to parking garage / Highline
- Vertical circulation and integration with connection
- Overhead connection would likely tie in at P2 level - tying into Highline level would create excessively high structure
- Tunnel connection may need to be via a new building



Looking West

+/- 60 m



CARLING AVENUE LANDSCAPE SECTION B

NOT TO SCALE

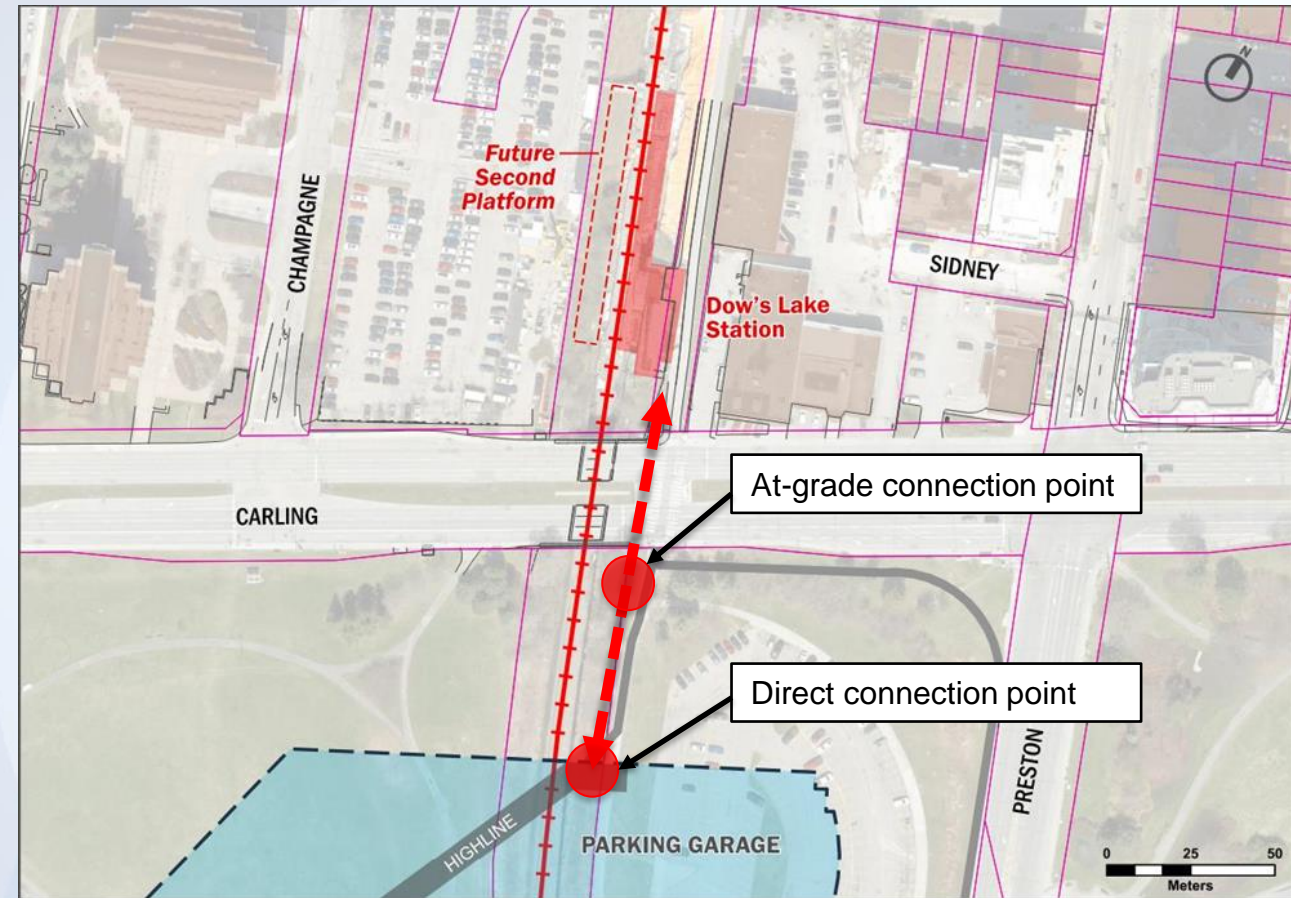
Hospital Parking Garage Integration

Direct

- Ability to tie into Parking garage and Highline access
- Landing/station headhouse required on south side of Carling for transit connections?
- Future development integration?

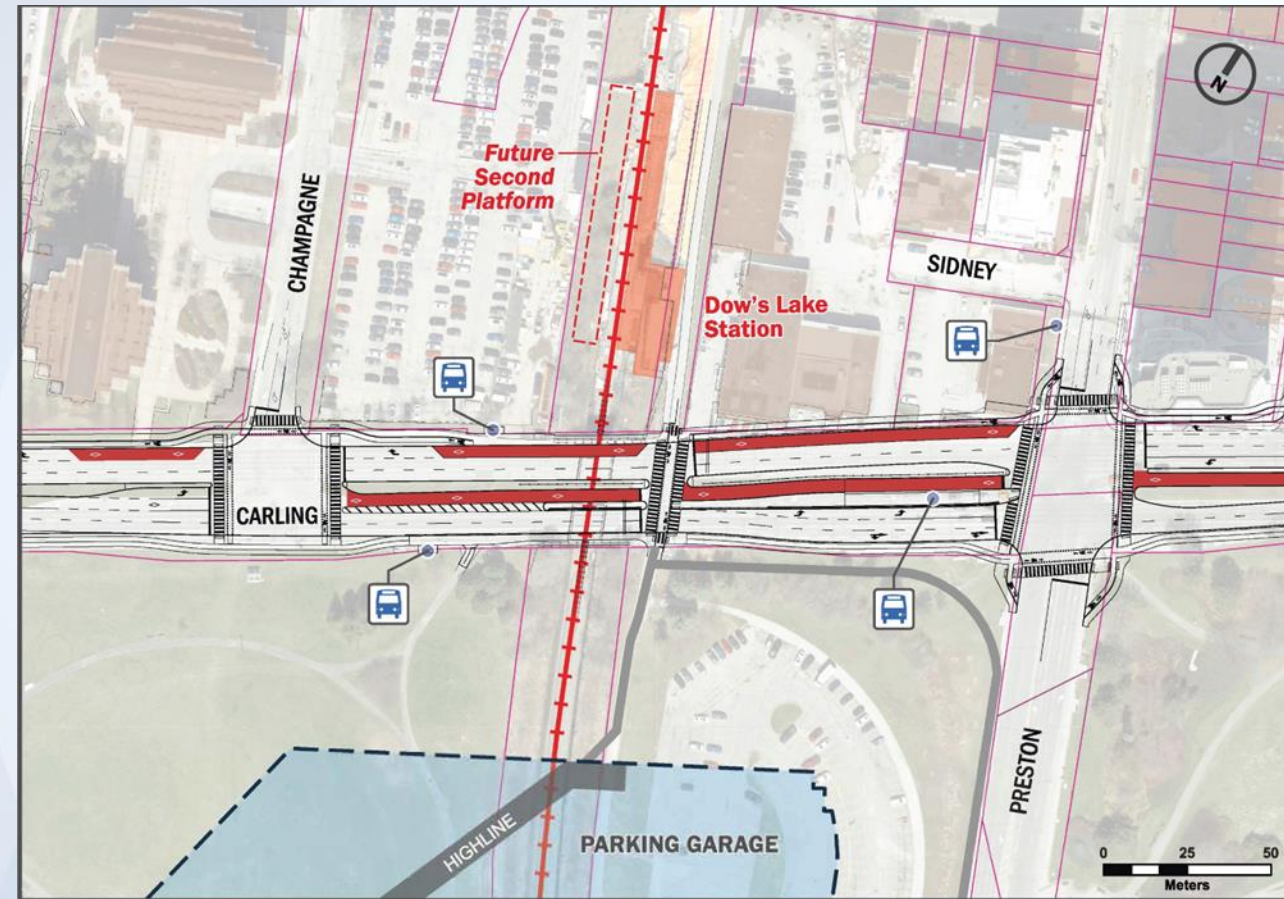
At-Grade

- Connection returns to grade south of Carling, with at-grade connection to parking garage and Highline
- Flexibility for future development to integrate connection to parking garage/highline



Carling Avenue Integration

- Integration with interim transit priority and ultimate rapid transit facility
 - Bus stop locations
 - Pedestrian circulation
- Hospital roadway modifications
- Integration with active transportation facilities
- Widening of LRT trench and eventual replacement of Carling overpass



Next Steps

Next Steps

- Review and update based on feedback received
- Finalize evaluation and select preferred alternative (tunnel or bridge)
- Early 2024 – Consultation Group Meetings and Public Consultation Event
 - Evaluation of alternative designs
 - Preliminary Recommended Plan
- Spring 2024 – Transportation Committee
 - Approval of Recommended Plan
- Summer 2024 - Study completion

Discussion

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