

Valley Line (SE to West) LRT Preliminary Design

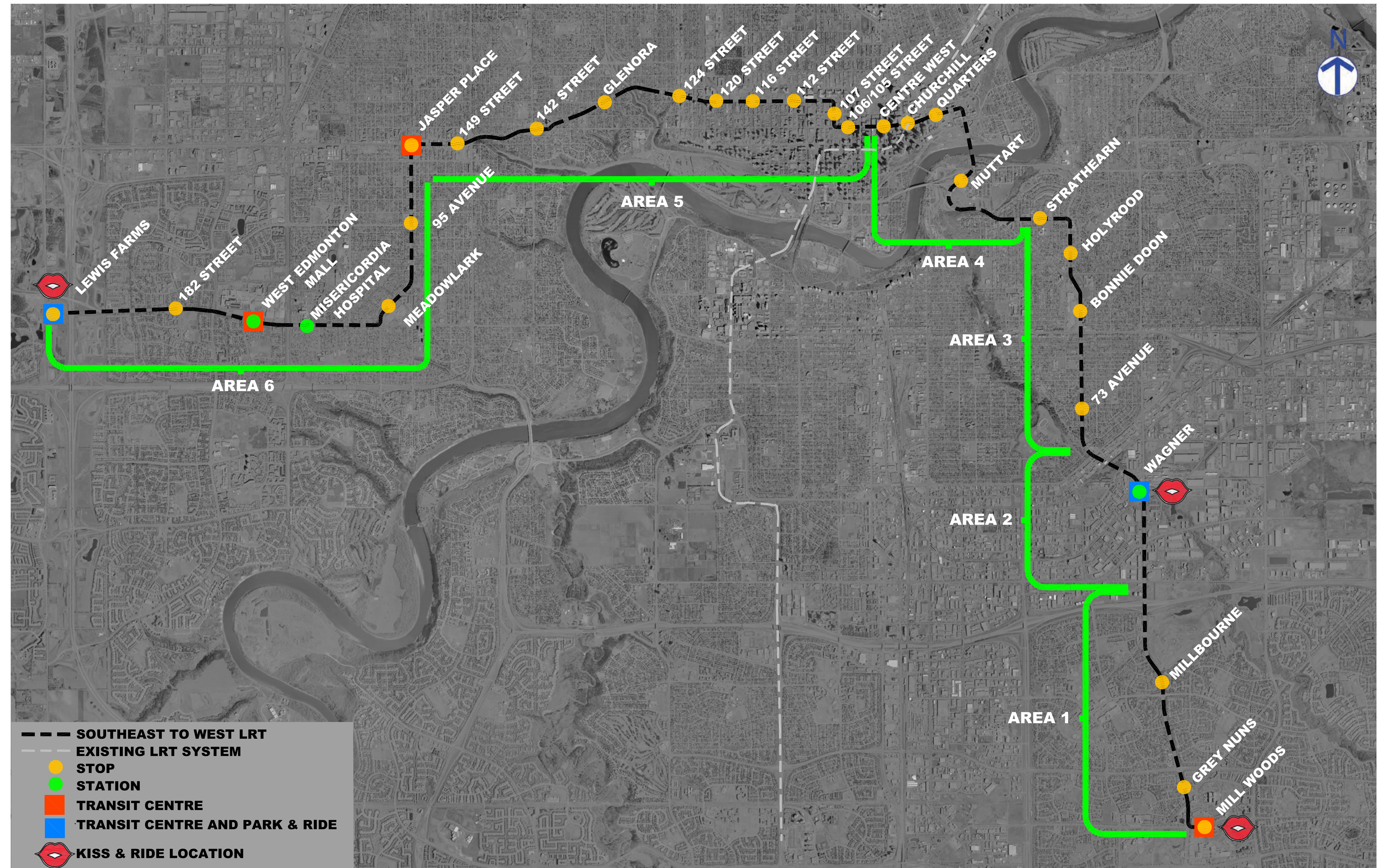


Valley Line LRT Corridor



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- Council approved
- 27 km line with 3 stations, 25 stops
- 6 bridges
 - Over North Saskatchewan River from Muttart Conservatory to Louise McKinney Park
 - Over Groat Road at 104 Avenue
 - Over 170 Street at 87 Avenue
 - Over Anthony Henday at Webber Greens Drive
 - Over Whitemud Drive at 75 Street
 - Over CN/CP rail lines along 75 Street
- 1 pedestrian bridge at Connors Hill
- 1 tunnel between Louise McKinney Park and 102 Avenue
- 2 Park 'n' Ride sites
- 3 Kiss 'n' Ride sites (other sites being considered)
- Integration with 5 transit centres
- 1 Operation and Maintenance Facility



PARK 'N' RIDE

Car park connected to transit station that allows commuters to leave vehicles and transfer to bus or LRT.

KISS 'N' RIDE

A place where commuters are driven and dropped off at a bus or LRT stop/station. Other Kiss 'N' Ride locations are being determined.

TRANSIT CENTRE

A stopping point for bus and LRT where commuters can move from one transit mode to the other.

Welcome!



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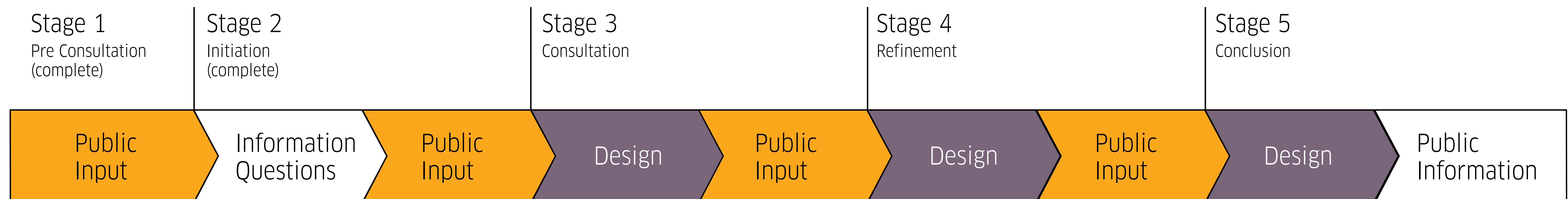
Public Involvement for Preliminary Design of the Valley Line (SE to West) LRT



PROJECT PURPOSE: To develop and finalize the Preliminary Design for a 27 km urban style, low-floor light rail system along the approved corridor from Mill Woods to Lewis Farms.

MEETING PURPOSE: To provide you with the recommended preliminary design for Mill Woods to Centre West of the Valley Line LRT.

WE ARE HERE





Mill Woods to Centre West: Stage 1

2013 - 2016: **Procurement and Design**

2013: **Utility Relocation Begins**

2015 - 2019: **Construction**

2019: **Opening Day**

- Schedule is dependent on funding approval.

Centre West to Lewis Farms: Stage 2

- Schedule is dependent on funding approval.
- If funding is secured, construction could begin as early as 2020.

Valley Line LRT

- Trains run on approx. 5 minute intervals during peak hours
- Trains share traffic signals with other road users
- A complementary bus network will be developed—some existing bus stops may be relocated to work better with LRT



- Improves connection between LRT and community
- Smaller scale stops, spaced closer together
- Less impact in community
 - Stops at street level
 - Reduced right-of-way
- Encourages pedestrian access
- Fewer barriers, gates and bells
- Strong bus, pedestrian and bicycle connections
- Reduced speeds in congested areas

Urban Style LRT

(continued)

- Investment in landscaping and architectural features
- Maximizes openness of space to create safe environment
- Does not share right of way with other road users but does share traffic signals
- City Council direction for extensions to existing and all new LRT lines

Low Floor Technology

- Stops are similar to bus stops—at street level
- Passengers board at street level
- Industry standard for LRT systems worldwide



Integrated Urban Style

roadways



sidewalks



Integrated Urban Style

catenary



public art



Integrated Urban Style

track



stops & stations



Stops and Stations

What is a stop?

A stop is similar to bus stops in terms of scale. It contains basic amenities and is accessed at street level.

What is a station?

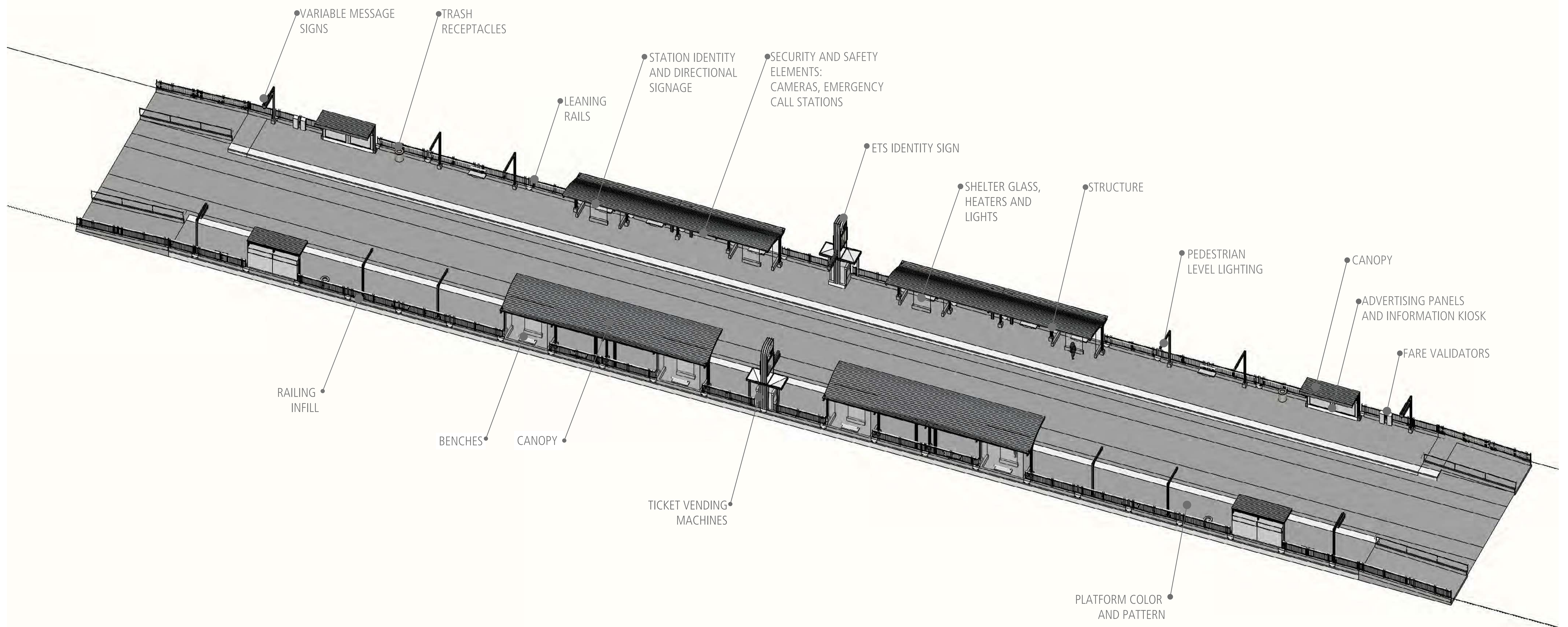
A station is an elevated stop. It contains basic amenities and is accessed using stairs or elevators.



Stop Elements



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- All layouts and scale to be confirmed as design progresses, based on ridership projections

We Heard:
Organic form is preferred
by the public.

Organic form that recalls the river and natural
history of the area.

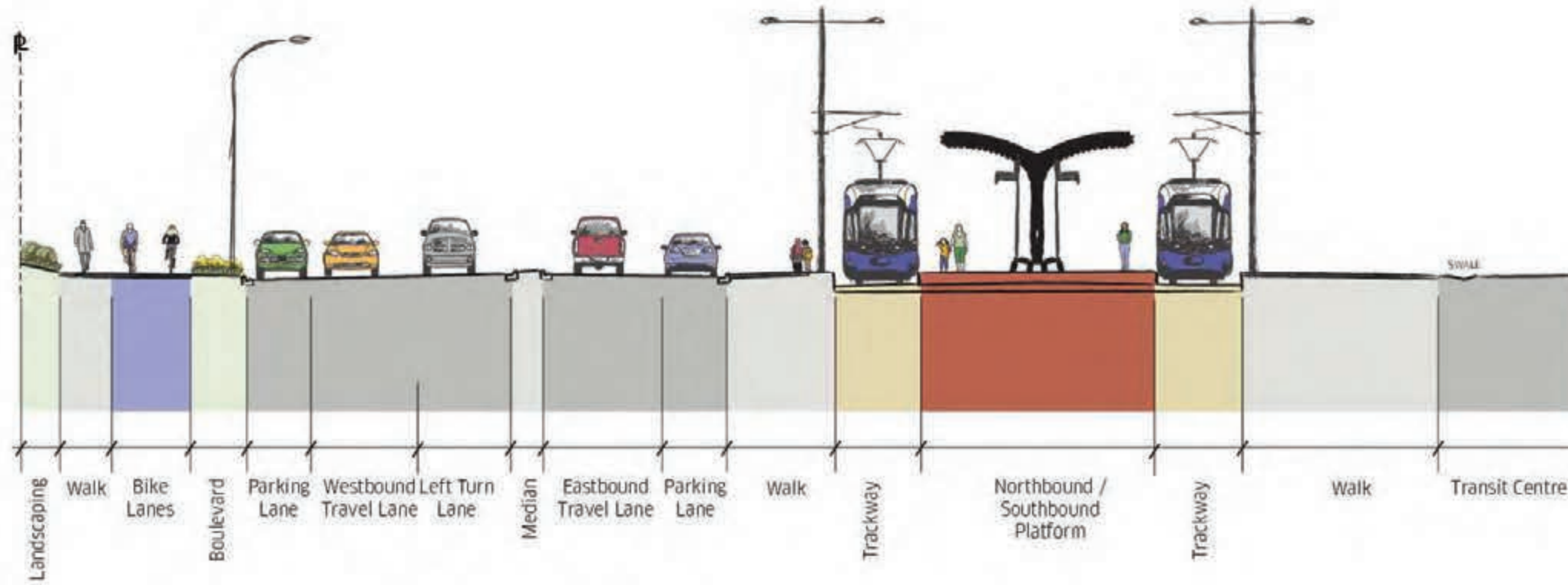
Materials:

- Steel structure
- Metal and wood canopy
- Glass shelters
- Unique concrete finishing
on platform



Mill Woods Stop

Note: Design along 28 Avenue is ongoing.



Cross Section C (Looking east)



Stop Design Elements (Based on your feedback, elements selected for project will be similar to images above.)



Existing Conditions

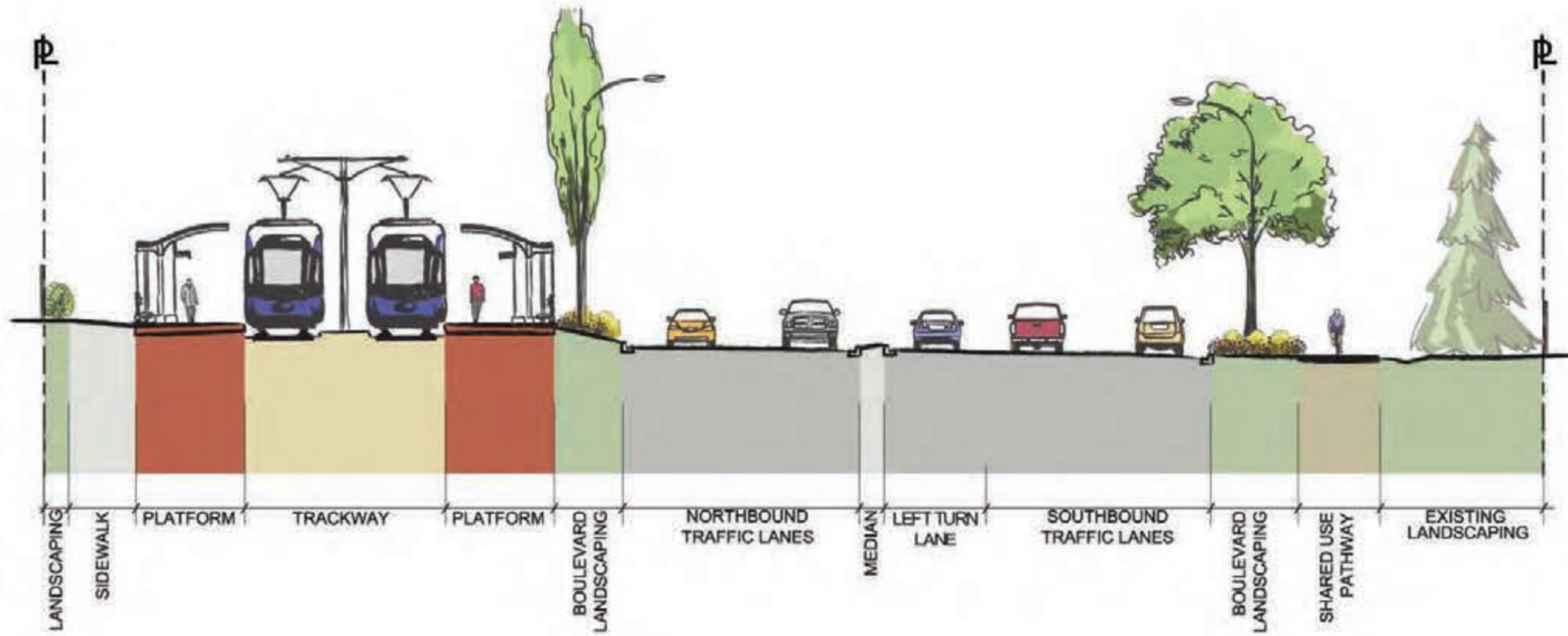


Concept Rendering

Views above look west along 28 Avenue from Hewes Way. (See ◀ symbol on plan.)

Stop Images View 5

Grey Nuns Stop



Cross Section B (Looking south)



Stop Design Elements (Based on your feedback, elements selected for project will be similar to images above.)



Existing Conditions

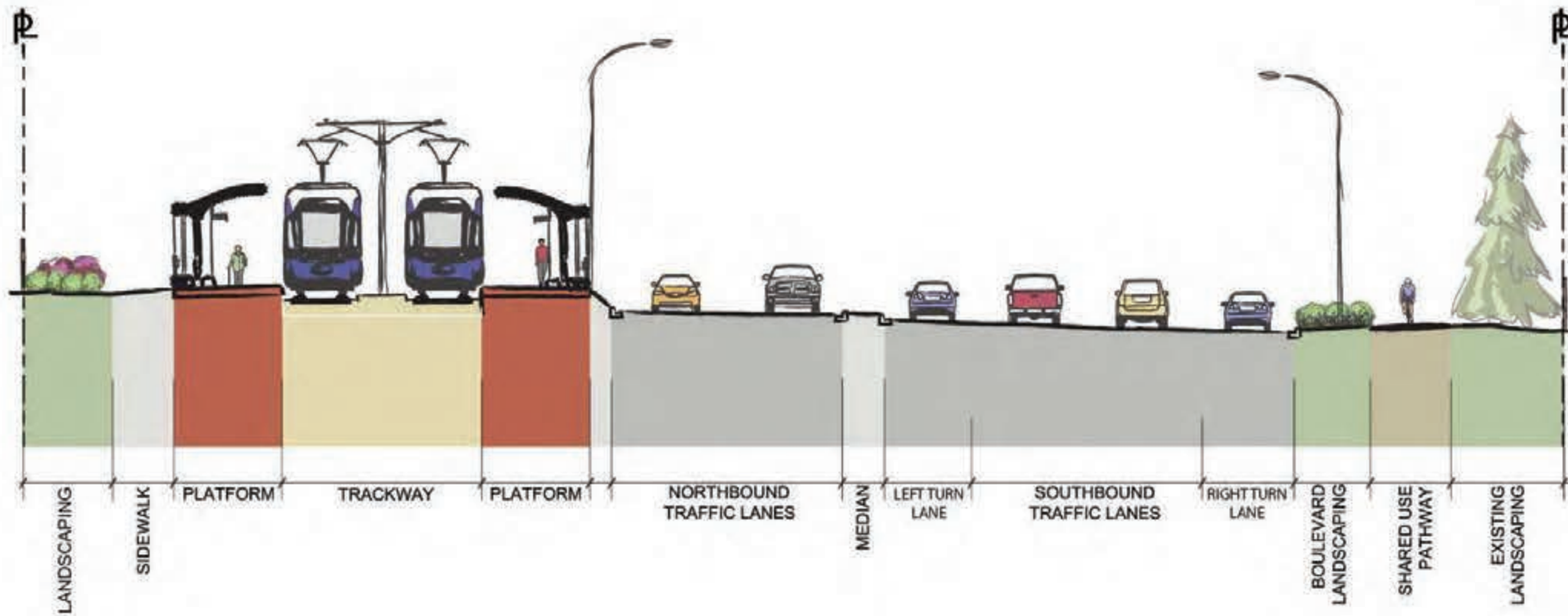


Concept Rendering

Views above look north along 66 Street from 31 Avenue intersection. (See ◀ symbol on plan.)

Stop Images View 4

Millbourne Stop



Cross Section A (Looking south)



Stop Design Elements (Based on your feedback, elements selected for project will be similar to images above.)



Existing Conditions



Concept Rendering

Views above look north along 66 Street from 38 Avenue intersection. (See ◀ symbol on plan.)

Stop Images View 3

Bridge Over Whitemud Drive

- A new bridge will carry the LRT over Whitemud Drive at 75 Street
- Bridge will be located on the east side of the existing 75 Street bridge over Whitemud Drive
- Pedestrians and cyclists will continue to cross Whitemud Drive on the west side of the existing 75 Street Bridge



Existing Conditions



Existing Conditions



Concept Rendering

Views above look northeast along from Whitemud eastbound off-ramp at 51 Street. (See ◀ symbol on plan.)

Bridge Images View 1



Concept Rendering

Views above look southwest along from Whitemud westbound off-ramp at 51 Street. (See ◀ symbol on plan.)

Bridge Images View 2

Wagner Station and Park & Ride



Concept Rendering - Exterior

View above looks southeast from the intersection of Wagner Road and Davies Road.

(See ◀ symbol on plan.)

Stop Image View 1



Concept Rendering - Interior



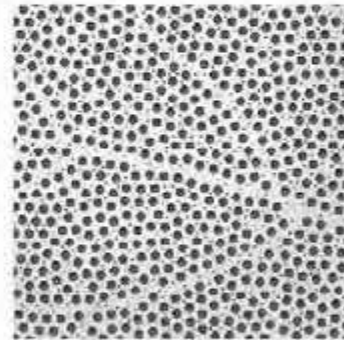
Bench



Recycling Bin



Paving



Column Wrap



Railing

Stop Design Elements

(Based on your feedback, elements selected for project will be similar to images above.)

- An elevated station has been designed at Wagner Station.
- Wagner Station will provide barrier-free access, i.e. elevators and escalators, to the other site facilities and surrounding community.
- Wagner Station includes:
 - Park 'N' Ride
 - Kiss 'N' Ride
 - Transit Centre
 - Potential for future Transit Oriented Development (TOD)



Concept Rendering - Wagner Station Park & Ride

Birds-eye view above looks north.

(See ◀ symbol on plan.)

Stop Image View 2

Argyll Bridge

- This bridge, also known as a guideway, carries the LRT over Argyll Road.



Existing Conditions



Existing Conditions



Concept Rendering

Views above look north from Wagner Road just east of Wagner High School. (See ◀ symbol on plan.)

Bridge Images View 3

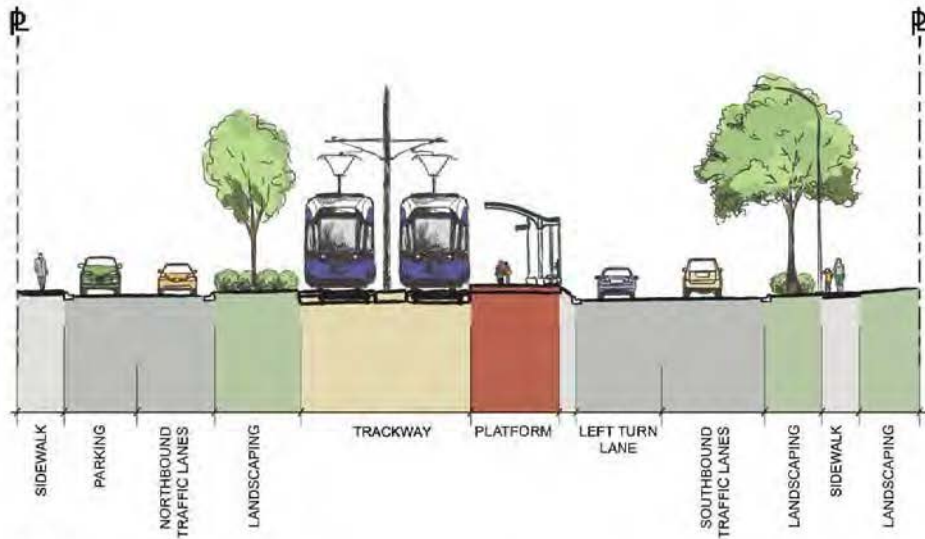


Concept Rendering

Views above look north along 83 Street from the intersection of Argyll Road and 83rd Street. (See ◀ symbol on plan.)

Bridge Images View 4

73 Avenue Stop



Cross Section D (Looking south)



Bench



Recycling Bin



Paving
(Patterned Concrete)



Column Wrap



Railing

Stop Design Elements

(Based on your feedback, elements selected for project will be similar to images above.)



Existing Conditions (Looking north)

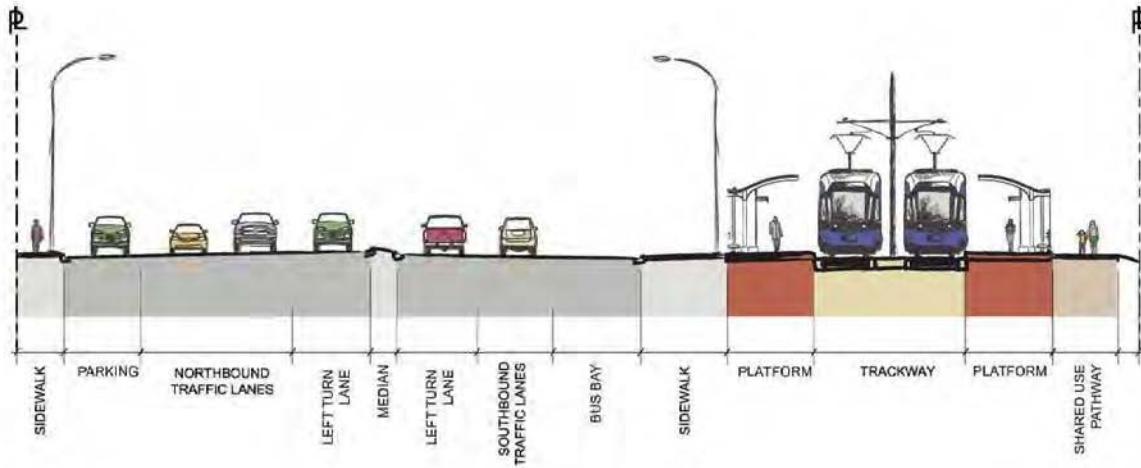


Concept Rendering

Views above look north along 83 Avenue from 73 Avenue intersection. (See ◀ symbol on plan.)

Stop Images View 4

Bonnie Doon Stop



Cross Section C (Looking south)



Bench



Recycling Bin



Paving
(Patterned Concrete)



Column Wrap



Railing

Stop Design Elements

(Based on your feedback, elements selected for project will be similar to images above.)



Existing Conditions (Looking north)

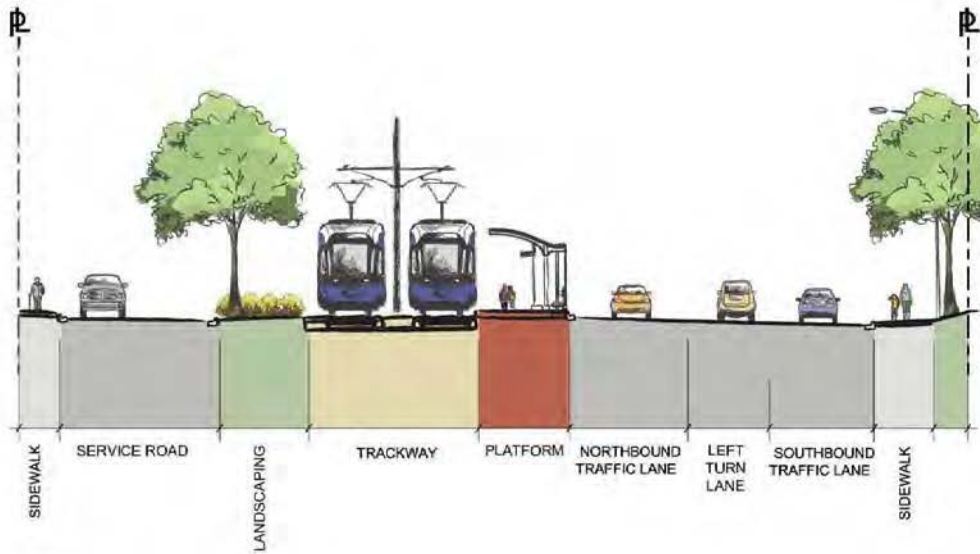


Concept Rendering

Views above look north along 83 Avenue from just north of 82 Avenue intersection. (See ◀ symbol on plan.)

Stop Images View 3

Holyrood Stop



Cross Section B (Looking south)



Bench



Recycling Bin



Paving
(Patterned Concrete)



Column Wrap



Railing

Stop Design Elements

(Based on your feedback, elements selected for project will be similar to images above.)



Existing Conditions (Looking north)

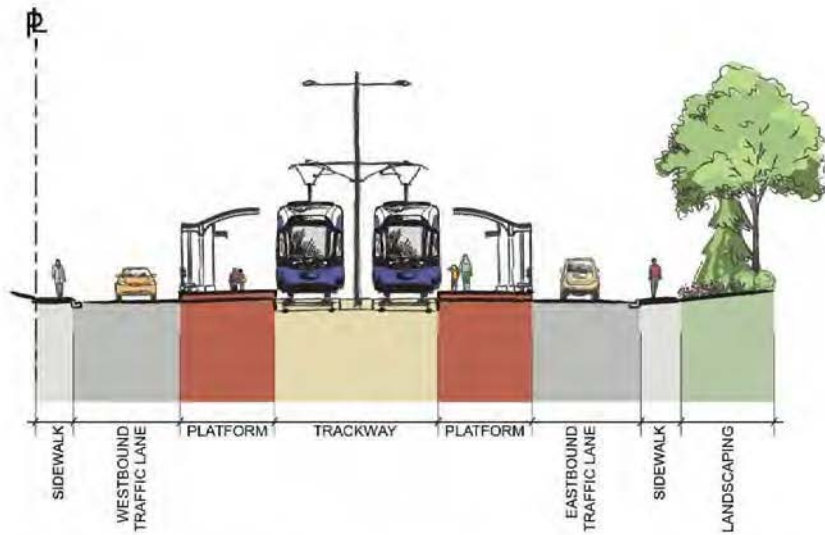


Concept Rendering

Views above look north along 85 Avenue towards 93 Avenue intersection. (See ◀ symbol on plan.)

Stop Images View 2

Strathearn Stop



Cross Section A (Looking east)



Bench



Recycling Bin



Paving
(Patterned Concrete)



Column Wrap



Railing

Stop Design Elements

(Based on your feedback, elements selected for project will be similar to images above.)



Existing Conditions (Looking west)



Concept Rendering

Views above look west along 95 Avenue towards 90 Street intersection. (See ◀ symbol on plan.)

Stop Images View 1

Connors Road Pedestrian Bridge

- The existing pedestrian bridge is too short to span the corridor when the LRT is constructed. A new pedestrian bridge is required.
- During construction, pedestrians and cyclists will be detoured, as required. See separate Environmental Impact Assessment (EIA) board for preliminary pathway detour information.



Existing Conditions (Looking west)



Concept Rendering

View above look east up Connors Road towards pedestrian bridge.
(See ◀ symbol on plan.)

Bridge Images View 2



Concept Rendering

View above looks northeast down towards Connors Road and pedestrian bridge.
(See ◀ symbol on plan.)

Bridge Images View 3

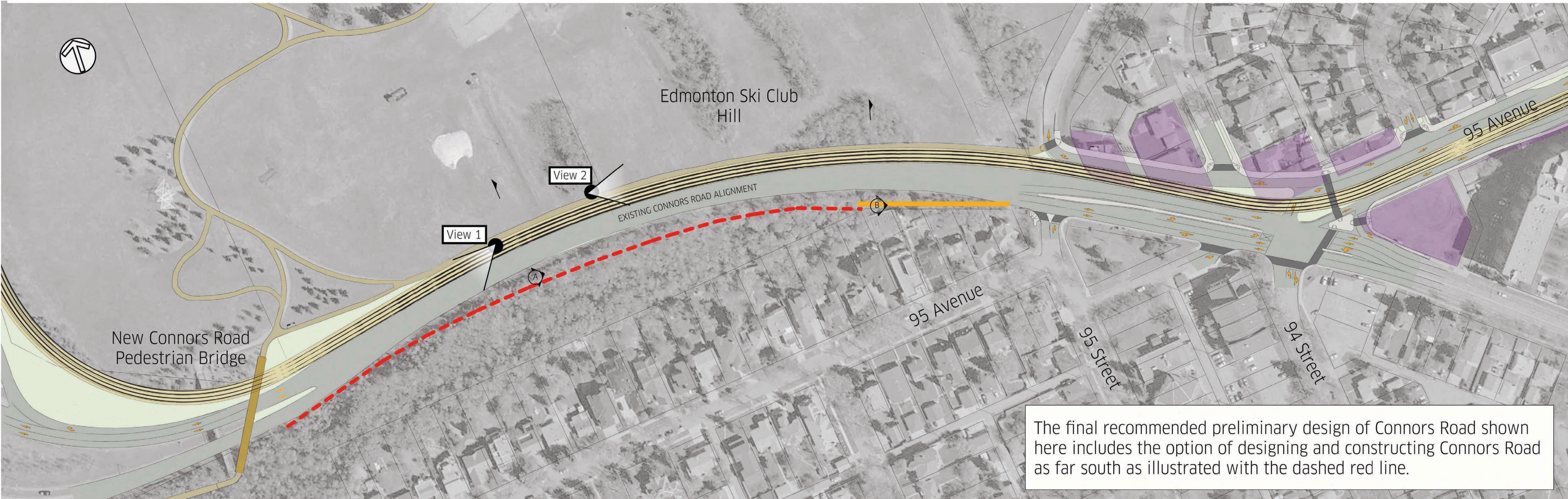


Concept Rendering

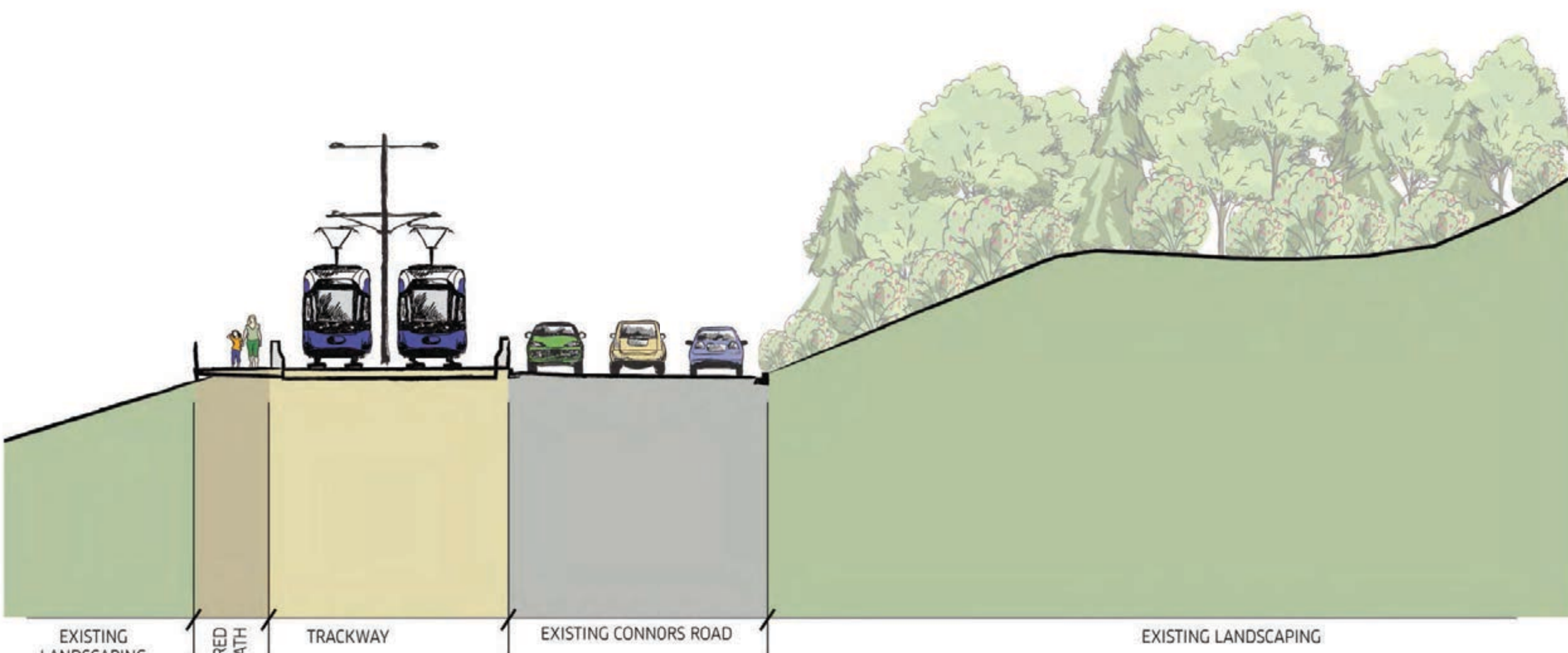
Views above looks west down Connors Road towards pedestrian bridge.
(See ◀ symbol on plan.)

Bridge Images View 4

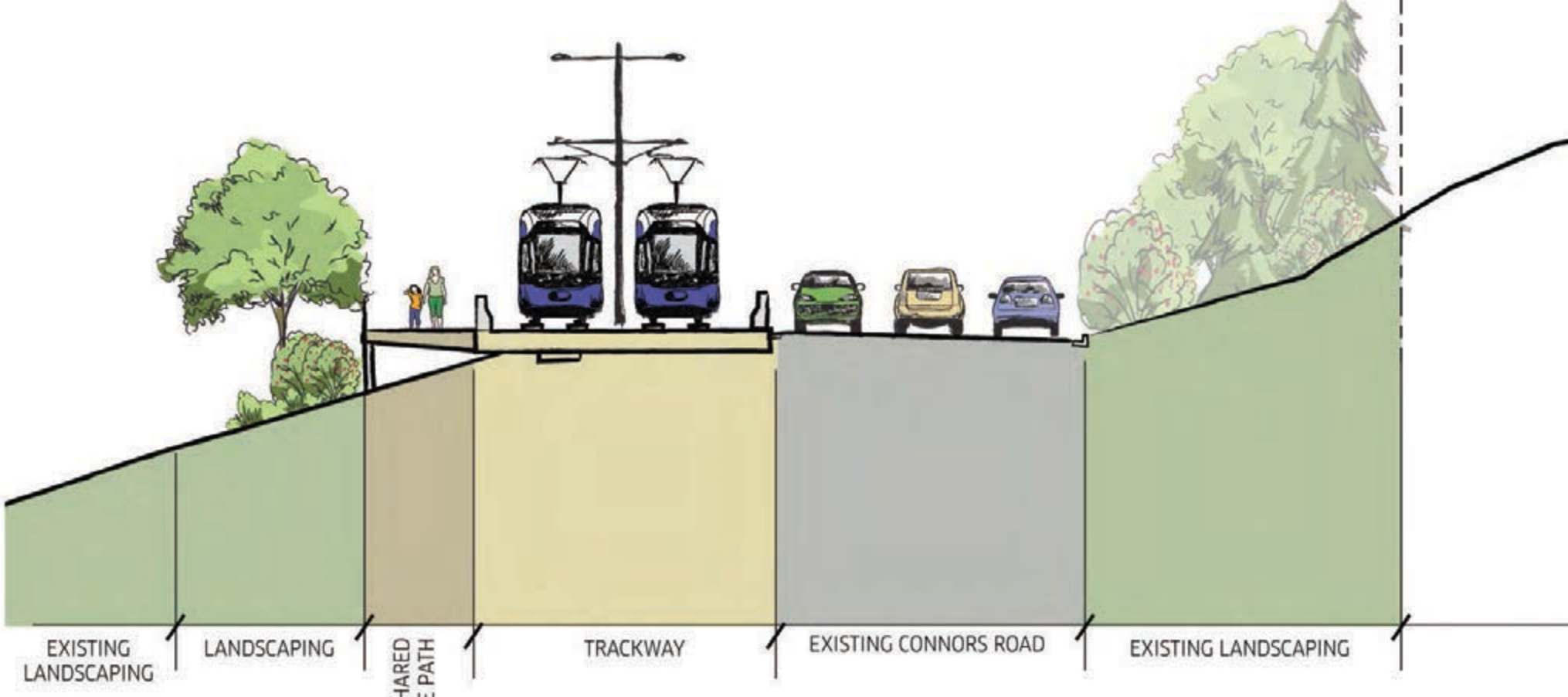
Connors Road Alignment



The final recommended preliminary design of Connors Road shown here includes the option of designing and constructing Connors Road as far south as illustrated with the dashed red line.



Section A (Looking east)



Section B (Looking east)

Legend

- Trackway - Embedded
- Asphalt Road Surface
- Concrete Walk
- Shared Use Path
- Pedestrian Crossing
- Signalized Pedestrian Crossing
- Potential Landscape Area (Hard or Soft)
- Existing Trees
- Potential Property Impacts
- Traffic Signals
- Noise Attenuation Wall



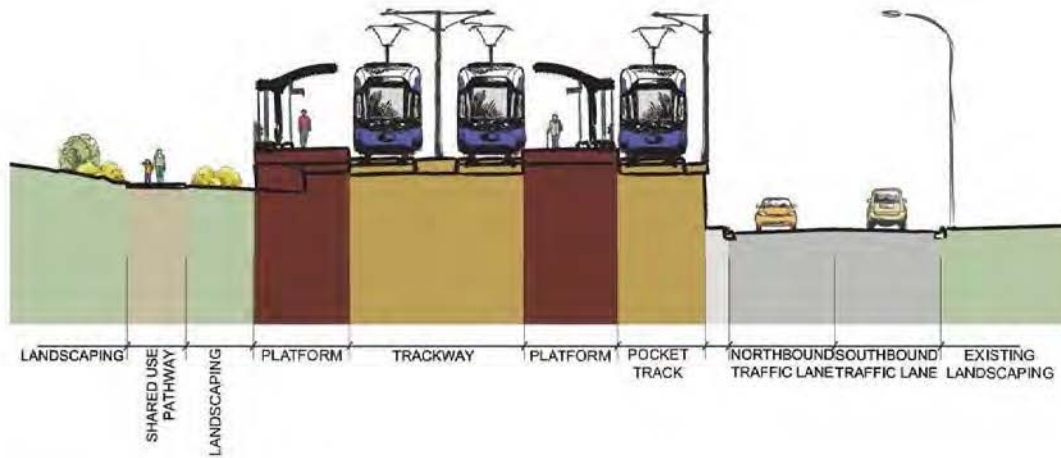
Concept Rendering View 1
View above looks west down Connors Road. (See < symbol on plan.)



Concept Rendering View 2
View above looks east up Connors Road. (See < symbol on plan.)



Muttart Stop



Cross Section A (Looking southwest)



Bench



Recycling Bin



Paving
(Patterned Concrete)



Column Wrap



Railing

Stop Design Elements

(Based on your feedback, elements selected for project will be similar to images above.)



Existing Conditions (Looking southwest)



Concept Rendering

Views above look southwest along access road adjacent to Muttart and 98 Avenue. (See ◀ symbol on plan.)

Stop Images View 1

Portal - Riverbank

- A portal design will complement the surrounding area and will consider existing trail connections.
- Traction Power Substation will be located at the top of the bank.

View 10

Birdseye view looking northwest towards downtown from river valley.

(See ◀ symbol on plan.)



Portal - The Quarters

View 6

Looking east along 102 Avenue from 97 Street intersection.

(See ◀ symbol on plan.)



View 8

Looking east along 102 Avenue towards Jasper Avenue intersection.

(See ◀ symbol on plan.)



View 7

Looking east along 102 Avenue from 96 Street intersection.

(See ◀ symbol on plan.)



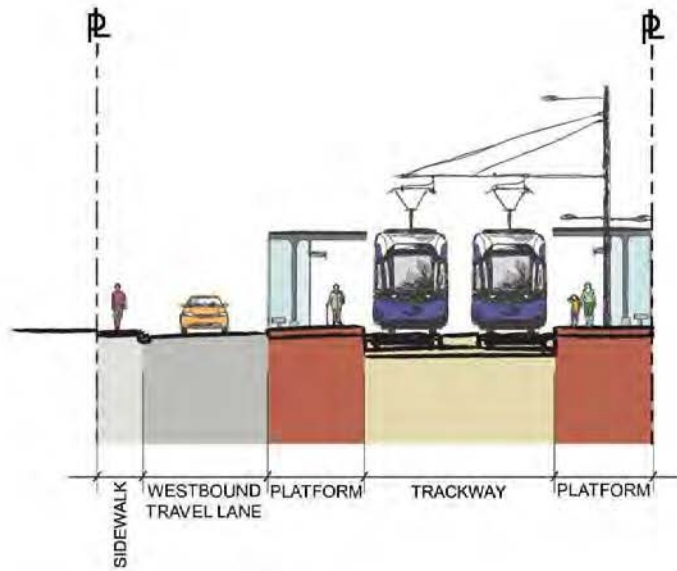
View 9

Birdseye view looking west along 102 Avenue from Jasper Avenue intersection.

(See ◀ symbol on plan.)



Quarters Stop



Cross Section C (Looking east)



Bench



Recycling Bin



Paving
(Patterned Concrete)



Column Wrap



Railing

Stop Design Elements

(Based on your feedback, elements selected for project will be similar to images above.)



Existing Conditions (Looking west)



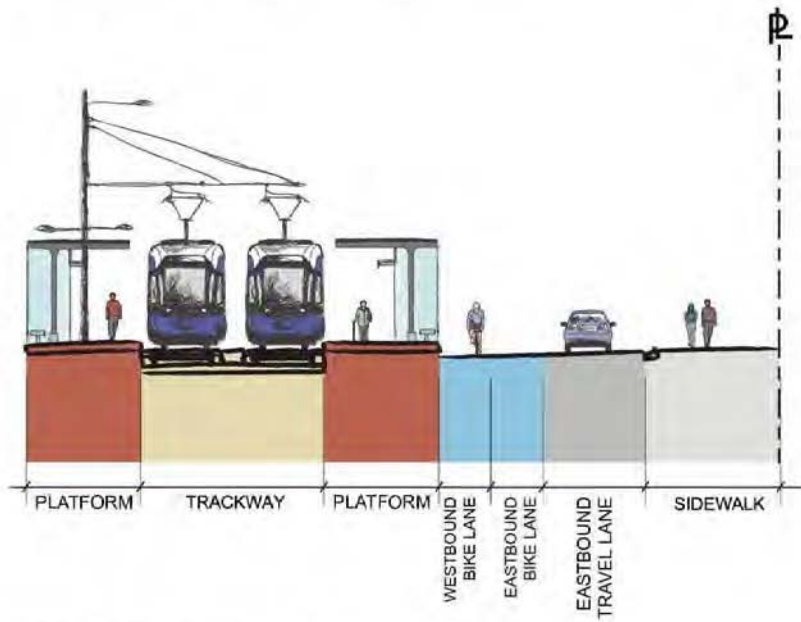
Concept Rendering

Views above look west along 102 Avenue from 96 Street intersection. (See ◀ symbol on plan.)

Stop Images View 5

Churchill Stop

Note: Design along 102 Avenue is ongoing.



Cross Section B (Looking east)



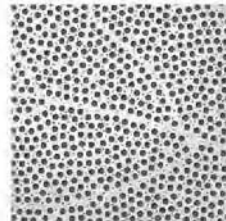
Bench



Recycling Bin



Paving
(Patterned Concrete)



Column Wrap



Railing

Stop Design Elements

(Based on your feedback, elements selected for project will be similar to images above.)



Existing Conditions (Looking west)

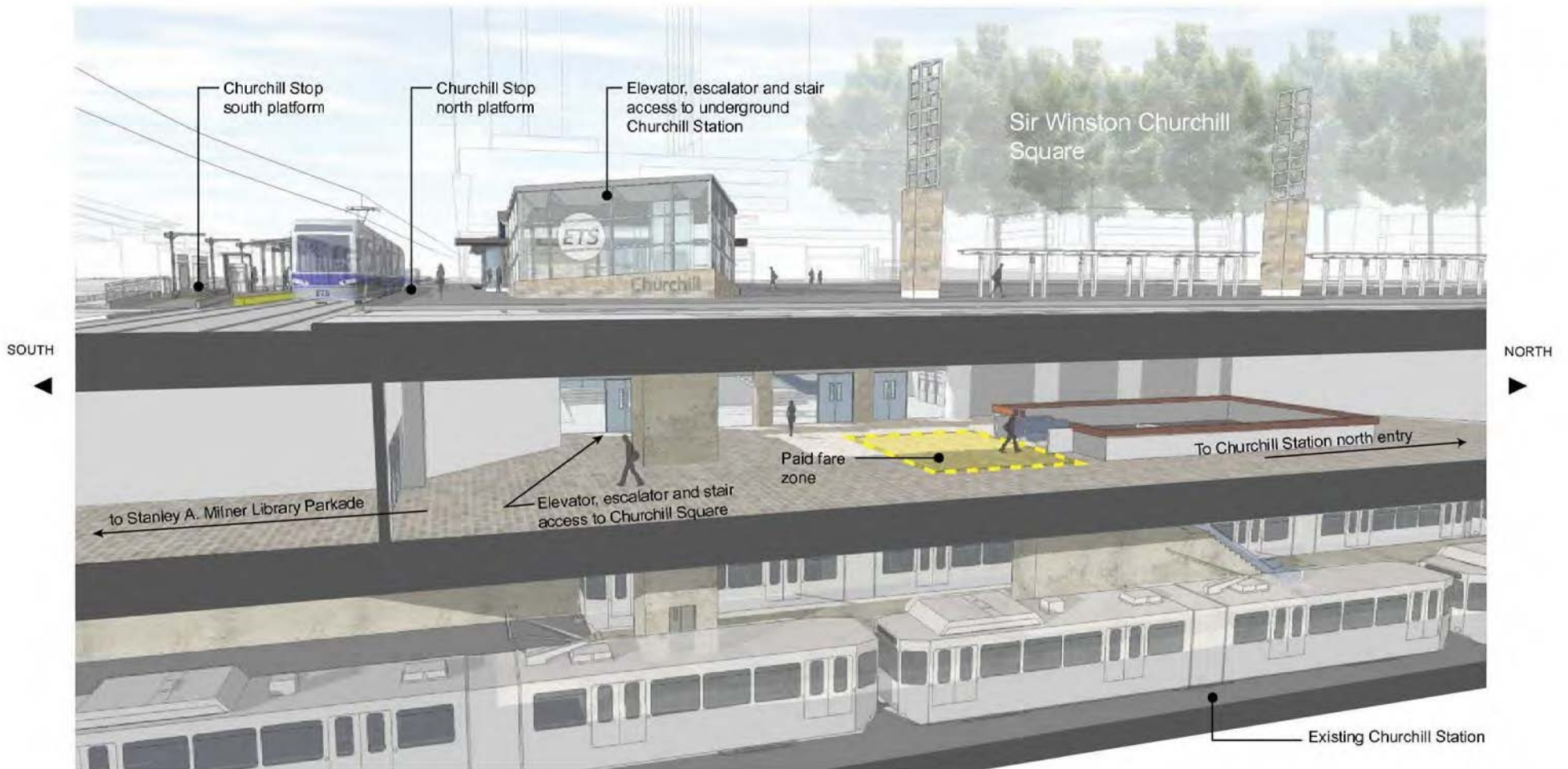


Concept Rendering

Views above look west along 102 Avenue from 99 Street intersection. (See ◀ symbol on plan.)

Stop Images View 2

Churchill Stop - Connection to Underground LRT

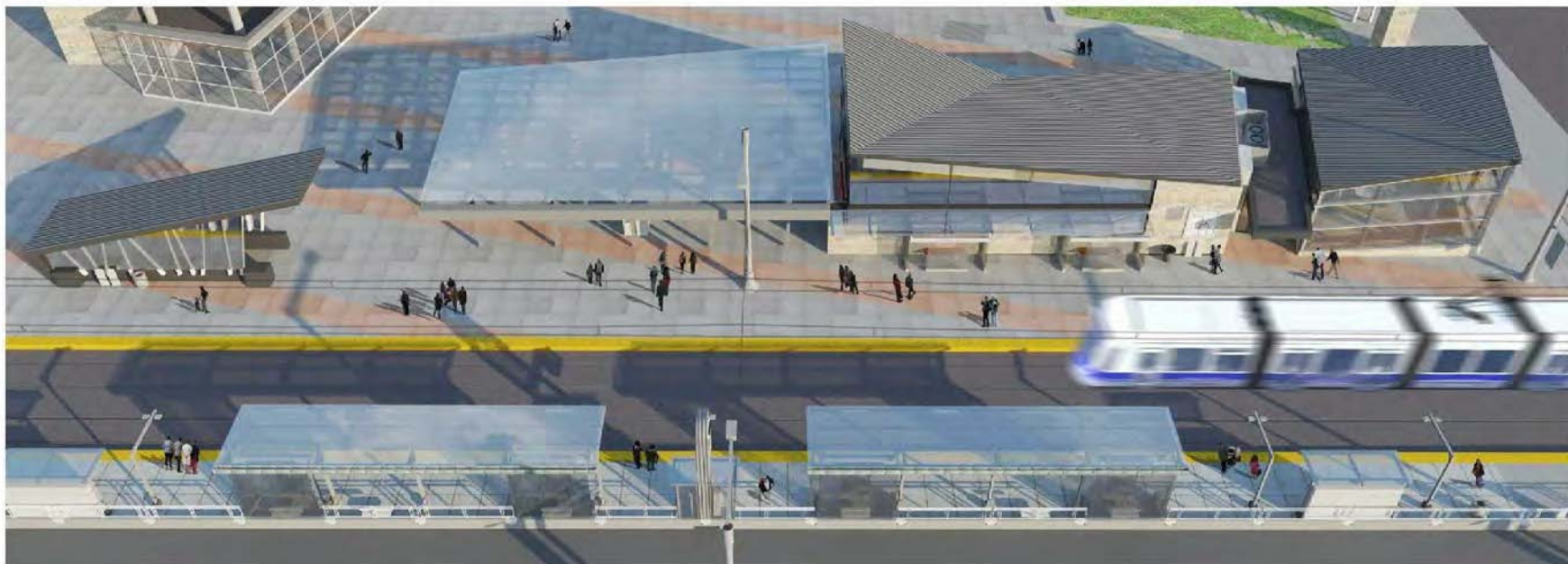




View 3

Looking north
towards Churchill
Stop.

(See ◀ symbol
on plan.)



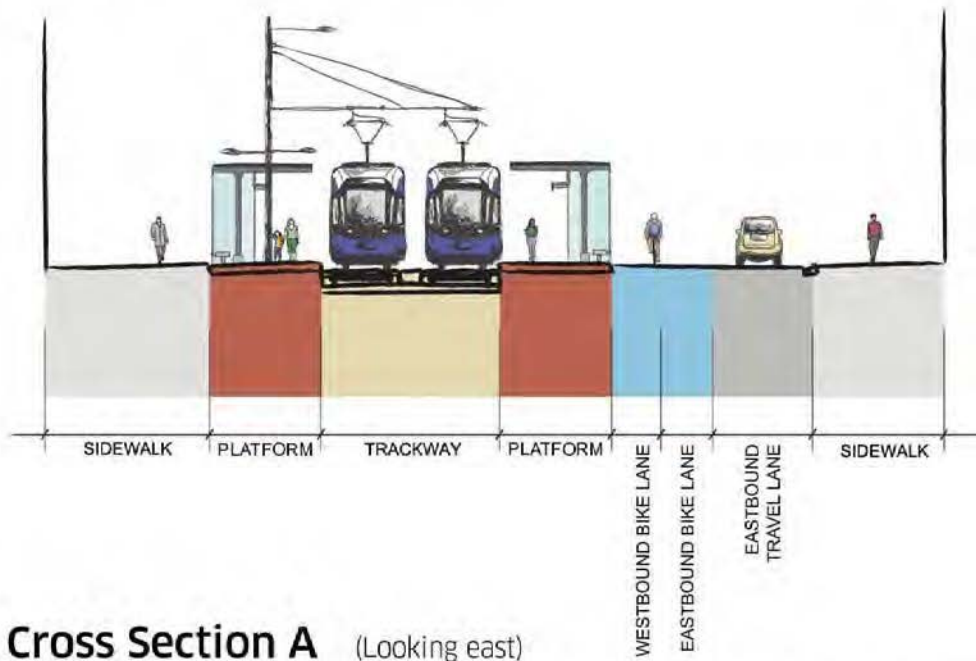
View 4

Birdseye View
looking north
towards Churchill
Stop.

(See ◀ symbol
on plan.)

Centre West Stop

Note: Design along 102 Avenue is ongoing.



Cross Section A (Looking east)



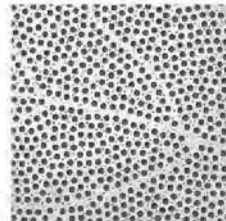
Bench



Recycling Bin



Paving
(Patterned Concrete)



Column Wrap



Railing

Stop Design Elements (Based on your feedback, elements selected for project will be similar to images above.)



Existing Conditions (Looking west)



Concept Rendering

Views above look west along 102 Avenue towards 101 Street intersection. (See ◀ symbol on plan.)

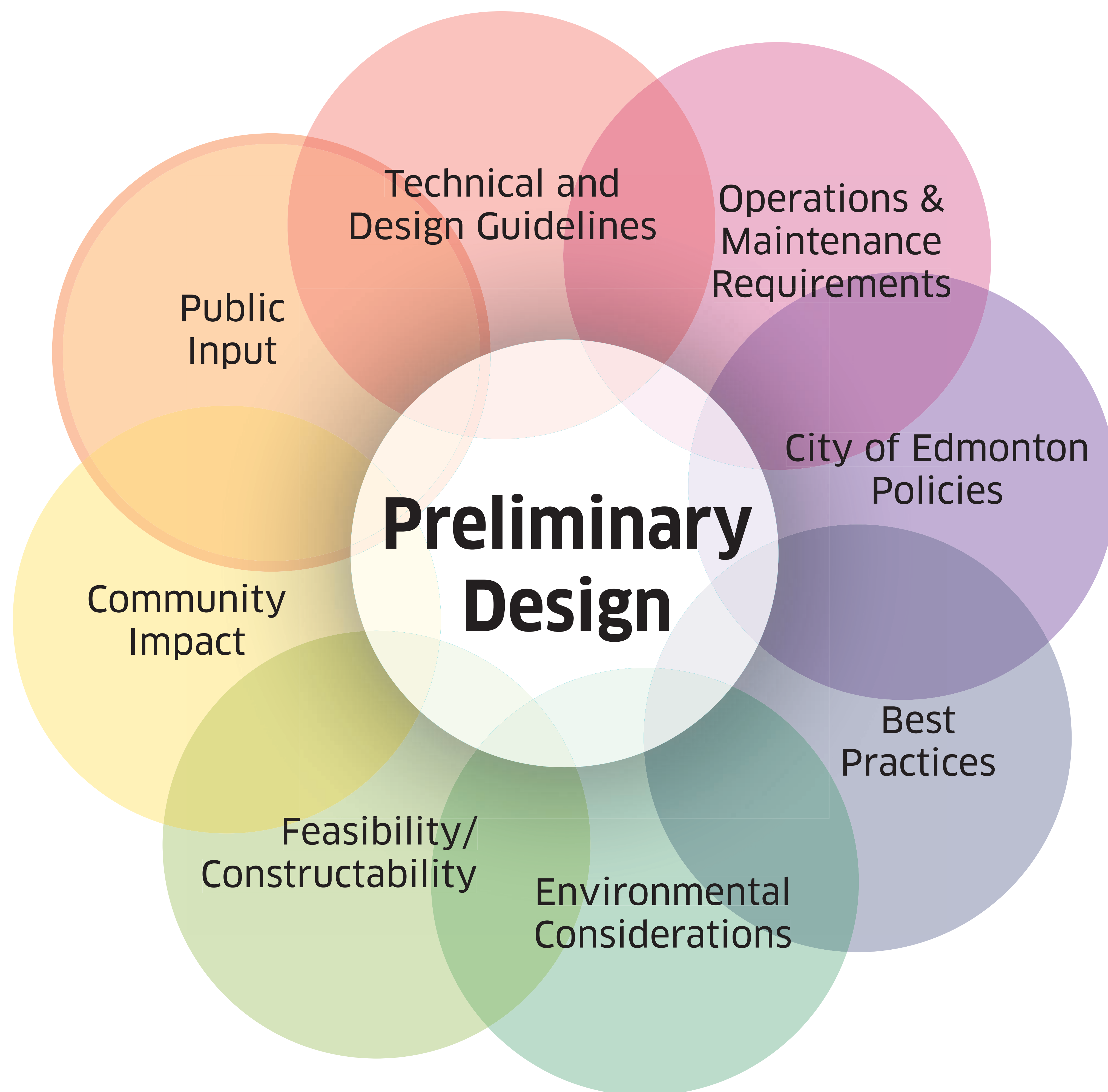
Stop Images View 1

Thanks for Getting Involved!



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Your input is valuable and used along with other information to inform the project.



We look forward to seeing you at our next public event in [September 2013](#).

For more information go to:
www.edmonton.ca/setowestlrt

What We Heard from Stage 4



What We Heard

Stops

- Stakeholders confirmed themes for a variety of stop/station elements, such as benches and paving.

Shelter Canopies

- Of three shelter canopy options, stakeholders preferred the organic shaped canopy.

Pedestrian Crossings

- Stakeholders value pedestrian access and want information on how they will navigate the LRT corridor.

Bicycles

- Stakeholders indicated they want bicycle lanes on major roadways.

Vehicular Movements and Access

- Stakeholders voiced concerns about impacts to vehicle accesses into neighbourhoods, businesses, schools and residences along the LRT corridor.

Parking

- Stakeholders voiced concerns about the loss of parking along the corridor.

Noise

- Stakeholders voiced concerns about noise from the operation of the LRT.

Vibration

- Stakeholders voiced concerns about vibration during construction and operations.

Connors Road and 95 Avenue Design Amendment

- Stakeholders have indicated a preference for the design alternative presented at Stage 4.

Shortcutting and Parking in Neighbourhoods

- Stakeholders voiced concerns about people parking in residential neighbourhoods to access the LRT or shortcutting through neighbourhoods.

Park 'n' Ride

- Stakeholders identified that Park 'n' Rides needed to be increased in size and/or other locations should be added.

How the Information is being used

- The preferred themes for stop/station elements are shown on the Corridor and Access Plans adjacent to the stop plans. These are not final selections but provide direction to the design team.
- The “organic” shaped shelter canopy will be used at most LRT stops, with the exception of some downtown stops.
- New, retained and relocated pedestrian crossings are illustrated on the Corridor and Access Plans. Accommodating pedestrians and creating ease of access for pedestrians to the LRT is a priority.
- Bicycle lanes are included along the corridor as per the Concept Plan approved by City Council. Local connections to the City of Edmonton cycling network will be refined as the cycling network grows and as preliminary design continues.
- New, retained and relocated vehicle movements and accesses are illustrated on the Corridor and Access Plans.
- New and retained vehicle parking is illustrated on the Corridor and Access Plans.
- Noise impact assessments are ongoing. Current information has been added to Corridor/Access Plans. See Noise Impact Board.
- General vibration screening is ongoing. Pre-construction assessment of structures and houses abutting the LRT route may be completed. See Vibration Impact Assessment board.
- A technical recommendation has been prepared that has given consideration to stakeholder input.
- The City will assess these potential issues after construction to determine their impact and strategies to avoid them.
- The design of Park 'n' Rides is currently ongoing.

Public Art



- Public art is considered to be a key component to attractiveness and identity of city
- Public art strengthens local economy
- Support for arts is a reflection of a progressive municipality
- The City dedicates 1% of qualifying construction budgets to public art
- Approved public art will be displayed within or in close proximity to the LRT corridor
- Art will be created by a wide range of artists, including those with Aboriginal and multicultural backgrounds. There will be opportunities for local artists
- Selected art will suit the scale and reflect the diversity of the neighbourhoods
- Art pieces may be functional, integrated and/or stand alone
- The Edmonton Arts Council will develop a Public Art Plan outlining potential public art projects along the LRT corridor



Integrated public art at transit stops.

HAVE YOUR SAY



Have Your Say!

To comply with the City of Edmonton's River Valley Area Redevelopment Plan (Bylaw 7188), an Environmental Impact Assessment of the project is being conducted.

Your input is important.

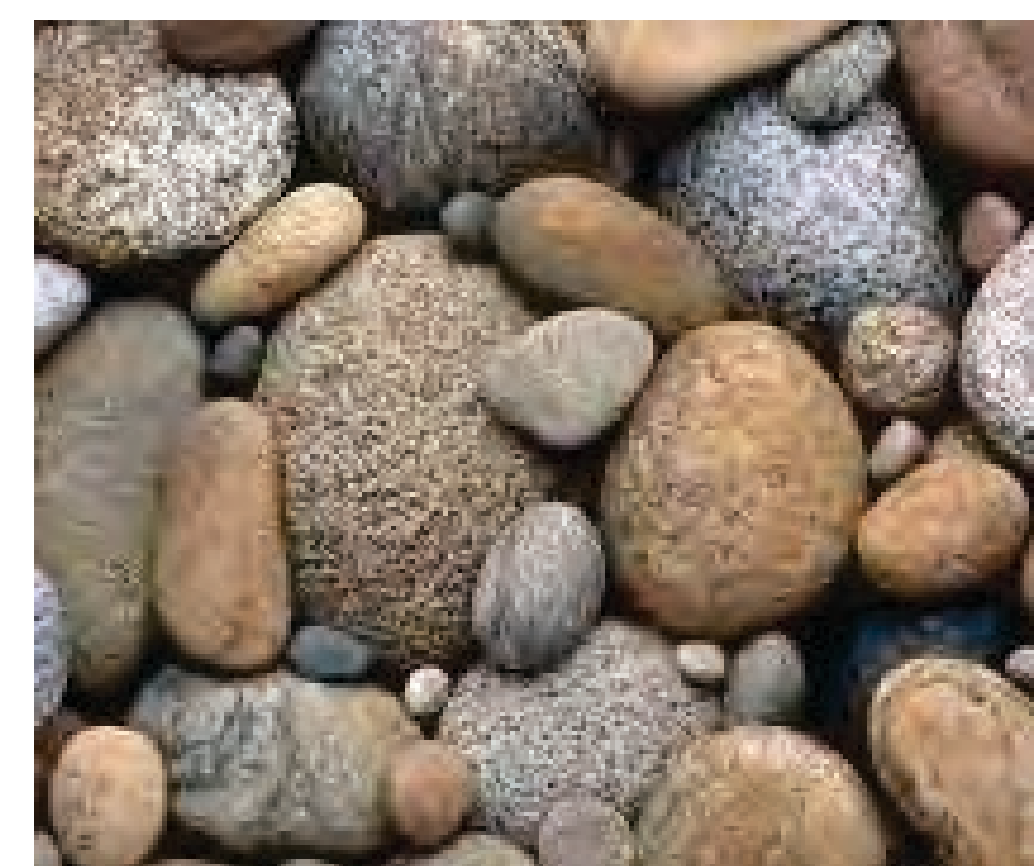
Please provide any information that you wish the project team to consider regarding the environment within, or adjacent to, the project boundaries. A draft is complete.

Put your comments directly on the map with sticky notes or complete the comment form today or online at www.edmonton.ca/setowestlrt

Your comments will be compiled and considered during the finalization of the environmental assessment and future development of mitigation measures.

As part of the EIA, the following field investigations have been completed or are underway:

- **Vegetation** – vegetation and rare plant surveys, completed in summer 2012.
- **Wildlife** – a breeding bird survey, completed in spring 2012; wildlife movement reconnaissance, winter 2012.
- **Fish** – a fish and fish habitat assessment, completed as part of the earlier planning phase.
- **Geotechnical** – a series of boreholes have been drilled in the river valley, to characterize fills, surficial deposits, and bedrock and, where appropriate, assess contaminants.
- **Hydrology** – borehole data is being used to assess groundwater conditions.
- **Historical Resources** – archaeological and paleontological impact assessments, completed in 2011.
- **Noise and vibration assessment** – completed in 2012.





An Environmental Impact Assessment (EIA) document is being prepared to meet the requirements of the City of Edmonton's North Saskatchewan River Valley Area Redevelopment Plan (Bylaw 7188).

The EIA:

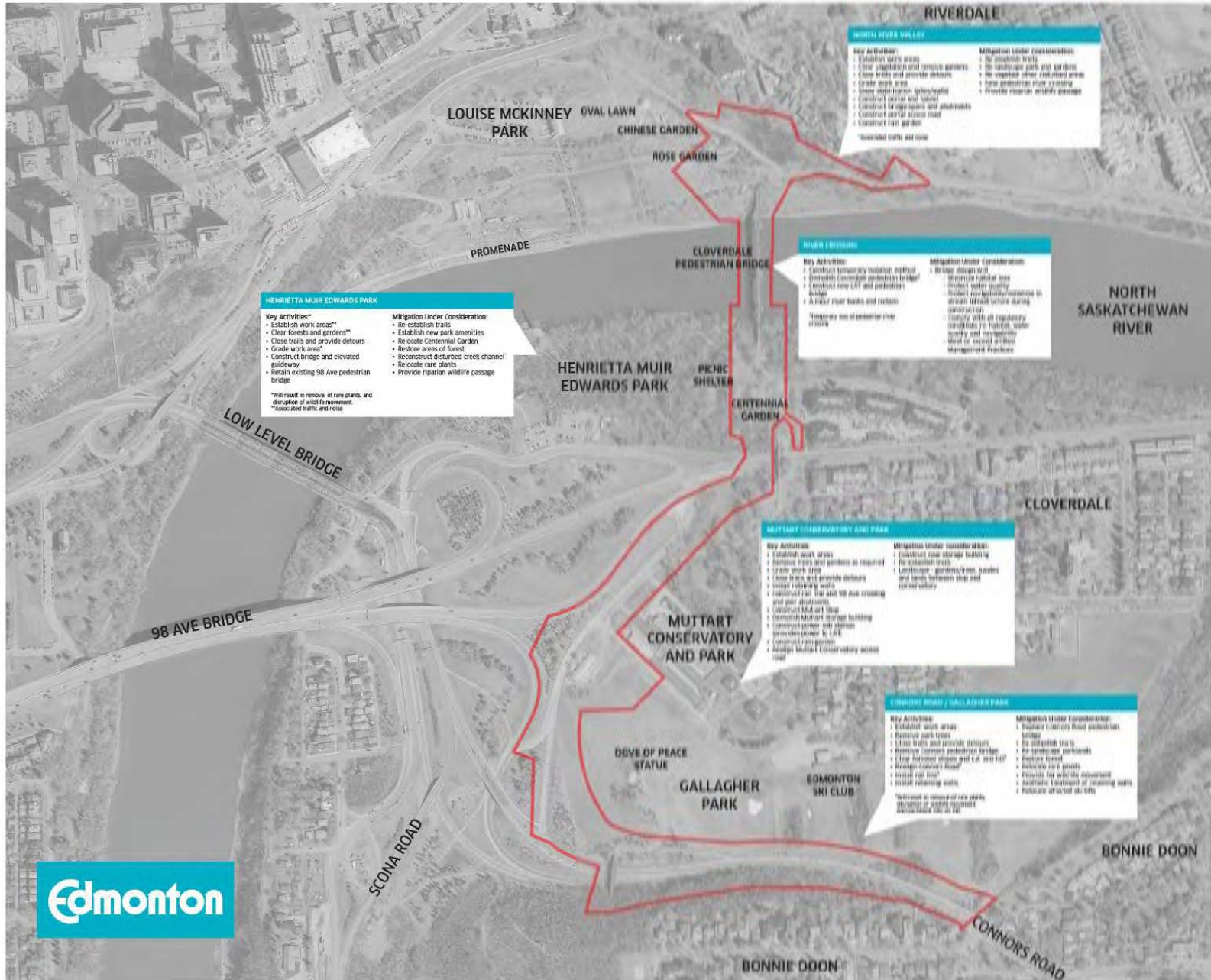
- Describes existing environmental conditions
- Assesses potential impacts
- Describes mitigation measures intended to eliminate or reduce impacts to each Valued Environmental Component (VEC)
- The following VECs are being assessed to identify ways in which the proposed project could affect biophysical and socio-economic resources:
 - **geology and geomorphology (including slope stability)**
 - **soils**
 - **surface water and groundwater**
 - **vegetation**
 - **wildlife**
 - **habitat connectivity**
 - **fish and aquatic resources**
 - **land disposition and zoning**
 - **residential land use**
 - **recreational land use**
 - **utilities**
 - **worker and public safety**
 - **visual resources**
 - **historical resources**
- The EIA may also be submitted to Fisheries and Oceans Canada and Transport Canada as supporting information for ***Fisheries Act*** and ***Navigable Waters Protection Act*** approvals, respectively.

ENVIRONMENTAL IMPACT ASSESSMENT

Key Activities and Mitigation
Under Consideration



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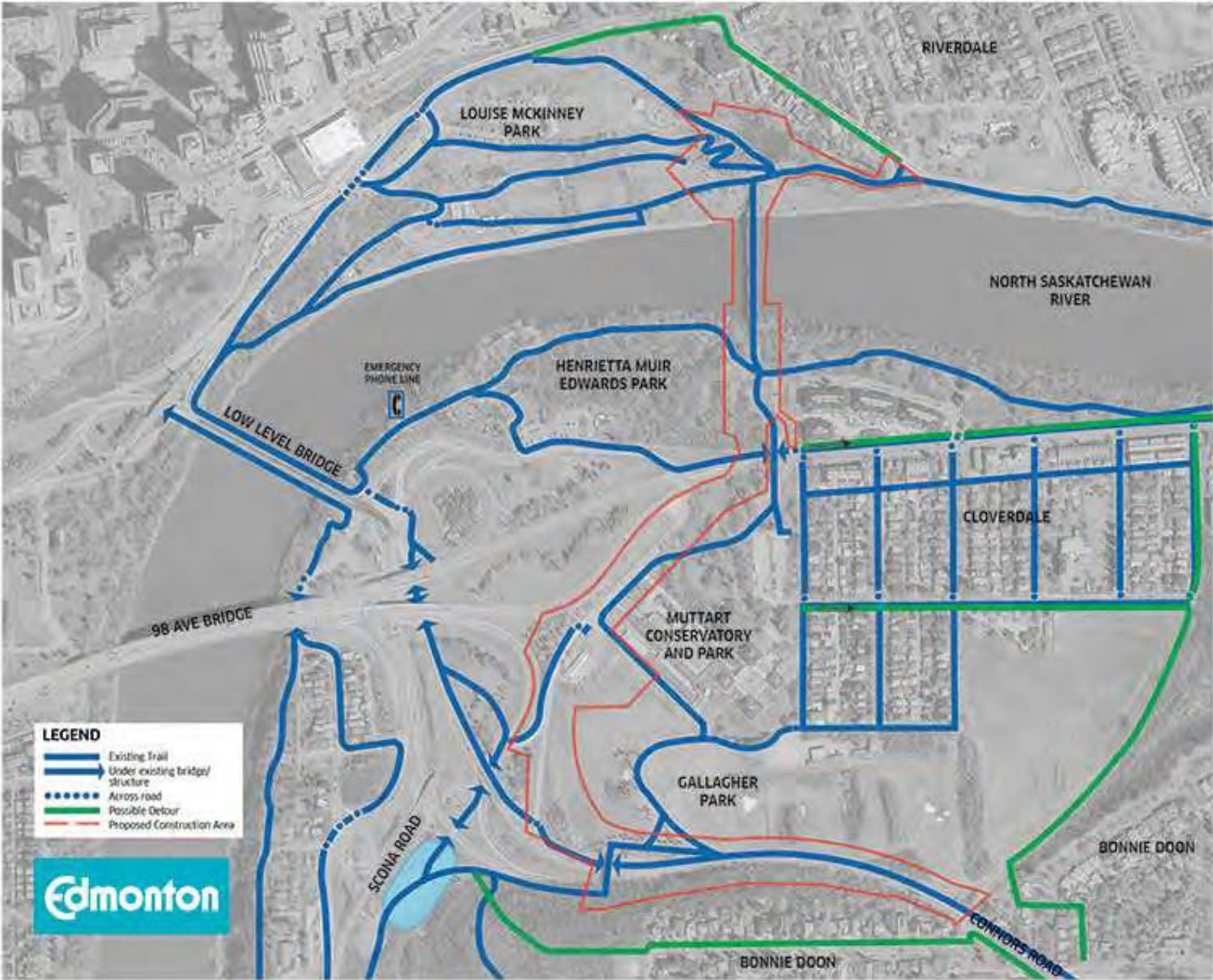
ENVIRONMENTAL IMPACT ASSESSMENT

Existing Trails, Possible Detours and
Proposed Construction Areas



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ENVIRONMENTAL RESOURCES IN WAGNER PARK (NATURAL AREA 402)

GREEN PROJECT INITIATIVES

- Landscaping at Wagner Station will emphasize green space with intent to create a stepping stone linkage between the Natural Area and upstream reaches of Mill Creek.
- Guideway drainage has been designed to provide additional inputs of water to the ravine, enhancing amphibian habitat and riparian community sustainability.

EXAMPLES OF SPECIES OBSERVED IN THE NATURAL AREA

Amphibians

- Boreal chorus frog
- Wood frog

Birds

- Swainson's hawk
- Tree swallow
- Clay-coloured sparrow
- White-throated sparrow
- Black-billed magpie
- Yellow warbler

Mammals

- Porcupine
- Coyote

POTENTIAL IMPACTS AND MITIGATION MEASURES

Loss of vegetation and habitat resulting from clearing

- Restore temporary working space within the Natural Area; restore some manicured lands north of the Natural Area (area yet to be determined).
- Compensate for tree/shrub loss as required by City's Corporate Tree Policy.
- Locate access road within Manitoba Maple community to extent possible.

Disturbance to rare plants

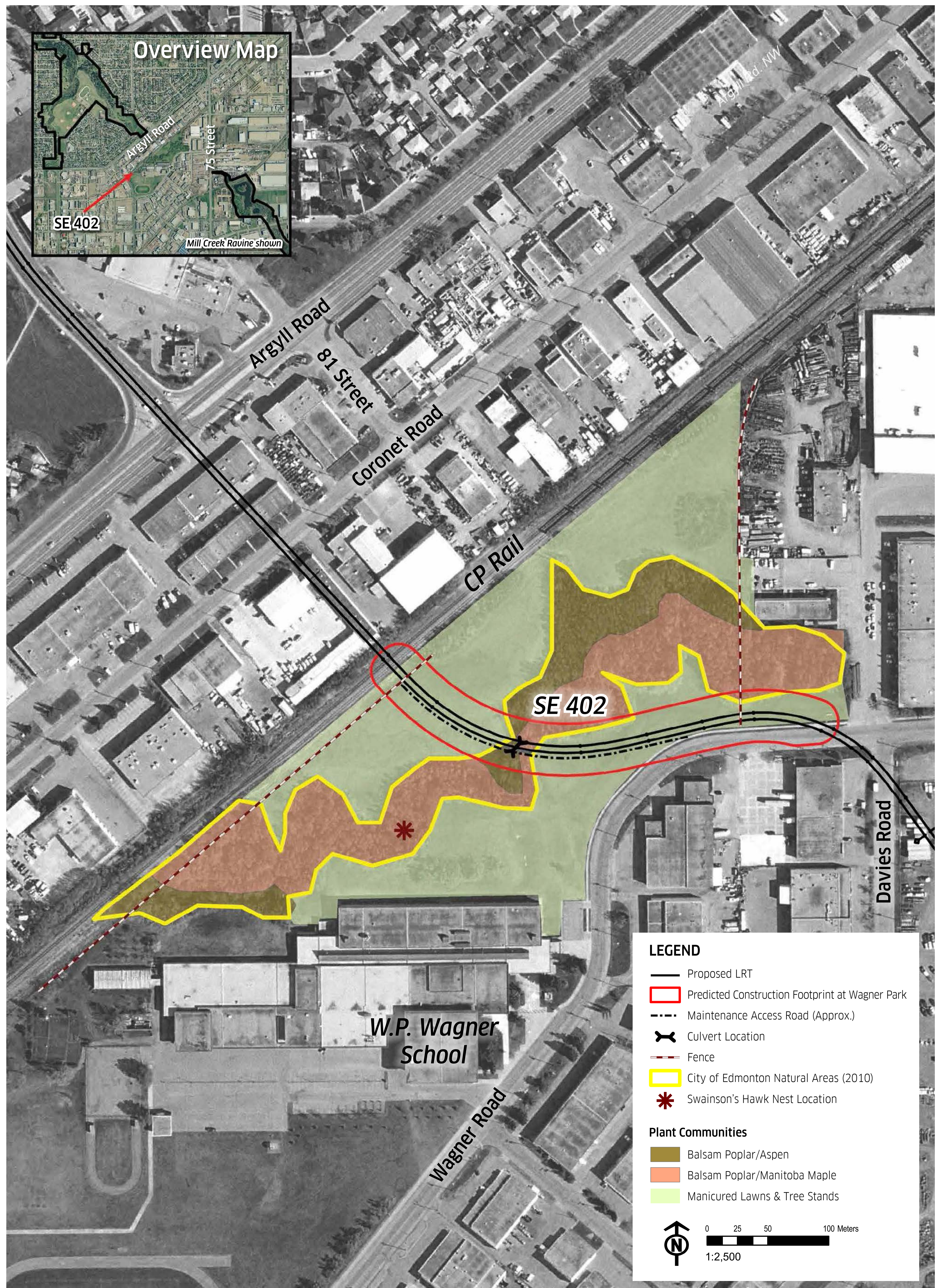
- Transplant and monitor rare plants found within the project area.

Habitat fragmentation

- Landscape to close gaps created during construction.
- Ensure that the new access road culvert is wildlife friendly.

Disturbance to nesting Swainson's hawks

- Undertake required vegetation clearing between 01 September and 15 March.
- If active nest is present in year of construction, avoid significant construction at Wagner Park until young are independent, approximately August - have biologist confirm.



Noise Impact Assessment

FAMILIAR NOISES dBA

| | |
|----------------------------|-------|
| Inside average urban home | 50 |
| Quiet street | 50 |
| Normal conversation at 1 m | 60 |
| Noisy restaurant | 70 |
| Highway traffic at 15 m | 75 |
| Busy traffic intersection | 80 |
| Bus or heavy truck at 15 m | 88-94 |
| Jackhammer | 88-98 |
| Freight train at 15 m | 95 |
| Jet taking off at 600 m | 100 |
| Amplified rock music | 110 |

- **The City of Edmonton Urban Traffic Noise Policy (UTNP)** states that existing residential locations backing onto transportation facilities that experience noise levels in **excess of 65 dBA Leq(24) will require noise attenuation.**
- **Noise modeling** has been conducted along the Valley Line (SE to West) LRT route.
- Based on modeling, **noise attenuation may be required in specific locations along the West segment.**
- Noise attenuation will be constructed at the same time as the LRT.


Vibration Impact Assessment

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- Vibration could occur during LRT construction and operation
- LRT runs on a continuous welded rail, a technology that minimizes vibration during operation
- A complete vibration screening of the SE to West corridor (route) is being conducted as part of Preliminary Design
- Vibration screening is based on the US Federal Transit Administration (FTA) screening process
- Corridor Wide Assessment is ongoing
 - Screening based on general vibration assessment
 - Accounts for train type, speed, distance from track
 - Screens out residences not affected by vibration
 - Identifies areas that may be affected
- Detailed Vibration Assessment
 - Includes site specific vibration measurements
 - Conducted at Winspear Centre for Music and Citadel Theatre areas (acoustic sensitivities)
 - Recommendations to reduce vibration during LRT operations will be provided if warranted
- Pre-construction assessments of structures and houses abutting the LRT route may be completed



- Land requirements were initially identified in the Concept Plan.
- Engineering completed through preliminary design has confirmed land requirements.
- Land requirements are identified on the corridor maps in purple. 
- The City is actively pursuing property purchases between Mill Woods and Centre West but is not actively pursuing properties between Centre West and Lewis Farms.

City Process to Acquire Land

- The City prefers to purchase land that is up for sale.
- Once the City begins to actively acquire properties for the project and a property is not up for sale, the City will contact the property owners.
- The City will negotiate in good faith to reach an agreement to purchase the property for fair compensation.
- If the property owners and the City cannot reach an agreement, the City may proceed with expropriation.

North Saskatchewan River Bridge

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- The new LRT bridge to be built on the existing pedestrian bridge alignment.
- New LRT bridge to incorporate new pedestrian and bicycle facilities under the bridge deck.
- Existing pedestrian bridge to be demolished prior to new LRT bridge construction.
- During construction, pedestrians and bicyclists will be detoured to Low Level Bridge.
- The project team assessed the feasibility of maintaining the existing pedestrian bridge during construction. Due to increased environmental impact on the River and proximity to existing residential development, this option is not being pursued.
- The Extradosed Bridge, as shown here, was approved by Council on February 20, 2013.



Extradosed bridge looking Northwest



Extradosed bridge looking Southeast



Thank you

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