

# Municipality of North Cowichan and City of Duncan

## Joint Special Council

### AGENDA

Monday, September 20, 2021, 6:00 p.m.  
Electronic Zoom Meeting, hosted by City of Duncan

Pages

#### 1. WELCOME

Welcome statement to be provided by the host, Mayor Staples.

##### 1.1. Introductions - Guests - Municipality of North Cowichan

Mayor Siebring to introduce himself and the members of North Cowichan Council.

##### 1.2. Introductions - Host - City of Duncan

Mayor Staples to introduce herself and the members of Duncan Council

#### 2. CALL TO ORDER

This Joint Meeting, though electronic, is being hosted by the City of Duncan and is open to the public. However, due to COVID-19, in person attendance at the City of Duncan Council Chambers is restricted. The 'Public Input Session' which typically occurs at the beginning of a North Cowichan Council meeting, as per section 3.1 of North Cowichan's Public Input and Meeting Conduct Policy, will not occur at this meeting, as it is not the practice of our host municipality. Nevertheless, members of the public may still participate during the 'Question Period' portion of the agenda by sending their questions in advance of the meeting to the Deputy Corporate Officer at [legislativeservices@northcowichan.ca](mailto:legislativeservices@northcowichan.ca). All submissions received will be read out during the Question Period portion of the meeting, will form part of the public record, and will be subject to the rules under the *Freedom of Information and Protection of Privacy Act*.

The public can observe the open portion of the meeting through the City of Duncan's live streaming service or view the recording at a later time where it will be archived on North Cowichan's website at [www.northcowichan.ca](http://www.northcowichan.ca).

#### 3. APPROVAL OF AGENDA

Host Council - call for approval

Guest Council - call for approval

Recommendation:

That the September 20, 2021 Council agenda of the Joint Meeting between the City of Duncan and the Municipality of North Cowichan be approved, as circulated.

#### 4. ADOPTION OF MINUTES

3 - 5

Host Council - call for adoption

Guest Council - call for adoption

Recommendation:

THAT the minutes of the January 21, 2021 Joint Council, Committee of the Whole meeting be adopted, as circulated.

#### 5. DELEGATIONS

##### 5.1. Nadine King, Watt Consulting Group - North Cowichan Master Transportation Plan

6 - 31

Purpose: Watt Consulting Group to present the Municipality of North Cowichan's Master Transportation Plan to both Councils.

Recommendation:

That Council waive the 10 minute time allotment for the delegation to present the North Cowichan Master Transportation Plan.

##### 5.2. Dan Casey, Urban Systems - City of Duncan Transportation and Mobility Strategy

32 - 153

Purpose: Urban Systems to present the City of Duncan's Transportation Plan to both Councils.

Recommendation:

THAT Council extend the delegation time allotment of 10 minutes for the City of Duncan Transportation and Mobility Strategy presentation.

#### 6. NEW BUSINESS

#### 7. QUESTION PERIOD

Question Period is an opportunity for the public to ask brief questions regarding the business discussed during the meeting by sending your questions in advance of the meeting to the Deputy Corporate Officer at [legislativeservices@northcowichan.ca](mailto:legislativeservices@northcowichan.ca).

All submissions received will be read out during Question Period and will form part of the public record. Please make sure to include both your name and address for identification purposes. Questions sent after the start of the meeting will be answered in the order they are received.

#### 8. ADJOURNMENT

Recommendation:

THAT the September 20, 2021 Joint Council Meeting between the City of Duncan and the Municipality of North Cowichan be adjourned at                      pm.



# **Municipality of North Cowichan and City of Duncan Joint Committee of the Whole MINUTES**

**January 21, 2021, 3:00 p.m.  
Electronically**

Members Present	Mayor Al Siebring Councillor Rob Douglas Councillor Christopher Justice Councillor Tek Manhas Councillor Kate Marsh Councillor Rosalie Sawrie Councillor Debra Toporowski
Staff Present	Ted Swabey, Chief Administrative Officer (CAO) Sarah Nixon, Deputy Chief Administrative Officer (D/CAO) Don Stewart, Director, Parks and Recreation Rob Conway, Director, Planning and Building Jason Birch, Chief Information Officer Megan Jordan, Manager, Communications and Public Engagement Michele Gill, Manager, Development, Engineering Tricia Mayea, Deputy Corporate Officer
Others Present	City of Duncan: Mayor Michelle Staples Councillor Bob Brooke Councillor Garry Bruce arrived at 3:29 p.m. Councillor Jenni Capps Councillor Tom Duncan Councillor Stacy Middlemiss Councillor Carol Newington Peter de Verteuil, Chief Administrative Officer (CAO) Monika Schitteck, Acting Director of Corporate Services Michelle Geneau, Manager of Planning

## **1. CALL TO ORDER**

There being a quorum present, Mayor Siebring called the meeting to order at 3:03 p.m.

## **2. APPROVAL OF AGENDA**

IT WAS MOVED AND SECONDED:

That the agenda be adopted as circulated.

CARRIED

## **3. PUBLIC INPUT**

The Committee received no submissions via email prior to the meeting.

**4. BUSINESS**

**4.1 Presentation from School District 79**

Candace Spilsbury, Chair of the Board of Education for the Cowichan Valley School District provided a presentation regarding the Cowichan Secondary School Replacement Project. Robyn Gray, Superintendent and Jason Sandquist, Secretary Treasurer, from the Cowichan Valley School District, and Tom Sparrow, Chief Project Officer for the Cowichan Secondary School Replacement Project, were in attendance and answered questions of both Council's. A copy of the presentation was appended to the agenda.

**4.2 Presentation from BC Housing**

Malcom McNaughton, Director of Regional Development Vancouver Island, from BC Housing provided an update on the supportive housing projects located at 260 White Road and 2983 Drinkwater Road. Heidi Hartman, Regional Director, Vancouver Island, Sean Rorison, Development Manager, and Roberta Randall, Manager, Community & Tenant Affairs, from BC Housing, were in attendance and answered questions of both Council's. A copy of the presentation was appended to the agenda.

Mayor Siebring experienced technical difficulties and left the meeting at 4:12 p.m. Councillor Manhas assumed the Chair until 4:15 p.m., when Mayor Siebring returned to the meeting and assumed the Chair.

**4.3 Presentation from the Cowichan Historical Society**

Sheila Kitson, President of the Cowichan Historical Society provided a presentation that included an overview of the Cowichan Historical Society and the Cowichan Valley Museum and Archives. Carolyn Prellwitz, Director, from the Cowichan Historical Society, was in attendance and answered questions of both Council's. A copy of the presentation was appended to the agenda.

IT WAS MOVED AND SECONDED:

That the Cowichan Historical Society's funding request for \$15,000 be referred to the next Committee of the Whole meeting for further discussion. CARRIED

**4.4 City of Duncan and Municipality of North Cowichan Inter-Municipal Relationship Protocol**

IT WAS MOVED AND SECONDED:

That the Committee of the Whole recommends to Council:

That Council approve the revised City of Duncan and Municipality of North Cowichan Inter-Municipal Relationship Protocol Agreement as attached to the January 21, 2021 Committee of the Whole agenda, with the addition of the following provision to the Conflict Resolution section of the protocol agreement:

*4. If the issue is still unresolved after negotiations and assistance from the dispute resolution officer, and the issue is the subject of an existing agreement that includes the option of arbitration, the arbitration provisions of the agreement may be utilized as detailed in the agreement.* CARRIED

**5. NEW BUSINESS**

None.

**6. QUESTION PERIOD**

None.

**7. CLOSED SESSION**

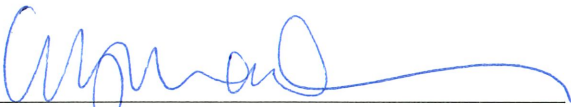
None.

**8. ADJOURNMENT**

IT WAS MOVED AND SECONDED:

That the meeting be adjourned at 4:53 p.m.

CARRIED



Certified by Corporate Officer

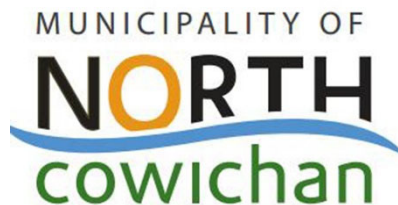


Signed by Mayor

# North Cowichan Master Transportation Plan

Joint North Cowichan & Duncan Council Presentation

September 20, 2021



MODUS  
planning, design & engagement



# JOINT COUNCIL MEETING

## AGENDA

- Project Outline
- Phase 1 Results
  - a) Engagement Strategy
  - b) Walking
  - c) Cycling
  - d) Transit
  - e) Vehicles
  - f) Parking
  - g) Draft Vision & Goals
- Phase 2 to date
- Next Steps







## PROJECT OUTLINE

- Phase 1 – Existing Conditions + Background + Framework
- Phase 2 – Network Assessment + Plan Development
- Phase 3 – Draft + Final Plan



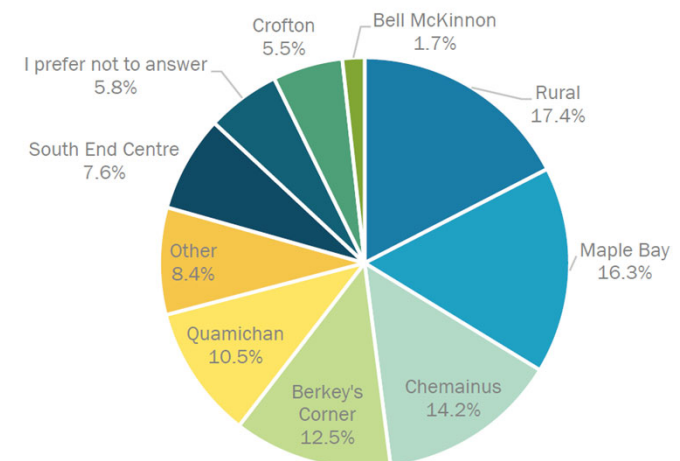
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# JOINT COUNCIL MEETING

## ENGAGEMENT

- Public Online Survey (completed)
- Informant Interviews (completed)
- Letters to First Nation (on-going)
- Travel Survey (completed)
- Open Houses





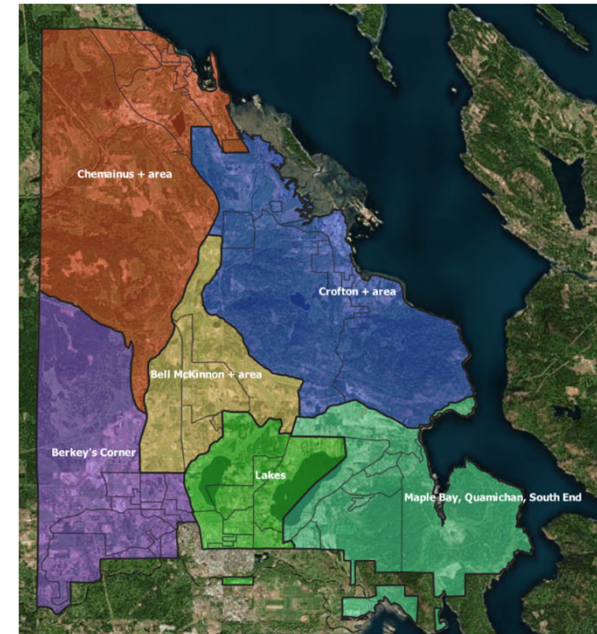
Log in at  
**Nctravelsurvey.ca**  
Your secure access code is  
**1234ABCD**

COUP.COM



## TRAVEL SURVEY

- Total Responses = 1,052 or 8.2% the population
- Exceeded Expectations as goal was 675 response
- To provide mode splits and origin / destination data
- Asked pre, during, and post-COVID questions



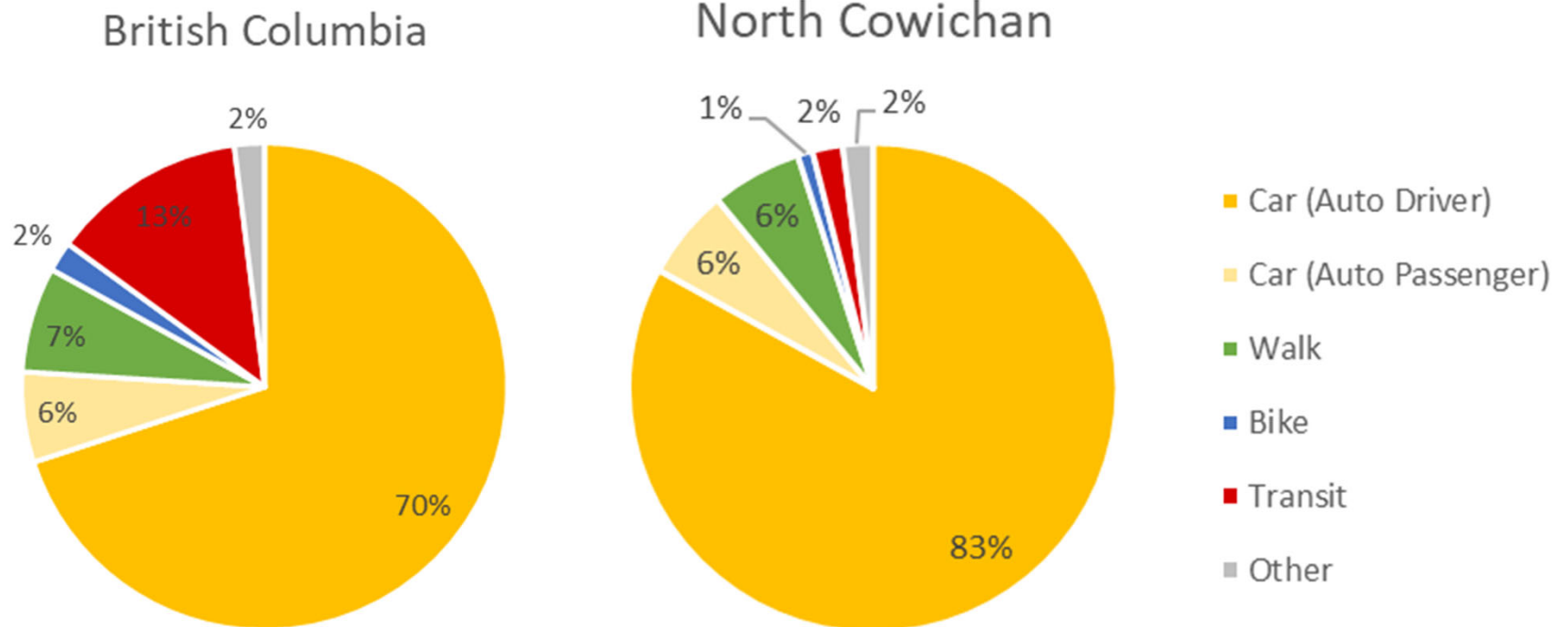
Area	Land area km <sup>2</sup>	Population	Pop. density per km <sup>2</sup>	Total private dwellings	Persons in private households	Survey Completions*	Sampling Rate
Chemainus + area	53.47	4,750	88.8	2,427	4,475	201	8.8%
Crofton + area	46.01	3,517	76.4	1,485	3,430	97	7.0%
Bell McKinnon + area	19.1	1,622	84.9	682	1,610	57	8.7%
Berkey's + area	33.96	9,195	270.8	3,955	9,125	261	7.0%
Lakes	12.8	5,107	399.0	2,425	4,940	170	7.3%
Maple Bay + Quamichan + South End	31.86	5,791	181.8	2,518	5,730	266	11.0%
<b>Total</b>	<b>197.2</b>	<b>29,982</b>	<b>1101.7</b>	<b>13,492</b>	<b>29,310</b>	<b>1,052</b>	<b>8.2%</b>





### MODAL SPLIT

- Census level data
- Community level will be from travel survey





### WALKING

- Existing Conditions
  - 136km of sidewalks or 23% of road network
  - 235km of off-road trails 39% of road network
  - Limited sidewalks on major roadways
  - Limited sidewalks in Maple Bay, Lakes, Bell McKinnon areas
  - 13 pedestrian involved collisions over last 5 years
- Crossings
  - Standard policy for crossings needed
- Considerations
  - Determine pedestrian facility types for North Cowichan
  - Develop standards for each type
  - Map Network
  - Develop policy for placement of each type

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### WALKING – ENGAGEMENT FINDINGS

- Top three barriers:
  - Lack of space / buffer between sidewalk and motor vehicle traffic
  - Lack of sidewalks or other walking infrastructure to my usual destinations
  - Speed, noise, and fumes of motor vehicle traffic
- Top three desired improvements:
  - Improve pedestrian network connections
  - Implement vehicle speed reduction/calming measures
  - Ensure sidewalks are properly maintained





### CYCLING

- Existing Conditions
  - 63km of bicycle facilities or 10% of road network
  - Mixture of off-road (16km); on-road protected (1.3km) bicycle lanes + buffered lanes (33km), & shared lanes (12.5km)
  - Limited connectivity of existing routes
  - Existing facilities don't all meet current standards
  - 12 cyclists involved collisions (with vehicles)
- Considerations
  - Determine bicycle facility types for North Cowichan
  - Review planned routes from 2016 & update
  - Review Strava heat maps
  - Develop standards for each type of facility
  - Develop identify for placement of each type
  - Consider with pedestrian needs
  - Map Network
  - Consider wayfinding







### CYCLING – ENGAGEMENT FINDINGS

- Top three barriers:
  - Lack of bike lanes, trails, and other cycling (safe) infrastructure to my usual destinations
  - Lack of bike racks and other secure bike parking / concerns about bike theft
  - Speed, noise, and fumes of motor vehicle traffic
- Top three desired improvements:
  - Improve cycling network connections
  - Build more lanes physically protected
  - Provide more secure bike parking



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### TRANSIT

- Existing Conditions
  - Nine Routes + Two commuter routes
  - Covers most of region, but low frequency of service
  - 234 Bus stops under District control
  - Most stops consist of sign & pole
  - Ridership is low (less than 30 passengers per day)
  - Busiest Stops = Cowichan Hospital & Cowichan Commons (40 passengers/day)
  - Next busiest stops are in Chemainus, Crofton, & Berkey's Corner
- Considerations
  - Bus Stop Improvements & Priorities
  - Densification needs for added transit service
  - Education



### TRANSIT – ENGAGEMENT FINDINGS

- Top three barriers:
  - Too infrequent
  - Lack of direct routes to my usual destinations
  - I am not familiar with the transit system
- Top three desired improvements:
  - Increase transit frequency
  - I am not interested in taking transit
  - Expand transit routes





### VEHICLES

- Existing Conditions
  - 607 km of roads
  - 76% are locals
  - Road standards have wide lanes, no bicycle facilities, & pedestrian facilities are too narrow
  - Majority of major roads have 3,000 to 5,000 vpd
  - Maple Bay Road, Drinkwater Road, Somenos Road & Cowichan Lake Road have 5,000 to 12,200 vpd
  - Only two poor operational locations: Somenos/Cowichan Lake/Sherman & Tzouhalem/Maple Bay
  - Top Collision Locations are signals & roundabouts + Herd/Lakes & Herd/Osborne Bay & Canada Ave/Philip St
  - Truck Policy is based on restricting roads rather than identify routes trucks should be using





### VEHICLES

- Existing Conditions - Speeds
  - 15 roads have speeds > than 10km/h over the posted speed limit
  - Roads with 30 to 40km/h speed limits have greatest difference between operating & posted speed limit
  - Most roads are rural in nature – wide lanes, shoulders, limited driveways, low density land use
- Considerations
  - Policy for posted speed limits
  - Updated road cross sections to change the nature of the roads
  - Identify geometric changes to change nature of roads
  - Update traffic calming policy to include arterial and rural roads
  - Review with OCP (land use)





### VEHICLES – ENGAGEMENT FINDINGS

- Top three barriers:
  - Too much traffic congestion when I need to travel
  - I have no driving related challenges
  - Unsafe intersections
- Top three desired improvements:
  - Create physical separation between vehicles and cyclists
  - Provide more off-street parking at key destinations
  - Improve intersection safety



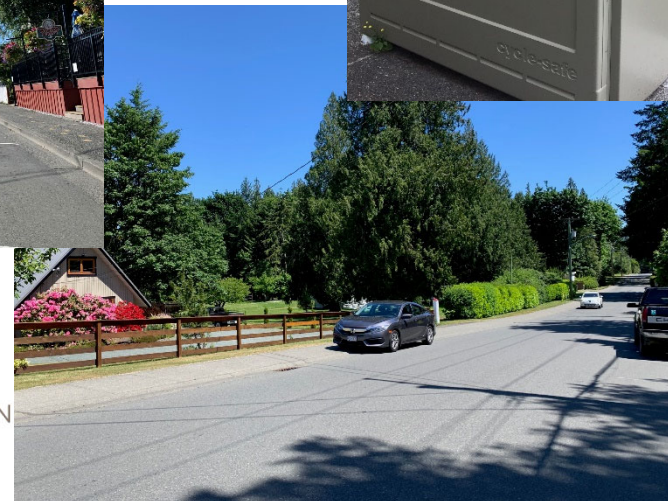
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## PARKING

- Considerations
  - Secure Bicycle Parking
  - Accessible Parking
  - Multi-Family Off-street Parking Rate(s)
  - Review on-street policies and bylaw







### **FUTURE OF TRANSPORTATION**

*The Master Transportation Plan will guide our transportation-related decisions over the next 20+ years. Looking forward, what are the most important issues the updated Plan should address?"*

- 1. Pedestrian and Cycling Safety*
- 2. Maintenance of Transportation Network*
- 3. Traffic Congestions*
- 4. Improved and Expanded Transit Service*
- 5. Climate Change and Improved Air Quality*
- 5. Preparing for New Technologies (e-bikes, e-scooters, autonomous vehicles)*
- 6. Affordability of Travel for All Residents*



### DRAFT VISION

*"North Cowichan is a connected community, where residents, employees, businesses, and visitors have transportation choices when deciding how to move around their network. Each transportation choice is supported with safe infrastructure and maintains the scenic character of the roadways. North Cowichan travel has become diversified to reduce impacts on the environment and align with the community's desire to be more sustainable."*



## GOALS



### **Safety for All Modes**

Streets are redesigned to support all modes especially active transportation.



### **Connectivity**

A connected network allows residents to travel to where they need to go, for any trip purpose.



### **Reduce Impact on Environment**

The transportation network gradually reduces its greenhouse gas emissions over time.



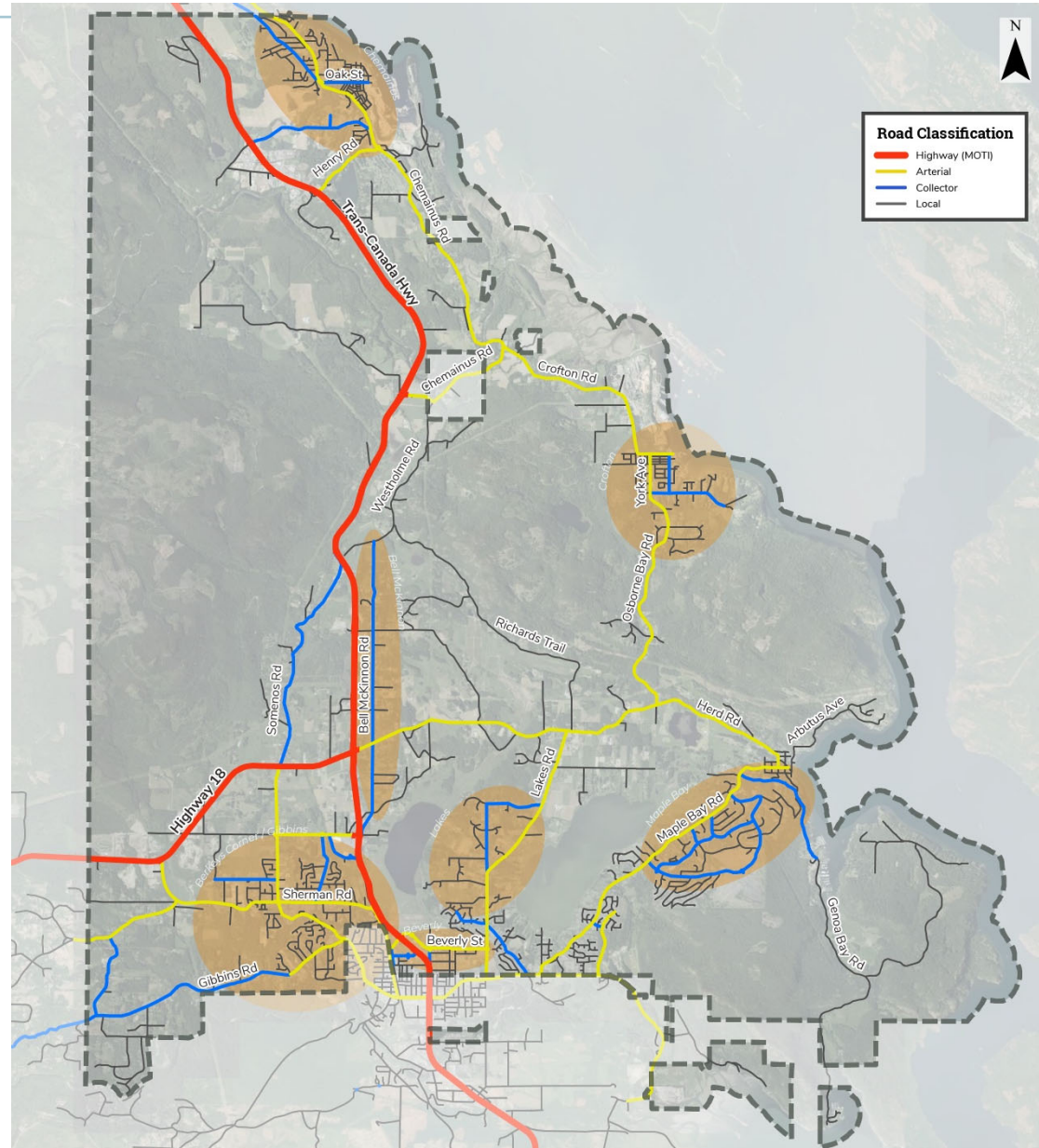
## JOINT COUNCIL MEETING

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# PRELIMINARY WORK IN PHASE 2



# JOINT COUNCIL MEETING

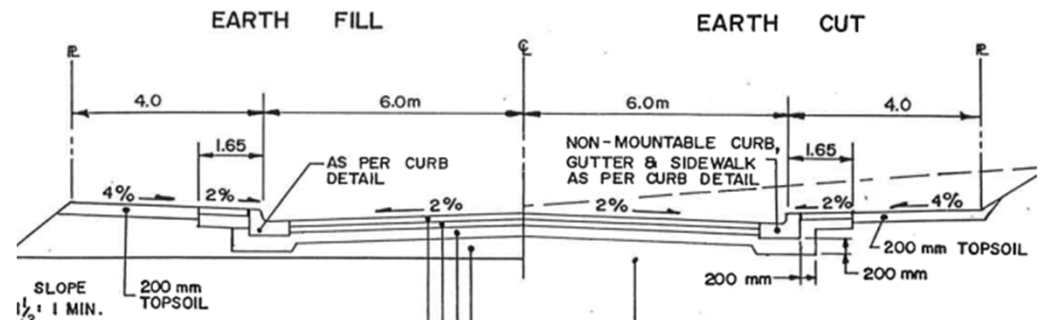






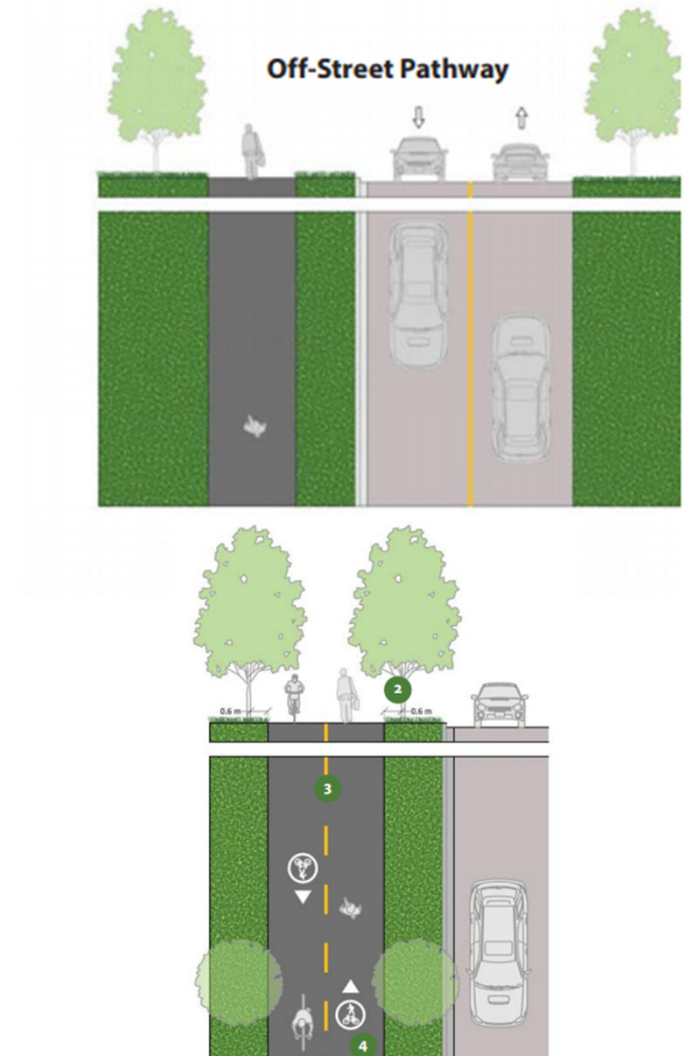
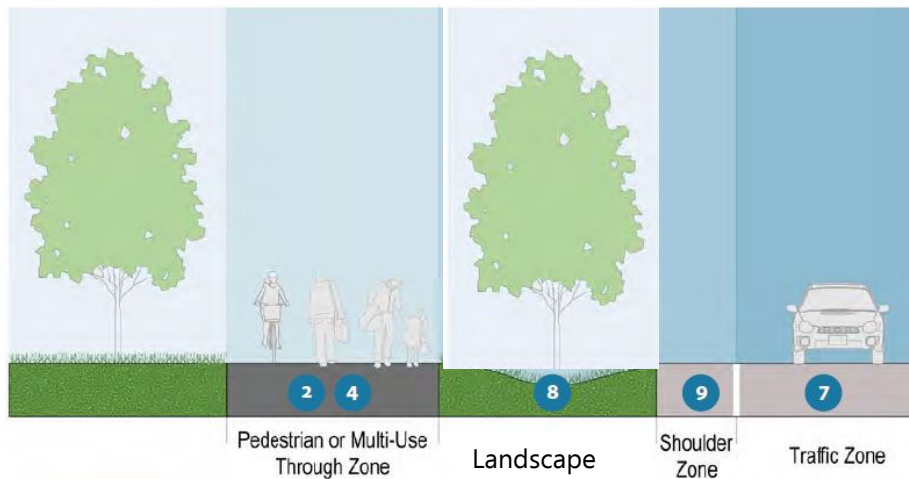
## COLLECTORS

- 20 m ROAD ALLOWANCE





## ROAD CROSS SECTION DIRECTION COLLECTORS

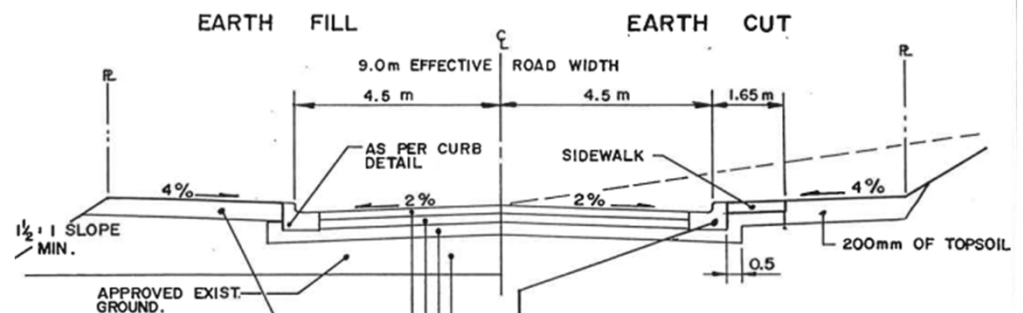
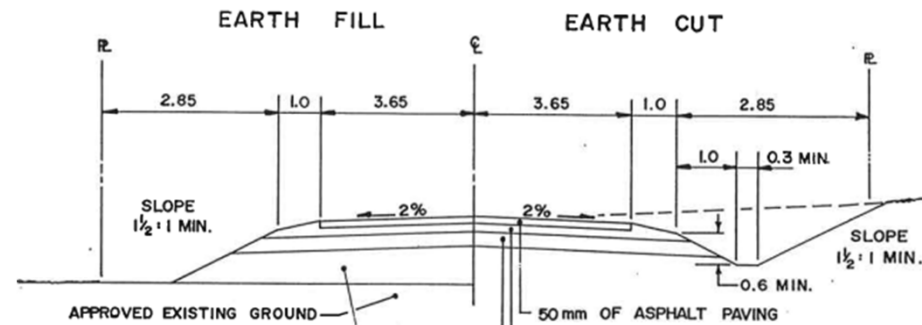




## EXISTING ROAD CROSS SECTIONS

### LOCALS

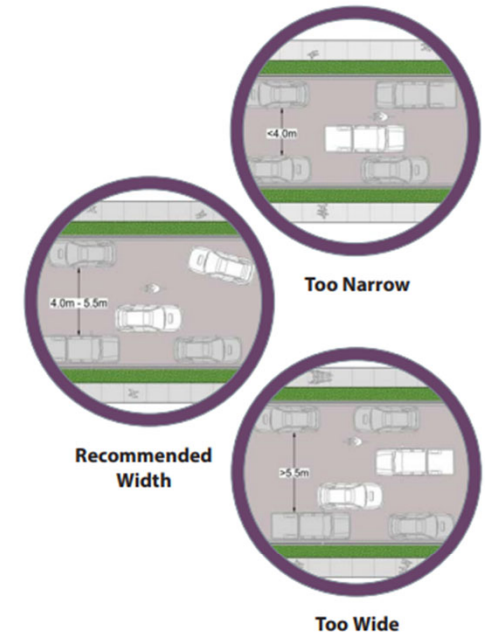
- Rural = 9.5m of asphalt
- Urban = 9m of asphalt
- Lanes are too wide in both case
- Retrofit Guidelines to be identified
- Reduce lanes to 3.0m depend on parking
- Reduce rural lanes + more shoulder + trees
- Reduce urban effective width – consider level of on-street parking demand with parking <8m





## ROAD CROSS SECTION DIRECTION LOCALS

- Create Three Sections
  - Residential (SF)
  - Urban (MF/Comm)
  - Rural
- Sidewalks
- Parking: bays, on-street
- Bicycle Boulevards / Neighbourhood Bikeways





### **NEXT STEPS**

- Prepare Draft Bicycle Network + Elements
- Prepare Draft Pedestrian Network + Elements
- Prepare Draft Road Cross Sections: New Roads + Retrofit
- Identify Retrofit Opportunities on Major Roads
- Engage with BC Transit Process
- Update Traffic Calming Policy
- Parking & TDM Policies
- Gather Long Term Land Use from OCP Process to complete modelling
- Review Long Term Road Network & Intersection Improvements
- Check in With Council
- Prioritize Improvements (draft)
- Phase 3





# DUNCAN TRANSPORTATION + MOBILITY STRATEGY

WORKING PAPER NO.1

EXISTING CONDITIONS & "WHAT WE HEARD"

SEPTEMBER 2021



**SEPT 2021**

*Prepared for:*

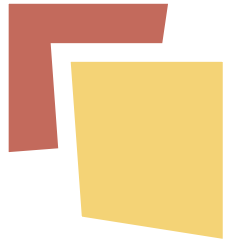
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Duncan BC V9L 1W3*

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**URBAN**  
S Y S T E M S



*The City of Duncan  
acknowledges that this land is  
located on the traditional,  
unceded territory of Cowichan  
Tribes, a Coast Salish people.*





## LIST OF MAPS

1 REGIONAL CONTEXT	7
2 LAND USE & KEY DESTINATIONS	9
3 NEIGHBOURHOODS	10
4 LOCAL AND REGIONAL MOBILITY PATTERNS	40
5 DAILY TRAFFIC VOLUMES	43
6 AM MEDIAN SPEED	46
7 PM MEDIAN SPEED	47
8 AM (PM) TRAFFIC VOLUME	49
9 ALL COLLISIONS	52
10 PEDESTRIAN COLLISIONS	54
11 CYCLIST COLLISIONS	55
12 STREET NETWORK	60
13 PEDESTRIAN NETWORK	63
14 CYCLING NETWORK	66
15 TRANSIT NETWORK	69
16 TRANSIT STOP ACTIVITY	71
17 TRANSIT STOP AMENITIES	72
18 DOWNTOWN PARKING INVENTORY	75

# CONTENTS

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## 1.0 OVERVIEW

- 1.1 TMS PROCESS
- 1.2 OUR COMMUNITY
- 1.3 JURISDICTION & NEIGHBOURING COMMUNITIES
- 1.4 LAND USE & KEY DESTINATIONS
- 1.5 INDIGENOUS PEOPLES
- 1.6 TOPOGRAPHY & CLIMATE
- 1.7 EQUITY

## 2.0 ENGAGING THE COMMUNITY

- 2.1 ENGAGEMENT ACTIVITIES
- 2.2 PARTICIPATION LEVELS

## 3.0 “WHAT WE HEARD”

- 3.1 SURVEY SUMMARY
- 3.2 POP-UP EVENT

## 4.0 POLICY & PLAN REVIEW

- 4.1 CITY PLANS & STUDIES
- 4.2 CITY BYLAWS & REGULATIONS
- 4.3 REGIONAL PLANS & STUDIES
- 4.4 FIRST NATIONS PLANS
- 4.5 PROVINCIAL PLANS & STUDIES

## 5.0 MOBILITY DATA + PATTERNS

- 5.1 TRAVEL MODE CHOICE
- 5.2 TRAVEL PATTERNS
- 5.3 TRAFFIC VOLUMES
- 5.4 NETWORK PERFORMANCE
- 5.5 COLLISION DATA

## 6.0 MULTI-MODAL NETWORK + EXISTING CONDITIONS

- 6.1 NETWORK INVENTORY
- 6.2 ACCESSIBILITY AUDIT
- 6.3 EXISTING CONDITIONS

## 7.0 SMART MOBILITY PRIMER

- 7.1 WHY CONSIDER SMART MOBILITY?
- 7.2 SMART MOBILITY COMPONENTS
- 7.3 MANAGING THE PUBLIC RIGHT-OF-WAY

## TMS FRAMEWORK

## NEXT STEPS

## APPENDIX A. ACCESSIBILITY AUDIT FOR THE CITY OF DUNCAN

## APPENDIX B. ROAD NETWORK PERFORMANCE IN THE CITY OF DUNCAN



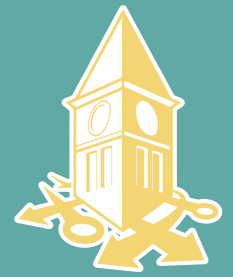




# 1

## OVERVIEW

The City of Duncan is developing its first-ever Transportation + Mobility Strategy (TMS). The TMS will provide a vision to guide and implement a safe, comfortable, and convenient multi-modal transportation network that serves all the City's residents. Through this process, the TMS will address walking, cycling, transit, streets and parking, goods movements, and smart mobility, while exploring environmental and health considerations, regional connectivity, and financial implications. Ultimately, the TMS will provide the City with clear policy, recommendations, and guidelines to deliver transportation programs and infrastructure in Duncan.



### Discussion Paper Series

This document is the first of two working papers being developed as part of the TMS process that will document the Strategy's progress and key activities. The working paper series will contribute to this outcome through focused discussion on the following topics:

- Working Paper no.1, Existing Conditions + "What We Heard" Engagement Summary
- Working Paper no.2, Future Directions + "What We Heard" Engagement Summary

This first working paper outlines the work done in the initial phases of the TMS process, summarizing existing conditions, initial engagement phases, and the draft vision, principles, objectives, and goals. Included in the assessment of current conditions are descriptions of the City's transportation networks, local demographics and trip generators, mobility patterns, and key policy directions that will influence transportation choice and land use. This technical analysis and local perspective of conditions will be fundamental to developing a TMS that is reflective of community needs in Duncan.

## WHAT IS A TRANSPORTATION + MOBILITY STRATEGY (TMS)?

The TMS describes the community's vision and priorities for multi-modal transportation in Duncan. This includes identifying the envisioned long-term transportation networks in Duncan, the type and design of transportation facilities, and priorities for implementation.

## WHO IS THE TMS FOR?

The TMS is for everyone living, working, and recreating in Duncan. As such, it is intended to be used as a guide for staff and elected officials in their decision making. The plan has been developed with input from community members and stakeholders – all of whom may reference the plan for their own purposes. The TMS ensures priorities are well understood and that future transportation networks are well mapped providing a shared future for investment.

## HOW WILL THE TMS BE USED?

The TMS will be used to inform priorities and guide investment in transportation throughout Duncan. It will be used to inform capital planning and public investment in infrastructure, as well as to guide land development toward providing desired transportation facilities in Duncan. It will assist in collaboration with adjacent jurisdictions and transportation service providers, as well as communicate the City's priorities for transportation infrastructure to Provincial and Federal funding agencies to help strengthen future partnerships and grant applications.



## 1.1 TMS PROCESS

An overview of the TMS process and timeline is provided below. The process includes technical activities and community engagement and will follow an iterative and collaborative process involving on-going analyses, idea generation, plan development, and feedback from Duncan and area residents, local stakeholders, transportation service providers, and neighbouring communities.



## JOINT OFFICIAL COMMUNITY PLAN (OCP) & TRANSPORTATION + MOBILITY STRATEGY PROCESS

The TMS process is being conducted alongside a comprehensive update and review of the Duncan Official Community Plan (OCP). The OCP guides the community's overarching vision for Duncan, therefore coordinating the goals, objectives, and outcomes with the OCP is a critical component of the final TMS. The intertwined relationship of these two documents means that as the TMS is developed, progress on the OCP will consistently be referenced. Changes to aspects of the OCP such as future community land use, environmental protection, urban design, and development standards will have profound implications for the direction of the TMS, just as the policy, recommendations, and guidelines outlined in the TMS will affect how transportation is framed in the OCP. Together, these coordinated documents will help shape the future of how Duncan moves and grows in a way that is meaningful to residents, welcoming to visitors, and respectful of the community's history.

The TMS and OCP project teams are working closely with one another to coordinate activities for both projects to build efficiencies and ensure effective processes. One critical alignment is between the two projects' engagement timelines, such that residents can provide feedback on both the TMS and OCP simultaneously with joint events and the sharing of key engagement findings. This approach is intended create a "one-stop shop" where local insights can be reflected in the TMS and OCP through a single event, website, or survey.



## 1.2 OUR COMMUNITY

The following are some of the key community demographics that influence the TMS:



**LAND AREA**

The City encompasses an area of 2.10 square kilometres (210 hectares). Duncan is the smallest municipality by area in the Cowichan Valley region, this results in transportation trip distances that are suitable and comfortable for trips by transit or active modes for many residents.



**POPULATION**

The community has a relatively small population, similar in size to municipalities like Metchosin and Gibsons.

This small population allows greater opportunity to shape transportation to meet the specific needs of both existing and future populations.<sup>1</sup>



**MEDIAN AGE**

With a median age of 54.4, significantly higher than the Provincial average (43), Duncan has an aging population. A particularly large portion of the community is 65 or older. Transportation infrastructure should reflect this and ensure facilities are well maintained and prioritize accessibility improvements.

<sup>1</sup> BC Statistics, British Columbia Population Estimates. Retrieved from <https://www2.gov.bc.ca/gov/content/data/statistics/people-population-community/population/population-estimates>



## 1.3 JURISDICTION & NEIGHBOURING COMMUNITIES

Several neighbouring local governments and senior government agencies influence the provision of transportation services and infrastructure in Duncan. The following is a summary of the organizations with influence over transportation in the community and their roles and responsibilities. The map on the following page, Map 1: [Regional Context](#), shows the various jurisdictions of the Cowichan Valley and Southern Vancouver Island.

### City of Duncan

The City is responsible for planning, design, and maintenance of infrastructure in road rights-of-way within the municipality (with exceptions), including sidewalks, trails, and cycling facilities.

### Municipality of North Cowichan

Like Duncan, the Municipality of North Cowichan is responsible for planning, design, and maintenance of infrastructure in road rights-of-way within the municipality (with exceptions, see below), including sidewalks, trails, and cycling facilities.

### Ministry of Transportation + Infrastructure

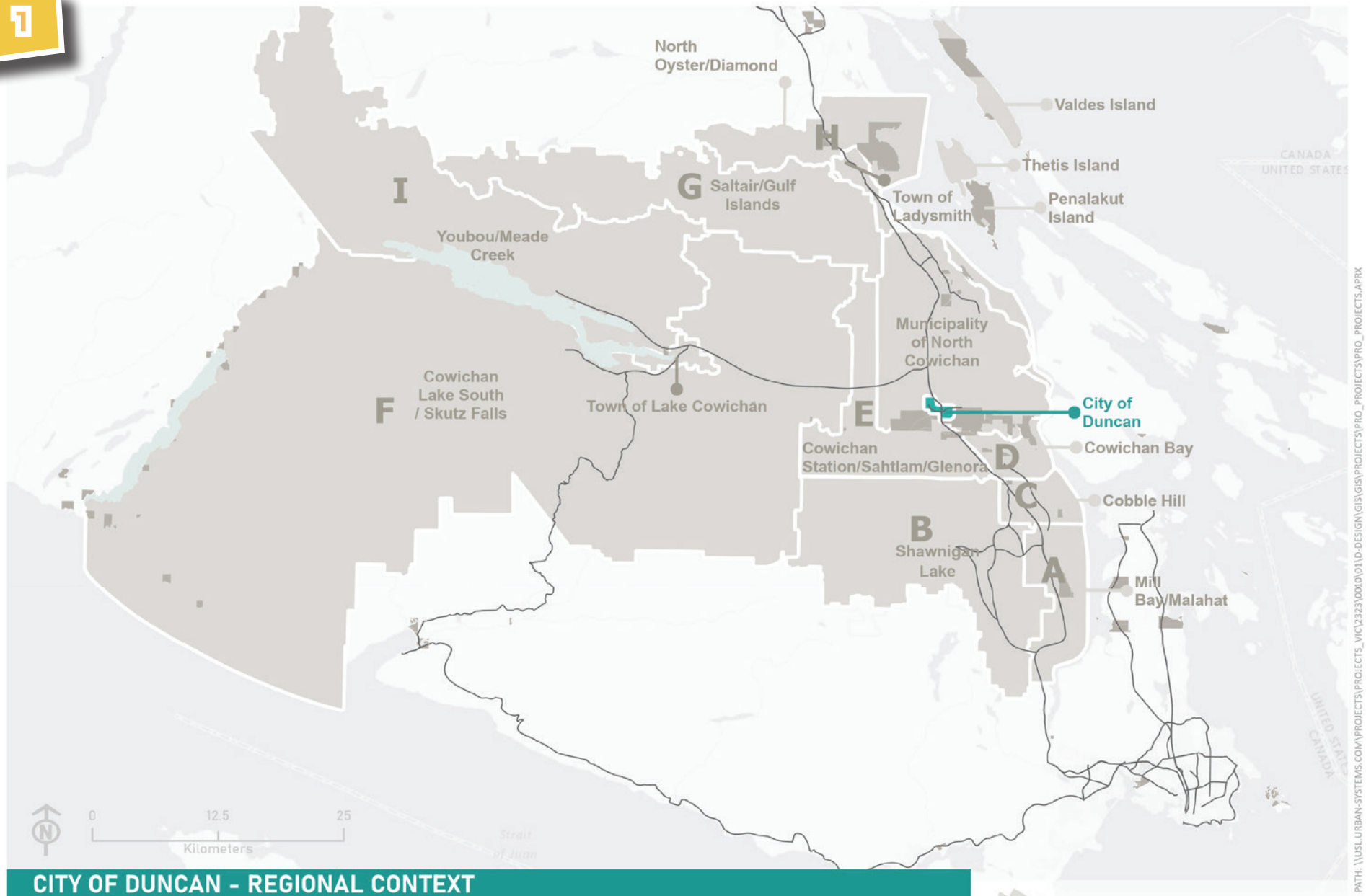
The Ministry of Transportation + Infrastructure (MoTI) has jurisdiction over the Trans-Canada Highway (Highway 1) corridor and related intersection traffic control. Additionally, MOTI has jurisdiction over roadways on the Cowichan Tribes lands and in the Electoral Areas of the CVRD.

### Cowichan Tribes

The Cowichan Tribes have lands immediately south of Duncan, with on-going land development throughout these lands including near Downtown Duncan. Cowichan Tribes also plans for transportation on their lands and for community members.

### Cowichan Valley Regional District

Planning, maintenance, and operations of regional parks and trails is undertaken by the Cowichan Valley Regional District (CVRD), which includes the Cowichan Valley Trail and Trans Canada Trail, as well as trails within regional parks. The CVRD also undertakes regional planning in the Electoral Areas outside of the various municipalities throughout the Cowichan Valley.



Sources: Electoral Districts: CVRD, 2021; Roads: First Nation Reserve Boundary: Data BC, 2020; ESRI Basemap

- Highway/Major Road
- First Nation Reserve Boundary





## 1.4 LAND USE & KEY DESTINATIONS

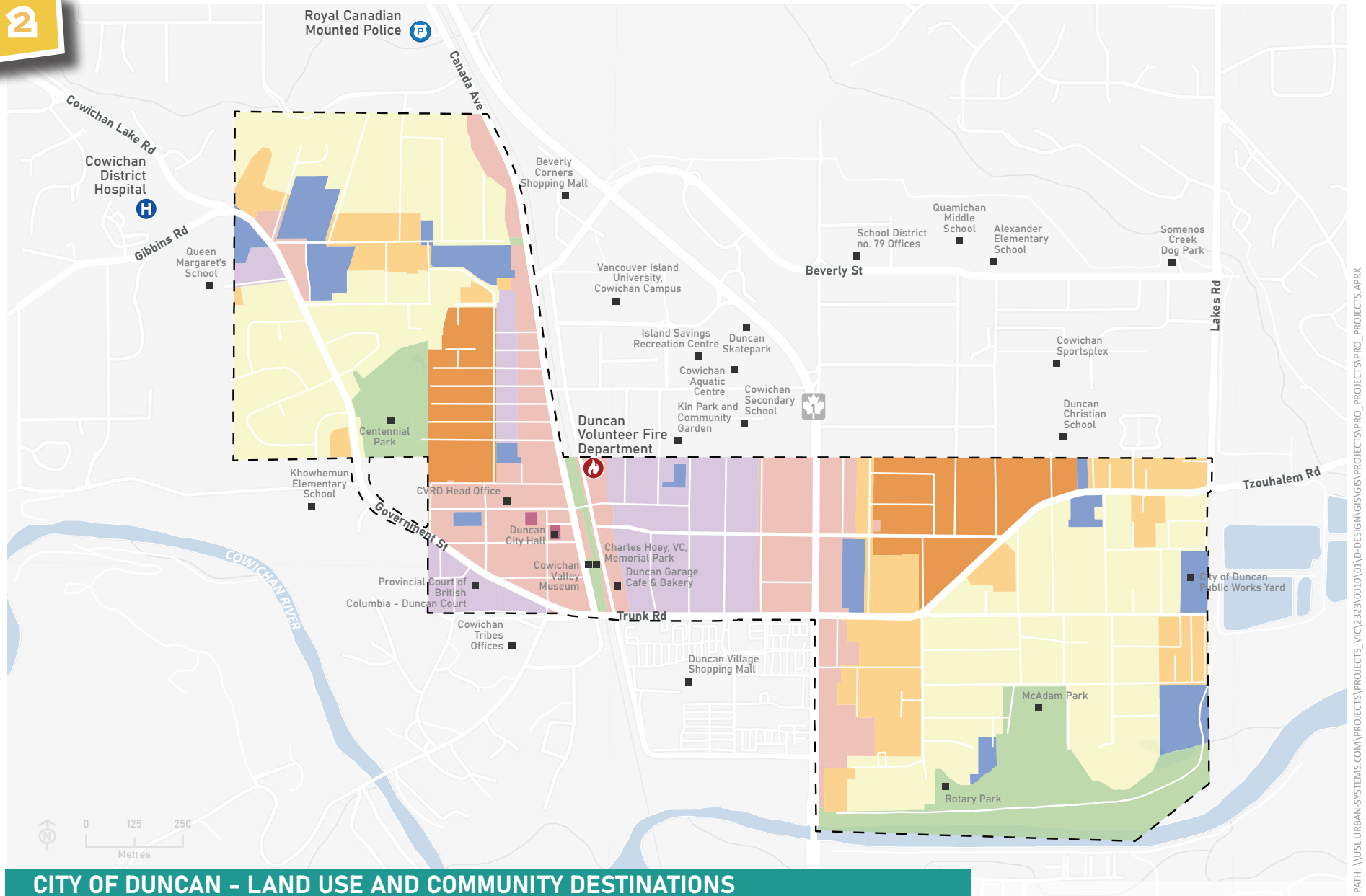
The City of Duncan supports a variety of urban land uses, including residential, commercial, parks and natural areas, and institutional uses. The community's small size means that land use is not as diverse as larger urban centres or adjacent municipalities. However, Duncan's limited land base and primarily residential land uses means the City has the highest population density in the Cowichan Valley region, approximately 2,440 people per square kilometre. As a result of Duncan's compact, mixed-use nature, the City can support a mix of transportation options with population densities to sustain transit and shorter distances to reach key community destinations. The City's existing land use is shown in Map 2: [Land Use + Community Destinations](#), on the following page.

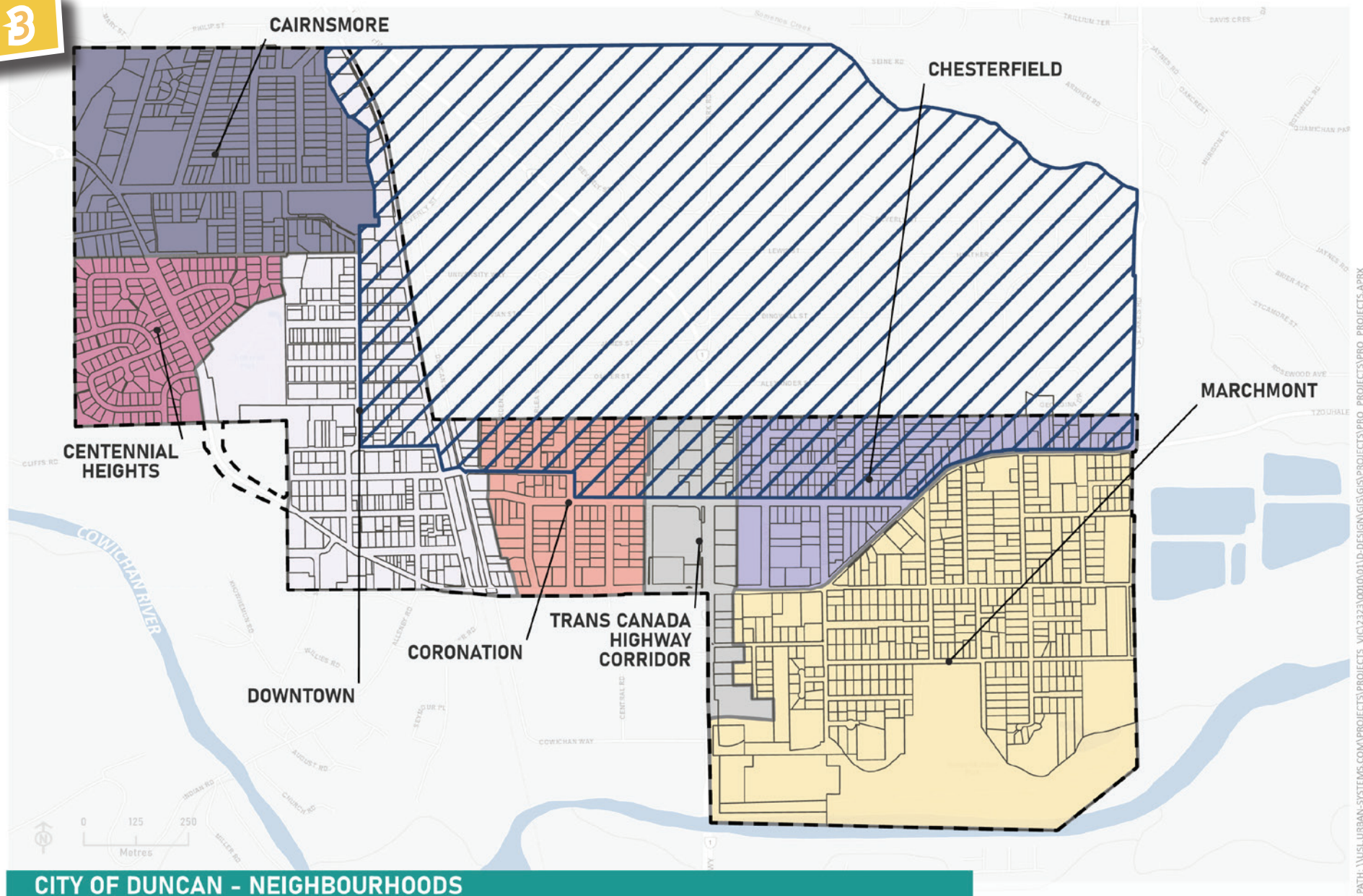
The City plays an important role in the Cowichan Region as one of a limited number of urban centres in the region. As a regional centre, several key destinations are focused around Duncan's Downtown which draw people from across the Cowichan Valley. The Downtown itself is a walkable, mixed-use area that supports a variety of commercial uses that attract residents and visitors. Most commercial and employment land uses are focused in the Downtown Area and along the Trans-Canada Highway. Smaller commercial centres include the Cairnsmore commercial node, located northwest of Downtown Duncan.

As shown in the map below, the City's residential uses are spread throughout the community, with higher density residential development located closer to Downtown, in the Coronation and Chesterfield neighbourhoods, and adjacent to the TCH. The Cairnsmore, Centennial Heights, and Marchmont neighbourhoods are traditionally lower density, single-family residential areas. The neighbourhoods are outlined in Map 3: [Neighbourhoods](#).

Outside of the City's residential and commercial areas, Duncan's two major parks, McAdam and Rotary Park and Centennial Park, provide recreational opportunities and green space within the urban fabric. Centennial Park is the largest park near downtown and west of the highway, while McAdam and Rotary Park provide access to the Cowichan River and serves eastern Duncan.

Several other important destinations that serve the City are immediately outside of Duncan's boundary. These include Vancouver Island University, several schools across age groups, Cowichan District Hospital, and the Cowichan Community Centre and Aquatic Centre, the Duncan Village Mall, the Boys-Allenby-Polkey industrial area, and Beverley Street Commercial Area.





Sources: Electoral Districts: CVRD, 2021; Roads: First Nation Reserve Boundary: Data BC, 2020; ESRI Basemap

-  University Village Plan Area
-  Parcel
-  City of Duncan Municipal Boundary



## 1.5 INDIGENOUS PEOPLES

The City Duncan is located on the traditional territory of Hul'qumi'num people, including the Cowichan Tribes, Penelakut, Halalt, Lyackson, Ts'uubaa-asatx, and Stz'uminus Nations. Hul'qumi'num is the shared language of these nations, whose traditional territory extends across much of the Cowichan Valley and Southern Gulf Islands, and the waters Salish Sea and Fraser River. While there are many shared traditions, beliefs, customs, and laws of the land between Hul'qumi'num nations, each has a unique history and territory. The Cowichan Tribes are British Columbia's largest First Nation and govern lands immediately adjacent to the City of Duncan and will be key partners throughout the TMS process.

## 1.6 TOPOGRAPHY & CLIMATE

Topography and climate are important to consider when assessing and developing a multi-modal network since they can act as barriers to certain modes. Overall, Duncan's topography is relatively flat, with a ridge rising between the downtown core and the Cairnsmore and Centennial Heights neighbourhoods. This rise creates relatively steep hills between these areas and limits access points and connectivity of transportation networks. Despite the gentle topography of the rest of Duncan's neighbourhoods, these areas are low-lying and are protected from seasonal flooding along the Cowichan River by a dike system.

Like other parts of the Cowichan Valley, Duncan has a favourable climate for supporting a variety of transportation modes. The City's mild winters and warm, dry summers mean that active modes can be safely used throughout the year and are particularly attractive during the warm months. This climate also mitigates some of the impacts on transportation facilities caused by freeze-thaw cycles experienced elsewhere in Canada.

The on-going climate crisis will impact Duncan's climate and increase the possibility of extreme weather events. Climate change is projected to worsen seasonal flooding due to intensifying rainfall events and the effects of sea-level rise, increasing the potential for flooding events from the Cowichan River<sup>2</sup>.

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<sup>2</sup> Cowichan Valley Regional District, Cowichan Koksilah Flood Mapping Project Final Report. Retrieved from <https://www.cvr.d.ca/DocumentCenter/View/99894/Lower-Cowichan--Koksilah-Flood-Mapping-Report-2021?bidId=>









## 1.7 EQUITY

The TMS aims to develop a multi-modal transportation network that serves all areas of the City and provides equitable access for all residents. This means being inclusive of – and prioritizing – people of all ages, abilities, backgrounds, and identities. It is especially important to focus on centering equity and supporting equity-seeking populations, which may include, but are not limited to, the following:

- ▶ Women;
- ▶ Seniors;
- ▶ Children and families;
- ▶ Indigenous people;
- ▶ Black people;
- ▶ People of colour;
- ▶ Immigrants and refugees;
- ▶ The 2SLGBTQ+ community;
- ▶ People with disabilities
- ▶ People who are socio-economically disadvantaged;
- ▶ People experiencing homelessness; and
- ▶ People experiencing addiction.

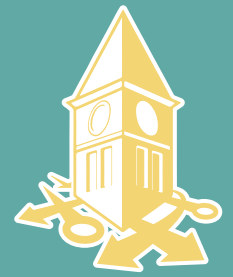
Equity-seeking populations face unique and intersecting challenges when navigating the transportation system, including the threat of discrimination and violence. They may be uncomfortable walking, rolling, cycling, or taking transit due to personal safety concerns. These populations – especially seniors and the BIPOC community – also tend to be overrepresented in traffic fatalities and serious injuries.

Additionally, these populations may not have the same level of access to motor vehicles or transit. Transportation costs are second only to housing as a percentage of household spending in North America, and transportation spending is disproportionately high among low- and moderate-income families. This lack of access to transportation services can limit individual economic development and cause social exclusion. Active transportation and transit are affordable transportation options that can help all residents participate fully in society if their personal safety needs are met.





# ENGAGING THE COMMUNITY



## 2.1 ENGAGEMENT ACTIVITIES

### COMMUNITY SURVEY

To set the stage for the Transportation + Mobility Strategy, a community survey was shared with the public to understand how those who live, work, shop, or visit Duncan experience the city's transportation systems. This survey focused on identifying local transportation and mobility issues and opportunities in the community, while also collecting information on respondents' demographics and travel patterns.

The survey was hosted online on the City of Duncan's PlaceSpeak webpage and was open from April 17th to July 12th, 2021. Promotion for the community survey was included on the City's social media channels and key stakeholders were notified when the survey opened.

### POP-UP EVENT

The project team attended the Duncan Farmer's Market on June 19th, 2021 to hold a pop-up event around the Official Community Plan and Transportation + Mobility Strategy projects. The event was intended to raise general awareness of the projects, other ongoing engagement activities, and facilitate conversations with marketgoers around their priorities and experiences living in or near Duncan. Since one of the desired outcomes of the pop-up was to promote the online surveys for both projects, the facilitators handed out project postcards with the survey details to market visitors, vendors, and other local businesses.

The pop-up event format also included a series of informative and interactive storyboards that described the intention and process of the OCP and TMS projects, while also providing the opportunity for participants to identify their specific priorities and key locations. A "dotmocracy board" allowed participants to place three or more dots in the themes that were most important to them. Table maps facilitated location-specific discussions and provided the opportunity to identify where challenges and opportunities currently exist in the community.



## 2.2 PARTICIPATION LEVELS

Duncan residents participated in several engagement activities held as part of the first phase of the TMS process. Engagement approaches were adapted to ensure all current public health orders related to the on-going COVID-19 pandemic were adhered to, providing a variety of options for residents to describe their insights and experiences moving around, to, and through Duncan.

Participation in community engagement activities is summarized below.



**615**

**VISITS TO  
PLACESPEAK PAGE**



**43**

**SURVEY  
RESPONSES**



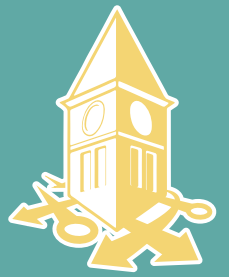
**23**

**SOCIAL MEDIA  
SHARES**



**55**

**POP UP  
PARTICIPANTS**









## “WHAT WE HEARD”



### 3.1 SURVEY SUMMARY

#### ISSUES AND OPPORTUNITIES

Survey respondents were asked to identify the issues they experience when using different transportation modes throughout Duncan. The top three answers by mode are outlined in this section.

#### Walking

The following were the top three survey responses for identified pedestrian issues in the community:



1. Lack of safe crossing locations on major roadways



2. Speed and noise of motor traffic



3. Lack of sidewalks or pathways

#### Cycling

The following were the top three survey responses for identified issues for cyclists:



1. Lack of bike routes



2. Bike routes donot feel safe



3. Lack of secure bike parking

## Transit

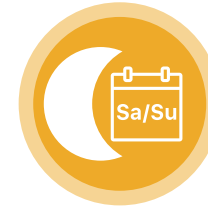
The following were the top three survey responses for identified issues for transit ridership in the community:



1. Transit isn't frequent enough during the day



2. Transit doesn't go to where I need to go



3. Transit doesn't run frequently enough at night or on weekends

## Driving

The following were the top three survey responses for identified issues for driving in the community:



1. Too much traffic during rush hour



2. I can't find parking



3. Other

Some input for “other” included: lack of parking for larger vehicles, and indirect roadways to reach destinations, including those beyond the city itself.

## IDENTIFYING PRIORITIES

Survey respondents were asked to rank outcomes from 1-7. The list below indicates the most important outcomes for participants from 1 (most important) to 7 (least important).

The top three most important outcomes of the TMS included:



1. Improving road safety for all users



2. Providing more transportation choices



3. Improving environmental outcomes

4. Reducing travel times and congestion

5. Affordable for the City and taxpayers

6. Improving public health

7. Reducing my transportation costs

Survey respondents were also asked about their opinions on the priorities for Duncan's transportation system. The list below ranks the priority areas from 1 (most important) to 6 (least important).



1. Walking and Accessibility



2. Transit



3. Cycling

4. Driving

5. Parking

6. Goods Movement

In addition, the list below outlines what survey respondents felt were most important in reducing GHG emissions in Duncan in order from 1 (most important) to 9 (least important).



**1. Building more sidewalks  
and trails**



**2. Providing more frequent  
transit service**



**3. Providing more and  
better transit routes**

4. Building more on-street bike facilities

8. Providing bike- and scooter-share options

5. Switching to low carbon vehicle technologies (e.g.,  
electrification, hydrogen, biofuels)

9. I don't think any changes are needed to reduce  
transportation related GHG emissions

6. Switching to low carbon commercial vehicles (e.g.,  
electrification, hydrogen, biofuels)

10. Other

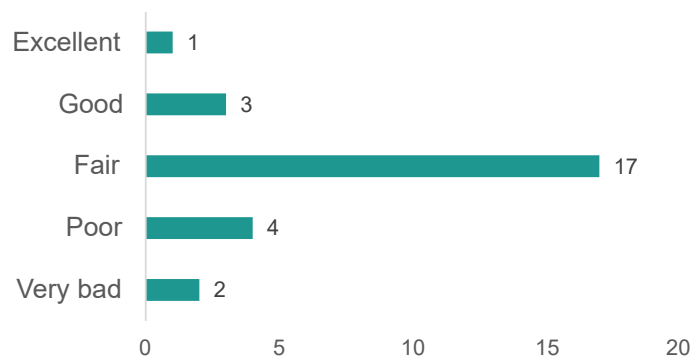
7. Expanding ride-share (i.e., uber), taxi, car-share  
options



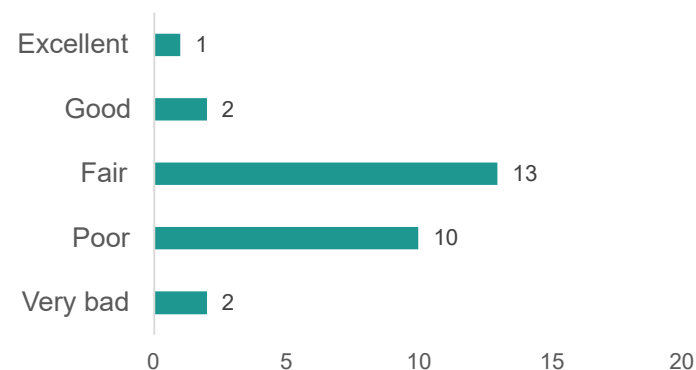
## SHAPING THE STRATEGY

Survey respondents were asked to indicate their level of satisfaction with the City's existing transportation system. This input will help guide priorities and may be helped to measure satisfaction with the network as the TMS is implemented in future. As shown below, responses indicated a "fair" level of satisfaction for access and mobility, transportation choice, community and environment, and an affordable transportation system.

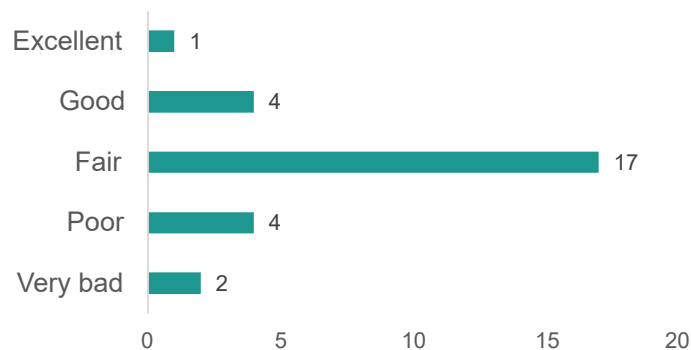
1. How well do you feel the current transportation system is working to support access and mobility?



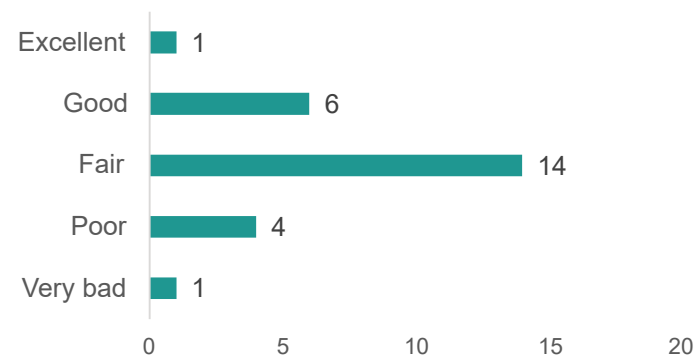
2. How well do you feel the current transportation system is working to support transportation choice?



3. How well do you feel the current transportation system is working to support community and environment?



4. How well do you feel the current transportation system is working to support an affordable transportation system?



## 3.2 POP-UP EVENT

The project team attended the Duncan Farmer's Market to hold a pop-up event around the Official Community Plan and Transportation + Mobility Strategy projects. The pop-up format included a series of informative and interactive storyboards that described the intention and process of the OCP and TMS projects, while also providing the opportunity for participants to identify their specific priorities and key locations. A “dotmocracy board” allowed participants to place three or more dots in the themes that were most important to them. Table maps facilitated location-specific discussions and provided the opportunity to identify where challenges and opportunities currently exist in the community.

On the dotmocracy board participants ranked their priority transportation modes in Duncan as:

1. Riding a bicycle
2. Walking and accessibility
3. Transit
4. Driving

Several transportation-specific themes also emerged through conversations at the pop-up event, including the following:

- ☰ Addressing congestion, speeding, and traffic safety along the Trans-Canada Highway corridor.
- ☰ Improving walkability and pedestrian safety, including at the Silver Bridge.
- ☰ Enhance multi-use and cycling routes in areas around Duncan.



# 4

## POLICY & PLAN REVIEW

The City of Duncan has numerous policies, plans, municipal bylaws, and transportation studies that help guide the community's transportation systems. These documents affect transportation in Duncan at varying scales from community-wide initiatives to specific corridors and intersections, and as such detail some of the City's challenges, opportunities, and aspirations around transportation.

In addition to direction on transportation, these documents contextualize Duncan's land use, environmental, and economic development goals, and integrate mobility into the broader community vision and goals. Combined with planning initiatives completed by neighbouring jurisdictions, the Cowichan Valley Regional District, and the Province, this section aims to describe current transportation planning and regulation in the City of Duncan.





## 4.1 CITY PLANS & STUDIES

### OFFICIAL COMMUNITY PLAN, 2007

Transportation-related direction in the City of Duncan's current Official Community Plan (OCP) are divided among numerous topic areas. Section 8.4 outlines transportation-specific policies related to rail, transit, walking cycling, roadways, parking, and inter-city connections.

Through these policies, the OCP supports enhancing active transportation by establishing standards for walking and cycling facility design, encouraging complementary land use mixes and densities to active transportation, and integrating with transit for longer trips. Specific active transportation planning initiatives, including a Bicycle Master Plan, are described in the OCP that have not been realized to date. Transit and rail policies support re-establishing commuter rail through compact and complete land use, improving and expanding transit infrastructure to encourage greater ridership and encourage greater regional and inter-regional connectivity.

The road network identified in the OCP is divided into three road classifications: major roads, local roads, and downtown streets, each with characteristics pertaining to vehicle volumes and speeds, commercial vehicle movement, and intended user groups. Road network policies identify specific improvements required in the network, requirements for road design and landscaping, and supportive programs to reduce single-occupancy vehicle use. Parking policies complement this direction, with emphasis on reducing the visual and environmental impact of parking facilities, while encouraging shared parking, bicycle parking, and consistent monitoring of parking issues in the Downtown area.

Additional OCP guidance on transportation includes chapters on economic and commercial development, protection of the natural environment, and development permit areas. These policies generally encourage improving streetscapes to allow for safe and comfortable travel for all users and mitigating the environmental impacts of Duncan's transportation system by increasing sustainable mode share.



## CAIRNSMORE SUSTAINABLE NEIGHBOURHOOD PLAN, 2020

The Cairnsmore Sustainable Neighbourhood Plan is the guiding planning document for the City's Cairnsmore neighbourhood, located in the northwest corner of Duncan. The Neighbourhood Plan was recently adopted and provides comprehensive policies around the neighbourhood's transportation network and infrastructure. These policies include provision to improve active transportation, transit, and the vehicle network, while generally enhancing mobility in Cairnsmore. The document also delineates the existing and future active transportation and road networks. Creating complete streets in Cairnsmore is a priority in the Neighbourhood Plan by designing for safe and accessible transportation infrastructure that integrates seamlessly with neighbouring land uses, creating an enjoyable experience for all users. Each street in the neighbourhood is assigned one or multiple street typologies that are accompanied by proposed road classifications, cross sections, and key improvement features to be considered for these classifications.

## UNIVERSITY VILLAGE SUSTAINABLE LOCAL AREA PLAN, 2015

The University Village Sustainable Local Area Plan (LAP) was a coordinated neighbourhood planning effort between the City of Duncan and the Municipality of North Cowichan to guide land use and urban design in the shared University Village area. The LAP area is primarily located within the Municipality of North Cowichan but also captures the areas north of Coronation Avenue / Trunk Road and James Road, and east of Jubilee Road along the City's northern boundary. A mixed-use and commercial area is envisioned east and north of the Trans-Canada Highway that would greatly intensify and diversify residential and commercial land uses around Duncan.

The LAP addresses transportation within the area and emphasizes active transportation use and community connectivity. Policy directions is provided for streetscapes, including pedestrian and cycling facilities, access and parking, lighting, and accessibility. New roadway connections are proposed to connect James Street to Festubert and St Julien Street through the Cowichan Secondary School site west of the TCH corridor and Bundock Avenue to Dingwall Street and Whistler Street to Alexander Street east of the highway corridor. Additionally, bicycle lanes are proposed on most streets east of the highway corridor, including Duncan Avenue, Canada Avenue, and James Street, which would connect to a multi-use path along the highway corridor.

## DUNCAN AREA ACTIVE TRANSPORTATION PLAN, 2014

The Duncan Area Active Transportation Plan in the urbanized area around the City of Duncan, including Cowichan Tribes lands south of the City and portions of North Cowichan to the west and north. Therefore, the AT Plan is the result of the combined efforts of the City of Duncan, Municipality of North Cowichan, and Cowichan Tribes to develop an integrated active transportation network through the area that serves key community destinations. The AT Plan establishes how these jurisdictions can implement a network around Duncan that improves safety for active transportation users, reduces GHG emissions, provides well-design facilities, and improves access to active modes. Naturally, cooperation and coordination between the City of Duncan and neighbouring governments is also a key theme, including how these jurisdictions will also work closely with the Ministry of Transportation and infrastructure and the CVRD.

An extensive of inventory of the Duncan area's existing active transportation infrastructure was conducted through this process, and further analyzed to identify critical gaps and safety concerns in the current network. This was supported by an extensive public engagement process that collected information on motivations and experiences with active transportation and location-specific areas of opportunity and concern. The AT Plan recommends the adoption of a transportation hierarchy that prioritizes access and investment for pedestrians, bicycles, and public transit above personal and commercial vehicles. Other recommendations include adopting a complete streets policy, end-of-trip facility standards for cyclists, multi-modal connections to transit, and expanding educational opportunity for safe walking, rolling, cycling, and driving. Further recommendations are provided for improving safety standards and plan implementation over the short-, medium-, and long-term, including how these projects should be prioritized.



## TRANS-CANADA HIGHWAY CORRIDOR MANAGEMENT PLAN: BOYS RD TO BEVERLY ST, 2014

The Trans-Canada Highway Corridor Management Plan updates and refines the focus of the 2004 Highway Corridor Study to the areas of the highway within and immediately adjacent to the City of Duncan from Boys Road to Beverly Road. The Corridor Management Plan outlines a staged infrastructure improvement approach through which to address ongoing concerns around congestion and access along this section of the highway. Recommendations were developed through exploration of numerous design options to alleviate congestion and improve access for vehicles, while also improving safety for active modes.

Three options were ultimately presented as part of the Corridor Management Plan, all including substantial improvements to active transportation and transit infrastructure, new roadway connections, consolidated access for properties abutting the highway, and intersection improvements. The preferred option recommends the following:

- ▶ Long-term access for uses adjacent to the Corridor from Cowichan Way to north of York Road
- ▶ New street connectivity parallel and adjacent to the Corridor, including a through road from Cowichan Way to Dingwall Street west of the highway via Price Place and Bundock Avenue.
- ▶ Multi-use pathways along the highway corridor, Beverly Road, the E&N Corridor and Canada Avenue, York Road.
- ▶ A pedestrian bridge over the Cowichan River, adjacent to the existing bridge.
- ▶ Intersection upgrades at Cowichan Way, Trunk Road, Coronation Avenue in the City of Duncan.
- ▶ Landscaped or separated medians from Boys Road to Beverly Road.
- ▶ Pedestrian connection to Downtown Duncan via Cowichan Way.

Ultimately, the Corridor Management Plan identifies sixteen improvements and evaluation criteria refined from a list of thirty-one options. The sixteen most effective improvement options or criteria was determined based on a matrix assessing pedestrian, cyclist, and vehicle safety, traffic flow, emergency access, economic sustainability, cost, and environmental impact of each option. These recommended upgrades are illustrated in detailed drawings in five sections of the highway corridor, including from Coronation Avenue to Trunk Road and from Boys Road to the Dike Trail. In addition, policy direction is provided for each improvement option, while also separating the projects into short-, medium-, and long-term priorities.

## GOVERNMENT STREET INTERSECTION IMPROVEMENTS TRANSPORTATION ANALYSIS, 2017

The City of Duncan completed a technical analysis of the series of intersections along Government Street between Canada Avenue and Allenby Rd / Craig Street. The study set out to assess the current transportation conditions in this area and outline how the City can address deficiencies through new design options, including estimated construction costs. Among the major issues identified in the analysis included the different cycle lengths of the signalized intersections in the study area, long crossing distances for pedestrians, and difficult left-hand turning movements that ultimately create vehicles queues and delays.

To address these issues, the study recommends synchronizing the traffic signals in the study area on a consistent cycle and restricting left-hand turning movements at Government Street and Craig Street / Allenby Road. These measures were recommended as being both effective in addressing the issues and relatively inexpensive. Other adjustments within the study area were also found to be beneficial to overall performance, including improvement left turn movements southbound on Canada Avenue, however it was suggested that these improvements should only be made in tandem with improvement to the TCH to limit through traffic in Downtown Duncan. Longer term options for the study area could also include a roundabout, roadway widening, connections to the E&N Corridor and additional connections to River Road but would require further study and resources before implementation.

## COMMUNITY ENERGY AND EMISSIONS PLAN, 2015

The Community Energy and Emissions Plan (CEEP) identifies several transportation initiatives to reduce Duncan's environmental impact and greenhouse gas emissions. The key actions described by the Plan include:

- ▶ Active transportation planning.
- ▶ Improving pedestrian, cycling, and alternative transportation infrastructure.
- ▶ Collaborating with major employers to reduce transportation-related emissions through transportation demand management strategies and other opportunities.
- ▶ Increasing transit access to underserviced neighbourhoods and inter-community destinations.
- ▶ Supporting ride-sharing and guaranteed ride home programs.
- ▶ Encouraging transitions to low-carbon and electric vehicles.

These specific actions are accompanied by general actions around optimizing land use and street design to support greater sustainability in the transportation system.



## INTEGRATED COMMUNITY SUSTAINABILITY PLAN, 2013

Duncan's commitment to community sustainability is established through the City's Integrated Community Sustainability Plan (ICSP). Transportation is an important component of the community's vision of environmental sustainability, therefore the ICSP identifies a suite of transportation outcomes for Duncan by 2040, including:

1. The public transportation system has transitioned off fossil fuels, which has helped to maintain its viability.
2. Cycling and walking have become the primary modes of local transportation, safely and seamlessly integrating between commuter and leisure use, ensuring safe bicycle and pedestrian priority where trails meet or cross the highway and local roads.
3. Duncan bus connections and transfer points are a maximum of a 400m walking distance from important locations and service areas.
4. Central Duncan is people-friendly, prioritizing pedestrians and cyclists, is well serviced by public transit day and night, and has eliminated traffic congestion in downtown Duncan, making it safe and enjoyable.
5. Public transportation options are affordable for all income levels.
6. Duncan has dedicated and well-marked bicycle paths that connect neighbourhoods to schools, local commercial areas, and regional trail systems.

These outcomes speak to greater access to transit, a culture of active transportation with supportive infrastructure, and a welcoming public realm that allows users of different transportation modes to feel safe and comfortable.

## COUNCIL STRATEGIC PLAN, 2019

Transportation-related direction in the 2019-2022 Council Strategic Plan recognizes a variety of initiatives that will be relevant to the Transportation and Mobility Strategy. The Plan identifies the completion of a Transportation Master Plan and a Downtown Parking Review as important documents to managing growth and providing a well serviced community. Streetscape improvements along the TCH Corridor and at the Beverly Street TCH intersection are also prioritized that would likely involve transportation infrastructure improvements.





## 4.2 CITY BYLAWS & REGULATIONS

Established City Bylaws and regulations are being considered through the TMS process, including identifying opportunities to advance key TMS directions through regulatory changes.

### WORKS AND SERVICES BYLAW

The City of Duncan's Works and Services Bylaw outlines the infrastructure requirements for subdivision and major development in the municipality. Regarding transportation, Schedule A of the Bylaw provides technical specifications for all new highway works, including road geometries and curvatures, intersections, utilities in the road right-of-way, sidewalks and walkways, and driveways. These requirements are generally organized by road classification, but crucially do not include cross-sections for road rights-of-way across the road hierarchy.

### DEVELOPMENT COST CHARGE BYLAW

The Development Cost Charge (DCC) Bylaw outlines municipal charges by development type, including for transportation projects. The bylaw does not identify specific transportation projects to be completed through a DCC program.

### ZONING BYLAW

The Zoning Bylaw regulates land use in the City and provides direction for vehicle and bicycle parking, commercial loading, and vehicle access, and ultimately impacts transportation through the land use mix and density of Duncan's urban form. The Zoning Bylaw sets out parking and loading requirements by land use, including visitor and accessible parking, and how parking facilities are designed and located. Cash-in-lieu of parking is also regulated through this Bylaw.

### STREETS AND PARKING BYLAW

The Street and Parking Bylaw is one of the City of Duncan's essential documents regulating vehicles and transportation facilities in the community. The Bylaw identifies how users of various modes should act in the City, requirements for vehicles, infrastructure, parking, and landscaping, and the resulting penalties for any breach of the regulations. The TMS will consider updates to the Bylaw to ensure alignment with the Strategy and its recommendations, which could lead to changes in identified speed limits, landscaping specifications, and parking permitting structures.

## 4.3 REGIONAL PLANS & STUDIES

### COWICHAN 2050, 2018

Cowichan 2050 is the regional vision for growth and development in the Cowichan Valley. The document emphasizes the need for the region and its communities to work collaboratively to pursue sustainable growth with respect to housing, the natural environment, community infrastructure, local economies, and health and wellbeing. This vision is guided by four regional aspirations: sustainability, livability, resilience, and relationships.

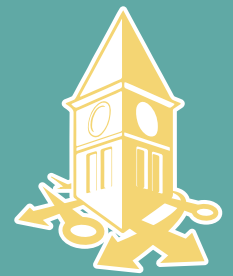
Transportation planning and infrastructure is considered as part of broader community infrastructure. This discussion includes several future considerations to improve mobility in the region and respond to new trends and challenges in the sector. The recommended actions include:

- ▶ Developing a regional transportation framework that identifies areas of partnership and collaboration around core regional transportation issues.
- ▶ Developing harmonized complete street standards for the larger region.
- ▶ Supporting ongoing implementation of the Transit Future Plan.
- ▶ Engaging with the Ministry of Transportation and Infrastructure to develop regional standards and policies on autonomous vehicles and other emerging technologies with local level implications.

This future work is an important consideration for the TMS due to the regional implications of transportation planning in the City of Duncan and ongoing initiatives in neighbouring communities.

### SOUTH ISLAND TRANSPORTATION STRATEGY, 2020

The South Island Transportation Strategy (SITS) is a regional planning initiative developed by the Ministry of Transportation and Infrastructure that broadly guides transportation planning and infrastructure improvements on southern Vancouver Island. The Strategy considers current and future conditions opportunities, and challenges for the region and its' major corridors, including highway, transit, active transportation, rail, marine, and air routes. Based on this understanding, the Strategy sets out to increase sustainable transportation options, enhance connectivity between key destinations and communities, improve safety and reliability, and support active transportation options. Under these themes a variety of strategies and short-, medium, and long-term priorities are identified for the region. While the City of Duncan is within the Strategy's study area, none of the specific improvements identified directly impact or improve the community's transportation network.





### **COWICHAN VALLEY REGION TRANSIT FUTURE PLAN, 2012**

The Cowichan Valley Region Transit Future Plan outlines the services, infrastructure, and investments needed to develop an accessible and connect transit network over the next 25 years. The Transit Future Plan review and analyzes existing transit services, regional and local land use planning, current transportation data, and demographic projections for the Cowichan Valley. Three goals are set out as part of the Transit Futures Plan, including making transit an attractive alternative to private vehicles, reducing the community's environmental impact, and building a more efficient transit system. Total ridership is targeted to reach 1.2M annual rides by 2036, or roughly a tripling of trips by transit over the next 25 years. To achieve these goals, the Transit Future Plan outlines short-, medium, and long-term implementation and investment priorities for service and infrastructure.

The City of Duncan plays an important role as a regional hub in the Cowichan Valley's future transit system. Regional and inter-regional services converge in Duncan, connecting the Cowichan Valley and providing transit access to neighbouring regions, including Nanaimo and Victoria. The Transit Future Plan also proposes a network of neighbourhood services that would link Duncan's neighbourhoods with adjacent areas in the Municipality of North Cowichan and Cowichan Tribes' lands.

### **COWICHAN VALLEY TRAIL NETWORK AND CYCLING PLAN, 2001**

The Cowichan Valley Trail Network and Cycling Plan was a multi-jurisdictional effort coordinated between the City of Duncan, Municipality of North Cowichan, and Cowichan Valley Regional District to establish a network of trails throughout the region that would provide opportunities for active transportation users. The document is divided into two distinct sections: the Trail Network Plan and the Cycling Plan with each of these sections outlining a long-term network, recommendations for trails and cycling, and a combined priority project list for both long-term networks.

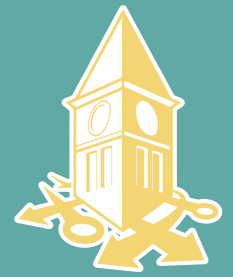
The implementation of the Trans-Canada Trail in the Cowichan Valley is a prominent theme in the document, with that trail acting as the spine of the broader network connected with various active transportation facilities. To achieve this integrated network, the Plan defines several types of pedestrian, cycling, equestrian, and multi-use facilities that would be the basis of the trail network.



## 4.4 FIRST NATIONS PLANS

### COWICHAN TRIBES TRANSPORTATION AND MOBILITY PLAN, 2015

Cowichan Tribes completed a transportation and mobility plan for their communities in the Cowichan Valley. Many of the key areas of concern and opportunities for improvement identified in the Plan, are critical corridors connecting to the City of Duncan. The Plan focuses on Boys Road, Tzouhalem Road, Allenby Road, and the Trans-Canada Highway as routes running to or through the municipality. A variety of quick start, short-, and medium-term actions are described in specific locations along these corridors, and would provide substantial upgrades to active transportation infrastructure, safety, and regional transit connectivity. Some of the specific projects will require coordination with the City, including a pedestrian bridge adjacent to the Silver Bridge and multi-use pathway from Boys Road to Trunk Road.



## 4.5 PROVINCIAL PLANS & STUDIES

### CLEANBC, 2018

The Province's CleanBC initiative lays out a framework for climate action including green buildings, cleaner industry and waste, green jobs, and sustainable transportation, targeting greenhouse gas emission reductions from 2007 levels of 40% by 2030, 60% by 2040, and 80% by 2050. An outcome of CleanBC is the Zero-Emission Vehicles Act (ZEVA), which requires that all new light-duty cars and trucks sold in the province will be zero-emission vehicles by 2040, using a phased-in approach (10% by 2025, 30% by 2030, and 100% by 2040).

### MOVE, COMMUTE, CONNECT – B.C.'S ACTIVE TRANSPORTATION STRATEGY, 2019

B.C.'s Active Transportation Strategy lays out the Province's intent to promote and invest in active transportation. The strategy contains several short-, medium-, and long-term initiatives that aim to double the percentage of trips taken with active transportation by 2030. Initiatives include expanding education and encouragement programs, reviewing the Motor Vehicle Act, promoting Vision Zero principles, improving active transportation facilities and end-of-trip facilities, incorporating active transportation in provincial highway design, partnering with the tourism sector to promote active transportation, and expanding active transportation funding, which resulted in the updated B.C. Active Transportation Infrastructure Grants Program.

### BRITISH COLUMBIA ACTIVE TRANSPORTATION DESIGN GUIDE, 2019

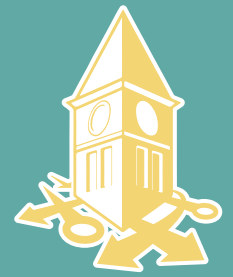
The B.C. Active Transportation Design Guide is a comprehensive set of planning and engineering guidelines offering recommendations for the planning, selection, design, implementation, and maintenance of active transportation facilities across the province. The Design Guide covers pedestrian, cycling, and multi-use facilities, intersection design, amenities, wayfinding, multi-modal integration, new mobility, and post implementation considerations such as monitoring and maintenance.







# MOBILITY DATA + PATTERNS



## 5.1 TRAVEL MODE CHOICE

Based on the 2016 Census data and the 2019 'big data' (StreetLight data), while the majority of the trips made within Duncan are by motor vehicle, almost a quarter to one-third of the trips originated within Duncan are made through sustainable mode choices. As shown in **Table 1**, approximately 16% of the commuting trips are walk trips according to the 2016 Census data, and the proportion is even higher for all trips (approximately 28%) according to the 2019 StreetLight Data.

*Table 1: Mode Share of Trips in Duncan (2016 Census and 2019 StreetLight Data)*

MODE	2016 CENSUS (COMMUTING TRIPS)	2019 STREETLIGHT DATA (ALL TRIPS)
Vehicle	77%*	71%
Transit	3%	n/a
Walk	16%	28% **
Bicycle	2%	1%
Other	2%	n/a
Total	100%	100%

\* 71% auto driver and 6% auto passenger

\*\* may include the walk trips made by transit users





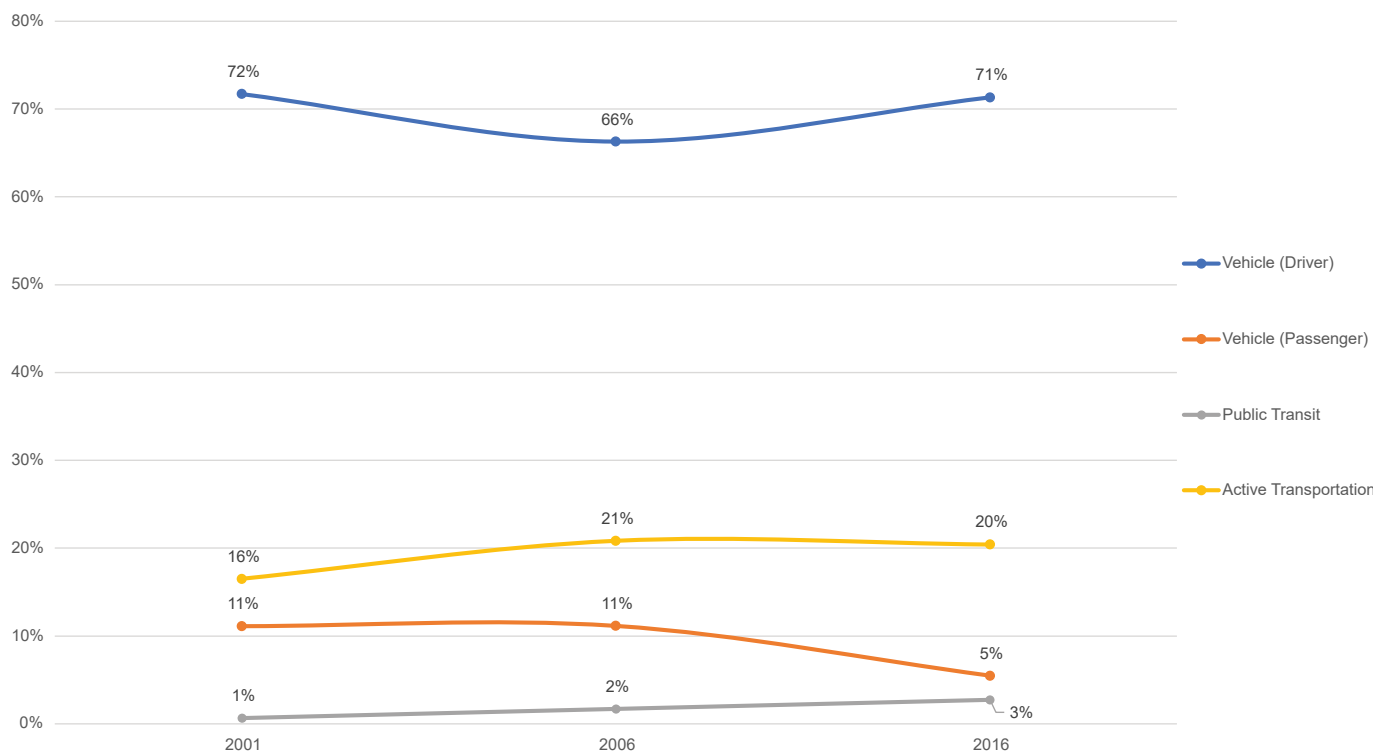


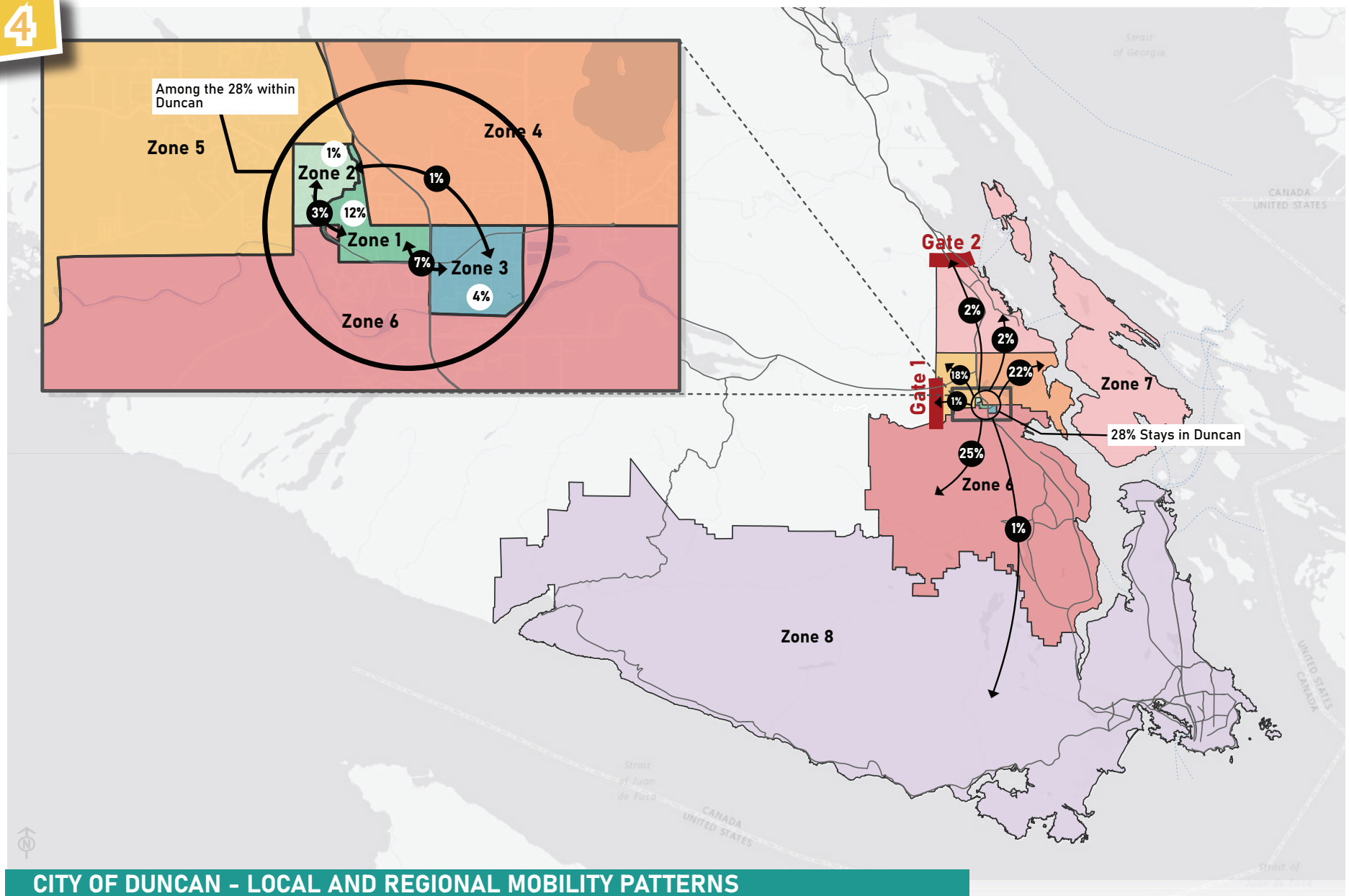
Based on the 2019 StreetLight Data by area, the mode share splits within the three zones in Duncan (Downtown and Coronation, Duncan West, and Duncan East) are generally similar to the overall trend with small variations. Within Duncan Downtown/Coronation and Duncan East, 72% and 70% of the trips are made by motor vehicles, respectively, and 30% and 27% of the trips are walk trips. Within Duncan West, the mode share split of vehicle trips is slightly higher (approximately 76%) with approximately 23% for walking.

Compared to 2019, the 2021 mode share splits see an 8% of increase for walk trips (from 27% to 35%) and a 7% of decrease of vehicle trips (from 71% to 64%) according to StreetLight Data.

As shown in **Figure 1**, according to the Census data, since 2001, the mode share splits of commuting trips have remained relatively unchanged except for auto passenger, which decreased from 11% in 2001 and 2006 to 5% in 2016.

*Figure 1: Mode Share Trends for Commuting Trips in Duncan (Source: 2001, 2011 and 2106 Census Data)*





Sources: Origin-Destination Zones, Gates: Streetlight, 2021;  
Ferry Routes: Data BC, 2020; ESRI Basemap



Percentage of trips starting or ending in Duncan

Highway/Major Road

Gate 1 - Cowichan Valley West

Gate 2 - Nanaimo Region & North

Origin-Destination Zones

Zone 1 - Downtown and Coronation

Zone 2 - Cairnsmore and Centennial Heights

Zone 3 - Marchmont and Chesterfield

Zone 4 - North Cowichan East

Zone 5 - North Cowichan West

Zone 6 - Cowichan Valley South

Zone 7 - North Cowichan North and Islands

Zone 8 - Capital Region

## 5.2 TRAVEL PATTERNS

The majority of the trips that originated within Duncan destinate outside of the City. According to the 2019 StreetLight Data, approximately 28% of all trips generated in Duncan stay within the City. Local trips in Duncan are largely movement to, from, and within the Downtown and Coronation area (12%). Approximately half of Duncan trips are evenly distributed between the area south of Duncan (Cowichan Bay and Mill Bay) and the southeast area of North Cowichan (Crofton and Maple Bay). The southwest area of North Cowichan is another major destination (approximately 18%) for Duncan trips. Longer trips to the Nanaimo Region, Capital Region, and the western Cowichan Valley were limited, representing less than 5% of all trips. Complete local and regional mobility patterns are shown in Map 4: [Local and Regional Mobility Patterns](#).

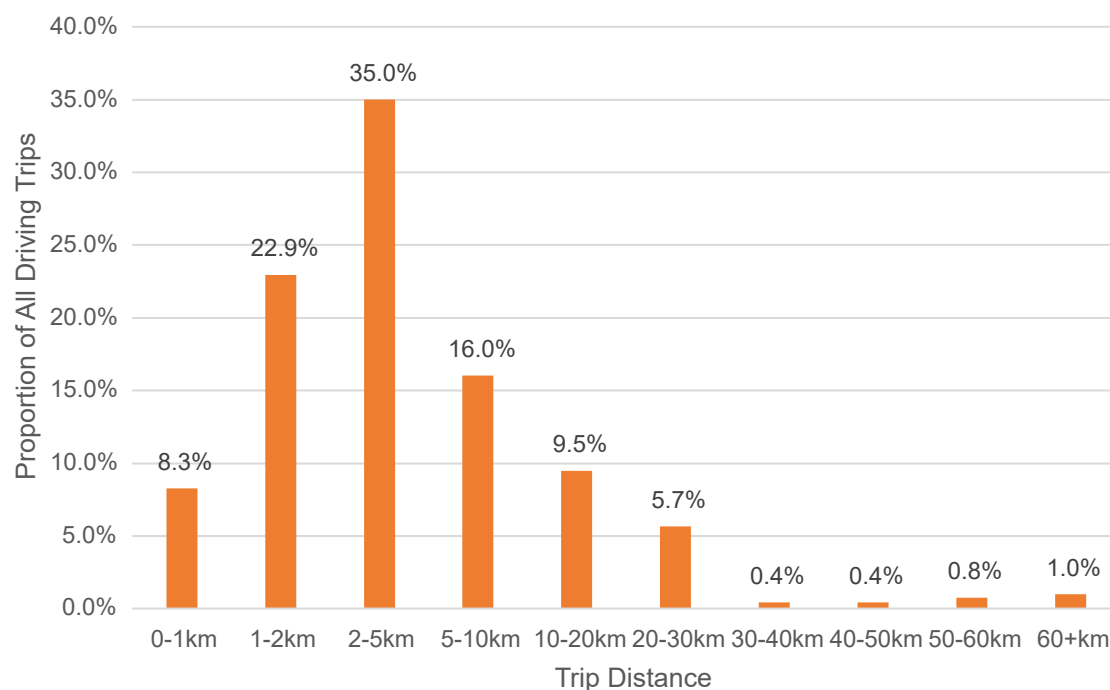
When considering all trips that originate in Duncan, the average distance of a trip is approximately 6.2km and varies based on the mode of transportation (see [Table 2](#))

While the average driving trip distance is 6.2km per trip, this average masks the significant variation in driving trip distances, as two-thirds of all driving trips are less than 5km, including over 30% that are less than 2km, a distance which could be replaced by active transportation (see [Figure 2](#)).

*Table 2: Trip Distance by Mode of Transportation (Source: 2019 StreetLight Data)*

MODE	TRIP DISTANCE (KM PER TRIP)
Vehicle	6.2
Walk	1.1
Bicycle	4.0

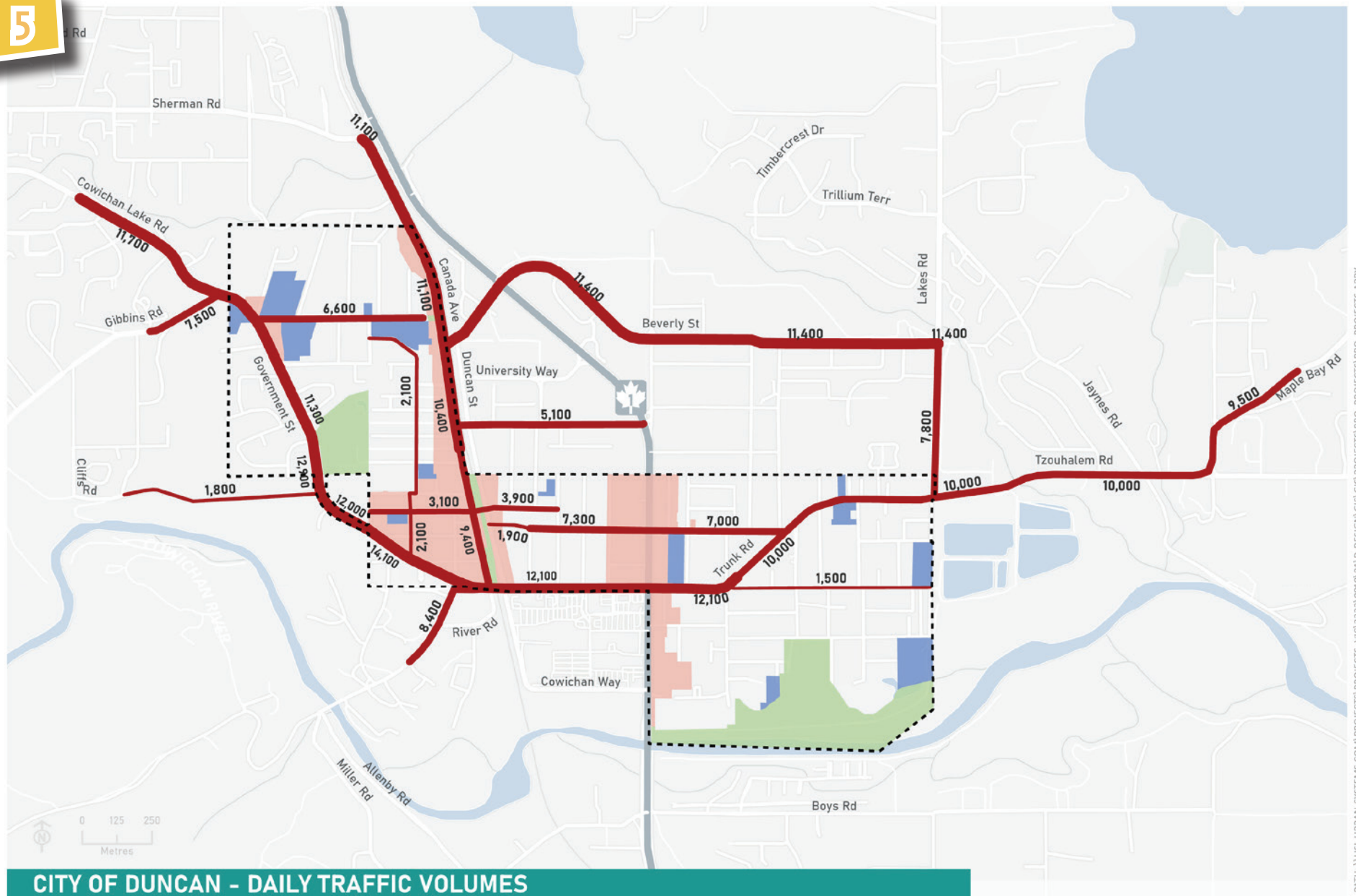
*Figure 2: Distance of Auto Driver Trips (Source: 2019 StreetLight Data)*



## 5.3 TRAFFIC VOLUMES

Traffic volumes vary throughout the City of Duncan. Map 5: Daily Traffic Volumes, illustrates the average daily traffic volumes, which are from historical counts adjusted with growth factors. Generally, the traffic volumes are more concentrated along the two main corridors, Government Street and Canada Avenue, which serve both local and regional trips in the east / west and north / south directions, respectively.





## CITY OF DUNCAN - DAILY TRAFFIC VOLUMES

Sources: Roads: Duncan Boundary, OCP: CVRD, 2021;  
Waterbodies: Data BC, 2020; AADT: USL, 2021; ESRI Basemap

### Daily Traffic Volumes (Vehicles/Day)

- 1500 - 2500
- 2501 - 5000
- 5001 - 10000
- 10001 - 14100

- Commercial
- Institutional
- Parks

City of Duncan Municipal Boundary

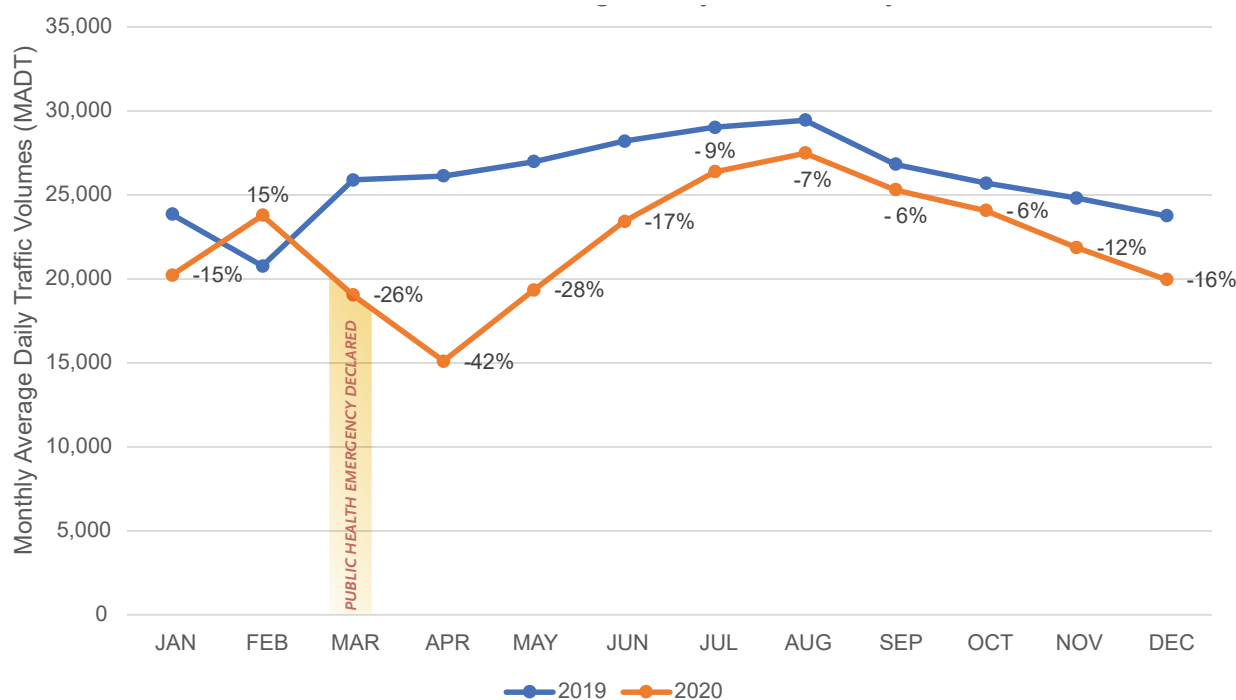
## COVID-19 IMPACT

The nearest permanent traffic count station, located on the Trans-Canada Highway approximately 10km north of Duncan, provides a comparison of the traffic volumes before and during the COVID-19 Pandemic. As illustrated in **Figure 3**, the average daily traffic volumes first significantly decreased in April by approximately 42%, and then gradually rebounded. By July 2020, the traffic volumes were only 10% less than 2019 in the same month. However, starting from November 2020, the traffic volumes started to decrease again and by the end of 2020, the traffic volumes were 16% lower than 2019.

A comparison of the intersection volumes at Canada Avenue and Government Street using the traffic data from a 2017 study and recent 2021 counts indicates that the 2021 traffic volumes are generally 20% and 10% lower in the morning and afternoon peak periods, respectively. This pattern aligns with the trends observed in many other communities where the morning trips see a higher reduction than the afternoon, which could be attributed to more work-from-home behaviour and personal business trips due to COVID-19.

As the situation evolves, it is anticipated that the travel pattern will change either temporarily or permanently. It is recommended to continuously monitor the traffic patterns within and around Duncan to better understand the impact. The traffic volumes used for traffic analysis represent 'normal' conditions without COVID-19's impact.

Figure 3: 2019 vs. 2020 Average Daily Traffic Volumes on the Trans-Canada Highway 10km North of Duncan (Source: MOTI Permanent Counts Stn P-12-4)





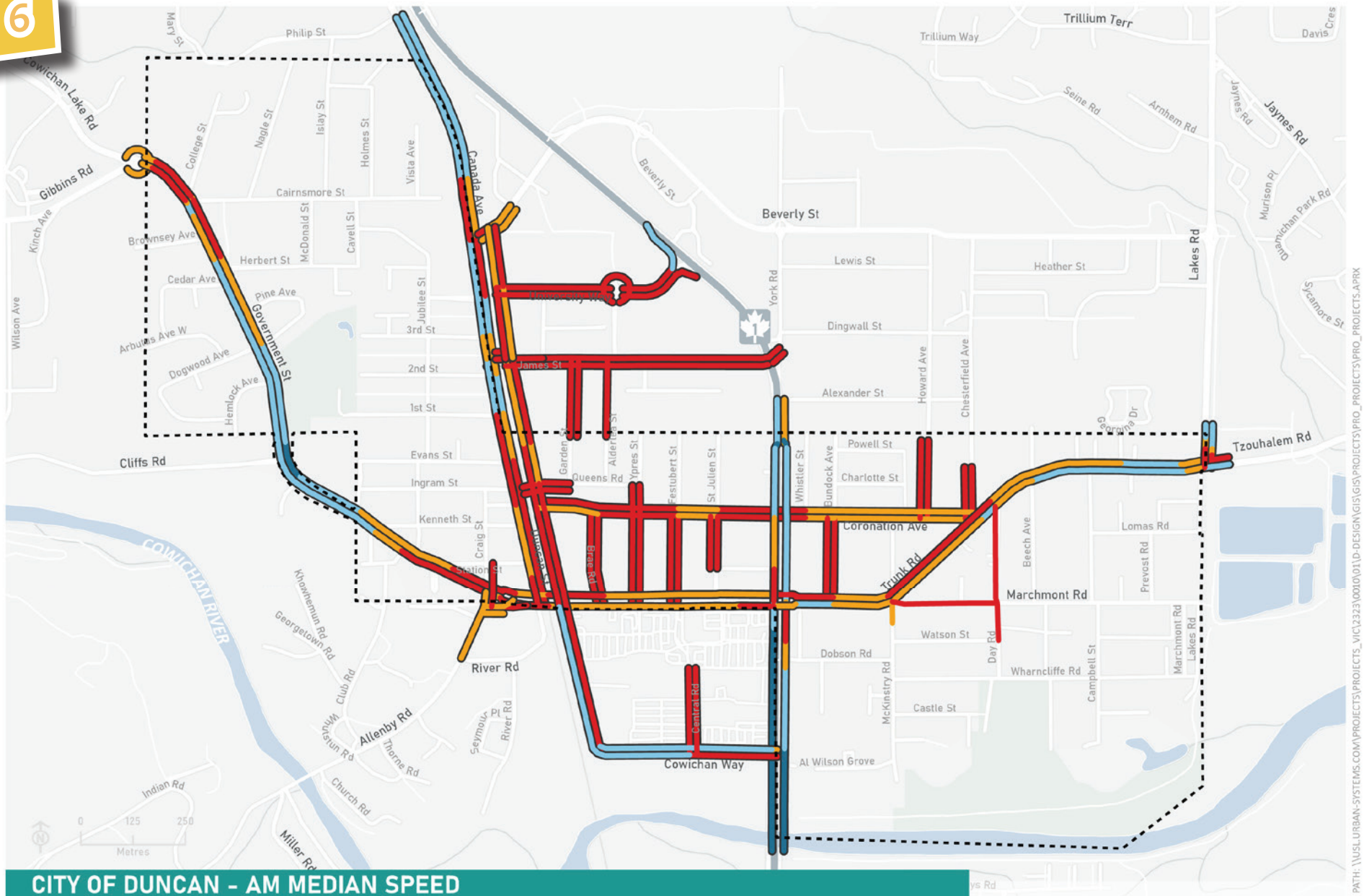
## 5.4 NETWORK PERFORMANCE

### CORRIDOR LEVEL

Travel speeds are often used to indicate mobility patterns. For example, median speed indicates the average operating speed over time, acting as a quick indication of the relationship between traffic demand and the system's capacity.

Map 6: AM Median Speed and Map 7: PM Median Speed, illustrate the morning and afternoon median speed data (2019 TomTom data). A review of the speed data indicates that the travel speeds on Government Street generally in the 30km/hr to 40km/hr range except for the segments with limited access. The travel speeds on Canada Avenue and Duncan Street are generally less than 40km/hr along the corridor and are less than 30km/hr at intersections. The eastbound traffic speed on Cowichan Way approaching the Trans Canada Highway is less than 30km/hr in the morning peak period. While the travel speed performance is similar in the morning and afternoon peak periods, the afternoon peak appears to be slightly busier than the morning peak period.



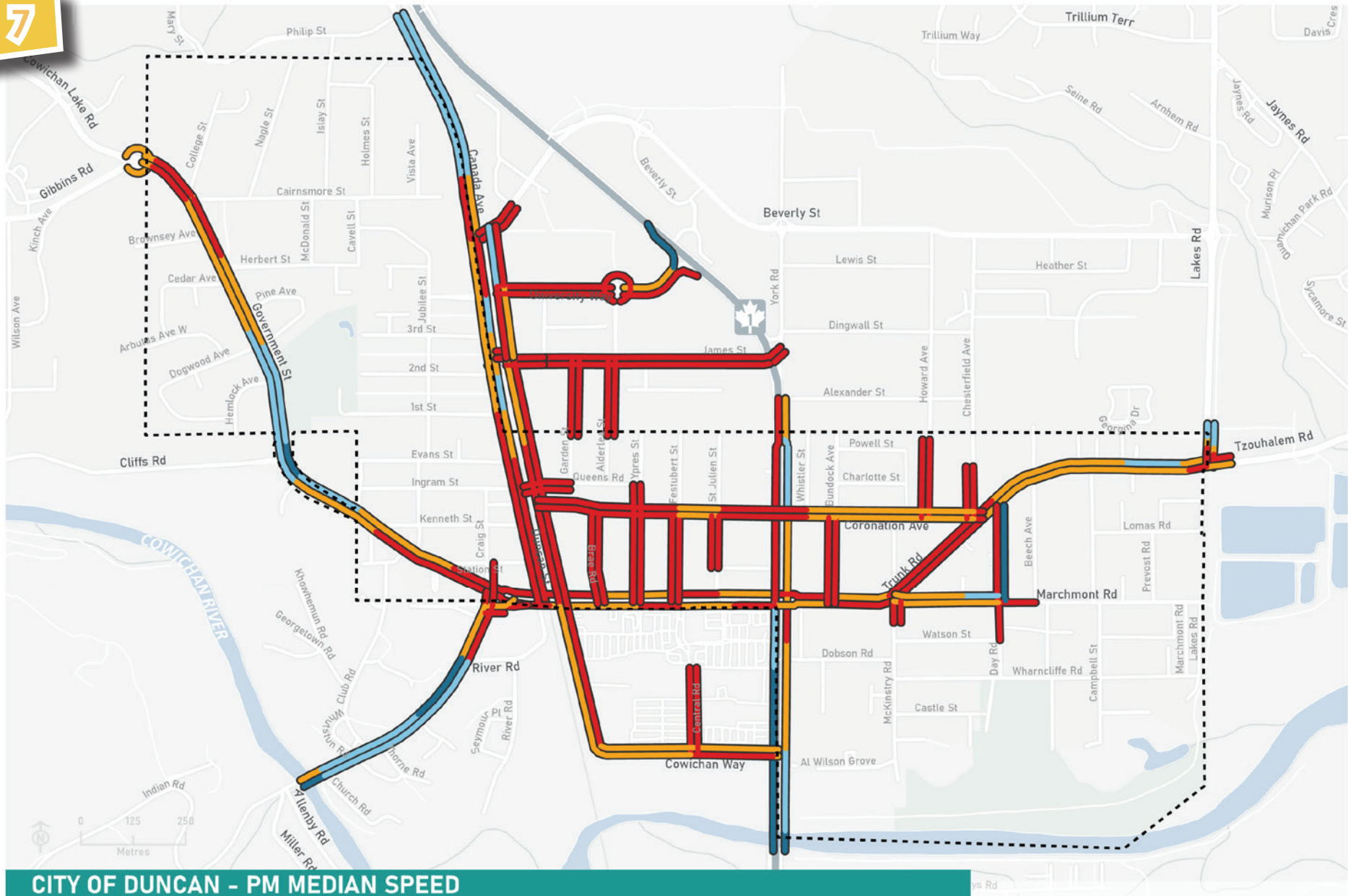


Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; AM and PM Median Speed: USL, 2021; ESRI Basemap

Weekday PM (8-9am) Median (50th percentile speed)   City of Duncan Municipal Boundary

- ≤ 30 km/h
- 30 - 40 km/h
- 40 - 50 km/h
- > 50 km/h





## CITY OF DUNCAN - PM MEDIAN SPEED

Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; AM and PM Median Speed: USL, 2021; ESRI Basemap

Weekday PM (3-4pm) Median (50th percentile speed)

- ≤ 30 km/h
- 30 - 40 km/h
- 40 - 50 km/h
- > 50 km/h

City of Duncan Municipal Boundary



## INTERSECTION LEVEL

Synchro models were developed using intersection volumes (adjusted to “normal” 2021 conditions) to calculate Level of Service (LOS). LOS indicates the average delays experienced by motorists and can be reported at both an intersection level and a movement level. LOS is expressed using letter grades from “A” through “F”, where LOS “A” represents minimal delays, and “F” represents significant delays (85 seconds per vehicle for signalized intersections and 50 seconds per vehicle for unsignalized intersections). LOS “F” often indicates insufficient capacity, and the intersection or movement is likely operating at a failing condition. A letter grade of “D” or better is usually considered acceptable operational conditions by many agencies.

Map 8: AM (PM) Traffic Volume, illustrates the overall intersection LOS with turning movement volumes under the existing conditions.

Key observations regarding existing LOS include:

- ▶ All of the intersections operate at LOS “C” or better at the intersection level, except the intersections of Government Street & Cairnsmore Street (LOS “D” in AM and PM) and Trans-Canada Highway & Cowichan Way (LOS “F” in PM);
- ▶ At the movement level, several movements at major intersections operate at or below LOS “D/E”. For example, most of the movements at Government Street & Cairnsmore Street, the westbound left at Canada Avenue & Beverly Street, the eastbound movements at Canada Avenue & 4th Street, the southbound left at Boundary Road & Government Street and the westbound movements at Allenby Road & Underwood Street;
- ▶ The eastbound movement at Trans-Canada Highway & Cowichan Way operates at LOS “F” in both the AM and PM peak periods; and
- ▶ Motorists experience longer delays and queue lengths during the afternoon peak hour.

The analysis above represents conditions at an intersection-by-intersection level. It is understood that certain intersections with close spacing from one another experience challenges not entirely represented in the LOS figures presented above (e.g., Government St / Trunk Rd) and these locations will be given further consideration through the TMS.





AM LOS.

PM LOS



## 5.5 COLLISION DATA

Traffic and road safety are an important component of creating a safe and welcoming environment for all transportation users. Areas like Duncan, with significant arteries such as the Trans-Canada Highway traversing the City, often experience a higher number of traffic safety incidents than other small communities. For the purposes of the TMS, it is critical to understand where collisions involving vehicles and active transportation users take place to improve safety in these areas.

Since 2015, ICBC has published overall and location-specific data on collisions in British Columbia, including tracking those incidents that result in casualties and directly involve a pedestrian or cyclist. It should be noted that recorded incidents around Duncan also include parts of the Municipality of North Cowichan and Cowichan Tribes lands that are adjacent to the City. Crucially, collisions analyzed in this dataset are only those that are reported to ICBC and therefore do not account for “near misses” or bicycle-pedestrian collisions that go unreported.

### ALL COLLISIONS

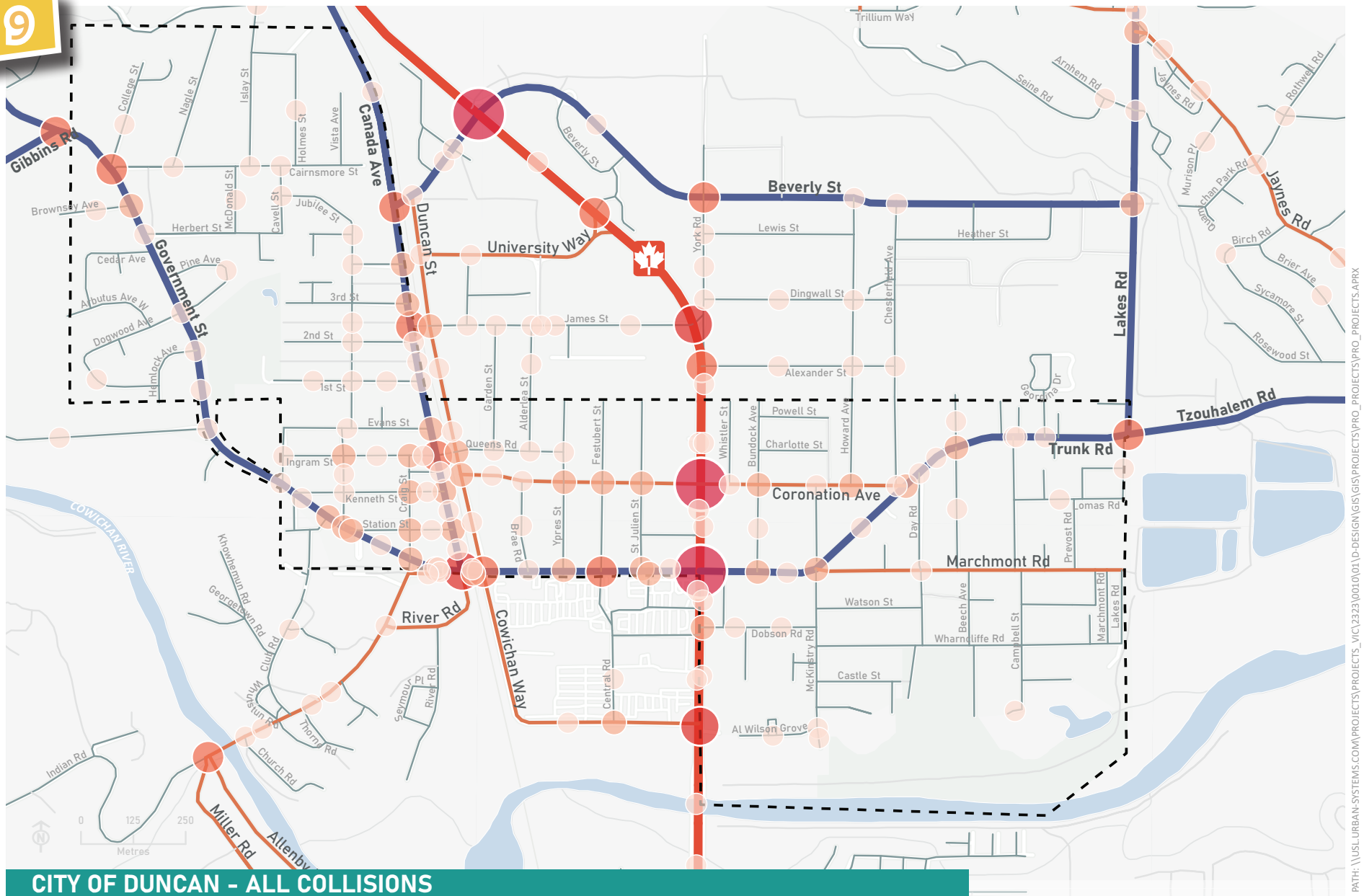
Between 2016 and 2020 a total of 10,740 collisions were reported in the Duncan area, including parts of North Cowichan and Cowichan Tribes lands. The highest number of collisions occurred in 2017 when 2,438 total incidents were recorded. Over these five years, 82% (8,714 total) of all collisions involved only property damage while the remaining 18% resulted in a casualty (either an injury or fatality). Incidents involving casualties steadily increased from 2016 to 2019 before falling in 2020. 441 casualties were recorded in 2019, the highest figure over this period. The locations of all incidents tracked by ICBC in the Duncan area are shown in Map 9: [All Collisions](#).

Several locations in Duncan experienced a higher number of collisions over the past five years. The top ten locations where the most crashes occurred over this period in the City of Duncan are summarized in the **Table 3** on the following page.



Table 3. Locations with the highest number of recorded traffic incidents in the City of Duncan, 2016-2020.

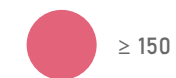
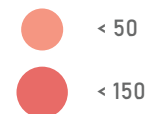
LOCATION	COLLISION TYPE		TOTAL INCIDENTS
	CASUALTIES	PROPERTY DAMAGE ONLY (PDO)	
Trans-Canada Hwy & Trunk Rd	117	152	269
Coronation Ave & Trans-Canada Hwy	68	90	158
Cowichan Way & Trans-Canada Hwy	31	47	78
Canada Ave & Government St & River Rd & Trunk Rd	26	25	51
Lakes Rd & Trunk Rd & Tzouhalem Rd	21	22	43
Beverly St & Canada Ave	19	23	42
Cowichan Way & Duncan St & Trunk Rd	14	26	40
Festubert St & Trunk Rd & Mall Access	14	26	40
Cairnsmore St & College St & Government St	14	15	29
Canada Ave & Ingram St & Queens Rd	10	17	27



Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; Collisions: ICBC, 2020; ESRI Basemap

\*Collisions shown in this map include those incidents involving property damage only (PDO) and those resulting in casualties.

**Collisions (PDO and Casualty)\***



City of Duncan Municipal Boundary



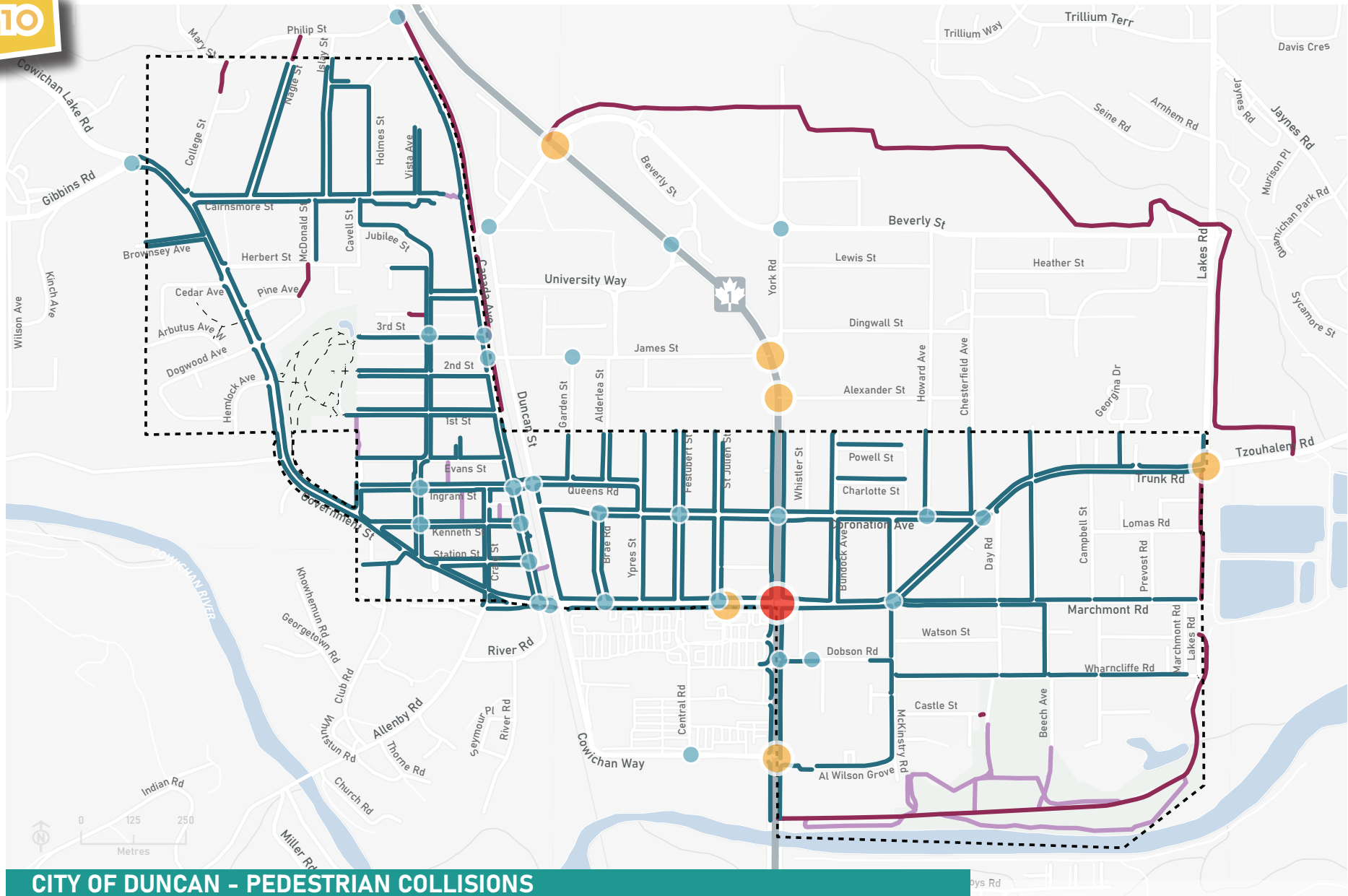
## PEDESTRIAN + CYCLIST COLLISIONS

Overall, 140 collisions or approximately 1.4% of all recorded incidents near Duncan between 2016 and 2020 involved a pedestrian or cyclist. Of these collisions, 81% results in a casualty (113 total). The highest number of collisions involving an active transportation user was recorded in 2018, with 36 total incidents, higher than the 29 collisions recorded in 2016 and 2017.

As shown in **Table 4**, five locations within the City of Duncan have experienced multiple collisions involving a pedestrian or cyclist over the past 5 years. The locations of all incidents involving pedestrians and cyclists are shown in Map 10: [Pedestrian Collisions](#) and Map 11: [Cyclist Collisions](#), on the following pages.

*Table 4. Locations with multiple traffic incidents involving active transportation users in the City of Duncan, 2015-2020.*

LOCATION	COLLISION TYPE		TOTAL INCIDENTS
	PEDESTRIAN	CYCLIST	
Trans-Canada Hwy & Trunk Rd	7	4	11
Cowichan Way & Trans-Canada Hwy	2	2	4
Coronation Ave & Trans-Canada Hwy	-	3	3
Trunk Rd & Mall Access	2	-	2
Lakes Rd & Trunk Rd & Tzouhalem Rd	2	-	2



## CITY OF DUNCAN - PEDESTRIAN COLLISIONS

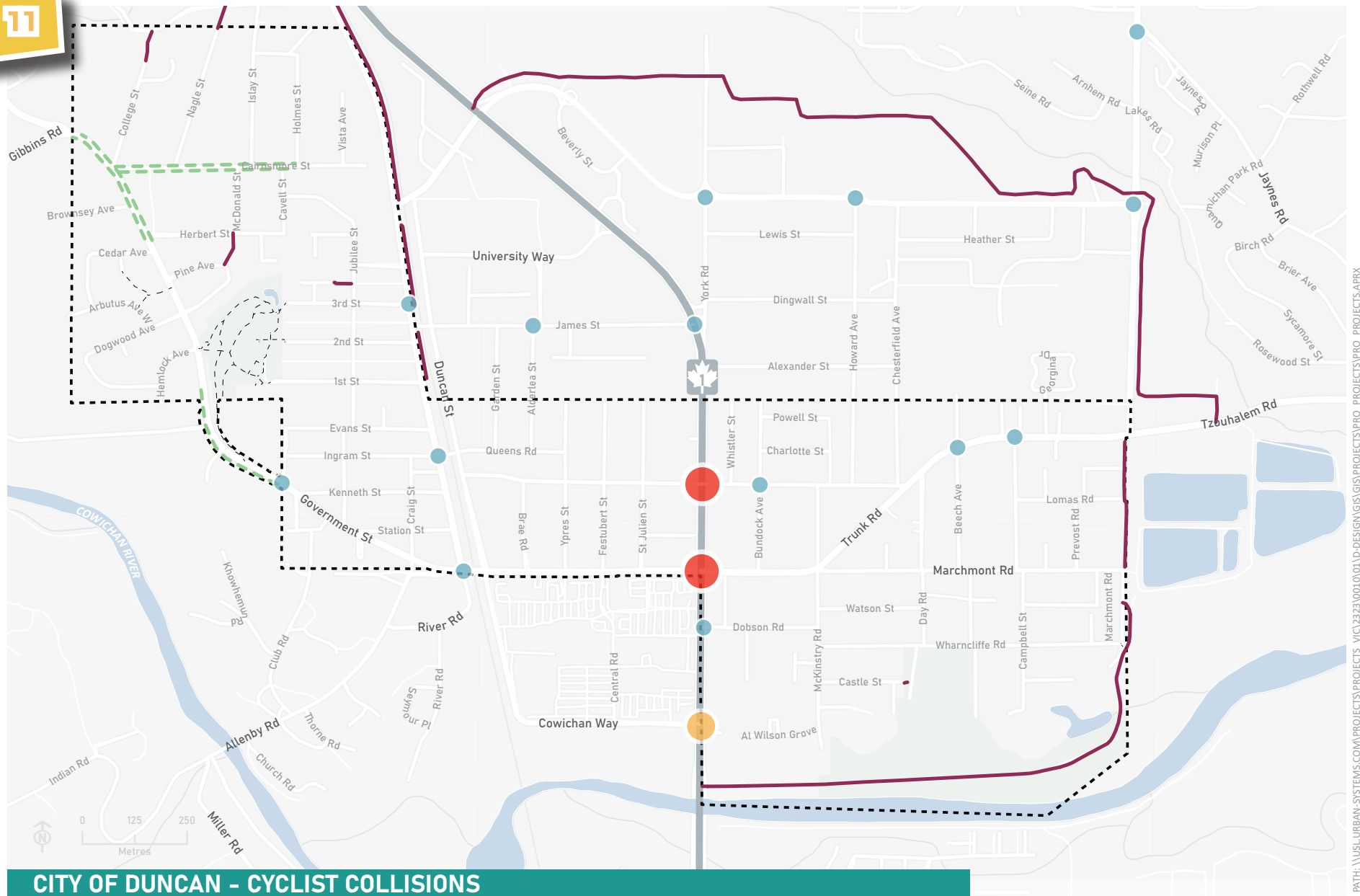
Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; Pedestrian Collisions: ICBC, 2020; ESRI Basemap

### Pedestrian Crash Count

- 1
- 2 - 3
- 4 - 7

- Sidewalk
- Multi-Use Pathway
- - - Pedestrian Connections
- - - Pathway

- - - City of Duncan Municipal Boundary



## CITY OF DUNCAN - CYCLIST COLLISIONS

Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; Cycling Collisions: ICBC, 2020; ESRI Basemap

### Cycling Crash Count

- 1
- 2
- 3 - 4

--- Shared Bikeway (Sharrows)

— Painted Bicycle Lane

— Multi-Use Pathway

--- Pathway

--- City of Duncan Municipal Boundary



UP TO 2 HOURS  
(3.00 max)  
8 am to 6 pm  
Monday to Friday

Imagine that! ARTISAN/DESIGN

STUDIO ONE

SALTSPRING SOAP

MICRO CAR AND  
MOTORCYCLE  
PARKING ONLY



# MULTI-MODAL NETWORK + EXISTING CONDITIONS

## 6.1 NETWORK INVENTORY

This section provides a complete overview of the existing transportation networks in the City of Duncan for the purposes of understanding how people, goods, and services move through the community. The City's existing multi-modal network provides opportunities for pedestrians, cyclists, drivers, buses, and others to reach their desired destinations within the municipality and connect to neighbouring communities and regions. Understanding the existing conditions of this network is essential to informing a TMS that is rooted in the community's experiences moving through, within, and outside of Duncan, and to identify improvements that better this experience for all users.

### STREET NETWORK

Duncan's street network is made up of different components, each serving specific functions in the City's transportation system. While streets provide an important function of ensuring mobility and access to a community, they are not just corridors for moving vehicles and goods. As roadways, the street network represents the fundamental element of the City's transportation system, as it supports not only automobile traffic, but all other modes of travel as well. The street network is also where social interactions, casual recreation, and many commercial activities take place, providing opportunities for vibrant public spaces that help define the City's character.

The City has a well-established road network of approximately 27.7 km of roads that connect homes, businesses, services, and local amenities, shown in Map #: Street Network. The community's road system is primarily a grid network which provides strong connectivity and access to adjacent areas, with some organic, "loop and lollipop" road layouts in some of the City's peripheral residential neighbourhoods. As discussed in previous sections, travel by private vehicle remains the dominant mode of transportation in Duncan today, as vehicles account for over 71% of trips made by Duncan residents.



## STREET CLASSIFICATIONS

Like other communities, Duncan's street network is organized hierarchically into classifications that reflect the characteristics of each street and its role within the network. These street network classifications generally describe the street's traffic volume and type and function within the network. Based on a traditional street classification, the City's street network is organized into the following classifications that will be reviewed through the TMS process.

- ✔ Arterial Roads provide for through movement of traffic. Arterial streets generally carry more than 5,000 vehicles per day and have limited private access and typically have a speed limit of 50 kilometres per hour. There are 5.09 km of arterial roads in Duncan, approximately 18% of the community's street network.
- ✔ Collector Roads provide links between local roads and trans traffic to arterial streets. Collector streets are not intended for the use of non-local and commuter through traffic. Collector streets usually accommodate between 1,000 and 8,000 vehicles per day at speeds of 50 kilometres per hour. There are 2.27 km of collector roads in Duncan, approximately 8.2% of the community's street network.
- ✔ Local Roads provide direct access to adjacent land uses and serve traffic of local importance. Local roads should integrate well with major roads. Trucks and buses are not expected on local roads, but cyclists and pedestrians should be integrated into the design. Local roads typically accommodate traffic volumes of less than 700 vehicles per day and speed limits of 30 or 40 kilometres per hour. There are 19.8 km of local roads in Duncan, approximately 71.5% of the community's street network.

Provincial highways, like the Trans-Canada Highway, represent the highest level of the street classification, however these roadways are under the jurisdiction of the MoTI. The Trans-Canada Highway (TCH) plays a defining role in both the City's multi-modal network and Duncan's overall character and land use and is discussed in more detail to the right. Highways in Duncan cover 0.55 km, 1.9% of the street network.

## THE TRANS-CANADA HIGHWAY CORRIDOR

Highway 1, known as the Trans-Canada Highway (TCH), is one of the defining features of Duncan's transportation networks. The highway corridor bisects the City, with the Downtown Area and Cairnsmore neighbourhood to the west and the Marchmont neighbourhood to the east. Regionally, the TCH is the primary thoroughfare connecting the Capital Region north through the Cowichan Valley to the Nanaimo Region. As such, the TCH is among Vancouver Island's busiest routes for commuter, commercial, and recreational travel.

For Duncan residents, the corridor plays a key role connecting to destinations with the City and the rest of the CVRD but can also be seen as a key barrier to safe and comfortable transportation within the community. High traffic volumes, the number of direct accesses to the highway, and the number of heavy vehicles result in poor conditions for most modes in and around the corridor. Active transportation is not supported by the current design of the TCH, with most vehicle incidents involving pedestrians or cyclists occurring within the highway corridor. This creates a direct barrier for fostering a truly multi-modal network in Duncan.

As previously discussed, the TCH is under the jurisdiction of MoTI and as such the City of Duncan lacks direct control over decision-making in the corridor. The City has collaborated with MoTI and other stakeholders on two corridor management plans in 2005 and 2014, respectively, that propose substantial changes to access configurations, active transportation infrastructure, and safety standards. Through the TMS process the City will continue to work with MoTI to implement these proposed changes, and work to improve those elements of the TCH area that area within municipal control.



**RECTANGULAR RAPID FLASHING BEACON (RRFB)**  
RECENTLY INSTALLED ON CANADA AVENUE

## INTERSECTIONS + TRAFFIC SIGNALS

There are a number of traffic signals in the City of Duncan, including full signalized intersections and pedestrian activated signals. As shown in Map 12: [Street Network](#) on the following page, traffic signals are concentrated along major corridors, including Trunk Road, Government Avenue, Canada Avenue, along with intersections along the TCH, which are under the MOTI's jurisdiction. Over recent years, the municipality has installed several new rectangular rapid flashing beacons (RRFBs) at pedestrian crossings along important corridors.

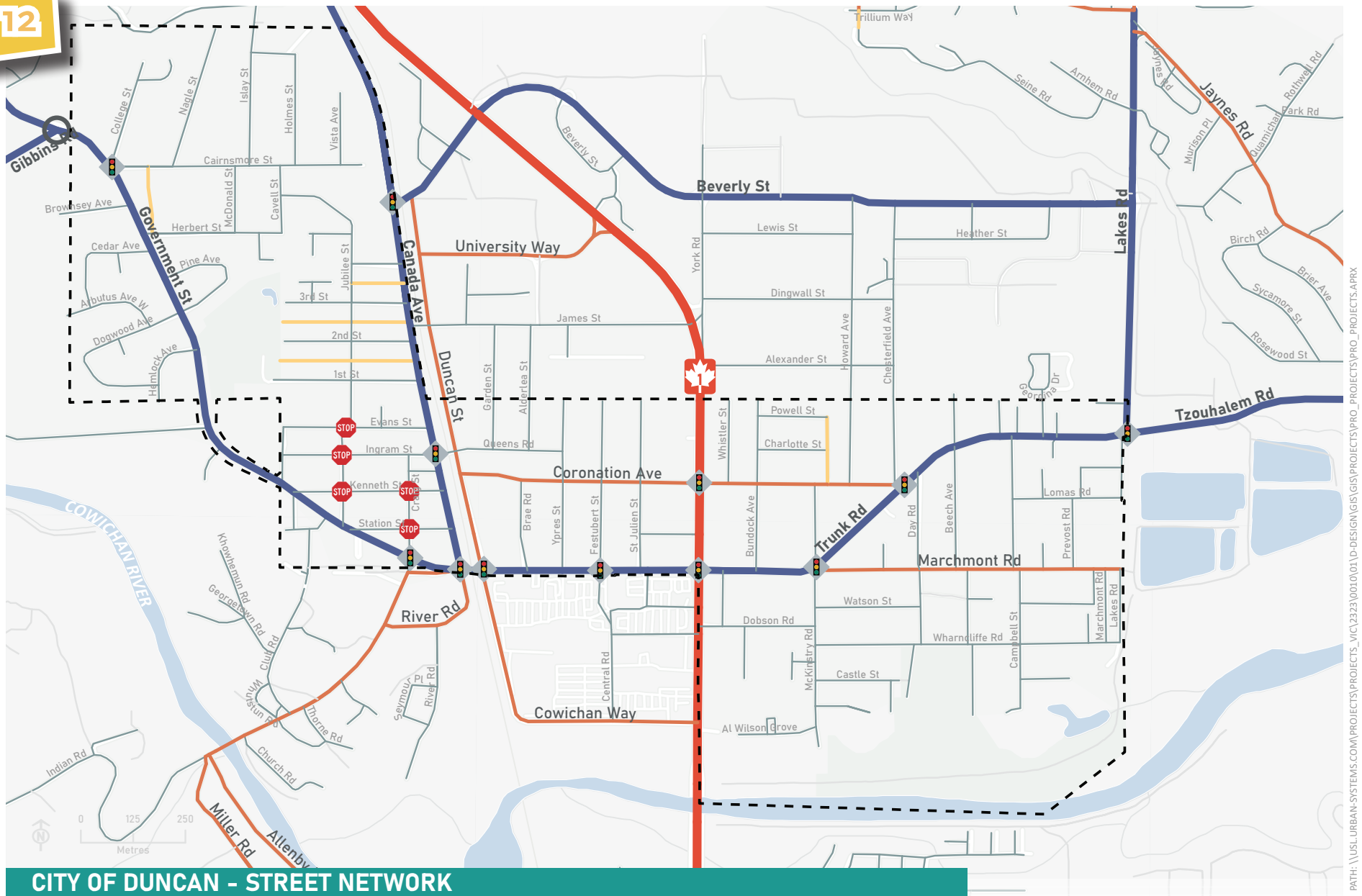
The City is also intending to re-configure the Government Street / Cairnsmore Street intersection with a new roundabout to replace the existing traffic signal.

## GOODS MOVEMENT

Duncan's streets play a key role in facilitating the movement of goods and services within the municipality, region, and across Vancouver Island. Truck routes in Duncan typically provide connections between commercial centres and the Trans-Canada Highway. Trunk Road and Canada Avenue are two of the key connections between the Trans-Canada Highway and Downtown Duncan and are the primary truck routes into the community centre from the TCH.

The Trans-Canada Highway corridor is a critical route for goods movement between the Capital Region and Nanaimo and communities to the north. The volume of large commercial vehicles on this route is an on-going issue for the community due to the challenges presented to safety for vehicles, pedestrians, and cyclists along the Trans-Canada Highway and effects on local traffic.





Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; Crossings: USL, 2021; ESRI Basemap

All-Way Stop

Signalized Intersection

Roundabout

#### Road Class

Highway

Arterial

Collector

Local

Lane

Other

City of Duncan Municipal Boundary

## WALKING & ROLLING

Walking or rolling is part of every trip, whether it be to the nearest bus stop, your car, or a bicycle rack. As such, walking and rolling are the most fundamental form of transportation and includes the use of mobility aids such as a wheelchair or scooter. Creating a pedestrian-friendly environment can help reduce how often people drive for short trips, increase social interactions, and encourage healthy habits.

Most walking trips are short trips, as the average walking trip distance is 1.7 km (approximately a 25-minute walk). Walking can be an attractive alternative to driving for short trips, especially where destinations are nearby, and they can be accessed through direct and convenient routes. The 2016 Census indicates that Duncan residents already make a high proportion of their trips on foot, which represents an already strong pedestrian-oriented community and walking culture in the City. Origin-destination information described in **Section 5.1**, reinforces this finding with approximately 28% of the trips starting or ending in Duncan being accomplished through walking or rolling.

Many areas of Duncan, including compact, mixed-use areas like the downtown core, the proposed mixed-use neighbourhood in Cairnsmore, and more residential neighbourhoods, such as Marchmont, are generally pedestrian-oriented and have the potential to further increase walking trips.

## Sidewalk Network

Sidewalks form the foundation of Duncan's pedestrian network. The benefits of sidewalks for pedestrians include physical separation from traffic, making for safe and comfortable walking trips. The City of Duncan has an extensive sidewalk network, shown in Map 13: Pedestrian Network, which provides excellent coverage of the community's road network, allowing residents to walk and roll to key destinations from most areas of the City. The City's sidewalk network covers approximately 28.12 km throughout the community. Around Downtown Duncan and on major corridors, sidewalks are regularly found on both sides of the street, while in outlying residential neighbourhoods some streets have sidewalks on only one side of the street or no pedestrian facilities. The distribution of Duncan's sidewalk network in relation to the City's road hierarchy is outlined in Table 5, including the presence of sidewalks on both or one side of the street, or the absence of sidewalks.

Table 5. Sidewalk presence in the City of Duncan by road class.

	ROAD CLASS			
	HIGHWAY	ARTERIAL	COLLECTOR	LOCAL
Sidewalks on Both Sides	543 m	3,674 m	1,270 m	6,147 m
Sidewalk on One Side	-	1,393 m	834 m	5,056 m
No Sidewalk	4 m	18 m	162 m	8,624 m

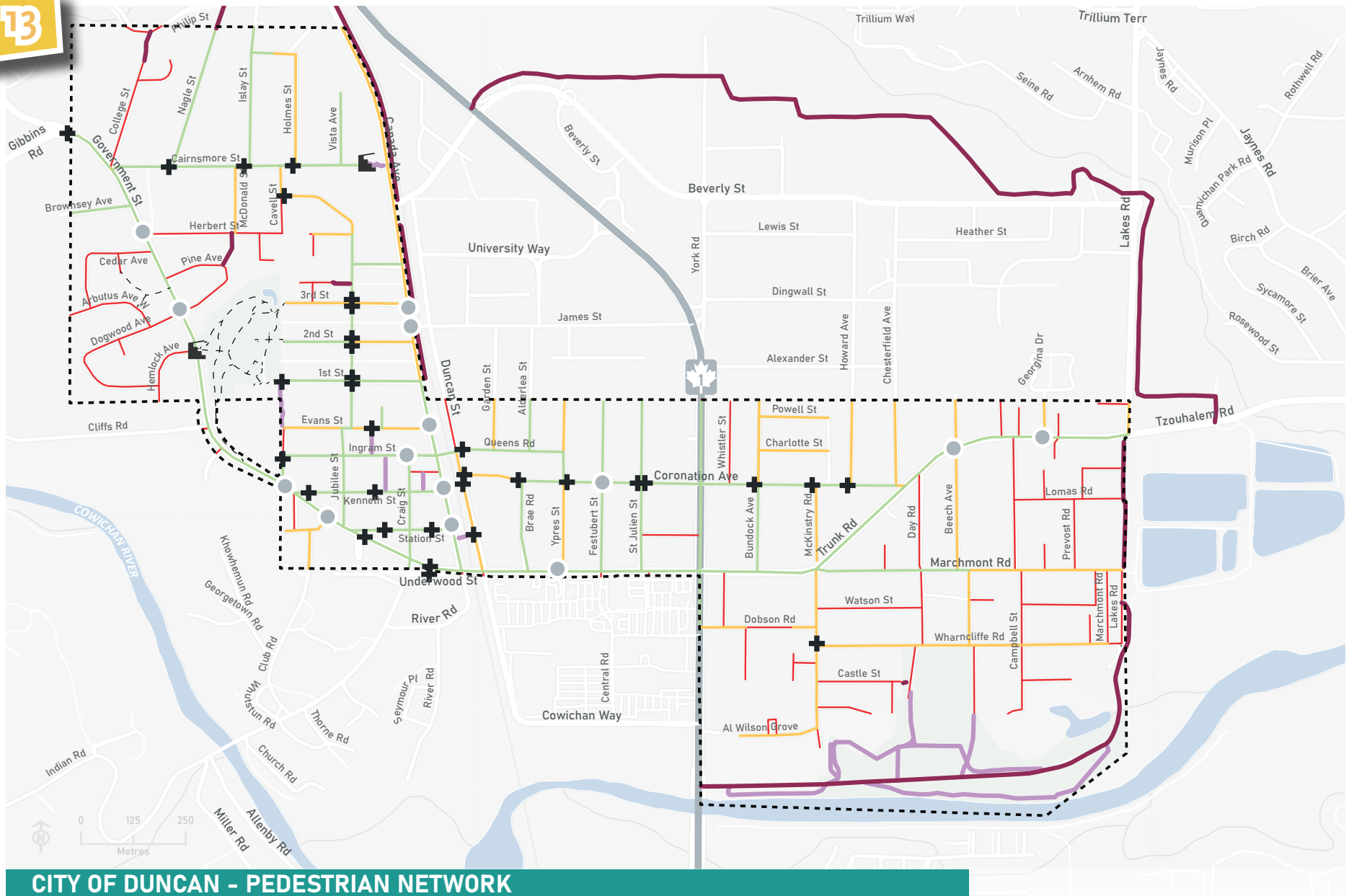
Despite the presence of sidewalks on most of the City's streets, some pedestrian facilities are not considered to be accessible due to impediments on the sidewalk, improper transitions to the street, or other issues that are described in more detail in the Accessibility Audit (Section 6.2).

## Trail Network

Duncan's trail network complements the City's sidewalks to create a complete pedestrian network. These trails are mostly found in the community's parks, such as McAdam and Rotary Parks, Centennial Park, and Heiwa Park. Trails increase the number of pedestrian connections and the permeability of the pedestrian network, allowing pedestrians to make shorter trips that are also separated from traffic. Other off-street connections are provided through mid-block connections, especially around the Downtown core, that are occasionally informal or across private lands, but increase the convenience of walking between blocks.



FRIENDSHIP TRAIL ALONG THE E+N RAIL CORRIDOR, DOWNTOWN DUNCAN



## CITY OF DUNCAN - PEDESTRIAN NETWORK

Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; Routes: USL, 2021; ESRI Basemap

✚ Crosswalk

● Pedestrian Activated Crossing

⚓ Stairs

— No Sidewalk

— Sidewalk One Side

— Sidewalk Both Sides

— Multi-Use Pathway

— Pedestrian Connections

- - - Pathway

--- City of Duncan Municipal Boundary



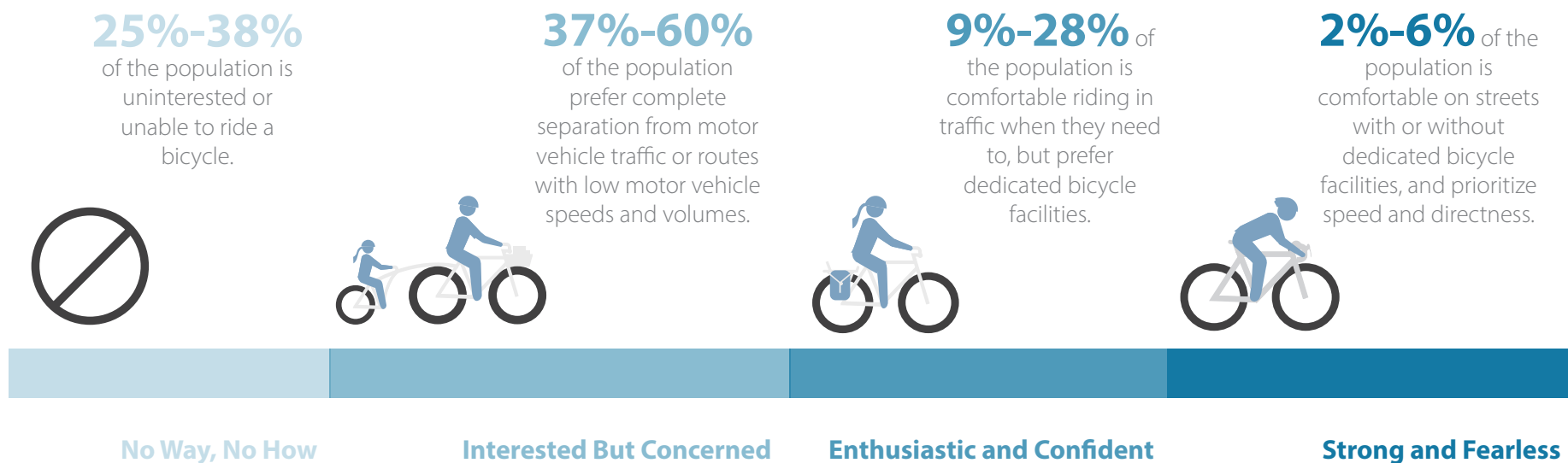
## CYCLING

Cycling is a popular activity for commuting, recreation, and service trips such grocery shopping or other errands. Creating a bicycle-friendly community can help foster a more balanced transportation system that encourages healthy and active living, creates a more livable community, and results in cost-effective and efficient solutions in terms of a community's infrastructure investments. Cycling allows for residents to accomplish daily trips that are too long to be completed by walking. Developing a safe and comprehensive cycling network can therefore provide a practical alternative to private vehicle travel.

As previously discussed in **Section 5.1**, cycling was found to represent only 1% of daily trips in Duncan. When compared to other communities of a similar size there is plenty of room to increase the cycling mode share in Duncan through targeted infrastructure development and cycling programs. With new technologies such as electric bicycles becoming increasingly popular and more affordable, cycling is becoming a viable mobility option for more people, allowing for longer trips, navigating steep topography, and transporting greater loads.

Specific consideration of the needs of each type of cyclist is important to creating facilities and supporting programs that appeal to a broad range of Duncan residents. This includes accommodating confident cyclists travelling over long distances and more novice riders cycling to school or for recreation, as examples. The generalized “Four Types of Cyclists” are introduced below.

Figure 4: Four Types of Cyclists



## Cycling Network

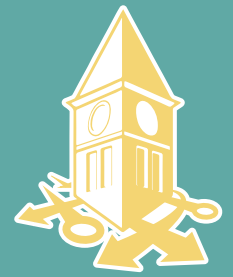
Duncan's existing bicycle network is shown in Map 14: [Cycling Network](#) on the following page. The network consists of three types of facilities: bicycle lanes, shared roads, and multi-use pathways, which extend approximately 5.5 km through the community. Of these facilities there is approximately 1.5 km of painted bicycle lanes, 1 km of shared roads typically demarcated with "sharrows", and 2.7 km of multi-use paths like the Friendship Trail and the Dike Trail. Currently, these facilities do not form a continuous and connected cycling network in Duncan, with significant gaps in safe routes for cyclists. Without improved network connectivity, these conditions result in uncomfortable conditions for many cyclists.

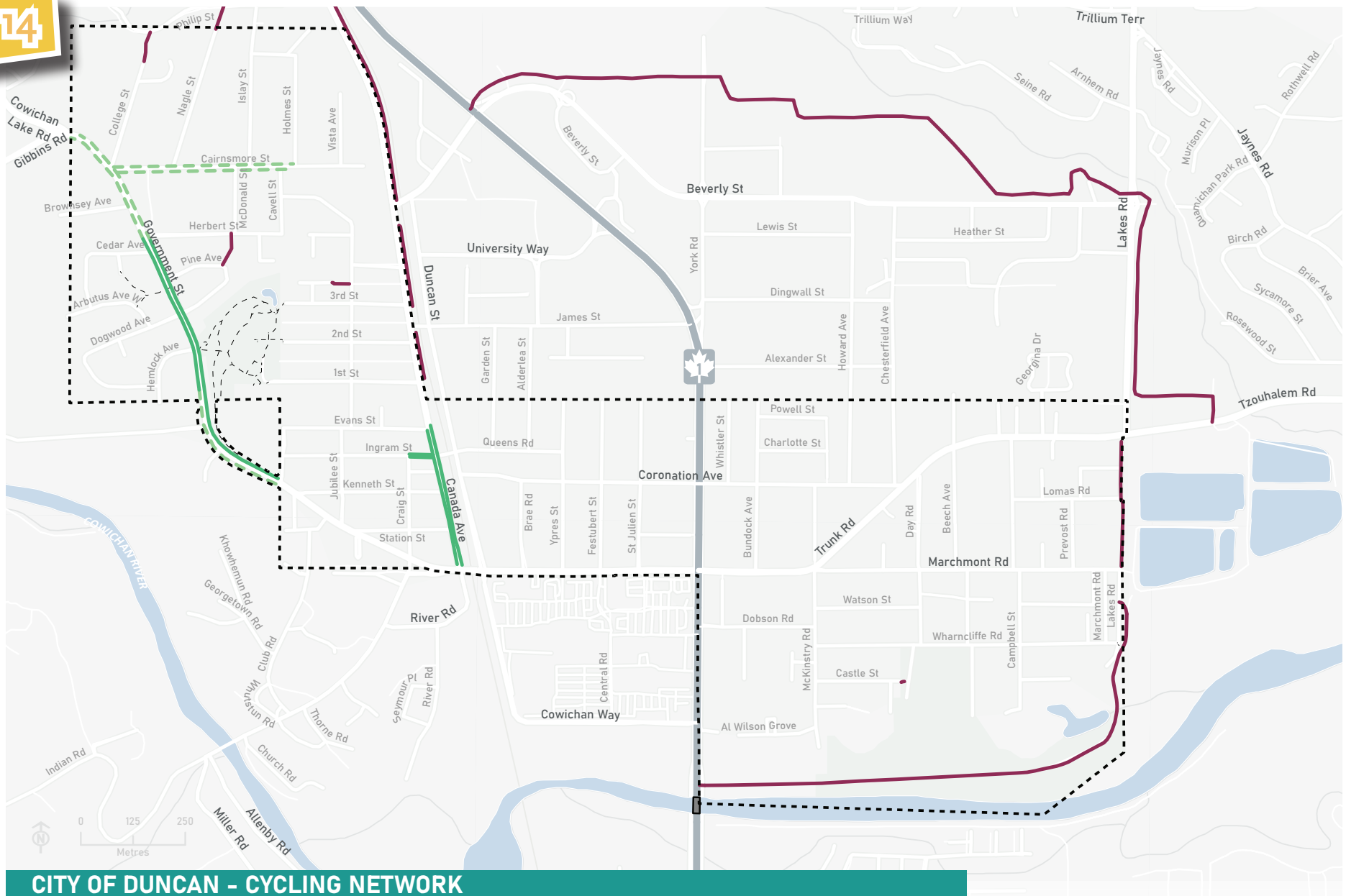
The Duncan Area Active Transportation Plan (2014) identifies a long-term cycling network. The goal of that document was to identify opportunities to create a connected network of comfortable, safe cycling facilities. Key directions from that document will help guide work on the TMS.

Wherever possible, future bicycle facilities should be designed to be comfortable for all ages and abilities (AAA). The City should review traffic volumes and speeds on all existing cycling facilities to ensure they meet the guidelines in the B.C. Active Transportation Design Guide to be comfortable for people of all ages and abilities. The City is also currently working on developing dedicated multi-use facilities along the eastern side of the Trans-Canada Highway 7th, which would provide an important north-south connection through the City from the Dyke Trail towards Downtown Duncan and other commercial areas along the highway corridor.

## Bicycle Parking

As discussed in **Section 4.2**, the City outlines requirements for bicycle parking supply and design in the Zoning Bylaw. These facilities provide an important complement to linear cycling routes, providing options for both short- and long-term bicycle parking throughout the City. Short-term bicycle parking is regularly provided at important public destinations such as parks, schools, civic facilities, and as part of the streetscape in high traffic areas, which also provide longer term bicycle parking for employees. Private development is also required to provide short- and long-term bicycle parking based on the specifications of the Zoning Bylaw.





## CITY OF DUNCAN - CYCLING NETWORK

Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; Routes: USL, 2021; ESRI Basemap

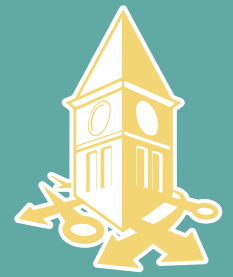
- Shared Bikeway (Sharrows)
- Painted Bicycle Lane
- Multi-Use Pathway
- Pathway
- Multi-Use Bridge
- City of Duncan Municipal Boundary

## PUBLIC TRANSIT

Convenient and attractive public transit is critical to creating a vibrant and sustainable community. Transit, in combination with walking and cycling, can provide an attractive alternative to automobile travel for both local and regional connections. In many cases, transit can offer competitive travel times to the automobile and reduce the environmental and community impacts of transportation. As such, well-designed transit can provide a mobility service that allows riders of all ages and abilities to access a variety of destinations and enhance the viability of other sustainable modes.

Transit service in Duncan is provided through the Cowichan Valley Regional Transit System (CVRTS). Planning and scheduling support are provided by BC Transit, with service levels and fare decisions determined by the CVRD in partnership with local governments throughout the region.

Currently transit is among the least frequently used modes of transportation in Duncan. As described in **Section 5.1**, approximately 3% of Duncan residents regularly use transit to reach local and regional destinations, according to the most recent Census. Effective transit is amenable to Duncan's inherent walkability, with local or regional transit service available to most residents within a reasonable walking distance of residential neighbourhoods and mixed-use centres. Transit can also be a primary means for those travelling to Duncan to access the City's employment and commercial uses, along with other important destinations. Duncan's transit network is described in this chapter, along with other essential components of transit service such as stop amenities.



## TRANSIT FUTURE ACTION PLAN

A Transit Future Action Plan process is set to commence in 2021 that will identify short-term priorities to improve the transit system in the Cowichan region. This will build on the Transit Future Plan (identified in Section 4.3) and will consider opportunities to improve transit service and enhance transit infrastructure.





## Transit Network

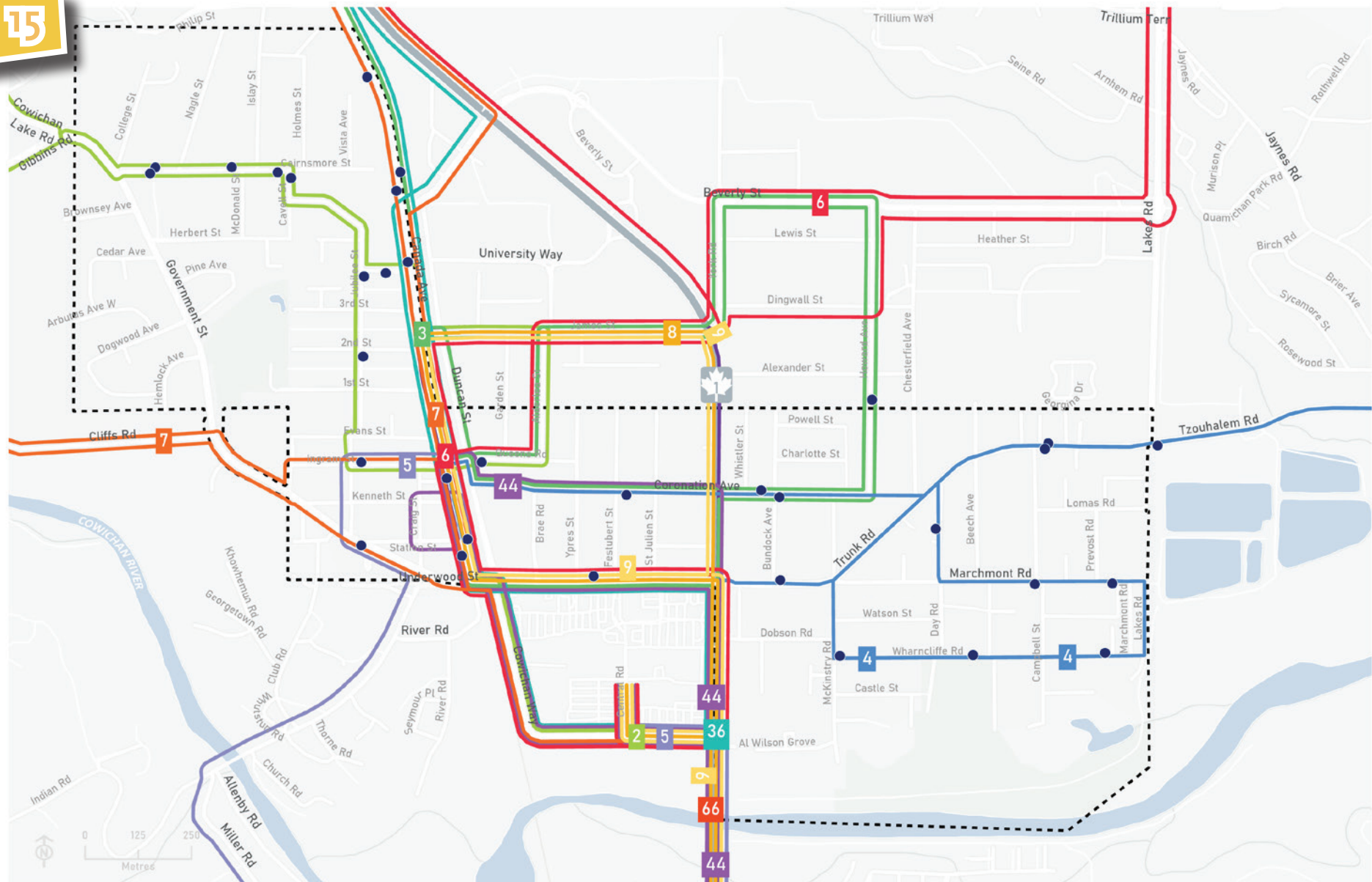
Duncan's transit network provides local and regional connections between the City's neighbourhoods and neighbouring jurisdictions, as shown in Map 15: [Transit Network](#). Regional connections are important to the City's transit network, with the Canada Avenue transit exchange acting as a hub for many of the routes between Duncan and the rest of the Cowichan Valley, along with connections to other regions. Each of the ten routes currently operating in the City of Duncan converge on the transit exchange, creating a central location for transit access for Duncan residents and providing residents of neighbouring communities access to amenities in the City's core.

Local service like Route 2 connects Downtown Duncan and the Highway Corridor area to the Cairnsmore neighbourhood and beyond to the Cowichan District Hospital, Mount Prevost School, and Cowichan Commons. Routes 3 and 4 provide also provide local service between areas of Chesterfield, Marchmont, and the Highway Corridor to the community core and neighbouring communities like Maple Bay.

Regional connections to the CRD are offered through Route 66 on weekdays and Route 44 on Saturdays, which allows residents to commute to or visit Victoria throughout the week. Commuters travelling northward can use Route 36 to reach Ladysmith on a limited schedule where they can transfer to routes destined for the City of Nanaimo and Nanaimo Regional District. Other routes operating in Duncan, including routes 5, 6, 7, 7X, 8, 9, provide service surrounding communities like Cowichan Bay, Lake Cowichan, Maple Bay, Crofton, Chemainus, Cowichan Tribes lands, and various areas of the CVRD Electoral Areas.

Like other small communities, transit in Duncan faces several challenges. Despite the relatively high number of transit routes servicing the community, mode share data suggests that many residents prefer to use other forms of transportation. Convenience is a significant challenge since many routes lack regular service. For example, many of the long-distance routes connecting Duncan with other communities in the Cowichan Valley run four or fewer times throughout the day or only run in one direction at peak commuting times. The lack of regular service could discourage potential riders that wish to have flexibility in their daily schedule.

Duncan residents can also request custom transit service through BC Transit's handyDART service. These services offer door-to-door service for people with physical or cognitive impairments who may not be able to independently use the conventional transit system. HandyDART uses smaller vehicles and offers shared rides.



## CITY OF DUNCAN - TRANSIT FACILITIES AND ROUTES

Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; Transit Routes: BC Transit, 2021; ESRI Basemap

- Transit Stop
- City of Duncan Municipal Boundary

## Boarding + Alighting

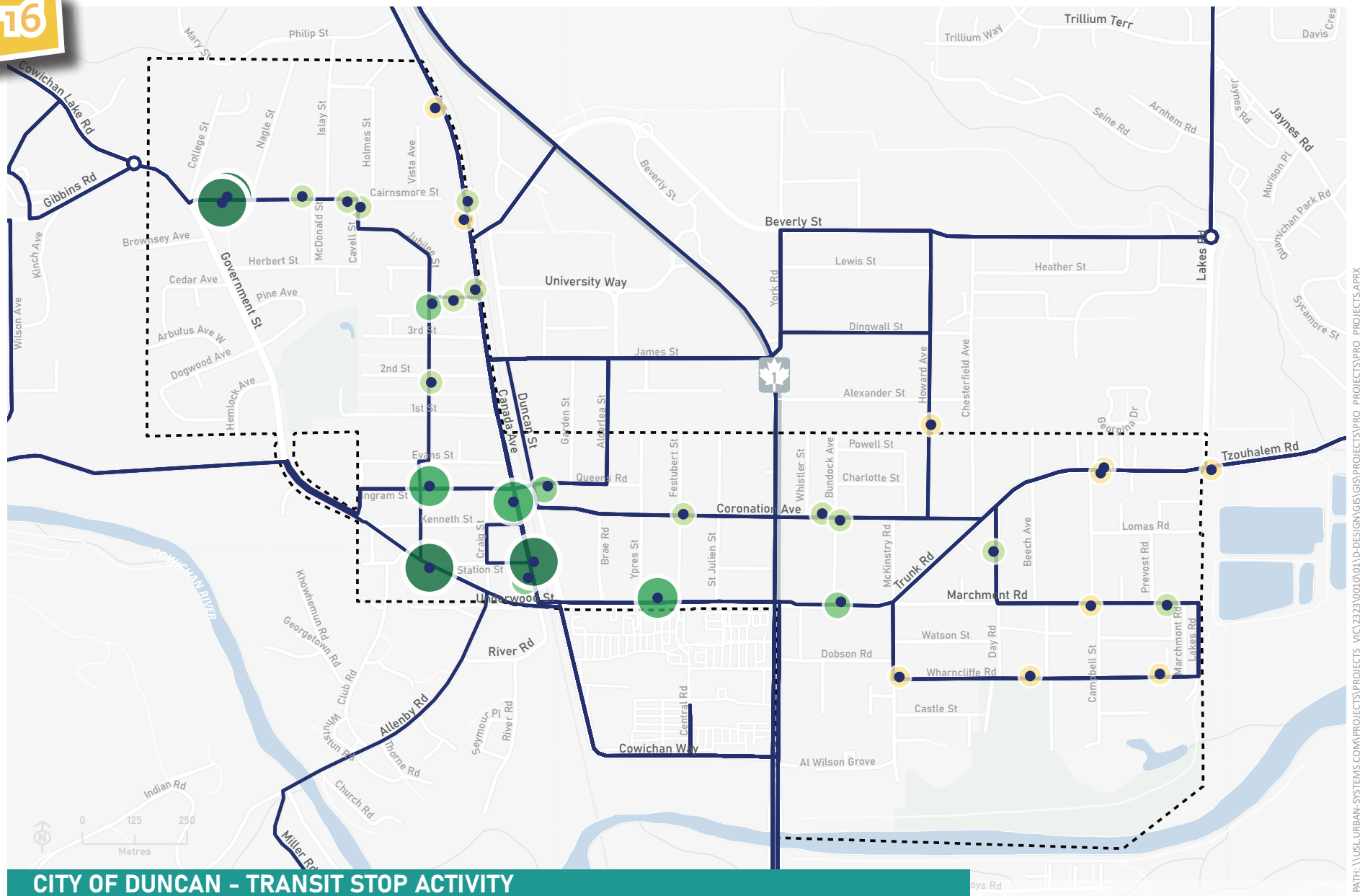
To understand where the most active locations for transit in Duncan, information from BC Transit was compiled to visualize daily boardings and alightings at each of Duncan's transit stops. Based on this analysis, the Duncan Transit Exchange experienced among the highest activity level for transit users, as expected. In addition to the exchange, it was also found that the stops along Cairnsmore between College Street and Nagle Street, Government Street at Station Street experienced similar daily traffic, as shown in Map 16: [Transit Stop Activity](#). It is important to note that the information presented was collected in 2019 and therefore provides a snapshot of conditions before the onset of the COVID-19 pandemic in 2020.

## Transit Stop Amenities

Transit stop amenities are important for making transit a convenient, attractive, and accessible transportation mode. Bus stop amenities, including benches and shelters, provide weather protection and comfortable places to rest while waiting for the bus, while route schedules can ensure that riders have route information without requiring access to phone service or the internet. Available stop amenities throughout the City vary largely based on the number of riders expected and the frequency of service along the route.

A complete inventory of transit stop amenities was assembled with information provided by BC Transit. The findings of the inventory are shown in Map 17: [Transit Stop Amenities](#) on the following pages. The inventory details the amenities discussed above and identifies potential locations of concern for accessibility for transit users. As the TMS project progresses, opportunities to enhance transit amenities in targeted locations will be assessed based on this inventory.





Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; Transit Routes, Stops, Activity: BC Transit, 2021; ESRI Basemap

\*Total transit activity represents stop on/off activity for weekday average per service day. Actual route activity may vary as not all buses are equipped with APC (on-board passenger counters).

#### Total Transit Activity\*

- ≤ 1
- 1 - 5

- 5 - 10
- 10 - 15
- 15 +




- Transit Stop
- Transit Route
- City of Duncan Municipal Boundary



## CITY OF DUNCAN - TRANSIT STOP AMENITIES

Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; Transit Routes and Stops: BC Transit, 2021; Stop Amenities: USL, 2021; ESRI Basemap

## Amenities

-  Bench Only
-  Shelter and Bench
- Other Stop Characteristics**
  -  Accessibility Concerns

- Route Schedule
- Garbage
- Garbage and Route Schedule
- No Other Amenities or Concerns

-  Transit Route  
 City of Duncan Municipal Boundary



## DOWNTOWN PARKING

Managing parking in the downtown core has been identified as a consistent issue in Duncan. Demand for parking, both on- and off-street, places pressure on corridors in adjacent residential neighbourhoods and is a key concern for local businesses and employers. Improving parking management systems can help communities reduce dependence on single-occupancy vehicles and increase the attractiveness of transit and active modes, while also potentially generating revenue from pay parking.

To better understand parking challenges in Downtown Duncan, an inventory of on- and off-street parking supply was developed. For the purposes of the inventory, the downtown area was consistent with the neighbourhood boundaries defined in the City's Official Community Plan. The inventory is shown in Map 18: [Downtown Parking Inventory](#).

Note that the parking inventory only provides information on the total number of on- and off-street parking stalls, and does not include performance measures such as occupancy, duration, and turnover.



## On-Street Parking

On-street parking supply in Downtown Duncan varies in form and restrictions, from defined stalls with specific time restrictions in the immediate downtown core to less formal on-street parking in adjacent neighbourhoods. While on-street parking provides space for vehicles to park close to homes, businesses, and other amenities around Downtown, these spaces can also play an important role in providing loading and delivery space or other curbside activities.

As shown in Map 18: [Downtown Parking Inventory](#), the on-street parking inventory concluded that there are approximately 800 on-street parking spaces in Downtown Duncan. Most on-street spaces are currently free with time restrictions varying from two hours to all day parking. Paid on-street parking is concentrated exclusively in central, high traffic locations around Canada Avenue and Duncan Street. Approximately 4.5%, or 36 total parking spaces, require a \$2 per day payment or a monthly pass. Re-parking is also not allowed within the downtown core, between Boundary Avenue, Evans Street, Duncan Street, and Government Street.

Specialty parking stalls, such as accessible or small vehicle spaces are also an important component of the on-street parking supply. Approximately 45 accessible parking stalls were identified around downtown, 33 of which were located on-street. In addition, the City offers a Disabled Employee Parking Exemption Permit, which allows any persons with a valid Social Planning and Research Council of BC Parking Permit for People Disabilities to park in any time regulated time for up to 8 hours per day.

Motorcycle and micro-vehicle parking stalls, suitable for vehicles less than 3.8 metres in length, are also found on many streets in the downtown core, with a total of 9 stalls identified in the parking inventory. Other specialty stalls include individual spaces for RCMP use, tour buses, and commercial vehicles and taxis.

## Off-Street Parking

Off-street parking is a combination of public and private lots that fulfill a similar role to on-street parking, with greater restrictions and limitations for those looking to park in these areas. Most of the off-street parking around Downtown Duncan is reserved for the specific use of customers or employees of a business or organization, or for residents at their homes. Approximately 1,799 off-street parking spaces were identified throughout the Downtown area, around 260 of which are dedicated for public use. Most public off-street parking is either free and restricted to a three-hour maximum, \$2 per day, or a monthly pass. Many of the stalls requiring payment are focused in two lots accessed from Canada Avenue, where fees are collected at stations in the lots. Two electric vehicle charging stalls are also offered in the southern lot.





Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; Downtown Parking Stalls, On-Street Parking, Off-Street Parking: City of Duncan, 2021; ESRI Basemap

#### Accessible Stalls

- Accessible Parking
- Commercial Vehicles and Taxis
- EV Charging

#### Motorcycle and Micro Car Only

- RCMP Only
- Tour Bus

#### Restriction

- No Parking
- Private Parking
- \$2 per Day / Monthly Pass
- Two Hour Free Parking

#### Three Hour Free Parking

- Free All Day
- Unknown
- Off-Street Parking
- City of Duncan Municipal Boundary





## 6.2 ACCESSIBILITY AUDIT

A specialized universal design firm - Universal Access Design (UAD) - conducted an accessibility audit around the City of Duncan to assess the suitability of transportation infrastructure to the needs of the diverse users in the community. The accessibility audit specifically focused on examining the current state of streetscapes around Duncan to determine the conditions of the sidewalks, pathways, and pedestrian connections throughout the City.

The initial process included conducting an existing conditions assessment of the streetscape to determine the location of all modal interface connections, identify potential hazard locations, and create a record of existing conditions with data and photographs. Measurements were performed using a laser measuring device or standard tape measure.

Based on the findings of the conditions assessment, a series of general and priority recommendations were developed to address the observed deficiencies around the City. These recommendations are summarized below along with the observations of the conditions assessment. A complete, site-by-site list of observations and recommendations compiled by UAD can be found in **Appendix A**.

### WHAT IS UNIVERSAL DESIGN?

Universal design is a process through which designs are created with a view to the need to all social groups of every type to achieve their full potential and remain independent. It is far more than a concept of making accommodations for people in wheelchairs. There are many other groups that have different needs for designs to allow access, for example people caring for babies or small children, older adults, people dealing with a temporary injury, or those with visual or hear impairments.

There are seven principles that are widely recognized as being the key consideration for effective universal design:

1. Equitable use
2. Flexibility in use
3. Simple and intuitive use
4. Perceptible information
5. Tolerance for error
6. Low physical effort
7. Size and space for approach and use

## EXISTING CONDITIONS + GENERAL OBSERVATIONS

Although most sidewalks, pathways, and modal interfaces found in Duncan allow for reasonable access, several general deficiencies were consistently observed:

- ▶ Multiple locations where pathway surface was in disrepair.
- ▶ Transition from sidewalk to crosswalk surfaces had greater than 13mm rise and often have a sharp transition.
- ▶ Curb ramps at intersections tend to be misaligned and direct pedestrians into the centre of the intersection.
- ▶ Multiple instances where full curb letdown may represent a hazard for persons who are blind or who use a mobility aid as vehicular traffic could cut the corner and encroach the sidewalk.
- ▶ Tactile warning surface indicators (TWSIs) at curb ramps represent older design and truncated domes are not present.
- ▶ Railway crossings at sidewalks may present a hazard for someone using a mobility aid.
- ▶ Obstructions to accessible path of travel observed in various locations.
- ▶ Crosswalk activation buttons located incorrectly.

## GENERAL RECOMMENDATIONS

The following recommendations provide overarching direction for improving universal access standards across the City of Duncan's transportation network based on the general observations of the accessibility audit.

- ✔ Complete comprehensive upgrade project to mitigate all sharp transition areas along sidewalks and pathways.
- ✔ Implement current best practices for curb ramp alignment at intersections.
- ✔ Install truncated dome TWSI's at all curb ramps at intersections, crosswalks, and pathway modal transitions.
- ✔ Ensure implementation of a robust pathway surface monitoring and maintenance program is in place.
- ✔ Ensure implementation of a robust pathway impediment monitoring and maintenance program is in place.
- ✔ Upgrade all crosswalk signal activation buttons to ensure safe and equitable access for all.
- ✔ Upgrade all pedestrian path of travel surfaces at all railway crossings to ensure the safety of those using mobility aids.
- ✔ Upgrade sidewalk and pedestrian design criteria for all new builds to allow for safe passage of two mobility aid widths (minimum 1200mm, preferably 1500mm)
- ✔ Coordinate with adjacent jurisdictions to ensure design criteria are continuous.
- ✔ Where service poles or signage installations are within the sidewalk path of travel, ensure that a minimum 1200mm width path of travel is maintained.

## PRIORITY RECOMMENDATIONS

The summary of priority recommendations reflects existing conditions analysis and universal access perspective with some common concerns and issues which inform the following general recommendations regarding safety, usability, and universal access throughout the pedestrian paths of travel.

- 🔧 Repair degraded pathway surfaces at intersection crosswalks.
- 🔧 Upgrade all pedestrian railway crossings.
- 🔧 Upgrade all islands in the pedestrian path of travel (e.g. along TCH) by creating level passage.
- 🔧 Upgrade curb ramps that have no level landing area.

## 6.3 EXISTING CONDITIONS

To illustrate the current conditions, design, and function of Duncan's transportation systems, the following section provides photo examples of the street network, walking and rolling, cycling, and transit facilities, downtown parking, and transportation-related amenities and signage.

### STREET NETWORK





## WALKING & ROLLING





## CYCLING





## TRANSIT





## DOWNTOWN PARKING

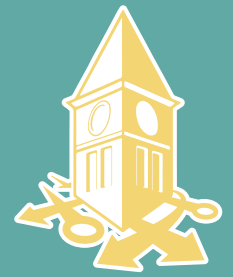




## SIGNAGE & AMENITIES



# SMART MOBILITY PRIMER



Transportation systems world-wide are undergoing major transformations due to the emergence of disruptive new technologies. Changes to vehicles, streets, and the way people plan, book, and pay for trips are changing the way people and goods move within and between communities. This includes improvements in the efficiency of pre-existing travel options (i.e., electric vehicles), enhanced mobility options made possible by online applications and advanced computing (i.e., ride-hailing), and technological advances leading to entirely new travel modes (e.g., electric unicycles and autonomous vehicles). These technologies have the potential to bring about both positive and negative impacts, depending on how they are managed by local, provincial, and federal governments.

## WHAT IS SMART MOBILITY?

Smart Mobility refers to the application of new and emerging transportation modes, utilizing technology and data to enhance the movement of people and goods. Smart Mobility also means rethinking the way cities are planned and transportation systems are reconsidered to promote sustainable, equitable, and multi-modal networks that are safe, efficient, and comfortable for people of all ages, abilities, and backgrounds. This means prioritizing active and sustainable modes such as walking, cycling, and transit, promoting shared mobility (e.g., bike share and car share), and enabling efficient, right-sized goods movement, with private motor vehicles accommodated but no longer emphasized.

This section outlines the context for Smart Mobility and explains the deep connection between land use and transportation planning, including the influence of regional travel patterns. It also introduces several new and emerging transportation modes, providing considerations for transportation and land use planning that will enable the City of Duncan to prepare for the future of transportation.



## 7.1 WHY CONSIDER SMART MOBILITY?

Several key issues and trends from the local to international levels underscore the need for a new approach to transportation planning centred on Smart Mobility.

### GLOBAL CONTEXT

Several high-level issues and trends have been emerging in transportation systems around the world. Most if not all these considerations are relevant in the City of Duncan today and are likely to become increasingly important in the near future.

#### Impacts of COVID-19.

The COVID-19 pandemic has altered mobility patterns and reshaped the way people use and travel through public spaces. Many cities reallocated road space by removing parking or travel lanes to provide room to safely walk and bicycle. COVID-19 also forced many to work from home, accelerating pre-existing changes to the job market such as automation, artificial intelligence, digital connectivity, telecommuting, outsourcing, and other trends that have been altering the type and location of employment. It is expected that many jobs will keep hybrid work arrangements post-pandemic, with the resulting increase in full- or part- time work from home meaning long-term changes to typical commute patterns and traffic volumes. However, the pandemic has exacerbated existing inequalities in the transportation system – working from home percentages differ greatly based on education, income and other demographics, and the opportunity to work from home is not equally available to all residents. Road space reallocation efforts have also underscored that relatively little space in cities is allotted to walking, cycling, and the activation of the public realm, with most of the public right-of-way dedicated to the operation and storage of private passenger vehicles. System-wide multi-modal transportation improvements remain important to support residents and businesses that continue to rely on the transportation network. Coming out of COVID, there is positive momentum towards ‘building back better’ and making major shifts in the way people and goods travel and the way transportation infrastructure and services are provided.

## Transportation and Land Use Integration.

Transportation conditions and travel demand are largely influenced by land use patterns. Dispersed, low density development patterns create longer travel distances and reduce the available travel options, resulting in car dependency, whereas compact, mixed land uses create shorter trips and support a range of travel options. The “Five Ds” of the built environment – Density, Diversity, Design, Destination, and Distance to transit – have been found to promote walking, cycling, and transit while reducing motor vehicle trips, especially when multiple measures are combined. Designing interesting and attractive neighbourhoods with a range of pedestrian-scale amenities can encourage people to get out of motor vehicles and experience the street on foot or by bicycle. One emerging trend is the importance of “15-minute neighbourhoods” that allow people to meet most of their daily needs – including working, learning, shopping, and outdoor recreation – within a 15-minute walk of their home. The importance of mixed-use, amenity-rich community design was underlined during the COVID-19 pandemic, where public health regulations required people to stay close to home.

## Global and Local Impacts of Climate Change.

The City of Duncan joined governments around the world in declaring a climate emergency in 2019. The transportation sector is the second largest emitter of greenhouse gases (GHG) in Canada<sup>3</sup> and represents a key area for climate action. Reducing transportation related GHGs requires supporting the shift to zero-emission vehicles (ZEV) and reducing vehicle kilometres driven by encouraging sustainable and active modes such as transit, walking, and cycling. Active transportation users have about one-tenth the ecological footprint of a person who commutes by motor vehicle<sup>4</sup>.

## Growth of e-Commerce and Impacts on Goods Movement and Local Shopping Behaviour.

E-commerce puts increasing pressure on local road infrastructure and increases competition for curbside uses such as on-street parking and loading areas. The COVID-19 pandemic accelerated the e-commerce boom, which also includes everything from Canada Post and private courier shipments to local food delivery services (e.g. Door Dash, Skip the Dishes, etc.). Delivery services have begun shifting to smaller delivery vehicles, including cargo bicycles, e-bikes, and even e-scooters, which required safe spaces to travel and park within the right-of-way.

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3 *Environment and Climate Change Canada (2019) Canadian Environmental Sustainability Indicators: Greenhouse gas emissions. Environment and Climate Change Canada. [Online] April 2019. [www.canada.ca/en/environment-climate-change/services/environmentalindicators/greenhousegas-emissions.html](https://www.canada.ca/en/environment-climate-change/services/environmentalindicators/greenhousegas-emissions.html).*

4 *Transport Canada. Active Transportation in Canada. [Online] 2011. [https://fcm.ca/Documents/tools/GMF/Transport\\_Canada/ActiveTranspoGuide\\_EN.pdf](https://fcm.ca/Documents/tools/GMF/Transport_Canada/ActiveTranspoGuide_EN.pdf).*



## Innovations in Monitoring and Data Collection.

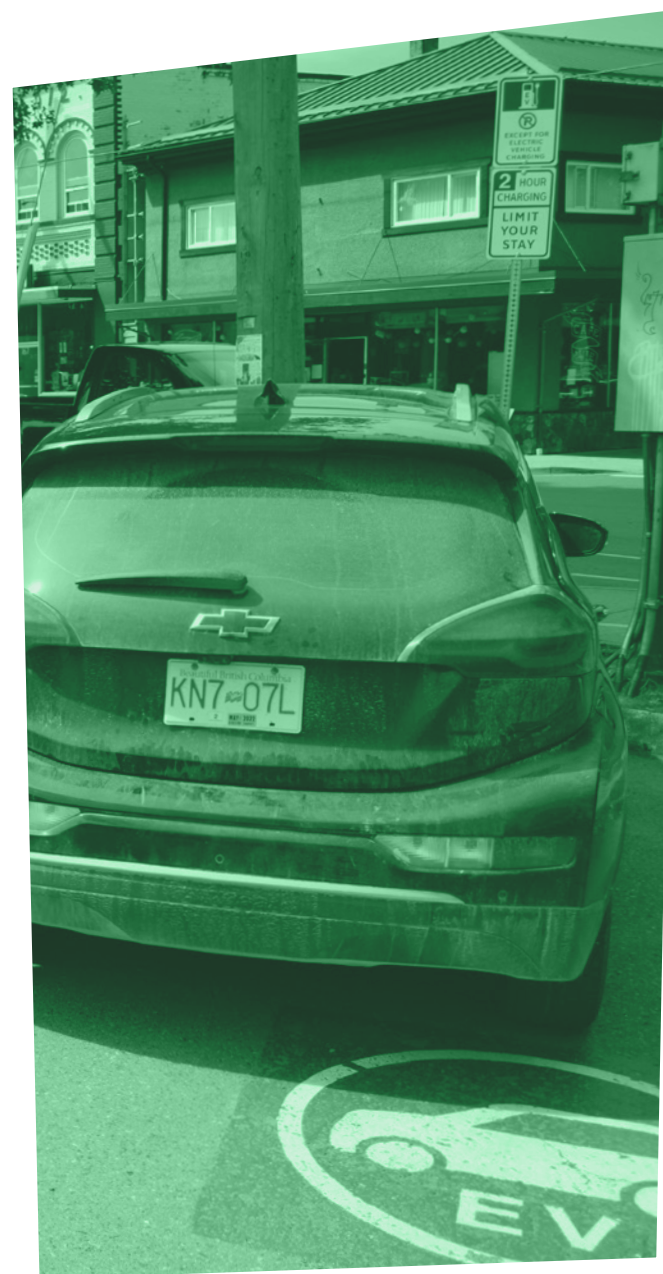
New technologies and the advent of Big Data (analyzing huge amounts of data from a wide range of sources, including GPS-based application, mobile phone positioning, social media, satellite imagery, and others) are enabling a better understanding of travel patterns and the ability to actively manage transportation infrastructure, including parking and mobility pricing.

## Transportation Equity.

As noted in Section 1.7, there is an urgent need to prioritize the transportation needs of equity priority populations. The transition to Smart Mobility must be done through an equity lens that ensures all people have access to safe, comfortable, and affordable ways of getting around. Smart Mobility often relies on access to technology, so it is important that people without this access are not left behind; this includes considering people who do not have access to personal vehicles or driver's licenses, people without smart phones or mobile data, and people without credit cards or mobile payment. It also means including those with accessibility needs and those facing the threat of violence and discrimination.

## A New Generation with Different Needs and Expectations.

All the above trends align with a new generation of young people who are demanding increased government action on the climate crisis and equity issues, better and more affordable mobility options, and seamless connections between modes. A culture shift away from the automobility is occurring, with the demand for driver's licenses among youth in British Columbia has been decreasing (even outside of transit friendly communities).<sup>5</sup> Continued urbanization also means that more and more people are moving to and growing up in dense urban areas that are – or have the potential to be – highly accessible using transit and active transportation. Both current and future transportation system users will expect greater access to Smart Mobility options in the coming years, and may seek this lifestyle elsewhere if it is not provided in Duncan.



5 <https://theprovince.com/news/local-news/demand-for-drivers-licences-decreasing-among-b-c-s-young-people>

## PROVINCIAL + NATIONAL CONTEXT

Smart Mobility aligns with policy goals and aspirations at provincial and federal levels.

- ▶ **Government of Canada:** The federal government's climate plan is targeting net-zero emissions by 2050 and includes a core pillar of “making clean, affordable transportation and power available in every community.”<sup>6</sup> Infrastructure and program funding from upper levels of government is increasingly tied to clean, innovative, and equitable transportation projects that meet multiple government objectives. The government has released significant dedicated funding for transit and active transportation and are currently developing Canada's first ever National Active Transportation Strategy.<sup>7</sup> Additionally, policies and programs such as the iZEV Program<sup>8</sup> (a ZEV incentive program) are aimed at getting more sustainable vehicles on the road and reducing overall GHG emissions.
- ▶ **Government of British Columbia:** The provincial government has also emphasized the importance of innovative and sustainable transportation that make life more affordable and contribute to a strong economy. The CleanBC strategy calls for reducing GHGs by 40% by 2030, 60% by 2040, and 80% by 2050 compared to 2007 levels and includes several relevant initiatives, including supporting the shift to ZEVs and encouraging transit and active transportation. Move. Commute. Connect., BC's Active Transportation Strategy, includes e-bike incentives and encourages All Ages and Abilities infrastructure facilities. The Province has also made transit free for children 12 and younger, eliminated PST on the purchase of an e-bike, and launched an e-scooter pilot project to allow micromobility in size pilot communities.

## LOCAL + REGIONAL CONTEXT

Duncan is a compact, walkable community with the potential to support smart, sustainable modes of transportation. The City's Official Community Plan recognizes the interconnection between transportation and land use and promotes “land use policies which support densification and the development of Duncan as a complete and compact community” (policy 8.4.1). The OCP also supports complete street design, bike share, car share, and other Transportation Demand Management (TDM) strategies designed to encourage sustainable transportation and reduce vehicle kilometers travelled.

The City's role as the economic hub of the Cowichan Region means that it serves a much larger geographic area home to around 80,000 people. Duncan is a key link along the South Island economic corridor between Victoria and Nanaimo, which means the City must consider the interconnections between local and regional transportation services. Local daily trips tend to be shorter and can often be accommodated using active transportation or local transit services. However, regional trips require express transit services or, where transit is not an attractive or feasible option, these trips will take place in motor vehicles.

With a significant proportion of regional travel destined for Duncan to access key commercial areas and service, this will result in demand for motor vehicle access and parking. The City needs to balance these regional needs with the local desire to promote sustainable transportation. Smart Mobility can play a role in analyzing regional travel patterns and demand, facilitating “last mile” connections to regional transit services, and providing alternatives to single occupancy motor vehicle trips.

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6 <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan.html>

7 <https://www.infrastructure.gc.ca/trans/active-actif-eng.html>

8 <https://tc.canada.ca/en/road-transportation/innovative-technologies/zero-emission-vehicles#/find/nearest?country=CA>



## 7.2 SMART MOBILITY COMPONENTS

As noted above, Smart Mobility includes both the promotion and enhancement of existing travel modes as well as the introduction of new and emerging mobility options and services. Proactive policies and a flexible long-term plan for supportive infrastructure are each critical to realizing the benefits of Smart Mobility as well as anticipating and mitigating possible negative impacts. The following section introduces several interrelated Smart Mobility components.

### ELECTRIFICATION OF TRANSPORTATION

The transportation system is undergoing a steady transformation to electric propulsion – by 2030, electric vehicles (EVs) are projected to account for approximately 25% of all new vehicles worldwide, up from 2.5% in 2019<sup>9</sup>. Major automakers such as Ford, General Motors, and Volvo have announced plans to go carbon neutral or have fully zero-emission fleets<sup>10</sup>, while electric vehicle manufacturer Tesla recently surpassed Toyota to become the most valuable carmaker in the world<sup>11</sup>.

EVs are part of a larger group of zero-emission vehicles (ZEV) that includes battery-electric, plug-in hybrid electric, and hydrogen fuel cell vehicles. In 2019, the provincial government introduced the Zero-Emission Vehicles Act, which requires 10% of all new light-duty cars and trucks sold to be zero-emissions by 2025 and 100% by 2040. To encourage this transition to take place, the Province is increasing the low carbon fuel standard to 20% by 2030, increasing the supply of renewable fuels and charging stations, and offering highly popular incentive programs for purchasing EVs.

Electric vehicles require local and regional networks of charging infrastructure. Data from PlugShare – a comprehensive online tool for locating EV charging stations – indicates that there are currently six EV chargers in the City of Duncan. Widescale electrification is likely to result in increased demand for EV charging infrastructure at the curbside, along regional corridors, and in public and private parking lots, with curbside parking restrictions and new pricing techniques required to optimize turnover for EV chargers.

Sales of e-bikes, e-scooters, and other forms of electric micromobility sales have skyrocketed, buoyed by an 82% decrease in battery costs between 2012 and 2020.<sup>12</sup> These devices are discussed further below.

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<sup>9</sup> <https://www2.deloitte.com/us/en/insights/focus/future-of-mobility/electric-vehicle-trends-2030.html>

<sup>10</sup> <https://asumetech.com/gm-2035-is-ev-goal-but-not-a-guarantee/>;  
<http://blogs.edf.org/climate411/2021/04/29/driving-the-electric-vehicle-transition-auto-companies-and-states-step-up-to-lead/>

<sup>11</sup> <https://www.bbc.com/news/business-53257933>

<sup>12</sup> <https://insideevs.com/news/447954/ihs-markit-ev-battery-cost-drop-2023/>

## MICROMOBILITY

Micromobility refers to small human and electric-powered transportation modes, such as electric bicycles (e-bikes), electric kick scooters (e-scooters), and other small, one-person electric vehicles such as electric skateboards, skates, and self-balancing boards. E-scooters and other forms of small, one-person electric vehicles are not currently permitted on all roadways in BC, but the Province recently launched an e-scooter pilot project to allow municipalities to enact bylaws allowing the operation of e-scooters in five participating communities (Vancouver, the City and District of North Vancouver, West Vancouver, Kelowna, and Vernon).

As noted above, electric micromobility sales have seen significant growth worldwide. E-bikes in particular have significant potential to replace motor vehicle trips and encourage a larger group of people to ride bicycles by making it more accessible (and less sweaty), flattening hills, and enabling longer travel distances. The growth in e-bike usage and micromobility more broadly has implications facility design (including facility width and determining where each device should be travelling) and carries storage and charging requirements.

## SHARED MOBILITY

A core component of Smart Mobility is the shift from vehicle ownership – which is strongly correlated with high vehicle kilometers travelled – to shared mobility services that naturally limit use due to the pay per use model. Shared mobility services include carsharing, ride hailing, ridesharing, microtransit, and shared micromobility.

Carsharing provides on-demand access to a shared fleet of motor vehicles, enabling a ‘car-lite’ lifestyle where users use transit, walking, and cycling for most trips, and a motor vehicle only when required. Two-way car share services like Modo Co-operative need to be picked up and returned to the same spot, whereas one-way car share services like Evo allow users to start and end a trip anywhere within a designated home zone. Carsharing can be significantly cheaper than car ownership: according to

CAA, car ownership costs an average of \$10,000 per year, whereas carsharing averages about \$1,500 per year.<sup>13</sup> Carshare can be encouraged by providing designated free or low-cost on-street parking for carshare vehicles, especially in underserved areas. To encourage uptake by a wide variety of users, municipalities can partner with industry to co-promote solutions that increase access for new drivers, non-English speakers, and others who are new to shared mobility.

Ride hailing was approved in the Province of BC in 2019. Ride hailing services are operated by Transportation Network Companies (TNC), the largest of which are Uber and Lyft. Neither Uber nor Lyft currently operate in Duncan, although Uber recently expanded its service area to include Victoria and other parts of the Capital Regional District. Passengers may be dropped off outside of a coverage area but must be inside a coverage area to request a ride. Ride hailing can increase mobility and access, especially in areas with poor transit coverage, but it can also lead to increased vehicle kilometres driven. Best practices for preparing for ride hailing include considering the allocation of additional pick-up and drop-off spaces at key locations and establishing clear data sharing agreements with TNCs.

Ridesharing (or carpooling) helps private vehicle owners find ride matches with the same route and commuting schedule to share car journeys on a regular basis. Mobile rideshare applications such as Poparide and gobyRIDE allow users to offer and book rides using a computer or smartphone and are especially popular for longer distance regional journeys. Both ride hailing and ridesharing can be used to enhance the reach of transit agencies (for example, TransLink has partnered with Poparide to provide service outside the region to Abbotsford). Additionally, microtransit and other on-demand transit services are being used to support transit systems. These services utilize smaller transit vehicles and provide flexible service that can be booked using an app, website, or phone. On-demand transit pilots have occurred in the Oakville and York Regions

<sup>13</sup>

<https://www.translink.ca/rider-guide/driving/carpooling-and-carsharing>



in Ontario, Halifax, and on Bowen Island, which involved a two-month pilot program run through TransLink.

Shared micromobility refers to bicycle, e-bike, and e-scooter sharing systems with a variety of ownership and operation models. These systems have grown massively over the past few years, with several systems operating throughout Metro Vancouver. Bike and e-scooter share can make multi-modal transportation more convenient, including providing 'last mile' connections to transit. Bike share systems can be docked or dockless.

The majority of 'new mobility' services are operated by private companies, which can bring benefits but also exposes municipalities to market fluctuations and private business decisions. For example, private dockless micromobility services can be cheaper to launch than services funded and controlled by municipalities but are vulnerable to the market, with many examples of abrupt service changes and companies pulling out of markets. Private carshare services are also vulnerable, as demonstrated by Share Now (formerly Car2Go) pulling out of the North American market in 2020. Municipalities need to create regulatory policies to manage private partnerships and successfully integrate emerging modes into the sustainable transportation network.

## **MOBILITY-AS-A-SERVICE (MAAS) AND DATA MANAGEMENT CONSIDERATIONS**

Mobility-as-a-service (MAAS) refers to the integration of transportation modes and services, making them accessible on-demand from a single mobile application. MAAS systems allow seamless multi-modal transportation by displaying dynamic, real-time information throughout a multi-modal journey and allowing a user to plan, book, and pay for transportation services such as transit, ride hailing, shared micromobility, and other services. The Transit App is an example of a MAAS application. Municipalities can aid in the development of MAAS systems by ensuring that local transportation data is up to date and made available on these digital services.

MAAS – and Smart Mobility in general – requires the integration of different types and large amounts of data. This includes personal, business, operations, and financial data, which can be sensitive for the consumer but also extremely valuable for municipal transportation planning. Data governance models that create a collaborative working relationship and data sharing agreement between the public and private sector are important to ensure that municipalities can take advantage of all the data collected through these new and emerging transportation services while ensuring the public interest is served.

## **SMART GOODS MOVEMENT**

With the growth in e-commerce and on-demand services like food delivery, the number and type of urban deliveries is increasing. Goods movement in a Smart Mobility sense includes optimizing goods movement routes and using sustainable, right-sized delivery vehicles such as smaller, more nimble trucks/vans, cargo bikes, hand carts, and even autonomous robots to increase efficiency and lower GHG emissions. This also includes implementing e-freights hub where goods can transfer to low emissions, right-sized, or active mode delivery vehicles as well as managing the curbside to make loading/unloading easier.

Cyclelogistics – the integration of bicycles into the goods movement network – is well established in Europe and has a growing presence in North America. Vancouver-based Shift Delivery uses electric cargo bikes, while on-demand courier and food delivery services such as Uber Eats, Door Dash, and Dominos Pizza are using a combination of bicycles, e-scooters, and cars. Compared to delivery trucks, e-bikes and e-cargo bikes spend less time looking for parking than trucks and require smaller spaces, which can free up more on-street parking to be reallocated to other uses. Cyclelogistics tend to be most successful in dense urban areas where there is a high need for deliveries within a relatively compact area.

In the near future, ground-based autonomous vehicles (i.e. delivery robots) may be deployed in the delivery of small goods such as small grocery shops or ready-to-eat meals. A series of successful trials have utilized technology whereby a robotic vehicle receives destination coordinates and travels along the shortest path distance to reach the destination, typically along the sidewalk at walking speed. Sensors respond to stimuli along the route, allowing the vehicle to detect, stop or steer around pedestrians and other objects, and respond to crossing signals. This new use of pedestrian space will need to be monitored and controlled so that people on the sidewalk are not impeded, especially those with reduced vision and/or mobility.

Additionally, ‘last-mile’ delivery of light goods by autonomous drones is likely in the future and has been trialed by major companies like Amazon. Unlike all other forms of deliveries, drones will not require the public right-of-way to transport goods. Instead, they would only require access to a small zone near building entrances for package drop-offs.

## AUTONOMOUS VEHICLES

Autonomous vehicles (AV) are still on the horizon and have not yet had a direct impact on municipal transportation networks, although the technology is rapidly emerging. Industry analysts expecting fully autonomous vehicles to be commercially available and legal in some jurisdictions by the late 2020s, with broader market adoption occurring over the next 30 years. AVs could have significant implications on vehicle ownership, land use, and transportation patterns, with a scale of technological change amounting to a revolution in urban transportation that could radically reshape the way people live and move.

In an ‘ACES’ future where private vehicle ownership is replaced by a network of Autonomous, Connected, Electric, and Shared on-demand vehicles, there could be a dramatic reduction in private vehicle ownership and parking demand, particularly for on-street parking. Simulations have shown that if all private vehicle trips were replaced by shared vehicles, only 10% of the existing vehicle fleet would be required, with a corresponding reduction in the need for parking spaces. However, while there are significant potential benefits, there are numerous issues to be addressed as AVs materialize, especially in a scenario where autonomous vehicles are widely adopted but privately owned. Issues such as “dead-heading” and the storage of self-driving vehicles while not in use, as well as security concerns related to personal information, need to be considered.

While AV technology may be right around the corner, the most significant impacts – including major changes to traffic patterns and parking demand – are not expected to be realized until the widespread adoption of AVs occurs, potentially in the 2050s or 2060s. However, this uncertainty highlights the need for aligned local and provincial policy that ensures new mobility options are brought forward within a framework that supports community objectives. Municipalities wishing to take a pro-active approach are studying the implications of an autonomous future with the aim of leveraging this new technology in support of their visions and goals. Examples of municipal research include TransLink’s Future of Driving report as well as other reports out of Toronto, Ottawa, Edmonton, Calgary, and many others.



## 7.3 MANAGING THE PUBLIC RIGHT-OF-WAY

The public right-of-way serves several key functions, as outlined in **Figure 5**. In an era of Smart Mobility, public roadways now need to achieve these functions while accommodating both traditional modes (private automobiles, public transit, cycling, walking, goods delivery, and emergency services) and emerging modes (micromobility, electric delivery cargo bicycles, car share vehicles, etc.), which may require additional measures for their successful operation. Future modes such as AVs will place additional demands on the public right-of-way. The challenge for the City of Duncan is to accommodate Smart Mobility in a way that integrates seamlessly into the local and regional transportation network and ensures safe and equitable access for all.

Widening the roadway is often impossible, undesirable, and/or prohibitively expensive in the urban context. As an alternative, municipalities can use roadway space reallocation, which involves considering whether there is a need to shift the amount of roadway space currently allocated or emphasized to one user (such as general purpose vehicle travel or on-street parking) towards other users to better meet local goals or objectives and the desired functions of an individual corridor. This can result in a more efficient use of the public right-of-way and can accommodate Smart Mobility while contributing to reducing congestion, improving public health, and addressing GHG emissions.

Figure 5: Essential Right-of-Way Functions (Source: ITE, adapted from City of Seattle DOT)

Essential Right-of-Way Functions		
Function	Definition	Uses
<b>Mobility</b>	Moves people and goods	Sidewalks Bus or streetcar lanes Bike lanes General purpose travel lanes - includes freight Right-of left-turn only lanes
<b>Access for People</b>	People arrive at their destination, or transfer between different ways of getting around	Bus or rail stops Bike parking Curb bulbs Passenger load zones Short-term parking Taxi zones
<b>Access for Commerce</b>	Goods and services reach their customers and markets	Commercial vehicle load zone Truck load zone
<b>Activation</b>	Offers vibrant social spaces	Food trucks Parklets and streateries Public art Seating Street festivals
<b>Greening</b>	Enhances aesthetics and environmental health	Plantings • Boulevards • Street trees • Planter boxes Rain gardens and bio-swales
<b>Storage</b>	Provides storage for vehicles or equipment	Bus layover Long-term parking Reserved spaces (e.g. for Police or other government use) Construction

Road space reallocation may be permanent or temporal, with dynamic lane assignments throughout the day. Managing the right-of-way and planning for flexible curbside uses can create a more efficient transportation corridor and a safer, more attractive street for all modes of transportation. Examples of road space reallocation to benefit Smart Mobility are provided below:

- ▶ Dedicated cycling facilities to accommodate more active transportation users, including non-standard bicycles (e.g. larger cargo bikes), micromobility, and cyclelogistics
- ▶ Expanded sidewalks and pathways to accommodate more people walking, active sidewalk uses such as restaurant seating, and physical distancing in the COVID-19 context
- ▶ Car-free zones, slow/open streets, and additional public realm (e.g. parklets and patios)
- ▶ Transit priority lanes
- ▶ Goods movement priority lanes
- ▶ High occupancy vehicle (HOV) lanes, which may allow ZEVs
- ▶ Flexible curbside spaces for the pick-up and drop-off of people and goods (e.g. ride hailing, food delivery, curbside pickup, etc.)

Figure 6: Curb Appeal (Source: NACTO: Curb Appeal (2017))

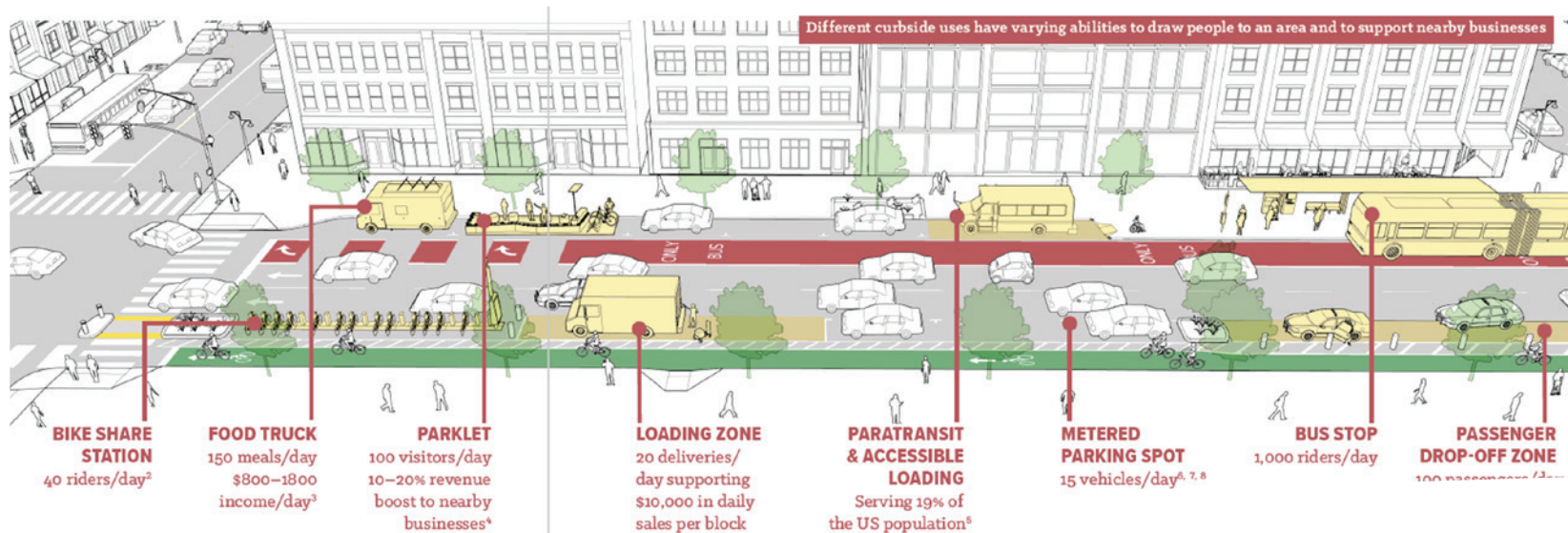
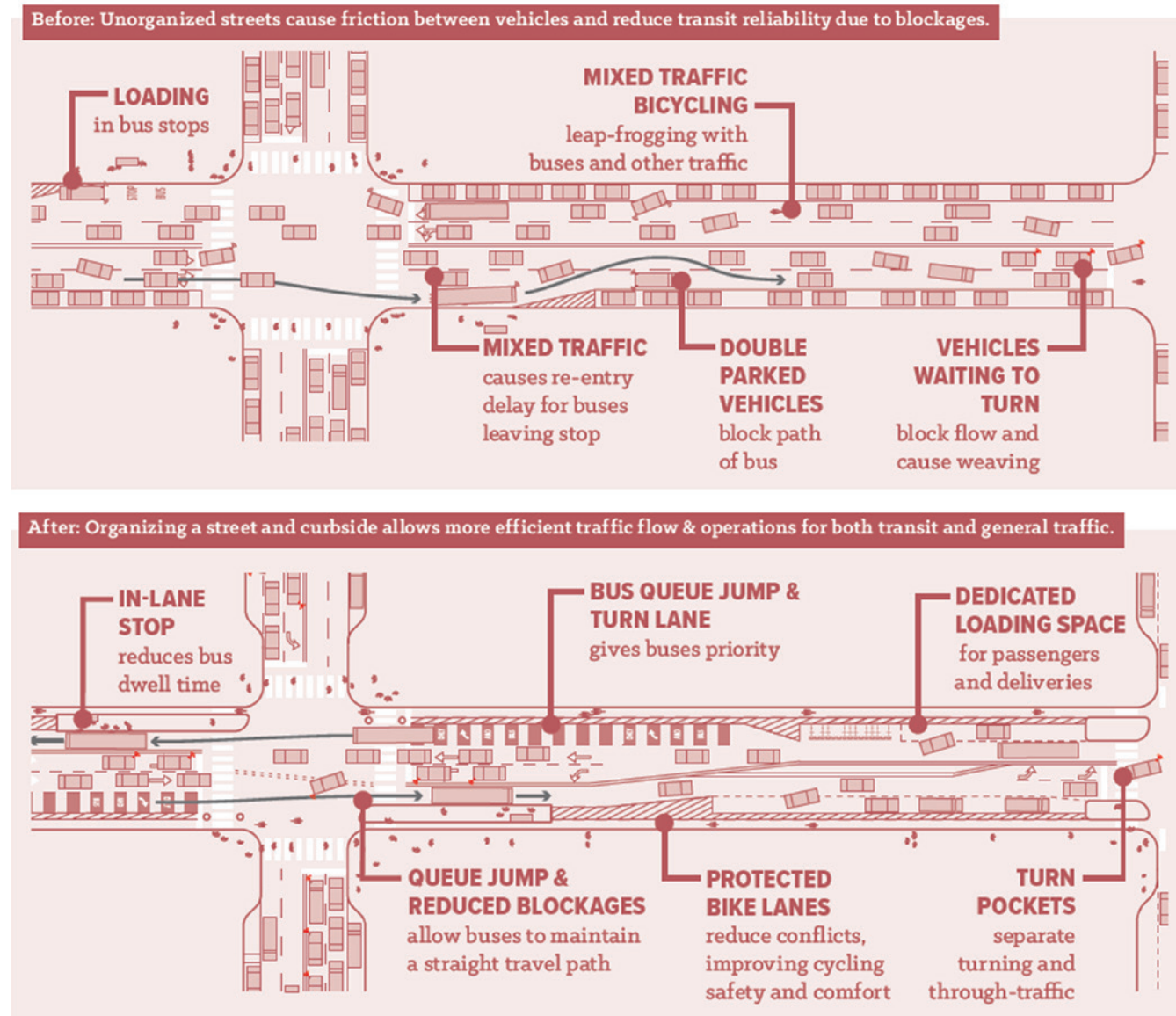




Figure 7: Street Organization (Source: NACTO: Curb Appeal (2017))













# TMS FRAMEWORK

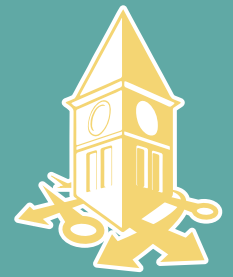
## VISIONING DIRECTION

The draft vision, goals, and principals provided below were created using input provided by residents when asked “what are your bold ideas for transportation in Duncan?” during the first phase of public engagement. The following elements were developed as a result of the findings of the engagement and have been inspired by the City’s strategic plans and overarching policies.

### DRAFT VISION

The City of Duncan’s transportation network will support mobility for all. The multi-modal transportation network will be enjoyable and functional for all users and support a shift towards active and sustainable transportation. People of all ages and abilities will have convenient, safe, and accessible transportation options.

Short trips can be fulfilled by walking, while cycling and transit will be convenient and practical choices for longer trips that are integrated throughout the Cowichan Valley. Goods movement and personal vehicle movement will also be important parts of the multi-modal system to ensure the City’s continued economic prosperity as the heart of the Cowichan Valley. The transportation system will seek to create and support a vibrant, livable, healthy and sustainable community for residents, businesses and visitors alike.





## DRAFT GOALS

The draft goals as outlined below will help guide the city in achieving its vision for the future of mobility within Duncan. They were inspired by the City's existing policies and input received through the first phase of engagement.



### ✓ Design

Streets support multi-modal movement and are complete destinations that support walking, cycling, and everyday life.



### ✓ Sustainable

Reduce transportation-related emissions and environmental impact of the transportation network.



### ✓ Collaborate

Enhance the transportation network in partnership with service providers and adjacent jurisdictions.



### ✓ Character

Build upon Duncan's character and central role as the economic core for the region.



### ✓ Connect

Provide connections to important destinations that support land-use decisions within, and beyond, Duncan.



### ✓ Invest

Make balanced, equitable investments in Duncan's transportation infrastructure, services, and maintenance.

## PRINCIPLES

### Mobility Hierarchy

The mobility network should prioritize safe, sustainable transportation options for all residents and visitors. To achieve this, a new approach to decision making related to transportation policy, planning, infrastructure, and services is envisioned where walking, cycling, public transit, goods movement, multi-occupant vehicles and single-occupant vehicles are ranked in descending order of priority.

WALKING (INCLUDING ACCESSIBILITY)

BIKING

TRANSIT

GOODS MOVEMENT

MULTIPLE OCCUPANT  
VEHICLES

SINGLE  
OCCUPANT  
VEHICLES



### All Ages and Abilities (AAA)

The City aims to provide a mobility network that is comfortable, convenient, safe, and attractive for everyone, regardless of their age or ability. This can be understood as, and will be described as 'All Ages and Abilities' or 'AAA' facilities.



### Land Use Integration

Compact, mixed land use create shorter trips and support a range of travel options. The TMS and Current OCP process should be founded on an integrated approach to transportation and land use planning that recognize the impact of one on the other and work toward a common vision for Duncan as the heart of the Cowichan Valley.



### Complete Streets

Streets represent public space and should fulfill various roles such as moving people and goods, but also providing opportunity for everyday life to flourish. Things like streets trees and landscaping, enabling recreation, and providing a venue for social activities should be encouraged to maximize the roles the street network can fulfill within a growing community.







## NEXT STEPS



The TMS process will continue throughout the remainder of 2021 with adoption of the final strategy occurring before the end of the year. This working paper is among the first steps of a process that will refine the community's vision transportation, explore the implementation of future transportation networks, and continue to engage with Duncan's residents, partners, and key stakeholders.

Upcoming milestones for the TMS include the following:

### 1. Technical Review, Network Development, and Design Guidelines

Building on the understanding of Duncan's existing transportation networks, further analysis will be completed to assess future directions and recommendations including proposed multi-modal transportation networks and facility design guidelines to be implemented in the City.

### 2. Engagement Round no.2

The second engagement phase will seek feedback on draft recommendations and continue to build the TMS directions alongside the community. Input will be sought from community members across the region, including Cowichan Tribes and the Municipality of North Cowichan.

### 3. Working Paper no.2 – Future Directions + “What We Heard”

The second working paper will summarize the technical analysis undertaken in previous phases along with the engagement tasks undertaken in the intervening period.

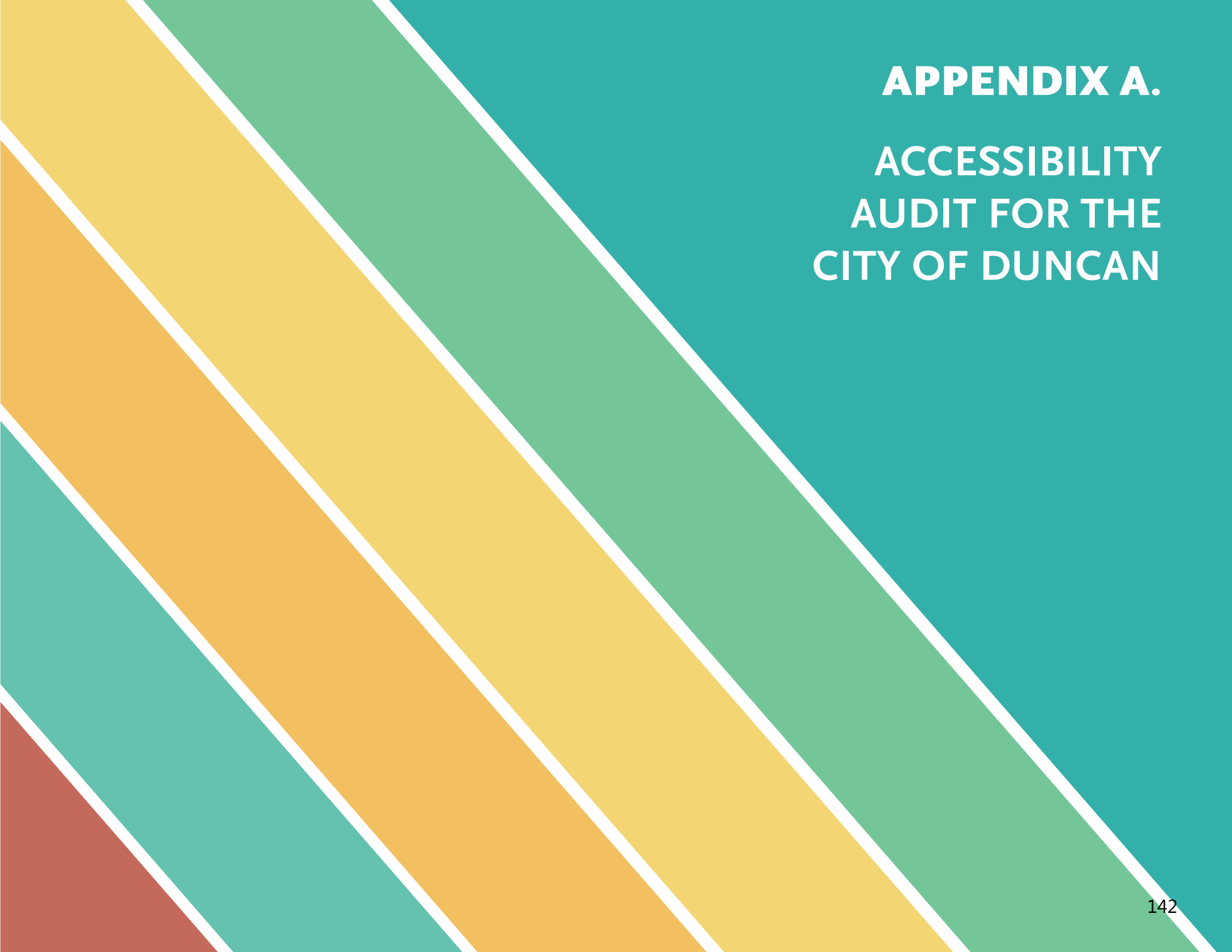
### 4. Transportation + Mobility Strategy

The final TMS will summarize all four phases of the process, including the recommendations, preferred options for each transportation mode, implementation strategy, and cost estimates. The strategy will be presented to the public, project partners, City of Duncan staff, and Council for final review and adoption.



## SMART MOBILITY REFERENCES

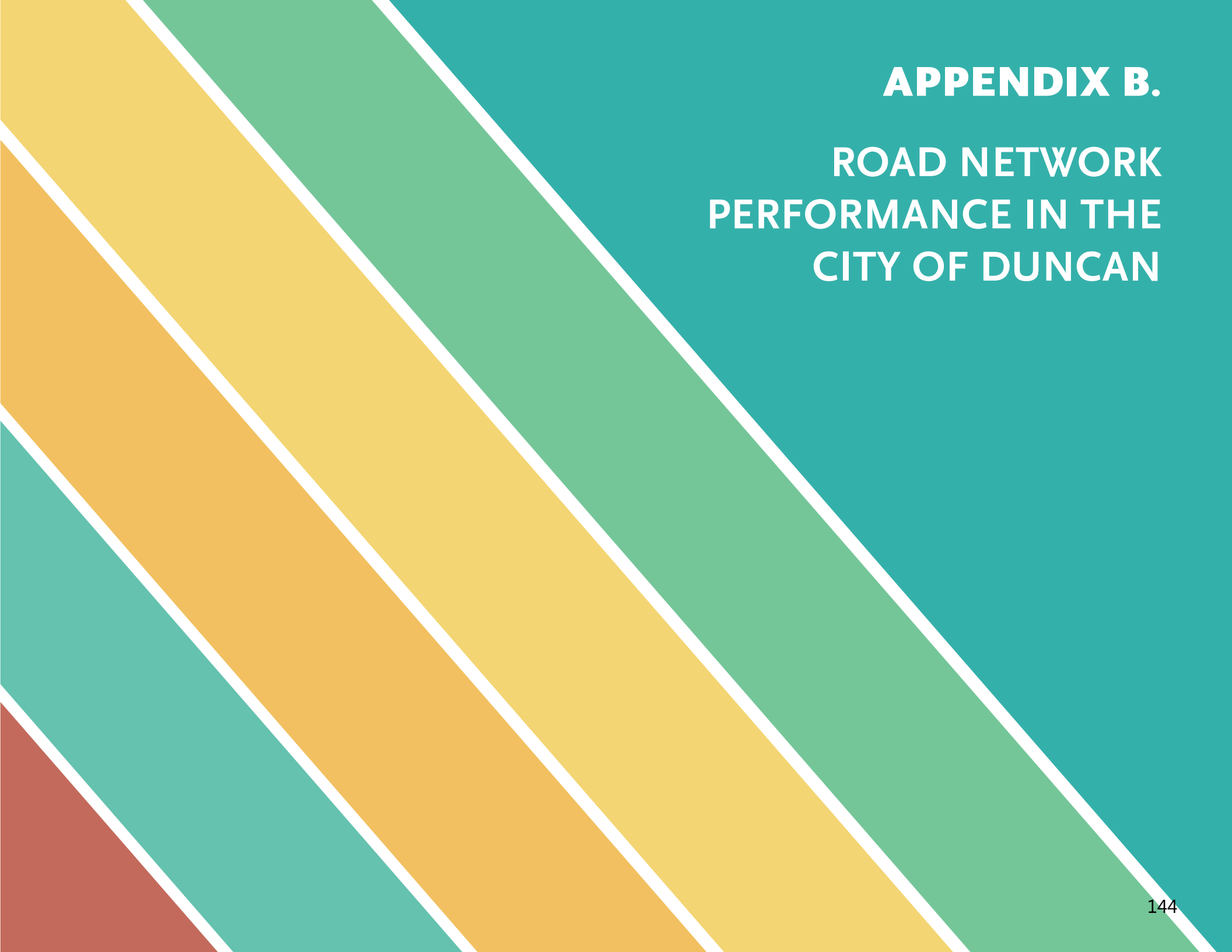
- BUEHLER, RALPH, GÖTSCHI, THOMAS AND WINTERS, MEGHAN. MOVING TOWARD ACTIVE TRANSPORTATION: HOW POLICIES CAN ENCOURAGE WALKING AND BICYCLING. ZURICH: ZURICH OPEN REPOSITORY AND ARCHIVE, UNIVERSITY OF ZURICH, 2016. [https://activelivingresearch.org/sites/activelivingresearch.org/files/ALR\\_Review\\_ActiveTransport\\_January2016.PDF](https://activelivingresearch.org/sites/activelivingresearch.org/files/ALR_Review_ActiveTransport_January2016.PDF)
- DELOITTE (N.D.). SMART MOBILITY: REDUCING CONGESTING AND FOSTERING FASTER, GREENER, AND CHEAPER TRANSPORTATION OPTIONS. [https://www2.deloitte.com/content/dam/insights/us/articles/smart-mobility-trends/DUP\\_1027\\_Smart-Mobility\\_Master1.pdf](https://www2.deloitte.com/content/dam/insights/us/articles/smart-mobility-trends/DUP_1027_Smart-Mobility_Master1.pdf)
- DELOITTE (2020). ELECTRIC VEHICLES: SETTING A COURSE FOR 2030. <https://www2.deloitte.com/us/en/insights/focus/future-of-mobility/electric-vehicle-trends-2030.html>
- GEHL, JAN (2010). CITIES FOR PEOPLE. WASHINGTON, DC: ISLAND PRESS. HT166.G438 2010
- GOVERNMENT OF BRITISH COLUMBIA (2021). ACTIVE TRANSPORTATION PILOT PROJECTS. <https://www2.gov.bc.ca/gov/content/transportation/transportation-environment/active-transportation/policy-legislation/motor-vehicle-act-pilot-projects>
- INSIDEEVS (2020). AVERAGE COST OF BATTERIES TO DROP BELOW \$100/KWH BY 2023: IHS MARKIT. <https://insideevs.com/news/447954/ihs-markit-ev-battery-cost-drop-2023/>
- ITE (2019). CURBSIDE MANAGEMENT PRACTITIONERS GUIDE. <https://www.ite.org/pub/?id=C75A6B8B-E210-5EB3-F4A6-A2FDDA8AE4AA>
- KEESMAAT, JENNIFER (2020). 2020 DECLARATION FOR RESILIENCE IN CANADIAN CITIES. RETRIEVED FROM: <https://www.2020declaration.ca/>
- LEANAGE, NELUKA AND FILION, PIERRE (2020). CAN THE 15-MINUTE WALKING CITY SAVE INTENSIFICATION HUBS IN AND BEYOND THE COVID-19 PANDEMIC? SCHOOL OF PLANNING, UNIVERSITY OF WATERLOO. AUGUST 31, 2020. RETRIEVED FROM: [https://uwaterloo.ca/environment/sites/ca.environment/files/uploads/files/densityhousing\\_2\\_centres\\_leanage\\_filion.pdf](https://uwaterloo.ca/environment/sites/ca.environment/files/uploads/files/densityhousing_2_centres_leanage_filion.pdf)
- NACTO (2017). CURB APPEAL: CURBSIDE MANAGEMENT STRATEGIES FOR IMPROVING TRANSIT RELIABILITY. <https://nacto.org/tsdg/curb-appeal-whitepaper/>
- OREGON DOT AND TRILLIUM SOLUTIONS, INC (2020). OREGON SHARED MOBILITY DATA PRIMER. <https://www.oregon.gov/odot/RPTD/RPTD%20Document%20Library/Shared-Use-Mobility-Data-Primer.pdf>
- PEMBINA INSTITUTE (2017). CYCLOGISTICS. <https://www.pembina.org/reports/cyclogistics-final.pdf>
- PERKINS+WILL (2018). DESIGNING FOR FUTURE MOBILITY. [https://perkinswill.com/wp-content/uploads/2019/09/Designing\\_for\\_Future\\_Mobility-1.pdf](https://perkinswill.com/wp-content/uploads/2019/09/Designing_for_Future_Mobility-1.pdf)
- POPARIDE (2019). POPARIDE SELECTED BY TRANS LINK TO PROVIDE CARPOOLING PLATFORM FOR SEAMLESS MOBILITY INITIATIVE ACROSS METRO VANCOUVER. <https://www.poparide.com/blog/press-release-translink-seamless-mobility/>
- SAVAGE, KATHERINE (2019). "RESULTS FROM THE 2016 CENSUS: COMMUTING WITHIN CANADA'S LARGEST CITIES". INSIGHTS ON CANADIAN SOCIETY. [ONLINE]. STATISTICS CANADA CATALOGUE NO. 75-006-X.
- STANTEC (2021). A STANTEC REVIEW OF GLOBAL AV RESEARCH. <https://www.stantec.com/en/ideas/content/article/2021/a-stantec-review-of-global-av-research>
- TRANS LINK (2019). TRANSIT ON-DEMAND PILOT PROGRAM: 2019 BOWEN ISLAND REPORT. [https://www.translink.ca/-/media/translink/documents/plans-and-projects/programs-and-studies/translink-tomorrow/transit\\_on\\_demand\\_pilot-bowen\\_island\\_summary\\_report.pdf](https://www.translink.ca/-/media/translink/documents/plans-and-projects/programs-and-studies/translink-tomorrow/transit_on_demand_pilot-bowen_island_summary_report.pdf)
- WSP (2019). REGIONAL LONG-RANGE GROWTH & TRANSPORTATION SCENARIOS: FINAL TECHNICAL REPORT (FOR METRO VANCOUVER AND TRANS LINK). [http://www.metrovancouver.org/services/regional-planning/planningpublications/LRGScenarios\\_TechnicalReport.pdf](http://www.metrovancouver.org/services/regional-planning/planningpublications/LRGScenarios_TechnicalReport.pdf)
- WSP (2020): SMART MOBILITY: OVERVIEW AND DATA GOVERNANCE NEEDS. [https://www.wsp.com/-/media/insights/canada/documents/2020/SmartMobility\\_Whitepaper.pdf](https://www.wsp.com/-/media/insights/canada/documents/2020/SmartMobility_Whitepaper.pdf)



# **APPENDIX A.**

## **ACCESSIBILITY AUDIT FOR THE CITY OF DUNCAN**

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# **APPENDIX B.**

## **ROAD NETWORK PERFORMANCE IN THE CITY OF DUNCAN**





# DUNCAN TRANSPORTATION + MOBILITY STRATEGY

## WORKING PAPER NO.2 OUTLINE FUTURE DIRECTIONS & “WHAT WE HEARD”

September 2021

Prepared for

**City of Duncan**  
200 Craig Street  
Duncan BC V9L 1W3

**September 2021**

Prepared by

**Urban Systems Ltd**  
312, 645 Fort Street  
Victoria BC V8W 1G2

**URBAN**  
S Y S T E M S

1. Overview
2. Engaging the Community
3. “What We Heard”
4. TMS Framework
  - 4.1 PRINCIPLES
  - 4.2 VISION
  - 4.3 GOALS



## 5. Complete Streets

### 5.1 COMPLETE STREET NETWORK ANALYSIS

### 5.2 LONG-TERM COMPLETE STREET NETWORK

### 5.3 COMPLETE STREET TYPOLOGIES

#### 5.3.1 NETWORK FUNCTION

#### 5.3.2 STREET TYPOLOGIES

### 5.4 LIVABLE NEIGHBOURHOOD STREETS

#### 5.4.1 NEIGHBOURHOOD STREET DESIGN

#### 5.4.2 NEIGHBOURHOOD TRAFFIC MANAGEMENT

#### 5.4.3 TACTICAL URBANISM + PILOT PROJECTS

### 5.5 GOODS MOVEMENT + EMERGENCY SERVICES

#### 5.5.1 GOODS MOVEMENT

#### 5.5.2 EMERGENCY VEHICLE ACCESS



## 6. Walking + Rolling

### 6.1 WHAT WE HEARD ABOUT WALKING + ROLLING

### 6.2 LONG-TERM WALKING + ROLLING NETWORK

### 6.3 WALKING + ROLLING FACILITY TYPES

#### 6.3.1 SIDEWALKS

#### 6.3.2 MULTI-USE PATHWAYS

#### 6.3.3 WALKING PATHWAYS

#### 6.3.4 WALKABLE SHOULDERS

### 6.4 WALKING + ROLLING PRIORITY PROJECTS

## 7. Cycling

### 7.1 WHAT WE HEARD ABOUT CYCLING

### 7.2 LONG-TERM CYCLING NETWORK

### 7.3 CYCLING FACILITY TYPES

#### 7.3.1 PAINTED + BUFFERED BICYCLE LANE

#### 7.3.2 SHARED BIKEWAY

### 7.4 CYCLING PRIORITY PROJECTS

OUTLINE

## 8. Public Transit

### 8.1 WHAT WE HEARD ABOUT TRANSIT

### 8.2 FUTURE TRANSIT NETWORK

### 8.3 TRANSIT FACILITY TYPES

### 8.4 PARK-AND-RIDES

#### 8.4.1 REGIONAL PARK-AND-RIDES

#### 8.4.2 LOCAL PARK-AND-RIDES

### 8.5 BUS STOPS

### 8.6 TRANSIT PRIORITY PROJECTS

## 9. Sustainable Transportation + New Mobility

### 9.1 ELECTRIC VEHICLE (EV) CHARGING

#### 9.1.1 TYPES OF ELECTRIC VEHICLE CHARGING

#### 9.1.2 DEVELOPING A CHARGING NETWORK

### 9.2 TRANSPORTATION DEMAND MANAGEMENT (TDM)

#### 9.2.1 MUNICIPAL PROGRAMS

#### 9.2.2 REGIONAL PROGRAMS + PARTNERSHIPS

#### 9.2.3 LAND DEVELOPMENT



## **10. Parking Management**

## **11. Policy + Bylaw Review**

## **12. Next Steps**

OUTLINE