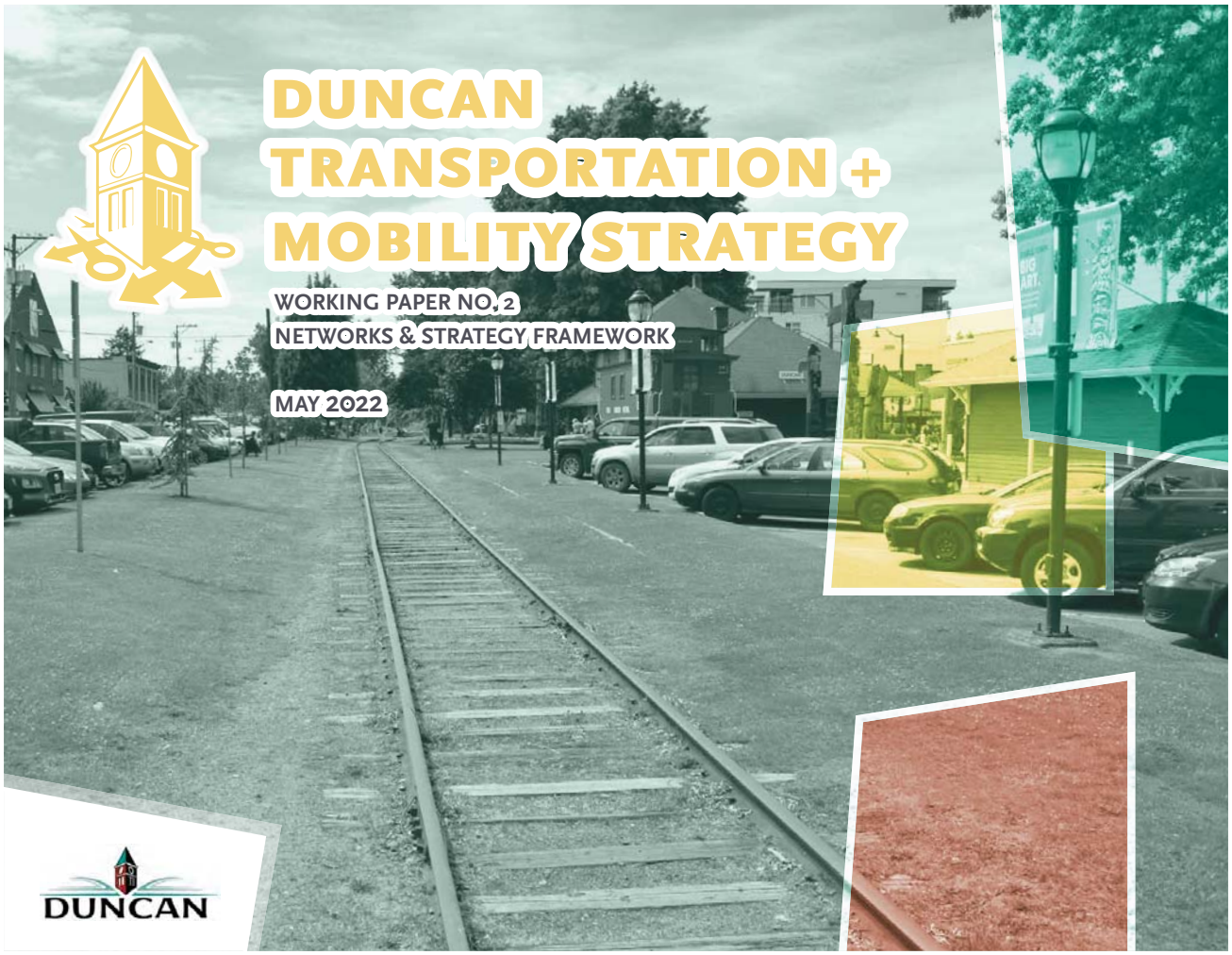

DUNCAN TRANSPORTATION + MOBILITY STRATEGY

WORKING PAPER NO. 2
NETWORKS & STRATEGY FRAMEWORK

MAY 2022

DUNCAN

MAY 2022

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

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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 second 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 contributes 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, **Networks & Strategy Framework**

This second working paper sets the stage for the final TMS by exploring the options available to the City of Duncan around future transportation networks, design guidance, and policy directions based on the trends, challenges, and opportunities identified through technical analysis and the first two phases of public engagement. Through this process, this working paper will explore how transportation is woven into the community and discuss the many exciting possibilities for mobility in Duncan.

2 ENGAGING THE COMMUNITY

2.1 ENGAGEMENT ACTIVITIES

COMMUNITY SURVEY

The second community survey shared draft mobility networks, priority projects, and policies by mode, while also providing the opportunity to comment on the vision, goals, and mobility principles proposed for the Transportation + Mobility Strategy. As such, responses informed if the TMS directions were appropriate for the community, identified additional projects for consideration, and expanded upon the implementation of transportation priorities in Duncan.

The survey was hosted online on the City of Duncan's PlaceSpeak webpage and was open from February 14th to March 14th, 2022. Promotional activities included a mailout to all addresses in Duncan and regular posts on the City's social media channels.

There were 7 total participants in the second community survey.

VIRTUAL OPEN HOUSE

The Transportation + Mobility Strategy and *Official Community Plan* teams held a joint virtual open house event on March 2nd, 2022, held via Zoom video conferencing. The event was intended provide an update on the progress of both projects and other ongoing engagement activities, and to facilitate discussion around the directions of both projects. Event facilitators provided a short presentation on the OCP and TMS, before participants were invited to provide feedback, identify further opportunities, and ask questions of the project team and staff.

There were 2 total participants in the two-hour facilitated discussion with the project team and staff.

"Very interested in a car share option - like Evo."

"Add sidewalks to every street in the city. Some are missing on both sides of the street."

"We need a parking garage Downtown"

"What's missing are connections to neighbouring communities. To have a real impact on traffic than people need to be able to connect to Duncan via trails."

"Need accessible sidewalks! Yes more trees. Increased frequency of busses and the ability to easily access schedules."

"For people to start commuting and traveling by bike, there also needs to be safe storage/parking at key destinations."

"Currently the focus is on cars. Very little of the transportation budget needs to be transferred to bike lanes and sidewalks to get an equitable result."

3 "WHAT WE HEARD"

1. Collaborate, Design, and Invest were seen as the most important goals of the TMS.

2. Complete Street and All Ages and Abilities were the most important mobility principles.

3. Participants most wanted to see safety improvements for walking and rolling and cycling.

4. General support for all draft networks and priority projects, with the walking and rolling and complete streets networks and transit amenity improvements most widely supported.

5. Desire to see a car share service provided in Duncan.

4 TMS FRAMEWORK

The draft vision, goals, and principles 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, and refined with feedback provided through subsequent engagement activities and by the TMS Steering Committee. The following elements were developed from the findings of the engagement and have been inspired by the City's strategic plans and overarching policies.

DRAFT VISION

Duncan's transportation network supports mobility for all. The multi-modal transportation network is enjoyable and functional for all residents and supports a shift towards active and sustainable transportation. People of all ages and abilities have convenient, safe, and accessible transportation options.

Short trips are fulfilled by walking, while cycling and transit are convenient and practical choices for longer trips throughout the Cowichan Valley. Goods movement and personal vehicle movement are also important parts of the multi-modal system and ensure the Duncan's continued economic prosperity as the heart of the Cowichan Valley. The transportation system supports 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.

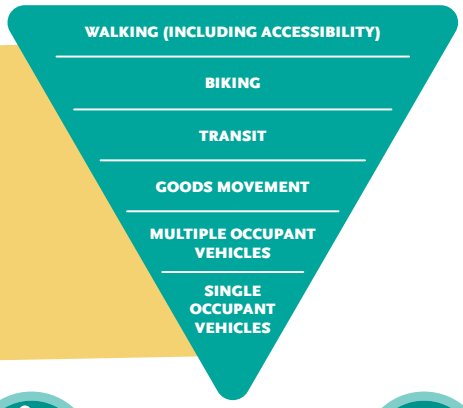
Connect
Provide connections to important destinations that support land-use decisions within, and beyond, Duncan.

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

DRAFT 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.



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 and described as 'All Ages and Abilities' or 'AAA' facilities.

Land Use Integration

Compact, mixed land use creates shorter trips and supports 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.

5 COMPLETE STREETS

Streets are public rights-of-way that represent a large portion of our community's overall publicly held lands. While conventionally designed to prioritize vehicle travel, our street rights-of-way present an opportunity to address a wide range of community objectives beyond simply accommodating vehicle travel.

A "complete streets" approach is a key component of the Duncan TMS to better balance the competing needs for space within the right-of-way. This includes facilitating movement of people and goods, but also opportunities for street trees and landscaping, stormwater management, enabling recreation, and providing a venue for community and social activities.

The complete streets approach is already central to the Cairnsmore Sustainable Neighbourhood Plan, so adopting complete streets at a community-level is a logical next step in acknowledging the many roles and functions of Duncan's streets.

What is a Complete Street?

Complete Streets are streets for everyone. They are designed and operated to prioritize safety, comfort, and access to destinations for all people who use the street, especially people who have experienced systemic underinvestment or whose needs have not been met through a traditional transportation approach, including older adults, people living with disabilities, people who cannot afford or do not have access to a car. Complete Streets make it easy to cross the street, walk to shops, jobs, and schools, bicycle to work, and move actively with assistive devices. They allow buses to run on time and make it safe for people to walk or move actively to and from bus stops.

5.1 COMPLETE STREETS POLICIES

The following draft policies are proposed to guide complete streets infrastructure and programs in Duncan:

1. **Build out the Long-Term Complete Streets and Goods Movement Networks as envisioned by the TMS.**
2. **Develop updated street classifications and design standards following Complete Streets principles.**
3. **Improve intersections that have been identified as having safety, operation, or geometric issues in a way that accommodates all users and reduces conflicts with motorists.**
4. **Manage curb space to be flexible and reflect the mobility hierarchy and emerging technologies.**
5. **Design and require universally accessible streets that consider the needs of all, including people with diverse abilities.**
6. **Develop an integrated and multi-modal network to facilitate the safe and efficient and integrated movement of goods.**
7. **Develop a well-connected grid network of streets and laneways to improve traffic circulation.**

5.2 STREET NETWORK ANALYSIS

Detailed technical analysis has been undertaken to understand existing and future conditions, and as the basis for identifying where future complete street improvements are necessary to maintain appropriate conditions.

A detailed account of existing street network conditions was included in Working Paper no.1 (Section 5.3 – 5.5), with consideration given to traffic volumes on key corridors, network and intersection performance, and collision data.

The emphasis of the following analysis is on understanding the impact that future land use and growth will have on the complete street network, including existing issues made more challenging and new challenges that arise. Opportunities to invest in complete street infrastructure are identified to help the City and partner agencies address identified issues.

NETWORK ANALYSIS

FUTURE GROWTH

A future population growth and land use scenario was developed to understand how the community will grow in future and as the basis for projecting future travel demand. Future growth has been projected for a 20-year (2042) timeline, with consideration given to overall growth, general locations for growth, and the type of land use – residential (units), non-residential (floor area).

The anticipated 2042 population for the City of Duncan is approximately 6,000. This represents an increase of approximately 20% over the 2021 population of 5,047 (2021 Census population). When considered for the increase in land use, this equates to approximately 300-400 new residential units and approximately 11,000-13,000 m2 of new gross floor area (GFA).

As has been highlighted throughout the TMS process, Duncan is a destination for a significant number of regional trips that originate outside the City's boundaries. Future growth and land use in surrounding communities has also been considered to understand how additional travel demand may impact the City's street network. This includes an estimated 5,300 population increase in North Cowichan over the next 20 years, focused in the Berkey's Corner, University Village, Bell McKinnon and Kingsview neighbourhood. Additional growth is forecasted in Cowichan Tribes communities, with travel demand to/from Duncan from the south and southeast.

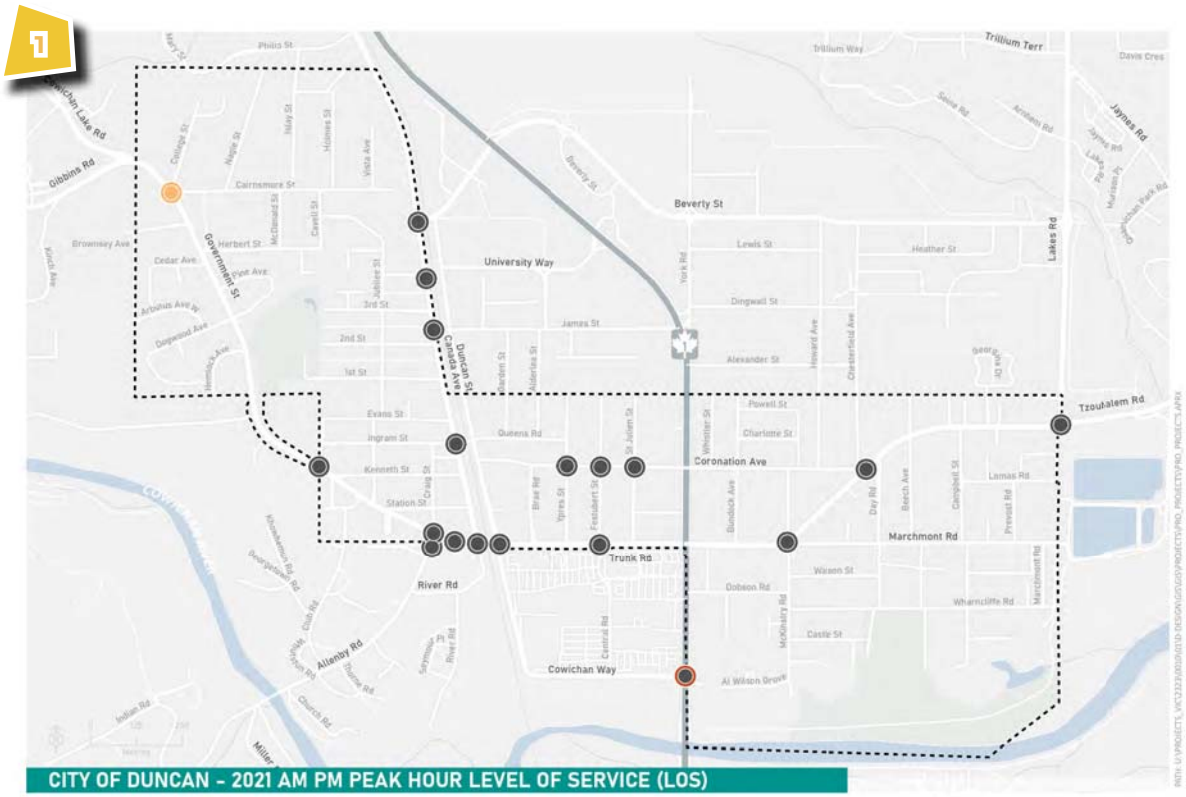
INTERSECTION ANALYSIS

Future trips are accounted for using the growth and land use scenario described above. Trip generation is based on land use type and quantity using recommended trip generation rates contained in the Institute of Transportation Engineers (ITE) Trip Generation Manual. Once generated, trips are assigned to the street network based on known and anticipated travel patterns.

Intersection analysis was completed using the anticipated new trips and trip distribution described above. Synchro models were developed using future intersection volumes to calculate future 2042 Level of Service (LOS) for both the AM and PM peak periods. The results from the modelling exercise are cross compared to the LOS measures established for existing conditions. Refer to **Map 1:2021 AM (PM) Peak Hour Traffic Volume** and **Map 2: 2041 AM PM Peak Hour Level of Service**.

About Level of Service (LOS)

Level of Service (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.



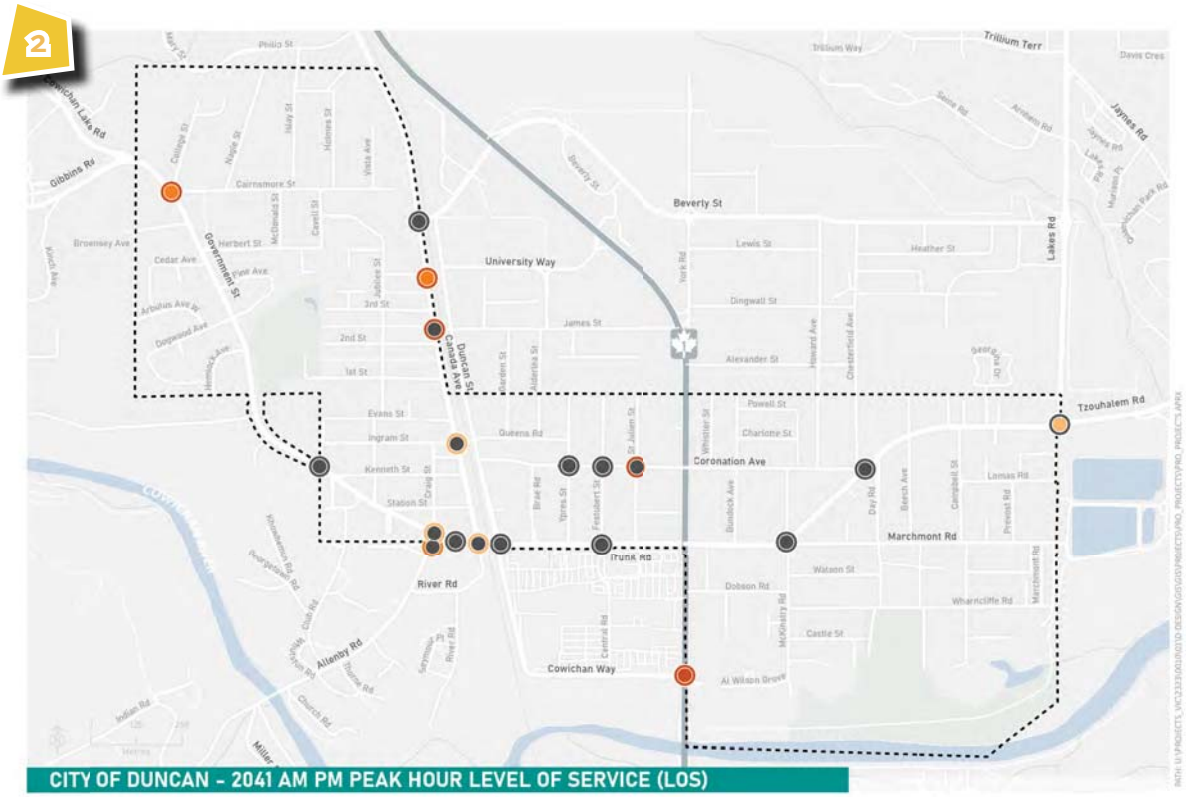
CITY OF DUNCAN - 2021 AM PM PEAK HOUR LEVEL OF SERVICE (LOS)

Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; AM and PM Level of Service: USL, 2021; ESRI Basemap

A, B, C ,D,E,F

AM LOS

PM LOS



CITY OF DUNCAN - 2041 AM PM PEAK HOUR LEVEL OF SERVICE (LOS)

Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; AM and PM Level of Service: USL, 2021; ESRI Basemap

A, B, C ,D,E,F

AM LOS

PM LOS

5.3 LONG TERM COMPLETE STREET NETWORK

Analysis of Duncan's street network conducted in preceding sections along with the experiences of engagement participants provides a clear basis for the community's long-term complete streets network. The long-term network identifies potential changes to road classifications, desired intersection enhancements, and possible road extensions or new rights-of-way that will help our community become increasingly connected, convenient, and safe for all modes of transportation, as shown in **Map 3: Draft Long-Term Complete Streets Network**.

Since the complete streets network is the foundation for all mobility throughout the community and to neighbouring areas, it is important to acknowledge that these proposed changes are multi-modal in nature and not specifically directed at vehicle movement. Instead, these improvements should benefit active, transit, and vehicle mobility, along with other emerging mobility options discussed throughout this working paper.

COMPLETE STREETS TYPOLOGIES

Identified street types – **Highway**, **Major**, **Connector**, **Local**, Laneway – are described in detail in Section 5.4.

NETWORK IMPROVEMENT TYPES

A series of network improvements are identified based on the background review and technical analysis undertaken. Improvements are categorized under the following objectives:

T Traffic Congestion

Improvements to address intersections and/or corridors with existing or anticipated traffic congestion.

S Road Safety

Improvements to address high collision locations and/or those with underlying safety or geometric design challenges.

L Network Connections

Improvements to better connect the street network, provide varied route options and/or link future development areas.

C Complete Streets

Improvements to enhance streetscape design, address under-developed infrastructure and better support active transportation and liveable streets objectives.

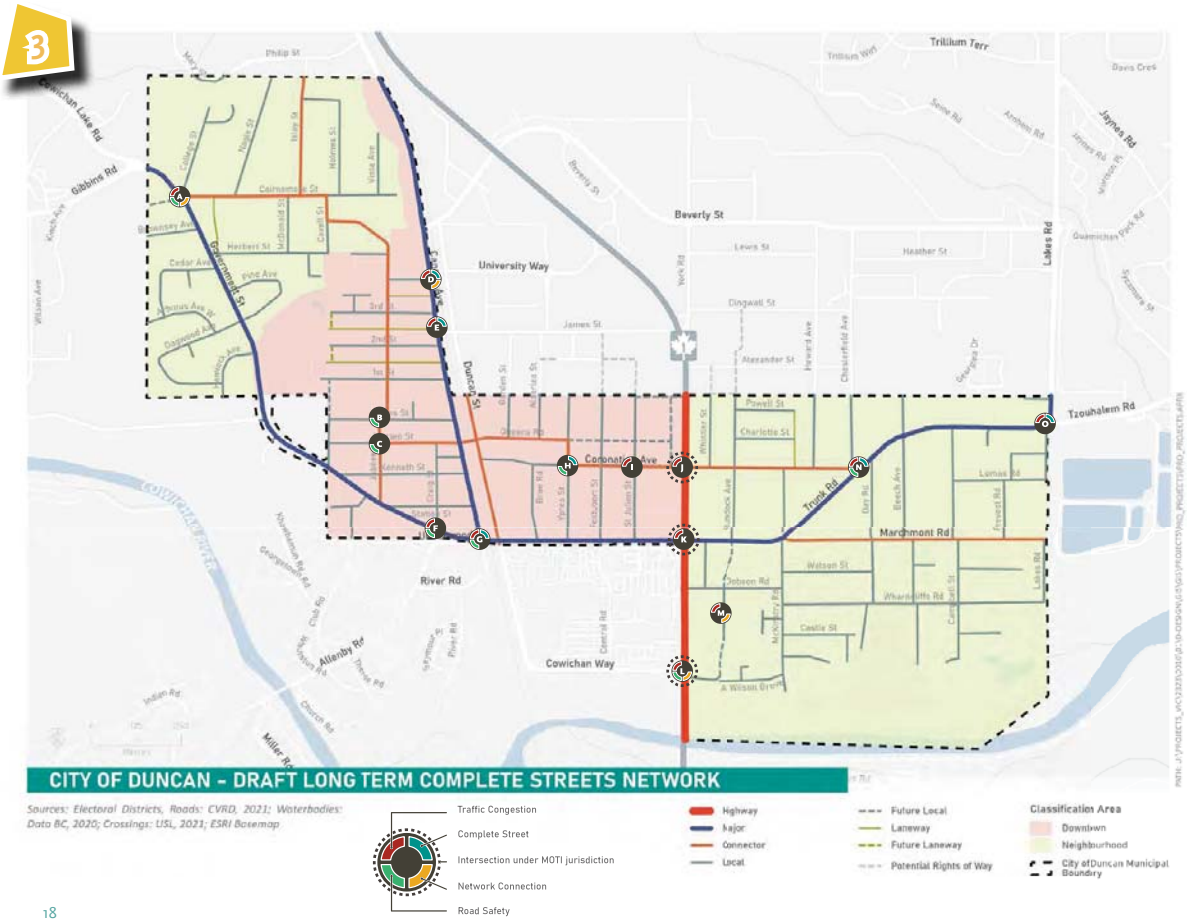


Table 1. Summary of priority Complete Street Network projects

LOCATION		TYPE	TIMING	DESCRIPTION
A	Government St / Cairnsmore Rd	T, S, L	Short	Install single-lane roundabout with five legs, including new western connection per City developed design
B	Jubilee St / Evans Rd	S	Short	Minor safety improvements to improve intersection sightlines, including advancing northbound and southbound stop bars to improve motorist sightlines (consider pursuing alongside Jubilee St / Ingram St improvements)
C	Jubilee St / Ingram St	S	Short	Geometric improvements to align southbound and eastbound travel lanes and create perpendicular pedestrian crossing on west and south leg (consider pursuing alongside Jubilee St / Evans Rd intersection improvements)
D	Canada Ave / 4th St	T, L, C	Short Medium	Install traffic signal to allow eastbound left-turn movements to more easily access Canada Ave and better facilitate traffic between Jubilee St and Canada Ave (with concurrent change in classification for 4th St to Connector) Improve street design on 4th St to reflect Connector street classification and better accommodate increased traffic volumes and active transportation activities in future
E	Canada Ave / James St	T, C	Short	Install traffic signal to improve eastbound traffic operations and multi-use crossing on Canada Ave
F	Government St / Allenby Rd / Craig St	T, S	Short Medium	Consider installing "Do Not Block Intersection" signs and pavement markings to address westbound left-turn queuing through Allenby Rd / Underwood St intersection Permanent turn restrictions on the eastbound left, westbound left and northbound right turn movements (in cooperation with Government St / Canada Ave improvements)
G	Government St / Canada Ave	T, S, C	Medium	Alter southbound laning to include southbound left and southbound left/right turn lanes, geometric improvements to eastbound left and westbound left turn (onto Underwood St), and improve pedestrian crossing at Underwood St improvements (consistent with 2017 Government Street Traffic Improvements report)

T Traffic Congestion
S Road Safety
L Network Connection
C Complete Street

LOCATION		TYPE	TIMING	DESCRIPTION
H	Coronation Ave / Ypres St	S, C	Medium	Convert the traffic control and include physical channelization so that the southbound left-turn and westbound right-turn are established as the major movements operating at free-flow condition (stop sign on northbound and westbound through, yield on eastbound approaches). Consideration may also be given to closing Coronation Ave west of Ypres St to vehicle traffic to further simplify the intersection.
I	Coronation Ave / St. Julian St	T	Medium	Establish northbound right-turn lane (likely only requires adjusted line painting)
J	Trans-Canada Hwy / Coronation Ave	T	Short	Signal timing upgrades to optimize intersection performance
K	Trans-Canada Hwy / Trunk Rd	T	Short	Signal timing upgrades to optimize intersection performance
L	Trans-Canada Hwy / Cowichan Way	T, S, L	Short	Install a pedestrian activated half signal to facilitate safe pedestrian and cyclist crossing of the highway (consistent with 2014 TCH Corridor Management Plan)
M	Price Road Connection	T, L	Medium	A north-south continuous connection paralleling the Trans-Canada Hwy to the east to facilitate rear access to properties fronting the Trans-Canada Hwy and allow for inbound/outbound traffic to access the highway at major intersections such at Trunk Rd, Coronation Ave and Cowichan Way (consistent with 2014 TCH Corridor Management Plan) Consider improvements required to facilitate Bundock Ave connection at Trunk Rd, includingpossible northbound and southbound turn restrictions to limit impact on Trunk Rd
N	Trunk Rd / Coronation Ave	T, S, C	Medium	Extend westbound right-turn lane by removing centre median and changing lane configuration on Trunk Rd between Coronation Ave and Beech Ave Consider changing Day Rd to right in / right out to address spacing from Coronation Ave intersection, consider impact on transit routing
O	Trunk Rd / Lakes Rd	T, C	Medium	Establish additional westbound through lane to address inbound traffic delays and support increased traffic east of Duncan

T Traffic Congestion
S Road Safety
L Network Connection
C Complete Street

CONSIDERING A BYPASS

An alternate route to the Trans-Canada Highway has historically been considered as a long-term solution to address congestion through Duncan. A bypass route would primarily be an initiative of the Ministry of Transportation & Infrastructure (MOTI), in cooperation with Cowichan Tribes, North Cowichan and Duncan.

While the bypass route may help address some of the congestion concerns through Duncan, it would come with several significant concerns. Advantages and disadvantages are considered below:

Advantages:

- Address congestion concerns on the Trans Canada Highway through Duncan
- Reduce conflicting movements along the Trans Canada Highway through Duncan
- Support inter-regional truck traffic and goods movement

Disadvantages:

- Significant capital cost detracting from other local priorities
- Visitor traffic diverted around Duncan, resulting in less local spending and negative economic impact
- Possible impact of infrastructure on natural habitats
- Impact of bypass traffic on outlying residential neighbourhoods

An alternative route to the Trans Canada Highway was considered in the 2014 *Trans Canada Highway Corridor Management Plan*, with the following concluded:

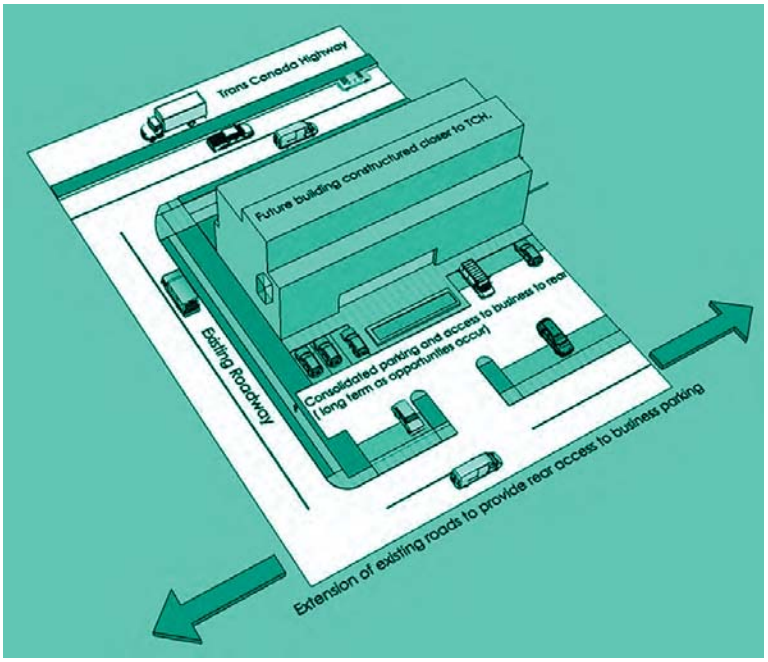
Re-routing the TCH would improve the traffic level of service by reducing the amount of conflicting movements (crossing travel paths) for local circulating traffic as well as highway through traffic, however the time savings would be negated for highway traffic by replacing a shorter corridor and signalized intersections with a longer corridor. This option is cost prohibitive, would likely affect some existing businesses along the existing TCH, and would significantly impact the environment and properties along any proposed new corridor.

While a bypass is not a priority in the TMS, the City supports MOTI's long-term planning to identify and preserve a possible bypass alignment in case such a corridor is needed in future.

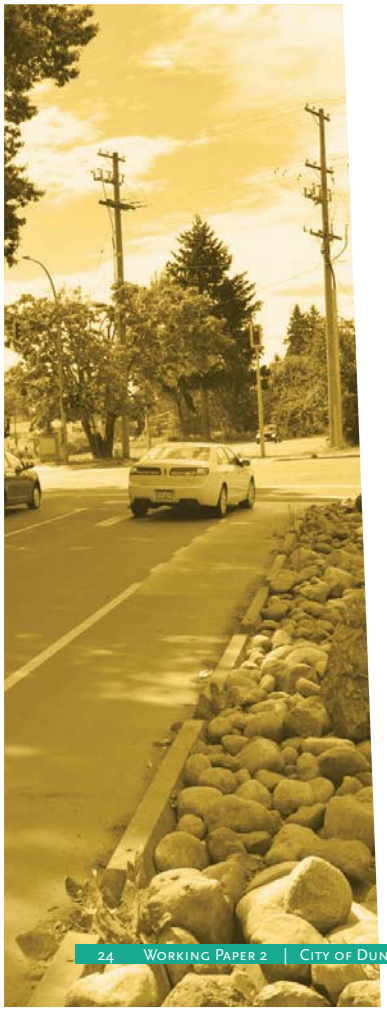
TRANS-CANADA HIGHWAY CORRIDOR

The Trans Canada Highway supports safe and effective inter-regional vehicle and freight movement, but also serves an important local function in facilitating multi-modal trips and connecting the community. Key planning principles for the Trans Canada Highway corridor are identified below, consistent with directions contemplated in the ***Official Community Plan*** and ***Trans Canada Highway Corridor Management Plan*** (2014).

- Support development at greater density with buildings located close to the front lot line;
- Locate parking to the rear of buildings, accessed by continuous rear access and laneways; and,
- Reduce the number and frequency of access on the Trans Canada Highway and instead facilitate site access from streets at the rear (preferred) or side (alternative) streets.



Future Trans Canada Highway Access Configuration (Trans Canada Highway Corridor Management Plan, Section 4.5, pg 4.10)



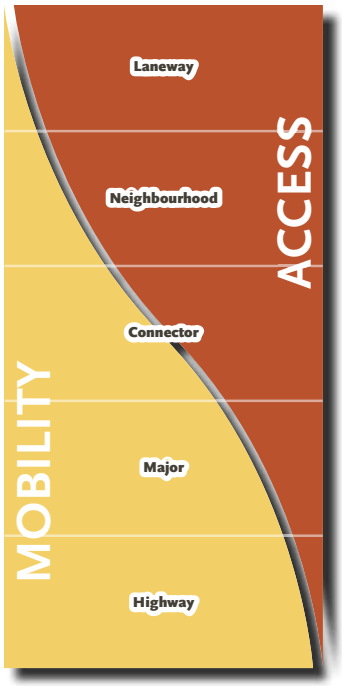
5.4 COMPLETE STREET TYPOLOGIES

Street classifications are the various road types that make up Duncan's complete streets network. Each classification serves a unique role within the network, with operating characteristics and specific design treatments to achieve its intended purpose. This section will describe in detail each of Duncan's unique street typologies and how they will serve their role in the broader network.

NETWORK FUNCTION

Each street classification serves a function within the broader network. Some streets emphasize mobility and are intended to satisfy trips in Duncan and Cowichan Valley over longer distances, while others offer immediate access to properties, commercial areas, and other key regional destinations and are intended to be travelled only for short distances.

Below is a diagram identifying the general role of each street classification in providing mobility and access throughout the community.



STREET TYPOLOGIES

A series of street typologies have been identified as the basis for the City's complete streets network. Typologies reflect best practice from similar communities and past planning initiatives in Duncan, including the previous ***Official Community Plan*** (2009), Duncan Area Active Transportation Plan (2014), and the Cairnsmore Sustainable Neighbourhood Plan (2019).

A series of street typologies are recommended as the basis for the complete streets network, and which will be used subsequently when applying typical cross-sections for street design and decision making related to active transportation facilities and traffic calming.

Typologies have been identified and differentiated to reflect their surrounding context, including their adjacent land use and neighbourhood context, current and anticipated traffic volumes, design travel speeds and speed limits, and right-of-way widths. The street typologies identified for the purposes of the TMS are informed by these criteria and street classification characteristics defined in other municipal planning documents. When combined with best practice concerning appropriate road hierarchy, the road classification is intended to be well suited to Duncan and its complete streets network.

For detailed cross-sections, refer to **Appendix B: Draft Complete Streets Typologies & Cross-Sections.**

Cairnsmore Sustainable Neighbourhood Plan, Section 5.5.1:

The City shall integrate the streetscape elements identified in this section into the Transportation Master Plan. This plan provides guidance on desired elements. Details, including dimensions, will be in the Transportation Master Plan.

DUNCAN'S STREET TYPOLOGIES

A. Highway

The highway classification in Duncan is reserved for the Trans-Canada Highway and reflects the unique role of this corridor in the community. A highway contains the highest traffic speeds and volumes and is intended to be a critical thoroughfare for regional connectivity, including heavy commuter, recreational, and commuter traffic.

B. Major

A major road is a through connection for traffic travelling to local and regional destinations. Major roads in Duncan are equivalent to arterial roads in a traditional road hierarchy. The design of major roads is intended to accommodate higher speeds and traffic volumes on rights-of way that are typically 20 metres.

C. Connector

Connector streets, known as collector streets in a traditional road hierarchy, provide intra-community connectivity, allowing a variety of road users to travel between neighbourhoods and key community destinations, and provide access other streets higher and lower in the classification. All connector streets typically incorporate active transportation infrastructure within a typical 20 metre right-of-way and support medium travel speeds, speed limits, and traffic volumes.

D. Local

Local streets are the fundamental component of the complete streets network and are the most common classification throughout Duncan. These streets play a vital, multi-faceted role in the transportation system allowing for local connectivity for vehicles and active transportation, all while supporting the urban forest and providing open space for social interaction, play, and other activities. In Duncan, local streets vary in width, from 10 metres in constrained conditions to 15-18 metres in a more typical right-of-way, and support lower speeds, design speeds, and traffic volumes.

E. Laneway

A laneway is the least developed of the road classifications in Duncan, but instead plays a key role in commercial loading and allowing for some connectivity, particularly for pedestrians and cyclists, and safe access in certain situations. Laneways are low speed, low volume, and narrow rights-of-way, and are mostly found in the Downtown, Trans-Canada Highway Corridor, and Cairnsmore neighbourhoods.

Context Areas

As shown in **Table 2** and **Table 3** below, the road classification for the TMS combines the hierarchy defined in the previous *Official Community Plan*, the Active Transportation Plan, and the Cairnsmore Sustainable Neighbourhood Plan. In addition, the TMS proposes three sub-classifications that allow the road classifications in the hierarchy to be more responsive to each street's context. These sub-classifications are specifically applied to Connector and Local roads and are as follows:

1. Downtown Streets

Downtown streets are designed to accommodate a combination of commercial activities, vibrant social spaces, and higher levels of traffic, including active transportation users. This sub-classification applies only to streets within the Downtown and Coronation neighbourhood.

2. Neighbourhood Streets

Neighbourhood streets are primarily concentrated in residential areas and allows residents to access local amenities and key destinations, while supporting and enhancing the social and open space functions of residential streets. This sub-classification primarily applies to streets in the Cairnsmore, Centennial Heights, Chesterfield, and Marchmont neighbourhoods.

3. Shared Streets

The third sub-classification, shared streets, provides the opportunity for Duncan to implement streets that are more fluid and supportive of a street's different mobility roles in constrained conditions. Shared streets are selectively located on streets that are conducive to a sensible approach to road design where rights-of-way must balance vehicle, pedestrian, and cyclist movement, along with on-street parking and boulevard space.

Table 2. Comparison of Street Classifications in Other City Documents

ROAD CLASSIFICATION	SUB-CLASSIFICATION	REFERENCE TO OTHER DOCUMENTS		
		CAIRNSMORE SUSTAINABLE NEIGHBOURHOOD PLAN	OFFICIAL COMMUNITY PLAN (2009)	ACTIVE TRANSPORTATION PLAN
Highway	-	-	-	-
Major	-	Neighbourhood Commercial Core (Government St)	Arterial	Arterial
Connector	Downtown	-	Collector	Collector
	Neighbourhood	Major Neighbourhood Connector		
Local	Downtown	-	Local	Local
	Neighbourhood	Local Residential Street with Boulevard, Local Residential Street with Medians		
	Shared	Shared Local Streets		
Laneway	-	Neighbourhood Commercial Node Shared Lanes	-	-

Table 3. Summary of Key Characteristics, by Street Classification

ROAD CLASSIFICATION	SUB-CLASSIFICATION	TYPICAL RIGHT OF WAY WIDTH	SPEED LIMIT	TRAVEL SPEED	TRAFFIC VOLUMES
Highway	-	~30m	50 km/h	50 km/h	> 15,000 vpd
Major	-	12 - 25m	50 km/h	40 – 50 km/h	5,000 – 15,000 vpd
Connector	Downtown	12 - 20m	50 km/h	40 – 50 km/h	1,000 – 5,000 vpd
	Neighbourhood				
Local	Downtown	10 - 20m	30 km/h	20 – 30 km/h	< 1,000 vpd
	Neighbourhood				
	Shared	10 - 15m			< 500 vpd
Laneway	-	~ 5 - 7m	20 km/h	5 – 10 km/h	< 100 vpd

5.5 LIVABLE NEIGHBOURHOOD STREETS

Perceptions around the role of the transportation network is changing around Canada and North America. There is growing recognition that public rights-of-way can be multi-faceted and community-oriented spaces where people can socialize and recreate, while also performing the basic mobility function of streets. Since roads occupy so much of the City's public space, promoting livable neighbourhood streets can be a critical characteristic of Duncan's transportation network. This is especially important in residential areas, where streets often play this role already but it is not formally incorporated into their design and function.

This section will further explore how livable neighbourhood streets could be implemented throughout Duncan, including street design standards, traffic management, and potential projects to begin this process.

KEY ELEMENTS OF LIVABLE STREETS

Recent planning efforts like the Cairnsmore Sustainable Neighbourhood Plan emphasize how street design can help promote livable communities. Several key ingredients can combine to create thriving neighbourhood streets including:

- Supporting safe and accessible multi-modal transportation infrastructure, emphasizing the role of active transportation and transit;
- Developing convenient connections to key destinations and daily needs;
- Providing opportunities for commercial activity in mixed-use and commercial nodes;
- Supporting social interaction in vibrant public spaces; and,
- Emphasizing the natural elements of the streetscape including green stormwater management and a thriving urban forest.

Each of these ingredients ensures that neighbourhood streets embrace a variety of mobility, social, and environmental functions. These principles are relatively broad and can encapsulate a variety of different options for infrastructure development, activity programming, and streetscape design.

ACTIVITIES FOR LIVABLE STREETS

Many of the daily uses of streets around Duncan can contribute to livable neighbourhood streets, emphasizing the many functions of this space and their potential to support health, environment, and community. Activities that exemplify livable streets could include the following:

- Neighbourhood celebrations / street events
- Boulevard gardening / re-wilding
- Street hockey, basketball, other games
- Street art / chalk
- Green stormwater management
- Creative traffic management
- Access to local shops and amenities

Not all these activities apply in every context, however they show the wide range of uses that can be supported through a creative re-imagination of public spaces.

LANEWAYS

Duncan's laneway network affords a significant opportunity not available to most other communities. Laneways provide for rear access to adjacent properties where garages are located and activities such as parking, waste pick-up, and deliveries may be accommodated. The presence of laneways allows the property frontage on the primary street to remain free of driveways and other activities, giving priority to walking and cycling facilities and maximizing opportunities for on-street parking and boulevards. The design of laneways could vary to reflect the intended function and activities to be accommodated.

Recognizing the importance of laneways, the City intends to establish and develop laneways where possible. Proposed policies for the TMS are shown below.

Laneway Policies (proposed)

The following are proposed as key policies respecting laneways, consistent with policies contained in the Cairnsmore Sustainable Neighbourhood Plan:

1. Laneways will be developed in City-owned rights-of-way where they exist.
2. New laneways not in City-owned rights-of-way will be dedicated as public street right-of-way through the land development process.

NEIGHBOURHOOD TRAFFIC MANAGEMENT

Neighbourhood traffic management (or traffic calming) is the process of changing driver behaviour to fit with adjacent land use and other street users, and to better align operating characteristics with the intended function.

Neighbourhood traffic management is commonly pursued to achieve one or more of the following objectives:

- Reduce vehicle travel speeds;
- Reduce traffic volumes;
- Discourage neighbourhood short-cutting;
- Minimize conflicts between vehicles and other street users; and,
- Improve the neighbourhood environment.

Above all, traffic management is an opportunity to enhance neighbourhood livability by ensuring motorists operate in a safe and comfortable manner.

The suite of possible traffic calming approaches includes access restriction, vertical deflection, horizontal deflection, and street narrowing, surface treatments and pavement markings, and supporting approaches such as enforcement, education, and technology. Each general approach includes specific traffic management devices that may be applied to achieve objectives of reduced travel speed, traffic volumes, or short-cutting.

Traffic calming is most common on Local Streets where operating characteristics (speed, volume, short-cutting) exceed target levels. Measures may also be applied on Connector Streets to address speeding concerns but should generally not target reduced traffic volumes or short-cutting as Connectors are intended to accommodate up to 8,000 vehicles per day. Traffic calming is not appropriate on Majors and Highways. Further, it is important that traffic calming is applied only where required to address undesirable traffic conditions, as inappropriate applications may have adverse impact on nearby streets, cyclists, and larger vehicles unable to properly navigate the street (i.e., buses, trucks, emergency services).

North Cowichan Traffic Calming Policy

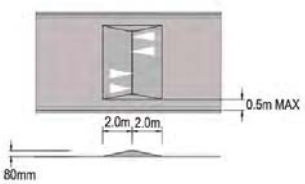
The Municipality of North Cowichan created a Traffic Calming Policy in 2005 to create consistency in where and how traffic calming is pursued. The document clarifies the following:

- Opportunities to pursue traffic calming (resident request, new development, capital projects)
- The process undertaken and conditions that must be met in considering whether traffic calming is appropriate
- Appropriate traffic calming devices for application in North Cowichan
- Monitoring approaches to gauge the effectiveness of traffic calming

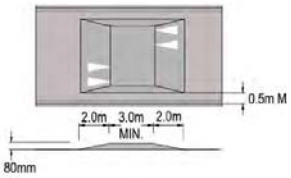
The policy can be referenced online at: www.northcowichan.ca/assets/Departments/Engineering/docs/TrafficCalmingPolicy.pdf

SAMPLE TRAFFIC CALMING DEVICES

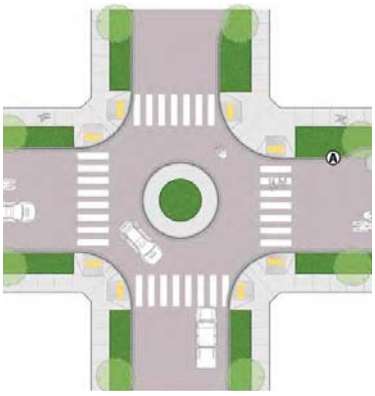
Speed Hump



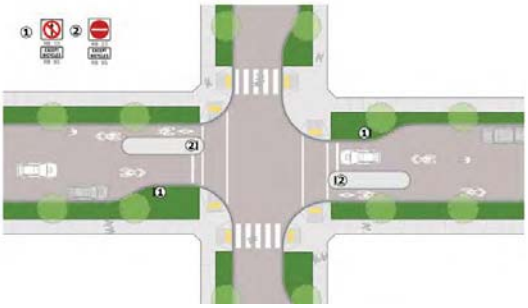
Speed Table



Traffic Circle



Directional Closure



TACTICAL URBANISM

To support livable neighbourhood streets in Duncan, there are several low-cost and rapidly implementable initiatives available to alter the street function without committing to the full cost of a permanent installation. Many of these pilot projects are already used in Duncan and are becoming increasingly common in other urban areas, particularly with the COVID-19 pandemic triggering a broader re-imagination of public spaces through tactical urbanism and other temporary installations.

Tactical urbanism and pilot projects would be directed at improving user experiences, addressing identified community needs, and testing solutions that, if successful, could be made permanent over the long-term.

PILOT INITIATIVES

1. **Sidewalk Patios** | Allow seasonal sidewalk patios in the downtown (guidelines may be required to ensure patios are safe and accessible, and to retain sidewalk and street function)
2. **Traffic Calming** | Interim traffic calming installations such as curb extensions and speed cushions that change motorist behaviour and support comfortable walking and cycling conditions
3. **Pop-Up Bike Lanes** | Bicycle lanes demarcated with temporary bollards, paint, or planters
4. **Street Closure** | Temporary street closures to support special events and community-building initiatives
5. **Bus Stops** | Floating bus stops extended from the transit pad to provide additional space for waiting passengers

Temporary Curb Extensions

The following locations are candidate locations for temporary curb extensions on wide streets to reduce crossing distance and slow vehicle turn speeds:

- Coronation Avenue corridor (Bundock, McKinstry, Howard)
- Queens Rd corridor (Garden, Alderlea, Ypres)
- Jubilee Street corridor (2nd, 3rd, 4th)
- Jubilee Street / Evans Street intersection

5.6 GOODS MOVEMENT

Safe and effective goods movement is essential to supporting Duncan and the Cowichan Valley's economy. To that end, a series of initiatives have been identified to ensure goods movement is accommodated in the City with strong connections to and from the Trans-Canada Highway, as well as appropriate measures to ensure goods movement is accommodated in a way that minimizes any negative impacts on neighbourhoods.

GOODS MOVEMENT NETWORK

A goods movement network will be established to clarify routes where large commercial vehicles can operate without restriction as shown on Map 4: Goods Movement Network. The network restricts large commercial vehicles primarily to identified Highway and Major streets (with exceptions), while providing access to key commercial, industrial, and institutional uses.

GOODS MOVEMENT ROUTE BYLAW

A regulatory bylaw should be established to allow the City and RCMP to enforce the intent of goods movement restrictions. The bylaw can clarify the key parameters related to operations of large commercial vehicles in Duncan, including the following specific items:

1. Establish criteria for the type of large commercial vehicles that are subject to the goods movement regulations. A Gross Vehicle Weight (GVW) of 10,900 kg or greater is recommended for consistency with regulations in North Cowichan as the threshold above which regulations apply. Larger vehicles such as buses, emergency vehicles, and recreational vehicles (RVs) may be explicitly exempt from the regulations.
2. Clarify that large commercial vehicles are to operate only on identified goods movement routes, except where they may use the nearest possible street(s) to access a destination not on a goods movement route.
3. Identify the goods movement network through inclusion of the map included in this document.

ENFORCEMENT

Enforcement is required to ensure that the intent of regulations is uphold and large commercial vehicles are operated in manner that supports the City's objectives. This includes the need to coordinate with North Cowichan and Duncan RCMP to confirm their willingness and ability to enforcement goods movement regulations.

STREET DESIGN

Supportive street design principles should be considered as part of any street improvements along identified goods movement routes to ensure large commercial vehicle travel is accommodated. The following is recommended:

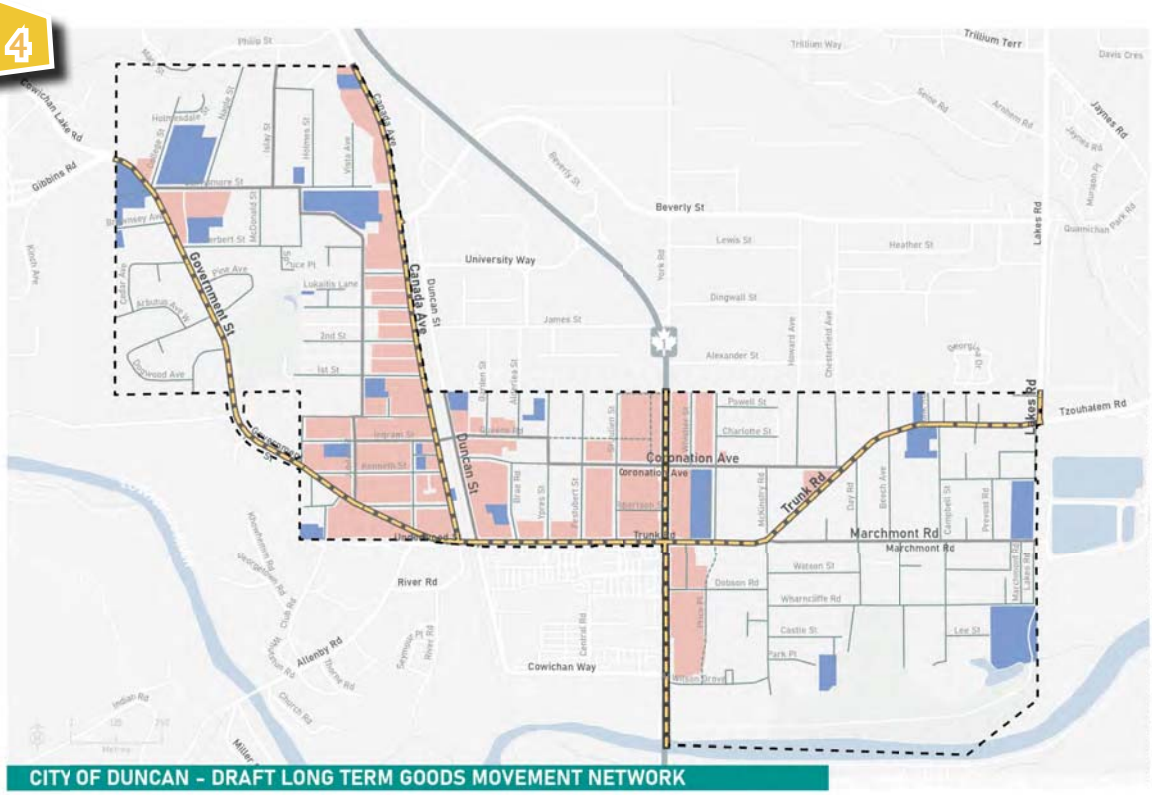
- Travel lane widths of not less than 3.5m, consistent with specifications for Highway, Major, and Connector streets.
- Favourable curb geometry on all right-turn movements connecting goods movement routes.
- Limit centre medians, right-turn channelization islands, or other traffic calming features that may restrict turns or be difficult to navigate for large commercial vehicles.

LOADING AREAS

Specific loading areas are required at the endpoint for goods movement trips to facilitate the unloading and transfer of goods. This can be facilitated by the City in two ways:

1. Review on-street loading areas to ensure sufficient opportunities for loading, specifically in the Downtown area where off-street facilities are not prevalent.
2. Review and consider off-street loading requirements in the Zoning Bylaw to ensure loading spaces are provided at an appropriate rate for land uses where loading and unloading activities are necessary.

4



CITY OF DUNCAN - DRAFT LONG TERM GOODS MOVEMENT NETWORK

Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; Land Use Designations: City of Duncan/USL, 2022; ESRI Basemap

Goods Movement Route

Draft OCP Land Use Designation

Institutional

Commercial

City of Duncan Municipal Boundary

5.7 EMERGENCY VEHICLES

Emergency services in Duncan, such as police, fire, and ambulance are essential to maintaining the City's function. Incorporating the needs of emergency vehicles is an important consideration that impacts the entire mobility network. Moving forward, the City should coordinate with local emergency service providers to ensure that infrastructure design and implementation will allow for an effective emergency response time. This section will examine how emergency vehicle access can be embedded in Duncan's streets and future infrastructure development and programs.

STREET NETWORK CONNECTIVITY

The importance of street network connectivity is reinforced when explored from the perspective of emergency vehicle access. A highly connected street network provides emergency responders with more options by which to respond to a call. Such a street network is more closely associated with a grid network rather than organic, "loop and lollipop" networks, which features more dead ends or cul-de-sacs. Implementing a highly, connected grid network is therefore crucial to designing for emergency services.

TRAFFIC CALMING

While traffic calming is an important part of livable neighbourhood streets, certain measures to limit the speeds of regular vehicle traffic can impede emergency access. When selecting the appropriate traffic calming strategy for a street ensuring that emergency vehicle access is not severely impeded is an essential consideration given the large size of many emergency vehicles and the need for rapid response times. Speeds humps, for example, may not be appropriate in all circumstances since they could negatively impact response time. Other traffic calming measures, such as curb extensions, traffic circles or diverters, or speed cushions may be preferrable. These measures could also benefit other large vehicles, like buses.

DESIGNING FOR EMERGENCY VEHICLES

There are special design considerations when designing Duncan's street network for emergency vehicles, in addition to traffic calming. Some emergency vehicles, such as conventional fire trucks, are large and have specific requirements for turn geometries. These requirements are similar to those of large commercial vehicles; however, it is expected that emergency vehicles can operate on all roads within the community.

6 WALKING + ROLLING

Walking is the most fundamental form of transportation, as it is part of every trip, whether made by car, transit, or bicycle. If suitable conditions exist – such as having a complete, connected sidewalk network and major destinations close to where people live – walking can also be a convenient alternative to driving for almost all short trips. Making walking more comfortable and convenient can also help reduce automobile dependence and greenhouse gas (GHG) emissions, improve public health, increase opportunities for social interactions, and contribute to a more livable and vibrant community.

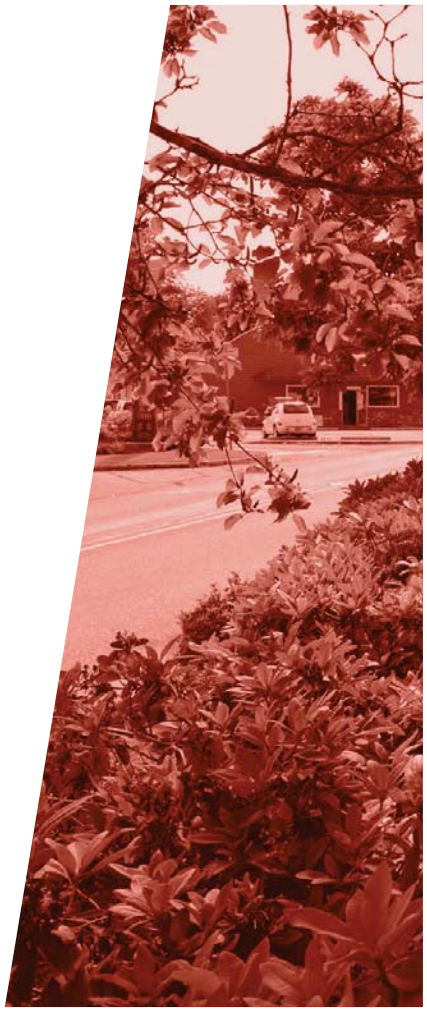
To support walking and pedestrian safety, the City develops and maintains a broad sidewalk network that extends approximately 28 km throughout the community. Most streets have good sidewalk coverage and crossing opportunities; however, sidewalk coverage is generally sparser in purely residential neighbourhoods away from mixed-use centres and major roads. Off-road trail facilities also help increase walking opportunities and enhance recreation. Trail networks are provided through Centennial Park, Rotary Park, and McAdam Park, as well as multi-use trails like the Friendship Trail and Dike Trail.

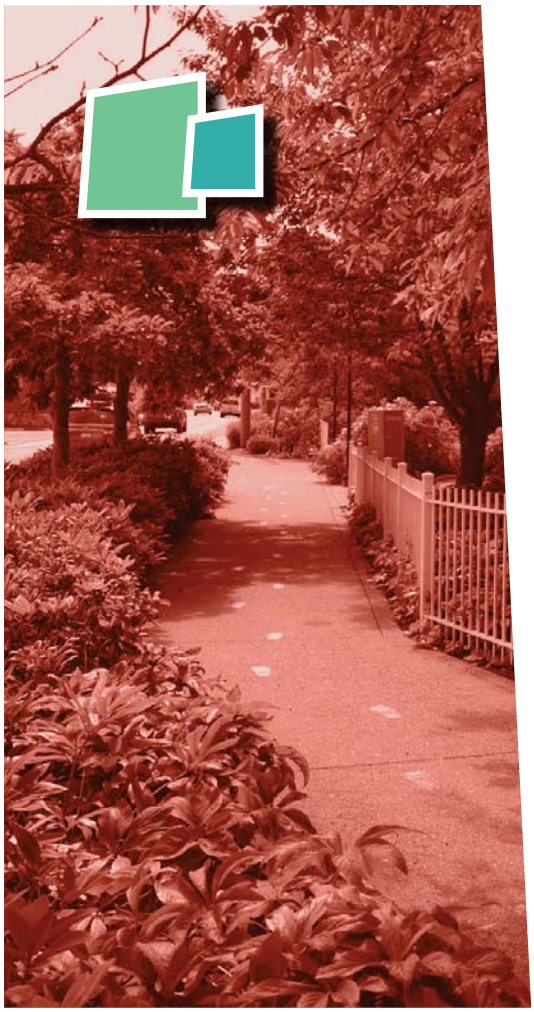
This section describes future directions for Duncan's walking and rolling network, including draft policies, a draft long-term walking and rolling network, and potential priority projects to be implemented throughout the long-term network.

6.1 WALKING + ROLLING POLICIES

The following draft policies are proposed to guide walking and rolling infrastructure and programs in Duncan:

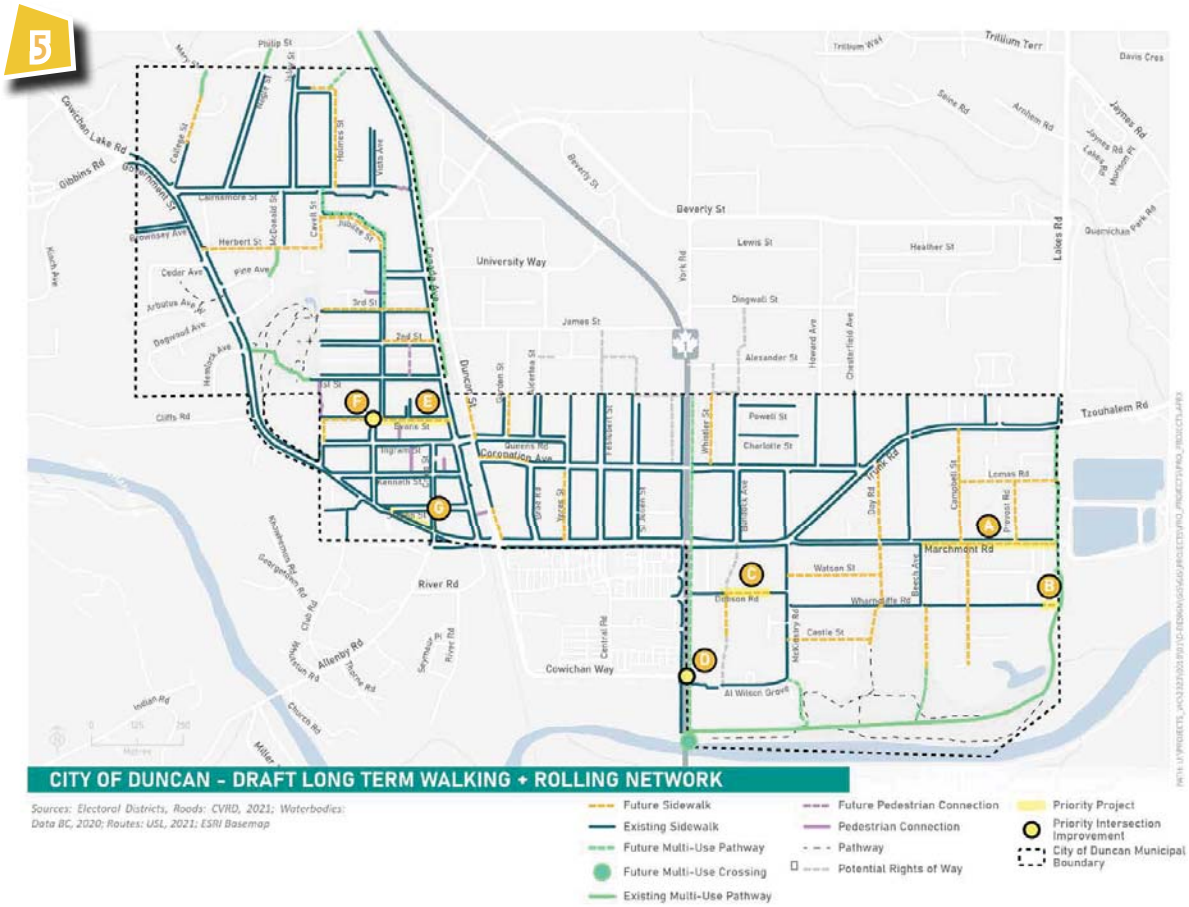
- Build out the Long-Term Walking + Rolling Network as envisioned by the TMS and CVRD Active Transportation Network Plan (this process is currently underway, for more information please refer to the CVRD's project page).
- Develop an expanded network of sidewalks and pathways to reduce barriers and create a more walkable city for people of all ages and abilities
- Pursue continuous pedestrian access along all neighbourhood transportation corridors.
- Continue to improve walking connections to schools, parks, and Neighbourhood Commercial, Core Commercial, Highway Commercial, Core Transition, and Community Land Use Designations, as defined in the draft OCP.
- Enhance the pedestrian environment through safety and accessibility improvements that make it easy and convenient to access everyday destinations.
- Develop a well-connected grid network of streets, laneways, public pathways and mid-block pedestrian connections to shorten walking distances and improve access to key destinations.
- Dedicate welcome and safe places that attract pedestrians and make walking enjoyable.
- Ensure major streets include convenient and safe crossings for people walking, including across the Trans-Canada Highway and safe crossings and active transportation connections nearby transit stops.
- Consider cost effective solutions for filling sidewalk gaps and making walking and rolling safer on neighbourhood streets.
- Create "places for people" through enhanced street treatments that improve pedestrian connections and create beautiful and interesting public places and expand the City's green space.





6.2 LONG-TERM WALKING + ROLLING NETWORK

To continue to support walking and rolling throughout Duncan, options have been identified to improve the pedestrian experience throughout the community. As shown in **Map 5: Draft Long-Term Walking + Rolling** Network, Duncan's long-term pedestrian network includes the provision of new linear walking and rolling infrastructure, accessibility improvements, and intersection and pedestrian crossing enhancements.



6.3 WALKING + ROLLING FACILITY TYPES

The long-term walking and rolling network consists of three facility types, each with unique design qualities appropriate in different contexts facilities.

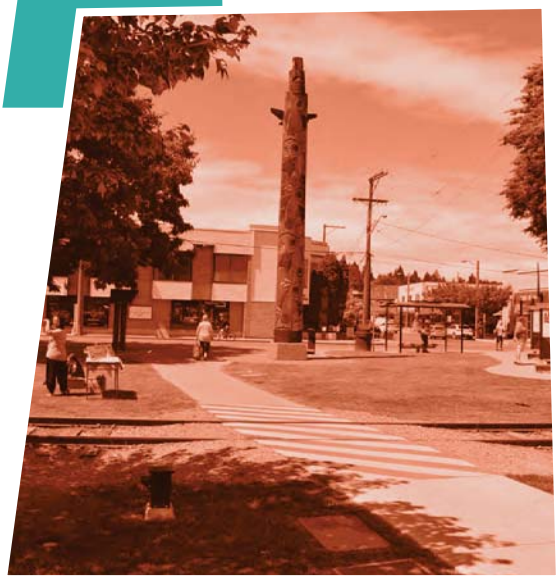
MULTI-USE PATHWAY (W1)

SIDEWALK (W2)

PEDESTRIAN TRAIL (W3)

For each, specific guidance is provided on a range of design features, including both the desired and constrained facility width.

Supporting guidance on accessibility and universal design is contained in **Section 6.5**.



W1. MULTI-USE PATHWAY

Multi-use pathways are designed to accommodate walking, rolling, cycling, and other active transportation users, physically separated from motor vehicles and typically located outside a street right-of-way.

PATHWAY WIDTH:

A minimum 3.0 m width is required to allow people walking and cycling to safely pass each other. Widening the pathway to 4.0m or greater will allow the pathway to safely set bi-directional (two-way) travel or to separate modes.

BUFFER WIDTH:

A buffer should be provided between the pathway and an adjacent street, where present.

SURFACE MATERIALS

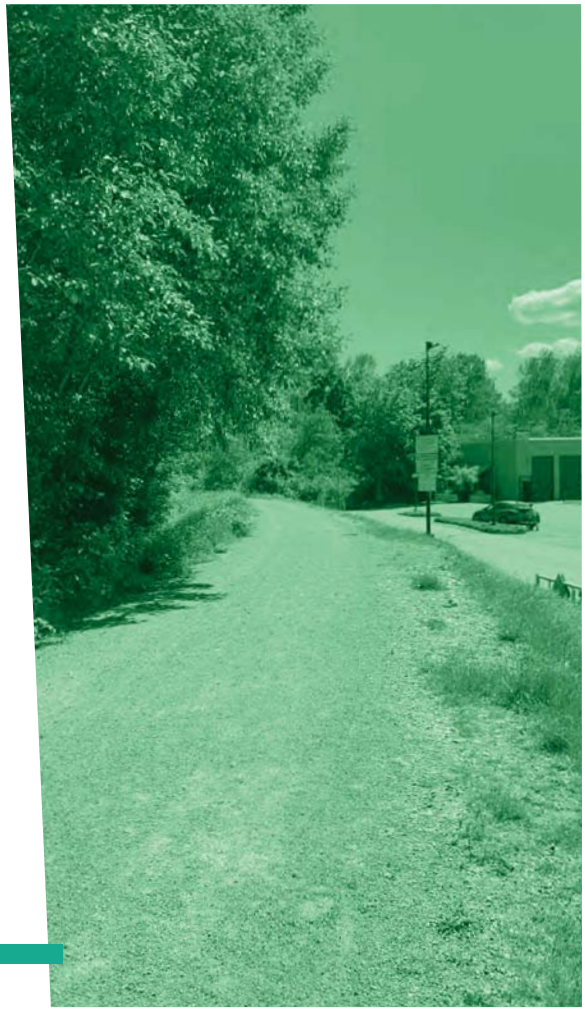
Asphalt provides a smooth continuous surface. Pavement markings should include the shared use symbol. Where applicable, a centre dividing line can be incorporated to mark out bi-directional traffic or to separate modes using the pathway.

PAINT AND SIGNAGE:

A shared pathway sign should be included along the pathway to indicate both walking and cycling are permitted.

ACCESSIBILITY FEATURES

Lighting should be provided to ensure the safety of pathway users and to identify potential hazards. Refer to Section 6.5 for detail on other accessibility design specifications.



W2. SIDEWALK

Sidewalks are the foundation of the walking and rolling network. Sidewalks are physically separated from the roadway by a raised curb and boulevard space and/or the furniture zone.

SIDEWALK WIDTH:

The City's current sidewalk standards call for 1.65 m wide sidewalks. It is recommended that this standard be widened to align with current provincial best practices. The recommended minimum sidewalk width is 1.8 m.

Wider sidewalks are desirable on primary streets through the Downtown and Coronation neighbourhoods. Along main commercial streets where high pedestrian volumes are expected, widths of 2.4 m or greater should be provided. Ideally, sidewalks in these locations should include a furnishing zone with additional space for street furniture and landscaping.

BOULEVARD WIDTH:

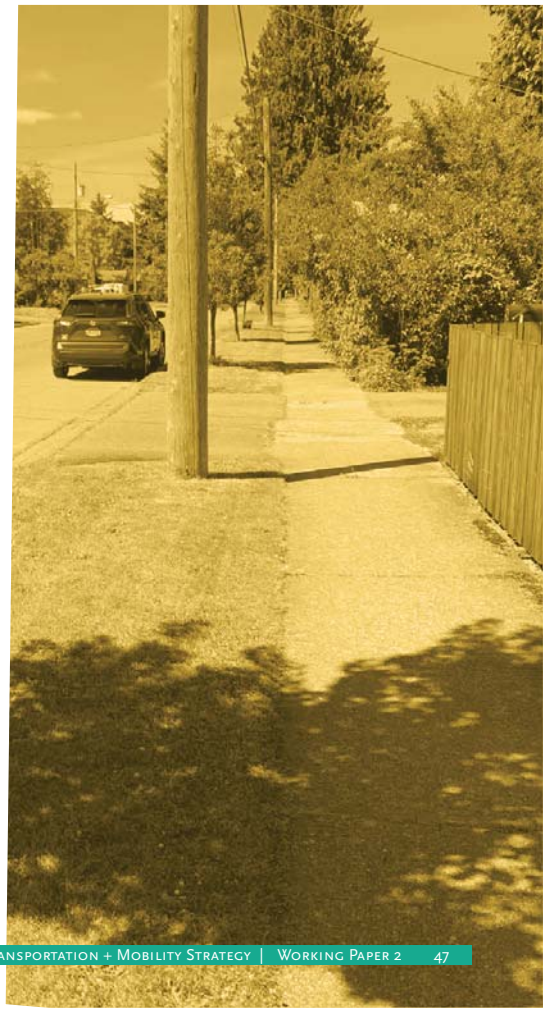
A boulevard space allows for further separation from the roadway and sidewalk. 1.5m of boulevard space allows for opportunities to support landscaping or street trees.

SURFACE MATERIALS:

- Concrete (preferred)
- Special asphalt or pavers may be applied in select areas

ACCESSIBILITY FEATURES:

A minimum 1.8m allows for people using mobility devices to pass in opposing directions. Cross slopes should not exceed 5%. Refer to Section 6.5 for detail on accessibility design specifications including curb ramps and tactile warnings.



W3. PEDESTRIAN TRAIL

A pedestrian trail is intended for the exclusive use of pedestrians, often located within parks or implemented as shortcuts to sidewalks or multi-use pathways.

TRAIL WIDTH:

Trails expected to receive steady two-way traffic should be 2.0 m wide. On trails with fewer users, 1.25m wide is sufficient.

SURFACE MATERIALS

Asphalt provides a smooth continuous surface and will ensure the trail is accessible. Some trails may implement gravel or bark chip/mulch surfaces where recreation is the primary activity and/or in more natural environments.

PAINT AND SIGNAGE:

Pedestrian only signage may be installed to indicate the use of the trail. On asphalt surfaces, a pedestrian only symbol may be applied to ensure compliance.

INTERSECTIONS + CROSSINGS

Intersections and crossings represent a critical juncture where pedestrians are exposed to potential conflicts with motorists, cyclists, and other street activities. To ensure safe and accessible crossing is facilitated at intersections and crosswalks, a series of design treatments are identified that prioritize people walking and rolling and mitigate crossing conflicts.

Curb Ramps + Tactile Indicators

Basic accessibility provisions – curb ramps and tactile indicators –can be installed at crossing locations to support safe crossing for people of all ages and abilites.

Leading Pedestrian Interval (LPI)

Leading pedestrian interval (LPI) – also known as a "pedestrian head start" – is an advanced walk signal that allows people walking or rolling to begin crossing at a signalized intersection before vehicles get a green signal, providing pedestrians a head start to ensure they are readily visible to right-turn motorists.

Pedestrian Countdown Timers

Countdown timers display a numeric countdown display that indicates the number of seconds remaining for a person walking or rolling to complete their crossing at a signalized intersection, providing added information to allow people to cross with greater confidence and comfort.

Audible Pedestrian Signals

Audible and vibrotactile indications provided at controlled crossings that act as the "walk" signal to support safe crossing for people with vision loss and others benefitting from additional sensory prompts.

6.4 WALKING + ROLLING PRIORITY PROJECTS

Based on the long-term walking and rolling network and the pedestrian facility types identified in preceding sections, several priority projects for walking and rolling infrastructure have been identified. A total of 7 projects are earmarked as priorities for pedestrians in the City of Duncan as shown in **Table 4.** Priority projects emphasize improvement assumed to be pursued by the City, and will support improvements achieved alongside land development.

As the TMS progresses, the priority project list will be further refined through discussions with City staff, stakeholders, and the public.

Table 4. Summary of priority walking and rolling network projects.

PRIORITY	LOCATION		DESCRIPTION	RATIONALE
A	Marchmont Rd	Beech Ave to Wharncliffe St (South side)	Sidewalk installation	Transit stop accessibility constraints Lack of sidewalk along a future connector route
B	Wharncliffe Rd	Vista Gardens to Dike Trail (North side)	Sidewalk installation	Local sidewalk connectivity between Dike Trail and residential areas, Rotary / McAdam Parks
C	Dobson Rd	South side	Sidewalk installation	Connect discontinuous sidewalk along street Provide option for pedestrians to connect east without walking along the TCH
D	Cowichan Way	Trans-Canada Highway	Intersection improvement	Pedestrian crossing improvements to allow for access across the TCH. Pedestrian-controlled signal to be installed to connect to the Marchmont neighbourhood and the Dike Trail. Requires MOTI approval.
E	Evans St	Canada Ave to Jubilee Rd (South side)	Sidewalk installation	Providing pedestrian facilities connecting towards major destinations (Duncan Manor, Centennial Park, Downtown Duncan, CVRD)
F	Jubilee St and Evans St		Intersection improvement	Identified in the accessibility audit as requiring path of travel alignment and accessibility upgrades (TWSIs, directional tactile markings, level landings) General traffic safety improvements required
G	Government St	Craig St to Jubilee St	Sidewalk improvement	Widening sidewalk to create appropriate, accessible conditions for pedestrian travel

6.5 ACCESSIBILITY + UNIVERSAL DESIGN

Accessibility is a term used to describe the degree of ease to use or enjoy something (device, service, place).Accessibility can be accomplished through Universal Design, allowing people with a disability to use the same facility or service as everyone else, or providing an alternative solution. This means creating a community and transportation network that is planned, designed, and retrofitted around people's diverse needs and abilities. Incorporating universal design benefits all community members like children, parents, seniors, people with injuries or illnesses and people with disabilities.

Ensuring that facilities are accessible to all visitors, residents, and other users is essential. This section is intended to provide guidance for ways to improve accessibility for the City's built environment, including barriers and issues identified through the Accessibility Audit conducted for this project and public engagement activities. Incorporating these universal design measures can help to remove or prevent barriers to access in the community and help to create an inclusive City.

The supporting design guidance aims to ensure that the infrastructure created is safe, comfortable, and provides access to all Duncan residents. This section identifies key design standards that should be incorporated into the built environment to improve accessibility and equity in the community.

UNIVERSAL DESIGN GUIDANCE

PEDESTRIAN THROUGH ZONE

The area intended for pedestrian movement. To ensure accessibility for all, a pedestrian through zone should be functional for people of all ages and abilities. This area should be clear of obstructions and barriers (i.e., street furniture, hydro poles, sandwich boards, landscaping, patios, etc.) and provide sufficient width for the expected volume of people, including people using mobility aids.

1.8m is the minimum width of a pedestrian clear zone for two people using mobility devices to pass one another.

SLOPES/GRADES

Flat surfaces are ideal for universal access. Pedestrian through zones should have grades no more than 5%. Where grades exceed this, strategies to accommodate people with disabilities can be implemented, such as implementing rest areas (benches or seating) or inserting railings. Further, regular maintenance is important to ensure that surface is clear of slipping hazards.

ACCESSIBLE RAMPS

Ramps may be used in areas where slopes are greater than 8.3% or in place of stairs to access a building. To ensure universal access, ramps should have a longitudinal grade 5% (desired) to 8.3% (maximum) and a maximum cross slope of 2%. Handrails are required on both sides of all accessible ramps. Ramps should have a width of 1.8m wide to allow for two people with mobility aids to pass each other.

CURB RAMPS

A curb ramp is sloped surface built into a curb to allow a smooth transition from the curb onto the right-of-way. Curb ramps are required for people with mobility aids but are also beneficial for people with strollers, baggage, or deliveries.

A curb ramp should be 1.5m - 1.8m wide with a running slope of 10% and a cross slope no greater than 2%. Detectable warning surfaces should be implemented with all curb ramps (see details below).

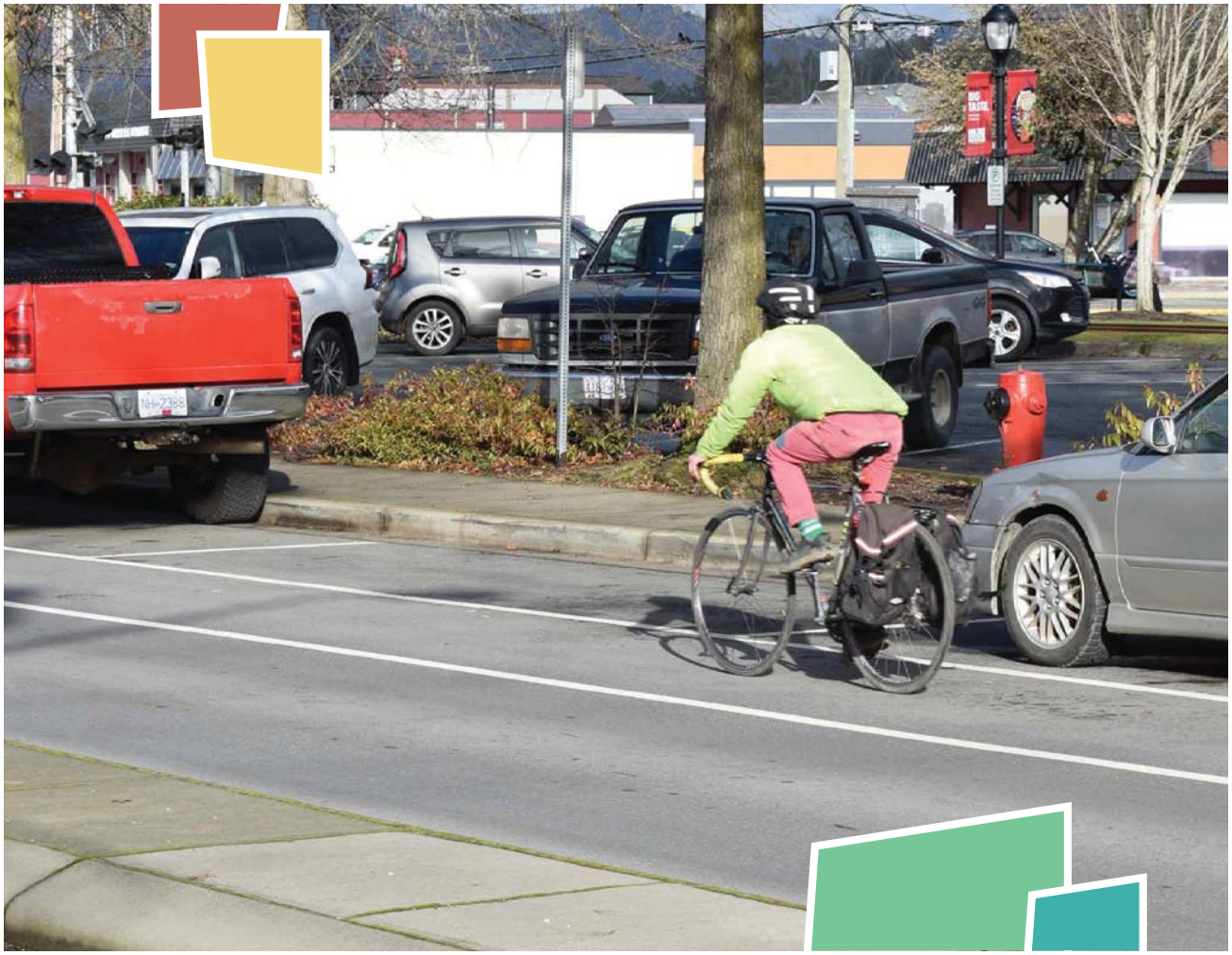
DETECTABLE WARNING SURFACES

Also referred to as Tactile Walking Indicator Surfaces (TWSIs) used to notify people with vision loss of a need for caution as they approach an intersection or a change in elevation; or are used as directional wayfinding. Indicators have a distinctive texture that a person with vision loss can feel with their feet or cane.

Tactile warnings should be installed at every curb ramp to notify people with vision loss that they are approaching moving vehicle traffic, or in some instances, crossing a bike path.

ACCESSIBLE PEDESTRIAN SIGNALS

Accessible Pedestrian Signals (APS) assist pedestrians with vision loss at intersections which are controlled by traffic signals. APS provides audible and vibrating pulses to indicate to the pedestrian that it is safe to cross.



7 CYCLING

Cycling is a convenient, relatively low cost and practical alternative for vehicle travel for short trips. It provides direct benefits to individuals, the community, and the environment, as an enjoyable, efficient, affordable, healthy, sociable, and non-polluting form of transportation. Cycling is an important and growing mobility option for Duncan residents that is increasingly looked at as a choice travel mode for commute and service trips.

Trip distances within Duncan are typically 3 km or shorter to key local destinations around Duncan. Key external community destinations such as Vancouver Island University, Cowichan Aquatic Centre, and Cowichan District Hospital are also within cycling distance for most. With only 1% of trips currently made by bicycle there is significant opportunity to grow commuter cycling in and around Duncan.

Where current cycling facilities in Duncan largely consist of bicycle lanes and roadways, a range of new cycling facility types could be viable in the community. Cycling infrastructure design best practices seek to provide facilities that support cyclists of All Ages and Abilities ("AAA") and generally achieve a greater degree of separation between cyclists and vehicles. Through this lens, 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.

Electric bicycles ("e-bikes") have become increasingly popular in recent years due to lower purchase prices and improved battery technology. The assistance provided by an e-bike allows for greater travel speeds, longer trip distances, and navigating steep topography. This makes cycling a travel option to a portion of Duncan residents that may otherwise have been unwilling to make long distance trips and/or navigate steep terrain.

7.1 CYCLING POLICIES

The following draft policies are proposed to guide cycling infrastructure and programs in Duncan:

- Continue to build out the long-term cycling network as envisioned by the TMS and CVRD Active Transportation Network Plan (this process is currently underway, for more information please refer to the CVRD's project page).
- Provide all ages and abilities connections to regional trails where possible as identified in the CVRD's Active Transportation Network Plan.
- Establish an all ages and abilities cycling route connecting the community from east to west, with an enhanced crossing of the Trans-Canada Highway.
- Develop complete and connected cycling facilities to support local and regional cycling trips that places residents and businesses within at least 350 metres of a bicycle route.
- Continue to improve cycling connections to schools, parks, and Neighbourhood Commercial, Core Commercial, Highway Commercial, Core Transition, and Community land use designations, as identified in the OCP.
- Integrate safe and secure bicycle parking in public spaces, including facilities for longer term use in Downtown and adjacent to the Duncan transit exchange.
- Explore ways to extend the riding season by providing better lighting and enhanced winter maintenance and supporting education for cyclists and motorists.

7.2 LONG-TERM CYCLING NETWORK

To continue to support cycling throughout Duncan, options have been identified to improve the cycling experience throughout the community. As shown in **Map 6: Long-Term Cycling Network**, Duncan's future cycling network includes a variety of facility types ranging from shared bikeways to protected bicycle lanes and multi-use paths. Through this network, residents and visitors would be able to travel by bicycle between neighbourhoods, to important locations in the downtown commercial district, and to access key destinations in neighbouring communities.

Cowichan Valley Regional Active Transportation Network Plan

The Cowichan Valley Regional District (CVRD) has commenced work on the Cowichan Valley Regional Active Transportation Network. Developed in coordination with local jurisdictions, including the City of Duncan, the Regional ATNP will identify a regional active transportation network that creates more opportunities and better connections for active travel throughout the Cowichan Valley. A key component will be identifying regionally significant corridors that provide connections between key origins and destinations for walking and cycling trips. As the Regional ATNP progresses, it is anticipated that certain routes within Duncan will be identified as critical components of the regional network and may be highlighted in the final TMS as such.

7.3 CYCLING FACILITY TYPES

The proposed cycling network includes a range of bicycle facilities that provide different levels of comfort and physical separation from traffic. To encourage cycling as an attractive and convenient mode of transportation it is essential that bicycle facilities are comfortable for users regardless of their cycling ability and experience.

The typical physical width of an adult on a bicycle is 0.75 m from handlebar-to-handlebar. Certain bicycle types such as cargo bikes and recumbent bicycles can be 0.9 m or wider. Bicycles are variable in size and cycling facilities should be designed in consideration of the range of bicycle types. To allow for lateral movement (common when pedalling uphill or travelling at higher speed), the minimum operating space is 1.2 m wide, and the preferred operating space is 1.5 m wide.

The long-term cycling network for Duncan includes a combination of facility types, including both AAA routes and non-AAA routes (support facilities). For example, some facilities like shared bikeways and painted bicycle lanes are not considered suitable for people of all ages and abilities in all contexts but may serve as a supporting facility that enhances the overall cycling network or provide connectivity during an interim period.

The following section identifies the four cycling facility types for Duncan:

MULTI-USE PATHWAY (C1)

PROTECTED BICYCLE LANE (C2)

PAINTED BICYCLE LANE (C3)

SHARED BIKEWAY (C4)

WHAT IS ALL AGES + ABILITIES (AAA)?

All Ages + Abilities or 'AAA' refers to active transportation facilities that are comfortable, convenient, safe, and attractive for everyone, regardless of age or ability. The pursuit of 'AAA' active transportation facilities is one of the key shaping priorities for the Duncan TMS.

C1. MULTI-USE PATHWAY

Multi-use pathways are designed to accommodate walking, rolling, cycling and other active transportation users, physically separated from motor vehicles.

PATHWAY WIDTH:

A minimum 3.0 m width is required to allow people walking and cycling to safely pass each other. Widening the pathway to 4.0m or greater will allow the pathway to safely set bi-directional (two-way) travel or to separate modes.

BUFFER WIDTH:

A buffer between the pathway and an adjacent street should be provided, with the width depending on the street's characteristics and available width.

SURFACE MATERIALS

Asphalt provides a smooth continuous surface. Pavement markings should include the shared use symbol. Where applicable, a centre dividing line can be incorporated to mark out bi-directional traffic or to separate modes using the pathway.

PAINT AND SIGNAGE:

A shared pathway sign should be included along the pathway to indicate walking and cycling are permitted.

ACCESSIBILITY FEATURES

Lighting should be provided to ensure the safety of pathway users and to identify potential hazards. Refer to Section 6.6 for detail on other accessibility design specifications.

C2. PROTECTED BICYCLE LANE

Protected bicycle lanes are the safest type of bicycle facility, offering a comfortable experience for users of all ages and abilities. Protected bike lanes should be applied on streets that have high vehicle traffic volumes and speeds greater than 50km/h. There are several important design considerations that impact their construction, cost, and operation. Uni-directional protected lanes are designed for one-way travel. Bi-directional protected lanes are designed for two-way travel, located on one side of the roadway.

BICYCLE LANE WIDTH:

- Uni-directional: 1.8m (constrained); 2.5 m (desirable)
- Bi-directional: 3.0m (constrained); 4.0m (desirable)

BUFFER/PROTECTION WIDTH:

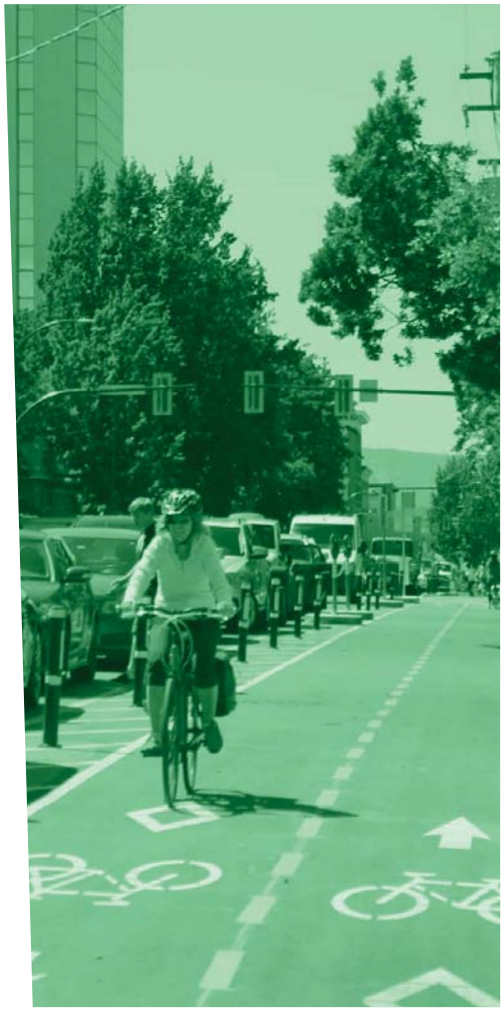
The buffer between motor vehicles and the bicycle lane should be at least 0.6 m wide, with a desirable width of 0.9 m. Additional buffer width is recommended when adjacent to on-street vehicle parking.

SEPARATION MATERIAL:

Protected bicycle lanes can provide physical separation from the roadway through a variety of treatments including delineators, curbs, medians, concrete, planters, and parked cars.

PAINT AND SIGNAGE:

Protected bicycle lanes should include the bicycle symbol and "reserved use" diamond symbol on the lanes. Signs along the corridor should also display the reserved bicycle lane symbol to indicate to road users the dedicated cycling lane.



C3. PAINTED BICYCLE LANE

Painted and buffered bicycle lanes are considered a supporting facility that may not be comfortable for people of all ages and abilities. They are typically for one-way traffic, located on the right side of the road adjacent to the curb or a parking lane.

BICYCLE LANE WIDTH:

The recommended desirable width of a painted bicycle lane is 1.8 m for one-way travel (1.5 m in constrained conditions).

BUFFER WIDTH:

Painted bicycle lanes have no other protection from motor vehicles other than the buffer space. Buffers provide additional separation between the bicycle lane and the motor vehicle travel and/or on-street parking. The recommended desirable buffer width is 0.6 m – 0.9 m (0.3 m constrained). Buffers are strongly recommended where motor vehicle speeds are 50 km/h or greater. A wider buffer is recommended if adjacent to on-street parking to mitigate the risk of a cyclist being "doored".

PAINT AND SIGNAGE:

A solid longitudinal line accompanied by a bicycle and "reserved lane" diamond symbol indicate the use of the painted bicycle lane. Signs along the corridor should also display the reserved bicycle lane symbol to indicate to road users the dedicated cycling lane.

C4. SHARED BIKEWAY

Shared bikeways are best suited for streets with average daily traffic volumes of 500 – 1,000 motor vehicles and a posted speed of 30 km/h or less. Various traffic calming and diversion measures may be used to reduce the motor vehicle speeds and volumes of an existing roadway to make it suitable for use as a shared bikeway. Traffic management is discussed in greater detail in Section 5.5 and in the B.C. Active Transportation Design Guide.

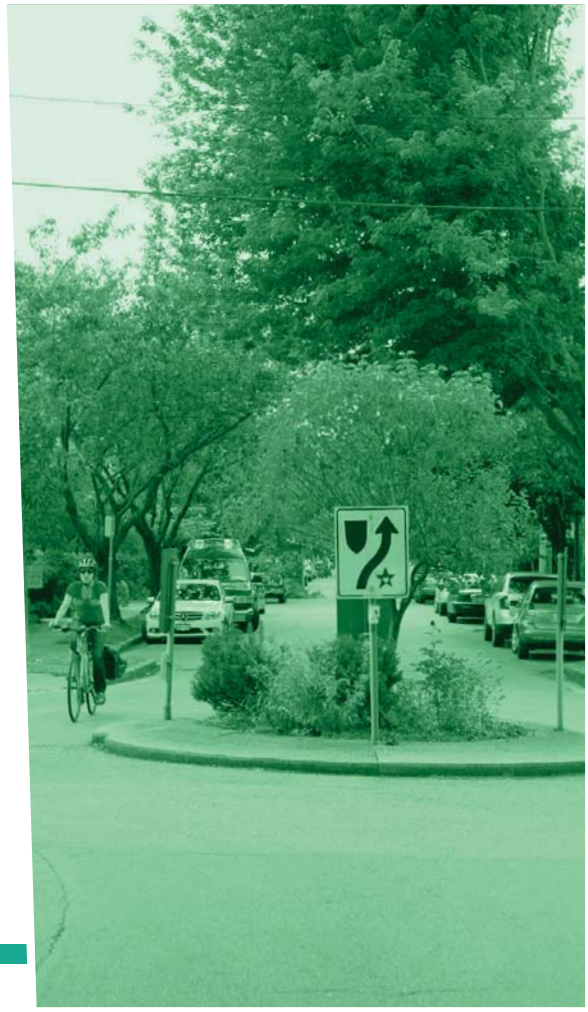
BIKEWAY WIDTH:

The clear width of the roadway – either between the curbs or between parked motor vehicles – should be between 4.0 and 5.5 m. This provides the ideal width to allow motor vehicles and bicycles to comfortably share the road, while ensuring that bicycles and motor vehicles travel at similar speeds.

PAINT AND SIGNAGE:

There should be no painted dividing centre lane on shared bikeway corridors. Shared use lane pavement markings should be applied to indicate the desired positioning of cyclists within the road.

A bicycle route sign and a share the road sign can be used to indicate to road users the intention of the roadway.



INTERSECTIONS + CROSSINGS

Intersection design that makes crossings more comfortable for cyclists of all ages and abilities can enhance safety for all road users and increase the uptake of active transportation. Cycling facility design at intersection and crossings is critical to creating safe and comfortable cycling experience, something that will be pursued through geometric design, bicycle-friendly intersection treatments, and signage and pavement markings.

Signage, pavement markings, geometric design elements (e.g. concrete medians and setback crossings), and bicycle friendly signal timing can increase safety for cyclists. The following section identifies intersection improvements that can be applied to improve the experience for cyclists.

PAVEMENT MARKINGS

Cross-Ride Markings (Elephant's Feet)

Used to alert all road users of a bicycle crossing. This type of treatment is typically used for bicycle facility crossings where bicycle users have the right-of-way over the person on the cross road. Can be enhanced by applying green conflict paint.

Conflict Paint

Green conflict zone pavement markings should be used in the bicycle lane to bring awareness to the conflict area. Additionally, the bicycle symbol and diamond markings should be used to denote the reserved bicycle lanes and can be supplemented with directional arrows.

Bike Box

A bike box is a designated area located at the front of motor vehicle lanes at signalized intersections where people cycling can wait for a green signal phase. Bike boxes help to position bicycle users ahead of waiting motor vehicles, increasing their visibility and allowing people cycling to enter the intersection ahead of motor vehicles. This added visibility means that bike boxes can be beneficial in preventing 'right-hook' conflicts at the start of the green signal phase. Two-stage turn boxes can also help to position cyclists ahead of motor vehicles at intersections, increasing visibility.

SIGNALIZATION

Standard Traffic Signal

A vehicular traffic signal head may be designated for bicycle users by mounting a Bicycle Signal sign adjacent to the traffic signal. This may be beneficial at locations where:

- Where people cycling cannot see existing vehicle signal faces;
- Bicycle users have a separate directional movement, phase, or interval; and
- It is desired to maximize the time a bicycle user may legally enter a crosswalk.

Bicycle Detection Feedback

Technology that can detect the presence of a cyclist at signalized intersections to allow a crossing when warranted.

Push Button

Used at signalized crossings of major roads to allow the cyclists to change the traffic signal phase.

SIGNAGE + PAVEMENT MARKINGS

SHARED USE MARKING ("SHARROW")

Pavement marking to indicate shared use of the roadway with people on bicycles and motorized vehicles, typically use on shared or neighbourhood bikeways.

SHARED PATHWAY MARKING

Wayfinding pavement marking to direct pedestrians and cyclists along multi-use pathways.

BIKE ROUTE SIGN

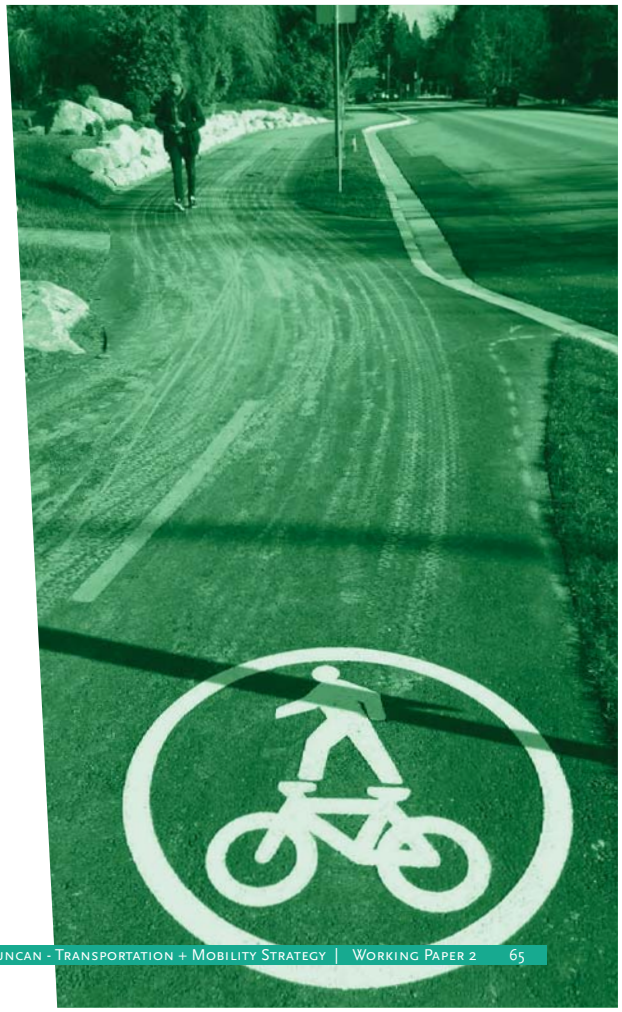
The Bicycle Route Marker sign provides route guidance for cyclists and indicates the streets, highways and separate facilities that form part of a bicycle route system. Arrows can be added to the Bicycle Route Marker sign to provide wayfinding guidance on bicycle routes. Bicycle symbols can be added to side-mounted or overhead street name blades to indicate bicycle corridors.

RESERVED BIKE LANE SIGN

The reserved Bicycle Lane Begins sign must be installed at the beginning of the reserved lane denoting the start of the bicycle lane.

SHARED PATHWAY SIGN

The Shared Pathway sign indicates that both cyclists and pedestrians are permitted to use the path, typically used alongside a shared pathway marking on multi-use pathways.



BICYCLE PARKING

Providing bicycle parking is key to facilitating an uptake in trips made by bike. The provision of bicycle parking is evolving as the types of devices and needs of users change. Bicycle parking should be designed to accommodate a range of bicycle types, sizes, and charging needs, and included both as public amenity in new infrastructure projects and including in development regulations to ensure appropriate provision in future development.

SHORT-TERM BICYCLE PARKING (I.E., LESS THAN TWO HOURS)

Short-term bicycle parking often consists of bicycle racks distributed throughout the public right-of-way in high-traffic areas and neighbourhood centres. Short-term bicycle racks are offered in a variety of styles with the 'U' racks and post-and-ring racks proving the most user-friendly. Adding weather protection will increase the useability of short-term bike racks.

The location of bike racks should be prioritized to be located as close to the destination as possible in convenient and highly visible locations. Racks should be installed with enough clearance to ensure that bicycles can be properly parked without impeding doorways or entrances and a clear travel path on the sidewalk should always be maintained.

LONG TERM BICYCLE PARKING (MORE THAN TWO HOURS)

Long term bicycle parking is intended to provide safe and secure bike storage generally oriented to cyclists needing to park their bicycle for the entire day or longer. Bike rooms, parkades or lockers can provide the type of security needed and should also incorporate other amenities for cyclists such as charging facilities, repair stations and even showers. Long term bike parking should be considered in multi-unit residential developments, workplaces, and transit areas such as park and rides.

COMMUTE END-OF-TRIP FACILITIES

In addition to bicycle parking, other end-of-trip amenities should be provided at key destiniation or within secure bike parking facilities to improve the experience for cyclists. are especially beneficial for cyclists making longer trips, particualrly where shower and change facilities are beneficial to support professional attire at employment or education destinations.

The following are some of the supporting end-of-trip facilities that should be considered in Duncan:

- Showers
- Change rooms
- Storage lockers
- Wash basin

Municipalities are entitled to establish development regulations to require such items to ensure all future land development include appropriate end-of-trip facility provision, which is discussed further in Section 9.3.

BICYCLE REPAIR STATIONS

Cycling repair stations ensure opportunities for cyclists to make basic repairs as they encounter challenges during their cycling trip. This may include repair stations location mid-way along key high-traffic cycling corridors and repair stations at key cycling destinations. Each repair station should include a bike stand, tire pump, and basic tools (screwdriver, hex wrench etc.).

7.4 CYCLING PRIORITY PROJECTS

Based on the long-term cycling network and bicycle facility types identified in preceding sections, several priority projects for cycling infrastructure have been identified. A total of 11 projects are identified as priorities for cycling in the City of Duncan, as summarized in **Table 5.** Priority projects emphasize improvement assumed to be pursued by the City, and will support improvements achieved alongside land development.

As the TMS progresses, this initial priority project list will be further refined through discussions with City staff, stakeholders, and the public.

Table 5. Summary of priority cycling network projects.

A	Marchmont Shared Bikeway Installations	Beech Ave Wharncliffe Rd McKinstry Rd	Shared bikeway installation	Cycling connections in the Marchmont and Chesterfield neighbourhoods Increase overall network connectivity east of TCH Simple implementation in wide rights-of-way
B	Trunk Rd	Lakes Rd to Coronation Ave	Protected bicycle lane installation	Physically protected cycling facility on Trunk Road connecting between planned cycling improvements on Coronation Ave and the planned roadside pathway on the north side of Tzouhalem Road in North Cowichan. Includes intersection improvements at Trunk Road / Lakes Road intersection, including connecting to Dike Trail.
C	Coronation Ave	TCH to Trunk Rd (Both sides)	Protected bicycle lane installation	Physically protected cycling facility on both sides of Coronation Ave providing connections between Downtown and the Marchmont and Chesterfield neighbourhoods. Will require agreement in-principle to install cycling intersection improvements along the TCH Includes intersection improvement at Trunk Rd to integrate with future east-west cycling route.
D	Coronation Ave / Queens Rd	Canada Ave to TCH (Both sides)	Protected bicycle lane installation	Physically protected cycling facility on both sides of Coronation Ave providing connections between Downtown and the Coronation neighbourhood.
E	Trans-Canada Highway	Dike trail to municipal boundary (East side)	Multi-use path installation	Connecting Dike Trail to future facilities on Trunk Road and beyond Portions of the project are currently in design phases Identified in the TCH Corridor Plan as a short-term project
F	Canada Ave Bus Exchange	East side	Enhanced bicycle parking facilities	Introducing safe and secure bicycle facilities to be used by visitors to Downtown Duncan and by transit commuters

PRIORITY	LOCATION		DESCRIPTION	RATIONALE
G	Canada Ave	Evans St to 3rd St (Both sides)	Painted bicycle lane installation	Key connection between existing painted facility south of Evans St to the Friendship Trail north of 3rd Street extending northward. Includes cyclist crossing at 3rd St.
H	3rd Street	Canada Ave to Centennial Park (Both sides)	Shared bikeway installation	Connect cycling facilities on Canada Ave with multi-use path along Jubilee St Improve cycling access to Centennial Park Simple implementation in wide right-of-way
I	Jubilee Rd / Cavell St	3rd St to Cairnsmore Rd (North / East side)	Multi-use path installation	Enhanced multi-use facility along east side of road, replacing existing sidewalk facility Prioritized as one of two possible connections between Cairns / Centennial Heights and Downtown and unsafe existing conditions To be connected to cycling facilities on Cairnsmore St and multi-use path on Jubilee Rd
J	Ingram St / Boundary Rd	Government St to Canada Ave	Protected bicycle lane installation	Physically protected cycling facilities on both sides of Ingram St / Boundary Rd connecting cyclists into the west end of downtown and providing a continuous east-west- cycling facility along the Coronation / Ingram corridor.
K	Government St	Herbert St to municipal boundary (Both sides)	Painted bicycle lane installation	Connecting existing painted bicycle lane facility to Cairnsmore neighbourhood node Enhancing connectivity to Downtown, Cowichan Valley Hospital, and beyond Potential to be completed in conjunction with Government St / Cairnsmore Road roundabout project

8 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 automobiles 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 is provided by BC Transit, with service levels and fare decisions are determined by the CVRD in partnership with local governments throughout the region.

This section describes future directions for transit service and infrastructure in Duncan, including what we heard from the community, a draft future transit network, and potential projects to be prioritized through the TMS .

8.1 TRANSIT POLICIES

The following draft policies are proposed to guide public transit infrastructure and programs in Duncan:

- Build out the Long-Term Transit Network as envisioned by the TMS (currently DRAFT) and Cowichan Valley Transit Future Plan (this process is currently underway, for more information please refer to the CVRD's project page).
- Implement transit priority measures that prioritizes transit over other vehicles to minimize delays and improve service delivery along transit corridors where congestion exists.
- Design and require universally accessible bus stops that consider the needs of all, including people with diverse abilities.
- Enhance the transit user experience and integration through passenger amenities and accessible connections to transit.
- Increase local transit ridership by supporting improved local bus service connecting Duncan's neighbourhoods to key destinations throughout the City.
- Continue to support Handydart service in Duncan and recognize the importance of this service as the local population ages.
- Support regional service improvements and enhanced connections to Duncan as the core of the Cowichan Valley, including inter-regional transit service to the Greater Victoria and Nanaimo regions.
- Implement transit-supportive land use planning by encouraging new development near transit service to provide easy access for residents, workers, and other transit users.

8.2 FUTURE TRANSIT NETWORK

Duncan's future transit network will primarily be determined through the Transit Future Plan process currently being undertaken by the CVRD and BC Transit, described on the right of this page. At the time of writing, no transit service changes have been suggested for the City as part of that process. As such, the TMS will focus mostly on addressing the need for amenities at transit stops around existing transit service as discussed in subsequent sections.

Nanaimo – Cowichan Express (NCX)

A new express transit route is now running between Nanaimo and the Cowichan Valley. There will be 7 round trips on this route (Route 70) Monday – Friday and 6 on Saturdays. Stops will be limited to seven locations - Downtown Nanaimo, South Parkway Plaza (south Nanaimo), Ladysmith, Cowichan Commons, Beverly at Canada Avenue, **Downtown Duncan** (at the Train Station), and Village Green Mall.

Cowichan Valley Transit Future Action Plan

The Cowichan Valley Regional District (CVRD) and BC Transit, in collaboration with local partners such as the City of Duncan, have begun work on the Cowichan Valley Transit Future Action Plan. The Action Plan will identify transit service improvements for the entire Cowichan Valley transit system. The focus of the initiative is on changes to be made in the short-and medium-term, with additional priorities identified for the long-term.

Priorities established through the Action Plan process will be coordinated with multi-modal network planning and transit infrastructure priorities identified in the TMS.

8.3 BUS STOPS

Bus stops are the interface between public transit and other travel modes. They not only frame the transit user experience but form the most visible fixed indicator of transit service in the community. Stops are tools to attract riders, improve operational efficiency, and support the identity of the system.

There are 30 bus stops in Duncan. Many include only a vertical post with bus stop identification sign without any supporting amenities. Improving bus stops to ensure they are safe, accessible, and include passenger amenities helps contribute to creating a public transit system that can be enjoyed by all residents.

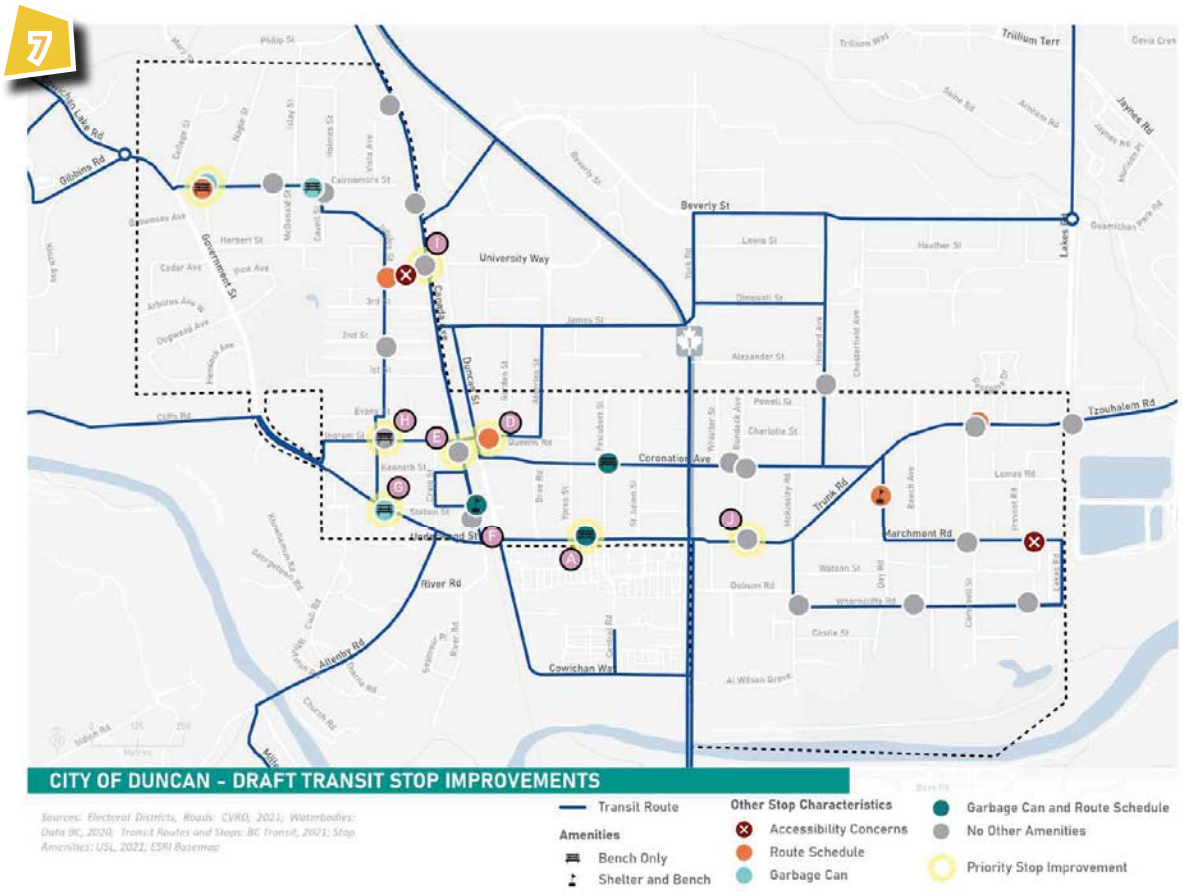
A prioritization exercise was undertaken to understand where investments in bus stops are best directed. Through this process a total of 9 bus stops were identified as priority improvements as shown in **Table 6.** The City should work to improve all locations in poor condition and/or that lack basic amenities as budgets allow. The identified priority location should also be included in the region-wide Action Plan process for consideration alongside bus stop investments elsewhere in the Cowichan Valley system. Bus stops and improvement locations are identified on Map 7: Transit Network Improvement Locations.

Stop upgrades should also occur in conjunction with complete street and sidewalk improvement projects, land development, and other capital works where possible.

Issues have been experienced in past with bus shelters being used for purposes other than transit passenger activities. To address this concern, the City intends to pursue bus shelters without panels on the front and sides, as well as with internal lighting wherever possible.

Table 6. Summary of priority transit stop amenity upgrades.

PRIORITY	LOCATION		STOP ID	DESCRIPTION
A	Trunk Rd	At Ypres Rd	136066	Install shelter
B	Cairnsmore St	At Nagle Rd (westbound)	136010	Install shelter, bench, and route schedule
C	Cairnsmore St	At Nagle Rd (eastbound)	136029	Install shelter and garbage can
D	Queens Rd	Farside Duncan (eastbound)	108037	Install shelter, bench, garbage can, and route schedule
E	Canada Ave	At Lois Ln (southbound)	136032	Install shelter, bench, garbage can, and route schedule
F	Government St	At Station St (eastbound)	136110	Install shelter and route schedule
G	Ingram Rd	At Jubilee St (westbound)	136002	Install shelter, garbage can, and route schedule; upgrade bench
H	Canada Ave	At 4th St (southbound)	136031	Install shelter, bench, garbage can, and route schedule
I	Trunk Rd	At Bundock Ave (westbound)	136065	Install shelter, bench, garbage can, and route schedule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CITY OF DUNCAN - DRAFT TRANSIT STOP IMPROVEMENTS
Sources: Electoral Districts, Roads: CVRD, 2021; Waterbodies: Data BC, 2020; Transit Routes and Stops: BC Transit, 2021; Stop Amenities: USL, 2021; ESRI Basemap
Transit Route
Amenities
Bench Only
Shelter and Bench
Other Stop Characteristics
Accessibility Concerns
Route Schedule
Garbage Can
Garbage Can and Route Schedule
No Other Amenities
Priority Stop Improvement
Trillium Terr
Jaynes Rd
Beverly St
University Way
Coronation Ave
Tzouhalem Rd
Marchment Rd
Trunk Rd
River Rd
Cowichan Way
Government St
Duncan St
Lakes Rd
Gibbins Rd
Cairnsmore St
Herbert St
Cedar Ave
Pine Ave
Lewis St
Heather St
Alexander St
Charlotte St
Lomas Rd
Watson St
Wherrette Rd
Castle St
Station St
Kenneth St
Queens Rd
Ingram St
James St
Allenby Rd
Church Rd
Indian Rd
Al Wilson Grove

COWICHAN COMMUNITY CENTRE
RECREATION. SPORTS. CULTURE.
VANCOUVER ISLAND REGIONAL LIBRARY
COWICHAN PERFORMING ARTS CENTRE

9 SUSTAINABLE TRANSPORTATION + NEW MOBILITY

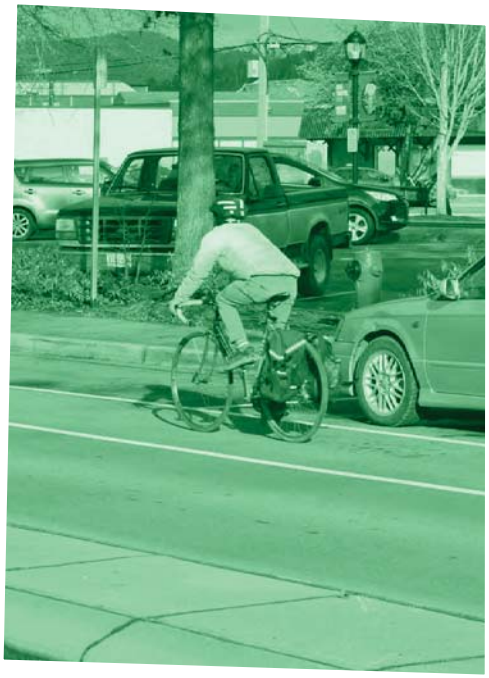
Transportation and environmental sustainability are inherently linked. Emissions arising from on-road transportation are consistently among British Columbia and Canada's largest sources of greenhouse gas emissions (GHGs). To mitigate the environmental effects of Duncan's transportation systems, embracing sustainable transportation, supportive land use, and emerging trends in mobility are all central to achieving the vision, goals, and objectives of the TMS.

This section will outline some of the strategies available to the City of Duncan to support sustainable transportation, including recommendations regarding electric vehicle (EV) infrastructure and transportation demand management (TDM) that can be adopted at municipal and regional scales.

9.1 SUSTAINABLE TRANSPORTATION + NEW MOBILITY POLICIES

The following draft policies are proposed to guide sustainable transportation and new mobility infrastructure and programs in Duncan:

- Expect new technologies and plan to accommodate new modes in the transportation network and to integrate these modes into the mobility hierarchy accordingly.
- Explore opportunities to provide and support new mobility options in Duncan, such as bicycle and car share.
- Ensure all new land development includes a variety of transportation demand management measures to encourage a reduction in automobile use
- Consider parking variances where appropriate parking supply is proposed, including developing a Parking Variance Policy to guide Staff and Council.
- Seek to develop a network of electric vehicle (EV) charging infrastructure at key locations throughout the City of Duncan, including both Level 2 and Level 3 charging capacity.
- Consider implementing a fee for charging at City of Duncan-owned EV charging stations.
- Update off-street parking regulations to ensure sufficient EV charging measures are included in new development.



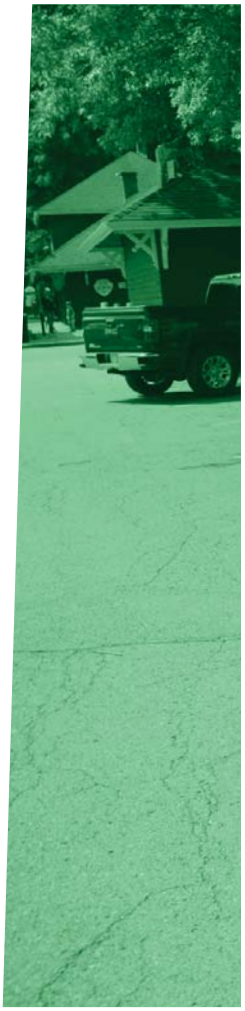
9.2 EMERGING TECHNOLOGIES AND SHARED MOBILITY

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.

Despite the wide number of shared mobility and micromobility options, carsharing consistently emerged as a priority for community members throughout the engagement process. 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.

Previous attempts at community-based carsharing in Duncan were unsuccessful; however, the opportunity still exists to integrate this form of shared mobility in the City, particularly as the Duncan area and Cowichan Valley continues to grow. Some key recommendations for future carsharing initiatives in the community include the following:

- Collaborate with neighbouring jurisdictions to ensure a coordinated approach to shared mobility and combine resources as options are explored.
- Explore partnerships with established car share provides, such as Evo and Modo, to understand service models and their applicability and suitability in Duncan and neighbouring communities.
- Investigate other opportunities for shared mobility and micromobility, including bike share, e-scooters, and other electric micromobility currently being piloted by other municipalities in B.C.

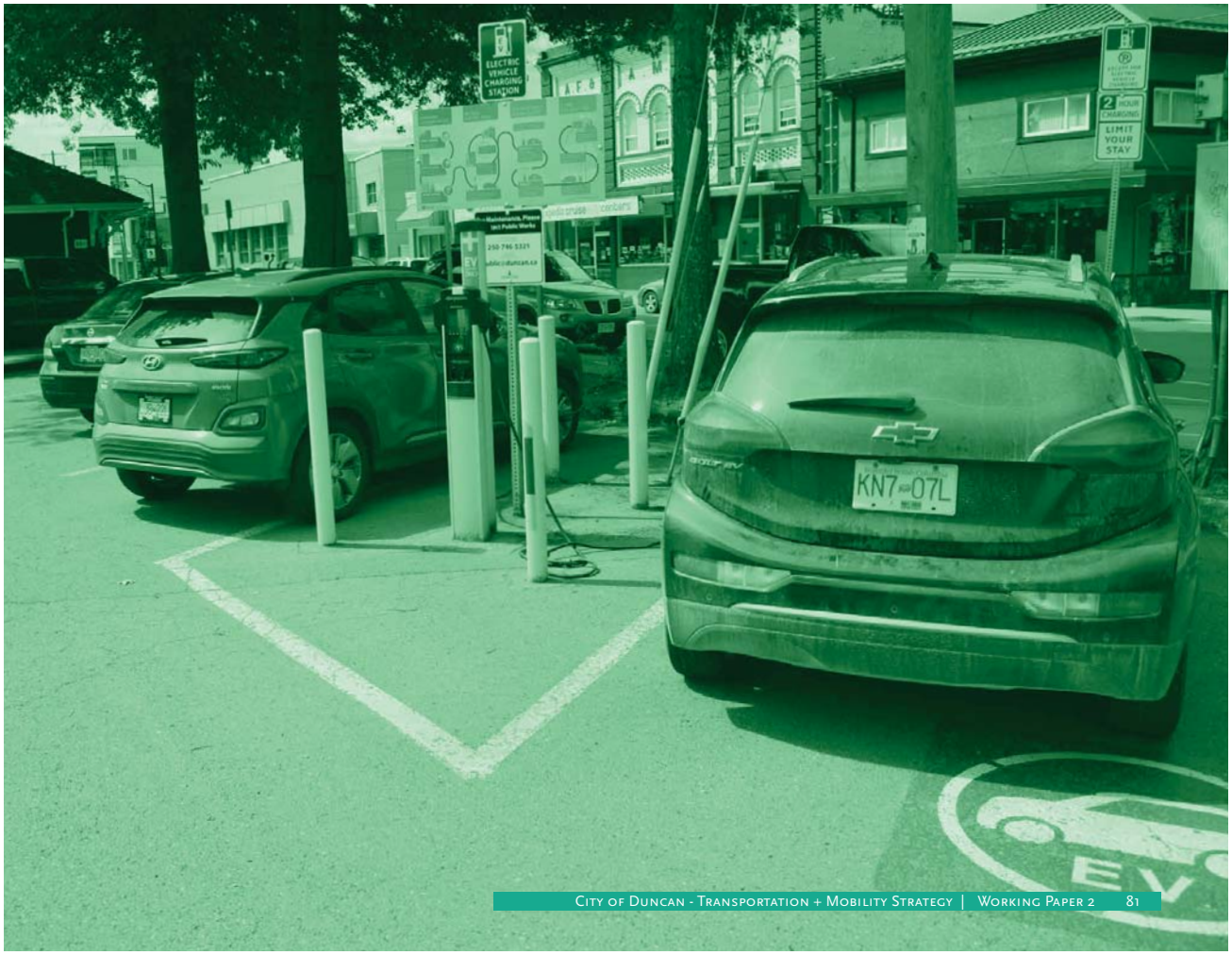


9.3 ELECTRIC VEHICLE (EV) CHARGING

Currently, one of the key components of a sustainable transition in mobility is the electrification of transportation. Electric vehicles are becoming less expensive and therefore more viable for a larger proportion of the population. As EV uptake continues to grow, planning for widespread integration of charging infrastructure into Duncan's transportation networks becomes increasingly important.

Duncan's position in the regional transportation network is also critical when considering the proliferation of EVs. With more EVs travelling along the Trans-Canada Highway and other inter-regional corridors, it is likely that more users will stop in Duncan to utilize local charging infrastructure. Therefore, it is critical to consider how the community can support greater charging capacity as demand grows.

In addition to electric cars and trucks, it is also important to consider how the community will provide infrastructure for other electric vehicles, including electric bicycles ("e-bikes"). Like other electric vehicles, the popularity of e-bikes has soared in recent years and provides another sustainable mobility option that allows users to complete longer and different types of trips. Providing public charging infrastructure in strategic locations should be considered to support e-bike uptake and promote sustainable transportation.

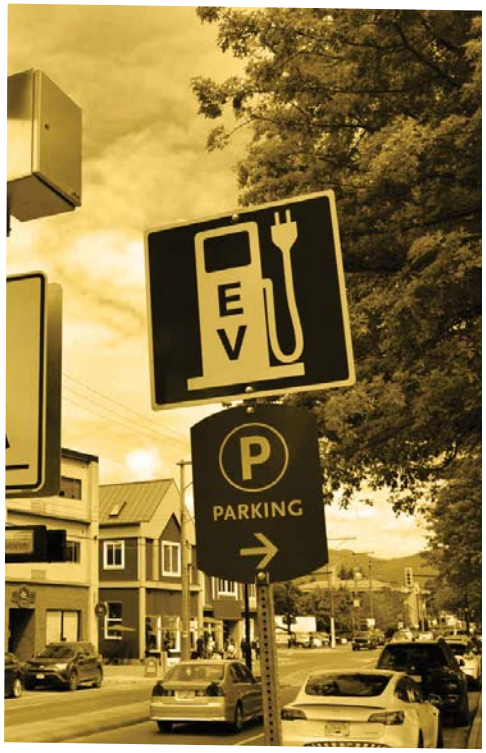


TYPES OF ELECTRIC VEHICLE CHARGING

There are four general types of EV charging stations that typically form part of an EV charging network. Each level of charging station provides different charging speed and duration and can fulfill different roles depending on the needs of the EV user.

LEVEL 1	Household outlets which provide 120V of AC power to the vehicle. This type of charging takes the longest time and is typically a good option for overnight charging.
LEVEL 2	Provide a higher amount of AC power (240V) to the vehicle. Level 2 charging stations recharge the batteries in about four to six hours. These stations are the most commonly available public charging stations, and can be installed in parkades, surface lots, or even curbside.
LEVEL 3	The quickest-charging stations, in that they provide 480V DC power, and can charge a full battery in less than an hour. The charging station is about the size of a fuel pump at a gas station and are typically located at public institutions, service stations, or large commercial retailers or centres.
TESLA SUPERCHARGER	A special Level 3 charger that can only be used to charge a Tesla vehicle; other makes of EVs do not currently have access. These stations are owned and operated as part of the Tesla network of superchargers and are typically sited to support the long-distance travel needs of Tesla owners, but increasingly are being installed within communities to provide charging for those without access to home charging.

The highest level of charging currently available in the City of Duncan are Level 2 chargers located in a few locations throughout the community, including in municipal parking lots in Downtown Duncan. The closest Level 3 charger is at the Cowichan Community Centre in North Cowichan.



DEVELOPING A CHARGING NETWORK

The City of Duncan can play a key role in building and supporting new electric charging infrastructure throughout the community. This section will explore how the municipality can facilitate public and private charging through revising regulations, studying opportunities for a regional charging network, and providing municipally owned infrastructure.

MUNICIPAL CHARGING INFRASTRUCTURE

As electric vehicle use has increased, local governments have become one of the primary developers of charging stations. Municipalities have often been ahead of private industry in providing public charging infrastructure in locations like municipal halls, libraries, community centres, recreation centres, or parks. For example, the City of Duncan provides charging stations in the southern municipal parking lot along Canada Avenue. Often these stations utilize a third-party metering and payment software such as Flo or Greenlots. While most public stations have been free of charge, municipalities are permitted to charge for electric vehicle charging, which is discussed below.

EV CHARGING REGULATIONS

One of the City's primary strategies to facilitate EV charging infrastructure is to introduce and bolster requirements for electrification and charging systems contained in the municipal regulation, particularly the Zoning Bylaw. Many other communities like Victoria, Saanich, Colwood, and Nanaimo have revised off-street parking regulations to require a proportion of stalls be electrified by land use type and to provide charging systems where possible. These are the two typical approaches to supporting electrification through the Zoning: requiring "EV-ready" stalls that are appropriately wired to support future charging infrastructure or requiring a minimum number of charging stations in certain land uses likely to support high charging demand.

Regulations also increasingly support providing opportunities for public e-bike charging alongside short- and long-term bicycle parking. Typically, this would simply require a conveniently located plug adjacent to bicycle parking that this capable of providing sufficient power for e-bike charging.

PAYMENT FOR CHARGING

One of the driving factors behind increased uptake in EVs has been a growing network of public charging stations that are free of charge. While not collecting payment for charging is one method by which to encourage sustainable transportation, payment for charging should be considered to enable cost recovery and to potentially fund further improvements in the charging network.

In May 2021, BC Hydro introduced payment at charging stations with costs ranging from 12 cents per minute at 25 kW chargers up to 27 cents per minute at 100 kW chargers. Other municipalities, including the City of Vancouver, District of Saanich, Township of Esquimalt, and City of Campbell River, among others, also collect payment for electric vehicle charging. Under Ministerial Order M104, all local governments are permitted to collect payment for charging, so it is likely that more municipalities will begin to introduce payment structures for public charging. Duncan should consider if this is appropriate for City-owned charging infrastructure, and if it is, how much it should cost and how payment should be implemented.

REGIONAL CHARGING GAP ANALYSIS

Duncan is experiencing the same trends in electric vehicle use to neighbouring communities and, in such an interconnected region, it is important to collaboratively assess the creation of a regional charging network that can support trips throughout the Cowichan Valley. Through a regional gap analysis exercise, municipalities, First Nations, and the Regional District can identify strategic locations for charging stations in high demand areas, avoid the duplication of infrastructure investment, and coordinate on approaches to payment for charging and updates to off-street parking regulation, if desired. This level of regional cooperation would provide the foundation for the Cowichan Valley's charging network to best serve local populations and broadly support sustainable transportation.

9.4 TRANSPORTATION DEMAND MANAGEMENT (TDM)

Transportation demand management (TDM) refers to acts of creating an efficient multi-modal transportation system that moves people with the goal of reducing congestion, improving environmental outcomes, and stimulating economic activity. Where transportation has conventionally focused on movement of vehicles, through TDM other, more sustainable travel modes such as walking, cycling, and public transit. These travel options typically allow travel demand to be met without costly investments in public infrastructure and with reduced environmental impacts.

There are a variety of opportunities available to the City and partner agencies to advance TDM in the community. These have been broadly considered in the following section as opportunities that the City themselves may carry out, opportunities for regional collaboration and partnership, and options to be pursued through land development.

MUNICIPAL PROGRAMS

A variety of TDM programs can be introduced by the City to champion sustainable transportation, manage traffic, and encourage a culture of healthy and safe transportation in the community. The programs below are not an exhaustive list but do provide an initial set of TDM programs that have proven to be effective in other communities around Vancouver Island and British Columbia.

PROMOTE CITY-WIDE TDM ACTIVITIES AND INITIATIVES

Municipalities can play a crucial role in helping educate residents, employers, and other organizations around the variety of TDM options that support sustainable, healthy, and convenient transportation systems. The City, for example, could develop an informative website describing local programs, financial incentives, and success stories to help set out a positive direction for TDM in the community. If accompanied by a successful marketing strategy, such an initiative can effectively promote local TDM measures.

The City taking a central position in promoting TDM in Duncan would also provide the opportunity to act as a facilitator and key liaison between organizations and a central repository for all local and regional information regarding TDM.

INTEGRATE TRANSPORTATION AND LAND USE DECISION-MAKING

Ensure supportive actions between land use and transportation by integrating decision-making on both and exploring the necessary revisions and updates to relevant City policies, bylaws, and other regulations. This could include identifying opportunities for enhanced sustainable transportation infrastructure in areas intended for higher residential densities and mixed-use centres.

MAKE SUSTAINABLE MODES MORE ATTRACTIVE

Providing incentives to employees for participating in alternative transportation modes will increase the interest of targeted groups. The City should work with employers to provide employee travel incentives. These programs may include an employee travel allowance, company travel reimbursement, cash for commuters, and a green business recognition program.

GUARANTEED RIDE HOME PROGRAM

A guaranteed ride home program provides a free means of getting home for all employees in the case of an emergency. This allows employees who regularly use alternative transportation modes to commute to work to have comfort that they will have ready access to transportation that can have them at their destination quickly, if necessary. Often a guaranteed ride home program involves an employer purchasing taxi vouchers through an agreement with a local taxi company.

The City of Duncan could both implement a guaranteed ride home program for municipal employees and support and promote similar programs for employers in the community. To promote these programs the City could agree to purchase initial vouchers for employers, providing an entry for these employers into the program. This could be a relatively inexpensive means to encourage TDM in Duncan.

ALTERNATE WORK ARRANGEMENTS

Supporting non-traditional working arrangements, such as working from home, a compressed or flexible work week, or remote access, provides employees with options to commute less. Since the onset of the COVID-19 pandemic, alternate work arrangements have become increasingly prevalent with many employers and employees now being set up to accommodate or encourage this type of work. The City can both work with employees to allow for alternate work arrangements and help promote the benefits to Duncan's transportation system and environmental impacts to local employers.

UPGRADE THE CITY'S VEHICLE FLEET

Under Duncan's Climate Action Charter Commitment, the City of Duncan is committed to tracking emissions from its own vehicle fleet. Taking this a step further and "greening" the City's vehicle fleet is another option for a municipal TDM measure. By supporting a fleet of low-emission vehicles, such as battery electric or hybrid vehicles, employees would be able to fulfill daily tasks in more sustainable vehicles. As more of these types of vehicles come onto the market, the City can provide diverse transportation options and set an example around environmentally friendly mobility in Duncan.

TRAINING FOR FUEL EFFICIENT DRIVING

Since driving is an important part of many municipal employees' roles, offering training around fuel efficient driving can lower the overall environmental impact of the municipal vehicle fleet. Such an initiative could be part of a wider effort to green the City's vehicle fleet, since drivers who take similar courses are shown to achieve fuel savings of approximately 20%-30%, reducing GHG emissions and lowering fuel costs for the municipality.

CREATE SPECIAL EVENTS TRAVEL PLANS

Concerts, sporting, and community events occur throughout the year. Large events have potential to generate significant traffic and parking demand, which should be managed using travel plans. A special event travel plan program should be made available to assist event hosts in providing travel options to event-goers. Plans should outline specific strategies to improve transportation options, manage transportation resources, communicate with the travelling public, and address heavy traffic and parking demand. Transit programs should be promoted at all special events and city travel advisories. These programs and services must consider travel before, during, and after the event.

Possible measures to consider under this strategy could include a bicycle valet service, temporary increases in transit service, discounted or free transit, carpool parking, designated drop-off and pick-up zones, taxi zones, and promotion of available programs through social media.

REGIONAL PROGRAMS + PARTNERSHIPS

TRANSIT PROGRAMS

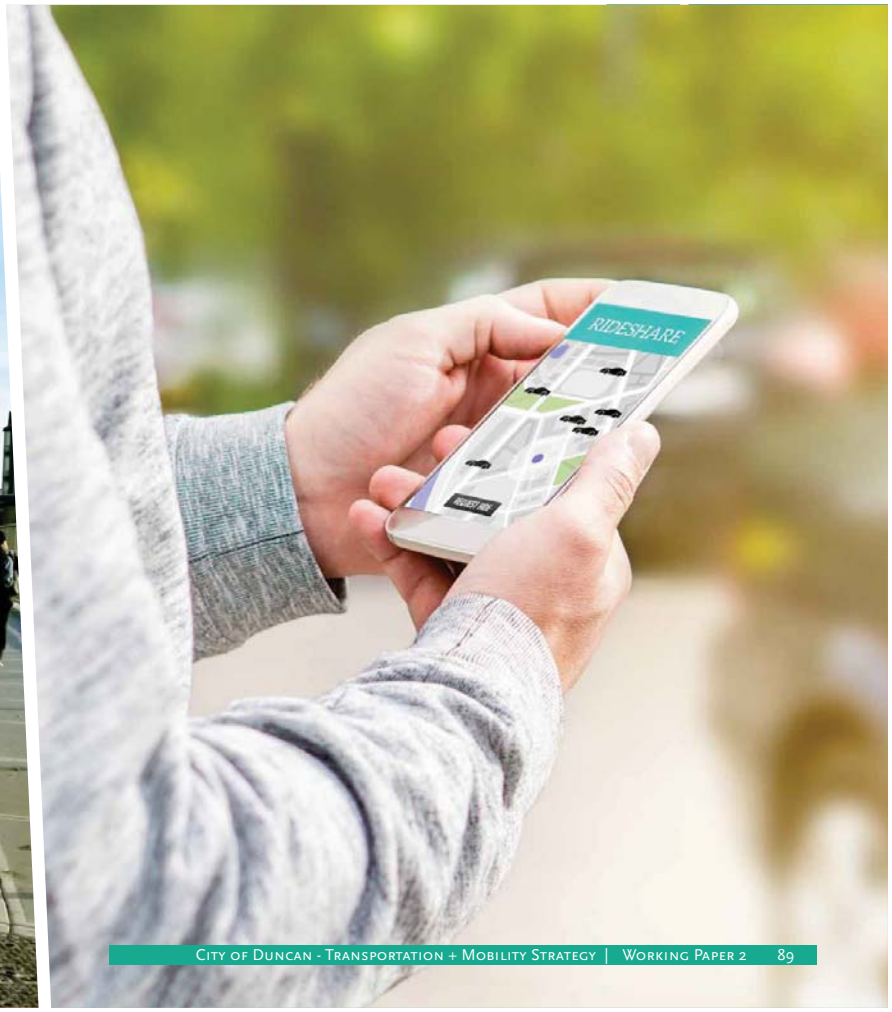
Among the most common TDM programs is to incentivize transit use through subsidized employee transit passes. These programs are frequently adopted by employers through BC Transit's ProPASS program, which is purchased by employees through payroll deductions. ProPASS aims to reduce rush hour traffic by allowing easier access to transit for employees and reducing the number of commuter vehicles on the road. Overall, the cost of this program is less than purchasing individual monthly passes over one year thereby reducing the annual cost of transit access for employees. In the Victoria Regional Transit System, over 70 organizations with approximately 3,000 employees have participated in the program.

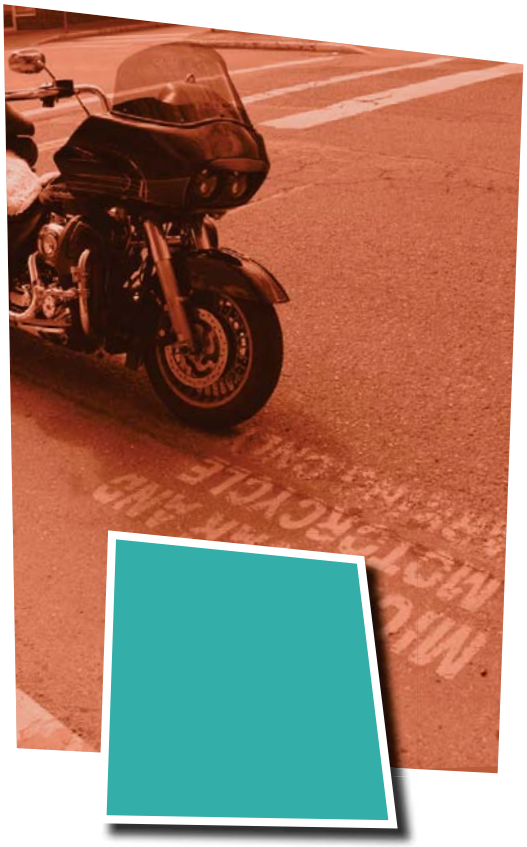
Similar programs are currently in place in the Cowichan Valley Transit System but could be an option for the region's transit system should organizations and employers express sufficient interest. The City of Duncan could play a central role in championing a ProPass program in the Cowichan Valley or a local equivalent to incentivize and encourage transit use, including introducing a transit program specifically for municipal employees.

CARSHARE

Carshare programs are becoming an increasingly common and popular services in urban areas around Canada and the world. These services are membership-based and allow members to access local vehicles, who then pay for the time and/or distance driven in the vehicle. Local examples of carshare include Modo and Evo, however these companies do not currently operate in the Cowichan Valley. Carshare is an excellent opportunity to access a vehicle without having to own a car, allowing members to complete tasks such as grocery shopping or moving or to travel longer distances than possible by bicycle or on foot.

Carshare could be considered by the City to reduce auto dependency and support sustainable transportation. Duncan can encourage the presence of carshare companies by updating regulations to permit carshare in private development or by reserving specific locations around the City for carshare use.





LAND DEVELOPMENT

BICYCLE PARKING

Providing and designing safe, convenient, and functional bicycle parking is an important component of encouraging recreational and commuter cycling. This includes ensuring that bicycle parking provision is appropriate for demand, meeting short- and long-term needs, and accommodating a variety of bicycle types. Developing policies and regulations that support bicycle parking rates and design standards that address these considerations can help increase cycling mode share and prioritize sustainable transportation modes in Duncan.

Possible next steps could include a comprehensive review of current bicycle parking rates and design requirements outlined in the Zoning Bylaw followed by an update of relevant sections to reflect demand for bicycle parking and industry best practice in short- and long-term bicycle parking.

CYCLING END-OF-TRIP FACILITIES

Cycling end-of-trip facilities support commuter cyclists by ensuring appropriate access to showers and change and locker facilities where long-term bicycle parking is provided, particularly in non-residential development. These facilities provide a significant benefit to commuter cyclists, particularly those travelling over longer distances. Minimum requirements for end-of-trip facilities can be incorporated into development regulations to support daily cycle travel and eliminate perceived barriers to commuting by bicycle, such as allowing commuters to change from cycling to business attire at their place of employment or to repair and maintain their bicycle on site. Like bicycle parking, including end-of-trip facilities as a requirement for specific types and/or sizes of development is a positive first step in this direction.

End-of-trip facilities to consider include the following:

- Change rooms
- Storage lockers
- Showers
- Water closets
- Sink and wash basin
- Bicycle repair equipment (e.g., tools, tire pump, workbench, or stand)
- Other amenities such as bulletin boards, multi-modal trip information (e.g., maps and bus timetables), towel service, seating lounges, etc.

In developing requirements for end-of-trip facilities it is essential to support equitable access. This could include measures such as ensuring equal distribution of facilities by gender- or gender-neutral facilities and requiring a minimum number of wheelchair accessible amenities.

PARKING VARIANCE POLICY

TDM can also be an effective tool in negotiating parking variances. In other communities around Vancouver Island and British Columbia, TDM measures are included as a criterion for reduced parking requirements. A variety of TDM strategies, including increased or enhanced bicycle parking, provision of a car share vehicle or membership for residents, bus pass programs, or providing enhanced amenities adjacent to the development such as a transit, pedestrian, or cycling facilities. These strategies provide the opportunity for communities to incentivize alternate transportation modes, encourage higher design standards in transportation amenities, and support less auto-dependent development.

The parking variance permitted by including TDM elements in development varies by community. Some parking variance policies are independent documents or are often integrated into the ***Official Community Plan***. Examples of communities using TDM in their respective parking variance policies include:

- City of Nanaimo, Policy for Consideration of a Parking Variance
- City of Colwood, Parking Variance Policy (Draft)
- District of Saanich, Official Community Plan
- District of Sooke, Official Community Plan
- City of Campbell River, Sustainable Official Community Plan
- District of North Vancouver, Official Community Plan
- City of Nelson, Official Community Plan

10 PARKING MANAGEMENT

Demand for on- and off-street parking, commercial loading, and specialized parking can result in competition for limited space in high traffic areas of Duncan. Moving forward, the City intends to consider how parking management intersects with transportation demand management, encouraging sustainable transportation, allocating space for infrastructure improvements, and supporting non-transportation activities within street rights-of-way. These considerations are largely focused on Downtown Duncan; however, some aspects could apply to streets near other mixed-use centres, high-traffic residential streets, and in areas that have a multi-modal function in the long-term transportation networks.

This section will overview draft parking management policies and principles, current parking challenges and opportunities, and strategies to rethink parking management in Duncan.

10.1 PARKING MANAGEMENT POLICIES

The following draft policies are proposed to guide parking infrastructure and programs in Duncan:

- Monitor residential parking conditions to ensure they reflect changing parking demand through build out of the mobility network.
- Work to establish parking supply that meets (but doesn't exceed) parking needs and provides parking in ways that require less land and do not occupy the most central areas of Downtown.
- Maximize the benefit that Downtown parking provides, considering opportunities for more people to use available parking and meets the needs of a greater range of users, prioritizing select activities that maximize downtown space and the finite parking supply, including accessible parking, commercial loading, drop-off / pick-up, and EV charging.
- Manage Downtown parking to support reduced parking demand, encourage the use of sustainable transportation options, and make effective use of available space.

10.2 CURRENT CONDITIONS

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 and other curbside activities.

The on-street parking inventory completed as part of Working Paper no.1 concluded that there are approximately 2,600 parking stalls in Downtown Duncan. Approximately 800 (31%) of these stalls are on-street while the remaining 1,800 are off-street. 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.

Without a detailed parking analysis, typical areas of high utilization are largely concentrated around the historic Downtown core. On-street parking on Craig Street, Station Street, Kenneth Street, and Duncan Street and other streets near popular commercial destinations are typically well used. Several public off-street lots, including those located between Canada Avenue and Duncan Street and three lots accessed from Kenneth Street, offer an alternative to parking on-street and are within walking distance of much of the Downtown. Many small businesses and other Downtown uses do not have dedicated off-street parking. Some larger private off-street lots are found around the periphery of the Downtown, along Canada Avenue and Duncan St and to the west of the core.

Parking in Duncan is greatly influenced by the City's role as the centre for the broader Cowichan Valley region. This means that many non-residents will travel by car to Duncan for employment opportunities, access to local businesses and services, and special events. As a result, the City must account for these intra-regional travel pressure when making decisions related to parking supply in Downtown Duncan.

10.3 RETHINKING DOWNTOWN PARKING

While on- and off-street parking remains an important consideration for Duncan mobility network, there is the opportunity to reimagine a strategic approach to downtown parking to maximize benefit to the community and to align with the goals and principles of the TMS. The following principles have been established to guide downtown parking management:

MAKE BEST USE OF DOWNTOWN SPACE	The concentration of different land uses and activities is what makes Downtown Duncan unique. Land is scarce and space used as parking does not contribute to the area's vitality. Recognizing the important of space in Downtown Duncan, the City should work to establish a parking supply that meets parking needs without oversupply, while exploring options to provide parking in ways that require less land or are near the edge of the downtown.
MAXIMIZE BENEFIT OF PUBLIC PARKING	A considerable supply of downtown parking already exists. The City should work to maximize the benefit that downtown parking provides, considering opportunities for more people to use available parking and to see that it meets the needs of a greater range of possible users.
PRIORITIZE PARKING FOR IMPORTANT ACTIVITIES	Recognizing the need to maximize downtown space and the finite parking supply, select activities should be prioritized in the allocation of public parking where they align with the objectives of the TMS. Examples include accessible parking, commercial loading, drop-off / pick-up, and EV charging.
SUPPORT A THRIVING DOWNTOWN	The ability for customers and employees to access the downtown is critical for its success. Since Duncan is the service centre for the Cowichan Valley it must be ensured that sufficient parking remains available for long distance trips to Duncan where alternative modes are not an option.
SUPPORT ACTIVE + SUSTAINABLE TRAVEL	Parking supply and management play a key role in shaping individual travel choices. Where parking is plentiful and inexpensive, people are more likely to drive. The City should use downtown parking management to support the key objectives of the TMS to reduce parking demand and pursue environmental and well-being objectives.

DOWNTOWN PARKING STUDY

Informed parking management decision-making depends on detailed examination of parking trends, issues, and opportunities, based on extensive data collection. The City has previously explored undertaking a Downtown Parking Study; however, it is yet to be completed. This study would examine parking utilization and turnover in the Downtown area, which is critical to determining whether current restrictions are effective, if parking supply is used efficiently, and understanding specific areas of concern

Such a study would be the first step to developing a detailed parking management strategy for Downtown Duncan. Parking studies have been developed in other comparable communities with regional commuting and a defined urban core, including Sidney, Parksville, and Chemainus. These examples could provide direction for the City and help to frame the necessary scope of a study into parking around Downtown Duncan.

STRUCTURED PARKING

The possibility of a parkade or other form of structured parking in or near Downtown Duncan has been longstanding a topic of discussion. There are several possible benefits and challenges to this approach to parking management. Among the benefits include more efficient off-street parking possibly alleviating parking pressures, opportunities for longer stays near Downtown, and freeing up space currently utilized for parking to be converted to other uses. Challenges include the high capital costs of structured parking, securing suitable land for the facility, and investing in a facility for automobiles when funds are required for other priorities, such as active transportation facilities.

The need for structured parking would ultimately be rationalized by a comprehensive downtown parking study, through which the acute need could be identified. Should the City wish to explore structured parking options, this could be included as part of a downtown parking study or could require its own separate research. Further consideration must also be given to locations that would be suitable to structured parking and maintain access to key destinations. As such, a parkade could be explored in partnership with neighbouring jurisdictions to secure land and ensure it serves multiple communities.

PRICED PARKING

Pay parking is not common in Duncan. Only the off-street lot between Canada and Duncan Avenues north of Ingram Street and portions of Duncan Street currently requires payment. An all-day stay in these locations costs $2.

One consideration for pay parking is how it incentivizes the use of alternate modes. Providing free parking encourages, or does not disincentivize, vehicle use for trips to Downtown Duncan. An option to change this would be to charge for parking and to ensure that minimum payment aligns with a transit day pass. For transit fares in Duncan, a day pass is $4.50, which is more than double what it would cost to park all day in the Downtown area. Such a strategy is particularly applicable for longer term parking to encourage Downtown employees to travel by bus as opposed to single occupancy vehicle.

ACCESSIBLE PARKING

Providing accessible parking is critical to supporting an equitable transportation system in Duncan. Parking stalls reserved for persons with disabilities can be found throughout the Downtown core in both on- and off-street facilities.

The City's Zoning Bylaw sets out supply and design requirements for accessible parking in new development. Minimum supply rates are currently one stall for the first 20 required spaces with one additional space for every further 40 spaces required. Accessible stalls are also required for uses identified under the British Columbia Building Code. To ensure that the Zoning Bylaw regulations meet the needs of those requiring accessible parking, two actions could be required:

- Removing mention of the British Columbia Building Code, since it no longer contains guidance on accessible parking provision or design; and
- Differentiating accessible parking supply rates based on land use.

Additionally, the City must ensure that on-street accessible parking is properly designed to ensure that persons with disabilities can comfortably use designated stalls.

PARKING RESTRICTIONS

On and off-street parking restrictions are applied in the City's Downtown. On-street restrictions are almost entirely based on length of stay, except on portions Duncan Street, while off-street restrictions include pay parking in one of the two public lots between Duncan Avenue and Canada Avenue.

In exploring opportunities for improved parking management, understanding the impacts of current restrictions is important. Parking restrictions must balance the needs of employees and customers, providing adequate supply for those requiring longer stays while encouraging turnover in high use areas. Future parking studies of the Downtown area should closely examine turnover to understand if current time limits and costs are effective based on parking demand. Consideration could be given to the following:

- Lowering time limits closer to the Downtown core to encourage turnover and ensure high value spaces are available for short-stay parkers;
- Accommodating long-term parking at the periphery of Downtown;
- Examining the need for on-street parking restrictions in residential neighbourhoods adjacent to Downtown; and,
- Studying parking demand for long-term vs. short-term stays.

SURFACE PARKING

Dedicating space to off-street parking is a key, often ignored, land use decision. While these areas are currently used for parking, they could alternatively be converted to different or higher uses that fit with the community's land use and transportation vision. This could include new housing or mixed-use development, park or open space, arts and cultural facilities, or other seasonal uses like markets and festivals.

This type of conversion of parking space could be particularly impactful in areas envisioned for more intensive use, like the Downtown core. For context, over 15% of the Downtown neighbourhood area defined in the OCP is currently occupied by public and private off-street parking facilities. It is worth noting that the neighbourhood area includes Centennial Park, so parking coverage in commercial and residential areas is higher.

As land use decisions are made around centres like the Downtown, the City could consider surface parking lots as opportunities for redevelopment. This should be balanced by considerations for parking supply and the need to secure off-street parking in underground or structured parking, or in peripheral areas.

ELECTRIC VEHICLE CHARGING INFRASTRUCTURE

According to the ICBC 2020 Vehicle Population dataset[1], there are now approximately 285 electric vehicles (EVs) in the Duncan area. With provincial mandates established to transition personal vehicle travel to zero emission vehicles, the need for EV charging infrastructure will increase in communities across B.C. Duncan will have a multi-faceted role in this transition, both needing to fulfill local needs and anticipate demand from Trans-Canada Highway related traffic.

As discussed in **Section 9.1**, existing public charging infrastructure in the City is mostly comprised of Level 2 chargers. To further augment existing capacity, Duncan could explore options to expand Level 2 charging infrastructure and introducing a Level 3 fast charger. Currently the only local fast chargers are in the Municipality of North Cowichan at the Cowichan Community Centre. More Level 3 chargers will be required to allow for fast, convenient charging without having to queue.

1 ICBC (2020). Vehicle Population – Passenger Vehicles 2020. Retrieved from https://public.tableau.com/app/profile/icbc/viz/VehiclePopulation-PassengerVehicles-2020/2020PassengerVehicles

11 POLICY + BYLAW REVIEW

An in-depth review of pertinent City policy and bylaw document was undertaken to identify opportunities to better align the existing regulatory framework with key directions from the TMS. The following section highlights key document included in the review and opportunities within each to advance TMS objectives.

Zoning Bylaw Bylaw No. 3166	✓ Update minimum parking requirements to revise land use classifications, ensure parking supply rates are appropriate for land uses, and provide consistent metrics for expressing minimum supply requirements. ✓ Review accessible parking requirement to ensure stall design dimensions are appropriate for the needs of people using accessible parking spaces and removing references to the BC Building Code in relation to accessible parking. ✓ Introduce requirements for electric vehicle (EV) charging by land use, including regulations concerning the provision of EV charging stations and electrified stalls compatible with the installation of EV charging infrastructure.
Works and Services Bylaw Bylaw No. 3158	✓ In Schedule A of the Works and Services Bylaw, "Highway Works", include new TMS cross-sections to clarify travel lane width, active transportation facility provision and width, and boulevard requirements specific to street classifications. ✓ Review required curb-return radii, vertical curvature, and cross-slope at intersections, based on street classification defined in the TMS, updating as necessary to maintain safe dimensions that function with vehicle and goods movement and active transportation infrastructure requirements defined in the street cross-sections. ✓ Review and update sidewalk and walkway dimensions and grade requirements to ensure consistency with street cross-sections and accessibility recommendations.

POLICY / BYLAW	RECOMMENDED UPDATES
Streets & Parking Regulation Bylaw Bylaw No. 3101	✓ Integrate language around on- and off-street electric vehicle charging. ✓ Include description of maintenance activities to be undertaken by the City on highways and active transportation facilities. ✓ Review requirements for sidewalk cafes and street furniture based on lessons learned and temporary installations throughout the COVID-19 pandemic. ✓ Update list of one-way streets, speed limits and permitted trails for cycling to reflect changes from the TMS.
Development Cost Charges (DCCs) Bylaw Bylaw No. 3147	✓ Review transportation DCC rates to align with the financial objectives of the TMS. ✓ Update transportation related DCC project list to be consistent with identified project list included in the TMS.
Development Cost Charges (DCCs) Reduction Bylaw Bylaw No. 3148	✓ Update the Schedule "A", Community Sustainability Checklist to include TDM strategies and possible infrastructure improvements to ensure that sustainable transportation is appropriately included as options for DCC reductions.
Sign Bylaw Bylaw No. 3095	✓ No updates recommended. Limited application regarding transportation and mobility.
Sewer Services Bylaw Bylaw No. 1844	✓ No updates recommended. Limited application regarding transportation and mobility.
Waterworks Regulations Bylaw Bylaw No. 3213	✓ No updates recommended. Limited application regarding transportation and mobility.
Maintenance of Property Bylaw Bylaw No. 3058	✓ No updates recommended. Limited application regarding transportation and mobility.
Boulevard Maintenance Bylaw Bylaw No. 3055	✓ No updates recommended.

12 NEXT STEPS

The TMS process will continue through the next months with adoption of the final strategy occurring before the end of the year. The second working paper is among the final steps of a process that refines the community's transportation vision, implements future transportation networks, and continues to engage with Duncan's residents, partners, and key stakeholders.

Upcoming milestones for the TMS include the following:

- **Updates to Council, TMS Steering Committee, and Project Partners**
  As Working Paper no.2 is completed, the project updates will be provided to Council, the TMS Steering Committee, and other project partners, including the Cowichan Tribes Quw'utsun Tumuhw Committee.

- **Draft Transportation + Mobility Strategy**
  Building off the analysis and engagement conducted as part of Working Paper no.2, the draft TMS will summarize the project process, including policy and program directions, long-term networks by transportation mode, implementation strategy, and cost estimates.

- **Phase 3 Consultation**
  The final community engagement phase will provide the opportunity for public comment on the draft TMS before proceeding to final adoption. Where needed, updates will be made based on feedback collected.

- **Final Transportation + Mobility Strategy**
  Upon completion, the final TMS will be presented to the public, project partners and Steering Committee, City of Duncan staff, and Council for final review and adoption.

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APPENDIX A.

COMPLETE DRAFT PROJECT LIST BY MODE

COMPLETE STREETS PROJECTS

LOCATION		TYPE	TIMING	DESCRIPTION
A	Government St / Cairnsmore Rd	T, S, L	Short	Install single-lane roundabout with five legs, including new western connection per City developed design
			Ultimate	Subsequent intersection improvements to include four lanes on Government St through intersection, to be pursued in coordination with ultimate four-lane cross-section on Government St corridor
B	Jubilee St / Evans Rd	S	Short	Minor safety improvements to improve intersection sightlines, including advancing northbound and southbound stop bars to improve motorist sightlines (consider pursuing alongside Jubilee St / Ingram St improvements)
			Ultimate	Pursue property acquisition for the intersection northwest and/or southeast corners as possible to reduce Jubilee St offset
				Consider traffic control changes to favour southbound and northbound movements
C	Jubilee St / Ingram St	S	Short	Geometric improvements to align southbound and eastbound travel lanes and create perpendicular pedestrian crossing on west and south leg (consider pursuing alongside Jubilee St / Evans St intersection improvements)
D	Canada Ave / 4th St	T, L, C	Short	Install traffic signal to allow eastbound left-turn movements to more easily access Canada Ave and better facilitate traffic between Jubilee St and Canada Ave (with concurrent change in classification for 4th St to Connector)
			Medium	Improve street design on 4th St to reflect Connector street classification and better accommodate increased traffic volumes and active transportation activities in future
E	Canada Ave / James St	T, C	Short	Install traffic signal to improve eastbound traffic operations and multi-use crossing on Canada Ave
F	Government St / Allenby Rd / Craig St	T, S	Short	Consider installing "Do Not Block Intersection" signs and pavement markings to address westbound left-turn queuing through Allenby Rd / Underwood St intersection
			Medium	Permanent turn restrictions on the eastbound left, westbound left and northbound right turn movements (in cooperation with Government St / Canada Ave improvements)

LOCATION		TYPE	TIMING	DESCRIPTION
G	Government St / Canada Ave	T, S, C	Medium	Alter southbound laning to include southbound left and southbound left/right turn lanes, geometric improvements to eastbound left and westbound left turn (onto Underwood St), and improve pedestrian crossing at Underwood St improvements (consistent with 2017 Government Street Traffic Improvements report)
H	Coronation Ave / Ypres St	S, C	Medium	Further study recommended to determine preferred intersection configuration to better feature the southbound left-turn and westbound right-turn as the major movements. Options may include a mini-roundabout, a channelized westbound right-turn allowing free-flow condition, and/or truncating the Coronation Avenue west leg.
	Coronation Ave / Festubert St	T, C	Long	Install a traffic signal as lane reductions occur on Coronation Ave and new street connections are made on Festubert St to James Street and Queens Rd west of Festubert St (consider changing Festubert St to Connector street as new connections are made)
I	Coronation Ave / St. Julian St	T	Medium	Establish northbound right-turn lane (likely only requires adjusted line painting)
J	Trans-Canada Hwy / Coronation Ave	T	Short	Signal timing upgrades to optimize intersection performance
			Long	Establish northbound and southbound right-turn lane onto Coronation Ave to remove right-turn vehicles from highway through traffic and improve intersection operations
K	Trans-Canada Hwy / Trunk Rd	T	Short	Signal timing upgrades to optimize intersection performance
			Long	Establish northbound and southbound right-turn lane onto Trunk Rd to remove right-turn vehicles from highway through traffic and improve intersection operations
L	Trans-Canada Hwy / Cowichan Way	T, S, L	Short	Install a pedestrian activated half signal to facilitate safe pedestrian and cyclist crossing of the highway (consistent with 2014 TCH Corridor Management Plan)
			Long	Upgrade to a full traffic signal once parallel local streets have been established to facilitate more vehicles accessing downtown via Cowichan Way and to improve conditions for side street traffic (consistent with 2014 TCH Corridor Management Plan)

LOCATION		TYPE	TIMING	DESCRIPTION
M	Price Road Connection	T, L	Medium	A north-south continuous connection paralleling the Trans-Canada Hwy to the east to facilitate rear access to properties fronting the Trans-Canada Hwy and allow for inbound/outbound traffic to access the highway at major intersections such at Trunk Rd, Coronation Ave and Cowichan Way (consistent with 2014 TCH Corridor Management Plan) Consider improvements required to facilitate Bundock Ave connection at Trunk Rd, including possible northbound and southbound turn restrictions to limit impact on Trunk Rd
	Trunk Rd / Marchmont Rd / McKinstry Rd	T, S, C	Ultimate	Consideration may be given to closing McKinstry Rd south of Trunk Rd and altering signal timing to give greater preference to Trunk Rd once the Price Rd connection is in place to improve intersection performance
N	Trunk Rd / Coronation Ave	T, S, C	Long	Extend westbound right-turn lane by removing centre median and changing lane configuration on Trunk Rd between Coronation Ave and Beech Ave Consider changing Day Rd to right in / right out to address spacing from Coronation Ave intersection, consider impact on transit routing
O	Trunk Rd / Lakes Rd	T, C	Medium	Establish additional westbound through lane to address inbound traffic delays and support increased traffic east of Duncan

T – Traffic Congestion S – Road Safety

L – Network Connection C – Complete Street

WALKING + ROLLING PROJECTS

PRIORITY	LOCATION		DESCRIPTION	RATIONALE
A	Marchmont Rd	Beech Ave to Wharncliffe St (South side)	Sidewalk installation	Transit stop accessibility constraints Lack of sidewalk along a future connector route
B	Wharncliffe Rd	Vista Gardens to Dike Trail (North side)	Sidewalk installation	Local sidewalk connectivity between Dike Trail and residential areas, Rotary / McAdam Parks
C	Dobson Rd	South side	Sidewalk winstallation	Connect discontinuous sidewalk along street Provide option for pedestrians to connect east without walking along the TCH
D	Cowichan Way	Trans-Canada Highway	Intersection improvement	Pedestrian crossing improvements to allow for access across the TCH. Pedestrian-controlled signal to be installed to connect to the Marchmont neighbourhood and the Dike Trail. Requires MOTI approval.
E	Evans St	Canada Ave to Jubilee Rd (South side)	Sidewalk installation	Providing pedestrian facilities connecting towards major destinations (Duncan Manor, Centennial Park, Downtown Duncan, CVRD)
F	Jubilee St and Evans St		Intersection improvement	Identified in the accessibility audit as requiring path of travel alignment and accessibility upgrades (TWSIs, directional tactile markings, level landings) General traffic safety improvements required
G	Government St	Craig St to Jubilee St	Sidewalk improvement	Widening sidewalk to create appropriate, accessible conditions for pedestrian travel

PRIORITY	LOCATION		DESCRIPTION	RATIONALE
-	Jubilee Rd	Government St to Evans St	Sidewalk improvement	Long-term accessibility improvement to include widening, leveling of path of travel and at driveways
-	Duncan St	Queens Rd to municipal boundary	Sidewalk installation	Long-term sidewalk installation
-	Herbert St		Sidewalk installation	Long-term sidewalk installation
-	Holmes St	East side	Sidewalk installation	Long-term sidewalk installation
-	College St	North of school	Sidewalk installation	Long-term sidewalk installation
-	Jubilee Rd	Cavell Rd to White Rd (south side)	Sidewalk installation	Long-term sidewalk installation
-	3rd Street	North side	Sidewalk installation	Long-term sidewalk installation
-	2nd Street	Jubilee Rd to Duncan St (north side)	Sidewalk installation	Long-term sidewalk installation
-	Evans St	Jubilee Rd to Boundary Rd (south side)	Sidewalk installation	Long-term sidewalk installation

PRIORITY	LOCATION		DESCRIPTION	RATIONALE
-	Boundary Rd	Evans St to Ingram St (east side)	Sidewalk installation	Long-term sidewalk installation
-	Garden Street	East side	Sidewalk installation	Long-term sidewalk installation
-	Coronation St	Duncan St to Brae Rd (north side)	Sidewalk installation	Long-term sidewalk installation
-	Ypres St	Coronation Ave to Trunk Rd (west side)	Sidewalk installation	Long-term sidewalk installation
-	Day Rd		Sidewalk installation	Long-term sidewalk installation
-	Castle St		Sidewalk installation	Long-term sidewalk installation
-	Watson St		Sidewalk installation	Long-term sidewalk installation
-	Beech Ave	Wharncliffe Rd to McAdam Park	Sidewalk installation	Long-term sidewalk installation
-	Campbell St		Sidewalk installation	Long-term sidewalk installation

PRIORITY	LOCATION	DESCRIPTION	RATIONALE
-	Loams Rd	Sidewalk installation	Long-term sidewalk installation
-	Prevost Rd	Sidewalk installation	Long-term sidewalk installation
-	Whistler St	Sidewalk installation	Long-term sidewalk installation
-	Cowichan River	Multi-Use Crossing	Multi-use crossing of Cowichan River connecting communities south of Duncan with future Trans Canada Highway multi-use pathway and Dike Trail

CYCLING PROJECTS

PRIORITY	LOCATION		DESCRIPTION	RATIONALE
A	Marchmont Shared Bikeway Installations	Beech Ave Wharncliffe Rd McKinstry Rd	Shared bikeway installation	Cycling connections in the Marchmont and Chesterfield neighbourhoods Increase overall network connectivity east of TCH Simple implementation in wide rights-of-way
B	Trunk Rd	Lakes Rd to Coronation Ave	Protected bicycle lane installation	Physically protected cycling facility on Trunk Road connecting between planned cycling improvements on Coronation Ave and the planned roadside pathway on the north side of Tzouhalem Road in North Cowichan. Includes intersection improvements at Trunk Road / Lakes Road intersection, including connecting to Dike Trail.
C	Coronation Ave	TCH to Trunk Rd (Both sides)	Protected bicycle lane installation	Physically protected cycling facility on both sides of Coronation Ave providing connections between Downtown and the Marchmont and Chesterfield neighbourhoods. Will require agreement in-principle to install cycling intersection improvements along the TCH Includes intersection improvement at Trunk Rd to integrate with future east-west cycling route.
D	Coronation Ave / Queens Rd	Canada Ave to TCH (Both sides)	Protected bicycle lane installation	Physically protected cycling facility on both sides of Coronation Ave providing connections between Downtown and the Coronation neighbourhood.
E	Trans-Canada Highway	Dike trail to municipal boundary (East side)	Multi-use path installation	Connecting Dike Trail to future facilities on Trunk Road and beyond Portions of the project are currently in design phases Identified in the TCH Corridor Plan as a short-term project
F	Canada Ave Bus Exchange	East side	Enhanced bicycle parking facilities	Introducing safe and secure bicycle facilities to be used by visitors to Downtown Duncan and by transit commuters

PRIORITY	LOCATION		DESCRIPTION	RATIONALE
G	Canada Ave	Evans St to 3rd St (Both sides)	Painted bicycle lane installation	Key connection between existing painted facility south of Evans St to the Friendship Trail north of 3rd Street extending northward. Includes cyclist crossing at 3rd St.
H	3rd Street	Canada Ave to Centennial Park (Both sides)	Shared bikeway installation	Connect cycling facilities on Canada Ave with multi-use path along Jubilee St Improve cycling access to Centennial Park Simple implementation in wide right-of-way
I	Jubilee Rd / Cavell St	3rd St to Cairnsmore Rd (North / East side)	Multi-use path installation	Enhanced multi-use facility along east side of road, replacing existing sidewalk facility Prioritized as one of two possible connections between Cairnsmore / Centennial Heights and Downtown and unsafe existing conditions To be connected to cycling facilities on Cairnsmore St and multi-use path on Jubilee Rd
J	Ingram St / Boundary Rd	Government St to Canada Ave	Protected bicycle lane installation	Physically protected cycling facilities on both sides of Ingram St / Boundary Rd connecting cyclists into the west end of downtown and providing a continuous east-west- cycling facility along the Coronation / Ingram corridor.
K	Government St	Herbert St to municipal boundary (Both sides)	Painted bicycle lane installation	Connecting existing painted bicycle lane facility to Cairnsmore neighbourhood node Enhancing connectivity to Downtown, Cowichan Valley Hospital, and beyond Potential to be completed in conjunction with Government St / Cairnsmore Road roundabout project
-	Cairnsmore St	Government St to Cavell St (Both sides)	Painted bicycle lane installation	Long-term painted bicycle lane installation
-	Pine Ave / McDonald St	Government St to Cairnsmore St (Both sides)	Shared bikeway installation	Long-term shared bikeway installation

PRIORITY	LOCATION		DESCRIPTION	RATIONALE
-	Islay St	Cairnsmore St to municipal boundary (Both sides)	Painted bicycle lane installation	Long-term painted bicycle lane installation
-	Jubilee Rd	3rd St to Government St (Both sides)	Painted bicycle lane installation	Long-term painted bicycle lane installation
-	Canada Ave	Evans St to Trunk Rd (Both sides)	Protected bicycle lane installation	Long-term protected bicycle lane installation
-	Government St	Boundary Rd to Canada Ave	Protected bicycle lane installation	Long-term protected bicycle lane installation
-	Government St	Herbert St to Boundary Rd	Protected bicycle lane installation	Long-term protected bicycle lane installation
-	Duncan St	Trunk Rd to municipal boundary (Both sides)	Shared bikeway installation	Long-term shared bikeway installation
-	Alderlea St	Queens Rd to municipal boundary (Both sides)	Painted bicycle lane installation	Long-term painted bicycle lane installation
-	Festubert St	Trunk Rd to municipal boundary (Both sides)	Painted bicycle lane installation	Long-term painted bicycle lane installation
-	Trunk Rd	Canada Ave to TCH (Both sides)	Protected bicycle lane installation	Long-term protected bicycle lane installation

PRIORITY	LOCATION		DESCRIPTION	RATIONALE
-	Trunk Rd	TCH to Coronation Ave (Both sides)	Protected bicycle lane installation	Long-term protected bicycle lane installation
-	Marchmont Rd	Trunk Rd to Lakes Rd (Both sides)	Shared bikeway installation with connection to Dike Trail	Long-term painted bicycle lane installation
-	Chesterfield Ave	Coronation Ave to municipal boundary (Both sides)	Shared bikeway installation	Long-term shared bikeway installation
-	Al Wilson Grove	TCH to McKinstry Rd (both sides)	Shared bikeway installation	Long-term shared bikeway installation
-	McAdam & Rotary Parks	McKinstry Rd to Dike Trail	Multi-use path installation	Long-term multi-use path installation
-	McAdam & Rotary Parks	Beech Ave to Dike Trail	Multi-use path installation	Long-term multi-use path installation
-	Centennial Park Multi-Use Path	Pine Ave to 3rd St	Multi-use path installation	Long-term multi-use path installation
-	Dike Trail	Marchmont Rd to Dike Trail	Multi-use path installation	Long-term multi-use path installation
-	Holmes St Multi-Use Path	Holmes St to municipal boundary	Multi-use path installation	Long-term multi-use path installation

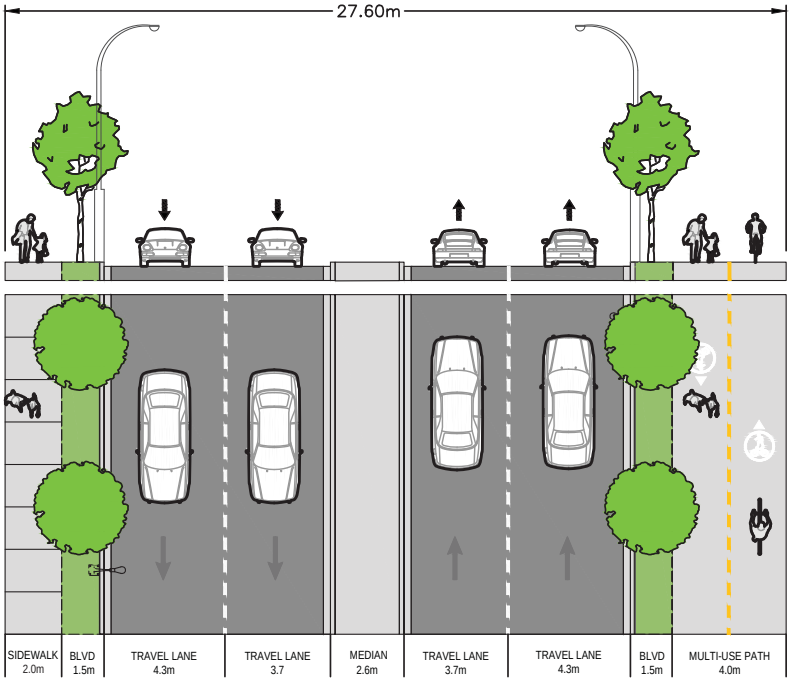
APPENDIX B.

DRAFT COMPLETE STREETS TYPOLOGIES & CROSS SECTIONS

A. HIGHWAY

DESIRED SPECIFICATIONS	TYPICAL FEATURES*
RoW Width: 30m Speed Limit: 50 km/h Traffic Volumes: 5,000 – 15,000 vehicles/day	• Narrowest width of vehicle travel lanes possible between 3.7m and 4.3m • No on-street parking; signage should direct vehicles to on-street parking on adjoining streets or off-street parking facilities • Sidewalks on the west side of the corridor with widths of a minimum 2.0m • Multi-use path on the east side of the highway with a minimum width of 4.0m • Boulevards and street trees on both sides of the street • Paved amenity zone, minimum 4.0m with a trench to accommodate street trees (rather than grass boulevard) and to extend pedestrian space; stormwater management incorporated into street tree trench wherever possible • Hydro poles relocated underground or onto laneways • Where applicable, enable a strong relationship between ground-level commercial land uses, including an active streetscape featuring public and commercial seating and outdoor display areas • Pedestrian-scaled lighting

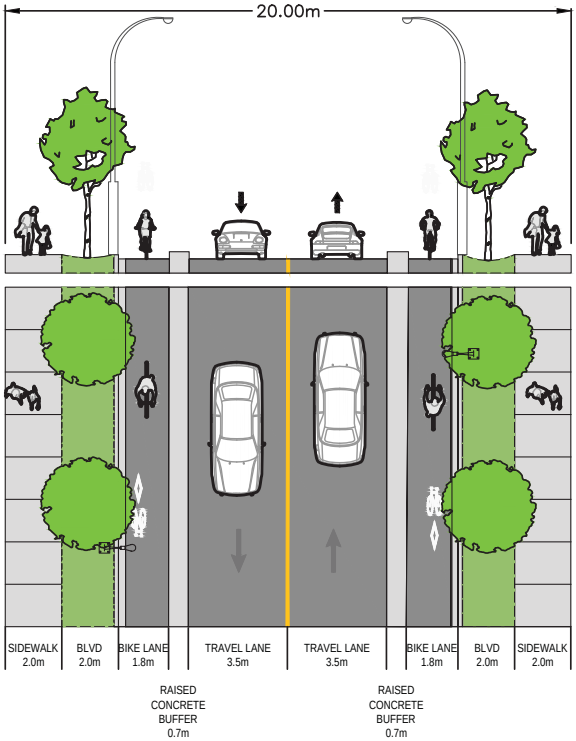
**Typical features may vary by corridor where local factors may influence right-of-way width and/or desired cross-section components may vary.*



B. MAJOR STREET

DESIRED SPECIFICATIONS	TYPICAL FEATURES*
RoW Width: 20 – 25m Speed Limit: 50 km/h Traffic Volumes: 5,000 – 15,000 vehicles/day	• Narrowest width of vehicle travel lanes possible approximately 3.5m • No on-street parking; signage should direct vehicles to on-street parking on adjoining streets or off-street parking facilities • Sidewalks on both sides with widths of a minimum 2.0m • Cycling facilities will be included on identified cycling routes • Boulevards and street trees on both sides of the street of a minimum width of 2.0m • Paved pedestrian and amenity zone, minimum 4.0m with a trench to accommodate street trees (rather than grass boulevard) to extend pedestrian space in front of active commercial; stormwater management incorporated into street tree trench wherever possible • Hydro poles relocated underground or onto laneways • Where applicable, enable a strong relationship between ground-level commercial land uses, including an active streetscape featuring public and commercial seating and outdoor display areas • Pedestrian-scaled lighting

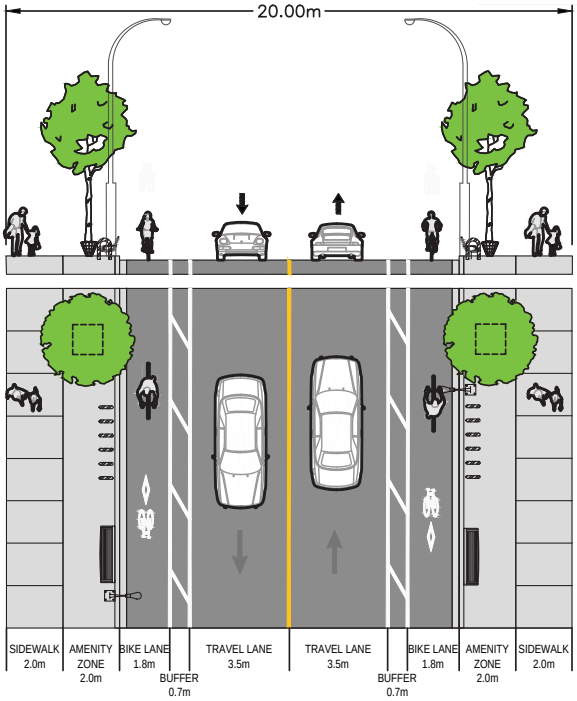
**Typical features may vary by corridor where local factors may influence right-of-way width and/or desired cross-section components may vary.*



C.1. CONNECTOR STREET, DOWNTOWN

DESIRED SPECIFICATIONS	TYPICAL FEATURES*
RoW Width: 20m Speed Limit: 50 km/h Traffic Volumes: 1,000 – 5,000 vehicles/day	• Narrowest width of vehicle travel lanes possible, approximately 3.5m • On-street parking on both sides of street in parallel configuration; may be excluded where incompatible with adjacent land use or active transportation facilities • Sidewalks on both sides with widths of a minimum 2.0m • Cycling facilities will be included on identified cycling routes • Boulevards and street trees included on both sides of the street • Paved pedestrian and amenity zone, minimum 2.0m, with a trench to accommodate street trees (rather than grass boulevard) to extend pedestrian space in front of active commercial; stormwater management incorporated into street tree trench wherever possible • Hydro poles relocated underground or onto laneways • Curb extensions in select locations to shorten crossing distances, provide space for green stormwater management, and street trees • Strong relationship between ground-level commercial land uses, including an active streetscape featuring public and commercial seating and outdoor display areas • Decorative, pedestrian-scaled lighting • Decorative paving, public art, and seating

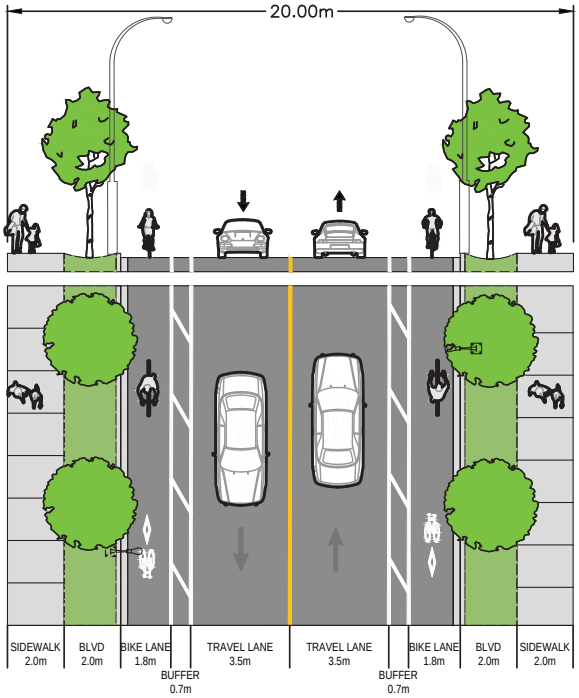
**Typical features may vary by corridor where local factors may influence right-of-way width and/or desired cross-section components may vary.*



C.2. CONNECTOR STREET, NEIGHBOURHOOD

DESIRED SPECIFICATIONS	TYPICAL FEATURES*
RoW Width: 20m Speed Limit: 50 km/h Traffic Volumes: 1,000 – 5,000 vehicles/day	Narrowest width of vehicle travel lanes possible, approximately 3.5m On-street parking on one side of street in parallel configuration; may be excluded where incompatible with adjacent land use or active transportation facilities Sidewalks on both sides with widths of a minimum 2.0m Cycling facilities will be included on identified cycling routes Boulevards and street trees to be included on both sides of the street Curb extensions in select locations to shorten crossing distances, provide space for green stormwater management, and street trees Pedestrian-scaled lighting

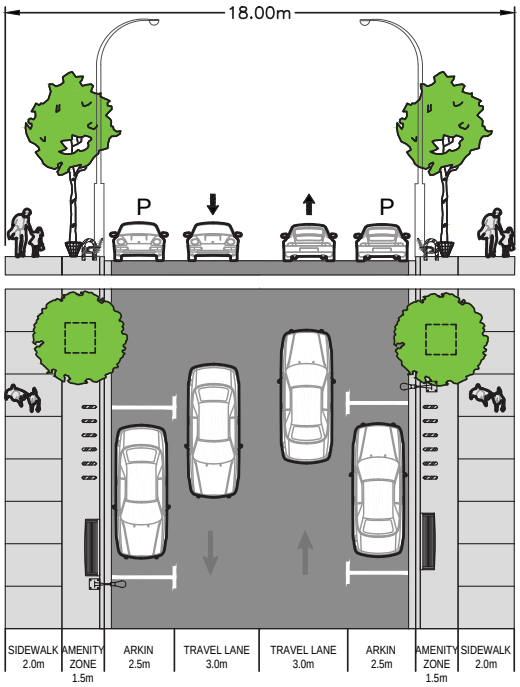
**Typical features may vary by corridor where local factors may influence right-of-way width and/or desired cross-section components may vary.*



D.1. LOCAL STREET, DOWNTOWN

DESIRED SPECIFICATIONS	TYPICAL FEATURES*
RoW Width: 18m Speed Limit: 30 km/h Traffic Volumes: <1,000 vehicles/day	Narrowest width of vehicle travel lanes possible of a minimum 3.0m On-street parking on both sides of street in a parallel configuration Sidewalks on both sides with widths of a minimum 2.0m Boulevards and street trees may be included on one or both side of the street Paved pedestrian and amenity zone, minimum 2.0m, with a trench to accommodate street trees (rather than grass boulevard) to extend pedestrian space in front of active commercial; stormwater management incorporated into street tree trench wherever possible Hydro poles relocated underground or onto laneways Curb extensions in select locations to shorten crossing distances, provide space for green stormwater management, and street trees Strong relationship between ground-level commercial land uses, including an active streetscape featuring public and commercial seating and outdoor display areas Decorative, pedestrian-scaled lighting, decorative paving, public art, and seating

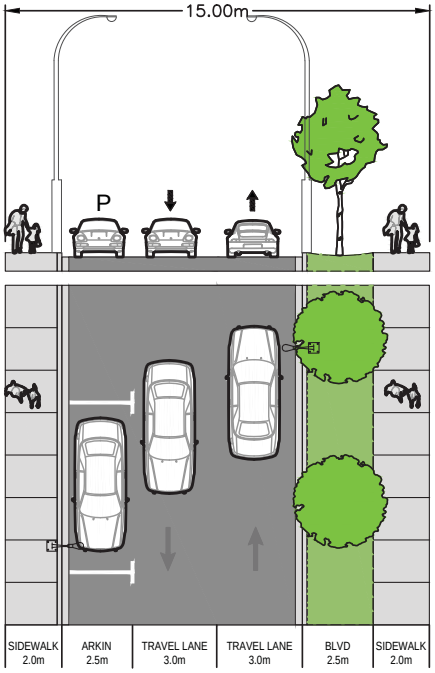
**Typical features may vary by corridor where local factors may influence right-of-way width and/or desired cross-section components may vary.*



D.2. LOCAL STREET, NEIGHBOURHOOD

DESIRED SPECIFICATIONS	TYPICAL FEATURES*
RoW Width: 15m Speed Limit: 30 km/h Traffic Volumes: <1,000 vehicles/day	Narrowest width of vehicle travel lanes possible, approximately 3.0m On-street parallel parking on both sides Sidewalks on both sides with widths of a minimum 2.0m Boulevards and street trees may be included on one or both side of the street Curb extensions in select locations to shorten crossing distances, provide space for green stormwater management, and street trees Pedestrian-scaled lighting

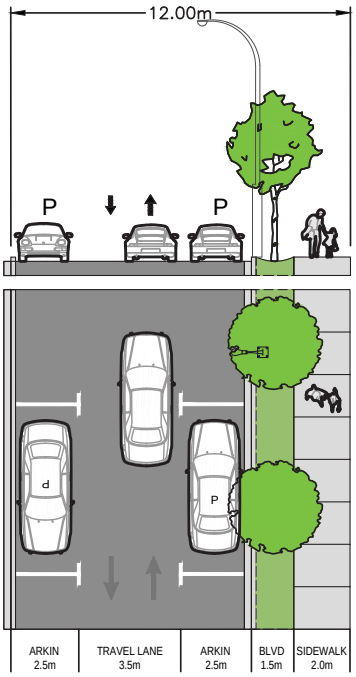
**Typical features may vary by corridor where local factors may influence right-of-way width and/or desired cross-section components may vary.*



D.3. LOCAL STREET, SHARED

DESIRED SPECIFICATIONS	TYPICAL FEATURES*
RoW Width: 12m Speed Limit: 30 km/h Traffic Volumes: <500 vehicles/day	Narrowest width of vehicle travel lane possible, approximately 3.5m Shared cycling facility markings will be included on identified cycling routes On-street parallel parking on one or both sides, with gaps in parking and. or driveways used for vehicles to pass in opposing directions Sidewalks on one side with widths of a minimum 2.0m Boulevards and street trees included on one side of the street Curb extensions in select locations to shorten crossing distances, provide space for green stormwater management, and street trees Pedestrian-scaled lighting

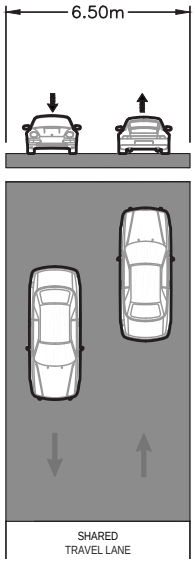
**Typical features may vary by corridor where local factors may influence right-of-way width and/or desired cross-section components may vary.*



E. LANEWAY

DESIRED SPECIFICATIONS	TYPICAL FEATURES*
RoW Width: 6.5m Speed Limit: 10 km/h Traffic Volumes: <100 vehicles/day	Multi-modal design to accommodate pedestrians, cyclists, vehicles, and service vehicles within the travel lane Alternative paving materials to indicate shared environment Chicanes or other traffic calming features to slow vehicles and provide space for planting Laneways to have at least two access points to a public street where possible, with consideration given to one-way circulation to avoid vehicle exits onto Major and Connector street Where a laneway exits onto a Major or Connector street, specific consider is needed to maintain appropriate sight distance with parking setback from the laneway by at least 3m Signage to be provided that clarifies intended travel speed and one-way / two-way circulation Additional 1.0m statutory right-of-way to be sought through redevelopment of adjacent properties

**Typical features may vary by corridor where local factors may influence right-of-way width and/or desired cross-section components may vary.*


6.50m
SHARED
TRAVEL LANE