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1 INTRODUCTION

Boulevard Transportation Group was retained by the Village of Lumby to conduct a transportation plan and trails master plan for the community. The key elements considered in the plan were a review of the roadway network in terms of connectivity, linkages, and classification, a review of trails and other active transportation measures, a review of road safety and a review of parking in the downtown core. In addition, issues of regional importance that may relate to Lumby are considered (e.g. the proposed Lumby / Silver Star connection).

The purpose of the study was to aid the Village in the guidance of future transportation infrastructure development in the community and ensure consistent and appropriate roadway designs are undertaken. Specifically, the study was to identify opportunities for new linkages (both roadway and trail), and to establish roadway classifications with design parameters. This will aid in the guidance of future development in the community and ensure consistent and appropriate roadway designs are undertaken.

2 BACKGROUND

The Village of Lumby is located in the Regional District of North Okanagan, 26 kilometres east of Vernon, and is bisected by Hwy 6. With a population of approximately 1,700 people, it is a small but growing community, and is increasingly becoming a bedroom community for the City of Vernon. The study area was the Village of Lumby boundary, with consideration to the key links in and out of the village (namely Hwy 6 and Mabel Lake Rd). The study area is shown in **Figure 1**.

3 DATA COLLECTION

Data collection for this study consisted of base mapping, land use information, traffic counts and parking counts, as well as stakeholder consultation.

3.1 Mapping and Land Use Information

GIS mapping information for Lumby was provided by the RDNO GIS department. This information comprised roadway centrelines, lot lines, municipal boundaries, one-metre contour elevations and water features. This information was compiled in a GIS platform, which allowed for the graphical presentation of relevant features.

An overview of existing and future land uses in the Lumby area was imparted in discussions with Lumby staff. In particular, areas of future residential development were relayed, which is important as these are areas where new roadway connections may be required.

3.2 Traffic Counts

Data collection for this study is composed highway traffic data provided by the Ministry of Transportation and a spot traffic count taken on Thursday April 30 2009 at the intersection of Hwy 6 and Shuswap Ave. This information was used to establish background traffic characteristics for the community on the two major roadways in Lumby. Traffic counts on Hwy 6 were taken on the east side and west side of town, and are two-way Annual Average Daily Traffic totals (AADT). The intersection count collected turning movements in an afternoon.

Existing 2009 traffic volumes were used as the basis for projecting the 20-year (2029) horizon traffic volumes, by assuming a 2.0 percent annual growth rate. **Figure 2** shows the traffic count summary.

3.3 Traffic Conditions

A review of traffic conditions was conducted at Hwy 6 and Shuswap Ave, as this is the busiest intersection in Lumby and is therefore of greatest interest in potential need for traffic control mitigations. Traffic conditions were investigated using Synchro traffic modelling software. Synchro is based on the Highway Capacity Manual (HCM) methodology, and analysis results are produced in terms of measures of effectiveness (level of service (LOS), delays, and queue lengths). Delays and the type of traffic control are used to determine the LOS letter grade, from LOS A (excellent operations) to LOS F (unstable/failing). LOS C or better are considered to be acceptable operations, while LOS D is considered to be on the threshold between acceptable and unacceptable operations.

Traffic conditions were assessed for the current (base) year 2009, and for the 10 and 20-year horizons, and are assessed based on the p.m. peak hour volumes, which represent the typically worst-case recurring traffic volumes.

Traffic conditions at Hwy 6 & Shuswap Ave:

- 2009: LOS B (all approaches)
- 2019: LOS B (northbound and westbound), LOS C (southbound and eastbound)
- 2029: LOS D (northbound and westbound), LOS E (southbound and eastbound)

From a capacity perspective, traffic operations are acceptable for the 10-year horizon, as the level of service is LOS C or better. In the 20-year horizon however, conditions are estimated to be at the threshold of unacceptable conditions, with two approaches at LOS E, and the others at LOS D. Improved traffic control of either a signal or roundabout would improve those future levels of service to acceptable levels. It is therefore a consideration that in the 20-year horizon traffic control improvements may be required for the intersection of Hwy 6 and Shuswap Ave.

3.4 Parking Counts & Conditions

A spot count of parking utilization in the downtown core of Lumby was taken on April 30 2009, at 2 p.m. and again at 3 p.m. The count collected the number of stalls (or the approximate number of available parking spaces) and the number of vehicles parked, on a per-block, per-side-of-the-street basis. The results are shown in **Figure 2**, in terms of percentages in three categories: less than 50 percent utilization, between 50 and 85 percent utilization, and greater than 85 percent utilization. These ratios were used since less than 50 percent utilization generally indicates an abundant parking supply, between 50 and 85 percent indicates that the parking is well used with an adequate supply (but may not be adequate in the future if increased development occurs), and greater than 85 percent utilization indicates parking is at or near full usage, which may indicate a short supply in an area and may indicate the need for a parking mitigation plan. Note that the higher utilization rate (of the 2 p.m. count and the 3 p.m. count) was assigned to a specific segment, to represent worst-case conditions.

Based on the parking utilization map, it can be seen that all of the three utilization categories are represented on some segments in Lumby's downtown core. Overall, there is no parking availability problem at present. Although some specific segments have full or near-full usage, adjacent segments, either across the street or around the corner have available parking spaces. Therefore, at this time no parking management or mitigation strategies are required or need be considered. However, in the five-

year horizon, the establishment of two-hour parking restrictions may be considered for the downtown core as a means of encouraging parking turnover in the commercial / retail district.

3.5 Stakeholder Consultation

Stakeholder consultation for the project consisted of workshops with Lumby staff and two open houses.

3.5.1 Meetings with Lumby Staff

Meetings were held with Lumby staff at several points during the project. The initial meeting to kick off the project was a base information gathering meeting, where potential issues, concerns and opportunities were discussed that helped guide the data acquisition phase. At other points, materials that were prepared throughout the project were discussed with Lumby staff for their input and feedback.

3.5.2 Open House #1

Two open houses were held as part of the project, the first open house being an information gathering exercise. It was held on June 11, 2009 at the Lumby Community Centre. The open house consisted of a welcome board with background information, and four specific boards under the themes of road network, trails and pathways, road safety, and traffic volumes and parking. The boards presented existing conditions, and provided a slate for inputting resident feedback (attendees were encouraged to draw on the boards to highlight issues, problem areas, or transportation opportunities). A questionnaire was also used to solicit attendee feedback on their particular issues of concern. The open house was, unfortunately, only attended by a small number of residents; nonetheless, their feedback was considered in the development of the draft plan. Materials from the first open house were displayed at Lumby's municipal hall, and some additional feedback was received from residents after the open house as well.

3.5.3 Open House #2

The second open house was held September 16 2009, and presented the draft plan to the community for comments and feedback. As with the first open house, a welcome board with background and process information was presented, and four boards with recommendations regarding road network, trails and pathways, road safety issues, and traffic volume and parking considerations were presented. A questionnaire was provided for resident feedback on the plan, to garner their feedback as to their thoughts on the plan and any comments that they might have for revision / inclusion into the final report. This second open house was better attended than the first one, with 10 attendees from the

public plus some members of Lumby's council. This feedback was important to get confirmation and to adjust the final plan to meet a vision appropriate for the village.

4 ROAD NETWORK CONSIDERATIONS

4.1 Road Classification Overview

Road classification is the designation of a specific road or roadway segment in terms of a category, where roadways labelled with a certain category share similar functions and traffic characteristics. Typical road classification categories are freeway, expressway, highway, arterial or major road, collector road, and local road. The classification of roads in a community is an important means of managing and planning for traffic and ensuring appropriate infrastructure expenditures are made on specific road links.

The key considerations in establishing roadway classifications are traffic volumes (existing and estimated future volumes) and mobility needs. These considerations ensure adequate capacity / laning is provided, as well as facilitating through-movement vehicles on specific routes but not on others where traffic is less desirable (such as local roads).

4.2 Hillside Roadway Grade Considerations

Road grades are an important consideration in Lumby given the topographic characteristics of the community. In particular, new residential development in the community is primarily taking place in the hills to the west, and roadway grades are necessarily an important design consideration.

A review of hillside development guidelines in other BC communities was conducted to establish typical road grade thresholds. Guidelines were considered from Kelowna, Vernon, Peachland, and Coquitlam. The range of maximum grades in these guidelines varies by road type, from 10 to 12 percent for local roads, 9 to 10 percent for collector roads, and 8 percent for arterial roads.

Based on these considerations, the following maximum road grade guidelines are recommended for the Village of Lumby:

- Arterials: 8 percent
- Collectors: 10 percent
- Locals: 12 percent

4.3 Existing Lumby Road Network

The existing road network in Lumby consists of an arterial roadway (Hwy 6), several collector roadways (Shuswap Ave / Mabel Lake Rd, Glencaird Rd), and local roads (all others)¹.

¹ Village of Lumby Official Community Plan, Bylaw No. 638, 2005

Irrespective of these designations, at present there are two main routes in town, namely Hwy 6 and Shuswap Ave / Mabel Lake Rd (north of Hwy 6). These are the busiest routes in town, with both serving through-town traffic as well as much of Lumby's internal traffic. (This is because many, if not most, of the Village's commercial and other destination land uses lie either along or adjacent to one of these routes.)

Given Lumby's small size, there are not any roadways that are "collector" per se, but there are several roads that could be considered Local Collectors. These are residential roadways that also serve to facilitate movements for other residential roadways that do not connect through to Hwy 6 or Shuswap Ave. Examples are Glencaird St, Mountain View Ave, Maple St and Cedar Ridge St.

The other type of road in the Village is Local roads, which primarily serve traffic to/from those roads only. Examples are Catt Ave, Derry Lane, and Skyview Crescent. Note that Park Ave would be considered a Local road despite having connections to both Hwy 6 and Shuswap Ave, by virtue of the numerous traffic calming speed humps used to dissuade cut-through traffic.

4.4 Lumby Road Network Needs / Opportunities

The assessment of road needs and opportunities is based on new connections to growth areas, traffic capacity needs, and consideration of ensuring adequate through-village connectivity via the collector road network. Each of these items will be considered in identifying need and opportunities, and will form the basis for the recommended road network plan.

4.4.1 Classification of Existing Links

There are some existing road links that are well positioned to serve as collector roads, owing to their connectivity to other main roads and the accessibility they provide to various Lumby neighbourhoods.

These roads are:

- Shuswap Ave
- Mountain View Ave
- Leblanc St / Maple St / Quesnel Rd
- Cedar Ridge St

Shuswap Ave is the major non-Ministry road in Lumby and therefore is a natural choice as a collector road. Mountain View Ave provides connectivity to the new hillside residential areas in the west of the village.

Maple St and Quesnel Rd do connect to / from central Lumby to Hwy 6 east. At present, however, Quesnel Rd is a narrow paved road with a cross-section that is equivalent to a laneway; this tends to dissuade through-traffic from using this route. There is the potential to upgrade this roadway, thereby providing an alternative village access to/from the east portion of Hwy 6, and could aid in the establishment of a grid collector network. Conversely, the existing roadway design may be retained, which is effectively a naturally traffic-calmed roadway, and thereby serving to dissuade through traffic.

Leblanc St is currently a dead-end road; however, should certain key roadway linkages be made at its west end, it could provide a good access to the Cedar Ridge St neighbourhood and the new residential areas in the west. Also, as it aligns with Maple St it would effectively provide a continuous east-west corridor in the village as an alternative to Hwy 6. This road was viewed as having better long term potential as a collector road than Glencaird Rd due to more direct network connectivity and lesser road grades (road grades are very steep on Glencaird Rd, to a degree that is undesirable for collector roads).

Cedar Ridge St is the only access road to the Cedar Ridge neighbourhood, and is therefore an important collector in the northwest of Lumby.

4.4.2 Future Links

Future road link requirements in Lumby are to be dictated by future growth areas, in terms of site access as well as connectivity to the larger Lumby road network. Current growth areas and associated new road link requirements are in the new residential areas in the hills on the west side of the village.

Mountain View Ave Extension

Mountain View Ave currently connects to Hwy 6 at the southwest corner of Lumby and runs north to just past Miller St. Given Mountain View Ave's collector-road nature in providing access to the new hillside residential areas as well as ability to be extended both north and south, this road provides the opportunity for future collector links. To the north, it is possible to eventually connect an extension to Cedar Ridge St, which would connect two roads that are effectively Local Collectors.

Cedar Ridge St / Leblanc St Connection

At present, Cedar Ridge St is effectively a dead-end road and only collector for the Cedar Ridge neighbourhood. It is feasible, however, to extend Cedar Ridge St a relatively short distance to connect with Leblanc St (approximately 250m). This would provide an additional access option for the Cedar Ridge neighbourhood and would provide an enhanced collector grid network.

Mountain View Ave / Leblanc St Connection

It may also be possible to connect the west end of Leblanc St with Mountain View Ave (intersecting just north of Miller St). This would further enhance community road connectivity and, along with a potential Cedar Ridge St extension, effectively provide a full grid network of Local Collectors for the village. Such a connection would provide an alternate route for drivers to/from Hwy 6 West and Lumby Mabel Lake Rd, which may reduce traffic at Hwy 6 & Shuswap Ave (lessening the potential need for future traffic control upgrades at that intersection). However, this added connectivity could result in less through traffic passing through the Lumby commercial core, and instead driving on residential roads.

Shuswap Ave Realignment

Shuswap Ave has a curvilinear alignment in the Maple St / Leblanc St area. This alignment results in potential safety concerns (see Section 5 for discussion of safety issues), and is also indirect in terms of clearly guiding through-vehicles along the corridor length. An option would be to realign Shuswap Ave between Maple St and a connection point south of Cedar Ridge St. This would allow for a conventional intersection at Maple St and Shuswap Ave where the major movement has a direct non-turning movement manoeuvre. This option would, however, have to be carefully considered in that it runs adjacent to the elementary school, and further would likely require a small portion of ALR land (both issues may render this option unfeasible).

New Road Links, West and North Lumby

In the longer term, there is potential for future residential development in Lumby to the west up the hillside as well as north from Spruce and Fir streets. In the longer-term additional roadway provisions may therefore be required. To service further development to the west, a new north-south roadway would likely be required, parallel to and west of Mountain View Ave (with the alignment to be determined). Connection considerations for this roadway are a function of hillside slopes and grade criteria.

At the north end, connection options for this potential roadway could include Cedar Ridge St, Spruce St, Fir St, and Lumby Mabel Lake Rd. It may also be possible and perhaps favourable to connect such future roads to the north towards Ladyslipper Rd in the RDNO. Towards the south, it may be most feasible to connect this north-south road to Hwy 6 south and west of Lumby (beyond the village limits) because of grade considerations. This would also provide an alternative route to/from Hwy 6 and Lumby Mabel Lake Rd.

4.5 Proposed Road Network and Cross Sections

Based on the above discussion, a Lumby road network is recommended that consists of three road classifications: Highway, Collector, and Local. The proposed road network is shown in **Figure 3**, with possible future collector roadway links shown, as well as possible long-term future connection options.

Three typical roadway cross sections are proposed: Urban Collector, Rural Collector, and Local. Note that the Highway cross section is not addressed as this is under the Ministry of Transportation's jurisdiction. The proposed cross sections are shown in **Figures 4, 5, and 6**.

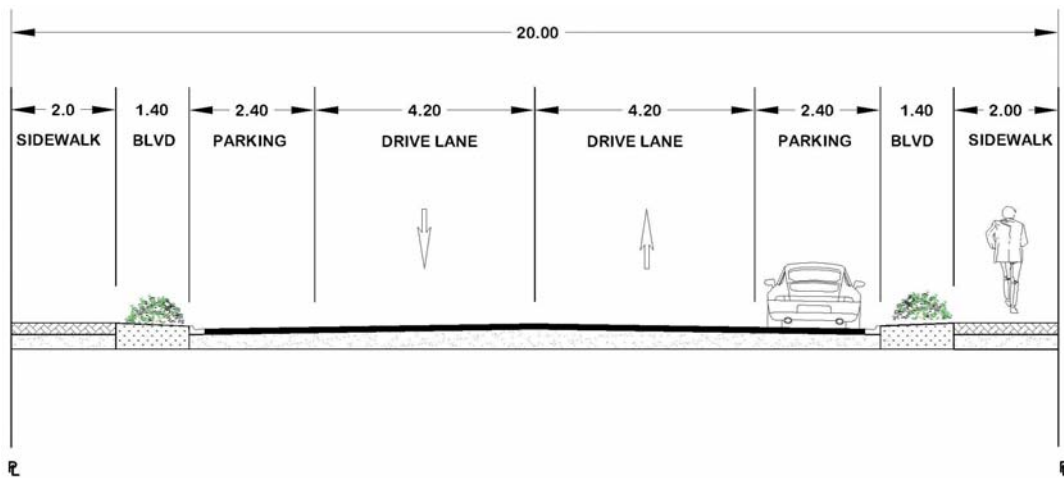


Figure 4: Proposed Urban Collector Cross Section

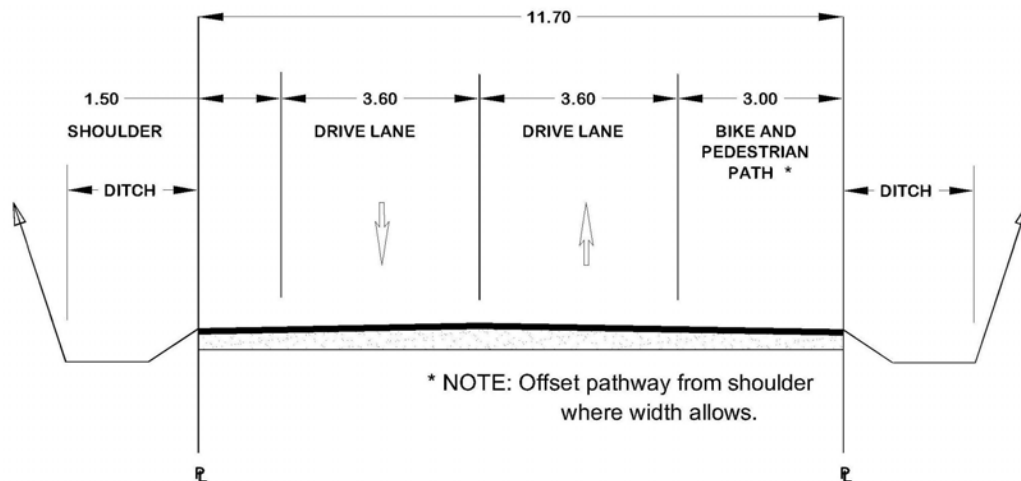


Figure 5: Proposed Rural Collector Cross Section

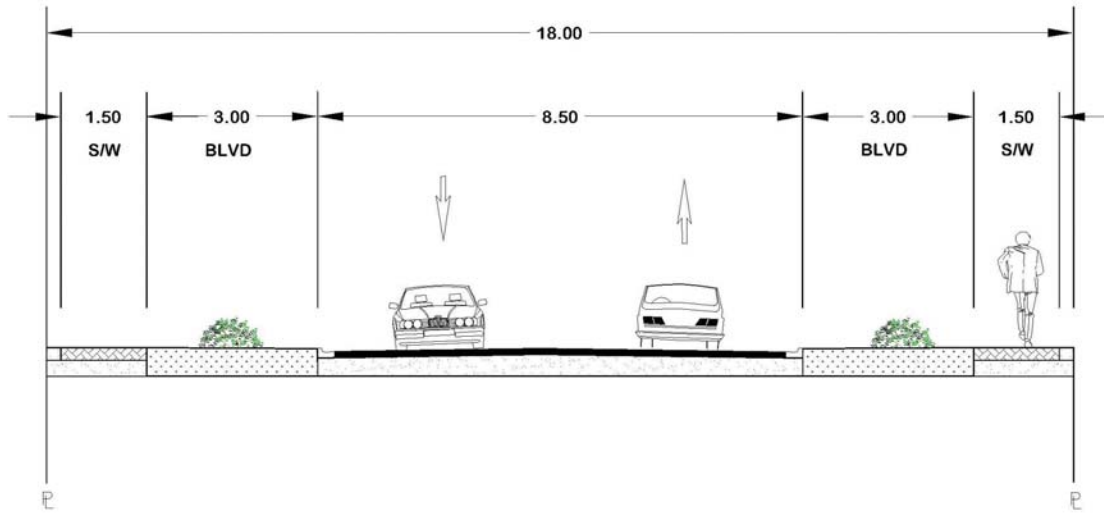


Figure 6: Proposed Local Cross Section

5 SAFETY & GEOMETRY ISSUES

Safety and geometry concerns were considered for key intersections and roadway segments throughout the village. The issues that were raised were identified from site visits, staff input and public feedback.

5.1 Specific Safety Issues

5.1.1 Intersection of Shuswap Ave / Maple St

At the intersection of Shuswap Ave and Maple St, there is currently unique geometry and traffic control that, while effective at facilitating the dominant vehicular movements (north-to-west and east-to-south Shuswap Ave traffic), introduce several safety concerns. A diagram is sketched below in **Figure 7:**

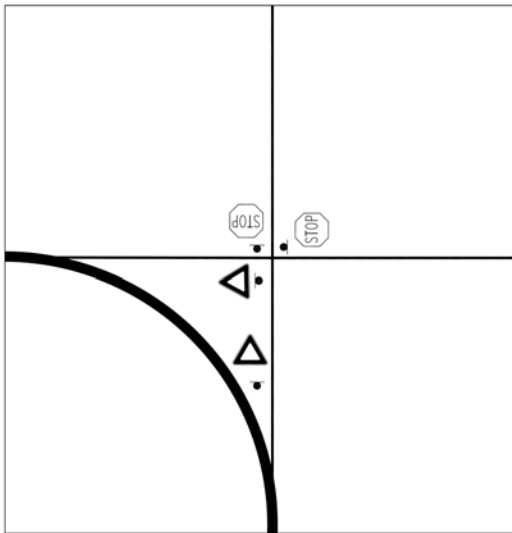


Figure 7: Existing Geometry and Traffic Control, Shuswap Ave & Maple St

Specific concerns are as follows:

- unexpected locations for yield signs, may confuse drivers or may be ignored or unnoticed, adding to collision risk
- effectively three intersection points, adding to the number of potential vehicle conflicts
- decorative rock is, while decorative, also a collision hazard as presently sited.
- drivers can drive directly straight onto or off the minor leg approaches, and therefore can do so at high speed, further increasing safety risks of a severe collision should one occur.

There are three potential mitigation options for this location: 1) basic geometry / signage improvements (realign Maple St approach); 2) install a roundabout, or 3) a new Shuswap Ave alignment, east of the school. Sketches of the three mitigation options are shown in **Figure 8**.

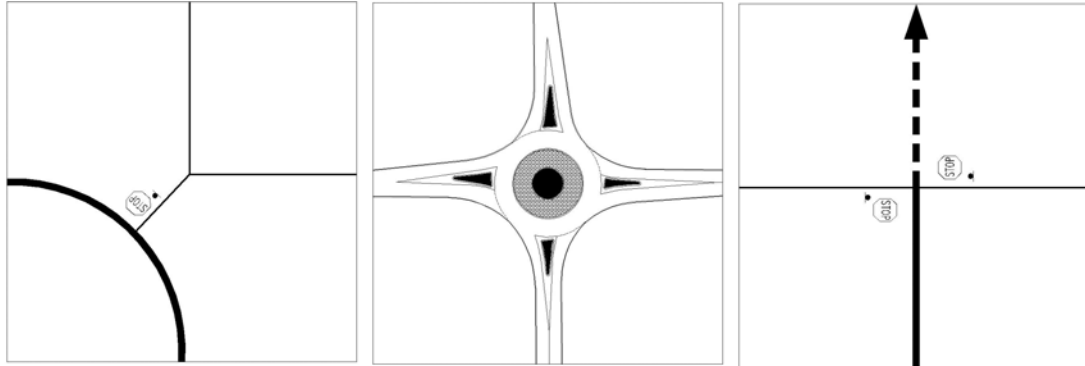


Figure 8: Mitigation Options, Shuswap Ave & Maple St

The base geometry and signage could be adjusted to improve the safety of this intersection. The simplest and therefore cheapest way would be to consolidate the existing intersection points into two instead of three, such that Maple Ave is curved and intersects Shuswap Ave on a curve, with an additional intersection being created on Maple Ave for the school access. This would better align approaching westbound Maple Ave vehicles, eliminating the risk of a high-speed straight through manoeuvre and would allow for clear stop-control on westbound Maple Ave at Shuswap Ave.

A roundabout would address the safety concerns by clearly directing and slowing vehicles through the intersection. The land area is likely available to construct a roundabout in this location, but this option would nonetheless have a major implementation cost.

The third option would effectively re-route Shuswap / Mabel Lake Rd such that it would pass east of the school, then through what is currently agricultural lands, and then rejoin the existing Mabel Lake Rd alignment some distance to the north. This would allow for a direct route for the major vehicle movement at this intersection, and would allow for conventional intersection control. It is likely that stop-control on Maple Ave would be sufficient traffic control. This option may also allow for further town expansion to the north. It would however involve significant costs for roadway construction and right-of-way acquisition.

5.1.2 Intersection of Cedar Ridge St / Lumby Mabel Lake Rd

At this intersection, the concern at present is the available sight distance for eastbound drivers on Cedar Ridge St looking in the northbound direction onto Lumby Mabel Lake Rd. The bank and vegetation combine to limit the available sight lines, which poses a safety concern of not enough time for an eastbound driver to see whether it is safe to turn onto Mabel Lake Rd or not.

As a mitigation to this issue, the brush and other movable obstructions could be cleared back and/or moved, which would improve the situation. However, for a more permanent improvement, cutting back of the bank would be required, as this would ensure adequate sight distance even if vegetation were to become “overgrown”. A survey of the site would be required to establish the design requirements for this potential mitigation measure.

Another feasible, but less desirable, mitigation would be to install 3-way stop control. This would require Mabel Lake Rd traffic to stop as well as Cedar Ridge St traffic, which in turn would lessen the sight distance requirements. The main issue with this option however is that it is likely not warranted (as all-way stop control is best employed where vehicle volumes are of comparable magnitude on all approaches, and in this case the volumes are much higher on Mabel Lake Rd than they are on Cedar Ridge St); because of this driver complacency and even stop sign “violations” may occur, which could in fact increase the safety risk. (Violations might occur for traffic on Mabel Lake Rd because if they do not frequently encounter vehicles on Cedar Ridge St then they may simply ignore the stop sign.) A final option would be to install a roundabout, as this too would eliminate any sight distance concerns, as well as any driver “violation” or complacency concerns. It would however have a large capital cost and would likely require the acquisition of additional land, which may in fact render this option impractical. Therefore, the option for clearing back the bank and clearing the brush and other sight line impediments is the most practical mitigation measure.

5.1.3 Shuswap Ave / Highway 6

Safety concerns at this intersection arise from the comparatively high volume (being intersection of Lumby’s two busiest roads) and the mix of road user types and activities resulting from the commercial services located nearby, as well as the tight intersection geometry. As this location is essentially the focal point of downtown Lumby, there

5.1.4 Miller St & Highway 6

There is a safety issue at Miller St and Hwy 6 due to the intersection skew angle. Westbound drivers can effectively travel onto Miller St from the highway by not turning, as it is straight through; the highway curves to the south at the intersection. Eastbound vehicles on Miller St have difficulty in

looking for eastbound Hwy 6 traffic, because of the sharp skew angle. The high speed at which a westbound vehicle can travel from the highway onto Miller St is of some concern. Also, for westbound drivers, it appears as though the highway alignment is “straight ahead” (onto Miller St) from a distance; it is only when a driver gets close that it is apparent that the highway curves to the south. Most of the time this is not a major concern, however it could be an issue for unfamiliar drivers, particularly in dark and/or inclement weather conditions.

Mitigation options are to 1) re-align the intersection 2) close Miller St at Hwy 6. Closing Miller St at the highway is feasible in that north-south running Norris Ave is only 135m west and would provide appropriate access to/from Miller St and Hwy 6. Miller St could still be open to cyclists and pedestrians at the intersection.

5.1.5 Grandview Ave & Highway 6

Possible nighttime visibility concerns have been identified for the currently unlighted intersection of Grandview Ave and Highway 6. In particular, the concern is for the visibility for eastbound drivers on Hwy 6 looking towards the intersection. The concerns arise from 1) the geometry, where there is a horizontal curve immediately to the west of the intersection that serves to limit eastbound sight distance, and 2) the operations at the intersection, as it is located in a transition between rural and village development, with cars coming from a high-speed rural road section (80 km/h) onto a lower 50 km/h posted speed limit area. The operations issue is compounded by the fact that the intersection appears rural in nature, as the village is still not truly in view, with farmland to the right and a hill to the left of an eastbound driver. The concern is therefore of rear end collisions with an eastbound through vehicle hitting an eastbound left turn, or for eastbound through vehicles hitting a southbound left turning vehicle coming off Grandview Ave.

Given the traffic volumes at the location, a left turn lane would not be warranted. However, the *TAC Illumination of Isolated Rural Intersections* lighting warrant was conducted to assess whether adding street lighting would be appropriate in this location. Based on the lighting warrant, partial and/or delineating lighting is warranted. For this intersection, that would mean lighting that in particular highlights the intersection for eastbound approach traffic.

5.1.6 Duke Lane

Potential safety concerns have been identified on Duke Lane along the frontage of Charles Bloom Secondary School during school arrival and departure times. The issues are related to the interaction of school buses (which use this road for student drop-off and pick-ups), cars (both drop-off / pickup and traffic heading to/from nearby parking spots), and pedestrians. The combination of cars and

pedestrians with large buses can increase safety risks as large buses limit sight lines and they have more constrained operating characteristics (e.g. slower acceleration, larger turning radii etc).

There are two potential mitigations that can limit unfavourable interactions between these road user types. The first is to convert Duke Lane into a one-way roadway along the school frontage, and possibly all the way to Maple St. The conversion could be either one-way northbound or one-way southbound. The second option is to turn the school frontage of Duke Lane into a bus-only road. One-way northbound is favourable for bus pick-up and drop-off, as the bus door is located along the school-side curb. The road could also remain open to cars, allowing for access to the buildings on the west side of Duke Lane. The disadvantage is that it would require many of the arriving buses to use the intersection of Miller St & Shuswap Ave, which has some turning-movement concerns. The southbound one-way option would work better if the road was limited to buses-only, so that bus passengers would not have to cross a stream of cars. (They would however still have to pass in front of the buses.) The advantage of the southbound option is that the Miller St & Shuswap Ave turning movement issue is less of a concern for exiting buses. If, however, the road was converted to a bus-only roadway, there would be access concerns for those buildings on the west side of Duke Lane. Note that while traffic calming measures (such as road narrowing or speed humps) could reduce maximum vehicle speeds along this corridor they would not serve to eliminate the root issue, which is the interactions of buses, cars, and pedestrians.

A summary of all safety issues is shown in **Figure 9**.

5.2 Traffic Calming

Traffic Calming has been described as “the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behaviour and improve conditions for non-motorized street users.” Streets are modified to create a driving environment that encourages appropriate vehicle speeds, discourage cut-through traffic and make walking and cycling more comfortable. Traffic calming measures are aimed at vehicles, but should not negatively impact pedestrians, cyclists, transit or emergency and service vehicles.

A traffic calming policy will allow the village to determine what areas of the community need traffic calming and how to prioritize the needs. The Transportation Association of Canada/ITE’s *Canadian Guide to Neighbourhood Traffic Calming (1998)* was utilized to develop a traffic calming policy specifically for Lumby’s environment.

5.2.1 Traffic Calming Principles

There is no single “best” solution, when implementing traffic calming, that can be applied based solely on objective criteria. A combination of local knowledge, technical expertise and experience must be applied to determine the best measure or combination of measures. There are five principles that will help create an effective plan and build community acceptance. These principles are:

Identify and Quantify the Real Problem - Ensure that any traffic calming plan is based on reality and not simply perceptions. Anecdotal reports and perceptions alone are not sufficient in triggering a traffic calming study on a roadway. Conducting vehicle volume and classification counts, documented speeding, licence plate traces, parking surveys and collecting collision statistics may be required to determine the type and extent of traffic problems.

Consider Area Wide Solutions - Traffic problems on a particular street may have raised the need for a study but those problems may be caused by deficiencies on other roads, or other streets in the area may face similar problems. Applying traffic calming measures on only one road may simply move the problem to neighbouring streets.

Avoid Restricting Access - Closures, diverters and other barriers may eliminate cut-through traffic but they will raise opposition from residents, emergency service providers and others in the community. They can also generate difficulties for large vehicles such as snow plows, garbage trucks and delivery vehicles. These types of measures also tend to move problems to other streets.

Consider All Potential Impacts - Measures implemented may negatively affect emergency vehicles, transit, bicycles, people who are visually impaired, maintenance, local access, parking, street sweeping, and police enforcement. It may be impossible to eliminate all negative impacts but proper planning can mitigate these concerns.

Monitor and Follow-up - It is important to perform follow-up evaluations to determine effectiveness of traffic calming measures and public acceptance after implementation. Some traffic calming devices may require maintenance that should be added to maintenance schedules.

5.2.2 Project Initiation

There are generally three different methods for initiating a traffic calming study: 1) Complaint driven requests from concerned residents, 2) Development Applications, and 3) New Roads/Capital Improvement Projects. The process for instituting a traffic calming study will be different depending upon the context.

Responding to a Complaint Driven Request for Traffic Calming

Collector roads and arterial roads are intended for a more regional traffic and therefore local input would bias an outcome that may compromise the intended use of the roadway. The process for collector and arterials is upon receiving a complaint, the staff would utilize Table 1 to determine and quantify the extent of the problem. Staff would then recommend appropriate changes based on the technical guidelines and standards required for the arterial or collector road in question.

A secondary process is needed for local roads as local roads are intended for the local residents. Therefore, the process outlined below includes opportunities for the local residents to have input into their street. The following process is for local roads only.

Step 1 - Is the Road an Appropriate Candidate for Traffic Calming?

When a complaint is registered, the first step is to make a determination as to whether the road even qualifies as a candidate for a traffic calming plan. The qualification review begins by referencing the Traffic Calming Qualification Matrix (Table 1) and comparing the information against the most recent data that has been gathered at that location. The road has to be classified as a local road to be considered for a complaint driven request for traffic calming. The village will be regularly undertaking data collection on its road network and in addition to volume information, speed data should also be collected, which identifies the 85th percentile speeds.

The following Table 1 is a matrix made up of the recommended traffic calming measures for the village and assigns threshold volumes and speeds relative to the road type. If the data for a particular road exceeds the thresholds, then the complaint would trigger a traffic calming study.

Table 1 - Traffic Calming Matrix

Recommended Measures	Collector Rd		Local Rd	
	Volume	Op. Speed	Volume	Op. Speed
	>5,000 Veh	>60 Km/h 85 th % ile	> 1,000 Veh	>55 Km/h 85 th % ile
Traffic Circles	✓		✓	
Intersection Channelization	✓		✓	
Diverter			✓	
Raised Crosswalk			✓	(school & playground zones only)
Textured Crosswalk	✓		✓	
Curb Radius Reduction	✓		✓	
Right in/ Right out Island	✓		✓	
Sidewalk Extension (at intersection)			✓	
Chicane (1 & 2 lanes)			✓	
Raised Median Island	✓		✓	
Curb Extension	✓		✓	
Directional Closure			✓	
On Street Parking	✓		✓	
Centreline Painting	✓		✓	

If the road does not meet the minimum requirements for the consideration of traffic calming devices, there are a number of mitigation measures that can be recommended to the concerned citizens. Since very often, the “offenders” in a community are the local residents themselves, grassroots awareness and education campaigns can often improve conditions. Such typically free measures include:

- Installation of ICBC’s road safety “Slow Down” lawn signs
- Speed Watch campaign
- Information to PAC or Neighbourhood Watch

Step 2 – Request a Petition

If the road is eligible for traffic calming, to ensure the neighbourhood is in agreement with the issues raised, the complainant will be asked to write a formal letter to the village stating where and why they feel there is a problem. Once the municipal staff has determined the study area and the number of the residents, the complainant will be required to gather a petition from 75% of his or her neighbours, signifying their traffic concerns and support (75% of the 75% solicited) for a review of the conditions.

Step 3 - Consider the Road in Context

If it is clear that the thresholds have been met, then it will be important to understand the role the road plays in the surrounding network. A review of the neighbouring streets will determine whether there is a vulnerability to spillover traffic that attempts to avoid the newly calmed street. If a vulnerability is detected, those streets should be included in the analysis, to ensure any diversion of traffic can be moved appropriately to arterial roads.

Step 4 - Develop Two Concept Plans

As all installations have varying benefits and necessary trade-offs, it is suggested that if possible two different traffic calming plans be developed for the problem area. Each plan should clearly illustrate what benefits the device is designed to achieve, and the disadvantages. The two concept plans developed will be acceptable to Lumby staff prior to presentation to Stakeholders.

Step 5 - Present the Options to Stakeholders

By way of a survey and a letter or public meeting, the options should be presented to the residents who stand to be affected by the changes, for review and feedback. The survey will allow for residents to choose between the two concept plans and rate them accordingly, and to determine if they support, do not support, or are neutral. A 75% acceptance rate (i.e.: total of support + neutral) is desired for approval. The emergency services should be included in the consultation.

Step 6 - Integrate Feedback, Evaluate Options

The following list of considerations should be included in the evaluation:

- Maintenance (cost, damage from snow removal equipment)
- Delay to Emergency Vehicles
- Heavy Vehicle Access (truck routes and potential future transit)
- Adherence to TAC Design Standards (issues may arise if alterations are made to standards).
- Adherence to MUTCD (Manual on Uniform Traffic Control Devices)

Step 7 – Council Approval

Based upon the feedback from the community stakeholders and in consideration of the evaluation exercise, an amended traffic calming plan can be developed with the ‘preferred option’ presented by the Municipal Staff to Council for approval and funding. Ensure funding requests includes necessary maintenance increases and follow up studies if required.

Consideration of Traffic Calming in New Developments

Often traffic calming that is designed and built into a new development is ineffective as the developer has not considered what and where the traffic problem may be anticipated. Developers sometimes propose traffic calming measures to appease Council and residents, but the result is ineffectual at best and may even be detrimental. In order for traffic calming to be considered by the village within a new development, a traffic engineer will be required to evaluate the need for traffic calming to justify the proposed measures under these guidelines. This will ensure that the proposed traffic calming is necessary within the new development, that the proposed measures are appropriate for the design of the roadway.

5.2.3 Consideration of Traffic Calming for Capital Projects/New Road Construction

Traffic calming may be desired by the village within capital or new roads projects.

Step 1 - Determine Appropriateness for Traffic Calming

Refer the Traffic Calming Matrix table to ensure the road qualifies. In the case of new roads, undertake an exercise to anticipate the expected speeds and volumes the new road will generate.

Step 2 - Evaluate

An evaluation should be done to determine what effects the various traffic calming devices would have on the roadway (i.e.: reduce speeding, reduce volumes).

Step 3 - Utilize Matrix

Once the evaluation is done, choose a combination of the corresponding measures identified in the matrix that would be considered appropriate for the new road/capital project.

5.2.4 Monitoring

If traffic calming measures are implemented, data should be collected, in the subject area, prior to implementation. Subsequent data collection should be undertaken at 6 months and 1 year respectively, after completion of the installation of the devices, to ensure the desired effect was achieved.

6 REGIONAL TRANSPORTATION ISSUES

This document is intended to focus upon transportation and trail considerations within the Village of Lumby proper. Nonetheless, there are several transportation issues beyond the village boundary that may have implications for the village, and therefore are important to identify and consider as appropriate.

6.1 Transit / Bus Service

Lumby is currently served by one BC Transit route, operated by the Vernon Regional Transit System. This route provides service between Lumby and downtown Vernon, and within Lumby it operates in a loop from Shuswap Ave to Glencaird Ave, Norris St, and Hwy 6. It operates with one early morning one late morning, and two evening buses (both in and out of Vernon).

The early morning and late evening buses are timed such that transfers can be made to the Route 90 North Okanagan Connector, which connects Vernon to UBCO in north Kelowna. There is, therefore, the potential for transit connection from Lumby all the way to Kelowna.

The primary issue that influence transit usability in Lumby are 1) the lack of a local service, and 2) low frequency of Vernon route. An opportunity to address the first issue is the potential to establish a community bus. This would service the village only with a small bus, that would operate on a fixed loop around the village (e.g. on a one hour loop) and could potentially be an on-demand type service. This type of service is common for many small BC communities, and can successfully provide an alternative to driving. In terms of the second issue, however, due to the relatively low population of the village and minimal population base in areas adjacent to Lumby, there is not the economic feasibility to run a high-frequency intercity service. However, as Lumby grows in population the demand for transit may increase, which can in turn result in increased transit bus frequency and hence usability. In the longer term, collector roads in Lumby should be considered as potential future bus corridors, providing bus service throughout the village.

6.2 Proposed Lumby / Silver Star Connection

A proposed second roadway connection to Silver Star mountain has been proposed, which would connect Lumby to Silver Star Road. This would serve to complement the existing Vernon / Silver Star connection, and would provide an emergency evacuation route as well as a diversion of, or even increased, traffic to the mountain that could have economic ramifications for the Lumby area. Details regarding the feasibility of this connection can be found in the report *Lumby to Silver Star Road*

Connector Economic Impact Assessment, conducted by Lions Gate Consulting Inc. for the Village of Lumby.

Should any new connection to Silver Star be constructed, then the key transportation issue from the village's perspective is where will the connector intersection with the existing road network be, as this will dictate where and to what degree any transportation-related impacts may be as well as any new requirements.

6.3 Hwy 6, Beyond Lumby Boundary

Hwy 6 is a critical roadway through Lumby as it serves most traffic to/from the village as well as serving through traffic. As such, any outstanding traffic concerns or safety issues along this road are of interest to Lumby as they may affect residents and/or patrons of Lumby alike. A consideration of specific issues beyond the Lumby border were beyond the project scope, however, and were therefore not investigated.

7 TRAILS AND PEDESTRIAN ACCOMMODATION

7.1 Existing Trails and Pedestrian Routes

At present, the Lumby trail and sidewalk network consists of the Salmon Trail, sidewalks along main roads, the 2009-built off-road trail paralleling Shuswap Rd to the north and west of Maple St (up to Cedar Ridge St), a stairway connection between Catt Ave and Grandview Ave, and a series of unofficial trail shortcuts used by residents. The Salmon Trail offers three trail sections that follow Duteau and Bessette Creeks, for recreational walkers in the summer and walkers, skiers and snow-shoeing in winter.

7.2 Trail Opportunities

There are opportunities to improve trail connectivity in Lumby. In some locations, new off-road trail opportunities exist, while in others there may be physical constraints limiting the potential for dedicated off-road trails. Nonetheless, there may be areas where pathways or sidewalks adjacent to the roadway could be implemented to facilitate pedestrian movements.

Salmon Trail Connections

At present, the Salmon Trail does not fully connect from one end to the other; in the downtown core the trail temporarily shifts to sidewalks as there is not the available right-of-way to presently extend the trail. Also, the west leg of the trail is effectively a dead-end loop to/from downtown; if this leg were to be connected to Hwy 6 at the west extremity, near Grandview Ave or Mountain View Ave then pedestrians would be able to walk to/from downtown using the trail network, or walk the whole Salmon Trail network in one loop around town. Also, this could connect with the tourist pull-out on Hwy 6, introducing visitors to the trail system upon their arrival to the village. These connections would therefore be of benefit to the trail network. There would, however, be right-of-way acquisition requirements from private land owners, which may influence the ability / feasibility of these specific connections. Nonetheless, these should be identified as future trail corridors, so that in the future these areas could be acquired as possible when available.

Formalization of Existing Informal Trails

There are a number of locations in Lumby where either short trail connections exist or where, adjacent to a roadway, a trail pathway has been worn by pedestrians. These are locations where a formalized trail built to an appropriate standard can raise pedestrian accessibility in the village. Example locations are:

- Along Hwy 6 (north side), between Grandview Ave and Downtown
- Connection between Grandview Ave and Mountain View Ave
- Connection between Catt Ave / Linea Cres and Shuswap Ave
- Connection between west ends of Glencaird St and Leblanc St, and Leblanc St and Cedar Ridge St
- Bridge Connection between the Lumby Community Centre and the campground (to the Salmon Trail)

Rail Trail

The old rail bed and right of way that once entered the village could potentially be converted into a Rail Trail. This would be of benefit as a trail not only within the Village, but could extend into the RDNO and be used as a regional trail. Should the opportunity arise, the acquisition of this right-of-way for trail use should be considered.

Adjacent to Roadway Pedestrian Routes

There are some parts of Lumby where by virtue of existing development it is not feasible to create fully off-road trails, or at least those separated by much distance from the road. Nonetheless, these are typically residential areas, and facilitating pedestrian routes would benefit walkability throughout town and to / from other off-road trail routes. This study identified three main routes that could be considered for a trail-type pathway, which would beneficially connect areas of the village and provide connectivity to schools in Lumby:

- Park Ave pedestrian corridor
- Glencaird St (between Park Ave and Shields Ave)
- Maple St

A map showing future trail connection opportunities is shown in **Figure 10**.

7.3 Trail Design / Pedestrian Walkway Cross-Section

The appropriate trail cross-section design is dependent upon consideration of trail users, urban environment and available widths / right-of-way. Some recommended and minimum trail widths are

listed below, along with sample off-road and adjacent-to-road trail cross sections (in **Figures 11 and 12** respectively):

- Pedestrian only trail: 2.5m preferred (2.0m minimum)
- Multi-use trail (pedestrians / cyclists): 4.0m preferred (3.0m minimum)
- Sidewalk: 2.0m preferred (1.5m minimum)

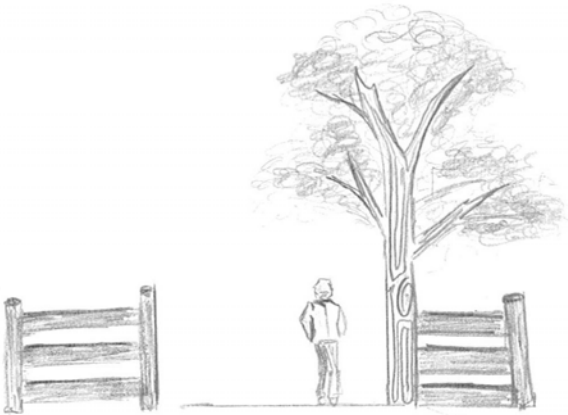


Figure 11: Example Off-Road Trail Cross Section

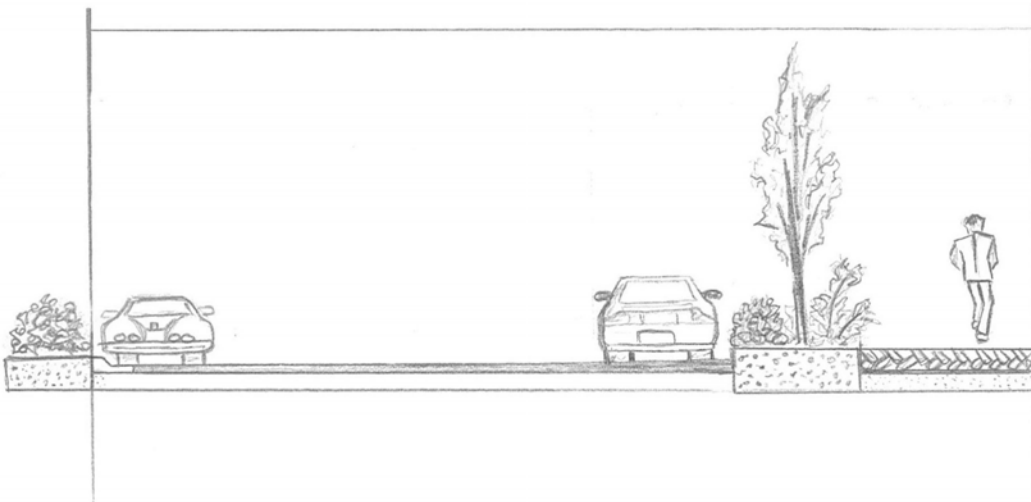


Figure 12: Example of a Trail Adjacent to a Roadway (e.g. Possible Park Ave Greenway)

7.4 Trails Implementation Strategy

There are a number of avenues that Lumby should pursue to assist in developing the community trails identified in the previous sections. Strategies for implementation include mechanisms for trail right-of-way acquisition, funding opportunities for trail development, and partnerships with community organizations and land owners.

7.4.1 Acquisition Mechanisms

The village should remain active in pursuing trail right-of-way acquisition, either through land development, granted statutory rights-of-way, or by individual donation.

Individual Donation

It is commonplace for a local resident or business to donate linear properties to a local government for trail development purposes as a way to give back to the community. Local governments may issue official donation receipts for the appraised fair market value of donated property. Such a receipt may be used to claim federal and provincial tax credits. You can also claim a tax credit based on the eligible amount of a gift of ecologically sensitive land if the land is certified as being important to the preservation of Canada's environmental heritage by the Ministry of the Environment.

Lumby should consider establishing a community trails endowment to instil confidence in potential donors that their contributions will be used exclusively for community trail development. Charitable donations of this nature are a taxable benefit to certain potential donors and should be pursued as a proactive mechanism to encourage community philanthropy.

Once a formal process is developed, Lumby should promote the process so any potential community donors are aware of the benefits available. The steps to donating and the benefits available should be highlighted to make the process as simple as possible.

Trail donations should be recognized in the media to honour donors and develop pride around community development. Suggested media sources include the Lumby Valley Times.

Statutory Right-of-Way

Lumby may seek an easement or statutory right-of-way where valuable community trail connections exist on private property, either through purchase or as a private donation. Statutory rights-of-way are granted to the local government by a private land owner, and may be negotiated completely independent of a proposed subdivision. The land owner retains the right of refusal on all statutory right-of-way negotiations. This should not be confused with expropriation.

7.4.2 Funding Opportunities

Park Land Acquisition Reserve Fund

The Park Land Acquisition Reserve Fund is used to purchase lands for park and trail development. It is financed through the sale of public parks and monetary contributions through property subdivisions. The Acquisition Fund should be used by Lumby to acquire connector trails.

Grant Programs

There is a variety of Provincial and Federal infrastructure funding programs aimed at local governments. Many of the grant programs are targeted specifically at sustainable infrastructure and rural communities, both of which are applicable to trail development efforts in Lumby. The following is a sampling of the grant programs available in 2009:

- LocalMotion is a Provincial initiative providing funds for capital projects, including cycling routes, walkways, trails and accessibility improvements.
- Towns for Tomorrow is a grant program intended for initiatives that address climate change and improve the health, sustainability and liveability of communities.
- The LiveSmart BC Green Cities Awards is a program offering funds to leading edge communities for initiatives aimed at making them greener and healthier.
- The Active Communities Initiative Grant Program is a BC Parks and Recreation initiative providing funds to assist communities in the planning and/or development of walkways, trails and bikeways.
- The Cycling Infrastructure Partnerships Program (CIPP) is a Provincial cost share program for the construction of new cycling infrastructure.
- ActNow B.C. is the health promotion platform that is helping British Columbians live healthier lives, for example, by being more physically active.
- The Building Canada Fund, specifically the Communities Component, provides funding for communities with fewer than 100,000 people to develop infrastructure that meets environmental, economic and quality of life objectives.
- The Canadian Gas Tax Fund provides support toward infrastructure that contributes to cleaner air and reduced greenhouse gas emissions.

While this list indicates infrastructure programs currently available, opportunities will change over time. Lumby should remain active in seeking out new Provincial or Federal funding initiatives that may be used for trail development.

8 TRANSPORTATION DEMAND MANAGEMENT (TDM)

Transportation Demand Management (TDM) strategies incorporate the use of other modes of travel to help lessen the dependence on the automobile as the main or only mode of transportation. A commitment to TDM strategies will strengthen the overall transportation plan as well potentially change the need for future road and parking improvements. The following are TDM measures that may be of consideration for the village.

8.1 Community Coordination

It is recommended that a *Transportation Coordinator* be designated to deliver the TDM programs and really champion the idea of sustainable commuting. Our experience in other communities has shown the coordinator to be a vital component of a successful TDM effort. Generally, the transportation coordinator will be responsible for liaising between the community and local merchants, on-going monitoring of parking conditions and parking programs, organizing transportation special events, distributing information about transportation and parking, and being available to answer merchant questions related to parking and transportation options.

8.2 Promote Ridesharing

Ridesharing is a simple, effective means to reduce parking demand and eliminate vehicle trips. In consideration of Lumby it could be particularly beneficial for commuters to/from Vernon. It is recommended that two (2) steps be taken to encourage ridesharing. First, the transportation coordinator should help facilitate ride matching by keeping a log of interested carpoolers. Those with an extra seat in their vehicle would inform the coordinator, as would anyone looking for a ride. The coordinator would put the two individuals in touch so they could arrange a carpool. The coordinator should promote this service to all area businesses. The coordinator should also promote an existing ridematching database to help connect carpoolers (i.e. www.carpool.ca). Secondly, promotional signage should be displayed in downtown Lumby to inform commuters of carpooling options.



8.3 Carpool Priority Spaces

Carpool priority parking are designated spaces reserved for commuter vehicles that travel with a minimum specified number of passengers, typically at least two (2) or three (3) occupants. Carpool spaces are located in sought after and prominent locations, providing both high visibility for carpooling and incentive to park in preferential locations. They should be reserved for carpoolers until 10:30 AM, after which time they revert to general public parking. Carpool spaces should be identified with a painted green curb and signage that clearly states their restrictions.

The transportation coordinator should closely monitor use of the carpool spaces. Should they be consistently occupied, the village should consider designating additional carpool spaces to further reduce parking demand.

8.4 Carpool Incentives

The village, with help from the transportation coordinator, may consider establishing a carpool incentive program. The program would reward area employees who carpool to work, by entering them into a prize draw. Suitable prizes include gift certificates from area merchants, recreation centre passes, and transit discounts.

8.5 Bicycle Parking

Bicycle parking facilities, including parking, are a major factor in choosing cycling as a mode of travel. Bicycle parking is typically provided in two (2) ways. Class I parking must be fully secure and weather protected, as the bicycle may be unattended for a long period of time. Class II facilities are intended for short-term users, typically residential visitors and retail customers, and are not meant to accommodate bicycles overnight.

8.6 Motorcycle/Scooter Parking

Motorcycles and scooters are being encouraged in many communities because they are more fuel efficient than a typical passenger vehicle and present an opportunity to reduce the negative environmental impacts of personal transportation. They also require smaller parking spaces and present an opportunity to satisfy parking demand with less paved surface or increase the number of parking spaces supplied in a given parking area.

8.7 Transit Passes

There are two (2) opportunities to provide discounted transit passes for employees and residents in the area. First, BC Transit offers a discount, called the ProPass, when three (3) or more members of an organization purchase a monthly bus pass. The transportation coordinator should ensure that all area businesses are aware of the ProPass program and the opportunity for monthly savings. If there is demand, the transportation coordinator may also look to administer the ProPass program through the local merchants association so that the employees of each member merchant may benefit from the ProPass savings. This will also work toward a lower monthly cost, as BC Transit tends to offer lower prices for larger groups. It is recommended that the transportation coordinator work with area businesses in both promoting and coordinating the ProPass.

Secondly, BC Transit has a lesser-known program called the Developer Pass Program that is negotiated into new developments. This program allows the development to receive a reduced monthly rate for transit usage and also permits the developer to subsidize the cost of transit use for the residents of their development at an agreed upon rate and term. It is recommended that Lumby work with BC Transit to implement the Developer Pass Program in future.

For the last two (2) years, BC Transit monthly passes have been eligible for a rebate of approximately \$12 per month on an individual's income tax, but few people are aware of this opportunity. The transportation coordinator should include this in any informational materials distributed.

8.8 Special Events

Each year there are a number of special events that encourage a variety of changes in lifestyle, many of which are directly related to sustainable transportation. While they only represent behavioural change for a single day or week at a time, each participant is introduced to a new travel method and is generally more inclined to continue using alternative modes because of this experience. It is recommended that the transportation coordinator is active in working with the City to promote the following events:

- Car-free Day - September 22
- Bike to Work Week - mid-May
- Earth Day - April 22
- International Day of Climate Action – October 23

The transportation should also develop and promote creative initiatives to encourage sustainable travel habits by employees, residents and customers of Lumby.

8.9 Transportation Options Information

It is recommended that the transportation coordinator develop a travel options informational package to distribute amongst Lumby businesses. The package should include the following:

- The costs and benefits associated with each travel mode;
- Cycling maps;
- Transit maps and schedules;
- Information on carpooling and ridesharing;
- Maps of parking options.

9 COST ESTIMATES

The following are cost estimates for specifically-identified transportation issues in Lumby, for safety and operational issues. These are ballpark estimates only, and are subject to detail design.

- Improve sight lines at Cedar Ridge St & Shuswap Ave - \$10,000
- Shuswap Ave / Maple St intersection improvements
 - realignment (short term) - \$100,000
 - roundabout (long term) - \$400,000
- Shuswap Ave / Hwy 6 intersection improvements, signal and/or geometry - \$200,000 to \$500,000
- Close Miller St at Hwy 6 - \$5,000
- Lighting improvements at Hwy 6 & Grandview Ave - \$5,000

10 CONCLUSIONS

The following conclusions are made regarding the Lumby transportation and trails master plan.

Existing Traffic and Parking

Existing, 10, and 20-year horizon traffic volumes were considered in the assessment of Lumby's busiest intersection, namely Hwy 6 & Shuswap Ave. In the 20-year horizon, mitigation improvements may be required, such as a traffic signal and geometry changes, or potentially a roundabout. A review of parking conditions in Lumby's downtown area found that, at present, there was generally ample parking. In the future should parking supply become a concern, consideration could be given to installing 2 hour parking restrictions.

Road Network Considerations

The road network assessment consisted of the investigation and development of hillside development guidelines for road design, a review of the existing road network and opportunities, and the recommendation of a proposed road classification with typical cross-sections. The proposed road network plan provides a framework for guiding appropriate future roadway design in consideration of the mobility, accessibility, and safety needs of the community.

Road Safety and Geometry

A number of road safety issues were identified, along with potential countermeasures, at site specific locations in Lumby. Also, a traffic calming policy was developed to aid the village in determining when, where, and how various traffic calming elements should best be considered.

Regional Transportation Issues

Three regional transportation issues were considered in the plan. The first was transit, where at present there is an absence of local service and infrequent intercity service to Lumby. A local community bus could be an option to address the lack of local service, while it will likely require a larger population and hence transit demand for BC Transit to increase service to/from Vernon. The proposed Lumby / Silver Star connector road was also considered, as it would relate to the village, as well as Hwy 6 beyond the Lumby border.

Trails and Pedestrian Accommodation

The trail and pedestrian accommodation assessment consisted of summarizing existing trails and identifying opportunities for future connecting trails, both off-road and adjacent to roadways. Proposed

trail cross-sections were suggested, and a trail implementation strategy along with funding opportunities was recommended.

Transportation Demand Management

A series of TDM measures were investigated and suggested as potentially viable for the community. These measures can serve to lessen automobile dependence and promote alternative travel modes and/or habits. Options include establishing a community TDM coordinator, promotion of ridesharing, carpool priority spaces and incentives, bicycle, motorcycle, and scooter parking, transit passes, and promotion of special events and development of a travel options information package for residents.

Cost Estimates

Ballpark cost estimates were provided for site-specific transportation improvements, for safety or operational improvement items.