APPENDIX A

Community Open House Materials














DISTRICT OF LANTZVILLE

TRANSPORTATION REVIEW

Open House Expectations…

Welcome to the first open house for the District of Lantzville Transportation Review. The purpose of this open house is to gather community input and information on transportation related issues and concerns. No decisions, conclusions or recommendations have been made at this stage of the project.

Open House #1…

- A presentation will be held outlining the background information and data collected to date
- Following the presentation there will be an open discussion / comment period followed by one-on-one discussions at the boards
- Feedback opportunities includes discussion at the end of the presentation, feedback forms, and adding notes on boards
- Additionally, Transportation Review information will be posted on the District's website (www.lantzville.ca) along with a copy of the feedback form following the open house

About the Transportation Review…

The objectives of the Lantzville Transportation Review are to:

- Review short and long term pedestrian, cycling, transit, intersection and road requirements
- Identify traffic calming and use of alternative and low impact road standards

Project Process…

The process for the Transportation Review is as follows:

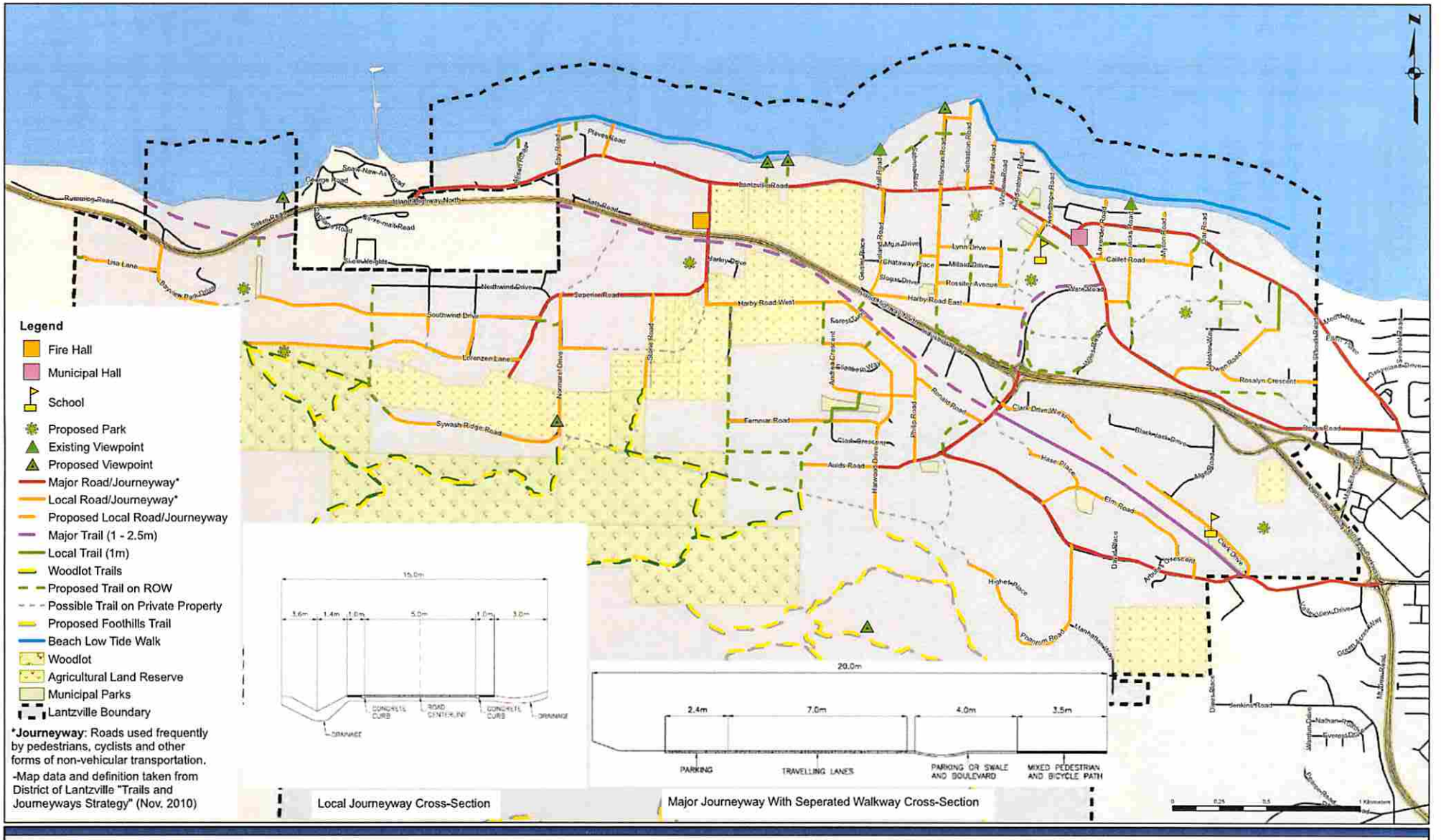
☑	December, 2012	Background Review/Data Collection
☑	January, 2013	Review existing conditions (safety, operations, right-of-way, road cross sections)
➡	O January 16th, 2013	Open House #1 – Collect issues and concerns
	O Jan/Feb, 2013	Analyze short and long term network options and improvements (roads, transit, bicycle, and pedestrian infrastructure and cross sections)
	O March 6th, 2013	Open House #2 - Report draft findings / recommendations
	O March, 2013	Finalize recommendations and report

By attending today's open house, you are providing the project team with information that will help inform final recommendations.

Open House #1
January 16th, 2013
2pm-4pm and 7pm-9pm

District of Lantzville

Boulevard Transportation Group



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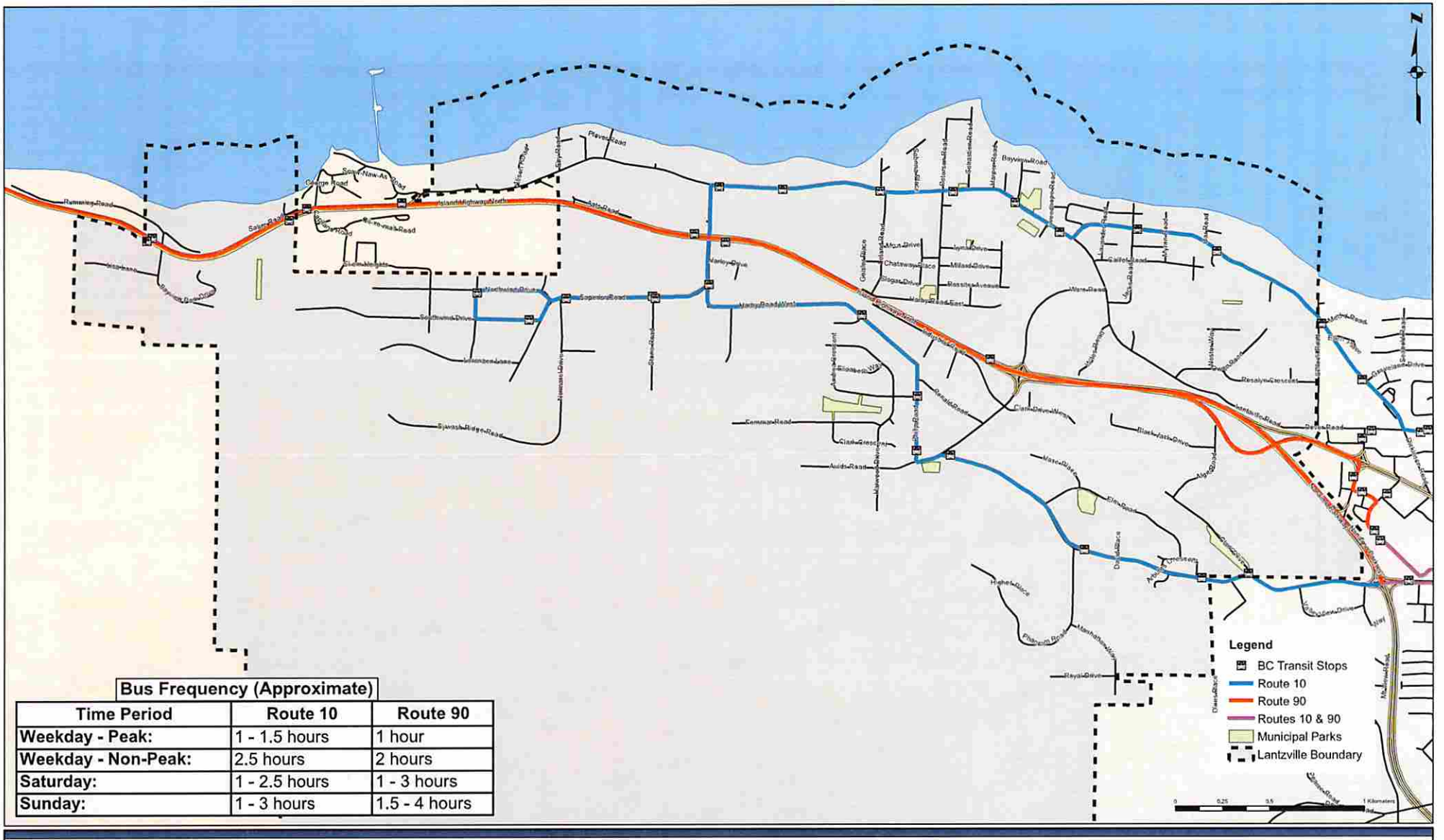
Fax: 250 388 9879
www.blvdgroup.ca

Existing Roads and Trails Plan

Lantzville Transportation Study



Bus Frequency (Approximate)

Time Period	Route 10	Route 90
Weekday - Peak:	1 - 1.5 hours	1 hour
Weekday - Non-Peak:	2.5 hours	2 hours
Saturday:	1 - 2.5 hours	1 - 3 hours
Sunday:	1 - 3 hours	1.5 - 4 hours

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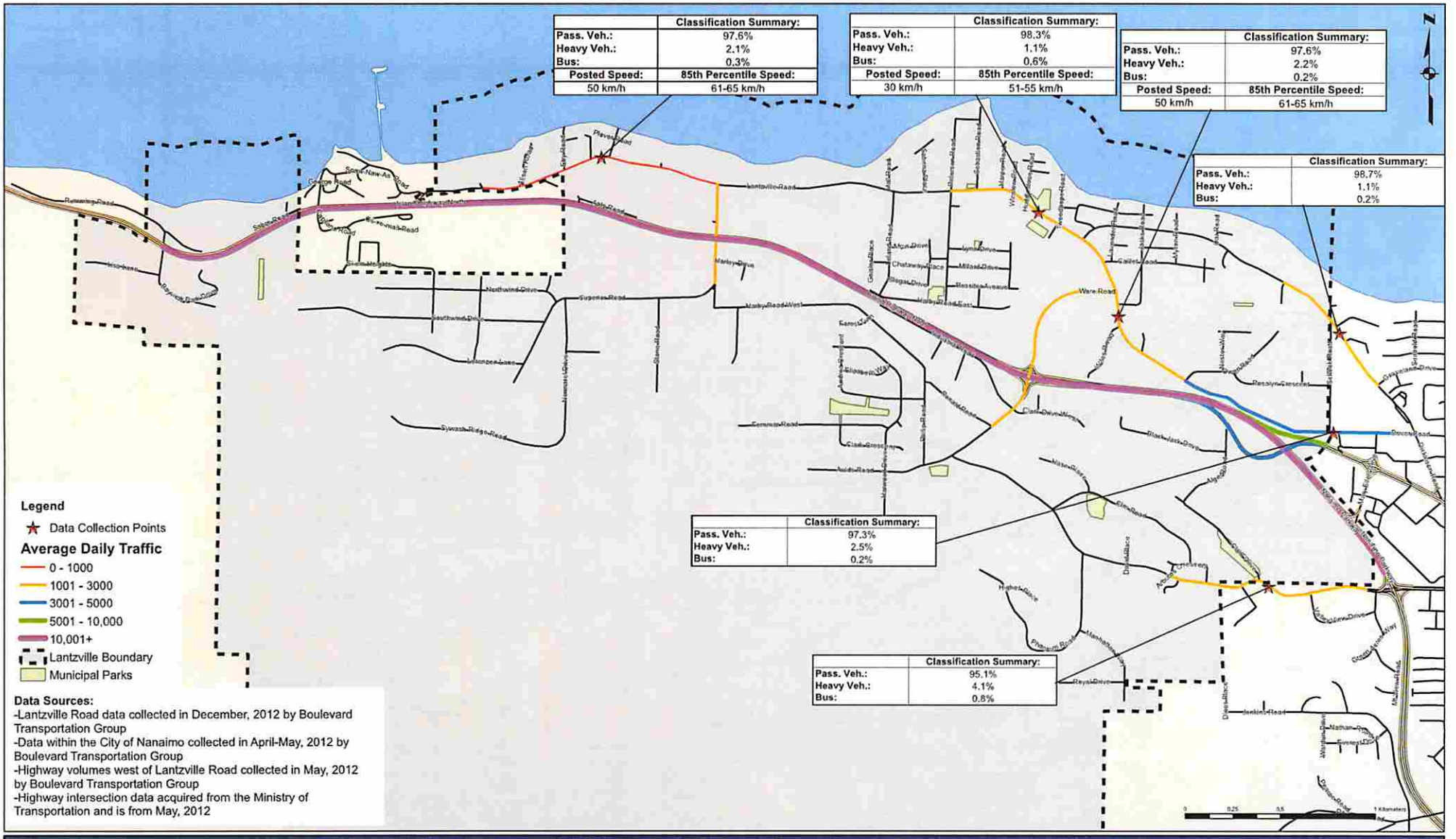
Existing Bus Routes

Lantzville Transportation Study

Drawn By: BA Date: Jan 02/13 File: 1473



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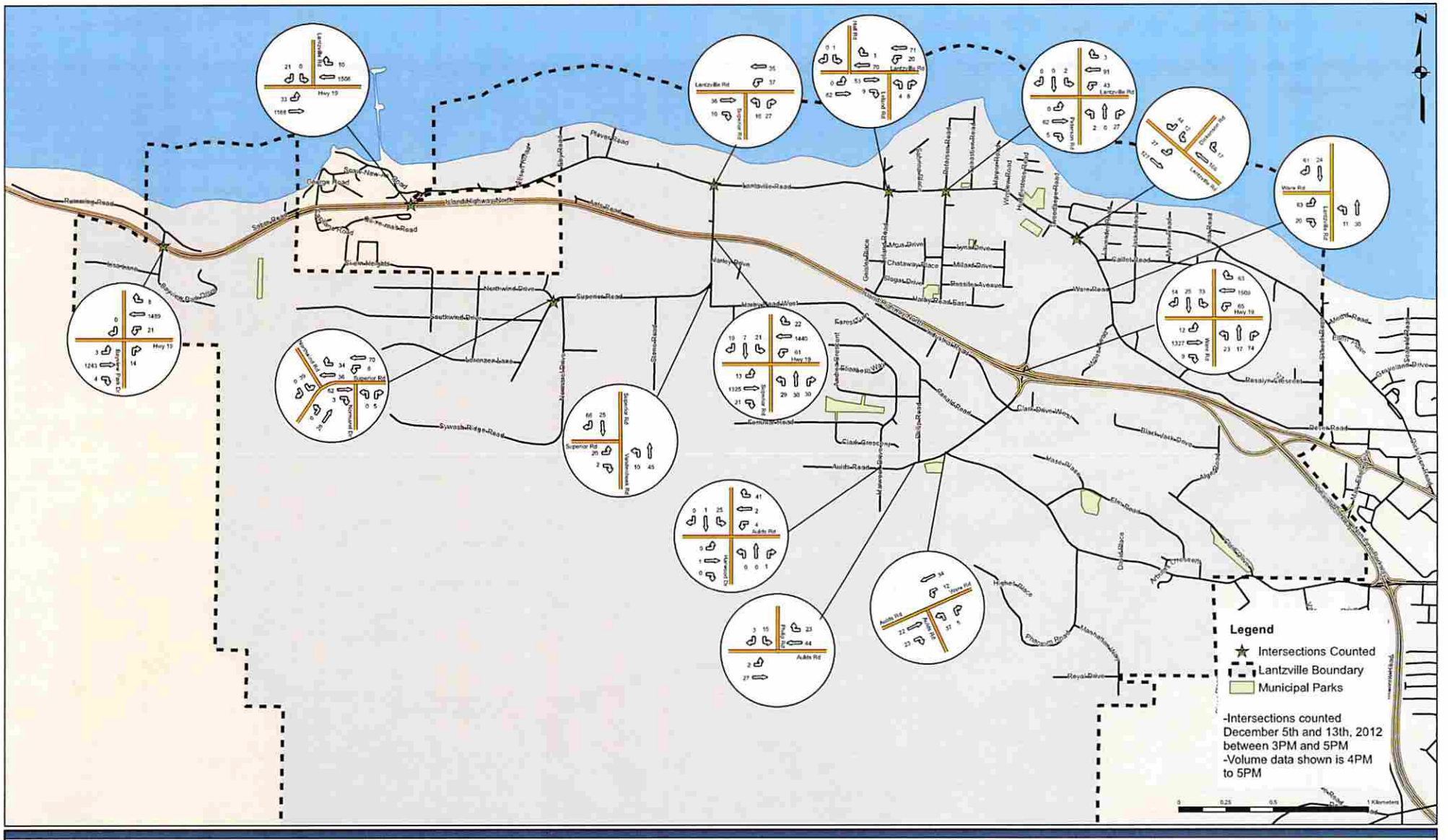
2012 Annual Daily Traffic, Vehicle Classification and Speed Data

Lantzville Transportation Study

Drawn By: BA Date: Jan 02/13 File: 1473



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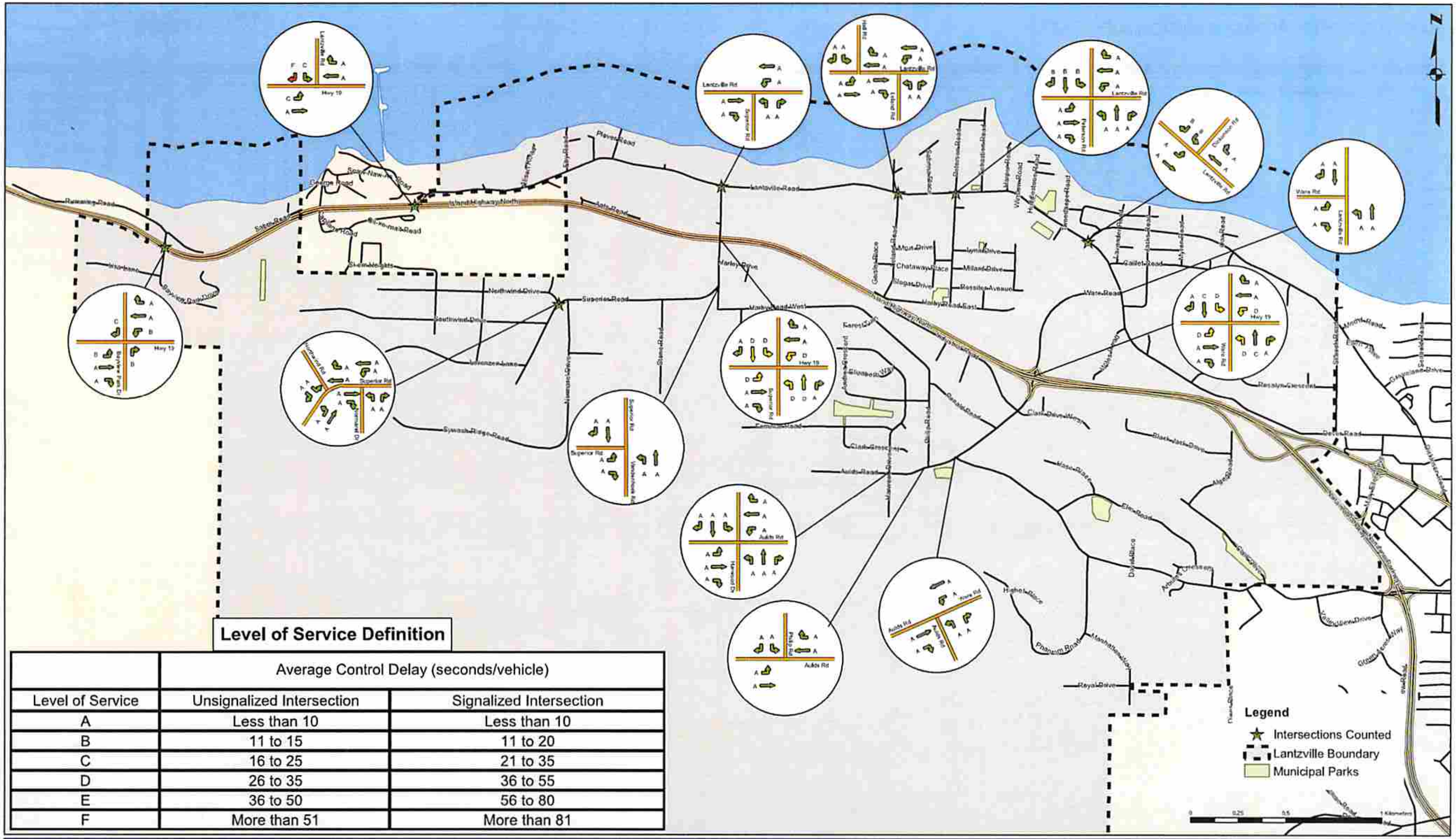
2012 PM Peak Hour Traffic Volumes

Lantzville Transportation Study

Drawn By: DA Date: Jan 02/13 File: 1473



Level of Service Definition

	Average Control Delay (seconds/vehicle)	
Level of Service	Unsignalized Intersection	Signalized Intersection
A	Less than 10	Less than 10
B	11 to 15	11 to 20
C	16 to 25	21 to 35
D	26 to 35	36 to 55
E	36 to 50	56 to 80
F	More than 51	More than 81

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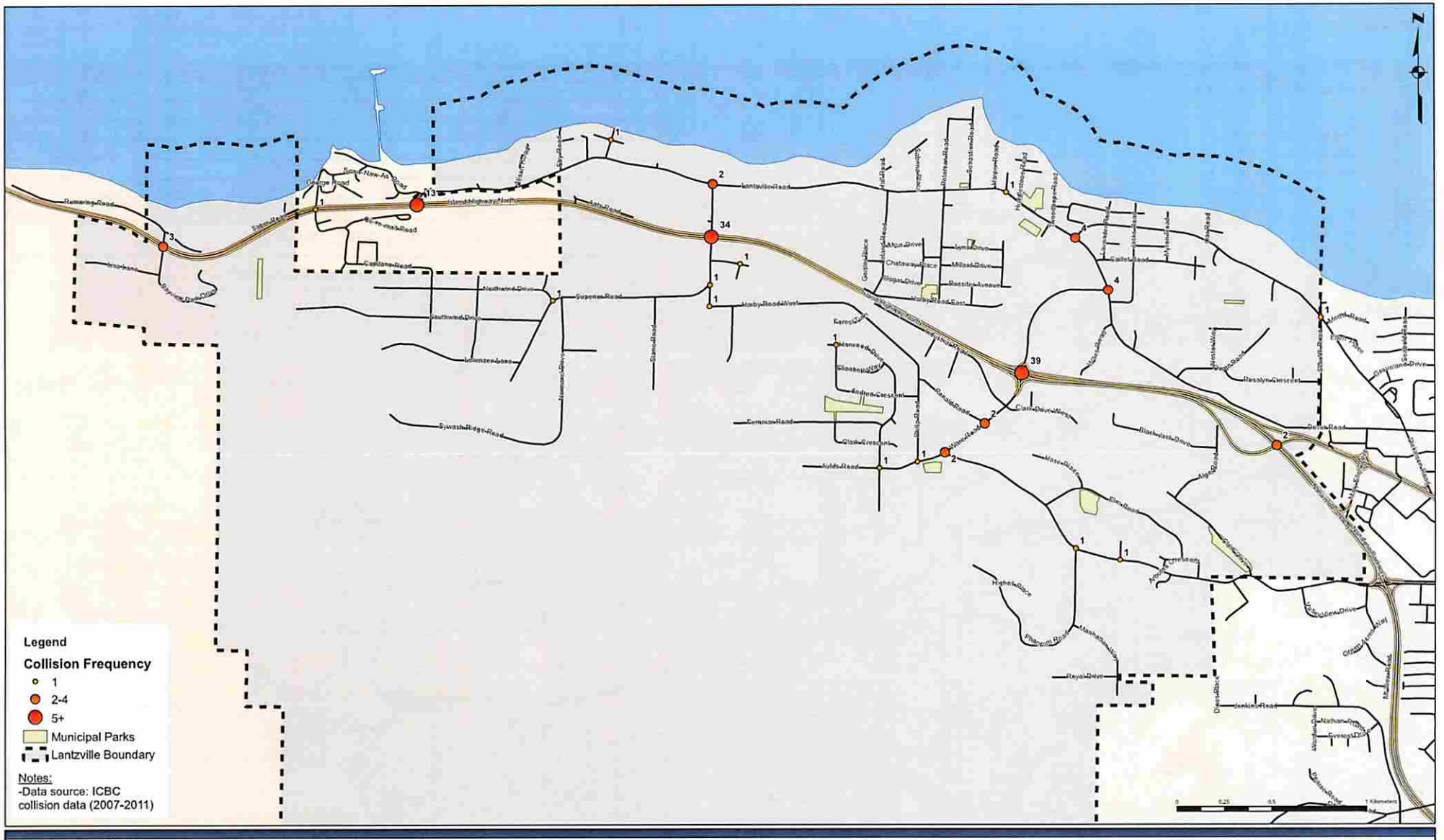
PM Levels of Service

Lantzville Transportation Study



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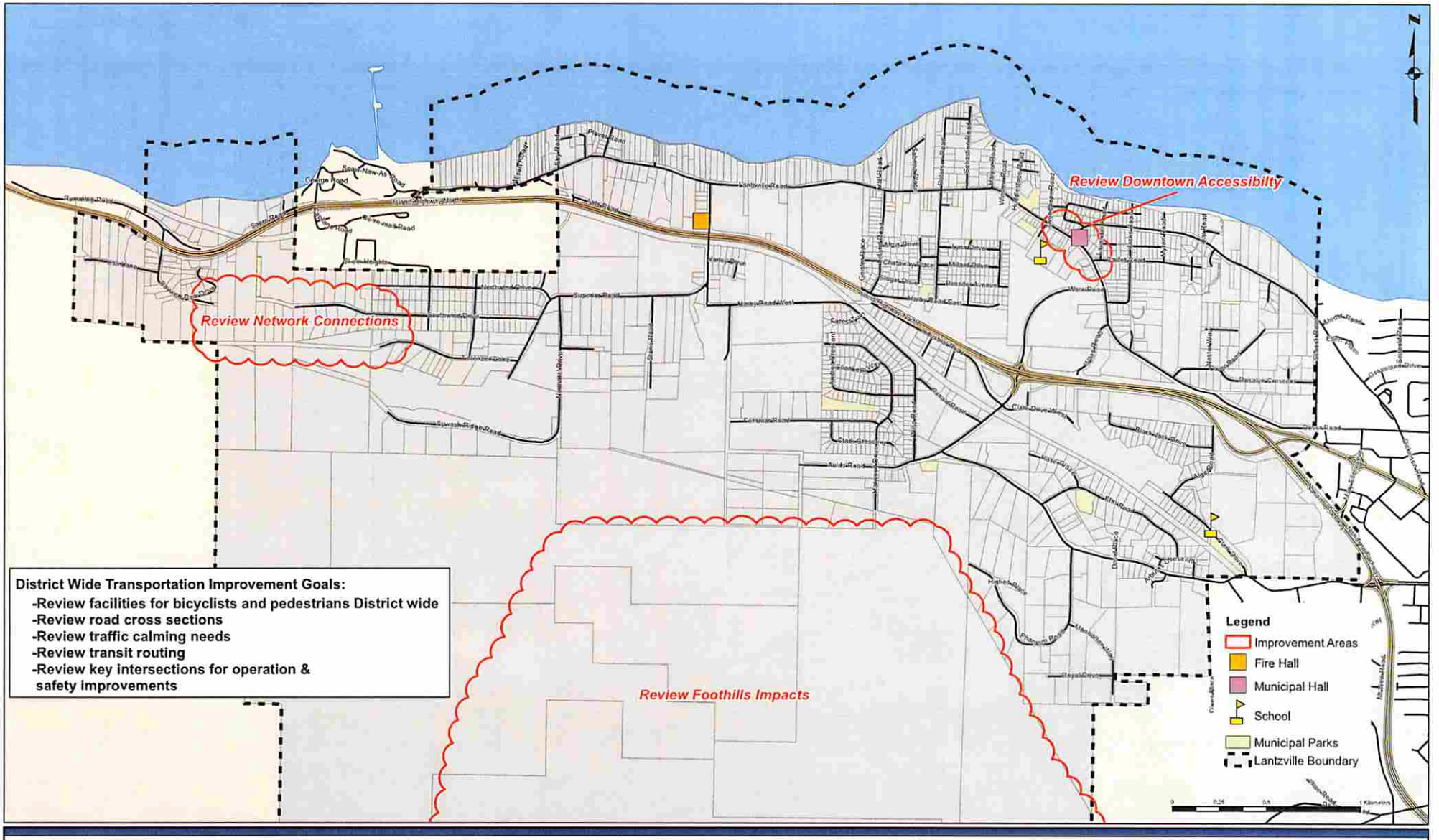
2007-2011 Collision Frequency and Locations

Lantzville Transportation Study

Drawn By: BA Date: Jan 06/13 File: 1473



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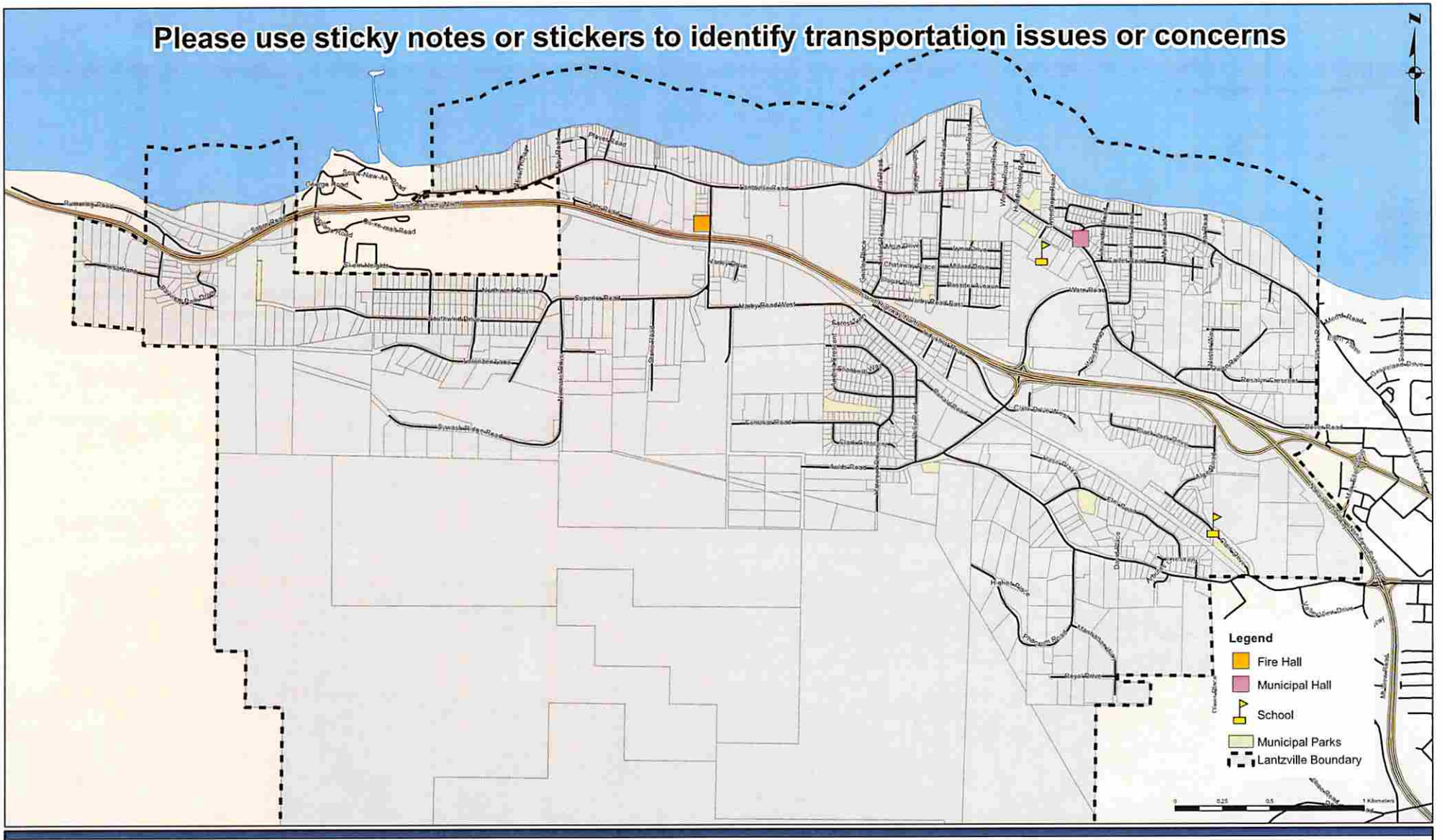
Transportation Improvement Goals

Lantzville Transportation Study

Please use sticky notes or stickers to identify transportation issues or concerns



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Lantzville Transportation Study

Drawn By: BA Date: Jan 08/13 File: 1473

LANTZVILLE TRANSPORTATION REVIEW

Open House #1

Lantzville, BC
16 January 2013

Outline

- Expectations & Process
- Existing Plans and Data
- Potential Issues / Areas of Concern
- Community Feedback

Purpose of Transportation Review

- Review short and long term pedestrian, cycling, transit, intersection and roadway requirements
  - Traffic operations & safety
  - Non-motorized needs
  - Downtown safety & accessibility
- Identify traffic calming and use of alternative and low impact road standards
  - Traffic calming standards
  - Road cross sections and implementation criteria

Expectations for Open House

- Meeting is about community input and information gathering
- No decisions, conclusions or recommendations have been made

- Information is provided as background information
- Feedback forum includes discussion at end of presentation, feedback forms, adding notes on boards, and reviewing information online

Open House #1 Process

- Presentation outlining background information and data
- One-on-one discussions at boards
- Feedback Forms
- Posting of presentation, boards, and feedback form on District website following open house

Study Process

- Review existing reports and collect data on existing conditions
- Review existing conditions (safety, operations, right-of-way, road cross sections, etc.)
- Collect community issues/concerns at Open House
- Analyze short and long term network options and improvements (roads, transit, bicycle, and pedestrian infrastructure and cross sections)
- Report draft findings / recommendations to community at Open House #2
- Finalize recommendations and report

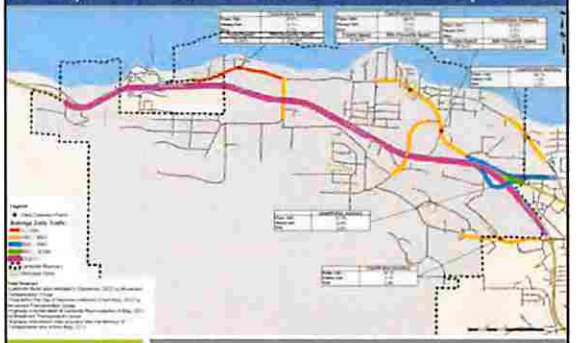
Roadways

- Roadways are discussed in three District documents
  - Official Community Plan
  - Trails and Journeyways Strategy
  - Subdivision and Development Bylaw No. 55

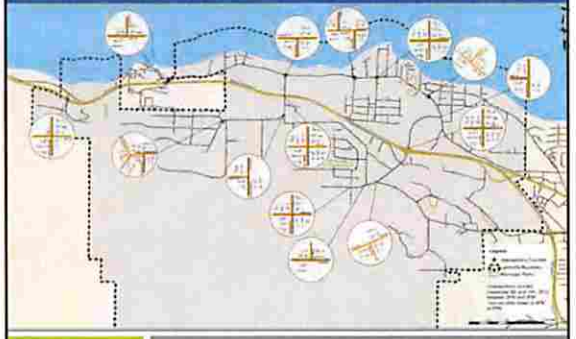
Journeyway & Trail Plan (2010)

Existing Transit Service

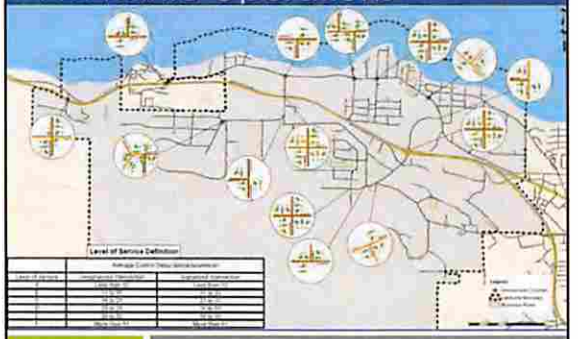
Daily Traffic, Classification, & Speed



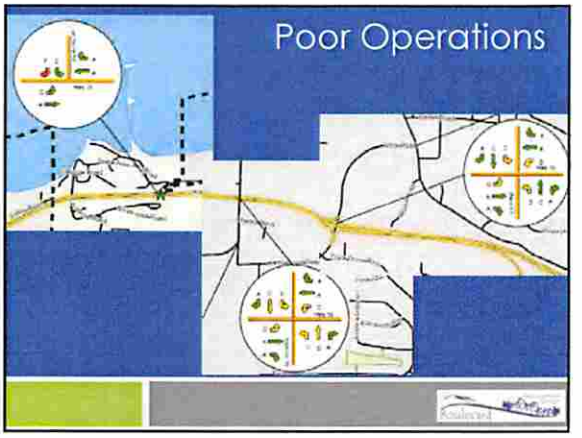
PM Traffic Volumes



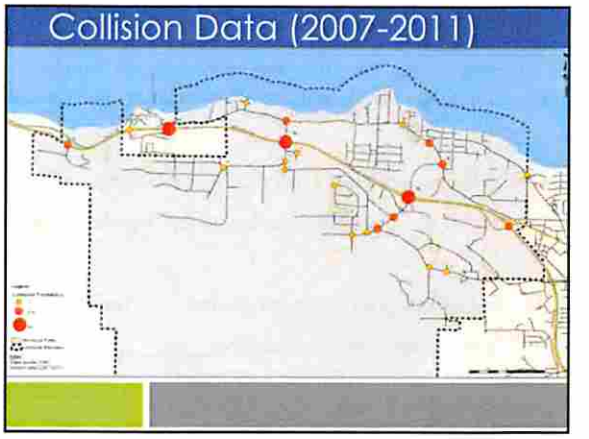
PM Traffic Operations



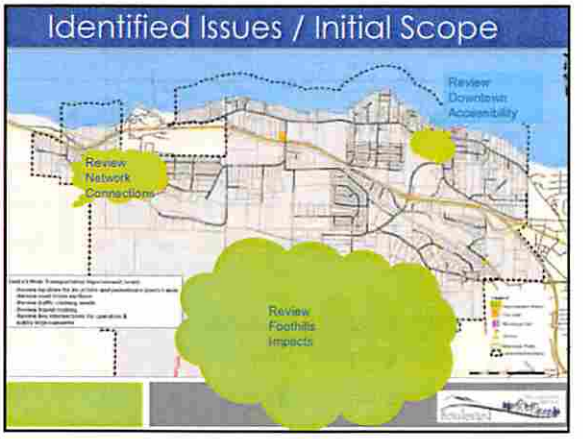
Poor Operations



Collision Data (2007-2011)



Identified Issues / Initial Scope



Thank You!

Contact: nking@blvdgroup.ca / mskene@blvdgroup.ca
ph. 250-388-9877

Feedback Form

Thank you for participating in the Lantzville Transportation Review Open House. Please use this feedback form to provide your thoughts on transportation in Lantzville. Please leave feedback forms on your way out or submit to Lantzville City Hall by Friday, January 25, 2013

1. Utilize the map on the reverse to identify / mark areas of concern regarding transportation including location(s) of traffic congestion, safety issues, and desired pedestrian, bicycle, and transit improvements.

2. Is bicycle infrastructure a priority? *(circle answer)* Yes / No

If yes, do you prefer separated bicycle paths / separated shared paths / on-street bicycle lanes *(circle one)*

3. Are sidewalks a priority? *(circle answer)* Yes / No

If yes, please identify locations:_____

_____

4. Is transit infrastructure improvements a priority? *(circle answer)* Yes / No

If yes, is the priority Additional Routes or More Frequent Service *(circle one)*

5. Additional Comments

_____

_____

_____

_____

_____

6. Help us plan for future open houses by answering the following questions: (*5 = strongly agree / 1 = strongly disagree*)

a) The information presented today was useful and informative.	5 4 3 2 1
b) The information was easy to understand.	5 4 3 2 1
c) The project team was helpful, friendly, and accessible.	5 4 3 2 1
d) I was able to find satisfactory answers to my questions.	5 4 3 2 1

7. Which statement best applies (choose one):

- ☐ I am a resident of Lantzville
- ☐ I am a business owner / operator in Lantzville
- ☐ I am part of a public interest organization in Lantzville

Contact information (optional):

Name: _____ Telephone: _____

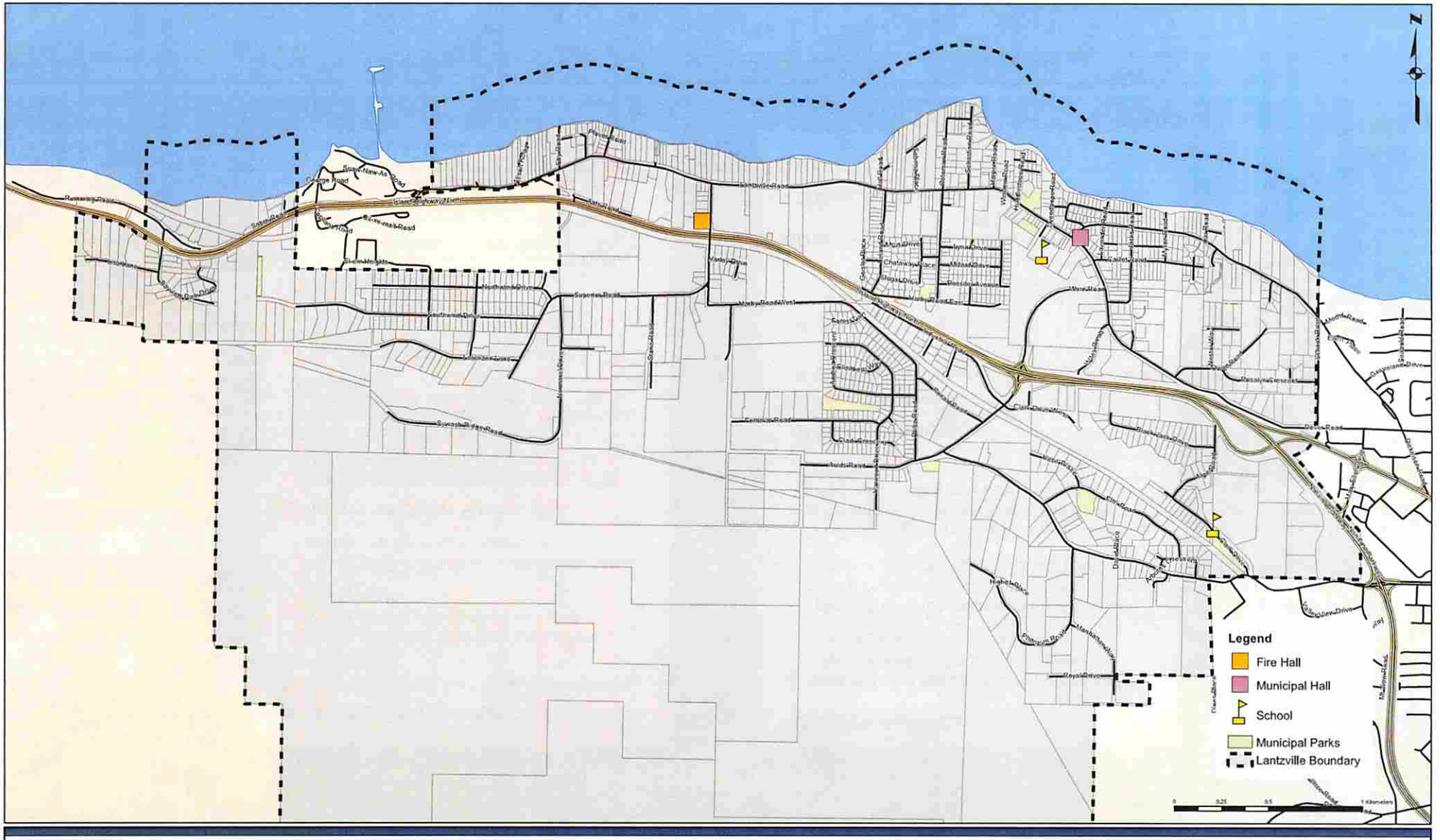
Address:_____ Email: _____

District of Lantzville
Transportation Review
Open House #1
January 16, 2013

Survey Prepared by Boulevard Transportation Group Ltd.

Questions? Comments? Please call Nadine King, P.Eng. at 250-388-9877 or email at nking@blvdgroup.ca

Boulevard Transportation Group



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Lantzville Transportation Study

Drawn By: BA Date: Jan 05/13 File: 1471
















DISTRICT OF LANTZVILLE

TRANSPORTATION REVIEW

About the Transportation Review…

The objectives of the Lantzville Transportation Review are to:

- Review short and long term pedestrian, cycling, transit, intersection and road requirements
- Identify traffic calming and use of alternative and low impact road standards

Summary of Open House #1

- Open House #1 was held on Jan 16, 2013 from 2-4pm and 7-9pm
- Boards on existing roads, trails, journeyways, bus routes, traffic volumes, traffic conditions, and collision data were presented
- Presentations of the information was provided
- Feedback forms were provided
- Feedback Summary:
  - Majority want sidewalks and bicycle facilities including access to North Nanaimo
  - Identified desire for more transit routes and service and use of smaller buses
  - Road issues identified as speeding, intersection upgrades, and 4x4 / Quad use
  - Against Southwind connecting to Fawn

Open House #2…

- A presentation will be held at 1:30pm and 7:30pm to outline the study analysis, findings, and recommendations
- Following the presentation there will be an open discussion / comment period followed by one-on-one discussions at the boards
- Feedback opportunities includes discussion at the end of the presentation, feedback forms, and adding notes on any of the boards

Project Process…

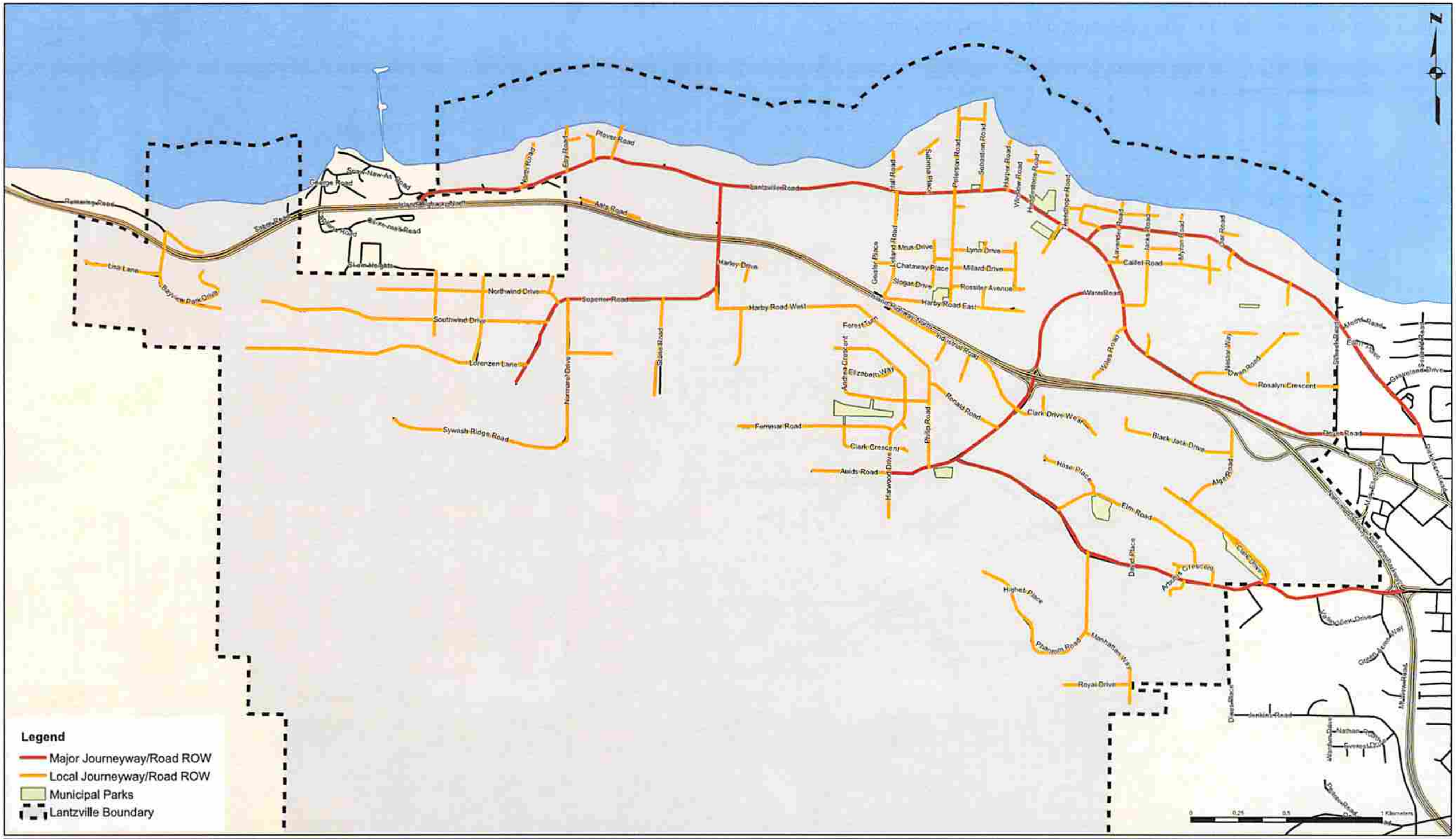
The process for the Transportation Review is as follows:

☑	December, 2012	Background Review/Data Collection
☑	January, 2013	Review existing conditions
☑	January 16th, 2013	Open House #1
☑	Jan/Feb, 2013	Analyze the network (roads, transit, bicycle, and pedestrian infrastructure and cross sections)
⇨ ○	**March 14th, 2013**	**Open House #2 - Report draft findings / recommendations**
○	March 25th, 2013	Finalize report / Council Meeting

Open House #2
March 14, 2013
2pm-4pm and 7pm-9pm

District of Lantzville

Boulevard Transportation Group



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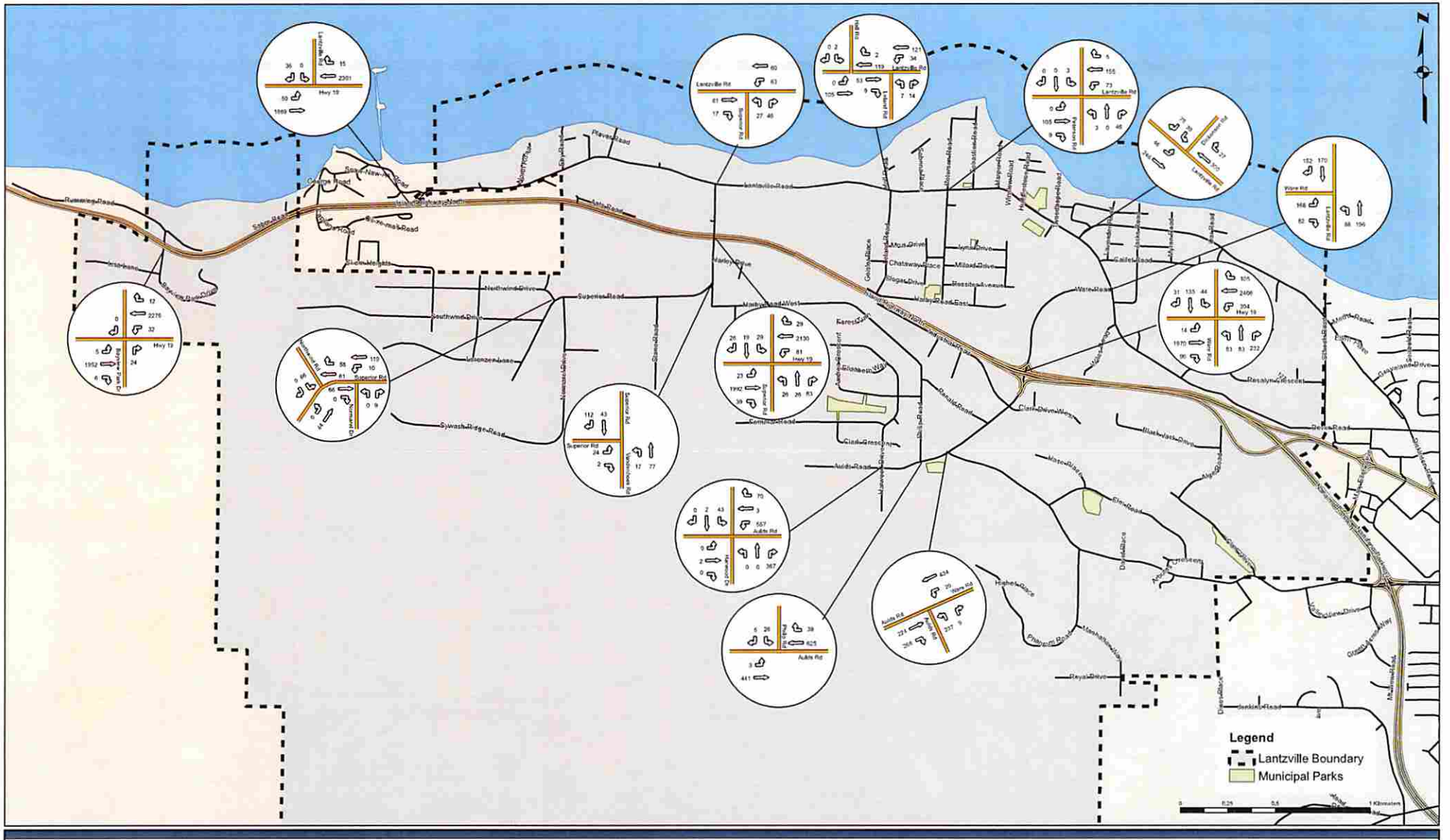
Proposed Road Classifications

Lantzville Transportation Study

Drawn By: BA Date: Mar 11/13 File: 1471



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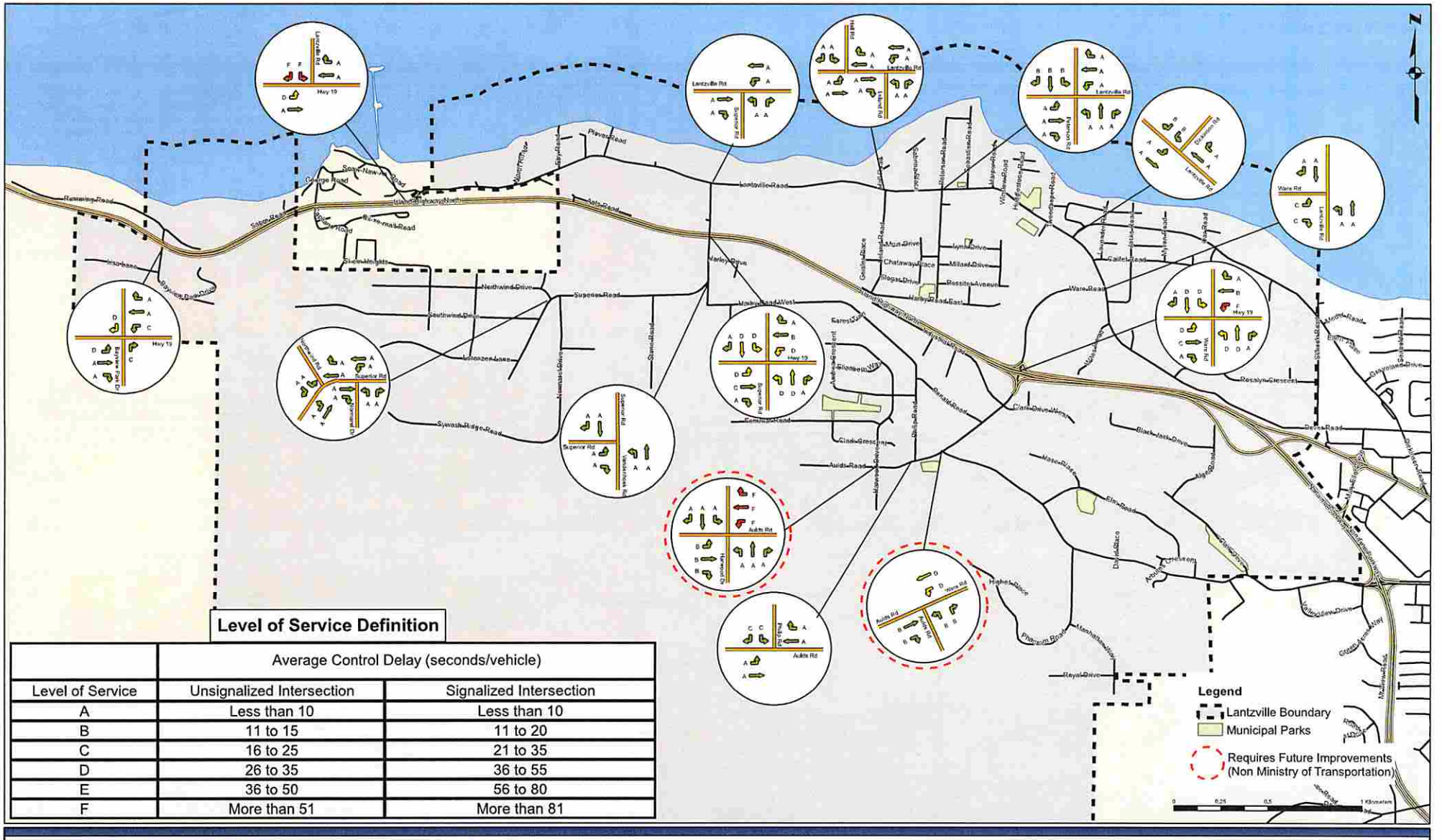
2032 PM Peak Hour Traffic Volumes - With Foothills Development Traffic

Lantzville Transportation Study

Drawn By: BA Date: Mar 11/13 File: 1473



Level of Service Definition

	Average Control Delay (seconds/vehicle)	
Level of Service	Unsignalized Intersection	Signalized Intersection
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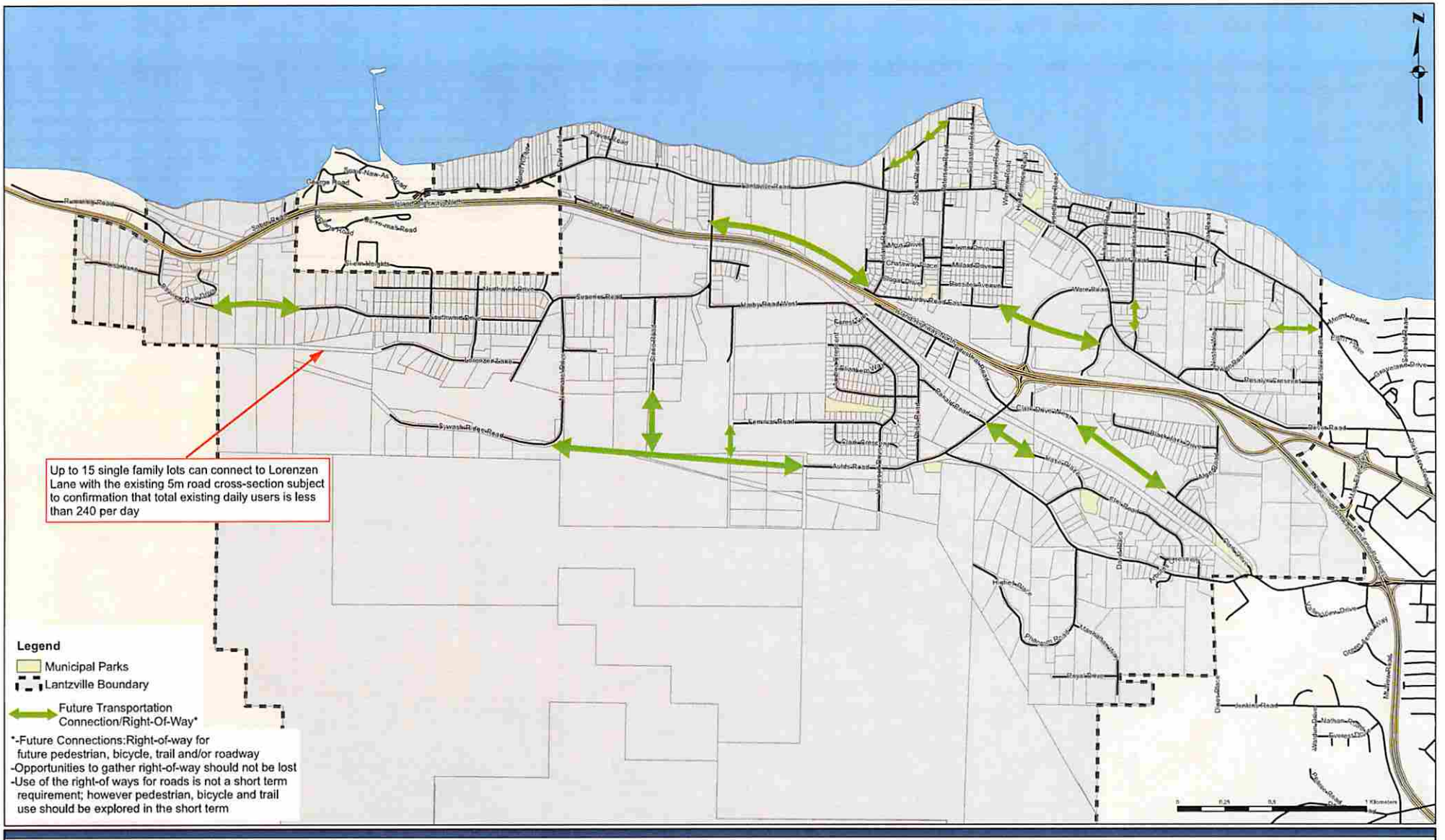
2032 PM Levels of Service - With Foothills Development Traffic

Lantzville Transportation Study

Drawn By: BA Date: Mar 11/13 File: 1473



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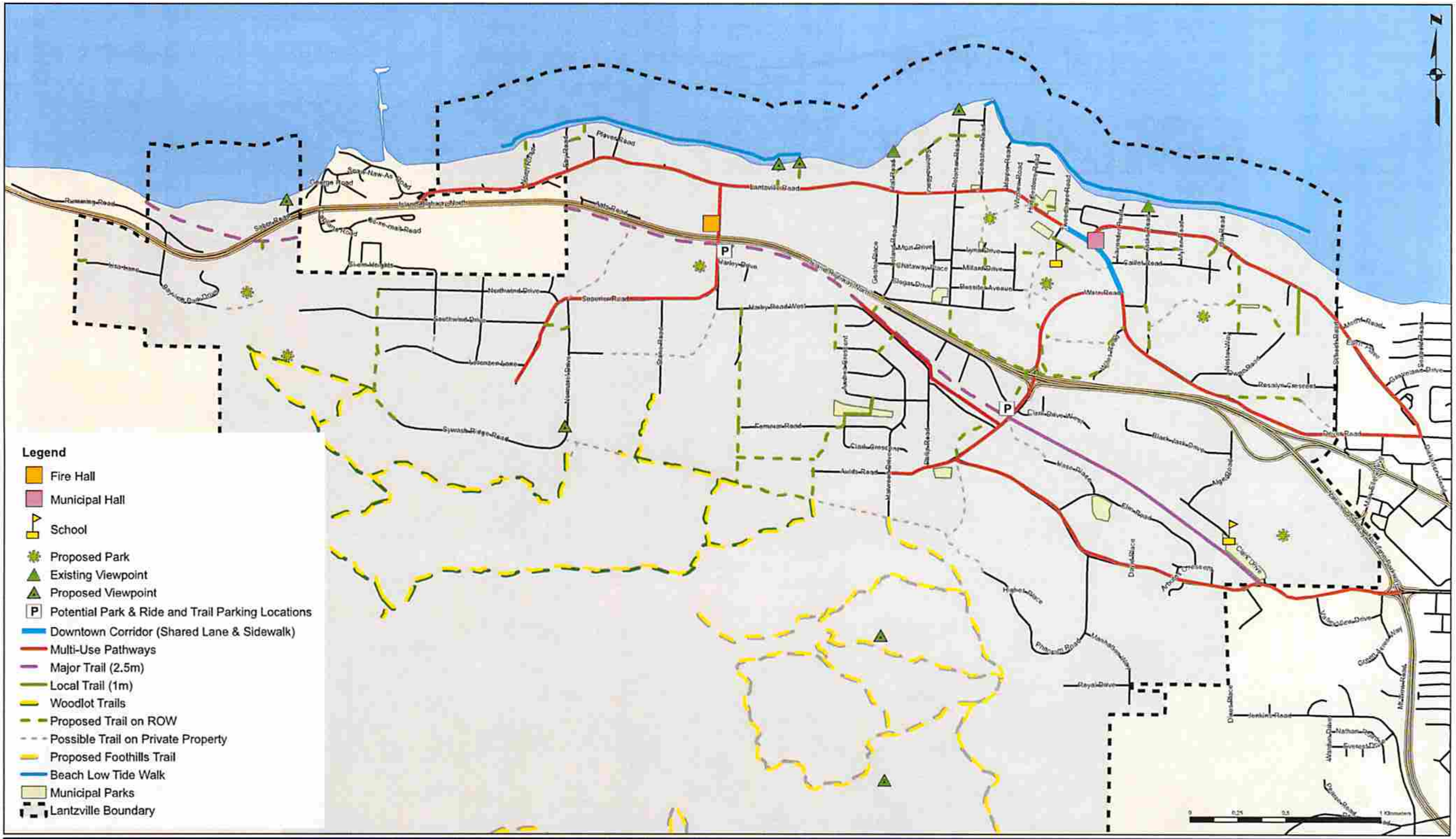
Future Connections

Lantzville Transportation Study

Drawn By: BA Date: Mar 08/13 File: 1473



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Major Bicycle and Pedestrian Facilities

Lantzville Transportation Study

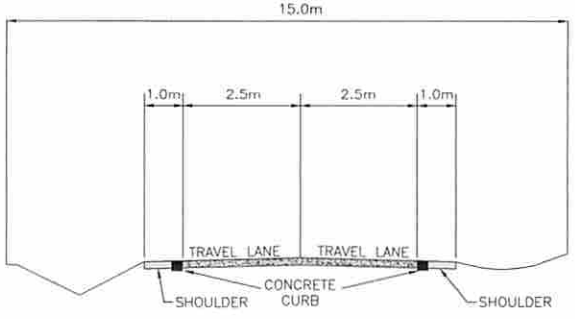
Boulevard

TRANSPORTATION GROUP

TITLE:
LANTZVILLE TRANSPORTATION
PROPOSED E&N TRAIL ROUTE

DESIGNED: NK	DRAWN: ba	SCALE: NTS	
DATE: Mar. 01-13	DRAWING NO: 1473_EN	REV. 0	

PROJECT: N:\Project Files\1473 - Lantzville Transportation Study\Drawings\Proposed\EN_Mar 01-13.dwg
PLOT DATE: 3/12/2013 12:34 PM
PLOTTED BY: Ba



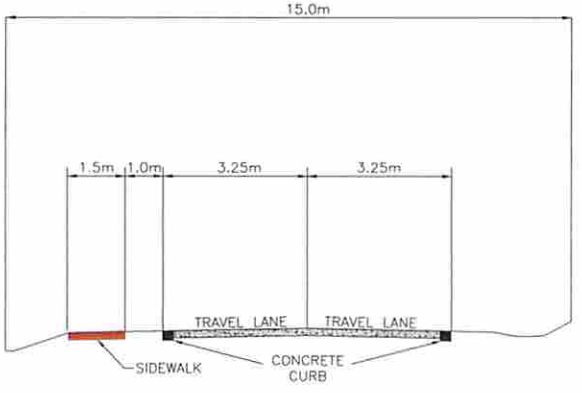
5.0m Local Road Cross Section

Key Features

- 5.0m of asphalt
- All users share the roadway
- 1.0m shoulders can accommodate pedestrians
- No on-street parking provided

Design Criteria / Implementation

- 30km/h Design Speed
- Implement when combined bicycle, pedestrian, and vehicle use is less than 400 users per day



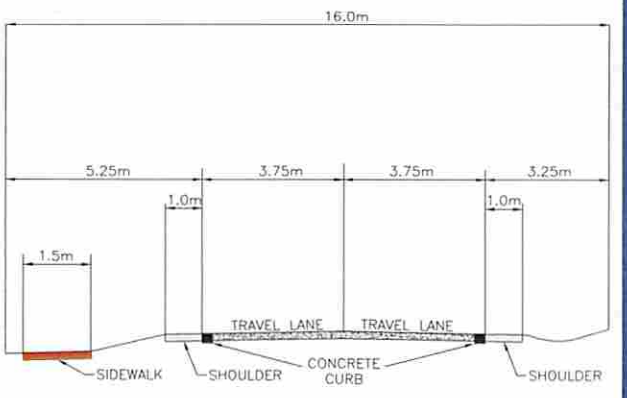
6.5m Local Road Cross Section

Key Features

- 6.5m of asphalt
- 1.5m sidewalk on one side (paved or concrete)
- Bicycles and vehicles share the 6.5m of asphalt

Design Criteria / Implementation

- 30km/h Design Speed
- Implement when combined bicycle, pedestrian, and vehicle use is 400 to 800 users per day



7.5m Local Road Cross Section

Key Features

- 7.5m of asphalt
- 1.5m separated sidewalk on one side (paved or concrete)
- Bicycles and vehicles share the 7.5m of asphalt

Design Criteria / Implementation

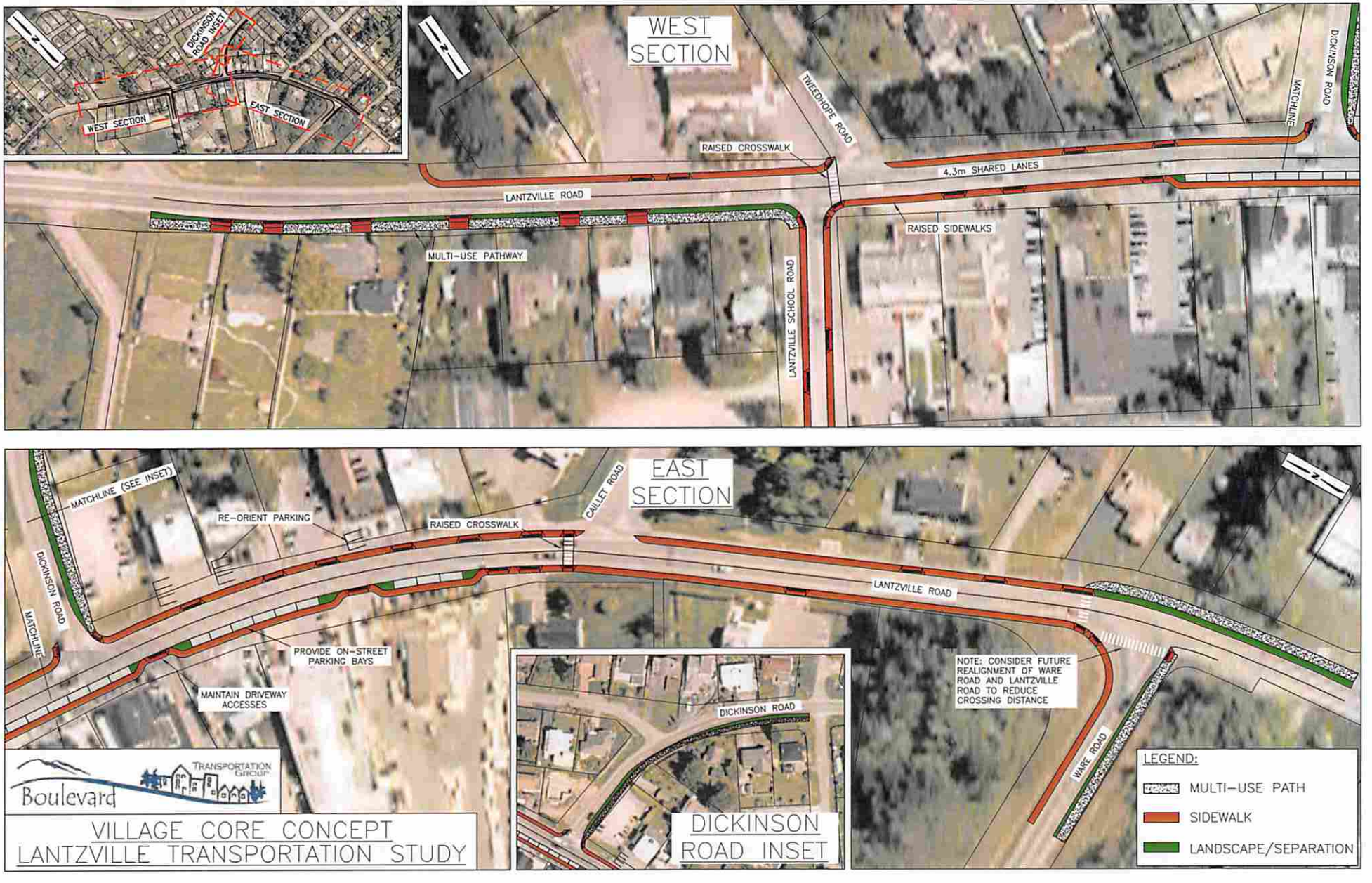
- 50km/h Design Speed
- Implement when combined bicycle, pedestrian, and vehicle use is less than 1,000 users per day

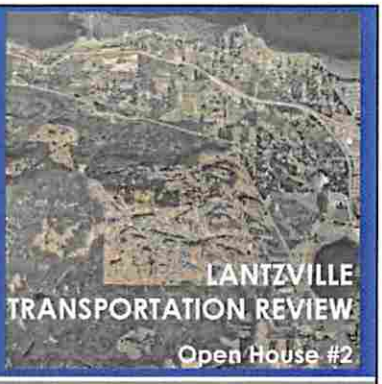
Bylaw 55 (Subdivision and Development) Updates

- Update definitions for the cross-sections to be consistent with the road classifications
- Add a definition for curbing
- Add additional details on bio-swale requirements
- Develop a Village Core cross section
- Remove R1SS: Rural Local Highway Cross Section with Curb (duplicate)
- Update 7.5m wiring cross sections (R6SS and R7SS)
- Include a statement regarding increasing right-of-way width requirements to allow for safe construction of roadways (in steep terrain)

Boulevard TRANSPORTATION GROUP

Road Cross Sections
Lantzville Transportation Study


DICKINSON ROAD INSET
WEST SECTION
EAST SECTION
WEST SECTION
RAISED CROSSWALK
TWEEDHOPE ROAD
MATCHLINE
DICKINSON ROAD
4.3m SHARED LANES
LANTZVILLE ROAD
RAISED SIDEWALKS
MULTI-USE PATHWAY
LANTZVILLE SCHOOL ROAD
EAST SECTION
MATCHLINE (SEE INSET)
RE-ORIENT PARKING
RAISED CROSSWALK
CAILLET ROAD
DICKINSON ROAD
MATCHLINE
LANTZVILLE ROAD
PROVIDE ON-STREET PARKING BAYS
MAINTAIN DRIVEWAY ACCESSES
DICKINSON ROAD
NOTE: CONSIDER FUTURE REALIGNMENT OF WARE ROAD AND LANTZVILLE ROAD TO REDUCE CROSSING DISTANCE
WARE ROAD
LEGEND:
MULTI-USE PATH
SIDEWALK
LANDSCAPE/SEPARATION
Boulevard
TRANSPORTATION GROUP
VILLAGE CORE CONCEPT
LANTZVILLE TRANSPORTATION STUDY
DICKINSON ROAD INSET



LANTZVILLE TRANSPORTATION REVIEW

Open House #2

Lantzville, BC
14 March 2013

Outline

- Review Background Data
- Review Results of Open House #1
- Review Analysis of Network
- Review Findings and Recommendations
- Community Feedback

Purpose of Transportation Review

- Review short and long term pedestrian, cycling, transit, intersection and roadway requirements
  - Traffic operations & safety
  - Non-motorized needs
  - Downtown safety & accessibility
- Identify traffic calming and use of alternative and low impact road standards
  - Traffic calming standards
  - Road cross sections and implementation criteria

Study Process

- Review existing reports and collect data on existing conditions
- Review existing conditions (safety, operations, right-of-way, road cross sections, etc.)
- Collect community issues/concerns at Open House
- Analyze short and long term network options and improvements (roads, transit, bicycle, and pedestrian infrastructure and cross sections)
- Report draft findings / recommendations to community at Open House #2
- Finalize recommendations and report

Journeyway & Trail Plan (2010)

Existing Transit Service

Daily Traffic, Classification, & Speed

2012 Poor Operations

Collision Data (2007-2011)

Open House #1

- Open House #1 was held on Jan 16, 2013
- Presentation and Boards on existing roads, trails, journeyways, bus routes, traffic volumes, traffic conditions, and collision data
- Feedback Summary:
  - Majority want sidewalks and bicycle facilities including access to North Nanaimo
  - Identified desire for more transit routes and service and use of smaller buses
  - Road issues identified as speeding, intersection upgrades, and 4x4 / Quad use
  - Against Southwind connecting to Fawn

Road Classifications

- Comparison of Daily Traffic to Road Class found all roads are appropriately classed
- Update definitions in Bylaw 55 (Subdivision & Development)
- Add Ware Road as Major Road/Journeyway
- Add Northwind Dr, Clark Cres, Tremblay Dr, Lancrest Terr, Black Jack Dr, Arbutus Cres, and Alger Rd as Local Road/Journeyway

Road Cross Sections

- Update Sections / Details in Bylaw 55
  - Sidewalk and shoulder material, curbing, and swales
- 5.0m Local Roads
  - 30km/h design speed
  - Shared roadway
  - Total users less than 400 per day
- 6.5m Local Roads
  - 30km/h design speed
  - Total users 400 to 800 per day
  - Sidewalk on one side

Road Cross Sections

- 7.5m Local Roads
  - 50km/h design speed
  - Shared roadway
  - Sidewalk on one side
  - Total users less than 1,000 per day
- 7.5m Major Roads
  - Reduce road width to 7.5m
  - Provide 3.0m multi-use path on one side

Future Traffic

- Added Foothills traffic based on OCP +
- 3.5% growth within Lantzville = 2x existing traffic volumes in 20 years
- Growth accounts for background growth and potential future developments
- 5, 10, 15 yr horizons = no improvements required
- At 20 yrs Aulds/Ware and Aulds/Harwood need upgrading

Highway 19

- Under jurisdiction of Ministry of Transportation and Infrastructure
- Requires that they undertake any improvements, but may be open to partnerships
- Long term highway improvements may include signal retiming, turn restrictions, additional laning, and addition of traffic signals

Roundabouts

- Review when unsignalized intersection needs upgrade
- Safer than conventional intersections
- Operate more efficiently than traffic signals
- Reduced carbon and general emissions
- Pedestrians have a pathway around and crosswalks on all legs
- Cyclists are accommodated by integrating with the vehicle traffic or providing a cycling path around the roundabout
- Typically more expensive to implement
- But can have lower maintenance costs
- Need more right of way than signals

Traffic Calming

- Traffic calming features work to achieve:
  - Reduce vehicle speeds;
  - Reduce traffic volumes;
  - Discourage neighbourhood short-cutting;
  - Minimize conflicts between vehicles and other street users; and
  - Generally improve the neighbourhood environment
- Traffic Calming needs to be planned based on road classification, purpose, and the larger network

Traffic Calming Evaluation Criteria

Road Classification	Threshold Limits	
Local Roadway/Journeyway	• Traffic Volume:	> 1,000 vehicles per day
	• Operating Speed:	> 10km/h over posted speed limit
	• Short Cutting:	> 25% of vehicles are not making trips to/from the specified area
Major Roadway/Journeyway	• Traffic Volume:	> 5,000 vehicles per day
	• Operating Speed:	> 10km/h over posted speed limit
Others items to consider	Adjacent Land Use	Commercial land use, playgrounds, schools

Future Connections

- 11 right-of-way areas identified
- Connections are to identify where right-of-way should be collected
- Connections may be used for trails, bicycle and pedestrian connections, and roads
- Road connections not necessary in short term
- Up to 15 single family houses/lots can connect to Lorenzen Lane before upgrading required

Lantzville Village

- Part of a Major Roadway/ Journeyway
- No distinction between Village and rest of Lantzville Road other than 30km/h signs and raised crosswalks
- Speeds are 20km/h above posted
- 90 degree parking creates unsafe reversing manoeuvres onto major road
- No defined space for different users
- Space is dominated by vehicle use

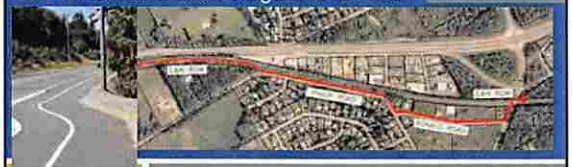
Lantzville Village

Lantzville Village

Lantzville Village

Pedestrians & Bicycles

- 5.0m Local Road = Shoulders / Road
- 6.5m & 7.5m Local Roads = One Sidewalk
- Major Roads = 3.0m multi-use path
- Village Core = Sidewalks both sides
- Alternative Next Stage of E&N Trail



Transit

- Two existing routes
- Current bus stops within Lantzville are not well marked/delineated
- One bus stop on Aulds Road has an accessible waiting area / pad and the stop in downtown Lantzville has a bench
- Continue to upgrade transit stops to be better marked and accessible.

Transit

- Depending on road connections and highway traffic control there is potential to expand to:
  - West Lantzville
  - West end of Lantzville Road
- Two Park & Ride opportunities:
  - Industrial Road at Ware Road
  - Superior Road at Highway 19

Recommendations

- Update Bylaw 55
- Update the OCP Road Classification Map
- Plan for improvements at Aulds Rd/Ware Rd and Aulds Rd/Harwood Rd (20 yrs)
- Work with MoT for Highway 19 improvements
- Create a policy roundabout reviews
- Collect right-of-way as available at 11 locations and use for trails and multi-use pathways
- Develop 3.0m multi-use pathways on major roadway / journeyways
- Utilize an interim alignment for the E&N Trail

Recommendations

- Hold discussions with Village property owners regarding implementation of Village streetscape
- Confirm Lorenzen Lane has less than 400 users per day
- Upgrade bus stop signage and accessible waiting areas/pads
- Review transit service routing with RDN Transit and BC Transit in long term
- Create a small Park and Rides

Thank You!

Contact: nking@blvdgroup.ca
ph. 250-388-9877

Feedback Form

Thank you for participating in the Lantzville Transportation Review Open House. Please use this feedback form to provide your thoughts on transportation in Lantzville. Please leave feedback forms on your way out or submit to Lantzville City Hall by Monday March 18, 2013

(5 = strongly agree / 1 = strongly disagree)

1. Do you support the proposed Village Core Streetscape Concept? 5 4 3 2 1

2. Do you support the proposed road classifications and road cross sections? 5 4 3 2 1

3. Do you support the proposed bicycle / pedestrian facilities? 5 4 3 2 1

4. Do you support the proposed alternative for the E&N Trail from Ware Road to Superior Road? 5 4 3 2 1

5. Do you support the implementation of traffic calming in Lantzville? 5 4 3 2 1

6. Do you support the proposed future connection right-of-ways? 5 4 3 2 1

7. Additional Comments

_____

_____

_____

_____

_____

8. Help us plan for future open houses by answering the following questions: *(5 = strongly agree / 1 = strongly disagree)*

   a) The information presented today was useful and informative. 5 4 3 2 1

   b) The information was easy to understand. 5 4 3 2 1

   c) The project team was helpful, friendly, and accessible. 5 4 3 2 1

   d) I was able to find satisfactory answers to my questions. 5 4 3 2 1

9. Which statement best applies (choose one):

   ☐ I am a resident of Lantzville

   ☐ I am a business owner / operator in Lantzville

   ☐ I am part of a public interest organization in Lantzville

Contact information (optional):

Name: _____ Telephone: _____

Address: _____ Email: _____

District of Lantzville
Transportation Review
Open House #2
March 14, 2013

Survey Prepared by Boulevard Transportation Group Ltd.

Questions? Comments? Please call Nadine King, P.Eng. at 250-388-9877 or email at nking@blvdgroup.ca

Boulevard Transportation Group

APPENDIX B

Synchro Background Information

Modelling Software Description

The traffic analysis was completed by using a software program called Synchro and SimTraffic, and the results were measured in delay, Level of Service (LOS) and 95th percentile queue length. Synchro is based on the Highway Capacity Manual (HCM) methodology. SimTraffic integrates established driver behaviours and characteristics to simulate actual conditions by randomly "seeding" or positioning vehicles travelling throughout the network. The simulation, is run five times (five different random seedings of vehicle types, behaviours and arrivals) to obtain statistical significance of the results.

Levels of Service

Traffic operations are typically described in terms of Levels of Service (LOS) which rates the amount of delay per vehicle for each movement and the entire intersection. Levels of service range from LOS A (representing the best operations) to LOS E/F (LOS E being poor operations and LOS F being unpredictable/disruptive operations). LOS E/F are unacceptable levels of service under normal everyday conditions.

The hierarchy of criteria for grading an intersection or movement not only includes delay times, but also takes into account traffic control type (stop signs or traffic signal). For example, if a vehicle is delayed for 19 seconds at an unsignalized intersection, it is considered to have an average operation, and would therefore be graded as an LOS C. However, at a signalized intersection, a 19 second delay would be considered a good operation and therefore it would be given an LOS B. The two tables below indicate the ranges of delay for LOS for signalized and unsignalized intersections.

Table B: LOS Criteria

	Average Control Delay (seconds/vehicle)	
Level of Service	Unsignalized Intersection	Signalized Intersection
A	Less than 10	Less than 10
B	11 to 15	11 to 20
C	16 to 25	21 to 35
D	26 to 35	36 to 55
E	36 to 50	56 to 80
F	More than 51	More than 81

APPENDIX C

Foothills Trip Generation and Assignment

Trip Generation

Trip generation rates are taken from the *ITE Trip Generation Manual 8th Edition* for the PM peak traffic hour. The trip generation rates are shown in Table 8 for the 20-year full build-out scenario.

Table 8: Trip Generation for Foothills Estates Full Build-Out

Code	Land Use	Rate	Units	Trips	In	Out
210	Single-Family Detached Housing	1.00	730 units	730	460	270
417	Regional Park	0.11	902 acres	99	45	55
520	Elementary School	0.15	200 students	30	15	15
814	Special Retail Centre	2.71	50 k-ft^2	136	60	76
			TOTAL	995	579	416

Trip Distribution and Assignment

The Foothills Estate will be accessed via Harwood Road and Vipond Road. It is estimated that 95% of generated traffic will access the neighbourhood via Harwood Road and 5% will use Vipond Road. The following assignment for vehicles entering and exiting vehicles:

- Harwood Road / Aulds Road
  - 95% westbound left
- Aulds Road / Ware Road
  - 30% northbound left
  - 65% westbound through
- Highway 19 / Ware Road
  - 35% northbound left
  - 15% southbound right
  - 15% westbound through
- Vipond Road / Dumont Rd
  - 2% northbound left
  - 3% southbound right

Exiting trip assignments are as follows:

- Harwood Road / Aulds Road
  - 95% northbound right
- Aulds Road / Ware Road
  - 45% eastbound through
  - 55% eastbound right
- Highway 19 / Ware Road
  - 10% eastbound left
  - 10% eastbound through
  - 25% eastbound right
- Vipond Road / Dumont Rd
  - 2.5% eastbound left
  - 2.5% eastbound right

APPENDIX D

Lantzville Traffic Calming Policy

TABLE OF CONTENTS

1 INTRODUCTION

1.1 Purpose

The Traffic Calming Policy will provide guidance on the administration, planning, design and implementation of traffic calming in Lantzville. The policy presents a consistent vision of how traffic calming is applied to provide clarity to the community, staff, and Council. It also seeks to limit the liability/risk by giving appropriate guidance on the application of traffic calming.

1.2 Objectives

The objectives of the policy are to establish:

1) Standardized procedures to initiate a traffic calming study;

2) Steps to identify and confirm issues, develop options, gather community feedback, and implement a plan; and

3) Standardized traffic calming measures to be implemented in the District to resolve issues;

2 PRINCIPLES

2.1 What is Traffic Calming?

Traffic calming is defined by the Institute of Transportation Engineers (ITE) as follows:

> *Traffic calming is 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.*

Traffic calming is a series of features coordinated to address a known or anticipated neighbourhood issue of vehicle speeding, short-cutting, and/or safety. Traffic calming features fall into five (5) categories:

- **Vertical Deflections:** Features that require a motorist to reduce speed due to a varied surface level. Vertical deflections have the primary benefit of reducing vehicle speeds, and secondary effects of decreased traffic volumes, reduced conflicts, and enhanced pedestrian corridors.

- **Horizontal Deflections:** Features that require a motorist to alter their direction or choose an entirely new route. Horizontal deflections can be applied to reduce neighbourhood short-

cutting, reduce vehicle speeds, and reduce conflicts.

- **Obstructions:** Features that obstruct specific vehicle movements. Obstructions discourage short-cutting, reduce conflicts, and enhance the neighbourhood environment. They are typically applied to intersections, but can be used midblock.

- **Signage:** Features that regulate traffic movements within a neighbourhood. Signage requires police enforcement and in many cases can be replaced with self-enforcing features.

- **Technology:** Features that utilize newer technologies to communicate a message to motorists, such as radar speed signs and in-road lighting.

Traffic calming may be applied on a proactive or reactive basis. Proactive traffic calming refers to on-going traffic calming improvements made by the District in anticipation of safety issues and community concerns, and the design of new roadways that include traffic calming measures to counteract situations where excessive speed, short-cutting, or unsafe conditions are anticipated (See Section 3).

A reactive approach responds to traffic calming requests from the community and provides a process for implementing traffic calming measures where speed, shortcutting, or safety issues have been confirmed in an existing neighbourhood (See Section 3.5).

2.2 Why Calm Traffic?

Many roads have been constructed with long and clear sightlines to increase a driver's ability to respond to incidents, conflicts, or other unforeseen circumstances. These sightlines may also encourage speeding. This can result in a reduction of the real and perceived safety of residents and road users. Policing of traffic in neighbourhoods has decreased over the past few decades due to other demands, enabling undesirable driving behaviour to continue.

The basic function of a street is to provide varying levels of both movement and access depending on the classification. Traffic calming aims to restore streets to their original intended functions. Traffic calming features are installed to achieve one or more of the following:

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

2.3 Traffic Calming and the Transportation Network

Each road classification is intended to provide a different function within the network. Traffic calming should be planned in consideration of road classification, purpose and the larger network. Lantzville's road classification network is found in FIGURE #. The cross-section of different road classifications (urban or rural) will directly affect the traffic calming measures which can be implemented on them. The roadway classifications are as follows:

- **Major roads** are intended to provide a link between Highway 19 and local roads. They provide access opportunities to adjacent lands and more continual routes. Traffic calming on major roads should be limited to technological and horizontal solutions.
    - The Village Area major road has a significantly different intended function from the other major roads. It provides low speed access to adjacent lands, connects to local roads, and connects to other major roads.

- **Local roads** are intended to provide access to adjacent properties and not for continuous travel and high speeds. Traffic calming measures are most often applied to local roads. Traffic calming on local roads can be technological, horizontal deflections, vertical deflections, or obstructions.

2.4 Process Principles

The process to develop a traffic calming plan will utilize the following principles:

- **Identify the Real Problem:** The perceived nature may be different from the real problem and a solution to fix a perceived problem may make the real problem worse.

- **Quantify the Problem:** Collect the appropriate data to confirm the suspected issues, which may include traffic counts, vehicle classification counts, speed studies, license plate surveys, and collision statistics. Refer to thresholds outlined in Section 4.2.

- **Consider the Surrounding Network First:** Determine the source of short cutting problems which are often the result of another problem on a higher order street. There are a range of low-cost options to improve operations on the arterial network that should be considered in advance of traffic calming on local roads. These options may eliminate the need for traffic calming.

- **Traffic Calm Areas, Not Sites:** Traffic calming must be considered at a neighbourhood level, rather than on a site-by-site basis to avoid shifting an issue from one location to another (by implementing site specific traffic calming without considering the larger area).

- **Avoid Restricting Access:** Diverters, barriers and closures restrict access to residences and businesses. Traffic calming solutions should be developed which retain access for neighbouring residents and businesses.

- **Do Not Impede Non-motorized Modes:** The purpose of traffic calming is to reduce the negative effects of motor vehicles and improve conditions for other modes. Traffic calming measures should be designed to permit cyclists and pedestrians to travel unaffected, while slowing or obstructing motor vehicles.

- **Accommodate Service Vehicles:** Service vehicles have unique manoeuvring requirements that must be accommodated when traffic calming is implemented. Designs should consider day-to-day services, transit, garbage collection, snow plowing, street cleaning, and emergency services (police, fire, and ambulance).

- **Use Self-enforcing Measures:** Some traffic calming measures require police presence to ensure compliance. Motorists recognize this and often fail to abide by the measure, compromising the effectiveness of the traffic calming solution. Self-enforcing measures require motorist compliance and do not need constant enforcement (i.e. Consider a traffic circle in place of a 4-way stop sign, speed humps in place of posted speed limits, and diverters in place of limiting turn movements with signs).

- **Public Education:** Educate the community about traffic calming improvements, why traffic calming is used and implemented, how it works and the benefits.

- **Monitor and Follow-up:** Traffic calming measures are not universally applicable, it is important to monitor applications to identify the successes and failures of specific features in West Kelowna. This must involve data collection before and after implementation, and constant feedback from the community.

3 APPROACHES TO TRAFFIC CALMING

Applied appropriately, traffic calming can provide solutions for issues related to traffic, safety, and community livability.

There are four (4) scenarios where traffic calming can be applied, as follows:

- **Community-Wide Traffic Calming Program:** Traffic calming should be implemented as a planned approach ensuring areas in greatest need are given highest consideration and that traffic calming is applied efficiently throughout the community. This approach allows District traffic calming needs to be considered as a whole and with the highest priority issues addressed first.

- **Concurrent with New Development:** Traffic calming may be applied in situations where typical roadway design standards are expected to result in high speeds, short-cutting, or generally unsafe conditions. This approach allows the District to address issues before they arise and provides an opportunity to secure funding through the land development process.

- **Response to Community Request:** Traffic calming may be considered in response to a community request. In this policy only those requests related to safety are pursued and all others are deferred to the community-wide program.

- **On Major Roads:** All traffic calming on major roads will be planned by District staff as these roads function to serve the broader community, rather than only the adjacent land uses. This ensures that these streets continue to function as intended.

3.1 Developing a Community-Wide Traffic Calming Plan

A community-wide traffic calming program is a proactive approach to systematically ensure traffic calming needs are met throughout the community. This includes developing a long-term planning framework that reflects commitment to traffic calming and program continuity, as well as committing the budget and resources necessary for efficient and equitable implementation. The following steps are recommended to establish a framework for implementing traffic calming in Lantzville.

3.1.1 Prioritize Neighbourhoods

Step 1: Establish a Working Group

A working group should be established to oversee the development and implementation of a community-wide traffic calming plan. The working group would ideally be comprised of the following members:

- One representative from each neighbourhood;
- One representative from RDN Transit;
- One representative each from Fire Rescue, RCMP, and Ambulance Service;
- One representative from the District's Engineering Department; and
- One representative from the District's Planning Department.

The working group is vital to ensuring that the community-wide program is created and prioritized in a way that is defensible to the broader community. It is important that a member of each neighbourhood is involved to ensure buy-in. Representatives from transit and emergency services must be consulted in the development of each traffic plan.

Step 2: Gather Information

Available information should be collected regarding vehicle collisions, speed, volumes, and road classifications. Information should be mapped to communicate it in the context of the community, and in consideration of land use and community facilities (i.e. schools, parks, etc.). Neighbourhoods with the highest number of crashes on local and major roads can be identified from ICBC collision data. The data should be presented to the working group in a workshop format.

The objective of the workshop is to define the priorities for each neighbourhood. Once priorities have been established the District will proceed with developing a traffic calming plan for each neighbourhood as outlined in Section 4.0. The District should consider the neighbourhood boundaries identified in the Official Community Plan (OCP).

Step 3: Adopt Program and Establish On-Going Funding

It is recommended the District commit to improving their community through traffic calming measures by allocating on-going funding for both planning and implementation.

3.2 Developing a Neighbourhood Traffic Calming Plan

The following describes a recommended process to develop a traffic calming plan for a specific neighbourhood as per the prioritized neighbourhood list.

Step 1: Define Issues and Locations

Specific traffic calming issues and locations must be addressed and clearly defined before pursuing traffic calming plans. This includes clearly articulating traffic concerns, identifying additional data collection needs, and defining a scope/location of the issue.

Step 2: Present the Issues (Open House)

An open house will be used to present the issues and seek input from the community as to their concerns. A minimum level of support must be achieved in order to continue the process indicated through a survey at the open house. This will ensure staff time and District monies are used on community supported initiatives.

Step 3: Collect Data

Data is required to ensure the plan is developed to responds to confirmed traffic issues. Much of the necessary data will have been collected as part of the work that goes into the community-wide program; however, this information may need to be updated, including collision data, vehicle volumes, speeds, and potentially short-cutting vehicles. Analyze this data using the thresholds outlined in Section 4.

Step 4: Develop Concepts

A number of traffic calming plan options should be developed at a concept level, and may include any of the features identified in Section 4. Options should include different ways to address the identified issues. Options should be illustrated for ease of communication with the community.

Step 5: Consult with the Community

Traffic calming concepts should be brought to an open house to select the option that achieves the traffic calming goals and the community supports. Questionnaires should be used to solicit feedback from both open house attendees and those who cannot attend but can submit via the District web site.

Step 6: Prepare Plan

A final traffic calming plan should be prepared. In most cases, the final plan will be the option that received the highest level of support from the community. Where justified, an alternate option or combination of a number of options may be considered. The final plan should be presented to Council for consideration.

3.3 New Developments

Design standards are developed to ensure roadways are designed safely. In certain cases roadways designed to standard may result in speeding and short-cutting (e.g. straight sections with significant grades).

Under the Traffic Calming Policy, roadways proposed with the potential for safety or speeding problems (i.e. extraordinarily long or wide segments) will be required to include traffic calming in their design consistent with the vision of the community-wide plan for the specific neighbourhood.

3.4 Major Roads

The application of traffic calming measures on major roads must be considered carefully since calming traffic may improve conditions in a particular neighbourhood but decrease the roadway's function/service level in other areas. Traffic calming on these higher order roads may be appropriate under the following circumstances:

- To address a location of high collision frequency;
- To improve an area with poor pedestrian conditions;
- To improve modal integration; and
- To improve compatibility with adjacent land uses.

3.5 Responding to Community Requests

For responding to traffic requests initiated from the community the following process is suggested. This process will enable the District staff, Council and residents to best use time and resources to address traffic safety issues in the community.

Step 1: Submit Request to District Staff

A resident wanting to submit a request for traffic calming measures to be installed in their neighbourhood should provide a letter stating the location and nature of the concern, and a petition with signatures from at least 50% of the households on the affected roadway.

Step 2: Assess Conditions

Only once a formal request and the required petition is received will the District begin considering a traffic calming application. The District should use collision data as criteria for determining the priority of the request if an immediate safety issue warrants action.

Step 3: Determine the Required Action

After an assessment of ICBC collision data has been completed there are two courses of action.

1) Locations with collision history should be considered priority and be eligible for the development of a traffic calming plan using the steps, as necessary. (Refer to Section 4.0).

2) Requests for traffic calming at locations with no collisions recorded should be documented and considered when the neighbourhood traffic calming plan is completed as part of the community-wide program.

4 TRAFFIC CALMING IN LANTZVILLE

4.1 Existing Traffic Calming Features

Existing traffic calming measures that have been implemented in Lantzville include two raised crosswalks (vertical deflection) and two maximum speed signs located on Lantzville Road in the vicinity of the Village Area.

Figure 1: Raised pedestrian crosswalk (left) and maximum speed sign (right)

4.2 Evaluation Criteria Matrix for District Roads

The following table outlines basic threshold considerations to determine where implementation of traffic calming measures may be warranted.

Table 1: Road Classification Threshold Limits to Application of Traffic Calming

Road Classification	Threshold Limits	
Local – Rural/Urban Residential	• Traffic Volume: • Operating Speed: • Short Cutting:	> 1,000 vehicles per day > 10km/h over posted speed limit > 25% of vehicles are not making trips to/from the specified area
Major	• Traffic Volume: • Operating Speed:	> 5,000 vehicles per day > 10km/h over posted speed limit
Others items to consider	Adjacent Land Use	Commercial land use, playgrounds, schools

Vertical Deflection:

Features that require a motorist to reduce speed due to varied surface level. Vertical deflections have the primary benefit or reducing vehicle speeds, and secondary effects of decreased traffic volumes, reduced conflicts, and enhanced pedestrian corridors.

- Raised Crosswalk:

A marked pedestrian crosswalk constructed at a higher elevation than the adjacent roadway. This feature may be located at an intersection or mid-block location.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.2.1, pg. 4-3.

Applicability: Urban Residential and Rural Residential Roads

Effectiveness: ● Speed ○ Volume ◑ Conflict

- Raised Intersection:

An intersection (incorporating crosswalks) constructed at a higher elevation than the adjacent roadways.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.2.2, pg. 4-3.

Applicability: Urban Residential Roads (Curb and Gutter)

Effectiveness: ◑ Speed ○ Volume ◑ Conflict

- Sidewalk Extension:

A sidewalk is continued across a local street intersection. For a 'raised' sidewalk extension, it is continued at its original elevation (no let-down) with the local roadway raised to the level of the sidewalk at the intersection. For an 'unraised' sidewalk extension, the sidewalk is lowered to the level of the roadway.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.2.3, pg. 4-6.

Applicability: Urban Residential Roads (Curb and Gutter)

Effectiveness: ◑ Speed ○ Volume ◑ Conflict

- Speed Hump:

A raised area of roadway, which deflects both the wheels and frame of a traversing vehicle. If there is no curb obstructions such as posts are bollards placed on roadside at speed hump location.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.2.4, pg. 4-6.

Applicability: Urban Residential and Rural Residential Roads

Effectiveness: ● Speed ◑ Volume ● Conflict

- Speed Cushion:

A raised area of roadway constructed in separate sections along the width of the roadway. The width of each section is designed to slow passenger vehicles and allow vehicles with larger axle widths (emergency vehicles) to pass between the raised sections unaffected by the traffic calming device.

Source: N/A

Applicability: Major and Urban Residential Roads (Curb and Gutter)

Effectiveness: ● Speed ◑ Volume ● Conflict

- Textured Crosswalk:

A crosswalk incorporating a textured and/or patterned surface which contrasts with the adjacent roadway. Texture helps alert motorists of the pedestrian crossing area.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.2.5, pg. 4-9.

Applicability: Urban Residential and Rural Residential Roads

Effectiveness: ○ Speed ○ Volume ◑ Conflict

Horizontal Deflection:

Horizontal deflections require a motorist to alter their direction or choose an entirely different route. Horizontal deflections can be applied to reduce neighbourhood short-cutting, to reduce vehicle speeds, or to reduce conflicts.

- Chicane:

A series of curb extensions on alternating sides of a roadway, which narrow the roadway and require drivers to steer from one side of the roadway to the other to travel through the chicane. Typically, a series of at least three curb extensions are used.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.3.1, pg. 4-9.

Applicability: Urban Residential Roads (Curb and Gutter)

Effectiveness: ◑ Speed ○ Volume ◑ Conflict

- Curb Extension:

A horizontal intrusion of the curb into the roadway resulting in a narrower section of roadway. Typically applied at intersections, but also effective at mid-block.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.3.2, pg. 4-11.

Applicability: Major and Urban Residential Roads (Curb and Gutter)

Effectiveness: ● Speed ○ Volume ○ Conflict

- Curb Radius Reduction:

A reconstruction of an intersection corner using a smaller radius, usually in the 3.0 to 5.0m range. Small curb radii require vehicles to slow when making a right turn, and also decreases the crossing distance for pedestrians.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.3.3, pg. 4-11.

Applicability: Major and Urban Residential Roads (Curb and Gutter)

Effectiveness: ◑ Speed ○ Volume ○ Conflict

- On-Street Parking:

A raised area of roadway, which deflects both the wheels and frame of a traversing vehicle. If there is no curb obstructions such as posts are bollards placed on roadside at speed hump location.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.3.4, pg. 4-14.

Applicability: Major and Urban Residential Roads (Curb and Gutter)

Effectiveness: ◑ Speed ○ Volume ○ Conflict

- Raised Median Island:

An elevated median constructed on the centreline of a two-way roadway to reduce the overall width of the adjacent travel lanes. Medians also provide opportunities to improve landscaping/streetscape.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.3.5, pg. 4-14.

Applicability: Major and Urban Residential Roads (Curb and Gutter)

Effectiveness: ◑ Speed ○ Volume ○ Conflict

- Traffic Circle:

A raised island located in the centre of an intersection, which requires vehicles to travel through the intersection in a counter-clockwise direction around the island.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.3.5, pg. 4-14.

Applicability: Major and Urban Residential Roads (Curb and Gutter)

Effectiveness: ◑ Speed ○ Volume ○ Conflict

Obstruction:

These features obstruct specific vehicle movements. They discourage short-cutting to varying degrees, depending on the type and number of features applied, reduce conflicts, and enhance the neighbourhood environment. They are typically used at intersections, but are also applied effectively at mid-block.

- Direct Closure:

A curb extension or vehicle barrier extending to approximately the centreline of a roadway, effectively prohibiting traffic entering or exiting a particular road.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.4.1, pg. 4-19.

Applicability: Major and Urban Residential Roads (Curb and Gutter)

Effectiveness: ○ Speed ● Volume ◑ Conflict

- Diverter:

A barrier extending across the entire width of a roadway, which obstructs all motor vehicle traffic movements from continuing along the roadway.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.4.2, pg. 4-19.

Applicability: Urban Residential Roads (Curb and Gutter)

Effectiveness: ○ Speed ● Volume ◑ Conflict

- Full Closure:

A barrier extending across the entire width of a roadway, which obstructs all motor vehicle traffic movements from continuing along the roadway.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.4.3, pg. 4-23.

Applicability: Urban Residential Roads (Curb and Gutter)

Effectiveness: ○ Speed ● Volume ● Conflict

- Intersection Channelization:

Raised islands located in an intersection, used to obstruct specific traffic movements and physically direct traffic through an intersection.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.4.4, pg. 4-23.

Applicability: Urban Residential Roads (Curb and Gutter)

Effectiveness: ○ Speed ◑ Volume ◑ Conflict

- Raised Median Through Intersection:

An elevated median located on the centreline of a two-way roadway through an intersection, which prevents left turns and through movements to and from the intersecting roadway.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.4.5, pg. 4-26.

Applicability: Urban Residential Roads (Curb and Gutter)

Effectiveness: ○ Speed ◑ Volume ◑ Conflict

- Right-In, Right-Out Island:

A raised triangular island at an intersection approach which obstructs left turns and through movements to and from the intersecting street or entranceway.

Source: Canadian Guide to Neighbourhood Traffic Calming, Section 4.4.6, pg. 4-26.

Applicability: Urban Residential Roads (Curb and Gutter)

Effectiveness: ○ Speed ◑ Volume ◑ Conflict

Signage:

Signage features regulate traffic movements within a neighbourhood and in many cases may be replaced with physical features that do not require enforcement.

- Traffic Calmed Neighbourhood Sign:

A sign indicating to drivers that traffic calming measures are in effect within a neighbourhood. This sign promotes driver awareness, and discourages short-cutting and speeding.

Source: Manual of Uniform Traffic Control Devices of Canada, Section A4.6.6 (ID-32).

Applicability: Major and Urban Residential Roads (Curb and Gutter)

Effectiveness: ○ Speed ○ Volume ○ Conflict

- Through Traffic Prohibited Sign:

A sign indicating to drivers that they are not permitted to proceed straight ahead. When used as a traffic calming measure, it discourages through traffic from short-cutting along a street.

Source: Manual of Uniform Traffic Control Devices of Canada, Section A2.4.1 (RB-10).

Applicability: Urban Residential Roads (Curb and Gutter)

Effectiveness: ○ Speed ◑ Volume ◑ Conflict

- Turn Prohibited Sign:

A sign indicating to drivers that they are not permitted to make a particular turn (either right or left). When used as a traffic calming measure, it prevents through traffic from short-cutting along a street.

Source: Manual of Uniform Traffic Control Devices of Canada, Section A2.4.3/A2.4.4/A2.4.5.

Applicability: Urban Residential Roads (Curb and Gutter)

Effectiveness: ◑ Speed ○ Volume ○ Conflict

Technology

Certain technologies exist that may be used as traffic calming to communicate a message to motorists about the intended use of a street.

- Radar Message Sign:

A radar device and message sign that measures a vehicles speed and displays either the vehicles speed or a warning message, providing real-time feedback to motorists on posted speed limits.

Source: N/A

Applicability: Major and Urban Residential Roads (Curb and Gutter)

Effectiveness: ◑ Speed ○ Volume ○ Conflict

- In-Ground Lighting:

In-ground lighting provides illumination within the road surface that more clearly communicates paint markings in key locations, including at crosswalks and land guidelines in high-conflict intersections.

Source: N/A

Applicability: Urban Residential Roads (Curb and Gutter)

Effectiveness: ○ Speed ○ Volume ◑ Conflict