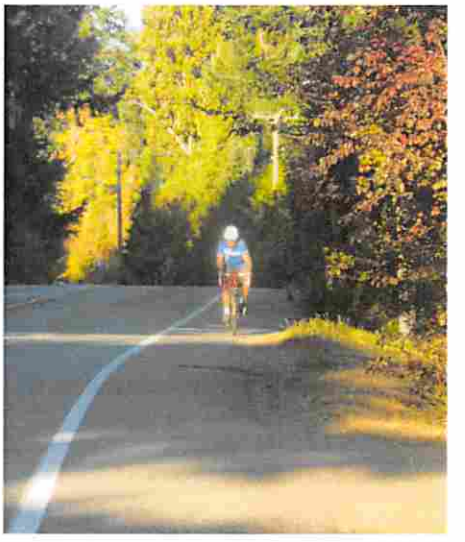

TRANSPORTATION REVIEW

District of Lantzville, BC

Submitted by Boulevard Transportation Group
20 March 2013
Project no. 1473

Boulevard Transportation Group

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EXECUTIVE SUMMARY

The District of Lantzville Transportation Study reviews existing and long term conditions for vehicles, bicycles, pedestrians, and transit. The study reviews the existing road network and intersection operations as well as the long term expected traffic conditions and identifies accommodation for bicycles and pedestrians within the right-of-way. The Study is a tool to assist District staff to better understand the existing transportation system and plan for future user needs of the system. The objectives of the 2012 District of Lantzville Transportation Study are to:

- Review road cross-sections standards for user accommodation, safety and capacity;
- Develop a concept for the Village core to improve the safety and walkability of the core;
- Establish a traffic calming policy for the community
- Review future network connections

Road Network

The OCP and Bylaw 55 provide definitions for roadway classifications and cross sections. The existing road classifications as defined in the OCP are appropriate based on the collected traffic volume data. However, there are discrepancies between the OCP road classification labels and the definitions in Bylaw 55 that should be updated.

The 5.0m local roadway/journeyway cross section should be limited to a combined threshold of 400 road users (vehicles, bicycles, and pedestrians) per day and a 30 km/h design speed. The 6.5m local roadway/journeyway cross sections have a 30km/h design speed and a capacity combined threshold of 400 to 800 road users (vehicles, bicycle, and pedestrians) per day. The 7.5m local roadway/journeyway cross section is for a 50km/h design speed and the capacity to less than 1,000 users per day.

Daily and PM peak hour traffic volumes were collected for key routes and intersections. Each intersection was analyzed to identify where operation improvements are required. During the 2012 PM peak hour, the only intersections with movements at LOS D or worse are along Highway 19.

In the long term, development in Lantzville is expected to occur for the Foothills Estate development in Upper Lantzville and various in-fill developments within the District. At the 20 year horizon, the intersections of Aulds Road/Ware Road and Aulds Road/Harwood Road will require increased traffic control. At Aulds Road/Ware Road a roundabout should be considered. At Aulds Road/Harwood Road the roadway (Aulds Road north to Harwood Road east) could be realigned as the through route or a roundabout implemented. Mitigation along Highway 19 will be required in the long term and may include signalization (Lantzville Road), additional lanes, or turn restrictions.

Roundabouts reviews should be limited to unsignalized intersections requiring upgrading. Assessment of each intersection should be undertaken to determine the appropriate type of traffic control, which may or may not be a roundabout. Roundabouts can be more efficient and have improved safety; however they are more expensive up front and may need right-of-way to be implemented.

There are eleven potential future connections that right-of-ways should be collected by the District as it becomes available. These future connections can take the form of a trail, multi-use path or journeyway (all users). These connections are Southwind Drive to Fawn Drive, Wiles Road / Ware Road / Harby Road East, Harby Road East to Superior Road, Aulds Road to Normarel Road, Stone Road to future Aulds Road extension, Femmar Road to future Aulds Road extension, Hase Place to Ronald Road, Clark Drive West to Clark Drive East, Stronge Road to Jack's Road, Owen Road to Schook Road, and Sunbury Road to Hall Road

The Village streetscape concepts accommodate all major types of road users (vehicles, pedestrians, and cyclists) and create defined areas within the right-of-way for each. Lorenzen Lane can accommodate up to an additional 15 single family accesses with the 5.0m cross section subject to the volume of pedestrians and cyclists being less than 100 per day.

Bicycle and Pedestrian Network

Pedestrians and cyclists will be accommodated on local roadway/journeyways in a variety of ways depending on the total volume of users. For the major roadways/journeyways a separated two way 3.0m multi-use pathway on one side of the road should be provided. The multi-use pathways are within the 'road' right-of-way, but should be physically separated from the travelled roadway.

Transit

Lantzville is part of the RDN Transit system which includes service for Nanaimo, Parksville, Qualicum Beach, Lantzville and RDN with two existing fixed routes through Lantzville (No. 90 and No. 10) providing daily service. The District of Lantzville should continue to work to upgrade transit stops to be better marked and accessible. RDN and BC Transit are in the process of updating the RDN Transit Future Plan which envisions what the transit network should look like in 25 years. Should future road network connections and upgrades to traffic control on Highway 19 be made, other areas of Lantzville may be served by transit in the long term.

Recommendations

The following Bylaw 55 updates should be undertaken:

- remove the use of the words collector and residential roads
- define the sidewalks as asphalt/concrete and shoulders (paved or gravel)
- update the Major roadway/journeyway cross section
- add a village cross section
- remove R1SS: Rural Local Highway Cross Section with Curb cross section
- update R6SS and R7SS to match either the 7.5m Local Road or the 7.5m Major Road section

Additional recommendations include:

- That this study be forwarded to RDN Transit for inclusion in the RDN Transit Future Plan
- Update the OCP Road Classification Map
- At the 20 year horizon (full build out of Foothills), plan for improvements at the intersections of Aulds Road/Ware Road and Aulds Road/Harwood Road will require increased traffic control.
- Work with MoT regarding longer term mitigation for Highway 19.
- Create a policy to review roundabouts as a potential intersection upgrade option.
- Collect right-of-way as available for Southwind Drive to Fawn Drive, Wiles Road/Ware Road/ Harby Road East, Harby Road East to Superior Road, Aulds Road to Normarel Road, Stone Road to future Aulds Road, Femmar Road to future Aulds Road, Hase Place to Ronald Road, Clark Drive West to Clark Drive East, Stronge Road to Jack's Road, Owen Road to Schook Road, and Sunbury Road to Hall Road
- Utilize potential right-of-ways for trails and multi-use pathways.
- Undertake a Village Revitalization Plan and Parking Assessment
- Conduct 24 hour vehicle and 12 hour pedestrian/cyclist counts on Lorenzen Lane prior to additional driveway connections. If combined volumes below 250 vpd allow up to 15 driveway connections before requiring road upgrading
- Develop 3.0m multi-use pathways on one side of the major roadway/journeyways
- Utilize an interim alignment for the E&N Trail between Ware Road and Superior Road to avoid expensive construction of existing alignment.
- Upgrade bus stop signage in the short term (within 1-2 years) and accessible waiting areas/pads in the longer term (2-10 years).
- Review transit service routing with RDN Transit and BC Transit when traffic control on Highway 19 changes and future road (vehicle) connections are made within Lantzville.
- Create a small Park and Ride along Industrial Road near Ware Road and formalize Superior Road/Highway 19 Park and Ride

TABLE OF CONTENTS

1.0 INTRODUCTION

The District of Lantzville Transportation Study reviews existing and long term conditions for vehicles, bicycles, pedestrians, and transit. The study reviews the existing road network and intersection operations as well as the long term expected traffic conditions and identifies accommodation for bicycles and pedestrians within the right-of-way. The need for future right-of-ways for all users will be considered as well as the cross sections for right-of-ways in Lantzville. A concept for the right-of-way within the Village core will be identified to improve the safety and walkability of the core as well as creating an identifiable Village compared to the surrounding area.

2.0 PUBLIC CONSULTATION

Two community open houses were utilized for this project to gather input and feedback on existing conditions and draft recommendations from the community.

2.1 Open House No. 1 – January 16, 2013

The initial open house for this project was held on January 16, 2013 at the Municipal Hall from 2:00pm to 4:00pm and 7:00pm to 9:00pm. Approximately 30 people attended the open house. The open house provided information on existing volumes, collision data, and existing plans regarding all modes of transportation. A presentation of the existing conditions was made during each session of the open house. An exit feedback form was made available to all attendees. The presentation and feedback form were posted on the District's website following the open house. Appendix A has the feedback forms from the open house.

A total of 14 feedback forms were received. The majority of respondents said sidewalks were a priority with the majority wanting the sidewalks in the Village core, and then Lantzville Road. Pedestrian connection to Woodgrove was also a strong desire by respondents. The majority of respondents said bicycle facilities were a priority with a majority wanting separated paths. Several respondents wanted more transit routes and more transit service. Speeding was identified as the main traffic issue. Multiple residents were against connecting Southwind Drive to Fawn Drive.

2.2 Open House No. 2 – March 14, 2013

The second open house was held on March 14, 2013 at the Municipal Hall from 2:00pm to 4:00pm and 7:00pm to 9:00pm. Approximately 24 people attended the two open house sessions. Information boards were provided on the proposed road classifications, the future traffic volumes and traffic operations, future network connections, major pedestrian and bicycle facilities, the proposed E&N trail alignment from Ware Road to Superior Road, cross section definitions, and a proposed Village core

streetscape. A presentation of the material was made available to all attendees. A feedback form and copy of the presentation was provided at the open house. Only one feedback form was received. The one respondent was neutral on the proposed Village concept, road classifications and cross sections, the proposed E&N Trail route, and the future connections. They did strongly support the proposed pedestrian/bicycle facilities, but strongly disagreed with the implementation of traffic calming. The respondent also asked 'what is the cost'. Appendix A has the feedback form and poster boards from the open house.

3.0 ROAD NETWORK

3.1 Data Collection

Traffic data were collected throughout Lantzville and the surrounding area to gather information on traffic volumes, vehicle classifications, speed and turning volumes. Table 1 shows a summary of the collected data locations, types, and dates.

Table 1: Summary of Collected Data

Location	Data Types	Date
Lantzville Rd West of Benwaldun Rd	Volume, Classification, and Speed	Dec 6 - 13, 2012
Lantzville Rd East of Huddlestone Rd	Volume, Classification, and Speed	Dec 6 - 13, 2012
Lantzville Rd West of Wiles Rd	Volume, Classification, and Speed	May 14 - 24, 2012
Dickinson Rd East of Medd Rd	Volume and Classification	Apr 25 - May 7, 2012
Dover Rd East of Schook Rd	Volume and Classification	Apr 25 - May 5, 2012
Aulds Rd East of Clark Dr	Volume and Classification	Apr 25 - May 7, 2012
Highway 19 West of Lantzville Rd	Volume	May 9 - 23, 2012
Highway 19 and Superior Rd	Turning Volume	June 4 - 11, 2012
Highway 19 and Ware Rd	Turning Volume	May 2 - 8, 2012
Highway 19 and Lantzville Rd	PM Turning Movement Count	Dec 5, 2012
Lantzville Rd and Leland Rd	PM Turning Movement Count	Dec 5, 2012
Lantzville Rd and Peterson Rd	PM Turning Movement Count	Dec 5, 2012
Lantzville Rd and Superior Rd	PM Turning Movement Count	Dec 5, 2012
Highway 19 and Bay View Dr	PM Turning Movement Count	Dec 5, 2012
Lantzville Rd and Dickinson Rd	PM Turning Movement Count	Dec 5, 2012
Superior Rd and Northwind Dr	PM Turning Movement Count	Dec 13, 2012

Figure 1 shows the locations of volume and classification counts and average daily traffic (ADT).

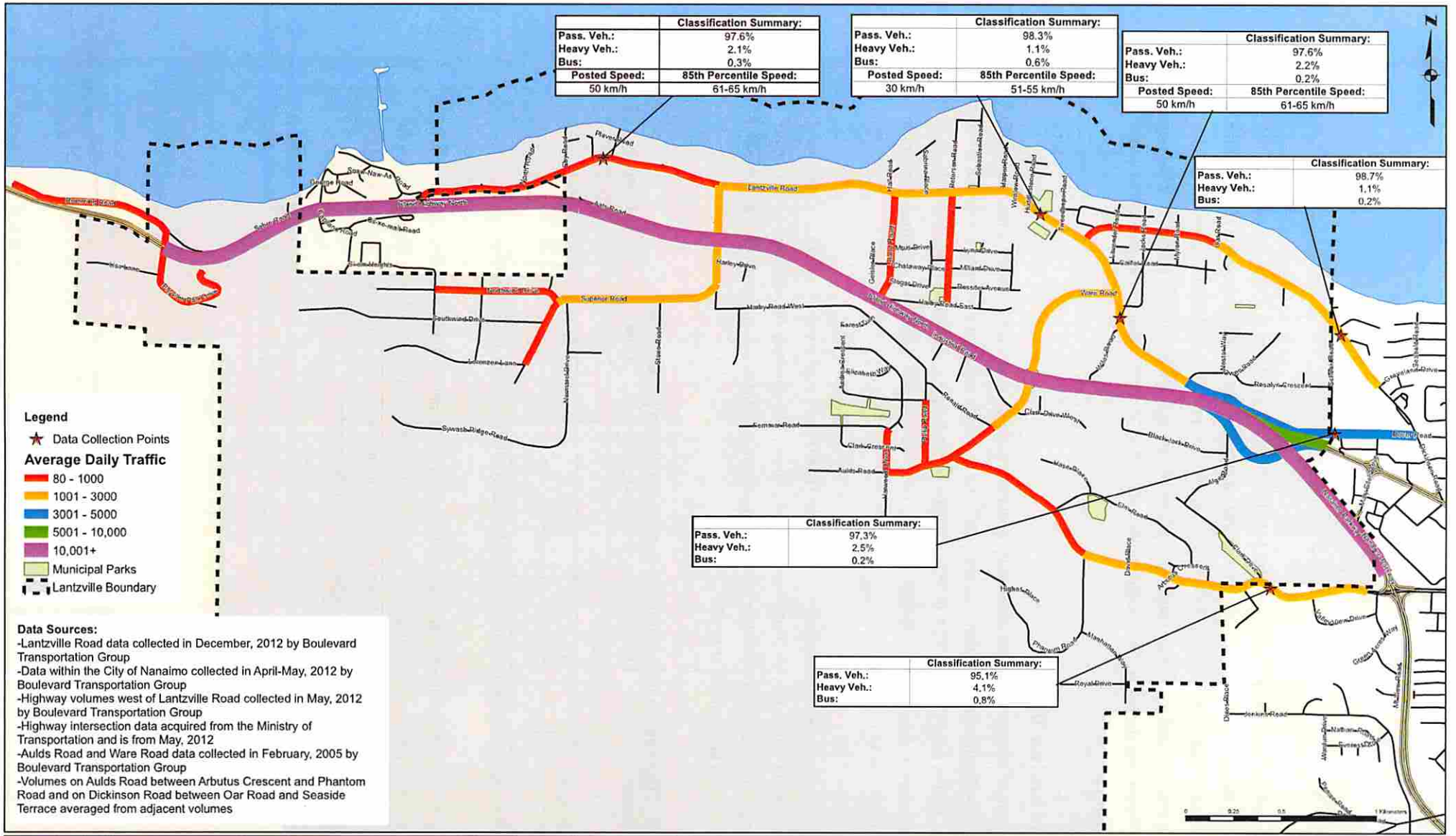

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Figure 1
2012 Annual Daily Traffic, Vehicle Classification and Speed Data
Lantzville Transportation Study

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

On Lantzville Road the percentage of truck traffic ranges from 1.7% to 2.4%. A review of 85th percentile speeds along Lantzville Road found that on either side of the Village core the 85th percentile speed is 61-65km/h and within the Village 51-55km/h. The posted speed limit on Lantzville Road is 50km/h except within the Village core where the speed limit is 30km/h. The 85th percentile speeds are 11 to 15km/h over the posted limit oustide of the core and to 21 to 25km/h over the posted limit within the Village core.

3.2 Collision Data

An analysis of collision data was undertaken to identify locations where road safety is a potential issue and to provide potential mitigation measures. Collision data were collected for Lantzville from ICBC's website for the years 2007 to 2011 including details on fatal, injury, and property damage collisions. The data were analyzed to identify high collision locations (overall) as well as high frequency crash locations by type of collision.

Table 2 shows a summary of property damage only (PDO) and casualty (injury and fatal) collisions at intersections in Lantzville on District and Ministry roads. The Ministry intersections have a higher percentage of casualty collisions than Lantzville intersections. This is due in part to being higher speed facilities with a high volume of traffic.

Table 2: PDO and Casualty Collisions at Intersections in Lantzville

Intersections	PDO	Casualty	Total	% Casualty
Lantzville Roads	18	8	26	31%
Ministry Roads	47	54	101	53%
Total	**65**	**62**	**127**	**49%**

Note: PDO refers to property damage only and casualty refers to injury and fatal collisions

Figure 2 shows the collision frequency at intersections throughout Lantzville. The intersection of Highway 19 / Ware Road, Highway 19 / Superior Road, and Highway 19 / Lantzville Road have the highest collision frequencies (over 5 per year). The higher frequency of collisions on Highway 19 is attributed to the larger volumes and higher speeds of the facilities.

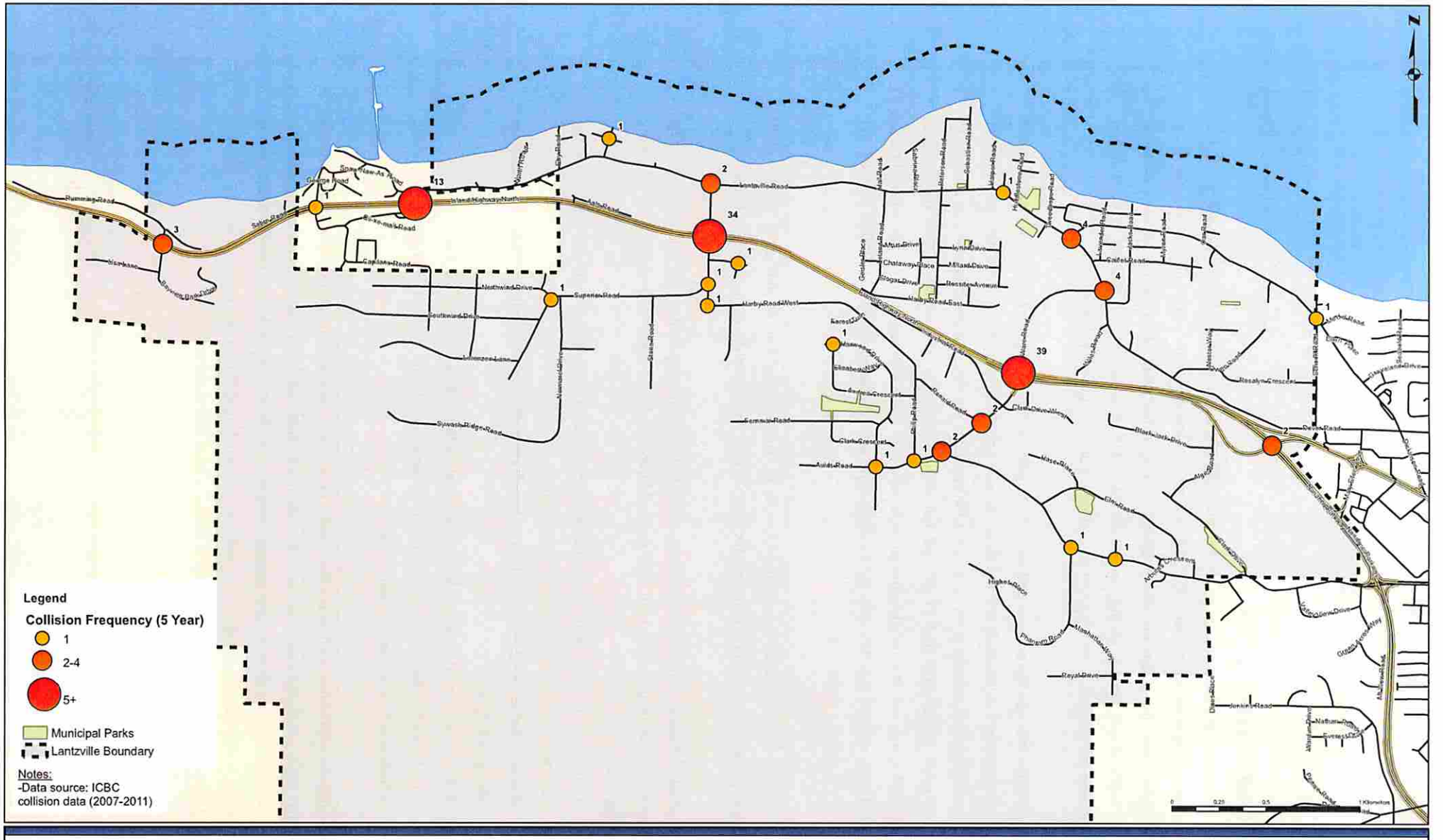

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Figure 2
2007-2011 Collision Frequency and Locations
Lantzville Transportation Study

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

3.3 Road Classification

Lantzville's road classifications are defined in the *Official Community Plan (OCP)* and *Bylaw 55*. The defined road classifications in the *OCP* indicate where desired major roads/journeyways and local roads/journeyways are within the community. This may differ from observed use of the roadways. Ideally, roads should operate as they are classified, if not, they should be reviewed to determine if improvements or changes to the physical road or road classification are required.

Road classifications are hierarchical and rank the function of the road from high vehicle mobility and low access to lower vehicle mobility and direct access. Local roads give priority to direct access over vehicle mobility and typically carry less than 1,000 vehicles per day. Collector roads, also referred to as Major roads in the *OCP* and *Trails and Journeyways Strategy*, give equal priority to vehicular mobility and access, while typically carrying between 1,000 and 8,000 vehicles per day. Arterial roads give priority to vehicle mobility over direct access and serve between 5,000 and 30,000 vehicles per day.

Arterial roads are referenced in *Bylaw 55* with a cross-section, but do not exist in the *OCP classification map*. There is no expectation for arterial roads for Lantzville in the foreseeable future.

There are discrepancies between the roadway classification definitions in the *OCP* and *Bylaw 55*. The *OCP Map No.6* only identifies two road types, Major and Local. *Bylaw 55* defines the following roadways:

- Collector Road: any road directly connecting to an arterial highway at one end and connecting to a rural or residential road on the other end.
- Local / Residential Road: a road that carries light traffic volumes with an origin or destination along its length.
- Major Road: a road designated as a major road in the Official Community Plan.
- Rural Road: a road in a rural zone and located outside the Urban Containment Boundary, which is not a collector or major road.

Comparing the *OCP Map No.6* to the definitions in *Bylaw 55* and the function of the roads, it would seem that major roads and collector roads are one in the same. Going forward, it is recommended that these roads are referred to as **Major Roads**. Similarly the local and residential labels are one in the same and it is recommended that these roads be referred **Local Roads**. **Figure 3** shows the existing roadway network definition for Lantzville in terms of local and major roads.

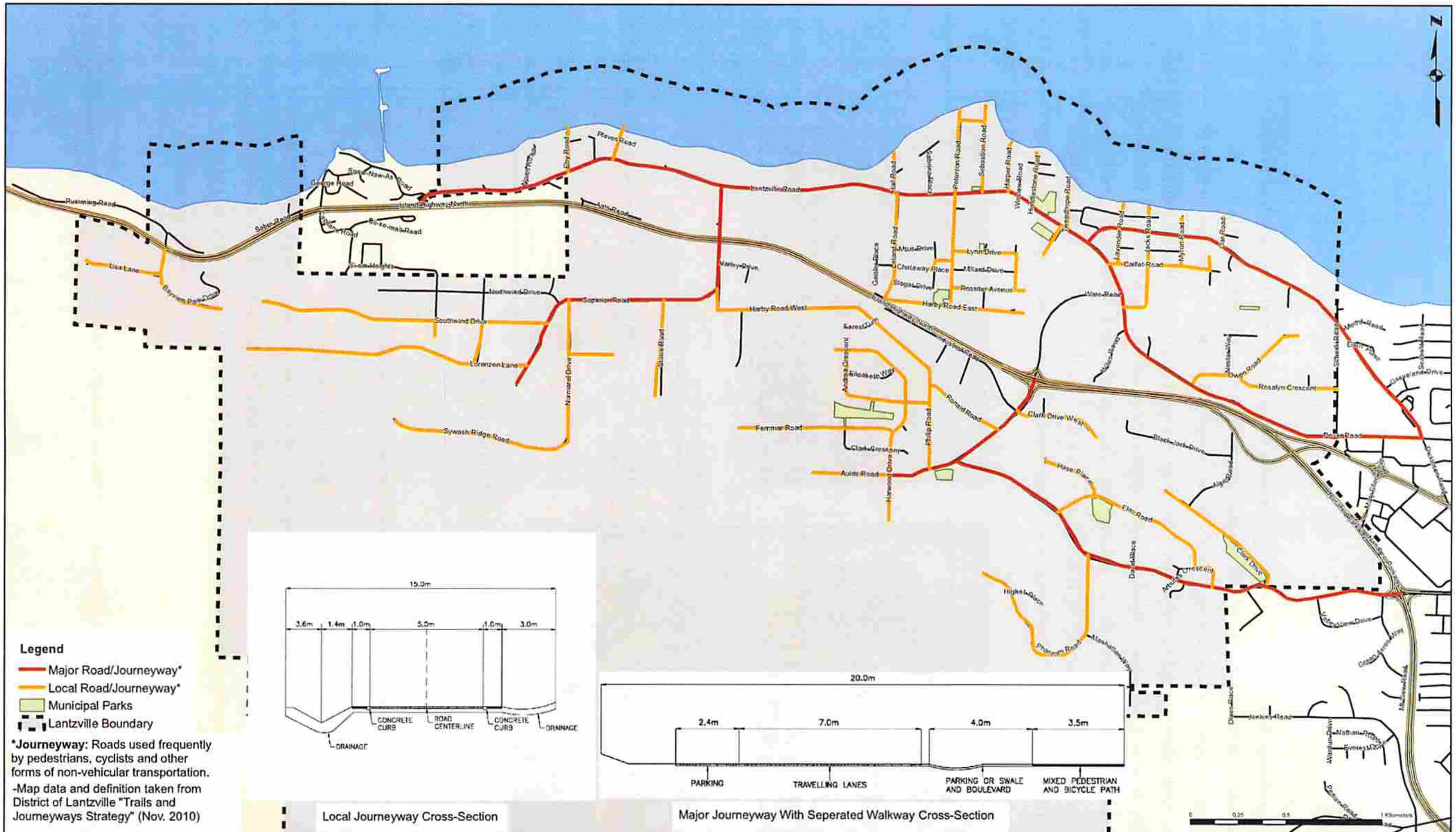

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Figure 3

Existing Road Classifications

Lantzville Transportation Study

Figure 4 compares the TAC road classification definitions with the existing road network in Lantzville based on measured traffic volumes. It indicates that for Lantzville Road and Ware Road in the Village Comprehensive Area the volumes are slightly below a major (collector) road for an urban area. Superior Road, Dickinson Road, Aulds, and Ware Road are appropriately classified as major roads. Lantzville Road west of Superior Road has low volumes and is identified as a local road based on volumes even though it is classified as a collector road. This classification is based on the function of the road in terms of connectivity to Highway 19 rather than based on volumes alone. **Figure 5** illustrates the proposed road classifications to include several missing road classifications on the existing map.

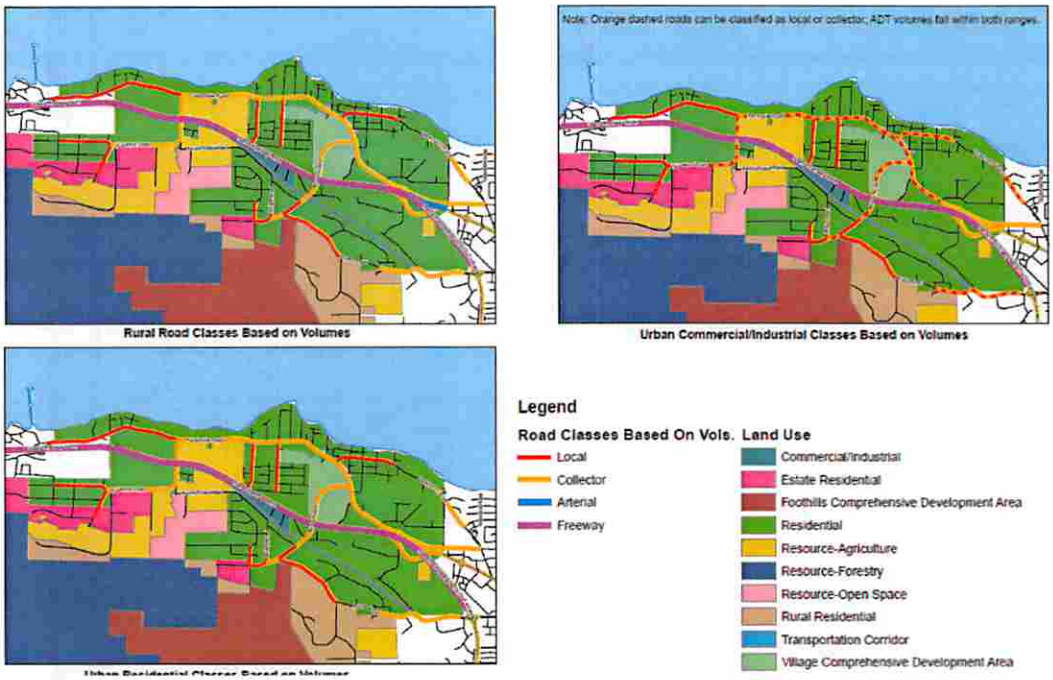

Figure 4 – Existing ADT versus TAC Definitions

3.4 Road Cross-Sections

The District of Lantzville defines the road cross-sections in *Bylaw 55*. There are four that are typical to Lantzville. They are as follows:

- Rural Local Street (R1SS): 5.0m roadway with two 1.0m shoulders.
- 6.5m Residential Road (R2SS): 6.5m roadway with two 1.0m shoulders and a 1.5m sidewalk.
- 7.5m Residential Road (R3SS): 7.5m roadway with two 1.0m shoulders and a 1.5m sidewalk.
- 8.0m Collector Road (R4SS): 8.0m roadway with a 1.0m shoulder and a 2.5m multi-use path.

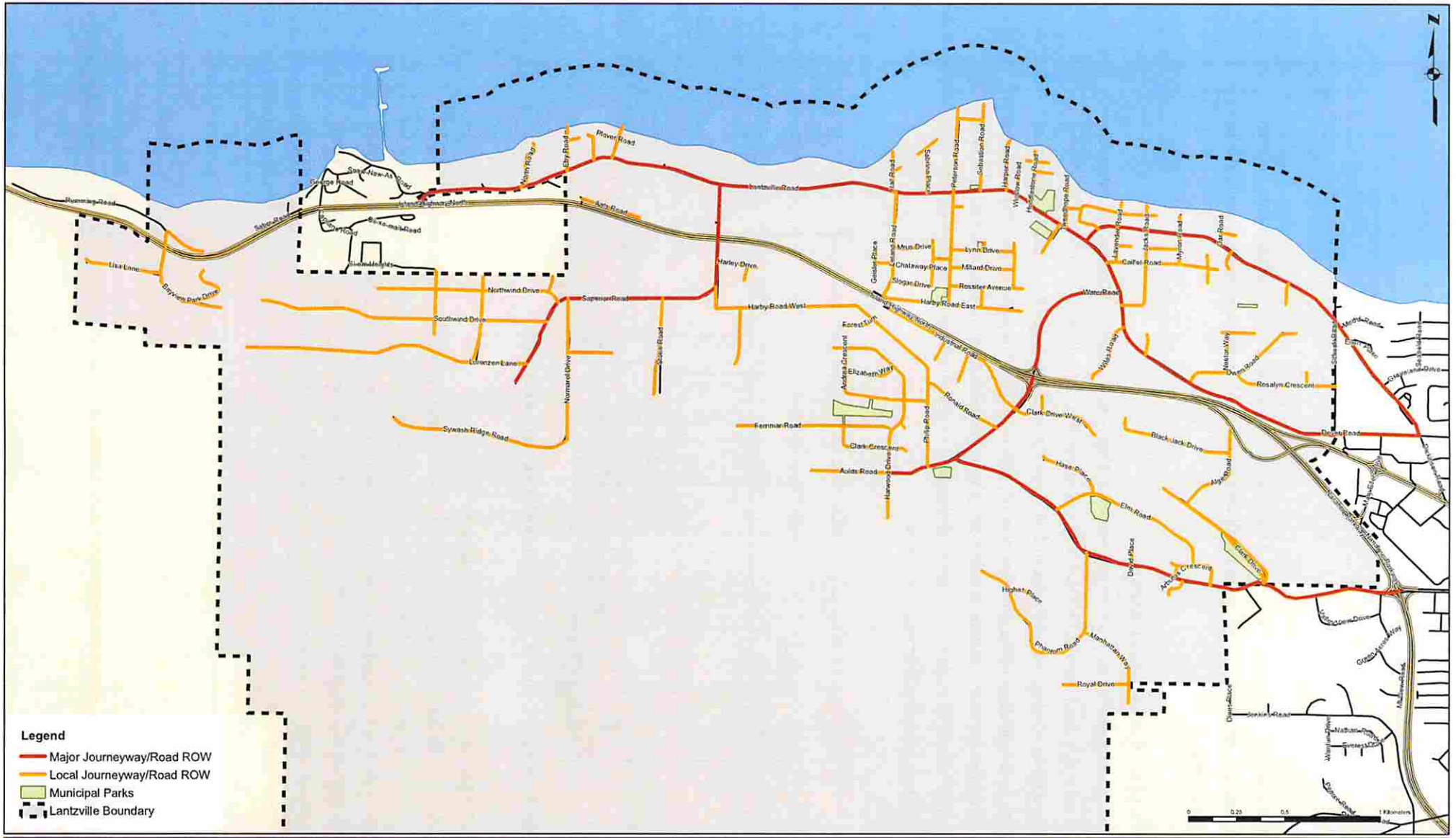

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Figure 5
Proposed Road Classifications
Lantzville Transportation Study

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

Definitions for the cross-sections in *Bylaw 55* will need to be updated to be consistent with the road classifications. A definition for curbing and additional details on bio-swale requirements should also be added to the bylaw.

3.4.1 R1SS: Rural Local Street

The R1SS: Rural Local Streets cross-section (shown in **Figure 6**) are narrow (5.0m asphalt width), low capacity roads that should limited to 30 km/h design speeds. This cross section should be re-labelled as **5.0m Local Road**. Cyclists are accommodated on the pavement by the large gaps in traffic, pedestrians have 1.0m paved shoulders (although bylaw does not define if shoulder is paved or gravel) to walk on, and on-street parking is not possible on both sides. It is recommended that the capacity of this roadway cross-section should be limited to a combined threshold of 400 road users (vehicles, bicycles, and pedestrians) per day and a 30 km/h design speed.

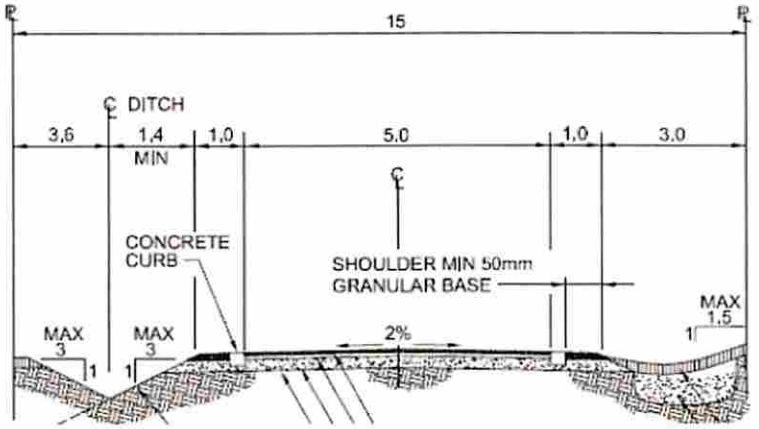

Figure 6: R1SS - Rural Local Street Cross-Section

3.4.2 R2SS: 6.5m Residential Road

The R2SS: 6.5m Residential Road cross-section (shown in **Figure 7**) provides a 6.5m asphalt width for a local road. It is recommended that this cross section be re-labelled as 6.5m Local Road. A 1.5m sidewalk (asphalt or concrete) on one side accommodates pedestrians. Due to the low speed and low volumes cyclists will share the road with vehicles. It is recommended that this cross-section have a 30km/h design speed and a capacity combined threshold of 400 to 800 road users (vehicles, bicycle, and pedestrians) per day.

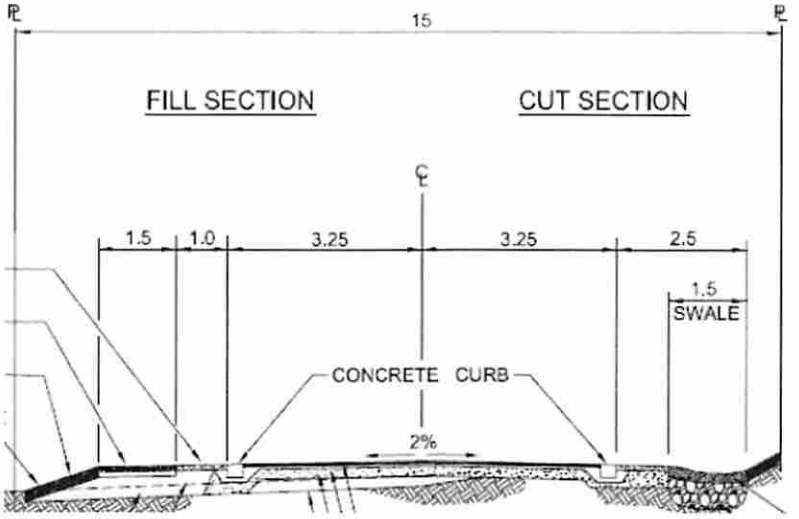

Figure 7: R2SS 6.5m Residential Road Cross-Section

3.4.3 R3SS: 7.5m Residential Road

The R3SS: 7.5m Residential Road cross-section (shown in **Figure 8**) has an asphalt width of 7.5m and two 1.0m gravel shoulders. A 1.5m sidewalk (not defined as concrete or asphalt) provides pedestrian accommodation on one side of the roadway. This cross section should be re-labelled as 7.5m Local Road and the type of sidewalk material defined. It is recommended that the design speed, for this road type, be limited to 50km/h and the capacity to less than 1,000 users per day.

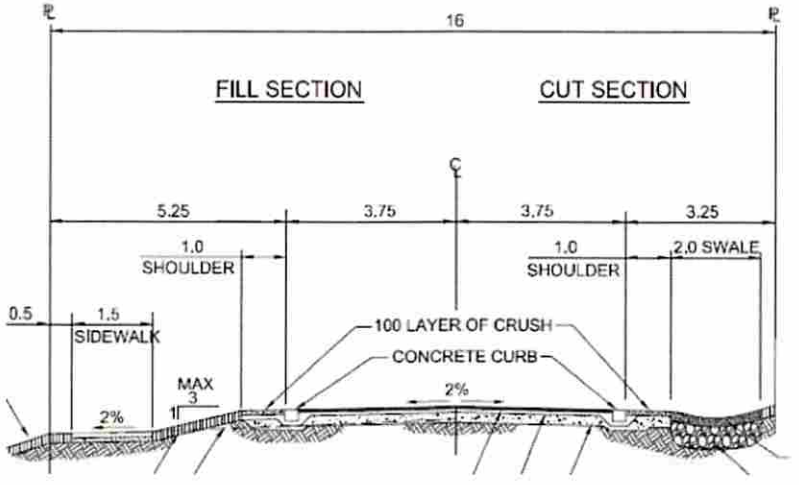

Figure 8: R3SS 7.5m Residential Road Cross-Section

3.4.4 R4SS 8.0m Collector Road

The R4SS: 8.0m Collector Road cross-section provides an 8.0m asphalt width, a 1.0m gravel shoulder on one side, and a 2.5m multi-use (concrete) path on the other side. This cross section should be re-labelled as 7.5m Major Road. It is recommended that shoulders be provided on both sides and that the multi-use path be 3.0m and reducing the road asphalt width to 7.5m.

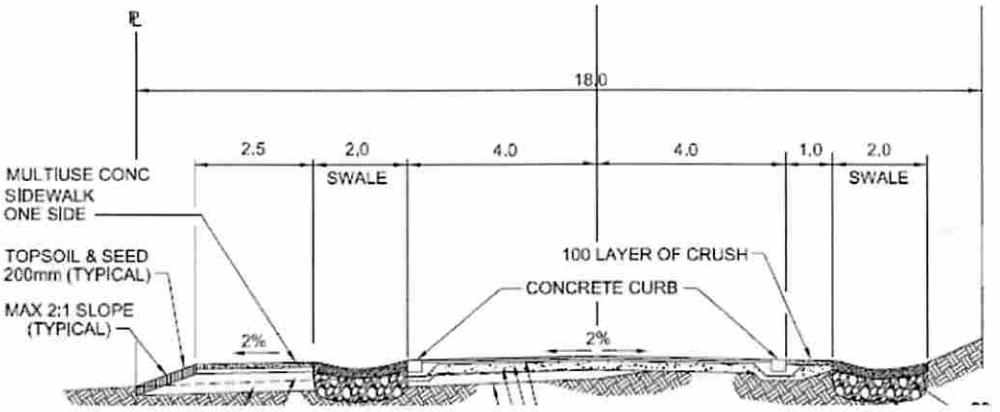

Figure 9: R4SS Collector Road Cross-Section

3.4.5 Other Notes on Cross-Sections

The R4SS: Collector Road cross-section is not practical for the downtown village area. It is recommended that major road within the downtown village area have 2.0m (minimum) sidewalks on both sides and 4.3m shared lanes for vehicles and bicycles. A cross section should be developed and added to the bylaw called Village Core.

There are several additional cross sections within Bylaw 55 that should be removed. The R1SS: Rural Local Highway Cross Section with Curb cross section should be removed as it is the same as the R1SS: Rural Local Street Cross-Section. The two cross sections for wiring do not match the existing 7.5m Local Road cross sections in terms of road right-of-way. R6SS and R7SS cross sections should be updated to match either the 7.5m Local Road cross section or the 7.5m Major Road cross section. The label for the sections should be updated to remove the word 'highway'.

Future amendments to *Bylaw 55* should also include a statement regarding that the right-of-way may be required to be wider than the typical to allow safe construction of the road (cut/fill slopes). Also a review of swales should be made to establish a range of depths to provide effective drainage while maintain low impact designs.

3.5 Existing Traffic Conditions

The traffic volume data was used to analyze the existing PM peak hour traffic conditions using Synchro software. Synchro is a two part software program that models and micro-simulates traffic conditions. Synchro utilizes the Highway Capacity Manual methodology. The Synchro analysis yields measures of effectiveness – Level of Service (LOS), queue lengths, and delays. LOS is based on the type of traffic control and delay and ranges from LOS A (excellent operations) to LOS F (unstable/failing). Movements at a LOS C or better are considered to be acceptable and reasonable conditions in Lantzville. LOS D is considered to be the threshold, particularly at traffic signals, for when improvements should be considered. See *Appendix B* for additional background information on the Synchro modelling software and Levels of Service.

3.5.1 Traffic Volumes

The PM peak hour traffic volumes were collected in December 2012 within Lantzville. A review of PM peak hour traffic volumes on Highway 19 (at Superior Road and Ware Road) from 2005 to 2012 was undertaken. PM peak period traffic counts were undertaken between 3pm and 5pm. Analysis of the data found that Lantzville traffic peaked between 3pm and 4pm while Highway 19 traffic peaked between 4pm and 5pm. Further review of the Lantzville traffic found that there is minimal difference in the traffic volumes between 3pm and 5pm. Therefore 4pm to 5pm is the PM peak hour for the Lantzville area. **Figure 10** shows the PM peak hour of traffic.

The following is a summary of areas where traffic volumes have changed (increase/decreased):

- Highway 19 (increased 2% per year)
- Superior Road (increased 3% per year)
- Ware Road North of Highway 19 (decreased 5% per year)
- Ware Road South of Highway 19 (decreased 1% per year)

3.5.2 2012 PM Peak Hour Traffic Operations

During the PM peak hour intersections with movements at LOS D occur at the signalized intersections Highway 19 / Ware Road and Highway 19 / Superior Road. The unsignalized intersection of Highway 19 / Lantzville Road has LOS F for southbound right movements from Lantzville Road onto Highway 19. The Ministry will need to make adjustments to the signal timing to improve the LOS at their intersections. Currently, large cycle lengths contribute to lower LOS for individual movements. Table 3 outlines the movements in the PM peak hour that are below a LOS C. See **Figure 11** for details per intersection.

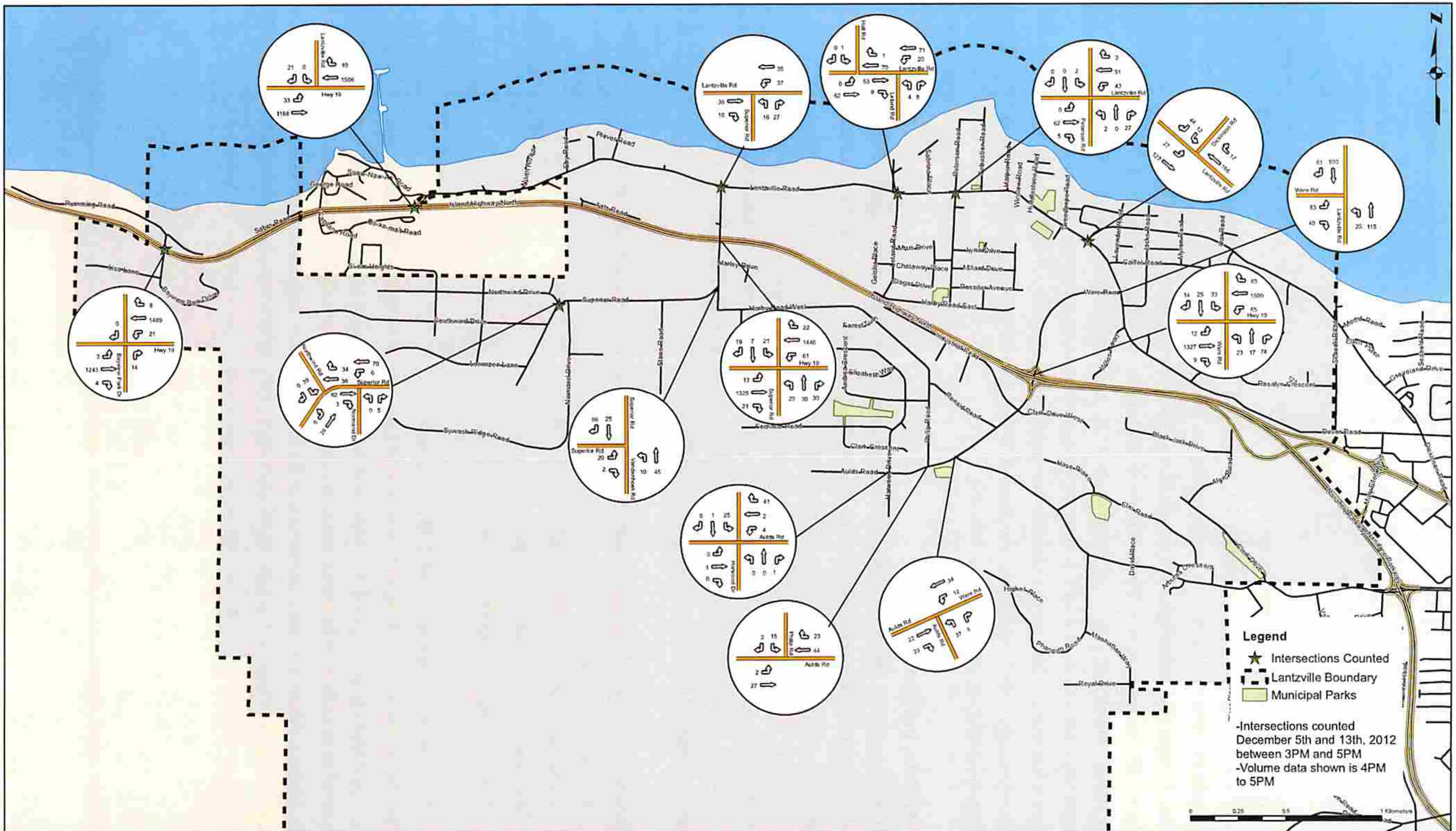

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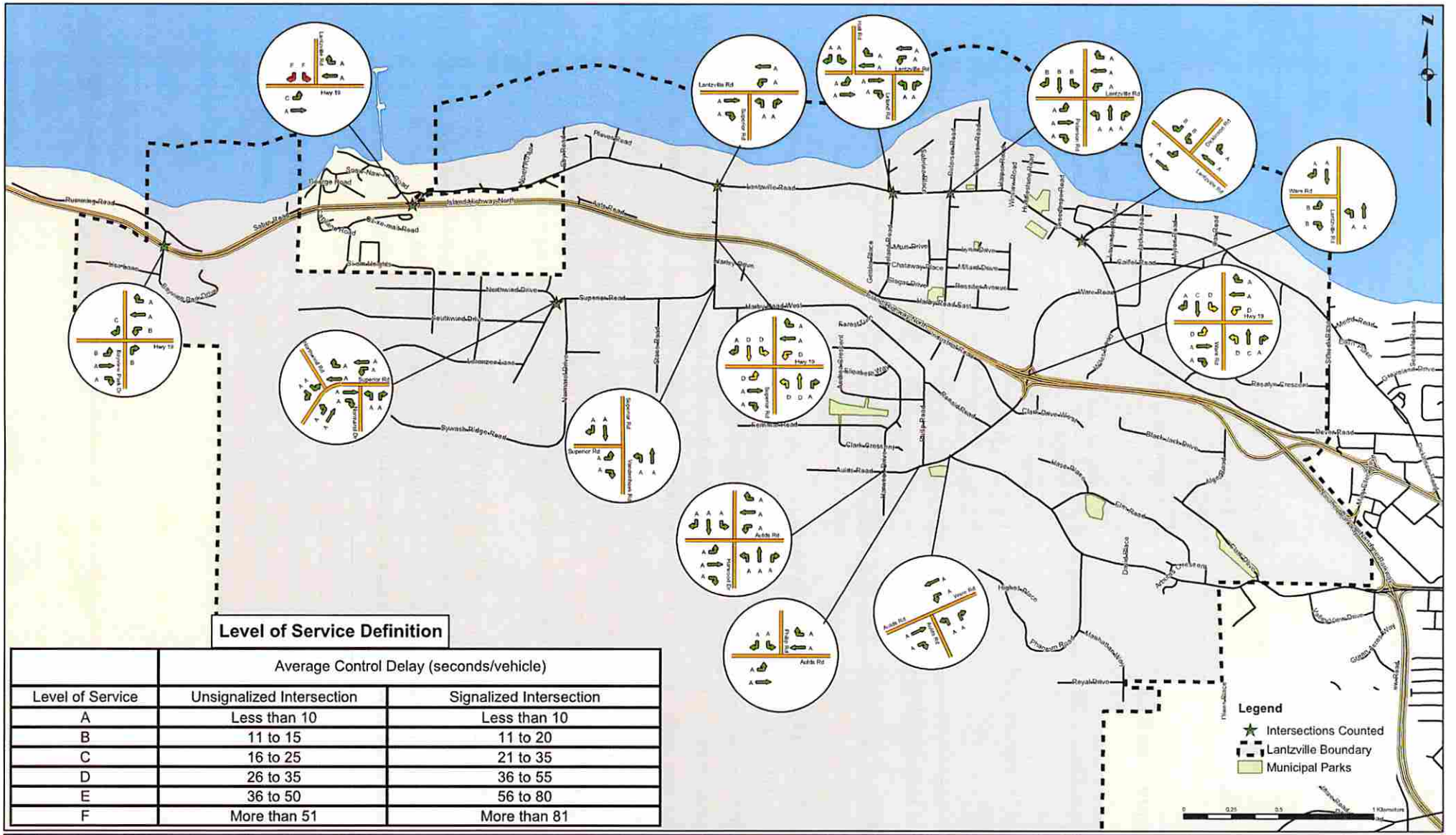
Figure 10
2012 PM Peak Hour Traffic Volumes
Lantzville Transportation Study



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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Figure 11
PM Levels of Service
Lantzville Transportation Study

Table 3: PM Peak Hour Turning Movements Below LOS C

Intersection	Turning Movement	LOS
Highway 19 / Ware Road	Northbound Left / Through	D
	Southbound Left / Through	D
	Eastbound Left	D
	Westbound Left	D
Highway 19 / Superior Road	Northbound Through	D
	Southbound Through	D
	Eastbound Left	D
	Westbound Left	D
Highway 19 / Lantzville Road	Southbound Right	F
	Southbound Left	F

Note: Directions are cardinal and therefore, Highway 19 runs east / west

3.6 Future Traffic Conditions

3.6.1 Traffic Volumes

Residential developments are planned to occur throughout Lantzville in the Foothills Estate, Upper Ware, Lower Ware, and Clark Drive areas. The Foothills Estates is a planned residential development identified specifically in the *OCP* featuring specific land use requirements. The rest of the developments are less specific and are accounted for in the growth of the background traffic at 3.5% per year. The following section describes the future conditions with the Foothills Estate build-out and the 3.5% per year background traffic. To account for the impact of other developments, traffic impact assessments should be required where a development generates more than 100 trips per hour.

The Foothills development will be located to the south of the escarpment in Upper Lantzville. From the *OCP*, the land use is planned to incorporate a maximum of 730 single family residential units, 365 hectares of park land, one satellite fire hall, and a 50,000 ft^2 of commercial/retail. For the purposes of the analysis, build-out is staged in 5-year increments for a 20-year full build-out scenario.

It is assumed that the development of the Foothills Estate will have slightly higher housing development in the first 10 years. The build-out assumptions are:

- Years 1-5: 185 single family dwellings and the public park;
- Years 6-10: 185 single family dwellings plus 25,000 ft^2 of the neighbourhood retail development;
- Years 11-15: 180 single family dwellings; and
- Years 16-20: 180 single family dwellings, the remaining 25,000 ft^2 of neighbourhood retail.

The proposed Foothills Development will generate up to a total of 995 trips per hour (PM peak hour) with 579 of the trips entering and 416 trips exiting in the peak hour. Additional information for trip generation and trip assignment can be found in *Appendix C*.

In addition to the Foothills development there is the potential for other in-fill or small scale developments to occur in Lantzville. Traffic for these potential developments was projected using a 3.5% per year growth rate for all traffic volumes within Lantzville (excluding Highway 19). The Highway 19 traffic was projected to the 20 year horizon using a 2.5% per year trip rate.

3.6.2 Interim (5, 10, 15 Year Horizon) Operations

Interim horizon years for 5 years, 10 years, and 15 years were reviewed with the projected growth and Foothills development. The results of the interim analysis found that no improvements are required to the Lantzville road network before full build out of the Foothills (20 year horizon). The District should continue to work with the Ministry of Transportation and Infrastructure (MoT) to ensure appropriate signal timings are maintained along the Highway signalized intersections in Lantzville.

3.6.3 20-Year Horizon PM Peak Traffic Operations

The 20-year traffic conditions are the sum of the 20-year 3.5% per year growth plus the trips generated from the Foothills Estate development. **Figure 12** shows the PM peak turning volumes and **Figure 13** shows the 20 year horizon LOS. Table 4 shows the 20-year traffic conditions.

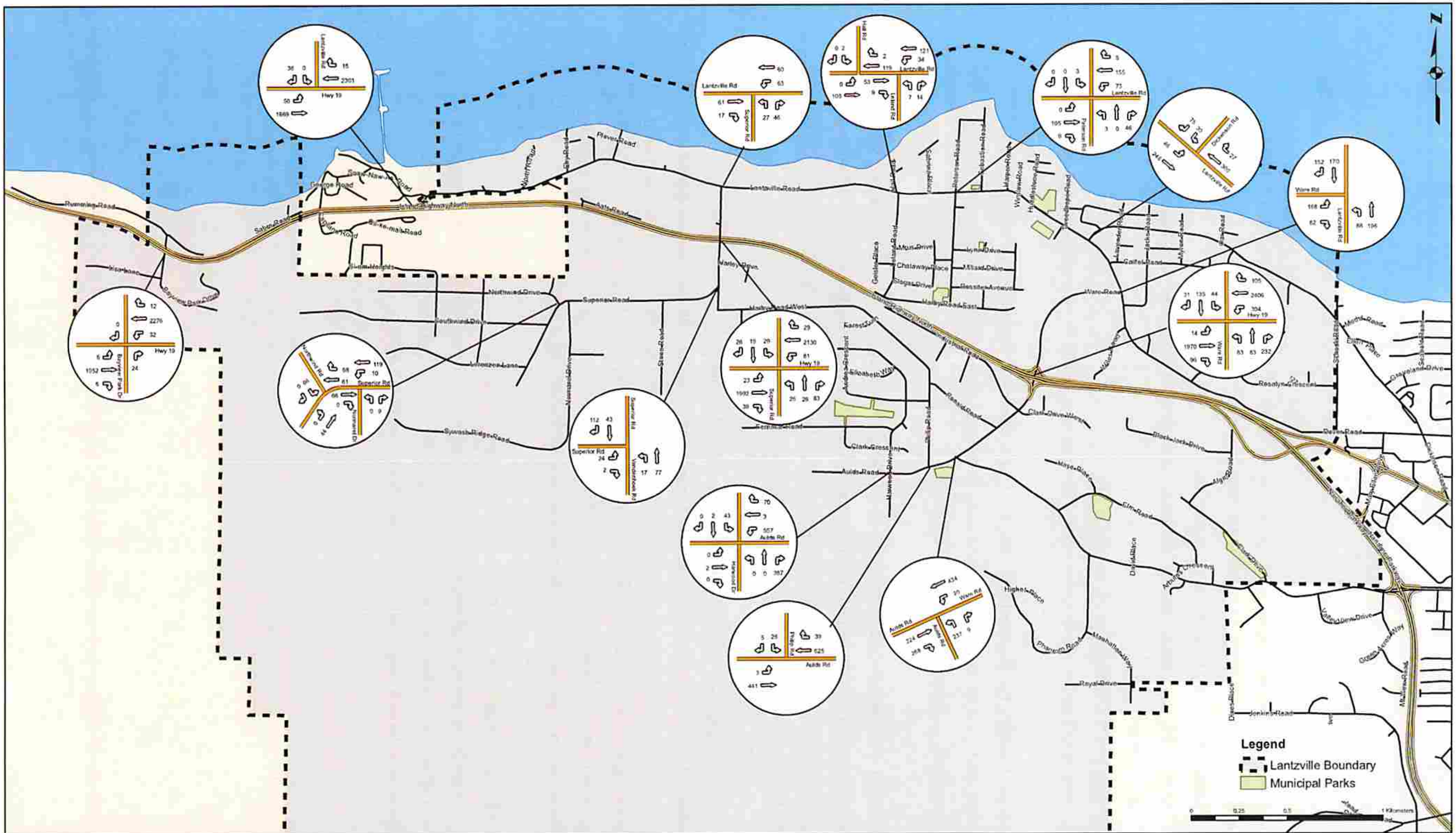

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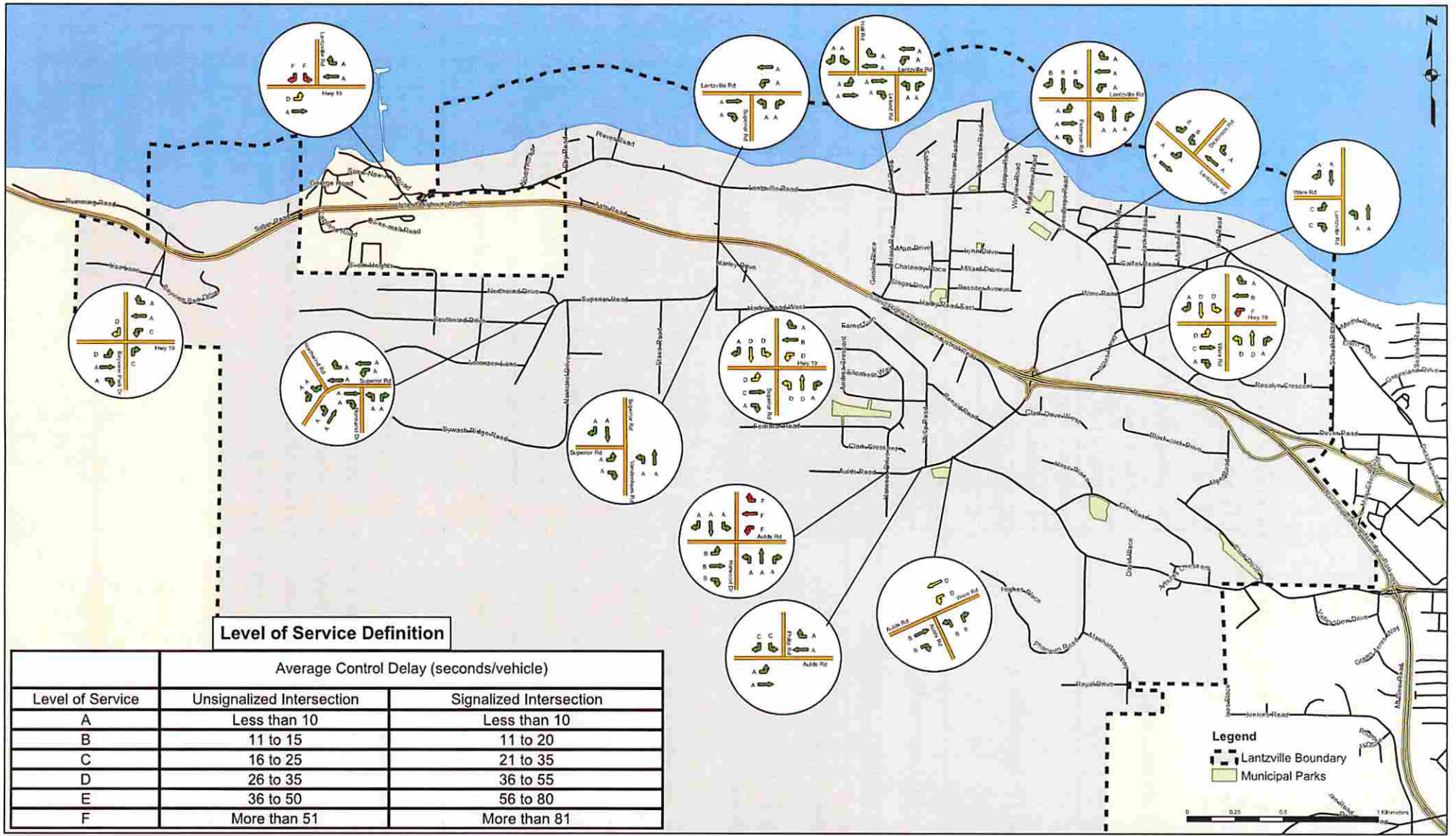
Figure 12
2032 PM Peak Hour Traffic Volumes - With Foothills Development Traffic

Lantzville Transportation Study



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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Figure 13
2032 PM Levels of Service - With Foothills Development Traffic
Lantzville Transportation Study

Drawn By: BA Date: Mar 11/19 File: 1473

Table 4: 20-Year Full Build-Out Turning Movements Below LOS C

Intersection	Turning Movement	LOS
Highway 19 / Ware Road	Northbound Left / Through	D
	Southbound Left / Through	D
	Eastbound Left	D
	Westbound Left	F
Highway 19 / Superior Road	Northbound Through / Left	D
	Southbound Through	E
	Eastbound Left	E
	Westbound Left	E
Highway 19 / Lantzville Road	Southbound Right	F
	Eastbound Left	D
Highway 19 / Bayview Park Drive	Eastbound Left	D
Aulds Road / Ware Road	Eastbound Through / Right	D
	Westbound Left / Through	D
Aulds Road / Harwood Road	Westbound Left / Through / Right	F

Note: Directions are cardinal and therefore, Highway 19 runs east / west

Multiple movements at Highway 19/Ware Road and Highway 19/Superior Road will be at a LOS D or worse. Improvements along this corridor will require coordination with MoT. Highway 19 / Lantzville Road has been indicated by MoT as being the location of a future traffic signal. The timing of the traffic signal is dependant on the safety of the intersection and potential development on the Nanoose Indian Reserve. In the long term the levels of service to access Bayview Park Drive will drop to a LOS D. Consultation with MoT will be required to determine the appropriate traffic control at this intersection in the long term and if the vehicle connection to Southwind Drive should be implemented in the long term.

Aulds Road / Ware Road has LOS D for the eastbound and westbound movements. A roundabout could be considered as a future upgrade for this intersection. Aulds Road / Harwood Road will operate at a LOS F for the westbound movement due to the large volume of westbound left turning traffic to access the Foothills. A roundabout or re-alignment of Aulds Road to Harwood Road as the major route are mitigation options for this intersection in the long term.

3.6.4 Implementation

The implementation of capital improvements for the roadway network are identified for Aulds Road / Ware Road and Aulds Road / Harwood Road and will be required between year 16 and 20. The capital plan for these improvements are shown in Table 5.

Table 5: Implementation for Intersection Improvements

Year	Intersection	Mitigation	Cost
16-20	Aulds Road / Ware Road	Add roundabout	$400,000
16-20	Aulds Road / Harwood Road	Add roundabout	$400,000
		TOTAL	**$800,000**

4.0 ROUNDABOUTS

The District of Lantzville does not currently have any roundabouts (or circular intersections). Roundabouts can be an alternative traffic control for upgrading intersections rather than using four-way stops or traffic signals. At this time the replacement of functioning traffic signals with roundabouts is not recommended. Potential roundabouts should be limited to unsignalized intersections requiring upgrading. Roundabouts are not recommended for all locations and each location that is in need of upgrading should be assessed to determine the appropriate type of traffic control. It is recommended that roundabouts be assessed, along with other options, when upgrading is required. The assessment of an intersection upgrade should include traffic operations (delays, queues, and emissions), geometrics (number of lanes, grades, inscribed diameter, entries and exits), drainage and right of way identification.

4.1 Roundabout Advantages

Roundabouts operate with vehicles yielding to traffic within the roundabout circulatory road compared to stop-and-go traffic at a four-way or signalized intersection. The yielding nature of a roundabout typically allows for a roundabout to operate more efficiently than a traffic signal. Roundabouts are better able to adapt to time of day traffic and handle high volumes of turning traffic compared to a traffic signal. Less stop and go traffic (more continuous) relates to carbon and general emission reductions due to reduced idling at intersections. Modern roundabouts operate safer than conventional intersections (signals, two and four way stops) due to reduced speeds, significantly lower conflict points (32 versus 8), and the types of collisions (side-swipe versus head-on).

4.2 Roundabout Disadvantages

Roundabouts are typically more expensive to implement than traffic signals during construction; however, typically in the long term the maintenance costs are lower, due to the lack of need for power to run the signal and signal maintenance. Maintenance costs for a roundabout can be high depending on the nature of the centre island – fountains, lights, and seasonal plantings can increase long term costs. Roundabouts can be located at the base (sag) of a vertical curve with appropriate design parameters; however roundabouts should not be located at the crest of a vertical curve.

Roundabouts need more right of way at the intersection of two roads compared to traffic signals, but can require less on the approaches due to the lack of turn lanes. Typical inscribed diameters (curb diameter) for single lane roundabouts are between 35m and 46m. Roundabouts should be located on grades less than 4%; however, roundabouts have been designed on roads with grades up to 10%.[1]

4.3 Pedestrian and Cycling Accommodation

Pedestrians are well accommodated at roundabouts with a sidewalk or multi-use path around the outside of the roundabout and crosswalks at each leg of the intersection. The splitter island provides a refuge for pedestrians to stop and observe the next lane of traffic before crossing the second lane of traffic. Cyclists are accommodated by integrating with the vehicle traffic, which is travelling at similar speeds to the cyclist, while travelling through the roundabout. Alternatively a cycling/multi-use path around the roundabout can be created to allow cyclists to avoid integrating with traffic in the circulating roadway.

5.0 TRAFFIC CALMING

The traffic calming policy can be found in Appendix D.

5.1 Background

A Traffic Calming Policy provides guidance on the administration, planning, design and implementation of traffic calming in Lantzville. The policy will present 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.

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. 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.

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. In addition, the rural nature of Lantzville with limited perceived surveillance (treed/limited sightlines from buildings/houses to road) and paved shoulders adding to the perceived road width also encourages speeding. This can result in a reduction of the real and perceived safety of residents and road users. 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.

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. The cross-section of different road classifications (urban or rural) will directly affect the implementation of traffic calming measures.

5.2 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. These traffic calming devices define the existing edges of the Village core.

[1] *Page 6-86 of the NCHRP Report 672 Roundabouts: An Informational Guide Second Edition*

Raised pedestrian crosswalk (left) and maximum speed sign (right)

5.3 Evaluation Criteria Matrix for District Roads

Table 6 outlines the proposed basic threshold considerations to determine where implementation of traffic calming measures may be warranted.

Table 6: Road Classification Threshold Limits to Application of Traffic Calming

Road Classification	Threshold Limits	
Local Roadway/Journeyway	• 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 Roadway/Journeyway	• Traffic Volume: • Operating Speed:	> 5,000 vehicles per day > 10km/h over posted speed limit
Others items/areas to consider	Adjacent Land Use	Commercial land use, playgrounds, schools

The traffic calming policy identifies the procedures to initiating a traffic calming study and/or the implementation of traffic calming devices. The policy outlines how a traffic calming study is initiated, what are the principles of traffic calming, which roadways qualify for traffic calming, and what are the steps of a traffic calming study.

5.4 Potential Traffic Calming Devices

There is a wide range of traffic calming devices available to be utilized. The following outlines the appropriate devices for use in Lantzville. Traffic calming devices should be reviewed and designed for each specific location and issue. These devices are not 'one size fits all'.

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. Therefore horizontal and vertical solutions are acceptable. **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. Table 7 features descriptions of general traffic calming features.

Table 7: Descriptions of General Traffic Calming Measures

Vertical Deflection	**Obstruction**
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. The following are vertical deflection measures that could be utilized in Lantzville: • Raised crosswalk • Raised intersection • Speed hump • Speed cushion • Textured crosswalk	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. These devices can be very restrictive to vehicle movements. • Direct closure • Diverter • Full closure • Intersection channelization • Raised median through intersection • Right in/right out

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. Horizontal deflection devices include: • Chicanes • Curb extension • Curb radius reduction • Raised median island • Traffic circle	**Signage** Signage features regulate traffic movements within a neighbourhood; however, signage has a limited impact on modifying behaviours. **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 / Speed Reader Sign • In-ground lighting

6.0 FUTURE CONNECTIONS

Future connections can take the form of a trail, multi-use path or journeyway (all users). Future connections require right-of-way to allow for the construction of a connection. The location for future right-of-way is required to be identified to allow the District to be aware of the need for the right-of-way to avoid missed opportunities during rezoning and subdivision. See **Figure 14** for proposed future connections.

Multiple areas of Lantzville have been identified as locations for future connections. The need for these connections to include vehicle access is expected to be longer term and could be utilized as trails / multi-use trails in the shorter term.

6.1 Southwind Drive to Fawn Drive

There is only one property separating the existing right-of-ways for Fawn Drive and Southwind Drive; however there is more than 550m between the two existing ends of the roadways. The right-of-way through the remaining property should be obtained to allow for a continuous right-of-way. In the short term (after the right-of-way is obtained) a multi-use trail should be implemented between the end of Southwind Drive and Fawn Drive. A multi-use trail connection would provide pedestrian/bicycle connectivity for residents of West Lantzville to the rest of Lantzville. Creating a vehicle connection between the two roadways is not required in the long term from a capacity perspective; however since West Lantzville's access is solely from Highway 19 at an unsignalized intersection there may be a need for a vehicle connection should MoT decided to modify/close the existing Bayview Park Drive/Highway 19 intersection.

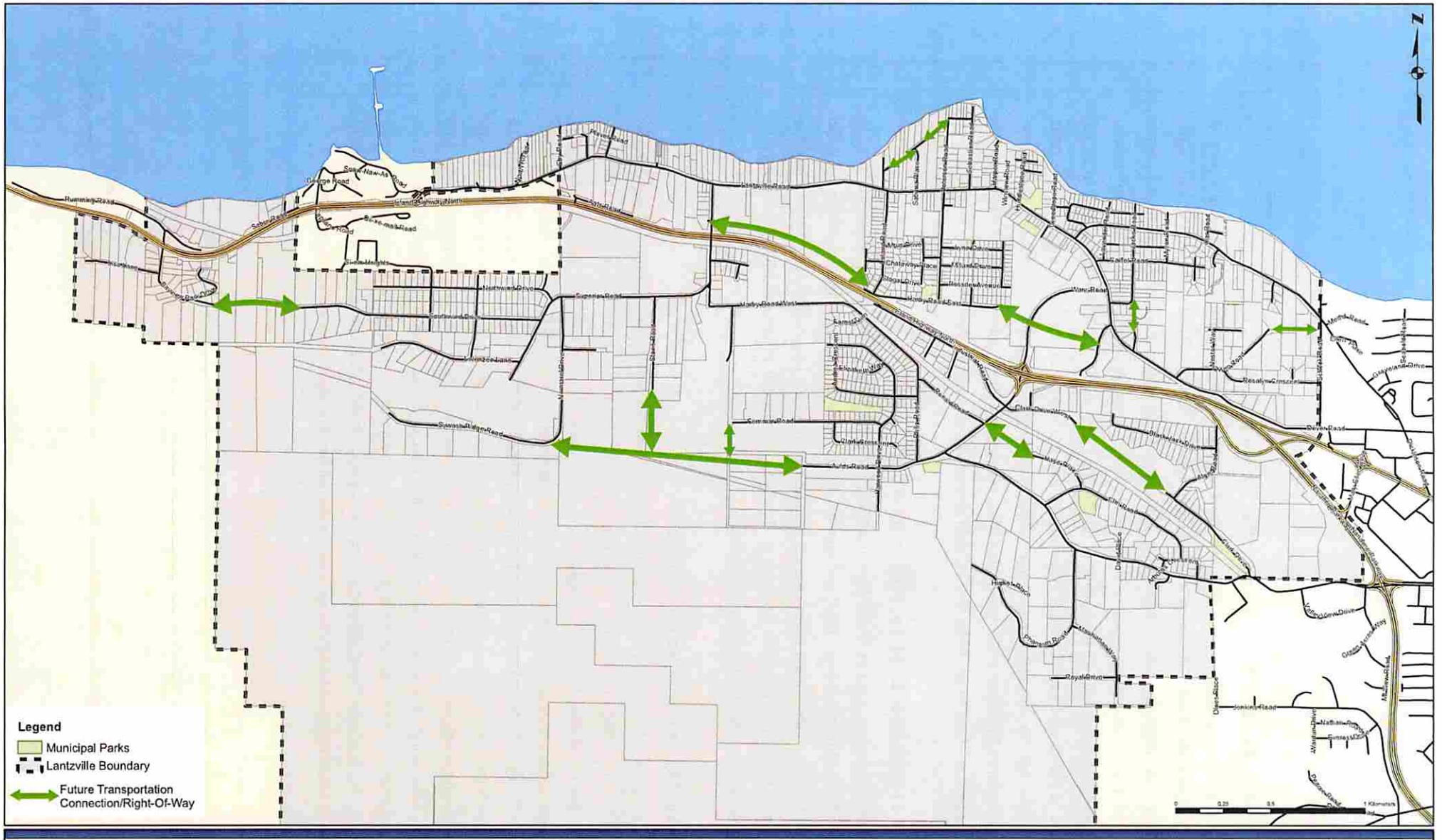

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Figure 14
Future Connections
Lantzville Transportation Study

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6.2 Wiles Road / Ware Road / Harby Road East

There is an existing private road between Wiles Road and Ware Road that could provide a parallel route to Lantzville Road. This road should be extended across Ware Road to the east end of Harby Road East. A connection from Ware Road to Harby Road East would provide an alternative access to the residential neighbourhood west of Ware Road. This alternative access would allow motorists to access the neighbourhood without having to travel along Lantzville Road. This route would reduce the volume of traffic on Lantzville Road which could help to improve safety within the core. This route would also provide an alternative, lower volume route for pedestrians and cyclists compared to Lantzville Road. This connection would also allow for accesses for the future village area to be off this road rather than Ware Road. Wiles Road should also remain a municipal roadway in the long term.

6.3 Harby Road East to Superior Road

A future connection between Harby Road East and Superior Road would provide a parallel route to Lantzville Road between Ware Road and Superior Road. This parallel route would provide access to the residential neighbourhood from the north without having to use Lantzville Road. The challenge to this connection is that all of the lands are in the Agricultural Land Reserve (ALR) which makes the potential for rezoning/subdivision more limited.

6.4 Aulds Road to Normarel Road

There is existing right-of-way to extend Aulds Road west of Harwood Road (a portion of this right-of-way is for an existing driveway) by approximately 800m. There is a slight 'jog' in the existing right-of-way that is not ideal for roadway design; however a roadway through the 'jog' could be developed. The right-of-way ends at the southeast corner of the Winchelsea View Golf Course. Additional right-of-way should be obtained to connect this existing right-of-way with Normarel Road. Similar to the Southwind Drive connection this connection is not needed until the longer term for vehicle traffic and in the shorter term could be a recreational trail / multi-use trail. This connection would connect with the Woodlot trail system and provide another pedestrian/bicycle connection between the two sides of Upper Lantzville. In the longer term this connection could provide another (alternate) vehicle access route to the Foothills Development area from Superior Road. This connection would reduce the potential future traffic utilizing Phillips/Harwood Road neighbourhood to access Superior Road.

6.5 Additional Connections

In addition to the above connections the following right-of-ways for future connections should be obtained:

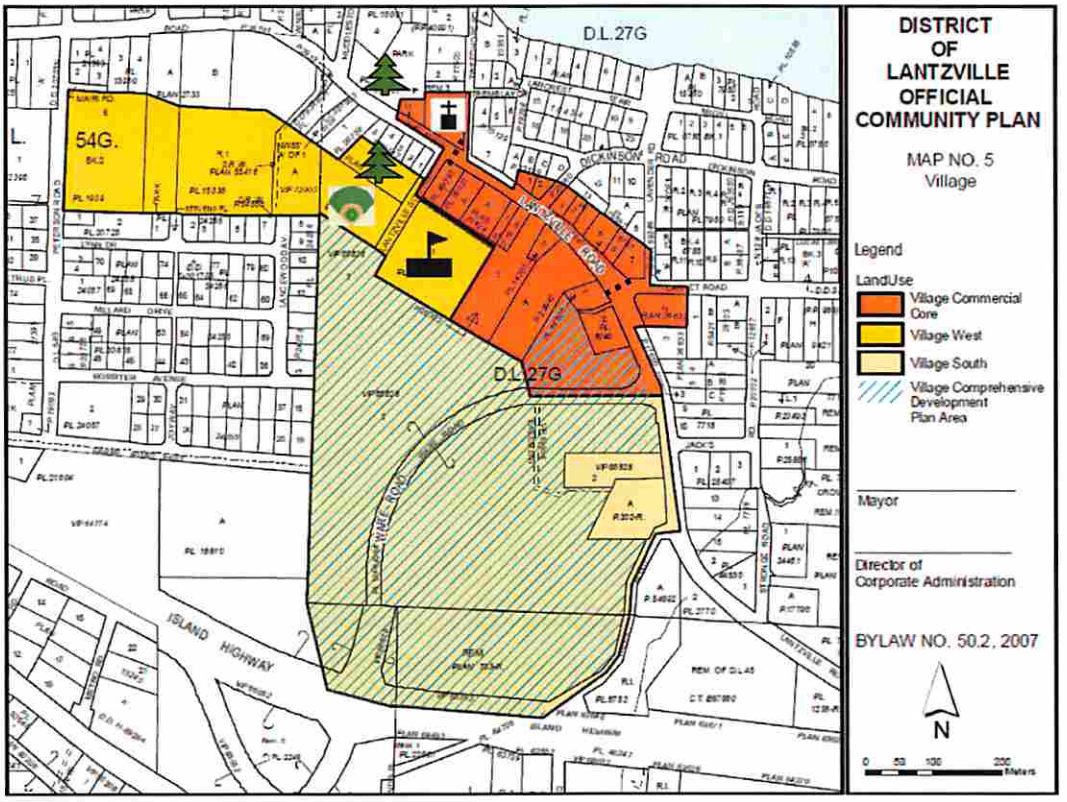
- Stone Road to future Aulds Road extension,
- Femmar Road to future Aulds Road extension,
- Hase Place to Ronald Road,
- Clark Drive West to Clark Drive East,
- Stronge Road to Jack's Road,
- Owen Road to Schook Road, and
- Sunbury Road to Hall Road

7.0 LANTZVILLE VILLAGE

The District of Lantzville commercial core area is defined as the Lantzville Village. The Lantzville Village is designated as the area along Lantzville Road from approximately Lantzville School Road to Wiles Road and a several properties between Peterson Road and Lantzville School Road.

7.1 Existing Conditions

Within the Village West area there is Seaview Elementary School, playing fields and a park. There is also a park located on the north side of Lantzville Road just to the west of the Village. The majority of the Village core is developed as commercial/retail/office space and includes the District's municipal hall. The Official Community Plan also designates the lands to the south/west of the Village core as part of Lantzville Village.



Lantzville Road is a major roadway/journeyway carrying residents to/from Nanaimo as an alternative to Highway 19, but also acts as a downtown or core area for the community. As a commercial core or village centre pedestrian accessibility, cycling, and vehicle access are key components of the village from a transportation perspective. Currently the Village portion of Lantzville Road has a very similar cross section (design) as the other portions of Lantzville Road with the exception of the 90 degree parking in front of buildings. The lack of change in definition of the roadway in the village core is encouraging vehicles to continue at similar speeds along the entire section of Lantzville Road. Speed limit signs of 30km/h and raised (elevated) crosswalks at each end of the existing Village have reduced the speeds in this section of Lantzville Road to 51-55km/h (85th percentile speed) compared to either side of the Village which has an 85th percentile speed of 61-65km/h. There are painted shoulder areas along both sides of Lantzville Road within the Village; however, these painted shoulders vary in width from less than 1m to multiple metres. Shoulder areas are wide in portions of the Village due to paved asphalt parking connecting to the shoulders rather than a wide pedestrian area. In some areas of the Village there has been an attempt to distinguish the shoulder (non-vehicle) area from the parking by painting a white line on both sides of the shoulder.

Example of shoulder painted on both sides of the shoulder

Example of 'wide' shoulder where shoulder blends with parking

Asphalt parking with 90 degree parking is located along both sides of the majority of Lantzville Road within the Village. These parking areas are too close to the travelled roadway for vehicles to reverse from the stalls without entering the travelled roadway. In addition the lack of definition between pedestrian/bicycle and parking areas creates conflicts between vulnerable users and vehicles. Therefore the current parking configuration along Lantzville Road is creating a significant safety issue. The lack of safety for pedestrians reduces the desire to park and walk within or walk to the Village rather than driving.

7.2 Proposed Village Concept

A Village cross section has been designed to improve conditions for bicycles and pedestrians, maintain parking, and create a visual change in the roadway to help reduce vehicle speeds. A proposed cross section of two 4.3m shared travel lanes for bicycles and pedestrians, two 2.0m concrete sidewalks or a raised pathway, and parallel parking on the south side of Lantzville Road is included as well as an alternative with 30 degree parking on the south side. See **Figures 15 to 20** for details. The implementation of sidewalks with curbs will require a formalized drainage system. The proposed cross sections are illustrative of potential streetscapes for the Village.

There are approximately 27 existing 90 degree stalls on the south side of Lantzville Road which are mainly located on the public right-of-way with the exception of several stalls for Slegg Lumber. The proposed parallel parking will reduce the amount of on-street parking compared to existing. The parallel parking improves safety as vehicles will now be manoeuvring adjacent to the travelled roadway rather than into the travelled roadway. If angle parking (30 degree) is provided on the south side of Lantzville there will be a decrease in parking stalls on the south side compared to existing, but more stalls compared to implementing parallel parking. Angle parking will have vehicles reversing into the travel lane; however, their angle of entry into the roadway is closer to the travelling roadway direction than the existing 90 degree parking. Both angle and parallel parking, on the south side, will only be accessible to eastbound motorists and will require exiting vehicles to continue eastbound. The proposed parking alignments allow for the creation of a separate pedestrian area (sidewalk) that separates pedestrians from through traffic and parking vehicles.

Due to the alignment of Lantzville Road and the close proximity of driveways, the provision of on-street parking is limited on the north side. The existing 90 degree parking stalls on the north side are located partially on private property and partially on public right-of-way. The stalls in front of the buildings require vehicles to reverse onto the public right-of-way (and into Lantzville Road). Therefore, the existing 90 degree parking on the north side of Lantzville Road should also be eliminated through discussions with the property owners. This will impact up to three properties plus

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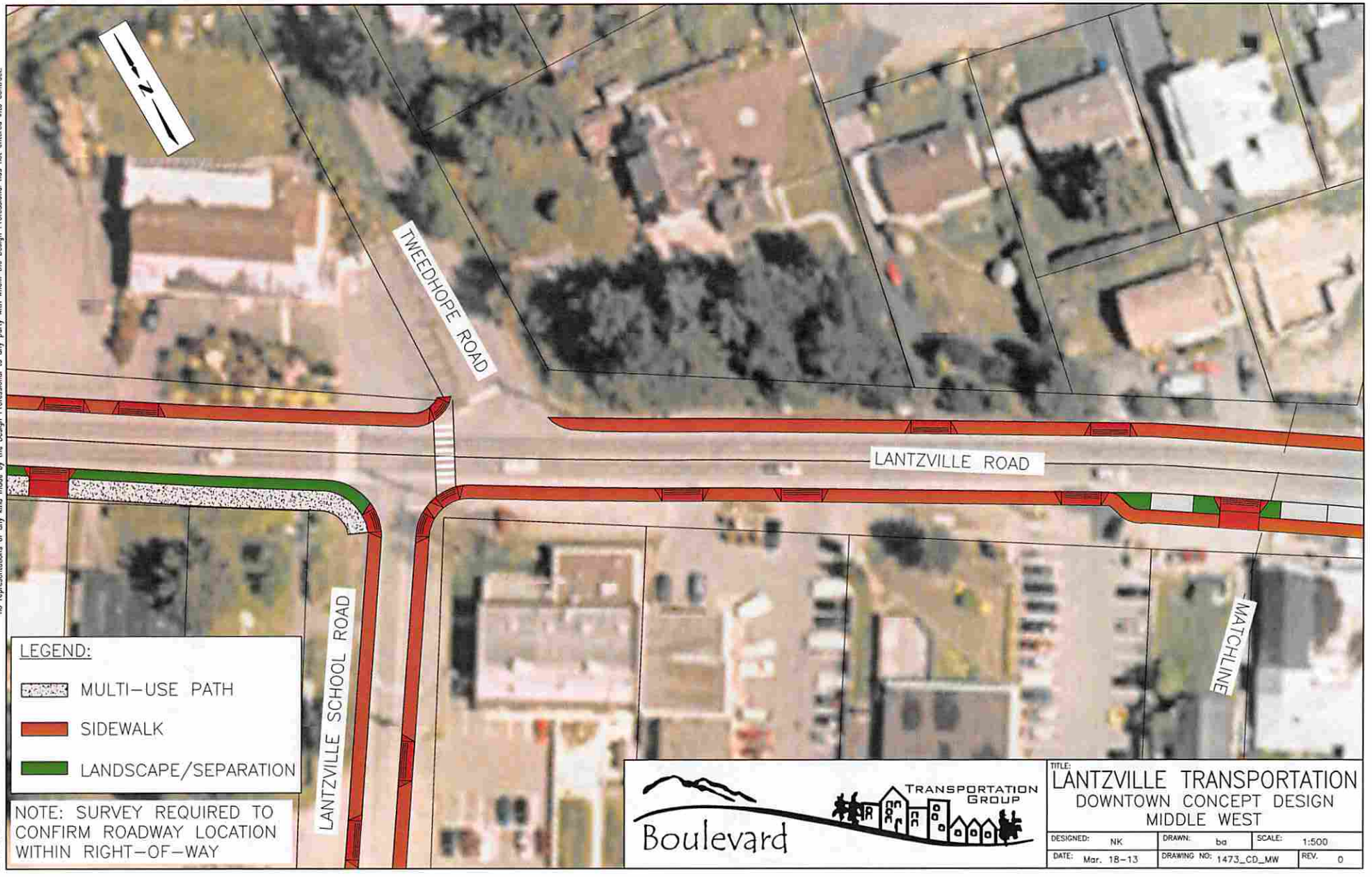

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PLOTTED BY: Nikki

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DOWNTOWN CONCEPT DESIGN
MIDDLE WEST

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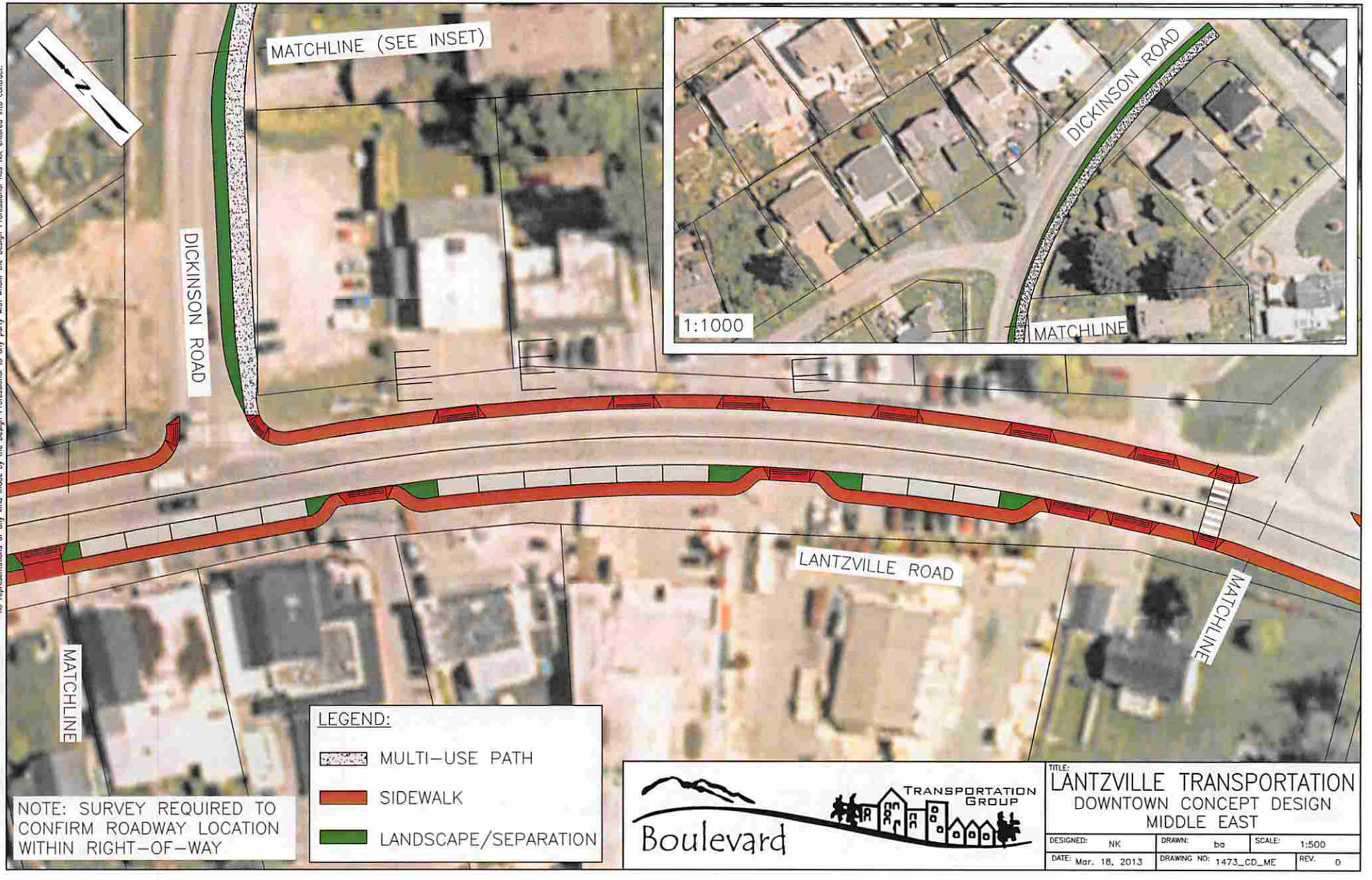

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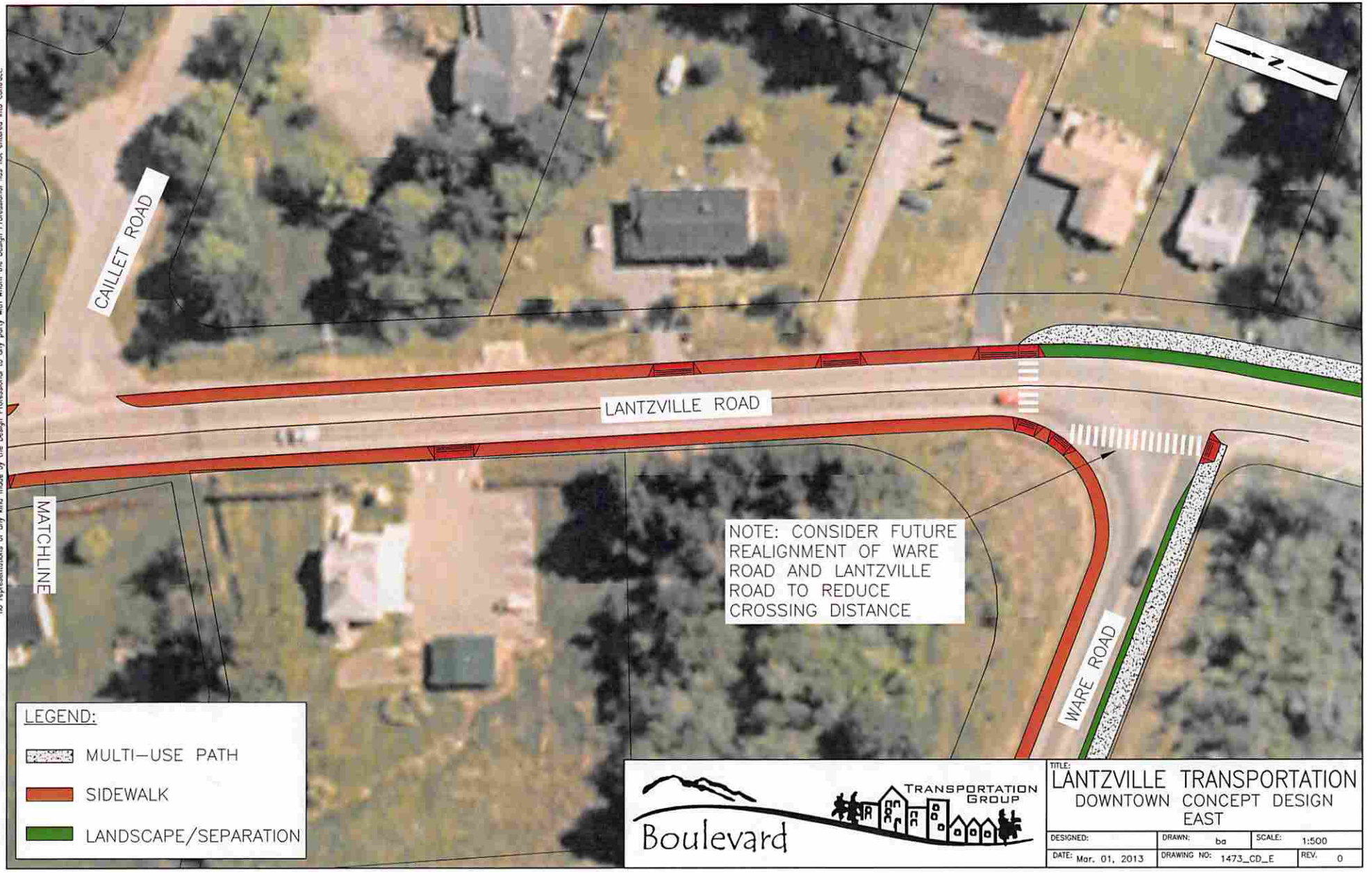

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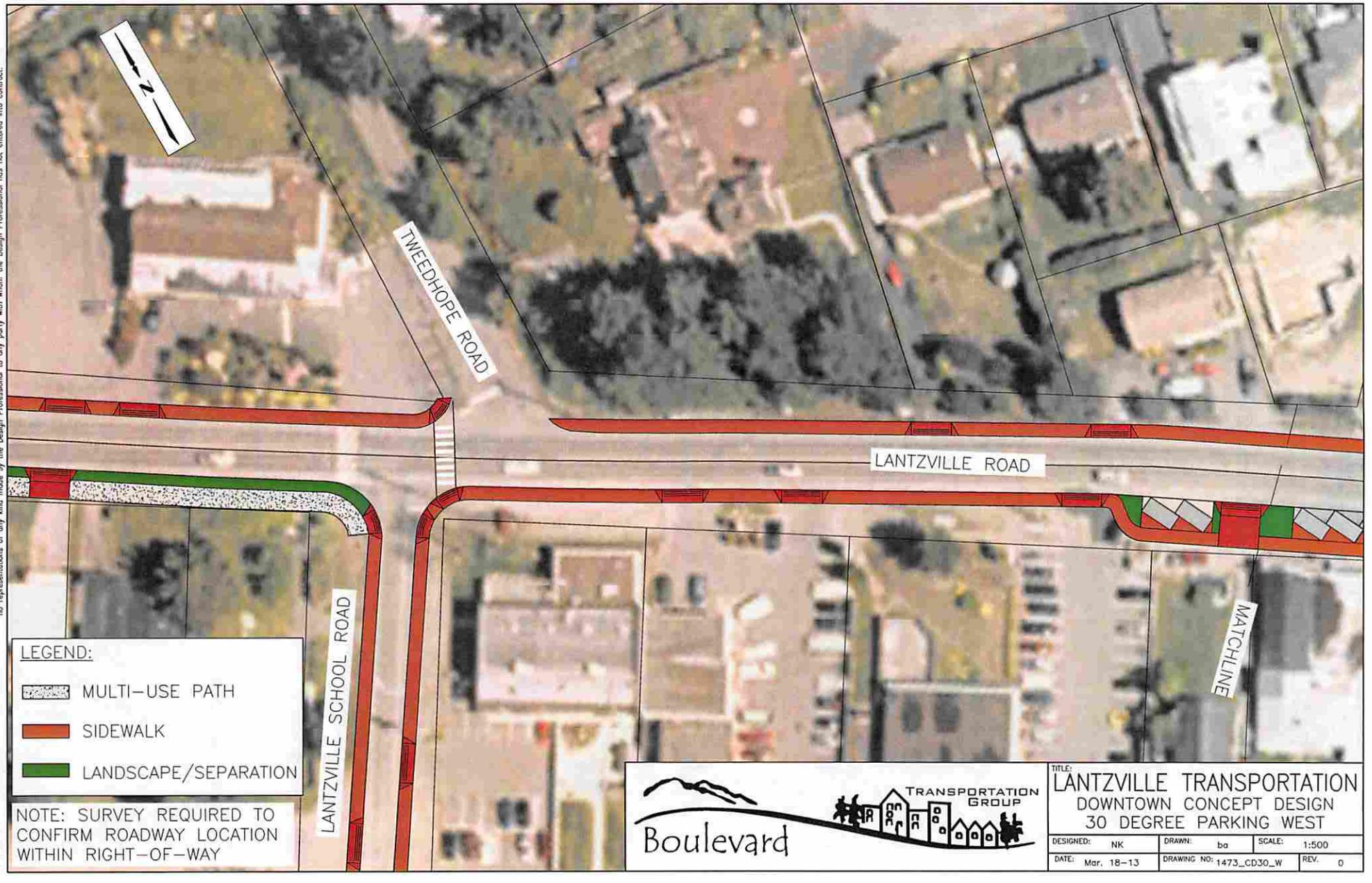

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LANTZVILLE TRANSPORTATION
DOWNTOWN CONCEPT DESIGN
30 DEGREE PARKING WEST

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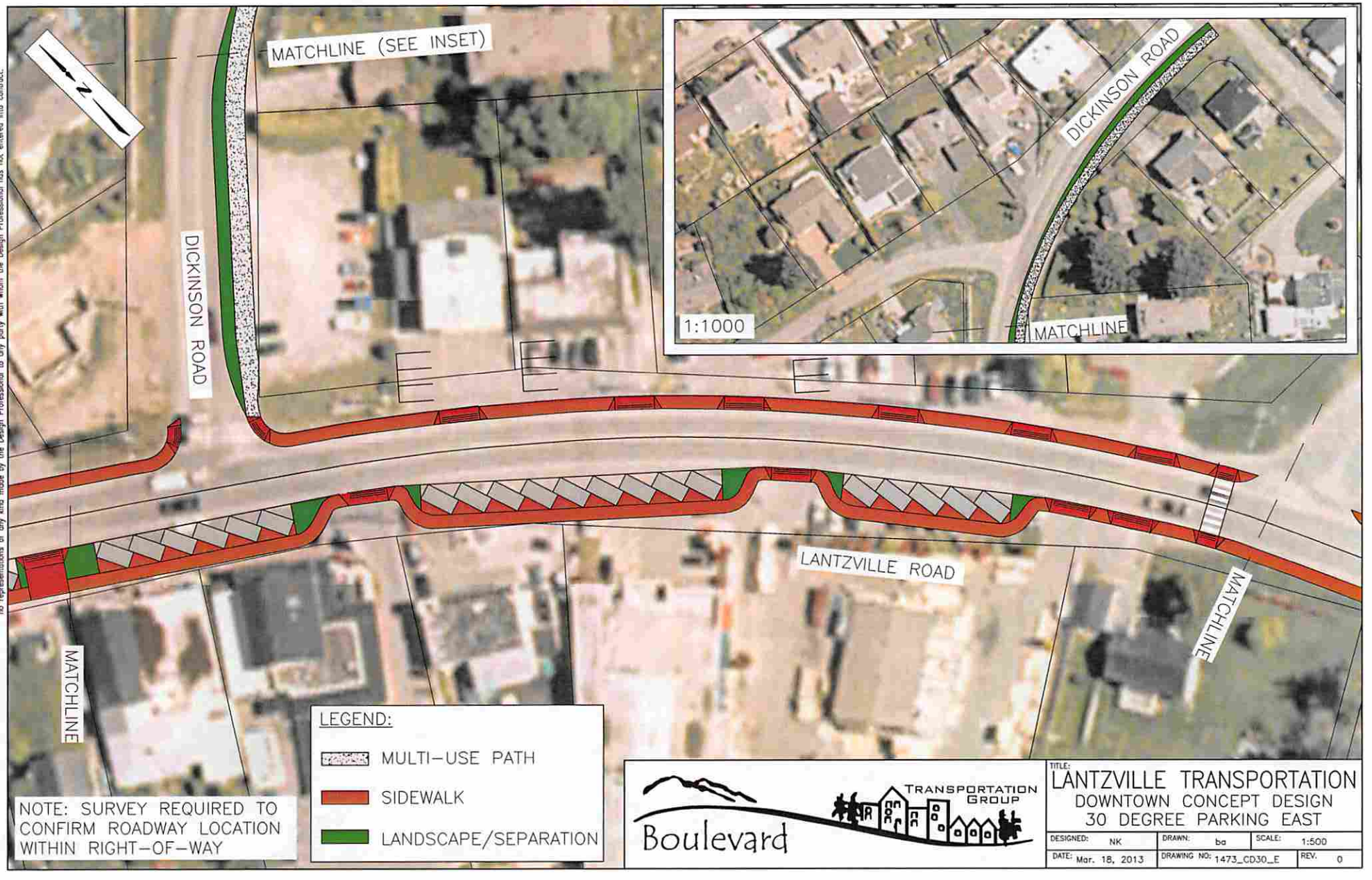

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LANTZVILLE TRANSPORTATION
DOWNTOWN CONCEPT DESIGN
30 DEGREE PARKING EAST

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the municipal hall. The municipal hall has an alternative parking lot off Dickinson Road and the existing parking stalls could remain in front of the hall as they are parallel to the road and provide accessible parking/access to the municipal hall. The two of the three properties have the majority of their parking in lots adjacent to the sides of their buildings. The remaining lot has a small parking lot behind their building and six parking stalls in front of their building that have to reverse onto Lantzville Road. It is possible for several of the properties to convert their 90 degree parking (in front of their buildings) to parallel parking. This parking would be located between the buildings and the sidewalk. There would be a loss of parking stalls (1 to 4 per lot) in front of the buildings on the north side with the proposed concept.

The proposed cross section may be required to be implemented in stages due to encroachments on the south side of Lantzville Road and the need for discussions regarding parking changes on private property on the north side. A detailed survey of the Village core including legal right-of-way and edge of asphalt, shoulder line and centre line should be undertaken prior to preliminary design of a Village Core concept.

The provided concepts for the Village core are preliminary concepts meant as potential options and a starting point for discussion on the Village core. The next step should be the development of a Village Core Revitalization Plan and a Village Parking Assessment. Components of a Revitalization Plan include: vision, principles and goals, land use, economic development, urban design and design guidelines, and street cross sections (roadway, pedestrian, parking and bicycle facilities.) An advisory committee and a series of community consultations/workshops could guide the plan's development. An on-street and off-street parking assessment should also be undertaken in the Village core to determine the parking utilization (demand) and turnover of vehicles. This assessment would inform the Revitalization Plan.

As the Village expands to and along Ware Road consideration should be given to not allowing for direct access to Ware Road. Access for this expansion of the Village should be via the proposed Ware Road to Harby Road East connection. This will minimize the number of intersections on Ware Road to one location.

8.0 LORENZEN LANE

Lorenzen Lane extends west from Superior Road. There are currently 15 houses with driveways on Lorenzen Lane. It is estimated (based on the Institute of Transportation Engineers Trip Generation Manual 9th edition) that there is a total daily vehicle volume of 162 vpd currently utilizing Lorenzen Lane. There are an additional four undeveloped lots with a frontage on Lorenzen Lane and another seven lots with indirect access (access would be required through an undeveloped lot. There is also one recently subdivided lot (at the end of Southwind Drive/Lorenzen Lane) that has the potential for several lots to have access to Lorenzen Lane. Therefore assuming a potential for up to 15 additional single family driveways on Lorenzen Lane the total expected vehicle trips on Lorenzen Lane would be 305 vehicles per day. The existing 5.0m cross section can support this volume of daily vehicle traffic if the number of pedestrians and cyclists was less than 100 per day. Prior to providing additional accesses onto to Lorenzen Lane a 24 hour vehicle count and 12 hour pedestrian/bicycle count should be undertaken to ensure the total number of users is less than 400 vpd and the number of existing vehicles per is similar to the above estimate. If the counts confirm the estimated existing vehicles and the number of pedestrians/cyclists is less than 100 per day then the additional driveways could be connected. If further subdivisions occur, especially to the south of Lorenzen Lane the need to upgrade the roadway cross section will need to be assessed with each subdivision.

9.0 BICYCLES AND PEDESTRIANS

Lantzville has significant natural beauty and character that Lantzville residents and visitors enjoy through walking, cycling, and hiking; therefore, provision for all users is of significant importance to Lantzville. The *2010 Trails and Journeyways Strategy* identified the majority of roadways within Lantzville as also being desired routes for pedestrian and cyclists. Therefore there is a need for sharing of the right-of-way for vehicles, pedestrians, and cyclists in Lantzville. (Note: Right-of-ways are not only for roads, but for all users.)

9.1 Proposed Facilities

Pedestrians and cyclists will be accommodated on local roadway/journeyways in a variety of ways depending on the total volume of users. For local roadways/journeyways with a total user volume less than 400 per day (vpd) all users will be accommodated through shared use of the 5.0m asphalt. The volume of users on these roads is estimated at less than 40 vehicles per hour which provides significant gaps in all types of traffic and the ability for a vehicle to pass a pedestrian or cyclist. For local roadways/journeyways with 400 to 1,000 vpd, separate pedestrian path (asphalt) or sidewalk (concrete) should be provided to separate pedestrians from cyclists and vehicles. The volume of vehicles is still low enough for bicycles to share the roadway with vehicles.

For the major roadways/journeyways there are higher vehicle volumes and potentially higher pedestrian and cycling volumes. Due to the higher volume of users greater separation between vulnerable users (pedestrians and cyclists) and vehicles should be provided through a separated two way multi-use pathway on one side of the road. A multi-use pathway can be within the 'road' right-of-way, but be physically separated (by landscaping, gravel, or physical barrier) from the travelled roadway. A multi-use pathway should be a minimum of 3.0m with ideally a minimum of 2.0m separation from the travelled road, but this separation could be reduced to 0.5m in pinch points. Multi-use pathways are proposed on the:

- South side of Dickinson Road (pinch points near Lantzville Road and at Warick Road)
- North side of Lantzville Road to Ware Road (transitions to Village cross section sidewalks and share lanes)
- South side of Lantzville Road west of Lantzville School Road
- East side of Ware Road
- North side of Aulds Road
- West side of Superior Road

The proposed multi-use pathways are proposed for roads that have multiple driveways; however, the majority of these driveways are single family houses whose users will become familiar with the pathway and the need to look for pathway users before crossing the pathway. Signage should be used at the ends of the driveways to notify driveway users of the pathway.

See **Figure 21** for details on the proposed multi-use pathways for major roads. The multi-use pathways work to connect Upper and Lower Lantzville. As previously mentioned when the final piece of right-of-way between Fawn Drive and Southwind Drive is obtained a multi-use trail should be provided along the right-of-way to connect West Lantzville and Upper Lantzville for pedestrians and cyclists.

9.2 E&N Trail

The first section of the E&N Trail has been constructed on the north side of the railway between Aulds Road (Nanaimo) and Ware Road. The next section of the E&N Trail has some geotechnical challenges to constructing the trail along the E&N right-of-way. In order to build the next section of the trail it is recommended that the trail start on the south side of the tracks (requiring users to cross Ware Road and the railway tracks). The trail could be a trail on the south side of the E&N right-of-way from Ware Road to Phillips Road or a multi-use path along the north side of Ronald Road. The trail would then connect to a multi-use path along the north side of Phillips Road. The pathway will travel along the

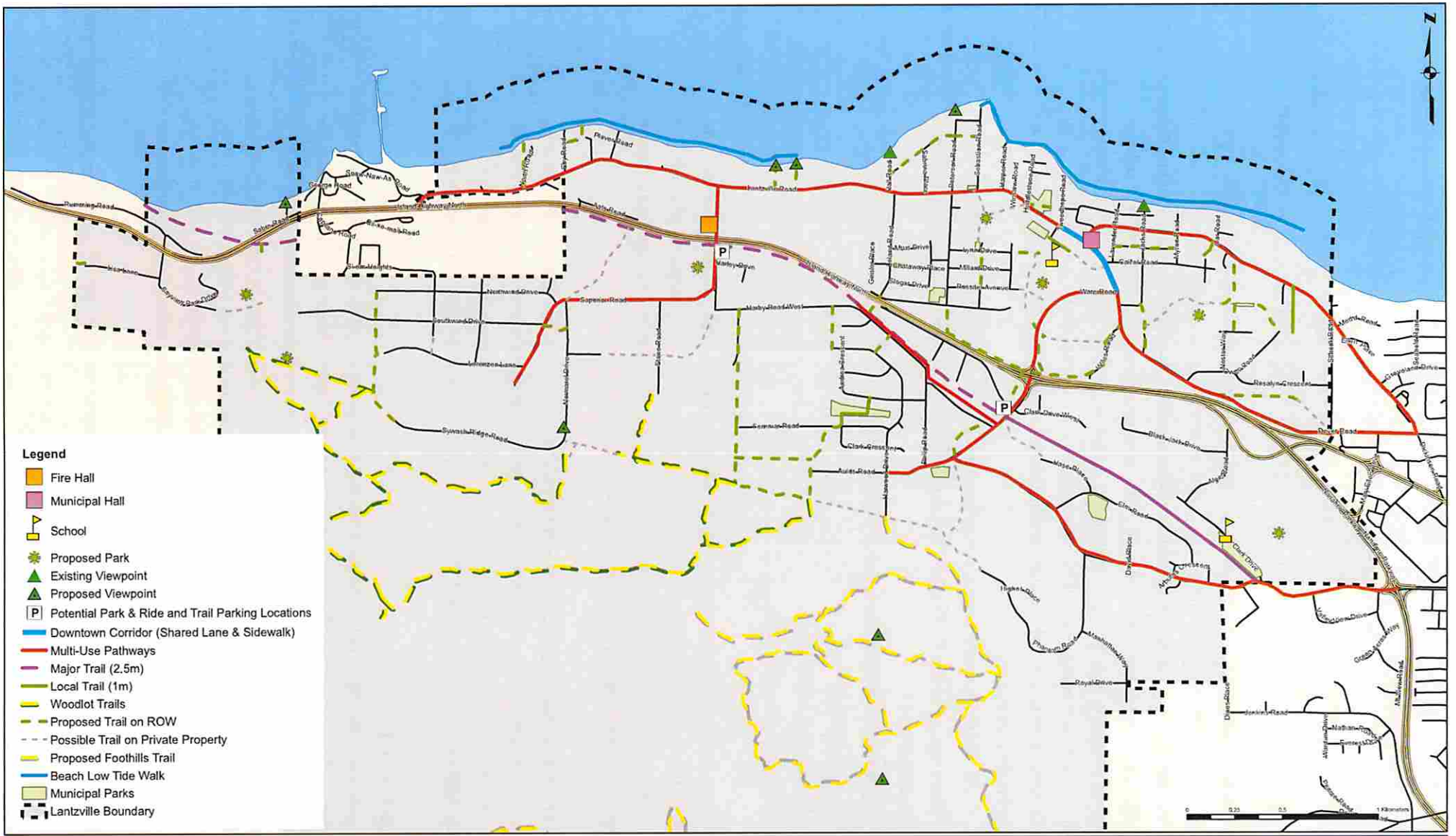

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Figure 21
Major Bicycle and Pedestrian Facilities
Lantzville Transportation Study

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

east / north side of Phillips Road and may need to utilize a portion of the road and E&N railway right-of-way. The pathway would then continue on the E&N right-of-way to Superior Road. See **Figure 22** for details.

10.0 TRANSIT

Lantzville is part of the RDN Transit system which includes service for Nanaimo, Parksville, Qualicum Beach, Lantzville and RDN. Routing and service levels are based on information from BC Transit with final decisions for these parameters made by the RDN. Currently, transit in the Region is operated by the RDN.

10.1 Existing Conditions

There are two existing fixed transit routes within the District of Lantzville – the No. 90 and No. 10. The No. 90 bus route is the 'Intercity' bus travelling between Qualicum Beach, Parksville, Lantzville, and Woodgrove Mall in Nanaimo. The No. 90 bus route travels along Highway 19 within Lantzville and stops on Highway 19 at Ware Road, Superior Road, Lantzville Road, and Bayview Park Drive/Rumming Road.

The No. 10 bus route is the 'Lantzville' bus and travels a loop within Lantzville before connecting with the rest of the RDN network at Woodgrove Mall. This route utilizes Aulds, Phillip, Harby, Superior, Southwind, Northwind, Lantzville Road, Dickinson Road, and Dover Road. This loop covers the majority of Lantzville; however, West Lantzville, and the western portion of Lantzville Road (west of Superior) are not covered.

A count of transit passenger levels, in November 2012, found that a total of 580 passengers were on the No. 10 bus over a 14 day period. The most heavily utilized stops were Phillip/Andrea, Eastwind/Westwind, Superior Road/Lantzville Road, Peterson Road/Lantzville Road, and the Lantzville Centre. See **Figure 23** for existing transit routes and stop locations.

10.2 Service Levels

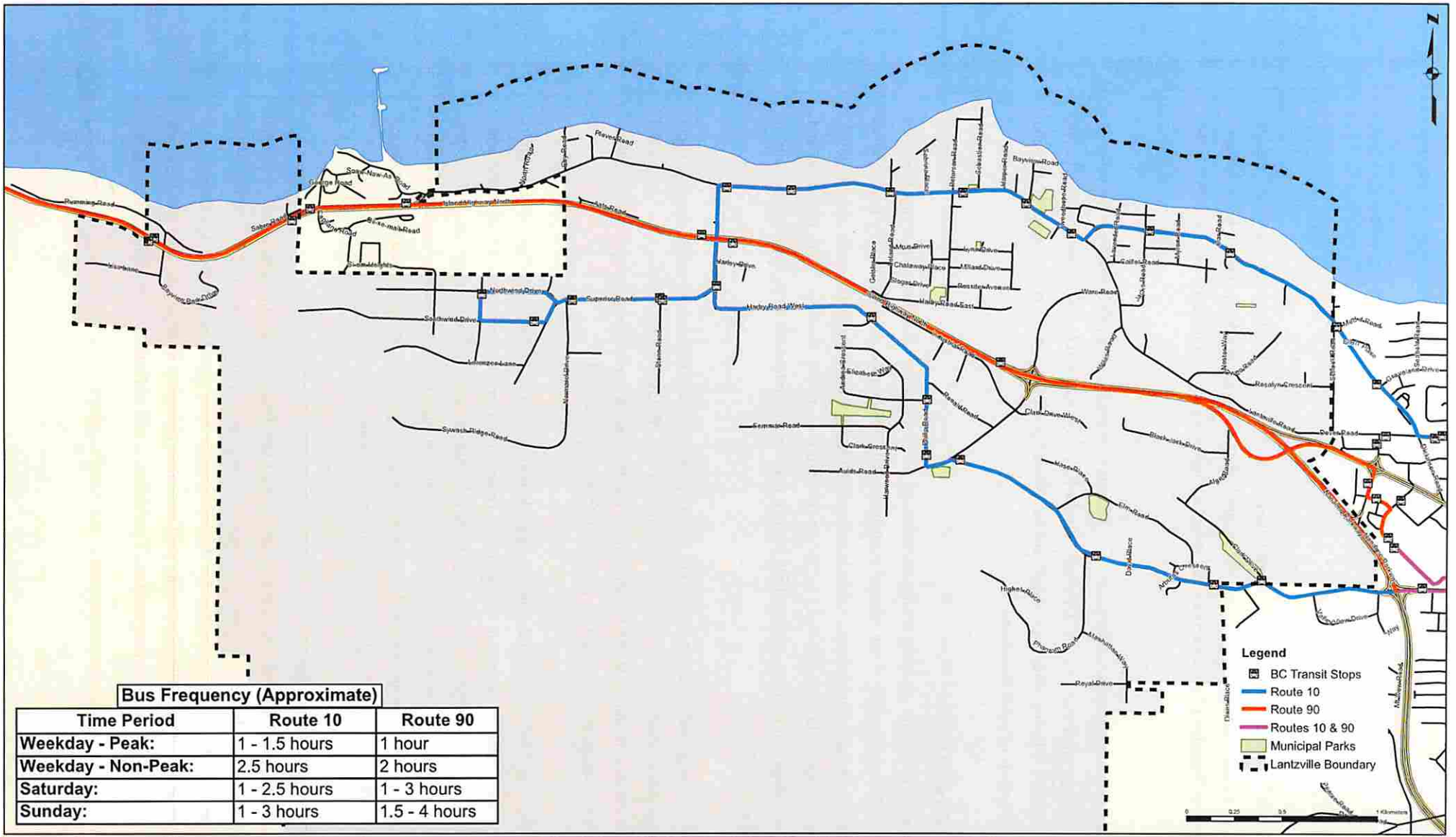
Service on the No. 10 (Lantzville) starts at 6:30am (7:00am and 7:30am on weekends) and ends at 7:00pm. Weekday service on the No. 90 starts at 6:30am in Parksville and 7:40am in Nanaimo. The last bus arrives in Parksville at 10:45pm while the last bus arrives in Nanaimo at 8:45pm on weekdays. Saturday service on the No. 90 is from 7:30am to 7:30pm and Sunday service is from 8am to 9pm.

Boulevard

TRANSPORTATION GROUP

TITLE: LANTZVILLE TRANSPORTATION
PROPOSED E&N TRAIL ROUTE

DESIGNED:	NK	DRAWN:	ba	SCALE:	1:5000
DATE:	Mar. 18–13	DRAWING NO:	1473_EN	REV.	0



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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Figure 23
Existing Bus Routes
Lantzville Transportation Study

Drawn By: BA Date: Mar 01/13 File: 1473

For the No. 10 route there are a total of eight buses per weekday, seven buses per Saturday, and six buses per Sunday. Service levels on the No 90. are higher during the weekdays (10-11 per direction), the same on Saturday (7 per direction) and lower on Sundays (4-5 per direction) compared to the No. 10 route.

Weekday peak hour service headways are 1 to 1.5 hours on the No. 10 and No. 90 while the off-peak hour headways are 2 to 2.5 hours. On weekends the headways between buses can be as low as 1 hour and as high as 4 hours. With such significant headways between buses the convenience of utilizing transit as a mode of travel is reduced.

10.3 Bus Stops

Bus stops in Lantzville are fairly evenly spaced along the No. 10 route. The bus stops along Highway 19 are all located far-side of the nearest intersection, while stops within Lantzville are a mixture of near-side, far-side, and mid-block. Far-side stops are typically preferred over near-side and mid-block crossings as near-side stops can block traffic from entering an intersection when a bus is stopped and mid-block stops can encourage jaywalking if there is no nearby intersection (legal crossing point) or marked crosswalk.

Current bus stops within Lantzville are not well marked/delineated which can lead to potential users not being able to identify where they should wait for a bus. Within Lantzville some stops are marked with the standard telspar pole and bus stop sign while the majority are marked by tape around a utility pole. One bus stop on Aulds Road has an accessible waiting area / pad.

The District of Lantzville should continue upgrade transit stops to be better marked and accessible. This includes installing signage in the short term (within 1-2 years) and accessible waiting areas/pads in the longer term (2-10 years). Further upgrades to include shelters, garbage receptacles, and benches should occur at high usage locations. BC Transit's Infrastructure Design Guidelines manual should be used to design consistent and accessible transit stops within Lantzville. The manual can be downloaded from BC Transit's website at http://www.busonline.ca/corporate/resources/pdf/res-urban-64.pdf.

10.4 Future Service

RDN and BC Transit are in the process of updating the RDN Transit Future Plan which envisions what the transit network should look like in 25 years. The process will be ongoing until the Fall of 2013. There are several areas of Lantzville that do not currently have transit service due to challenges to access the areas. West Lantzville and the west section of Lantzville Road do not have service which could be due to low ridership potential (small population areas) and due to the challenges entering/exit

and looping using Highway 19. Should a future connection between Southwind Drive and Fawn Drive occur for vehicles; transit could be extended to West Lantzville. If the intersection of Lantzville Road/Highway 19 is signalized in the future (due to safety or development considerations) and the Southwind Drive to Fawn Drive connection occurs transit could continue their existing loop from Southwind Drive to Fawn Drive and then turn left onto Lantzville Road at a controlled intersection. This future service would be a long term consideration and would require discussions with RDN Transit and BC Transit.

10.5 Park and Ride

Park and Ride locations provide a formal space for motorists to safely park their vehicle and utilize transit. Park and Rides could also double as recreational parking for the E&N Trail and other trail systems and parks within Lantzville. A review of the existing right-of-way along Highway 19, while wide in some locations does not provide an opportunity for a Park and Ride with access to a side street. Any Park and Ride along Highway 19 would require MoT approval. There is the potential for a small Park and Ride along Industrial Road near Ware Road. There is approximately 18m of unused right-of-way that could be converted to a parking area. This location, while not visible from Highway 19 is within walking distance (less 200m) to the Highway and would provide parking for E&N Trail users. There is an existing informal Park and Ride on the south side of Superior Road/Highway 19 which could be formalized and used as an additional parking area for the future E&N Trail.

11.0 CONCLUSIONS

The existing road classifications as defined in the OCP are appropriate based on the collected traffic volume data. The road classification map and Bylaw 55 should be updated to remove the use of the work collector and residential, define the sidewalks as asphalt/concrete and shoulders (paved or gravel), and update the Major roadway/journeyway cross section. A Village cross section should be added and R1SS: Rural Local Highway Cross Section with Curb cross section removed and R6SS and R7SS should be updated to match either the 7.5m Local Road cross section or the 7.5m Major Road cross section.

The 5.0m local roadway/journeyway cross section should be limited to a combined threshold of 400 road users (vehicles, bicycles, and pedestrians) per day and a 30 km/h design speed. The 6.5m local roadway/journeyway cross section has a 30km/h design speed and a capacity combined threshold of 400 to 800 road users (vehicles, bicycle, and pedestrians) per day. The 7.5m local roadway/journeyway cross section is for a 50km/h design speed and the capacity to less than 1,000 users per day.

During the 2012 PM peak hour the only intersections with movements at LOS D or worse are along Highway 19. No improvements are required to the road network over the next 15 years other than on-going discussions with MoT regarding signal timing reviews and updates. At the 20 year horizon, the intersections of Aulds Road/Ware Road and Aulds Road/Harwood Road will require increased traffic control. At Aulds Road/Ware Road a roundabout should be considered. At Aulds Road/Harwood Road the roadway (Aulds Road north to Harwood Road east) could be realigned as the through route or a roundabout implemented. Mitigation along Highway 19 will be required in the long term and may include signalization (Lantzville Road), additional lanes, or turn restrictions.

Roundabouts reviews should be limited to unsignalized intersections requiring upgrading. Assessment of each intersection should be undertaken to determine the appropriate type of traffic control, which may or may not be a roundabout. Roundabouts can be more efficient and have improved safety; however they are more expensive up front and may need right-of-way to be implemented. Pedestrians and cyclists are accommodated through roundabouts. The nature of Lantzville's road network encourages speeding which could be mitigated with traffic calming. Traffic calming should be planned in consideration of road classification, purpose and the larger network. A traffic calming policy is provided in Appendix D for the District to deal with requests for traffic calming measures.

There are eleven potential future connections that right-of-way should be collected by the District as it becomes available. These future connections can take the form of a trail, multi-use path or journeyway (all users). These connections are Southwind Drive to Fawn Drive, Wiles Road / Ware Road / Harby Road East, Harby Road East to Superior Road, Aulds Road to Normarel Road, Stone Road to future Aulds Road extension, Femmar Road to future Aulds Road extension, Hase Place to Ronald Road, Clark Drive West to Clark Drive East, Stronge Road to Jack's Road, Owen Road to Schook Road, and Sunbury Road to Hall Road. The Fawn Drive and Southwind Drive connection is not required for vehicle traffic unless the intersection of Highway 19/Bayview Park Drive is modified/closed by MoT; however, it provides a potential bicycle/pedestrian route between Upper Lantzville and West Lantzville. The Harby Road East connection (east and west) would provide a parallel route to Lantzville Road for residents to access their neighbourhoods from Superior Road and Ware Road without having to use Lantzville Road. The extension of Aulds Road to Normarel Road is not needed until the longer term for vehicle traffic and in the shorter term could be a recreational trail / multi-use trail. Within the Village Core, Lantzville Road should have two 4.3m shared bicycle and pedestrian travel lanes, 2.0m concrete sidewalks or raised pathway on both sides of the road. Two concepts are provided for on-street parking: parallel and 30 degree angle. These concepts provide for all users and create defined areas within the right-of-way for all users. Where sidewalks are proposed a formal

drainage system will need to be provided. The concepts for the Village Core should be utilized as preliminary concepts that should be reviewed as part of a Village Revitalization Plan. The next step for the Village Core is to undertake a Village Revitalization Plan and Parking Assessment.

Lorenzen Lane is a 5.0m wide road with less than 20 existing homes. The addition of up to 15 addition homes having access from Lorenzen Lane is acceptable for a 5.0m subject to the volume of pedestrians and cyclists being less than 100 per day.

Pedestrians and cyclists will be accommodated on local roadway/journeyways in a variety of ways depending on the total volume of users. For the major roadways/journeyways a separated two way 3.0m multi-use pathway on one side of the road should be provided. The multi-use pathways are within the 'road' right-of-way, but should be physically separated from the travelled roadway. Signage may be placed at the ends of driveways to warn motorists of the pathway. An interim alignment for the E&N Trail between Ware Road and Superior Road was developed utilizing Ronald Road (or the E&N right-of-way), Phillips Road and the E&N right-of-way west of Phillips Road/Harby Road west connection.

Lantzville is part of the RDN Transit system which includes service for Nanaimo, Parksville, Qualicum Beach, Lantzville and RDN. There are two existing fixed routes through Lantzville – the No. 90 and No. 10. Bus stops within Lantzville are a mixture of near-side, far-side, and mid-block and are not well marked/delineated which can lead to potential users not being able to identify where they should wait for a bus. The District of Lantzville should continue to work to upgrade transit stops to be better marked and accessible. This includes installing signage in the short term (within 1-2 years) and accessible waiting areas/pads in the longer term (2-10 years). Several areas of Lantzville currently do not have transit service due to network and traffic control challenges in accessing the areas. Should future connections for vehicles and upgrades to traffic control on Highway 19 be made these areas may be able to be accessed by transit. There is the potential for a small Park and Ride along Industrial Road near Ware Road. This location, while not visible from Highway 19 is within walking distance (less 200m) to the Highway and would provide parking for E&N Trail users.

12.0 RECOMMENDATIONS

The following Bylaw 55 updates should be undertaken:

- remove the use of the words collector and residential
- define the sidewalks as asphalt/concrete and shoulders (paved or gravel)
- update the Major roadway/journeyway cross section
- add a village cross section
- remove R1SS: Rural Local Highway Cross Section with Curb cross section
- update R6SS and R7SS to match either the 7.5m Local Road cross section or the 7.5m Major Road cross section.

Additional recommendations include:

- That this study be forwarded to RDN Transit for inclusion in the RDN Transit Future Plan
- Update the OCP Road Classification Map
- At the 20 year horizon (full build out of Foothills), plan for improvements at the intersections of Aulds Road/Ware Road and Aulds Road/Harwood Road will require increased traffic control.
- Work with MoT regarding longer term mitigation for Highway 19.
- Create a policy to review roundabouts as a potential intersection upgrade option.
- Collect right-of-way as available for Southwind Drive to Fawn Drive, Wiles Road / Ware Road / Harby Road East, Harby Road East to Superior Road, Aulds Road to Normarel Road, Stone Road to future Aulds Road extension, Femmar Road to future Aulds Road extension, Hase Place to Ronald Road, Clark Drive West to Clark Drive East, Stronge Road to Jack's Road, Owen Road to Schook Road, and Sunbury Road to Hall Road
- Utilize potential right-of-ways for trails and multi-use pathways.
- Undertake a Village Revitalization Plan and Parking Assessment
- Conduct 24 hour vehicle and 12 hour pedestrian/cyclist counts on Lorenzen Lane prior to additional driveway connections. If combined volumes below 250 vpd allow up to 15 driveway connections before requiring road upgrading
- Develop 3.0m multi-use pathways on one side of the major roadway/journeyways
- Utilize an interim alignment for the E&N Trail between Ware Road and Superior Road to avoid expensive construction of existing alignment.
- Upgrade bus stop signage in the short term (within 1-2 years) and accessible waiting areas/pads in the longer term (2-10 years).
- Review transit service routing with RDN Transit and BC Transit when traffic control on Highway 19 changes and future road (vehicle) connections are made within Lantzville.
- Create a small Park and Ride along Industrial Road near Ware Road and formalize the Park and Ride at Superior Road/Highway 19.