



Lewes Boulevard Corridor Study

Final Report

Prepared for: City of Whitehorse

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LEWES BOULEVARD CORRIDOR STUDY – PHASE 1

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1.0 INTRODUCTION

1.1 STUDY OBJECTIVES

The City of Whitehorse requested Stantec to prepare a summary report that outlines whether transportation issues exist on Lewes Boulevard. To accomplish this, the objectives were as follows:

- Observe and understand the current uses of Lewes Boulevard;
- Develop a comprehensive understanding of the project issues and opportunities based on data and information provided by the City of Whitehorse in combination with stakeholders' experiences and intentions; and
- Blend qualitative and quantitative insights to assist the City of Whitehorse in determining design treatments that can be considered in Phase 2 of the Work Program for Lewes Boulevard.

This report is the summary of the observations, background review, and engagement activities that were completed as part of Phase 1 of the Lewes Boulevard Corridor Study.

1.2 BACKGROUND

Lewes Boulevard represents an important transportation link between Riverdale, Downtown, and other areas of the City. As of 2018, Riverdale is the largest neighbourhood by population in the City of Whitehorse and is very accessible to Downtown both in proximity and at the same elevation.

Residents within the Riverdale neighbourhood have expressed concerns regarding the Lewes Boulevard corridor specifically related to congestion during peak hours and speeding within the school zones. The addition of a second bridge to Riverdale is often brought forward, both to relieve congestion and to provide a second access to Riverdale in an emergency.

City Transit has difficulty adhering to schedules during the peak periods, negatively affecting connectivity and reliance. Safety issues around the schools in Riverdale were identified in a recent Whitehorse School Mobility Review (Stantec, 2018).

Council has recently adopted significant plans guiding transportation. The Transportation Demand Management Plan (Boulevard, 2014) has a goal to shift commuter mobility away from single occupancy vehicles to carpooling, walking, cycling and taking transit. The Bicycle Network Plan (Urban Systems, 2018), recommends all ages and ability cycling routes in Riverdale and throughout Whitehorse, and the Transit Master Plan (Stantec, 2018) recommends new routes, transfer hubs and marketing. The City of Whitehorse identified the opportunity to evaluate the issues on Lewes Boulevard and design the corridor that will encourage residents and employees to walk, cycle, and take transit for commuting to and from Riverdale.



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Future improvements to this corridor must encourage multiple modes of transportation, increase health and safety for all users, and ensure the corridor can function into the future as a vital residential and neighbourhood commercial link between Riverdale and surrounding areas. The Lewes Boulevard corridor should also be reinforced, through design and land-use improvements, to act as the community spine of the Riverdale neighbourhood.



1.3 STUDY AREA

As shown in **Figure 1** below, the Lewes Boulevard Corridor Study – Phase 1 extents include Lewes Boulevard between Robert Service Way and Asek Road (South).

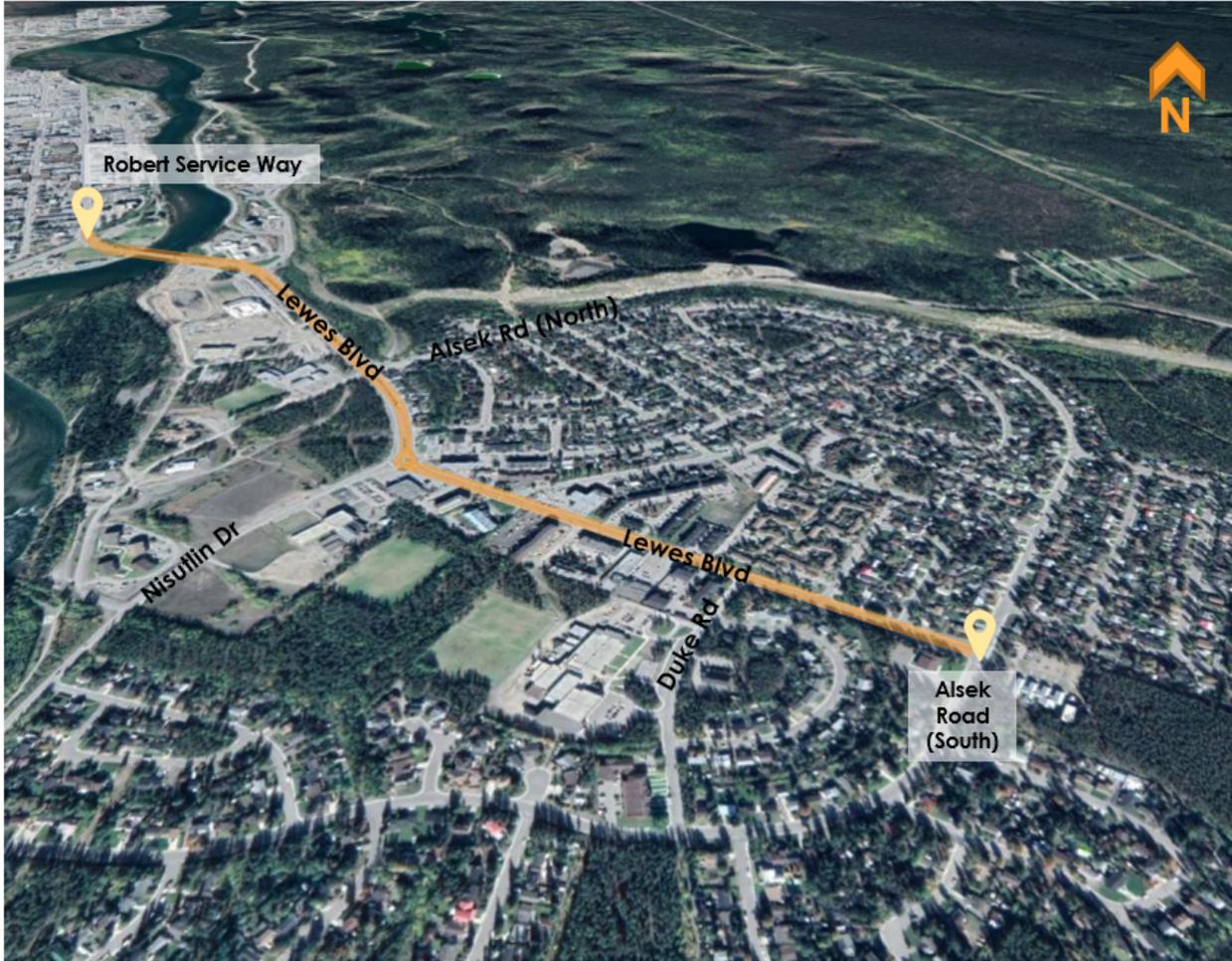


Figure 1: Lewes Boulevard Study Area



2.0 EXISTING AND FUTURE AREA CONDITIONS

2.1 LAND USES

Figure 2 below highlights some of the notable land uses adjacent to Lewes Boulevard within the study area. Additional future residential developments are also anticipated in the Riverdale neighbourhood and are illustrated in Figure 3.

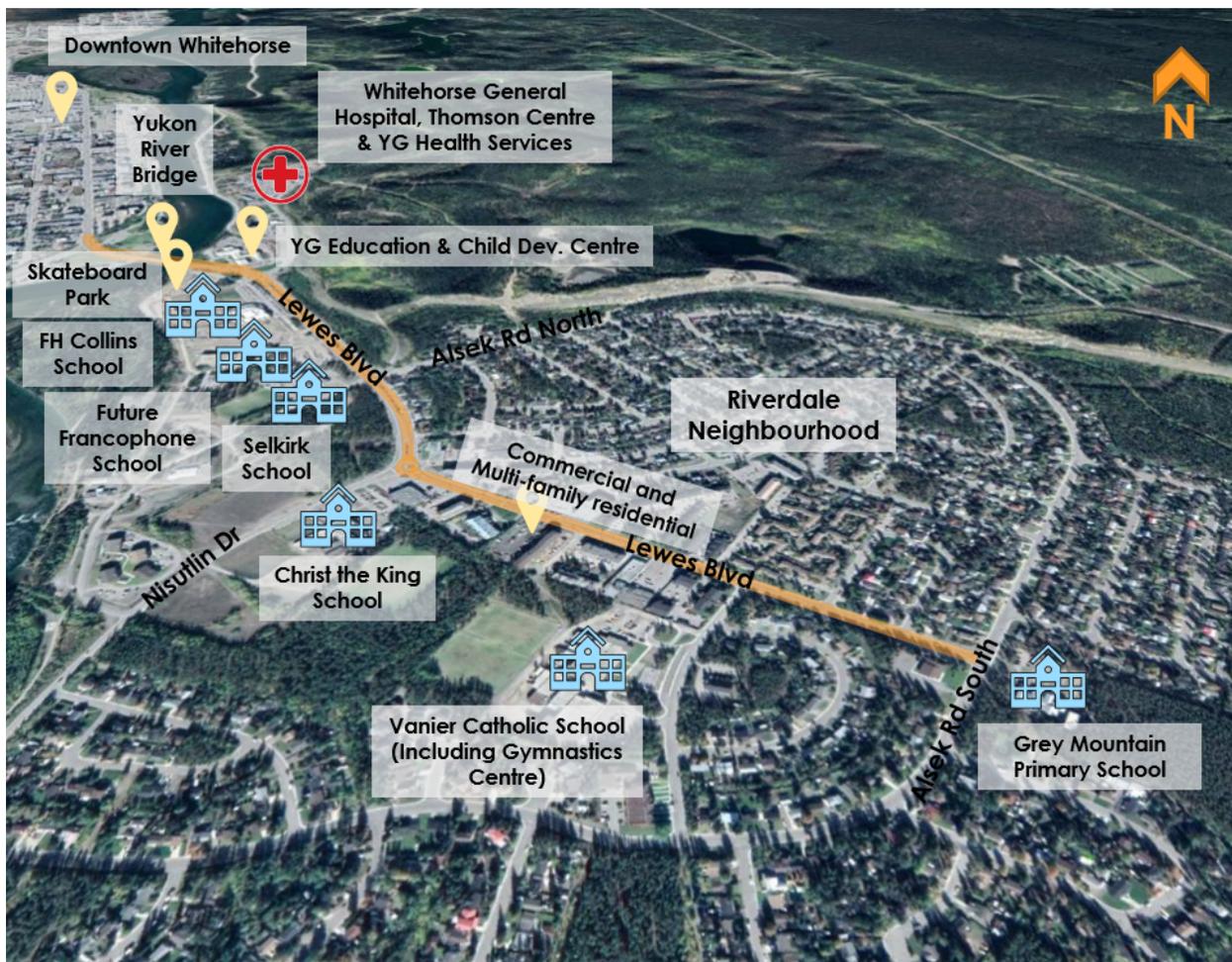


Figure 2: Adjacent Land Uses





LEGEND:

- New Development or in Progress Immediate 2010
- Medium Term Development
- Long Term Development

2.1.1 Residential

Approximately 5,500 people¹ reside within the Riverdale neighbourhood (Yukon Bureau of Statistics, December 2018). Riverdale residential land uses primarily include low density dwellings; however, there are relatively higher density sites currently constructed and centrally located along Lewes Boulevard.

2.1.2 Commercial

Neighbourhood commercial businesses such as a grocery store, retail, childcare centres exist along Lewes Boulevard between Nisutlin Drive and Duke Road.

2.1.3 Schools and Yukon Government Education Offices

Five schools are currently operational along or in the vicinity of Lewes Boulevard. FH Collins Secondary School relies on direct vehicle access via Lewes Boulevard while Christ the King Elementary School, Vanier Catholic Secondary School, and Grey Mountain Primary School have vehicular access off collector roadways in the vicinity of Lewes Boulevard. Selkirk Elementary School is in transition, with plans to remove the primary vehicle access from Lewes Boulevard to Selkirk Street. The Francophone School under construction along Lewes Boulevard between FH Collins Secondary School and Selkirk Elementary School, will also have vehicular access via Lewes Boulevard. The majority of students walking and cycling access the schools via the main roads. All schools have City transit stops in the vicinity.

Start and end times for classes at each operational school in the study area were investigated and are summarized in **Figure 4**. It was determined that classes at all five schools begin and end within approximately 10 to 15 minutes of each other. All the schools, with the exception of Grey Mountain Primary, have regional student attendance. School buses are therefore shared between schools, so that students living in one neighbourhood use the same bus to access either of the high schools. Students are encouraged to apply for a City Transit pass, permitting them to take transit for free, while making them ineligible to continue using the school buses. Data on where the students live and how they get to school would be beneficial to understanding the transportation impacts and modal shift opportunities created by the Riverdale schools.

¹ Yukon Bureau of Statistics, Population Report, Q4 2018



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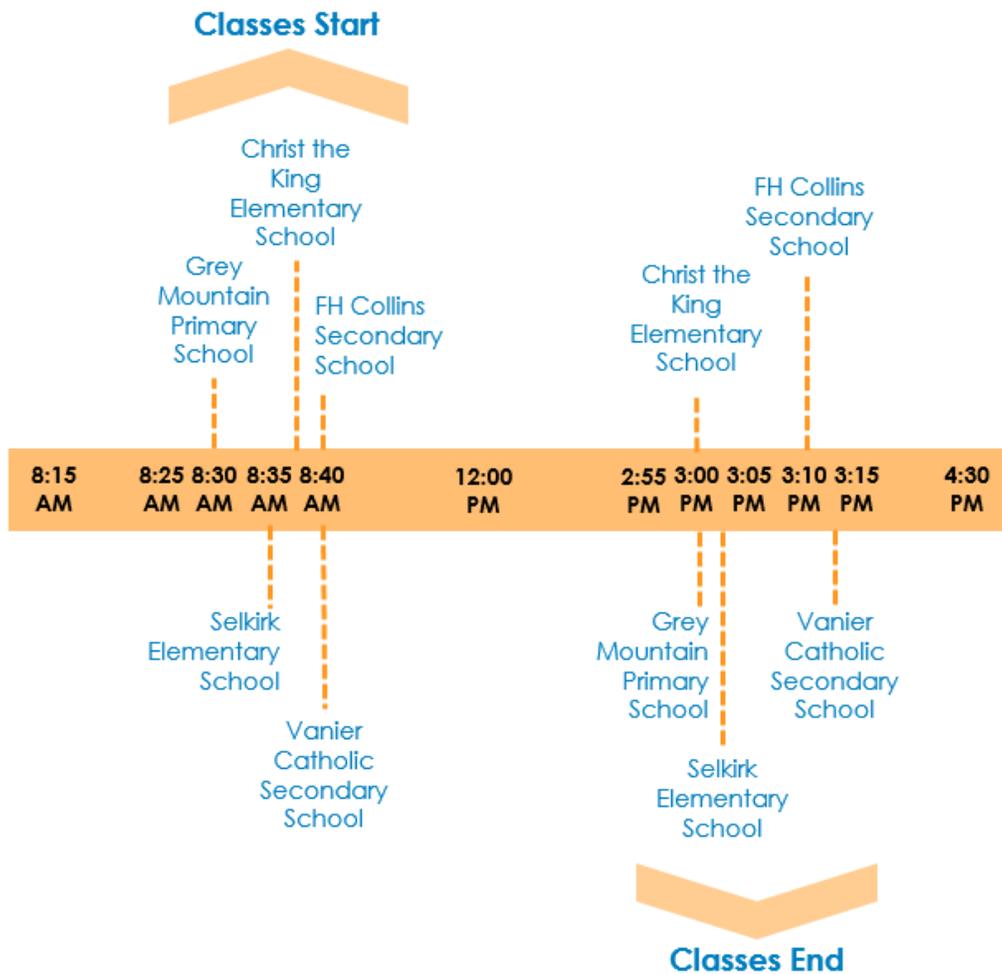


Figure 4: Lewes Boulevard School Start and End Times (2018/2019 School Year)

Although not necessarily contributing to the school traffic surges, Yukon Government Education’s primary office building is also located at the intersection of Lewes Boulevard and Hospital Road.



2.1.4 Whitehorse General Hospital and other Health Services

The Whitehorse General Hospital is located along the Yukon River on Hospital Road, northeast of Lewes Boulevard and operates 24/7 providing emergency care, inpatient and ambulatory services, cancer care, and supporting services clinics. Lewes Boulevard provides the primary access to the Whitehorse General Hospital via the Lewes Boulevard/Hospital Road signalized intersection. Other health services are located along Hospital Road including Thomson Continuing Care Facility and staff offices.

2.1.5 Future Development

Based on a review of previous traffic studies completed within the area, future low density and medium density residential development has been identified within 9 sites throughout the Riverdale neighbourhood. The FH Collins Traffic Study completed by Yukon Engineering Services (YES) in 2014, identifies in the order of 350 potential new residential units within the Riverdale neighbourhood.

2.2 POLICY REVIEW

Figure 5 on the following page outlines the policies and previous work completed and summarizes the findings and recommendations of each document relevant to Lewes Boulevard and the City of Whitehorse.



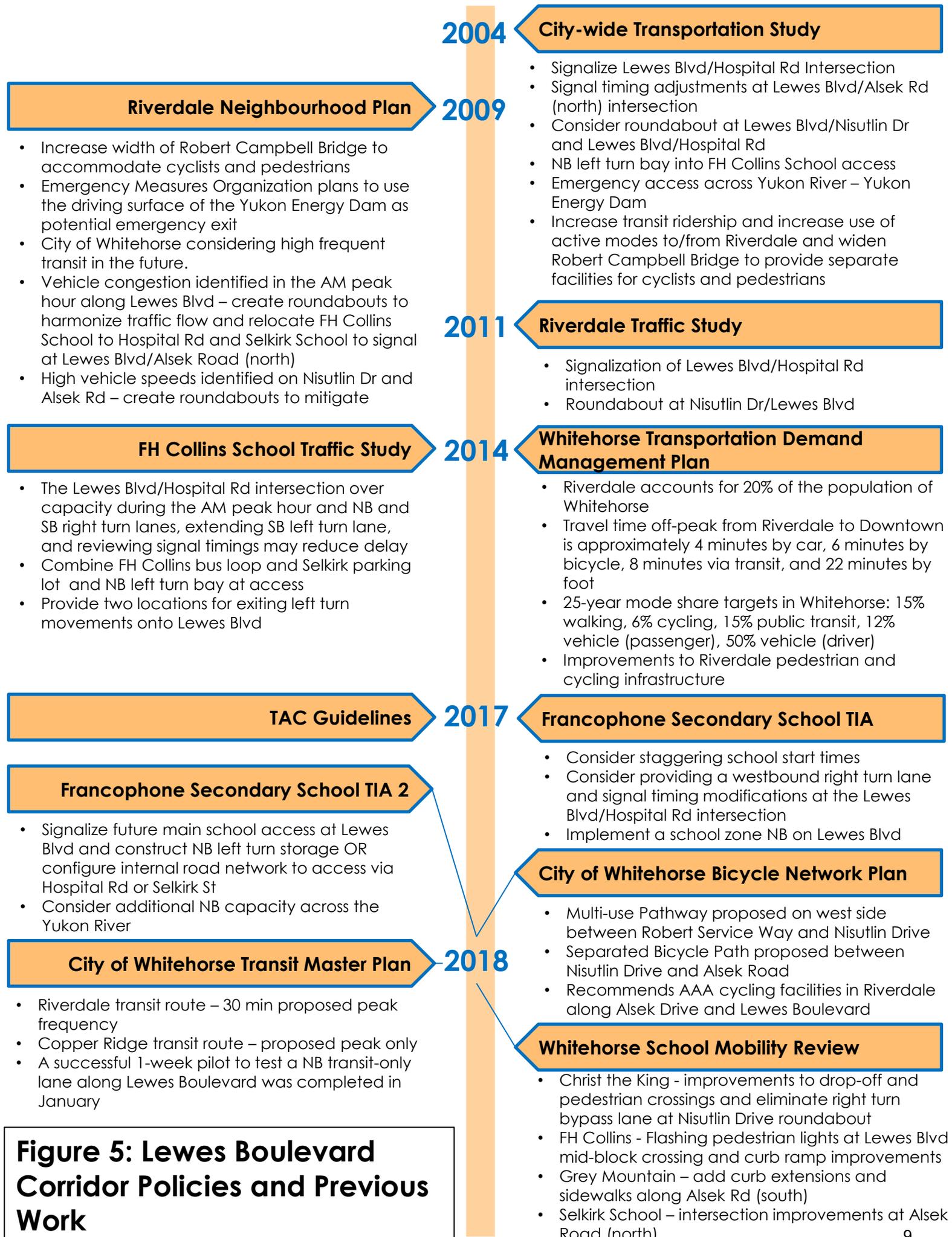


Figure 5: Lewes Boulevard Corridor Policies and Previous Work

2.3 PAST & FUTURE PROJECTS

Based on a discussion with the City of Whitehorse, further work that is planned for future years along Lewes Boulevard is shown on **Figure 6** and includes:

- Based on the success of the 1-week pilot in 2018, Whitehorse Transit commenced a long-term pilot of a dedicated transit lane/bike lane on Lewes Boulevard from the roundabout to Hospital Rd in September 2019.
- In 2019, the City and Yukon Government (YG) extended the paved multi-use path on the west side of Lewes Boulevard from FH Collins School to Selkirk School, as a component of the Francophone School construction.
- Yukon government will be implementing changes to Lewes Boulevard with the new Francophone School (e.g. new accesses, drop-off areas, etc.)



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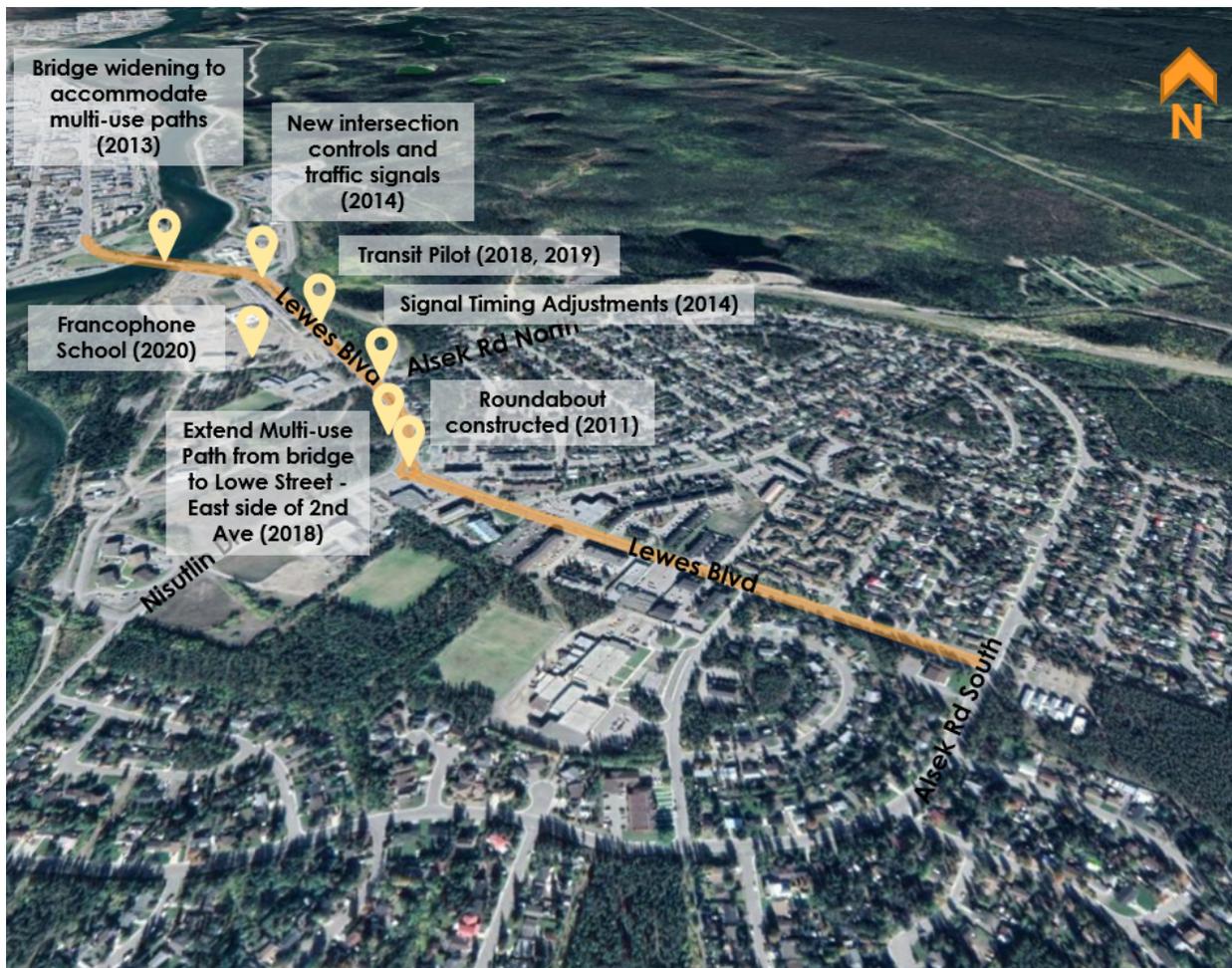


Figure 6: City of Whitehorse Lewes Boulevard Projects



2.4 CORRIDOR OBSERVATIONS

2.4.1 Transit Considerations

A high-quality transit service can promote alternatives to single-occupancy vehicle usage and provide mobility options for those without personal vehicles and unable or unwilling to utilize active mode networks. The criteria for measuring the quality of a transit service can vary from area to area and between municipalities, as the objectives of the transit service help define the values that are deemed most important.

Typical elements to support a favorable transit environment are summarized in **Table 1**.

Table 1: Typical Transit Environment Criteria

Criteria	Description of Criteria
<i>Reliability</i>	Users should feel that the available transit services will arrive and depart on schedule. Metrics for service reliability should be considered in the future to establish expectations.
<i>Comfort</i>	Bus shelters should include features such as benches and protection from weather elements during winter conditions. Buses should be kept in ideal operating conditions to maintain a positive experience for riders, including working environmental controls for differing weather conditions.
<i>Safety</i>	Shelters and pathways connecting to and from transit stops should provide adequate lighting and visibility. Where possible, emergency call buttons should be made available. Visibility of shelters and other areas should maximize the number of “eyes on the street” to enhance safety.
<i>Accessibility</i>	Adequate sidewalks to connect users to transit shelters should be provided, including appropriate crossing controls at intersections. In addition, curb cuts at major pedestrian crossings should be provided to accommodate the needs of all users. Buses should include accessibility features such as kneeling functionality and dedicated seating areas for those with additional needs.
<i>Convenient</i>	Both services and infrastructure should be convenient for users. This includes locating shelters within reasonable walking distances to intended users, routes that are direct and in proximity to major destinations, with a schedule and payment method / features that are easy to use.
<i>Winter Maintenance</i>	Adequate winter maintenance at shelters and along pathways should be enforced to maintain functionality during winter months. This includes planning for snow storage needs surrounding these areas in accordance with the other criteria noted above.



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As noted in the 2016 Canadian Census, 2016 modal split levels indicate a 5% usage of public transit, with target goals of 9% in 2021 and increasing to 15% by 2036 per the City's Transportation Demand Management Plan (2014). The Transit Master Plan identified that between Downtown and Riverdale are the highest transit trip frequency, making up 23% based on the survey sample size. The Transit Master Plan provided recommendations to the Riverdale Route (1), including to interline with Route 5 while Route 5 is operating to improve timed transfers and allow for quick travel times. This would allow the route to operate on 30-minute frequencies at peak and 60 minutes off-peak. The Transit Master Plan also recommended that the Transit Lane initiative in Riverdale along Lewes Boulevard be implemented in full.

Field observations made along the corridor indicate transit vehicles queued at the roundabout during peak periods of congestion, negatively impacting transit services and travel times. This congestion was most pronounced during the AM peak hour, occurring in two traffic surge periods beginning at approximately 8:00am and clearing approximately 45 minutes later.

To further encourage a high-quality transit service for the corridor, a dedicated transit lane in each direction should be considered. However, as noted in later sections of this report, congestion and reduced free-flow speeds along the corridor were only observed to occur during the peak activity periods of the adjacent schools, generally lasting approximately 30-45 minutes during the mornings and afternoons. At all other times, congestion levels appear to be minimal. While dedicated transit lanes may provide benefits during these congestion periods, at other times of the day, the general use lanes are expected to operate adequately and may not provide transit users with a significant travel time advantage. The dedicated transit lane may also benefit the corridor's observed high 85th Percentile Speeds, by narrowing the travel lanes and reducing driver comfort with speeding through the corridor. Further, the expected benefits of a dedicated transit lane to improving transit usage should be updated in the future if the duration periods of congestion increase.

2.4.2 On-Site Peak Hours Observations

On Tuesday February 12, 2019, peak hour observations were conducted by Stantec which included observing all modes of transportation using the street. This day appeared to reflect typical operations of the surrounding land uses. The motor vehicle queuing that was observed in the AM Peak hour is described in the timeline below.



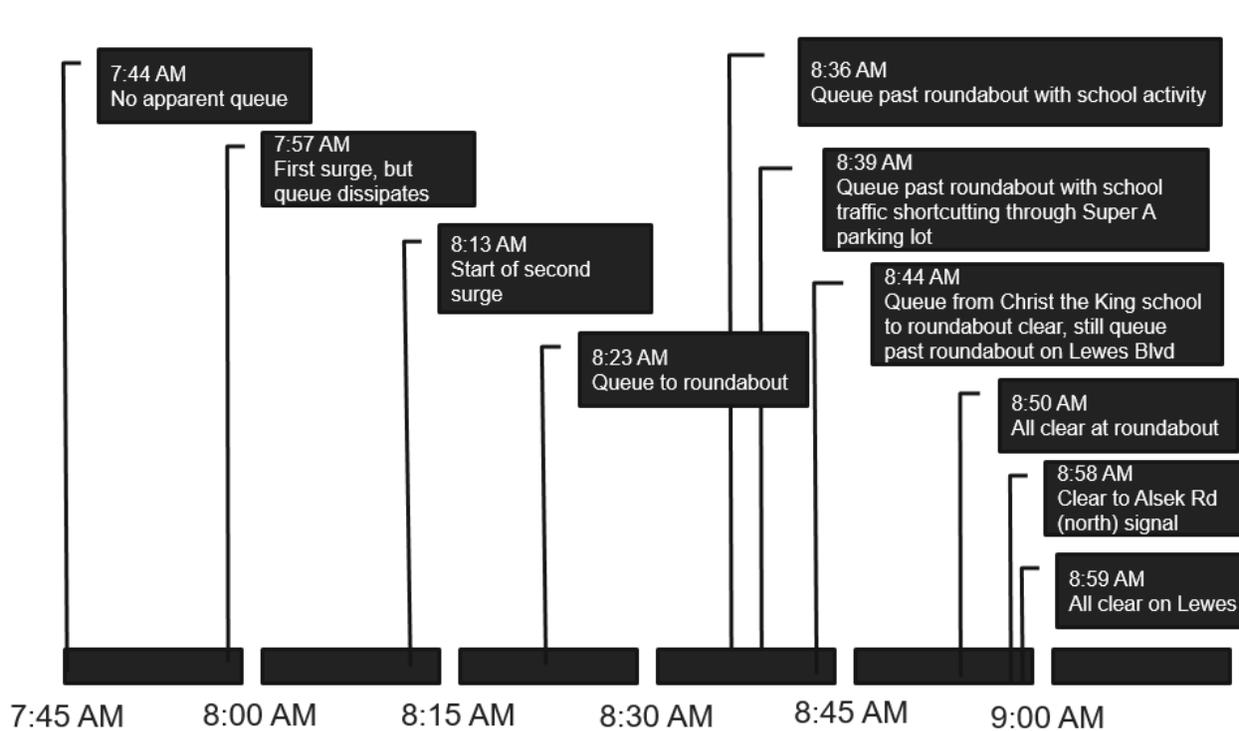


Figure 7: AM Peak Hour Observations - Northbound Lewes Boulevard

As can be seen in **Figure 7** above, the queuing activity that was observed on the street was for approximately 45 minutes, from 8:13 AM to 8:59 AM. When there was queuing on the street, the vehicles would travel at a stop-and-go pace, not a standstill or ‘grid lock’, as can be seen in the travel time trials that were completed for the street segment (section 2.4.2).

Observations that were also noted during the morning peak hour site visit were:

- Significant number of people noted to be walking and biking along Lewes Boulevard.
- The existing pedestrian crossing at FH Collins School is difficult to see with the current lighting and sight distances;
- Cyclists primarily used the parallel bike facilities (multi-use path or trail), although one cyclist used the snow-covered bike lane; and
- Merging areas primarily at Alsek Road (North) and Nisutlin Drive create additional stopping and delay for upstream vehicles due to negotiations between drivers.

A compiled video of the street activity that was observed during the AM Peak Hour on February 12, 2019 was created and made available to the City of Whitehorse. This short video shows the existing conditions and the activity observed on the street and is provided separately to the City.



2.4.3 Travel Time Trials

Travel time trials along the Lewes Boulevard corridor were completed on Wednesday April 3, 2019 during the AM, midday, and PM peak periods. Southbound time trials began at the Robert Service Way/Lewes Boulevard intersection at Rotary Park and time was recorded at milestones along Lewes Boulevard until Alsek Road (South) at Grey Mountain School. Northbound time trials began at the Alsek Road (South)/Lewes Boulevard intersection and completed in similar fashion to Robert Service Way.

Figure 8 identifies the results of the travel time recorded in the southbound direction along the corridor. As shown, traveling the corridor in the southbound direction generally took between 3 minutes and just over 4 minutes. While there was not significant variation in the southbound travel time over the course of the day, the longest times were recorded during the AM peak at approximately 8:40 AM, midday at approximately 12:25 PM, and in the afternoon at 3:30 PM.



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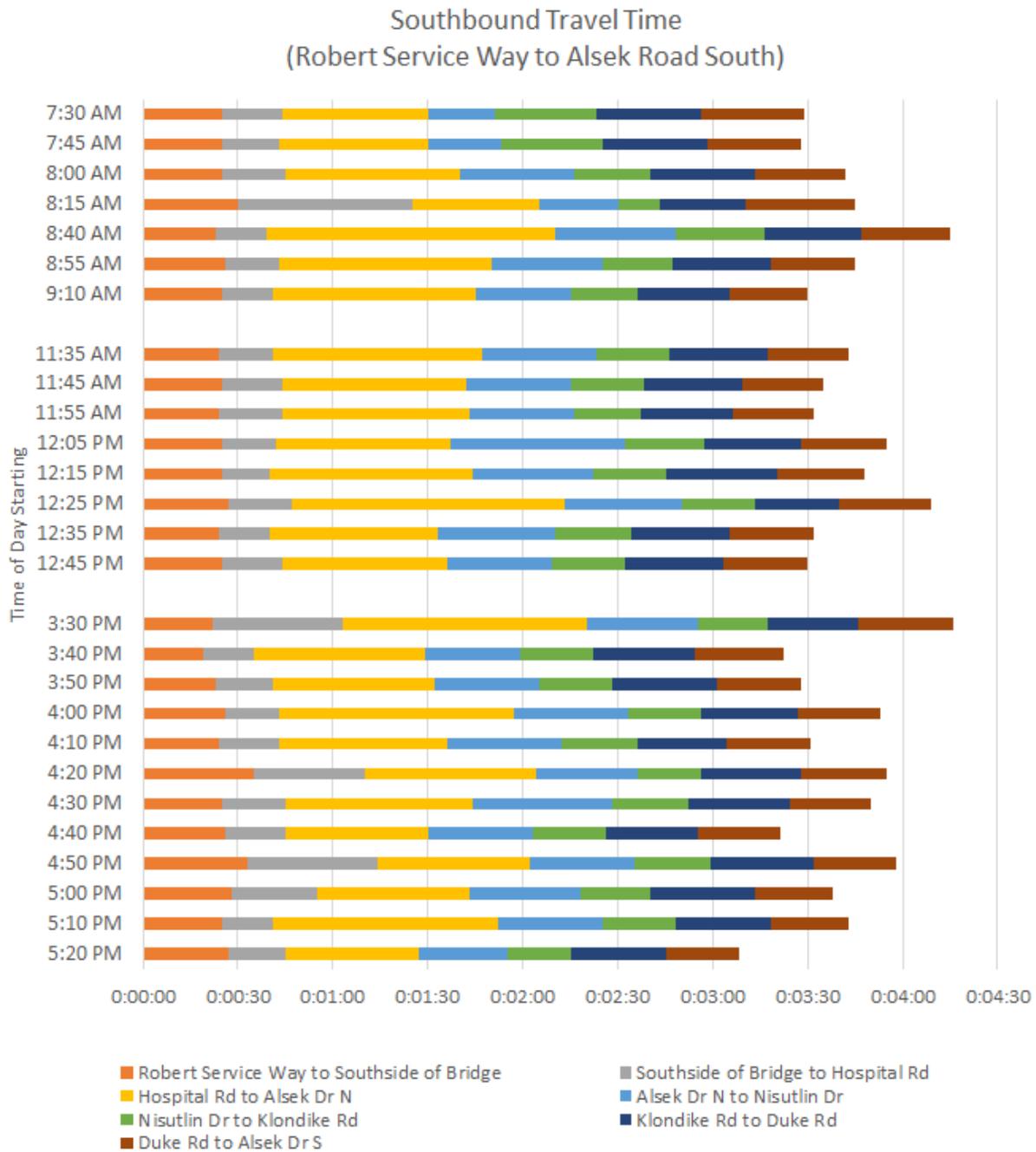


Figure 8: Southbound (into Riverdale) Travel Time (Robert Service Way to Alsek Road (South))



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Figure 9 illustrates the results of the travel time recorded in the northbound direction along Lewes Boulevard. As shown, the travel times recorded ranged between 3 minutes and 15 minutes. The longest travel time (15 minutes) traveling northbound between Alsek Road (South) and Robert Service Way was recorded between 8:20 AM and 8:35 AM. This time coincides with the school morning drop-off period and residents leaving the neighbourhood. A northbound moving queue was observed to extend south from the Robert Campbell Bridge to south of the Lewes Boulevard roundabout. By 8:45 AM, the travel time was reduced to roughly 7.5 minutes as the queue dissipated. No significant spikes in travel time similar to the AM peak were recorded during the midday and PM peak periods.

It is not uncommon for short durations of increased congestion to coincide with the AM peak hour period particularly near school sites during the morning drop-off period. The added congestion can also be beneficial, resulting in slower vehicle speeds and therefore increasing safety adjacent to the school site. Given the short duration of this congestion period, short period of time required to clear queues and that the remainder of the day operated as free flow conditions, this minor period of increased congestion is considered acceptable.



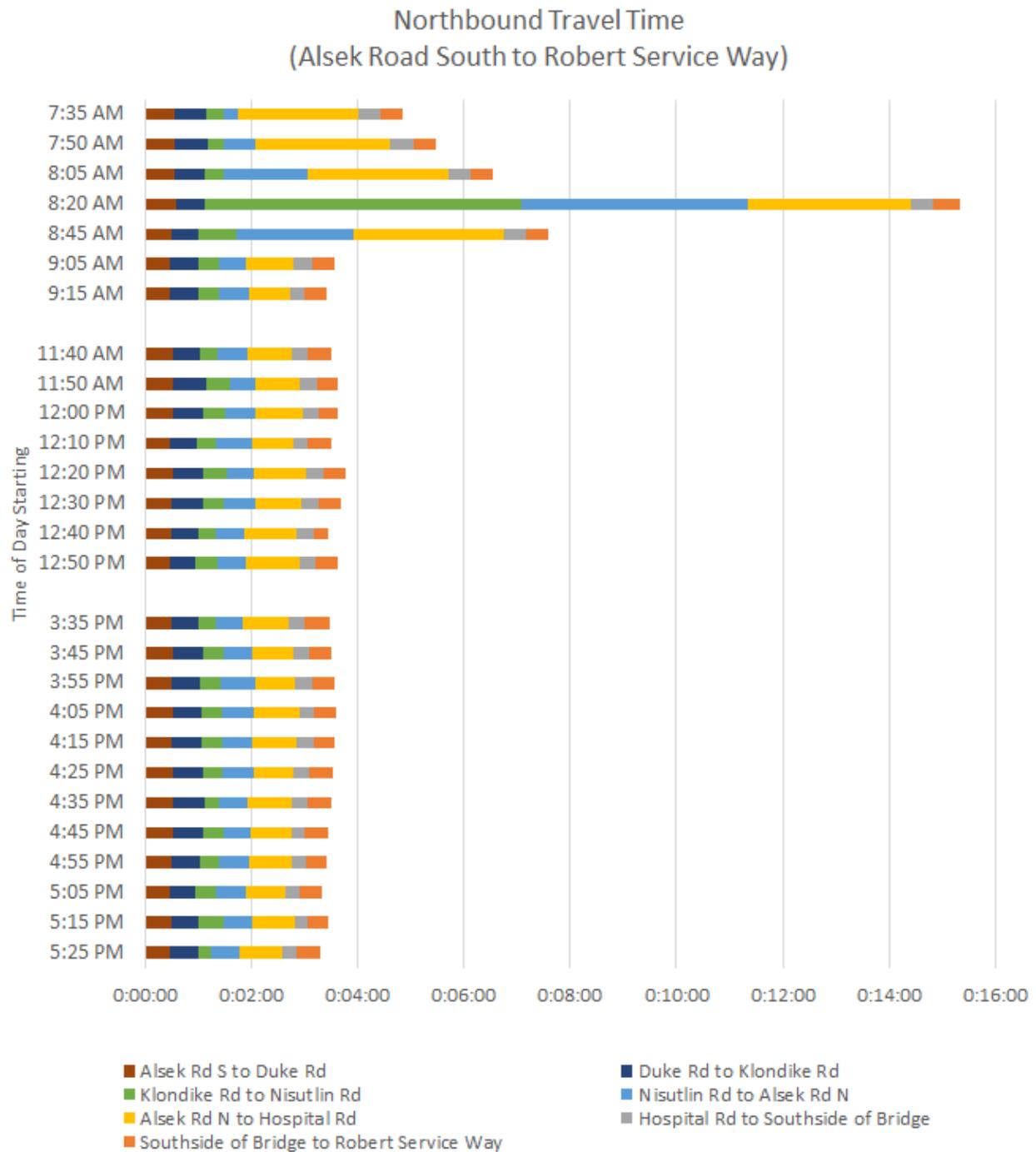


Figure 9: Northbound (out of Riverdale) Travel Time (Alsek Road (South) to Robert Service Way)



2.4.4 Walkability and Accessibility

An area that is acceptable for walking and using mobility aids is typically one that is overall safe and attractive. High quality walking environments provide a high level of connectivity, promote a sense of place, and encourages consideration of the community as a destination. Typical elements of a walkable environment are summarized in **Table 2**.

Table 2: Typical Walkable Environment Criteria

Criteria	Description of Criteria
<i>Space</i>	There is appropriate space provided along a street for people walking. Sidewalks should provide a comfortable buffer from adjacent vehicles.
<i>Place</i>	The street should be a destination in its own right with buildings, trees, and other plantings that are oriented towards the street and provide an interesting environment for people.
<i>Crossings</i>	Pedestrian crossings are conveniently located along desired travel paths and are comfortable and safe. Devices are provided to support crossing by people of all ages and abilities without barriers.
<i>Security</i>	People feel comfortable walking alone at all times of the day and night and areas are overlooked by people in surrounding buildings and those interacting with the street.
<i>Connectivity</i>	Direct and logical walking routes with minimal deviation exist between destinations, reducing travel times.
<i>Accessibility</i>	The street can be accessed by people of all ages and abilities (eg. Minimal grade differences, barrier free design)

At the time the site visits took place, snow was covering much of the walking infrastructure in the area, especially the nuanced aspects associated with accessibility. As such, the criteria for conducting a walkability and accessibility review of the area is provided below and it is recommended that this be conducted prior to Phase 2.

Table 3 summaries industry best-practice evaluation criteria that could be used to evaluate mid-block and intersections on Lewes Boulevard.



Table 3: Proposed Lewes Boulevard Walkability Evaluation Criteria

	Good	Fair	Poor	Gap/Barrier
Mid-Block (between intersections)	Unobstructed pedestrian through zone width $\geq 3\text{m}$ AND Buffer from moving traffic all day (e.g., parking) or furnishing zone of $\geq 1.7\text{m}$ AND Pedestrian-oriented lighting	Pedestrian through zone width $<3\text{m}$ and $>2\text{m}$ AND Buffer from moving traffic but may be narrow or not all day (e.g., off-peak parking only) AND Street lighting	Pedestrian through zone width $<2\text{m}$ OR No buffer OR No lighting	No sidewalk
Intersection	All FAIR elements are present AND Universal Design elements (e.g., tactile walking surface indicators) AND Curb Radii $> 4.5\text{m}$ and $< 6.0\text{m}$	For Speed Limits of 50km/hr. & 2 lanes: • RRFB* & marked crosswalk • Curb ramps aligned with crosswalk For Speed Limits of 50km/hr. & > 2 lanes: • RRFB for ADT $< 15,000$ and up to 4 lanes • Traffic signal where > 4 lanes or at schools • Marked crosswalk • Curb ramps aligned with crosswalk AND Curb Radii $>6.0\text{m}$ and $\leq 10.0\text{m}$	Does not meet FAIR elements OR Unmarked crossings where ADT >1500 OR Crosswalk is skewed OR Curb ramp is not oriented to crosswalk OR Curb Radii $> 10\text{m}$	No marked crossing or traffic controls for: • Streets with operating speeds $>50\text{km/hr.}$ • Crossings near schools OR No curb ramps

*Rectangular Rapid Flashing Beacon (RRFB)

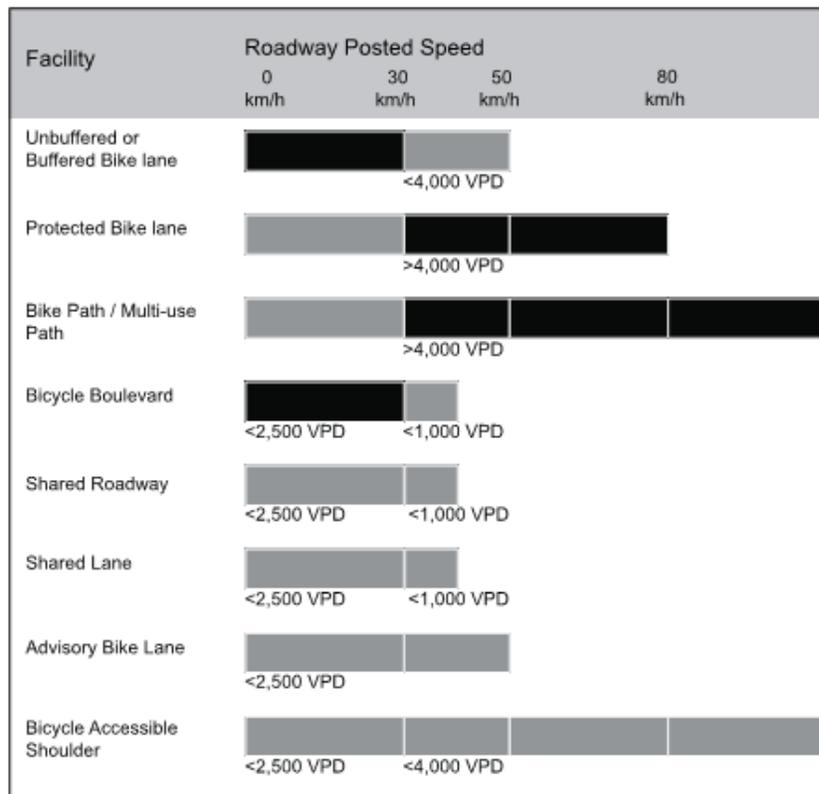
While not all streets require a “good” evaluation for successful pedestrian accommodation, these criteria should be applied uniformly to the network. Areas that are “fair” or “poor” should be justified based on context and volumes. As Whitehorse is a winter City, the buffer-furniture zone is critical for snow storage both from the roadway and from adjacent sidewalks and multi-use paths.



2.4.5 Bike Comfort Survey

The City of Whitehorse Bicycle Network Plan (2018) was reviewed to assess the most appropriate treatment for the Lewes Boulevard corridor. Criteria for determining the most appropriate treatment are and shown below in Figure 10 (Figure 7, Bicycle Network Plan):

Bikeway Facilities Recommended by Transportation Association of Canada, based on Roadway Posted Speed and Vehicles per Day (VPD)



Legend

- Facility is typically suitable for posted speed
- Depends on context - motor vehicle volumes as indicated
- Not suitable (blank areas)

Source: Geometric Design Guide for Canadian Roads, Chapter 5 - Bicycle Integrated Design (2017)

Figure 10: Bikeway Facility Selection Criteria for Lewes Boulevard Corridor



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Based on the posted speed limit and daily volumes, Figure 10 would suggest that either a Protected Bike Lane or Bike Path / Multi-Use Path is recommended. Given the context of the corridor relative to the number of schools, it is generally observed that most younger children (and their guardians) are more comfortable using an off-street facility. A sidewalk currently exists along the entire west side of the roadway for the study area from Alsek Road (N) to Downtown. As the schools are also located on the west / southwest side of the roadway, and given the high bus/pedestrian activity, it is recommended that a two-way bike path be constructed in the boulevard to the Bridge. There appears to be adequate ROW in the boulevard space to accommodate this upgrade, though more detailed review and design would be required to confirm this and whether the existing sidewalk would need relocating.

On the Robert Campbell Bridge, the expanded sidewalks allow for “shared use” allowing cyclists to travel on either side of the bridge, though they have to yield to pedestrians. Given the high daily vehicular traffic volumes observed on the bridge, the thresholds for a shared facility outlined in the Bicycle Network Plan are exceeded, however adequate ROW does not appear to be available to accommodate a travel lane in each direction and a protected bicycle facility. If there are no near-term plans to widen the bridge, it is recommended that the current and future function of the shared-use facilities be examined. It could be beneficial to restrict cyclists to one side if pedestrian volumes are too high, say, on the west side. The existing lanes and shoulders on Lewes Boulevard are wide enough to accommodate a designated bicycle facility on either side, though a painted bike lane would be substandard. It is recommended that a potential on-street protected cycle lane be examined for the northbound direction. An off-street 2-way bicycle facility would still be recommended for the southbound direction given the frequent bus activity that would be challenging to integrate with an on-street facility.

2.5 HISTORICAL TRAFFIC VOLUMES

Figure 11 on the following page identifies the locations where 24-hour, 2-way vehicle-volumes are measured, as well as the 2017 data (vpd=vehicles per day)., No other 24-hour data locations in the Lewes Boulevard corridor were available at the time of this study, however peak hour data is available at the roundabout. Also illustrated in Figure 11 is the peak hour volumes (vph) for the roundabout.





Figure 11: Locations where Two-way Traffic Volumes are measure and 2017 data

Figures 12 and 13, illustrate the distribution of two-way traffic volume along Lewes Boulevard for multiple count years between 7:00 AM and 7:00 PM north of Hospital Road and north of Alsek Road (North) respectively. As shown in both locations, the most dramatic traffic peak occurs in the AM roughly between 7:45 AM and 9:15 AM.

The data in both figures suggests that there is some variation from year to year in the two-way volumes, however there is no clear trend for increased traffic growth. The general traffic profile through the 12-hour period is also consistent year to year at both locations and there are other distinctive peaks outside the AM peak period. There is a double peak in the PM peak period, roughly 3:00pm-4:00pm and again 4:30pm to 5:30pm that are approximately 70% of the AM peak volume. A lower peak is evident over the lunch hour with volumes approximately 50% of the AM peak volume.



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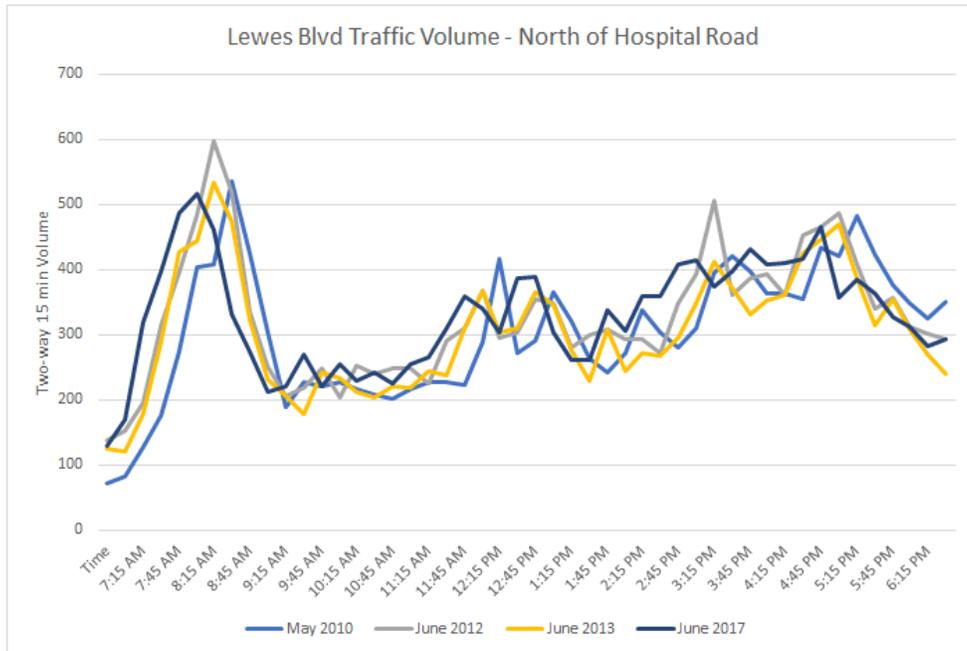


Figure 12: Total Traffic Counts (15-min intervals) from 7am to 7pm on Lewes Blvd north of Hospital Rd

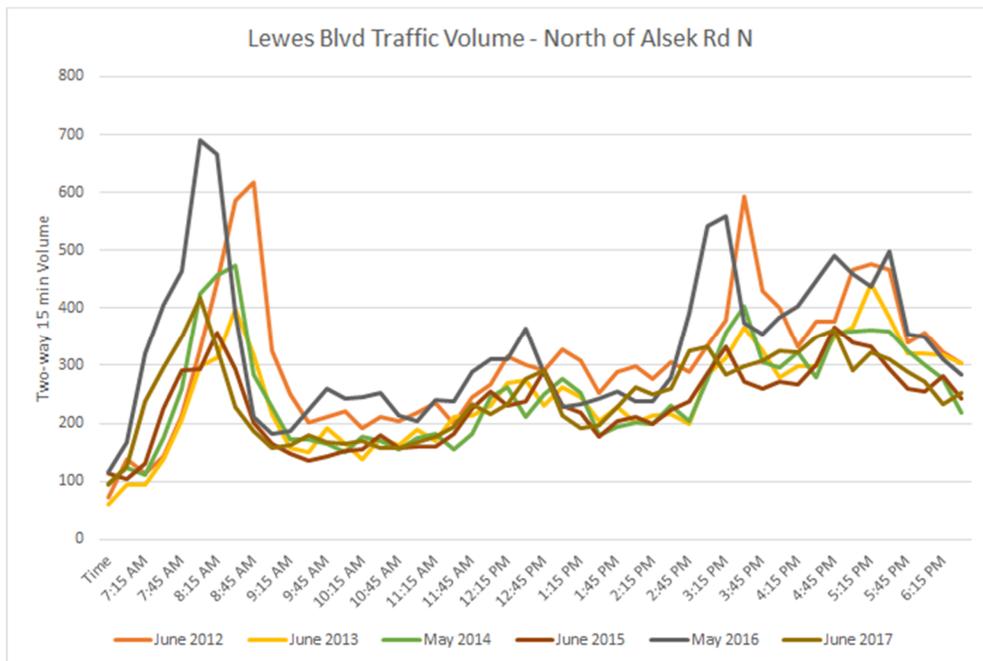


Figure 13: Total Traffic Counts (15min intervals) from 7am to 7pm on Lewes Blvd north of Alsek Road (North)



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Figure 14 illustrates the 15-minute traffic volume measured in June 2017 along Lewes Boulevard between the Robert Campbell Bridge and Hospital Road entering and exiting the Riverdale neighbourhood. As shown, the magnitude of traffic entering and exiting Riverdale is generally similar in the AM peak, while traffic entering Riverdale generally represents a larger portion of the total traffic on Lewes Boulevard in the PM peak. During the school dismissal period, the proportion of traffic exiting Riverdale is higher on Lewes Boulevard.

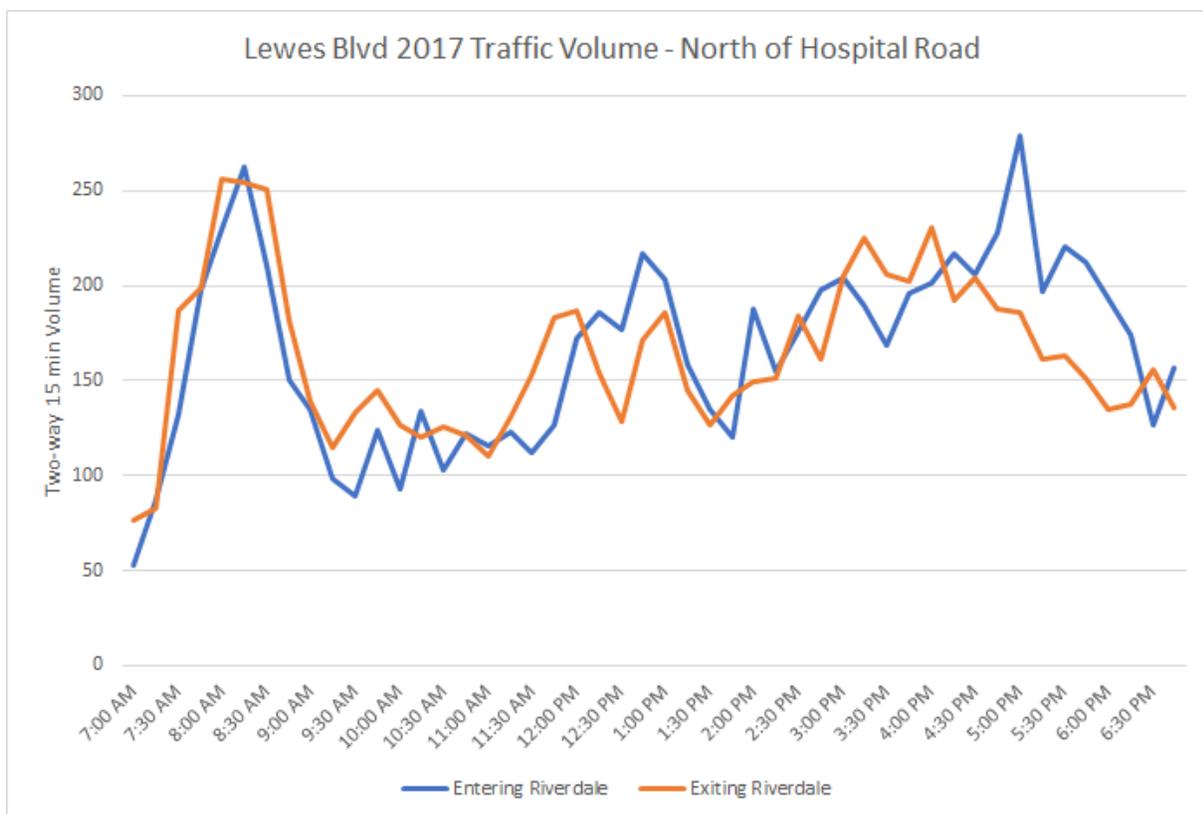


Figure 14: Lewes Boulevard 2017 Traffic Volumes North of Hospital Road, separated by direction

Figures 15, 16, and 17, illustrate the peak hour volume between 2010 and 2017 at the Lewes Boulevard & Hospital Road, Lewes Boulevard & Alsek Road (North), and Lewes Boulevard roundabout respectively. Traffic volumes at each intersection remained relatively consistent with respect to time of day, between 2010 and 2017.

The relationship between AM, Midday, and PM peak hour traffic at each intersection is also illustrated. At Lewes Boulevard & Hospital Road, the highest traffic volume through the intersection occurs during the AM peak hour. At the Lewes Boulevard & Alsek Road (North) and Lewes Boulevard & Nisutlin Drive intersections, the magnitude of AM and PM peak hour traffic is relatively similar.



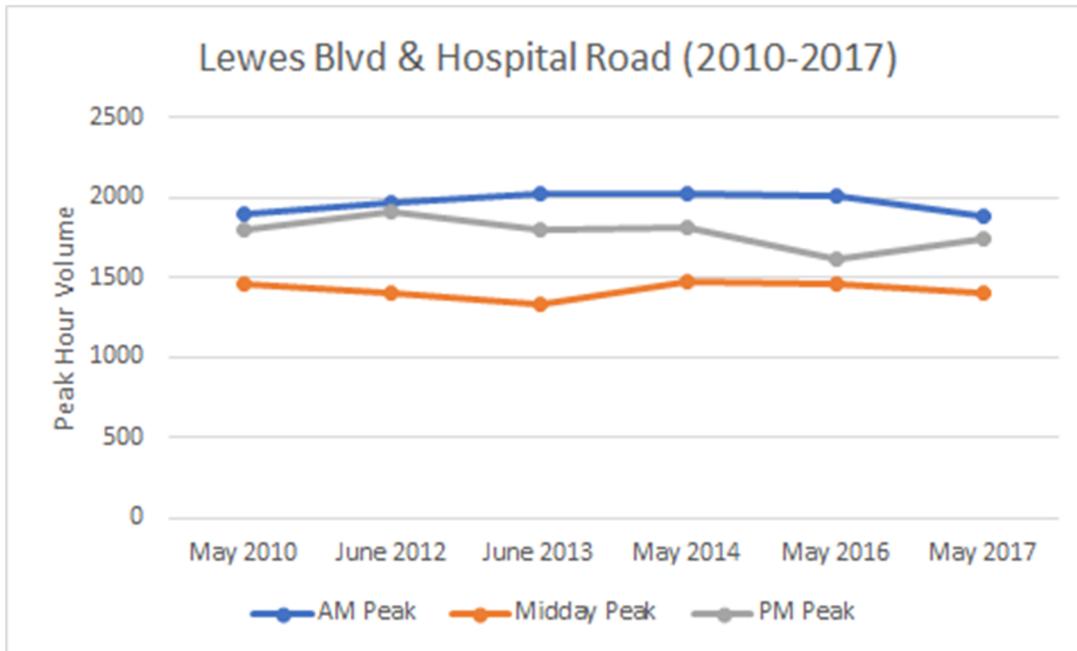


Figure 15: Peak Hour Traffic Volume at Lewes Boulevard & Hospital Rd

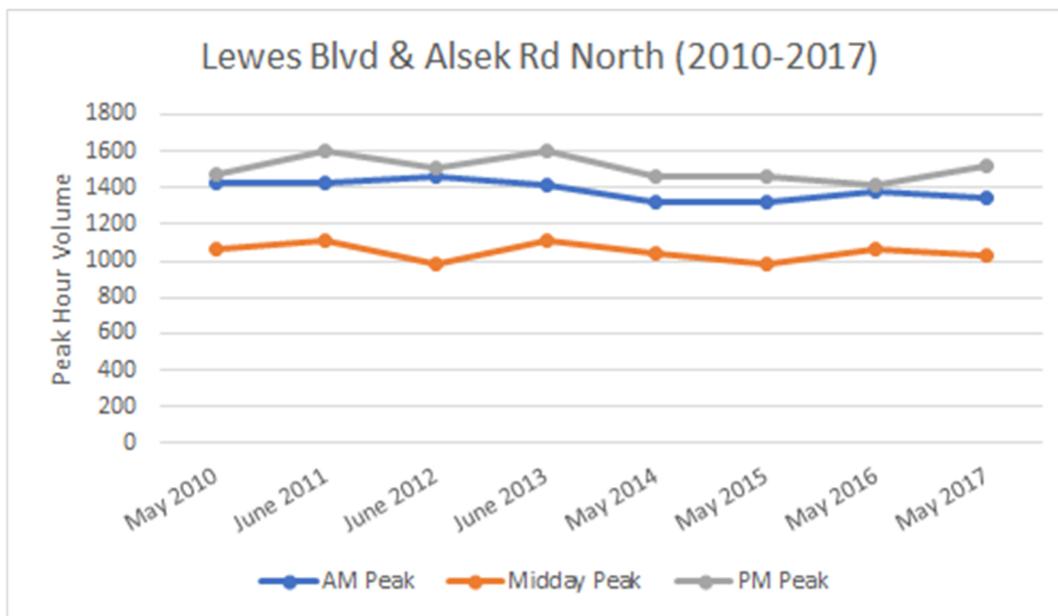
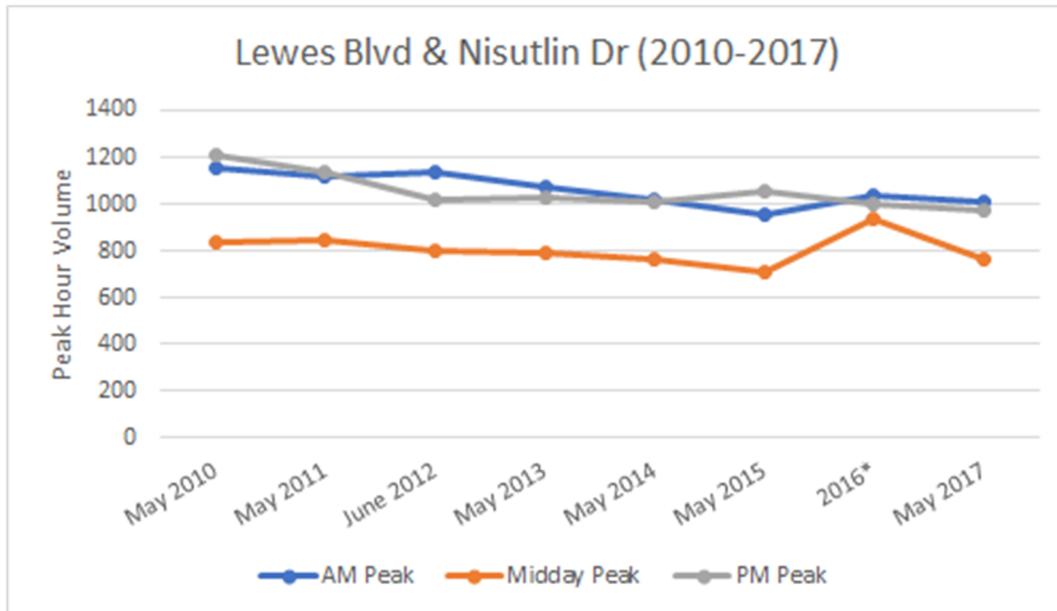


Figure 16: Peak Hour Traffic Volume at Lewes Boulevard & Alsek Road (North)





1. 2016 count date at the Lewes Boulevard & Nisutlin Drive intersection was not recorded with the count summary.

Figure 17: Peak Hour Traffic Volume at Lewes Blvd Roundabout¹

2.6 FUTURE TRAFFIC VOLUMES

Based on a review of the Whitehorse Francophone School TIA completed by Bunt & Associates in 2016, the following developments were included in establishing total traffic along Lewes Boulevard:

- Whitehorse General Hospital expansion (gross floor area expansion only - no new beds or hospital staff);
- Riverdale Infill Developments and Densification (based on Riverdale Traffic Impact Study and FH Collins Traffic Impact Study) - low and medium density developments. (151 townhouse dwelling units (du), 53 single family du, and 100 apartment du in long term (2036));
- Expansion to FH Collins and Selkirk Schools (114 FH Collins students and 45 Selkirk students in long term); and
- Development of the Whitehorse Francophone School.

At this time, it is anticipated that the total traffic volumes outlined in the Whitehorse Francophone School TIA completed by Bunt & Associates represents a good indication of the future traffic volume expected along Lewes Boulevard with the additional development outlined above. Refer to the TIA for the AM and PM peak hour traffic volume forecasts along Lewes Boulevard.



It is our understanding that the Department of Education is reviewing school locations and restructuring. Changes to the number of schools in Riverdale can have a dramatic impact on the traffic volumes.

The skateboard park located to the north of FH Collins will be rebuilt and expanded by 2021.

2.7 SPEED STUDIES

Figure 18 illustrates the 85th percentile speed along Lewes Boulevard measured in 2018 over a 24-hour period. The measured speeds were generally low in the AM and School PM peak hours coinciding with congestion on the corridor. It is noted that a school zone of 30 km/h currently exists in the southbound direction of Lewes Boulevard between Hospital Road and Alsek Road (north). While the posted school zone does not indicate time of day, the Yukon Motor Vehicles Act states that the 30 km/h speed limit be enforced between 8:00 AM and 4:30 PM on school days. The data sets provided did not differentiate the speeds by time of day or direction on Lewes Blvd. It is therefore not possible to comment on the school zone speed compliance.

85th Percentile Speed Definition: The speed at which 85% of the measured or observed vehicles are traveling at or below.



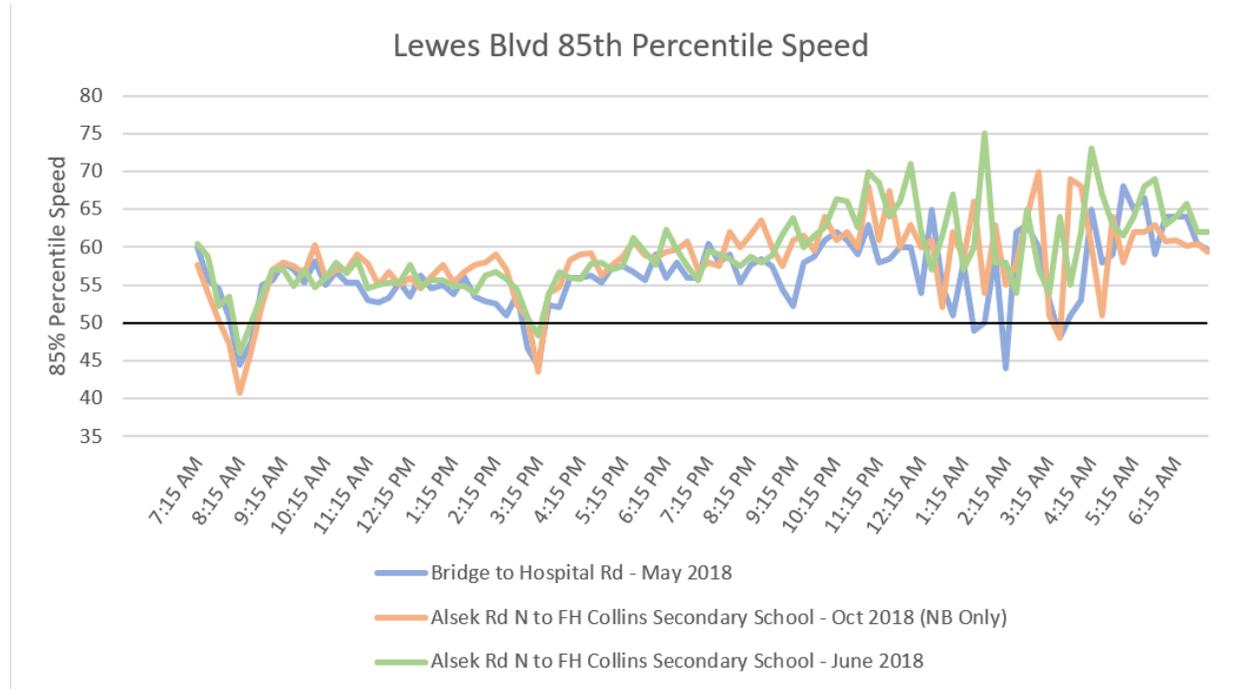


Figure 18: Lewes Boulevard 85th Percentile Speed (2018)

As illustrated in **Figure 18**, the 85th Percentile Speed exceeds the 50 km/h posted speed limit (noted with a black line on the graph), with lowest speeds observed during the peak activity periods of the nearby schools. This suggests road conditions are conducive to providing driver comfort when traveling at higher-than-posted speeds. This may be a condition of a number of factors, such as:

- Limited traffic control measures: All of the intersections between the only signalized intersections of Robert Service Way and Alsek Road (N) are stop-controlled on the minor street approaches, with free-flow conditions along Lewes Boulevard. This provides limited incentives to slow vehicles along the corridor.
- Limited cross street interference: The cross-streets to Lewes Boulevard between Robert Service Way and Alsek Road (N) generally serve specific land uses (the hospital, schools, etc.), which may not generate significant traffic volumes outside of their respective peak activity periods (such as shift changes at the hospital, morning drop off and afternoon pick up at each school, etc.). This condition increases driver comfort for traveling at higher-than-posted speeds due to expectations of limited conflict areas.
- Wide travel lanes: The wide (5m or 16 ft) travel lanes along Lewes Boulevard combined with 1m (3 ft) shoulders are conducive to higher travel speeds. The lower speeds observed during peak school times suggests a moderating affect due to the traffic activity because highest speeds and variability occur during the night hours. This too suggests that the design environment is not conducive to “calming” traffic.



2.8 COLLISION DATA

Collision data received from City of Whitehorse is summarized in the **Table 4** below.

Table 4: Lewes Boulevard Collision Data (2012-2017) Type of User Conflict							
	2012	2013	2014	2015	2016	2017	Total
Collisions (#)	10	15	13	9	8	10	65
Injuries (#)	X	6	5	X	X	X	19
Fatalities (#)	0	0	0	0	0	0	0
Pedestrian (#)	0	0	X	0	X	X	X
Bicycles (#)	0	0	0	X	0	0	X

An 'X' indicates that the number is above 0 but less than 5 and therefore has been suppressed for confidentiality reasons. While the traffic volumes along Lewes Boulevard have largely held steady, the number of collisions has remained relatively flat as well. While there is insufficient data to calculate a collision rate for the corridor, the general pattern would suggest a relatively unchanging collision rate. In addition, there may be potential variations over the years in how collisions have been reported as well that account for some of the variations. Further details of the specific location, time of day, road/driver conditions and other specifics would be required to conduct a more detailed assessment of the corridor's collision history and to identify any areas of geometric concern.



3.0 STAKEHOLDER INPUT

In February-April 2019, a variety of stakeholders were sent invitations to participate in a short engagement activity with the project team. The intent of this engagement was to develop a background story of the corridor and its current use. The stakeholders, their influence on the activity of Lewes Boulevard and the surrounding areas, and the status of their response at the time of the writing of this report is provided in **Table 5** below.

Table 5: Stakeholder Engagement

Group	Influence	Response
Yukon government Department of Education	Operates several schools and has staff offices in Riverdale	Invitation to connect sent, no response received
Yukon government Department of Health and Social Services	Has staff offices and services in Riverdale	Yes
Yukon Hospital Corporation	Runs the Whitehorse General Hospital	Yes
Kwanlin Dün First Nation	Owns settlement parcels in Riverdale which are likely to be developed in the future	Yes
Ta'an Kwäch'än Council	Owns settlement parcels in Riverdale which are likely to be developed in the future	Invitation to connect sent, no response received
Riverdale Community Association	Community is served by Lewes Boulevard	Invitation to connect sent, no response received
City departments	Includes Whitehorse Transit, Engineering, Operations, Land and Building Services, and Planning and Sustainability Services	Yes Yes Yes Yes

Comments associated with each stakeholder interview are provided below.

Yukon government Department of Health and Social Services

- Organization has staff offices and services in Riverdale
- Group homes within Riverdale, but staff don't travel to there from the Hospital site because they have dedicated staff
- Expansion or Relocation of a new building in 3-5 years is being considered, but could be located anywhere in the City, not necessarily on Hospital Road
- This is one of the largest departments and has many staff within the building on Hospital Road, there are approximately 80 people (within 3 buildings). Regular work hours are 8:30 AM - 4:30 PM.
- Employees travel to work in a variety of transportation modes other than motor vehicles (e.g. Use YG rideshare program, many people bike there)



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- There are dedicated parking spots at each building (at capacity or over), unassigned, with plug-ins, not paid.
- Bike racks in front of building, with showers at Building #1 (unsure about Building #2 & #4)
- Merging and turning lanes seems to be fine
- Traffic coming out seems to be bad, but coming into the site not too bad

Yukon Hospital Corporation

- Hospital is continuously growing as it is tied to the growth of the City. No new facilities are planned in the City, only the expansion of this facility.
- Morning is worst for travel. Lab and Imaging open at 7AM and shift changes are at 7 AM/PM and 8 AM/PM (12-hour shifts)
- Parking issues (demand-related) exist on site
- The left turn onto Hospital Road can back-up
- Exiting the site is sufficient, as there is a dedicated lane
- Speed noted to be a possible issue on Lewes Boulevard
- Accessing the hospital from Riverdale can take 10 minutes at the most congested time

Kwanlin Dün First Nation

- KDFN doesn't have any immediate plans for the development of its Nisutlin Drive parcel but have identified the parcel as having significant development potential

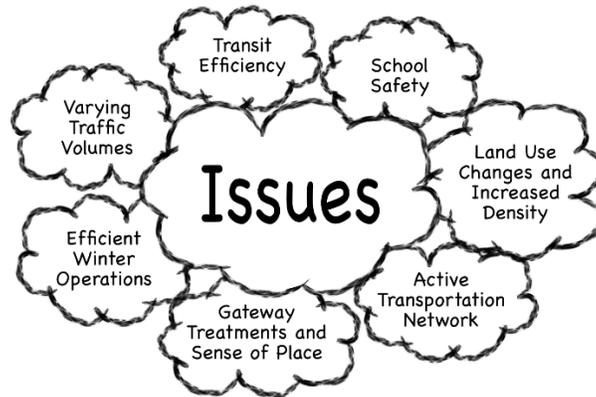
City of Whitehorse Administration (Workshop)

- Integration of Francophone school with Lewes Boulevard
- Redevelopment in area is occurring (track, gym, multi-family developments, school redevelopment)
- 20% of the City's population is in Riverdale, all with transportation requirements to some degree
- Transit Route changes planned for 2020
- New high school usage for transit expected
- Seasonality of infrastructure and maintenance requirements needs to be considered
- Coinciding work times could be an issue
- Need to have convenient and comfortable bicycle infrastructure and amenities at the start and end of the trip
- Sense of Place on Lewes Boulevard could be a secondary issue to other transportation concerns
- Wildfire emergency planning (evacuation and access/egress) to be considered



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In addition to the workshop feedback received from the City of Whitehorse, issues and concerns were provided in the Request for Qualifications at the outset of this project. These concerns and issues are summarized in the graphic below.



- High volume variability—traffic congestion during the peak commuter periods when schools are in session, in contrast to low-medium traffic volumes at other times of the day
- Impacts on transit schedules during peak morning commuter periods
- Signalization timing including the impacts of traffic lights on Second Avenue
- School zone safety including speed, drop-off zones, and safe crossing points
- Impacts of planned increased density in the neighbourhood including new development parcels and ongoing densification of existing houses (e.g. living suites)
- Changing land-use patterns along the corridor including neighbourhood commercial nodes and higher-density residential development
- Connectivity and safety for active commuting
- Potential boulevard beautification improvements such as landscaping to reinforce the corridor as the primary entrance into Riverdale
- As a winter-city, snow storage and removal are considerations that need to be incorporated into the corridor design
- Cost of infrastructure for new improvements (eg. Bridge and roadway improvements)
- Use of the boulevard along the corridor for personal use
- Emergency access and egress out of Riverdale in the event of an emergency (eg. Mass evacuations)



4.0 ISSUE DEFINITION

Determining if an issue exists can be a very broad and subjective matter. Stantec, with refinement provided by the City, developed a more succinct statement to describe the observations and the activity taking place in the study area. By being more specific in the development of a problem statement, like the one below, it is then possible to clearly see what actions may be effective in changing the current status and what actors could be engaged. The issue statement is as follows:

*There are **many people** travelling **by private motor vehicle** on **one access road** that serves the neighborhood and their **arrival and departure times coincide** with **many other people** due to the **purpose of their trips**. Within the **same travel space** that is used for private motor vehicles, transit, active transportation, and emergency services also operate.*

*This issue may be **exacerbated** with **new trips** being made by people travelling to the area by motor vehicle from **across town** due to **new developments** or with street design that is not **inviting or reliable year-round** for people to make travel decisions other than private automobile.*

From this statement, some of the potential actions that could be considered in the following phase of this work are described in **Table 6** on the following pages.



Table 6: Issue Definitions

Category	Action	Intention behind the action	Time frame
Schools	Stagger school times	All schools along Lewes Boulevard start classes within 10 minutes of each other; therefore, traffic demand associated with each school coincides with each other. School traffic in AM peak hour along Lewes Boulevard also coincides with general traffic leaving the Riverdale neighbourhood. Busing resources (e.g. sharing services) may contribute to this requirement of having coinciding start times, but this operational cost could be considered in light of any capital costs that could be required to mitigate the issue (although different parties have responsibility in these issues).	Short-Term
	Re-locate schools outside of Riverdale that have regional enrollment	Schools with regional enrollment would be better served if they were located in a more central location. Explore opportunities to replace ageing school infrastructure in more central locations.	Long-Term
	School Travel Planning	Encourage Yukon Government to collect data on how students travel to and from school and home. Optimize school bus routes and review busing policies. Develop a Safe Routes to School program and address safety issues and infrastructure gaps.	Short-Term
	Behaviour Change Programs	<p>Students are concerned about climate change. Both the City and YG have declared a state of climate emergency. Shifting school travel to other forms of transportation, including utilizing school bus or public transit for both journeys, cycling and walking all reduce the burden that transportation plays in GHG emissions. Explore options to challenge students to get to school independently.</p> <p>Explore options for parents to drop-off students on the downtown side of the Yukon River, and walk or be picked up by transit or school bus for the remainder of the trip. This would at least alleviate the in-out travel incurred by dropping students at the school.</p>	Short-Term
Mode Choice	Improve Safety/Improve Connectivity	Providing high quality options within the community and at the destinations that are within a viable walking or biking distance can help create shifts in mode choice. The routes need to be well connected, logical, efficient and continuous.	Short-Term



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	Improve winter maintenance	School is in session throughout the winter months. Providing high level of snow clearing and sanding is required to make the journey by bicycle or walking safe and predictable.	Short-Term
	Improve Transit reliability	Transit needs to be on time, predictable and reliable. Transit that can pass private vehicle queues is attractive and desirable. Explore ways for transit to bypass congestion through dedicated lanes or que-jumper lanes at traffic lights.	Medium-Term
Increase Road network/ capacity	Widen Lewes Boulevard (not recommended)	Increasing the number of lanes on Lewes Boulevard is not warranted. The traffic congestion is low to medium through-out the day, and only sees high use for a fraction of the morning. Increasing the number of lanes will have the negative consequence of increasing the speed on Lewes Boulevard though-out the day, and negatively impacts any incentive to shift the time-of the day that one is travelling on Lewes Boulevard or to switch to an alternative mode.	N/A
	Second Bridge (not recommended)	Access points to the community could relieve motor vehicle congestion in the peak hour but may result in more vehicle travel in the community due to induced demand (e.g. the current automobile trips may be suppressed because of the network). Emergency access via the Yukon Energy Dam already exists for moving people in or out of the Riverdale neighbourhood.	N/A
Land-Use	Increase the number of destinations in Riverdale	Land use and destinations generate transportation trips. Creating new neighbourhood-oriented destinations within Riverdale. could replace external trips.	Long-Term
	New Developments	Ensuring new developments in the area contribute to an environment in the community that promotes multiple travel options or creates new destinations within the community that could replace external trips	Long-Term
Street Design	Complete Street Design	Speed issues were mentioned in interviews and the affordance of space to motor vehicles can contribute to higher speeds in off-peak time periods.	Medium-Term



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		<p>Some lane geometry at intersections may be modified to increase movement of motor vehicles during peak hours.</p> <p>A transit-only lane with higher frequency buses may affect the mode split percentages in the peak hours and could be used by emergency services (if engagement confirms this need) to remove the requirement to share the same travel lanes.</p> <p>Great connections (e.g. convenient, comfortable, safe) along Lewes Boulevard, within the community, and to destinations / Downtown could help change the mode split to encourage more people to ride bicycles or walk.</p> <p>Infrastructure that can be used year-round must be designed with winter maintenance practice and procedures in mind. This ensures a reliable network for people who want to use modes other than private automobiles, while making it plausible for operations to provide winter maintenance.</p>	
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5.0 CONCLUSION

From the investigation that was conducted for Phase 1 of this study, issues were identified along Lewes Blvd that could be addressed through further design or programming changes. This initial phase concluded the following:

- **Transit:** As the Riverdale community represents a relatively large percentage of the transit riders in Whitehorse, maintaining a high-quality connection will maintain and even improve usage of this route. A review of the traffic volumes, speeds and travel times indicates minor periods of congestion along the corridor, coinciding with peak activity periods of the adjacent schools. Outside of these periods, no observable impedances to transit were noted. Given the relatively short duration of this congestion, a dedicated transit only lane is not expected to provide significant advantages over the general use travel lanes except during the peak congestion periods. However, this benefit should be re-considered in the future should congestion periods increase. A dedicated transit only lane will also provide an opportunity to narrow the wide travel lanes, potentially lowering the 85th Percentile Speeds closer to the posted speed limit.
- **Active Modes:** While the Bicycle Network Plan recommends a separated bike lane along the corridor, given the context of the schools and general comfort level of school-age children on an on-street facility, it is recommended that, in addition to the existing sidewalk along the west side that a separate boulevard two-way bicycle path is constructed in the future to avoid the bus/pedestrian conflicts. On the other side of Lewes Boulevard, a northbound protected on-street bike lane, or boulevard pathway should be examined. Currently, the bridge has shared use facilities (wide sidewalks) on either side. Given the high volume of pedestrian users, the existing and future active modes needs on the bridge should be examined to determine if cyclists should be restricted to one side.
- Historic traffic volumes along the corridor indicate a relatively steady volume of traffic. The similar steady number of collisions would suggest a relatively flat collision rate for the corridor. Minor differences in the number of collisions may also be attributed to differences in reporting over the years.
- Aside from the congestion periods associated with the peak activities of the school, the corridor experiences relatively few traffic concerns aside from speeding. Mitigation measures for reducing speeding concerns include narrowing the travel lanes through the introduction of transit-only lanes and application of a Complete Streets approach.

The subsequent design phase of work would evaluate options based on agreed upon set of criteria, anticipated capital and operating costs, and recommend possible cross-section modifications that could be taken to detailed design and construction.

Programming changes that could be explored in the next phase of work could include municipal programs or coordination with existing and future landowners to determine if mode choice or staggering of trips at



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different times of the day is feasible. It is important to understand the complexity of this type of project and a Complete Streets approach, where all transportation users are considered with safety and equity being top priority, is recommended.

Prioritization of improvements should be given to the completion of a Complete Street design with a transit only-lane, improved walking and cycling connectivity and safety improvements. In addition, changes to the school policies to support the network changes, including staggering bell times, and improved education and programs should be implemented. Following these changes, it is recommended the corridor be monitored and re-evaluated before medium and long-term improvements are considered.

-End of Report-

