

Report to Council



Date: August 24, 2020
To: Council
From: City Manager
Subject: Lakeshore Corridor – Transportation Update
Department: Integrated Transportation

Recommendation:

THAT Council receives, for information, the report from the Integrated Transportation Department dated August 24 2020, with respect to transportation conditions along the Lakeshore Corridor and at Eldorado Rd / Anne McClymont Elementary.

Purpose:

To provide Council with an update on transportation conditions within the Lakeshore Corridor and at Eldorado Rd / Anne McClymont Elementary in the Lower Mission.

Background:

The Lakeshore Corridor, connecting the Upper and Lower Mission via Chute Lake and Lakeshore roads, has experienced some of the most significant traffic related delays in Kelowna. Concentrated outflows of traffic from the Upper Mission in the morning, combined with drop-off activity at Eldorado Rd / Anne McClymont Elementary lead to significant northbound queuing and delays between 8 and 9 am on school day mornings.

Staff last reported to Council on this issue on May 1st, 2017.¹ Since then, transportation staff and the Mayor attended a Town Hall at Chute Lake Elementary on April 2nd, 2019. Council has expressed interest in receiving an update on conditions along the corridor.

This report summarizes how conditions have changed since 2017, considers how future conditions may evolve and assesses a number of mitigation strategies.

Discussion:

¹ Southwest Mission Transportation Update (May 2017) - <https://kelownapublishing.escribemeetings.com/filestream.ashx?DocumentId=6946>

The Lakeshore Corridor (Figure 1), made up of Lakeshore and Chute Lake roads, services the south-west portion of the Upper Mission, including Kettle Valley, neighbourhoods adjacent to Chute Lake Rd and Lakeshore Rd along Okanagan Lake to the south.

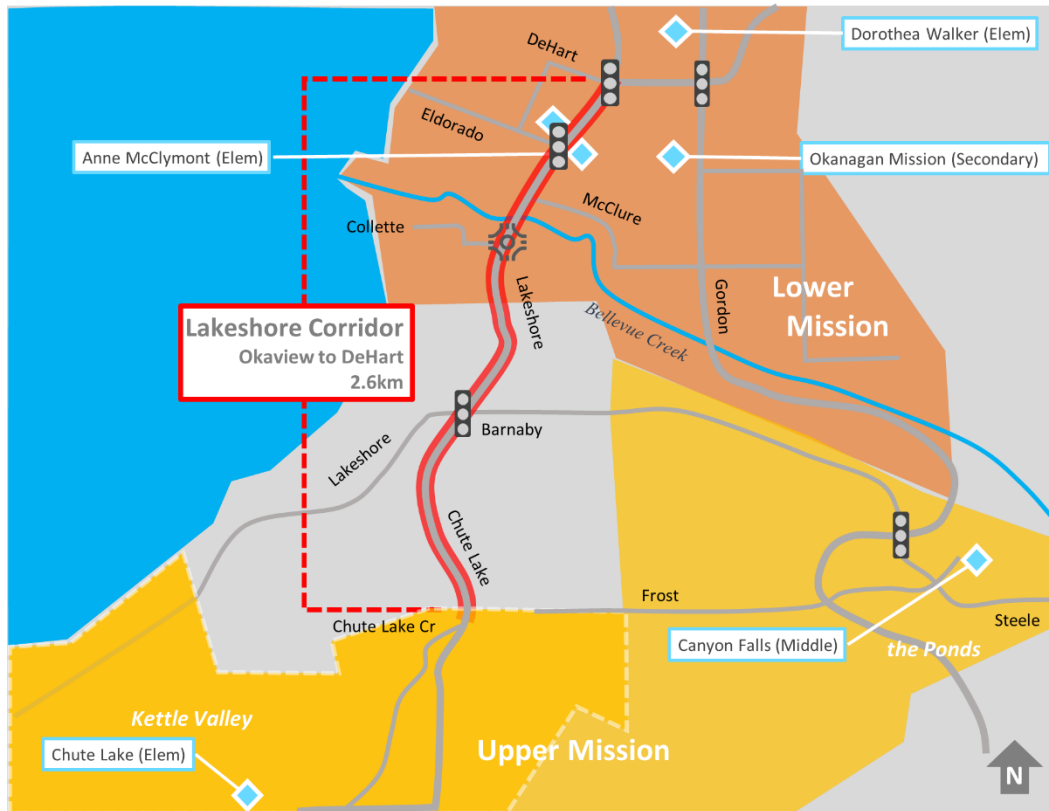


Figure 1 - Lakeshore Corridor Context

Typical of suburban residential neighbourhoods, traffic patterns are dominated by a sharp peak in outbound / northbound travel in the morning as residents travel to work and school. Traffic volumes build along the corridor from local streets within Kettle Valley, at Upper Mission Dr, Barnaby, Collett, McClure and Eldorado. At DeHart traffic divides depending on their ultimate destination, heading to Lakeshore, Gordon and Swamp roads.

The Lakeshore / Eldorado intersection, adjacent to Anne McClymont Elementary (AME), is currently the capacity constraint in the corridor. High morning rush hour volumes on Lakeshore in combination with on-site school loading activities (turning vehicles and pedestrian crossings) initiate queuing and delays. On a typical² school day morning, queuing extends southward from Eldorado through the Collett roundabout towards and beyond Barnaby. While queuing currently starts at Eldorado, adjacent intersections (Barnaby, Collett and DeHart) are also close to their capacity.

Queuing and delay are typically limited to between 8 and 9 am and within this hour conditions vary significantly, peaking around 8:30 (Figure 2); little delay is observed outside this time period or on non-school days.

² Conditions before the COVID19 pandemic.

Lakeshore Corridor Existing Northbound School Day Travel Times

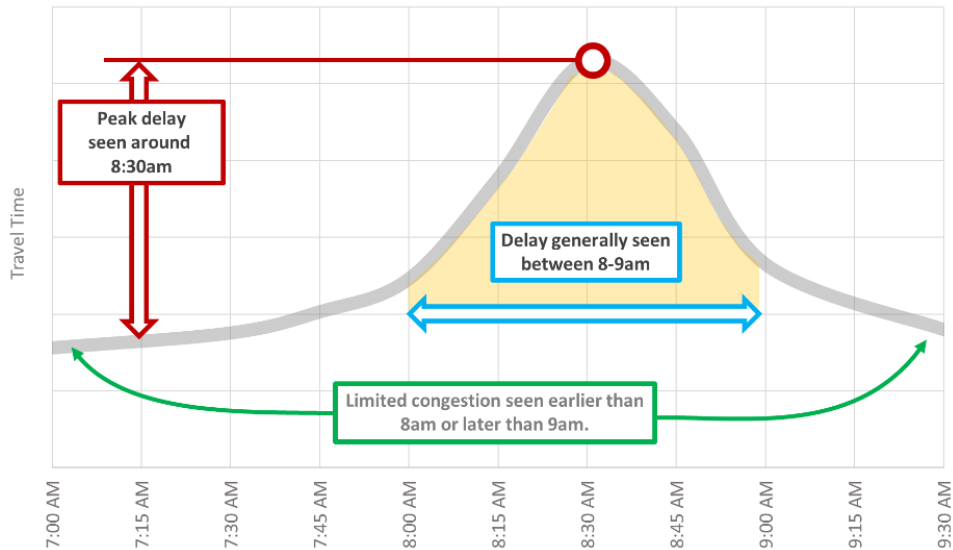


Figure 2 - Changes in Travel Times over the Peak Hour

Changes - Spring 2017 thru Spring 2019

Between spring 2017 and 2019, traffic volumes on Lakeshore grew by 15%, driven by continued development in the area served by Lakeshore (approximately 100 houses). To address increasing delay the traffic signal at Eldorado was adjusted several times to maximize throughput on Lakeshore. Despite these changes, peak travel times on school days (at 8:30am, shown in Figure 3 with light blue dots) both increased and became more variable. While average peak travel times (dark blue lines) increased by 30% day to day variability (the dispersion of the blue dots) grew by 60%.

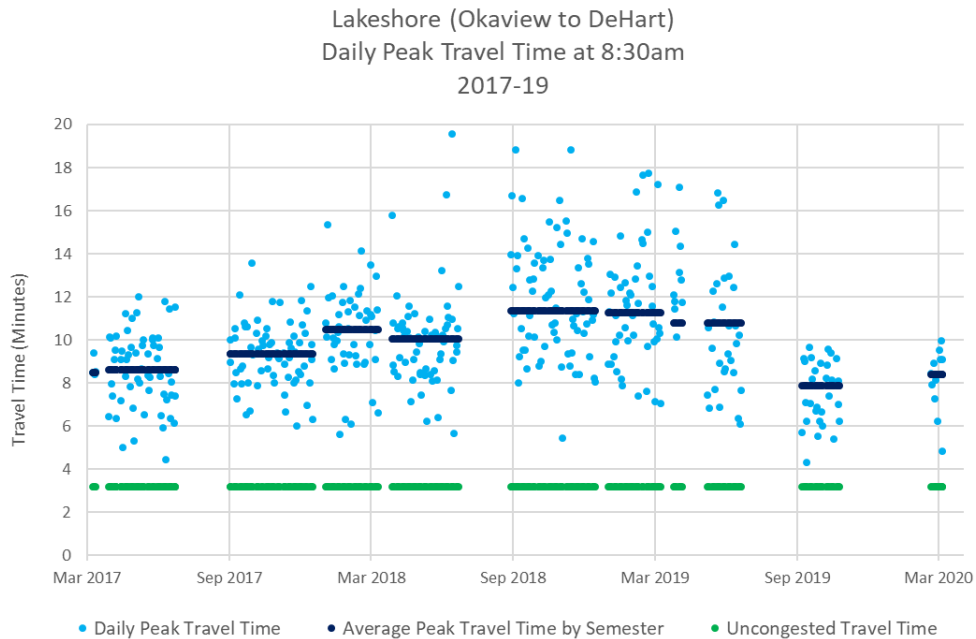


Figure 3 – School Day Travel Times @8:30am (2017-2020)

With greater variability, residents need to add extra time to every trip to reliably arrive at their destinations on time. Queuing, increasing average delays and greater day to day variation are all indicators that Lakeshore, at 8:30am, is at capacity.

Conditions- Spring 2019 – Winter 2020

In the spring and fall of 2019 conditions on Lakeshore changed.

Earlier Signal Timing Adjustments

Additional traffic signal timing adjustments were made at the Lakeshore / Eldorado traffic signal in May of 2019. While signal timing changes had limited impact during school drop-off, they did increase capacity in the hour before school drop-off. As a result, trips shifted earlier, before the school peak and smaller queues started later.

As a results of timing changes, the Eldorado traffic signal now services Lakeshore 80% of the time during peak periods. During these times northbound traffic flows exceed 1000 vehicles/hr, greater than most of the City’s major roads and approaching the capacity of adjacent intersections.

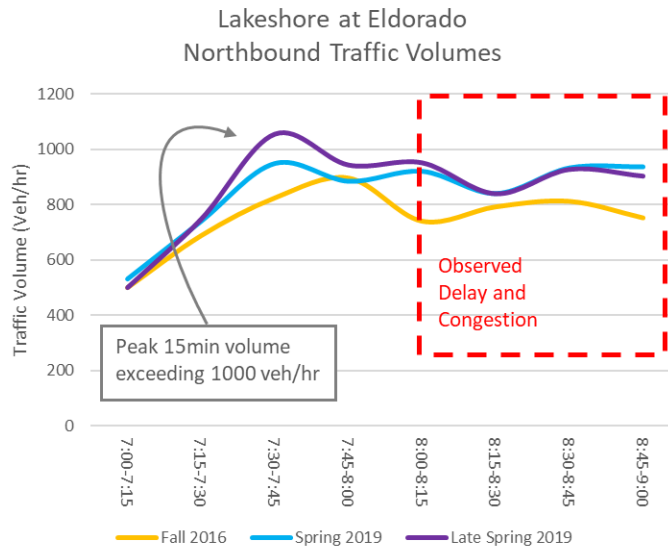


Figure 4 - Traffic Volumes - Northbound - Lakeshore @ Eldorado

Canyon Falls

The second change reduced student enrolment at Anne McClymont Elementary. With the opening of Canyon Falls Middle School in the fall of 2019, grade 6 was relocated from Anne McClymont, resulting in a ~20% drop in student population and less drop-off activity on Lakeshore. Enrolment may see some rebound moving forward, however levels are unlikely to return to those seen before the opening of Canyon Falls in the short-term.

As a result of these two changes, conditions on Lakeshore improved significantly by the fall of 2019 with average peak travel times and travel time variability returning to levels last seen 2017. This significant change in performance (delay/queuing) with a relatively small change in traffic volume highlights that delays grow more rapidly as roads approach their capacity.

Congestion Mitigation Strategies

To further mitigate queues and delays several congestion mitigation strategies were considered.

Expanded School Bus Use

The greater use of school buses could reduce both traffic volumes on Lakeshore and drop-off activity at Anne McClymont. However, there may be limited potential for greater school bus use as Anne McClymont already has one of the highest school bus use rates in the district (~50%), particularly in a non-rural context.

Public Transit Bus Use

Similar to school buses, the use of transit buses by students to travel from home to school was considered. Although transit buses can be an option for older students, it is not appropriate for most elementary students unless escorted by adult. As such, it is unlikely that many Anne McClymont students could be shifted to transit.

Further Traffic Signal Timing Adjustments

Current traffic signal timings at Lakeshore / Eldorado are maximized to move traffic on Lakeshore but result in long waiting times for students crossing Lakeshore and vehicles turning from Eldorado/Anne McClymont. With peak traffic flows now exceeding 1000 vehicles/hour, Lakeshore's capacity now outperforms most City streets and closing in on the capacity of the adjacent intersections (Collette and DeHart). Recent changes did not increase throughput in the peak hour and additional capacity increases with further signal timing changes is unlikely.

Pedestrian Overpass

A pedestrian overpass would remove the need for traffic on Lakeshore to stop for crossing students, however, interruptions would still be required to accommodate vehicles turning from Eldorado and Anne McClymont. A pedestrian overpass, with an estimated cost of \$2.5-5 million, does not address the capacity limitations of adjacent intersections (Collett and DeHart), limiting benefits for its cost.

Shifting School Start Times

Shifting school start times was considered to separate commuter peaks from school drop-off peaks. However, as traffic volumes on Lakeshore are relatively consistent from 7:30-9:00am, shifting school start times would have limited benefits.

Future Trends:

Between 2017 and 2019 an estimated 100 homes were constructed in neighbourhoods serviced by the Lakeshore corridor and traffic volumes increased by 15%.

This small change in traffic volume (+15%) triggered both larger increases average peak travel times (+30%) and made travel times less predictable (+60%). If traffic volumes increase in the future, similar or greater impacts are expected.

Under existing OCP designations 2-300 potential housing units could be approved/constructed in the future. Additional development will generate additional trips.

Over time, enrollment at Anne McClymont may rebound but will likely not return to levels seen before the opening of Canyon Falls Middle School in the short term.

With low densities, a circuitous street network and long trip lengths - providing transit in the Upper Mission is challenging and transit use for travel to work is 60-70%³ lower than City averages. Current local service matches to demand and future planning will seek opportunities to increase use by residents, commuters and students. While the Transportation Master Plan anticipates strengthening transit services, particularly within the core transit area and mitigating congestion on the road network to the north, driving will remain the dominant form of travel in this area over the long term.

While large drops in travel occurred during the early phases of COVID-19 pandemic volumes over the summer have rebounded significantly. Looking forward, fall/winter conditions with school in session are uncertain and while conditions may broadly return to normal following the pandemic, the long-term behavioral impacts of COVID19 are unknown.

³ 2016 Census, Census Tract 9150001.00 vs Kelowna, City – Main mode of commuting, Public Transit

Conclusion:

Between the spring of 2017 and spring of 2019, a small amount of traffic volume growth (+15%) resulted in much larger increases in morning peak travel times (+30%) and day to day travel time variation (+60%); both these effects impacted residents.

There are few opportunities to increase capacity on the Lakeshore Corridor as multiple intersections are approaching their capacity and throughput is optimized.

In the spring/fall of 2019 a combination of increased capacity through signal timing changes and decreased enrolment at Anne McClymont returned delays to levels seen in the spring of 2017.

In the spring of 2020, traffic volumes fell significantly with the COVID-19 pandemic, however, volumes rebounded in the summer and fall/winter conditions are uncertain.

Future traffic volumes will be largely influenced by future development, as well as, long-term impacts of the COVID-19 pandemic and changes to Anne McClymont's enrollment.

Before the pandemic, the Lakeshore Corridor was at capacity each school day morning. Given the relationship between traffic volumes and delay as streets approach their capacity, relatively small increases in future traffic volumes will have larger impacts on future travel times and reliability. Delays observed between 2017 and 2019 will likely return if traffic volumes during the morning peak grow by more than 10%.

Considering the transportation challenges of this area, and uncertainty of future conditions, staff will continue to monitor traffic volumes and travel times to inform future development applications and decision making.

Internal Circulation:

Communications Advisor
Divisional Director, Planning & Development Services
Infrastructure Operations Department Manager
Traffic Operations & Technical Support Supervisor
Urban Planning & Development Policy Manager

Considerations applicable to this report:

Existing Policy:

OCP Policy 7.7.3:

Recognize and accept that a greater level of congestion will result from an increase in suburban growth and a reduced road construction program. The construction of active transportation corridors will be one of the methods of providing alternatives to relieve this congestion.

OCP Policy 7.8.6:

Time traffic signals in a manner that gives people preference over cars. Signal lengths should be set to permit fewer mobile pedestrians to cross with ease. Wait times should be set low so as to encourage pedestrians to act within the rules. These provisions should be made even if such result in delays to motorists.

Considerations not applicable to this report:

Financial/Budgetary Considerations
Legal/Statutory Authority
Legal/Statutory Procedural Requirements
External Agency/Public Comments
Communications Comments

Submitted by:

G. Foy, Transportation Engineering Manager

Approved and reviewed by:

R. Villarreal, Integrated Transportation Manager

Approved for inclusion:

A square box containing a handwritten signature in black ink, which appears to be 'A. Newcombe'.

A. Newcombe, Divisional Director, Infrastructure

Attachment 1 - Lakeshore Corridor Transportation Update Presentation

cc: Deputy City Manager
Divisional Director, Corporate Strategic Services
Divisional Director, Infrastructure
Divisional Director, Planning & Development Services