

Report to Council



Date: July 8, 2024
To: Council
From: City Manager
Subject: Highway 33 Clement Extension Project Update
Department: Integrated Transportation

Recommendation:

THAT Council receives, for information, the report from the Manager of Transportation Engineering dated July 8, 2024, with respect to the Highway 33 / Clement Extension Project.

Purpose:

To provide Council an update on current and upcoming work associated with the Highway 33 / Clement Extension Project.

Council Priority Alignment:

Transportation

Background:

The extension of Clement Avenue from Spall Rd to Highway 33 is a major road project recommended in the Regional Transportation Plan, Kelowna Transportation Master Plan is and one of the 2023-2026 Council Priority Transportation Actions. Work on the project started last year and development of an initial concept was completed this spring. Preliminary design is planned to start this summer, with completion targeted by mid-2025. This report provides an update on work to date, early findings and outlines actions planned over the next year.

Discussion:

Project Background

The current version of the Highway 33 / Clement Extension is the culmination of a series of ideas, concepts and policies made over the last 20+ years. The following section lays out key guidance leading to the current project scope.

Historic Concepts (1990s-2010s)

Through the 1990s to 2010s a series of concepts were proposed to bypass the urban sections of Kelowna via a new highway corridor. The corridor most relevant to the Highway 33 / Clement Extension, known as the Central Okanagan Bypass, was envisioned to start at UBCO/YLW, run through agricultural lands west of the existing highway, along Mill Creek, through the North End, across a second lake crossing and rejoin Highway 97 on the west side.

The full bypass would have been expensive (both roadway and land assembly), was longer in distance than the current highway and was challenged by significant environmental, agricultural and community impacts on both sides of Okanagan Lake. In addition, a 2015 study estimated that 87% of trips crossing the Bennett Bridge started or ended in Kelowna, eroding benefits of the bypass concept.

Central Okanagan Multimodal Corridor (2013)

In 2007 Clement Ave was constructed from Gordon Dr to Spall Rd; by 2013, design was advanced for the section between Spall Rd and Highway 33. These segments included design elements that supported conversion to a future freeway. However, meeting freeway design standards also limited opportunities to avoid impacts on adjacent lands, infrastructure and environmentally sensitive area, while significantly increasing right of way needed and infrastructure costs.

Regional Transportation Plan (2020)

Through 2018-2020, the Regional Transportation Plan (RTP) explored how to best facilitate regional travel demand across Okanagan Lake. Considering regional goals for transportation, development and the environment, the plan recommended increasing the people-moving capacity of the existing Bennett Bridge / Highway 97 corridor by improving the capacity, reliability and competitiveness of transit.

Several transit improvement projects were recommended to support this direction, including shoulder transit lanes on the west side to bypass bridge queues, a third eastbound lane for transit on the Bennett Bridge, and separated median transit lanes in Kelowna. The RTP also recommended the extension of Clement from Spall Rd to Highway 33. These projects work together to moderate vehicle congestion and support faster goods movement and transit travel times with long-term reliability.

To be successful transit needs to connect riders with their final destinations. Transit services on the Highway 97 corridor achieve this by directly serving 40% of the City's existing employment and a large proportion of planned residential / service / employment growth. In addition, Highway 97 connects to 18 out of 22 of Kelowna's transit routes and interconnects with three of five major transit exchanges (Queensway, Orchard Park and UBCO). The Highway 33 / Clement corridor complements the Highway 97 transit corridor by freeing up capacity on Highway 97 for dedication to bus usage.

Kelowna Transportation Master Plan (2022)

The Kelowna Transportation Master Plan (TMP) further refined the RTP's recommendations and proposed the extension of Clement Ave as a 2-lane major arterial from Spall Rd to Highway 33 with at-grade intersections (at Spall Rd, Dilworth Dr and Enterprise Way) and consideration of future extension to McCurdy Rd. Corridor capacity would be maximized with additional lanes at intersections and restricting access from adjacent properties. The TMP's proposed project timing is in the third quartile of this plan (2031-2035).

Central Okanagan Integrated Transportation Strategy (2023)

In the fall of 2023, the provincial Central Okanagan Integrated Transportation Strategy (CO-ITS) recommended vehicle, transit and active transportation improvements throughout the region along the Highway 97 corridor, including transit improvements along Highway 97 from Downtown to Highway 33 and the extension of Clement Ave to Highway 33. The study did not support a second crossing within the 2040 planning horizon due to its limited ability to reduce congestion on Highway 97 and the potential to induce additional vehicle traffic on other parts of the road network. The Ministry of Transportation and Infrastructure has formed a dedicated program to advance some recommended projects.

Current Activities

Work on the Highway 33 / Clement Extension project started in fall 2023. The project is divided into three segments (see Attachment 1) described below.

Segment 1 – Spall Rd to Highway 33

Segment 2 - Highway 33 to McCurdy Rd

Segment 3 - McCurdy Rd to UBCO/YLW at Highway 97

Conceptual Design

In advance of preliminary design, existing information was considered within an updated corridor context and was used to develop an initial concept design for Segment 1. Work included travel demand modelling to understand project benefits and impacts to the larger road network, a review of historical designs to identify information that could be reused and what new information would be required moving forward and development of a concept design that reflects an arterial road vision for Clement Ave and is informed by up-to-date constraints and regulatory requirements.

Conceptual Design work is effectively complete; findings are outlined below.

Travel Demand Modelling

Consistent with the RTP and TMP, early modelling results indicate strong demand for additional east-west road capacity within the Midtown area. The corridor is expected to be well used and will help mitigate the growth of delay on parallel east-west corridors including Enterprise Way, Harvey Ave / Highway 97 and Springfield Rd. Trips accessing Downtown and the North End from the east will shift from Harvey St to Clement Ave.

Modelling also indicates that improvements at the east end of the corridor will be required to merge traffic from Clement onto Highway 33 and 97. These improvements could take the form of local intersection improvements at and approaching Highway 33 & 97 and/or the extension of Clement Ave to McCurdy Rd. Modelling results will be refined moving forward to update projected project benefits and inform preliminary design.

Initial Concept

Consistent with the TMP the concept design started with a 2-lane arterial. Additional lanes at intersections were added to maintain capacity. The alignment was shifted to reduce impacts where feasible, and access was eliminated where possible.

The resulting concept (see Attachment 2) includes a five-lane cross section at Spall Rd with additional turn lanes at Clement Ave and Spall Rd, three lanes east of Spall Rd (2 eastbound / 1 westbound), a tee intersection at Hardy St that maintains access to the City and BC Transit yards but eliminates access to the south, a roundabout (likely multilane) at Dilworth Dr, two lanes east of Dilworth Dr and a five-lane cross section at Enterprise Way where additional turn lanes will likely be required.

The concept work to date did not extend beyond Enterprise Way, but modelling results indicate that improvements at Highway 97 / Highway 33 and Highway 97 / Leathead Rd may also be required. The Okanagan Rail Trail was maintained in the concept however some sections will require realignment. The concept design also considered the long-term potential for a separated transit corridor along Clement. Initial results indicate a transit corridor would not be precluded by building the road.

This concept will evolve, potentially significantly, through the upcoming preliminary design phase.

Challenges and Constraints

The Highway 33 / Clement extension is located within a constrained corridor that contains significant utility infrastructure, environmentally sensitive areas, archaeological sites, community assets and is adjacent to existing and future development areas. An initial list of challenges was identified through the conceptual design process. These challenges will be confirmed and addressed through preliminary design. While the individual challenges identified are typical of transportation capital projects, the combined number and scale of challenges is significant.

Infrastructure – Electric and Natural Gas

Large scale electric and natural gas infrastructure runs along the corridor including two natural gas pipelines, an overhead electric line, a gas valve station, and an electric substation. Significant relocation of gas lines and some impacts to overhead electric lines are anticipated. These are major regional transmission facilities, and relocation is expected to be complex and costly. Where relocation can be avoided, additional procedures may be required during construction adjacent to the facilities.

Infrastructure – Flood Control

The alignment passes adjacent to the recently upgraded Mill Creek diversion structure. Modification to the structure or its upstream dykes would be challenging. The concept design has avoided impacts to this area.

Infrastructure – Transportation / Recreation

The Okanagan Rail Trail is an important active transportation and recreation corridor with 600-1,200 users per day¹. The trail runs the length of Segment 1 with multiple trail impacts highlighted including sections of realignment, intersection crossings and traffic noise. Other formal and informal recreational trails that exist within the corridor may also be impacted.

Archeological & First Nations Engagement

There are known archaeological sites in proximity to the corridor and the project area has moderate to high potential for additional archaeological finds. The corridor also passes the Grist Mill historic site. Westbank First Nation has been notified of the project. Preliminary design will include engagement with First Nations, and likely additional actions including confirmation of sites, site delineation, and potential subsurface exploration.

Geotechnical

There are a range of geotechnical considerations along the corridor including high groundwater, rock, and slope stability. The initial concept design identified three major retaining walls ranging in height from 4 to 16 metres and running over 400m in cumulative length. The scale and associated cost of these retaining walls is significant and will be an area of focus in preliminary design.

Environmental – Wildlife / Species at Risk

This project runs along and crosses Mill Creek and will have impacts on fish habitat, species at risk, riparian areas, and wetlands. As such, its development will be subject to provincial and federal regulatory frameworks. While the concept design shifted the road alignment to reduce impacts, not all impacts could be avoided. In these cases, strategies to mitigate and offset impacts will be required working with permitting agencies and other interested parties. The regulatory approvals described below typically take two to three years.

There are five key external regulatory frameworks that the project must work within:

- Canada Species at Risk Act (2002) – More than half of the concept design alignment potentially impacts species or habitats.
- Canada Migratory Bird Convention Act (2022) - Under updates adopted in 2022 the process to address nesting bird sites has changed impacting under what conditions, when and monitoring requirements for the removal of nests.
- Canada Fisheries Act (2019) - The federal Fisheries Act applies to work that impacts streams, their riparian areas or has the potential to harm fish or fish habitat. The concept design includes two new crossings of Mill Creek and encroachments within the riparian setback.
- BC Water Sustainability Act (2014) - Regulates work in and around waters in BC and requires permitting through the Ministry of Environment.
- BC Wildlife Act (1996) - Provides for the conservation and management of wildlife and wildlife habitats.

Environmental – Contaminated Sites

A number of sites with potential contamination have been identified along or adjacent to the corridor. Investigation during the preliminary design phase will confirm their impacts, if any. If contamination is identified within the corridor it will have to be addressed before or during construction.

Community Facilities

Several significant community facilities exist within the corridor, including the Kelowna Memorial Park Cemetery, the City Public Works Yard and the BC Transit Maintenance Facility. Impacts on these facilities, including parking and access, will have to be managed through preliminary design to protect the long-term public use of these sites.

Development

There are existing and future development sites along the corridor that may impact the project design and alignment. Coordination with these sites will be required.

Access Management

Minimizing driveway access to the Clement corridor will be an important strategy to maximize corridor capacity. While existing access to the BC Transit and Public Works Yards is to be maintained additional accesses need to be avoided.

Next Steps

The following sections outline work planned over the next year.

Segment 1 - Preliminary Design

This summer preliminary design will start for Segment 1 (Spall to Highway 33). Procurement of engineering design skills is currently underway. Council and public engagement, and site investigation is planned during this phase.

Outcomes from preliminary design include a clear project scope, benefits, costs, impacts and identification of regulatory requirements. Recommendations for the project next steps and timing will also be provided. Completion of preliminary design is targeted for mid-2025.

Segment 2 – Phasing Recommendations

Travel demand modelling indicates that improvements at the east end of the corridor will be required to merge traffic from Clement onto Highway 33 and 97. These results will be refined and inform phasing recommendations to McCurdy Rd. The team needs to compare the relative cost benefits of improvements at Highways 33 / 97 to the cost benefit of extending to McCurdy. Provide phasing and timing recommendations, and depending on budget, consider advancing preliminary design.

Segment 3 – McCurdy to UBCO

While this segment is not included in the OCP or 20-Year Servicing Plan, the City has historically protected this corridor to accommodate the future mobility to/from UBCO / YLW. The long-term benefits of this corridor (beyond 2040) and recommendations related to continued corridor protection remain.

Budget

The current project budget is \$1.2 million, including a \$600k contribution from the provincial government. With this funding the project team's intent is to complete preliminary design for Segment 1 (Spall Rd to Highway 33). However, considering the complexity of challenges identified through the concept design phase and emerging rationale to advance the extension to McCurdy earlier, additional funds may be required to complete the preliminary design for Segment 2 as part of the work during the next year. If funds are required, they will be addressed through a separate budget request.

Construction funding has not been identified in the City's 10 Year Capital Plan thus far. The preliminary design phase will include updated cost estimates and recommendations per potential timing for construction should necessary fiscal support from the Province be secured.

Conclusion:

Work on the Highway 33 / Clement Extension Project has now started. Early findings suggest that if constructed, the project would be well used, moderate the growth of congestion in Midtown and could help facilitate future transit improvements on Highway 97. However, significant impacts to infrastructure and the environment were also identified and will have to be addressed. Findings from the conceptual design work will inform the upcoming preliminary design which will start this fall and has a targeted completion in mid-2025.

Internal Circulation:

Infrastructure Delivery
Communications
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Considerations applicable to this report:

Consultation and Engagement:

Public consultation and engagement with interested parties is expected as part of the upcoming preliminary design phase.

Considerations not applicable to this report:

Legal/Statutory Authority:

Legal/Statutory Procedural Requirements:

Existing Policy:

Financial/Budgetary Considerations:

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Approved for inclusion: M. Logan, Infrastructure General Manager

Attachment(s):

Highway 33 Clement Extension Project Update presentation

cc: L. Corcoran, Acting Divisional Director, Corporate & Strategic Services
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