

# Technical Memo



Date: February 11, 2019

To: City Manager

From: Gordon Foy, Manager of Transportation Engineering

Subject: Capri Landmark Urban Centre Plan – Landmark Transportation Network Assessment

---

## Background

The Landmark area was originally developed as a mix of light industrial and service commercial uses between Harvey and Springfield avenues. Starting in the 1990's development of Landmark Centre, a series of office tower projects were constructed under a land use contract planning framework. To facilitate drivers accessing the Landmark Centre site, four large parkade structures with over 1900 parking spaces were constructed. As Landmark Centre grew to become one of the region's biggest employment / office centers, the local street network, designed to service light industrial land uses, saw large increases of vehicle traffic.

This concentration of employment of one type, office, has resulted in sharp surges in inbound and outbound travel to/from Landmark during weekday AM and PM peak periods. As a result, congestion and queuing is regularly observed where the local network connects to the surrounding major roads, as workers leave Landmark each afternoon.

Due to the planning framework of the land-use contract, few and insufficient infrastructure improvements were developed to service a development of Landmark's scale. With recent phases some smaller scale improvements at intersections with the surrounding major road network have been completed, however, capacity improvements were not sufficient to avert the congestion observed today; in early 2017, Landmark's local street network was at capacity.

In the fall of 2016 a moratorium on rezoning was put in place to restrict further development, though development rights under existing zoning and land use contracts remained. The Capri-Landmark Urban Centre Plan and supporting Transportation Servicing Review were initiated to address both existing

transportation issues and facilitate growth associated with Capri-Landmark's evolution into a successful Urban Centre.

### *Challenges of the Landmark Transportation Network*

Landmark's street network was sized to service its original land uses, a mix of light industrial and service commercial. The network of un-urbanized streets with large blocks, limited walking facilities, no internal cycling infrastructure, no continuous east-west streets for local trips and few connections to the surrounding major road network will not support a dense urban centre without significant improvement.

Currently many internal Landmark trips take circuitous routes, on surrounding major roads, including Harvey Ave and Springfield Rd, contributing to congestion on these important city-wide corridors. There are only four points of access in and out of Landmark that must convey all trips in and out of the area. There is no internal east-west connection across Landmark; access to the west via Sutherland is through two offset intersections along Burtch Rd. and there is no connection to Spall Rd.

Travel to, from and within Landmark by walking, cycling and transit is difficult due to street network and infrastructure deficiencies.

Large blocks make walking trips longer and less attractive while a lack of pedestrian crossings at intersections make crossings difficult and less safe. Many streets have informal gravel shoulders where pedestrians and cyclists must struggle through irregularly parked cars and moving traffic; where sidewalks are present, they are often in poor condition.

While bike lanes are available on surrounding major roads, and access to the Okanagan Rail Trail is provided via the Harvey Pedestrian Overpass, there are no cycling routes within Landmark and crossing major roads at the edge of Landmark is difficult.

For transit riders, three of the City's best transit routes travel adjacent to Landmark (Routes 8, 11, 97), providing over 300 departures per day on a typical weekday. Despite strong transit service, access to/from transit is hampered by a poor pedestrian network, difficult crossings of major roads at transit stops and a lack of stop shelters/amenities.

Combined, these factors significantly erode walking, cycling and transit's competitiveness with driving for Landmark workers despite its location within the City's core.

## **Capri-Landmark Urban Plan – Transportation Approach**

The draft Capri-Landmark Urban Centre Plan seeks to facilitate Capri-Landmark's transition to a successful mature urban centre. The Plan proposes significant residential growth (+8,000 residents) combined with maintaining current levels of employment (5-6,000 jobs). To address existing and future transportation challenges, the Plan included a Transportation Servicing Review based on three broad strategies, including;

- **Rebalance land use** by increasing residential development in Capri-Landmark, with the reverse travel patterns of office (in direction and timing), growth can occur with less impact on the local street network. Residential growth will create opportunities for workers to live within the same neighbourhood, creating short trips that can be best completed by walking or bicycling, reducing future car trips.
- **Strengthen the street network** to increase mobility and connectivity in Capri-Landmark for all modes of transportation. With a network scaled to service its original light industrial land uses,

currently at capacity, Capri-Landmark will require a stronger street network to support future growth. The areas existing east-west corridors, including Harvey and Springfield Ave are reaching capacity during peak periods and are required for longer city-wide / regional trips. A strong east-west major street will service internal Capri-Landmark trips, link Capri and Landmark, improve connections to surrounding major roads, support transit and cycling, provide more options to connect to Downtown, Capri, Highway 97, Glenmore and maintain the opportunity to connect eastward towards Midtown in the future.

- **Shift travel from driving to walking, cycling and transit** by making alternative transportation options convenient, reliable, comfortable and ultimately competitive with driving. Walking and cycling are most viable for shorter trips within and adjacent to the Urban Centre while transit best serves longer trips along rapid and frequent transit routes. Shifting travel modes beyond those seen in Downtown today will require investments in alternative transportation networks and demand management of vehicle trips. A shift to alternative transportation modes would reduce demand for car trips from existing and future land uses.

### *Capri-Landmark Urban Plan – Network Evaluation*

Initial transportation options for Capri-Landmark were assessed against the principles of the Urban Centres Roadmap and their ability to service proposed growth at a network level. Two combined land-use / transportation network scenarios were brought forward for public consultation in June 2017. A recommended network option was endorsed by Council in August 2017.

### *Capri-Landmark Urban Plan – Transportation Servicing Review*

Following endorsement of a preferred land use / transportation scenario a comprehensive Transportation Servicing Review (TSR) was undertaken to confirm the future performance of the transportation network at buildout. This detailed assessment projected future trip generation, mode split, distribution and assignment onto the proposed future street network, generate future traffic volumes and assess intersection performance against standard targets.

Although the Plan proposes improvements for Harvey Ave and Springfield Rd, addressing these corridors is beyond the scope of the Capri-Landmark Plan and will be considered within the City and Regional Transportation Master Plan processes, as well as the Ministry of Transportation and Infrastructure Central Okanagan Planning Study (COPS).

### *Capri-Landmark Urban Plan – Goals of the Sutherland Extension*

Within the draft Capri-Landmark Urban Centre Plan, the proposed Landmark street network, including the extension of Sutherland Ave from Burtch Rd to Spall Rd, sought to create a continuous east-west street corridor to address the issues listed below.

- Develop a continuous east-west street through Landmark (currently absent), linking Burtch Rd to Spall Rd; allowing local Landmark trips to remain within the Landmark street network, reducing impacts on Harvey Ave and Springfield Rd.
- Support the Ministry of Transportation and Infrastructure's objective of strengthening municipal road networks parallel to Highway 97.
- Create more options, with more capacity, linking Landmark to the surrounding major road network, including, Burtch Rd, Sutherland Ave and Spall Rd.

- Create a strong continuous link between Landmark and Capri that facilitates comfortable and convenient walking and cycling trips within the Capri-Landmark Urban Centre.
- Provide better routes to reach Gordon and Richter for trips heading north / west to neighbourhoods north of Highway 97 including, Downtown, Glenmore and destinations across Okanagan Lake.
- Provide direct access to Spall Rd, reducing circuitous trip routing via the Springfield / Spall intersection and from Kirschner Rd to Spall Rd.
- Maintain the future ability to consider the extension of Sutherland eastward towards the Midtown Urban Centre.
- Support Landmark's walkability by providing a comfortable walking environment with wider sidewalks and boulevards that can support the high levels of walking trips required to service future development.
- Improve access to transit by facilitating frequent transit in the core of Landmark.
- Improve the competitiveness of cycling by extending the Sutherland Active Transportation Corridor from Burtch through to Spall and Orchard Plaza via Kent and Agassiz roads.

The proposed Sutherland Extension's concept reflects these objectives and includes a two lane urban street, left turn bays at all intersections with medians elsewhere, separated bike lanes along its north edge, bays at transit stops, some on-street parking and sidewalks with boulevards. This configuration seeks to increase vehicle capacity within an environment that is friendly to those who are walking, cycling and taking transit. The resulting right-of-way width of Sutherland Ave was no less than 24m with additional widening (up to 30m) for segments to accommodate intersections, turn lanes and transit stops.



*Figure 1 - Sutherland Extension Street Elements*

## Reconsideration of Landmark Transportation Network

In the fall of 2018 the draft Capri-Landmark Urban Centre Plan was brought forward to Council for consideration. Discussion related to transportation focused on the impacts of extending Sutherland Ave through Landmark and a desire for reconsideration of the proposed street network with exploration of alternative network options.

### *Developing Network Alternatives*

Following Council's fall 2018 direction a review of alternative street network options for the Landmark area was initiated. As primary concerns were related to the alignment of the proposed Sutherland Extension through Landmark, the review explored alternative options for an east-west corridor. A comparison of options was conducted to understand the relative performance, costs and impacts of each option. Options were considered for their ability to meet the objectives of the Sutherland Ave Extension, their impacts and costs.

Four options were investigated as part of the review:

- Option 1 tested the ability of targeted improvements to the existing street network to support the future Capri-Landmark Urban Centre. Improvements were limited to existing intersections.
- Options 2 and 3 considered alternative east-west alignments via Dickson Ave in the north and the proposed Ritchie Ave in the south.
- Option 4 was the Sutherland Extension.

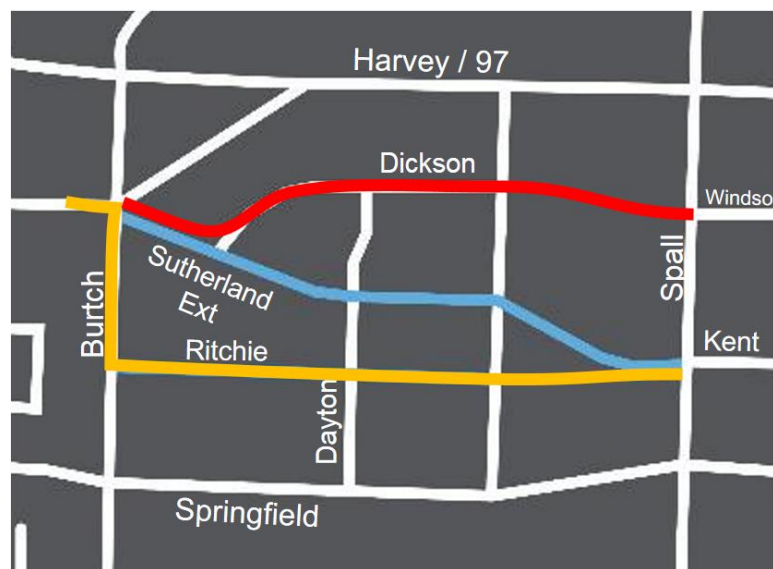


Figure 2: Transportation Network Options

Other alternative networks could be created with changes to the above four alignments, however, these alignments provided a sufficient range of options necessary to assess the viability of options to the Sutherland Ave extension.

## Landmark Transportation Network Options

### *Option 1 – Existing Network (Targeted Improvements)*

This option considered improving access to surrounding major roads through targeted improvements at intersections within the existing street network. Existing small scale improvements have already added some capacity and strengthened access to the major road network on Dayton St at Springfield Rd (separation of right and thru/left turn lanes) and on Dickson St at Burtch Rd (restriction of left turns to better facilitate right turns).

Two additional improvements were considered; signalization of Kirschner Rd / Springfield Rd to improve access to Springfield Rd, serving trips to the east and south, and a pair of offset signalized intersections linking Sutherland Ave and Dickson St via Burtch Rd to assist trips to the north and west.

## Landmark Network Options

### Existing Network – Option 1



Little ability to improve capacity.

East/west trips stay on Harvey / Springfield

Improve access to major roads.

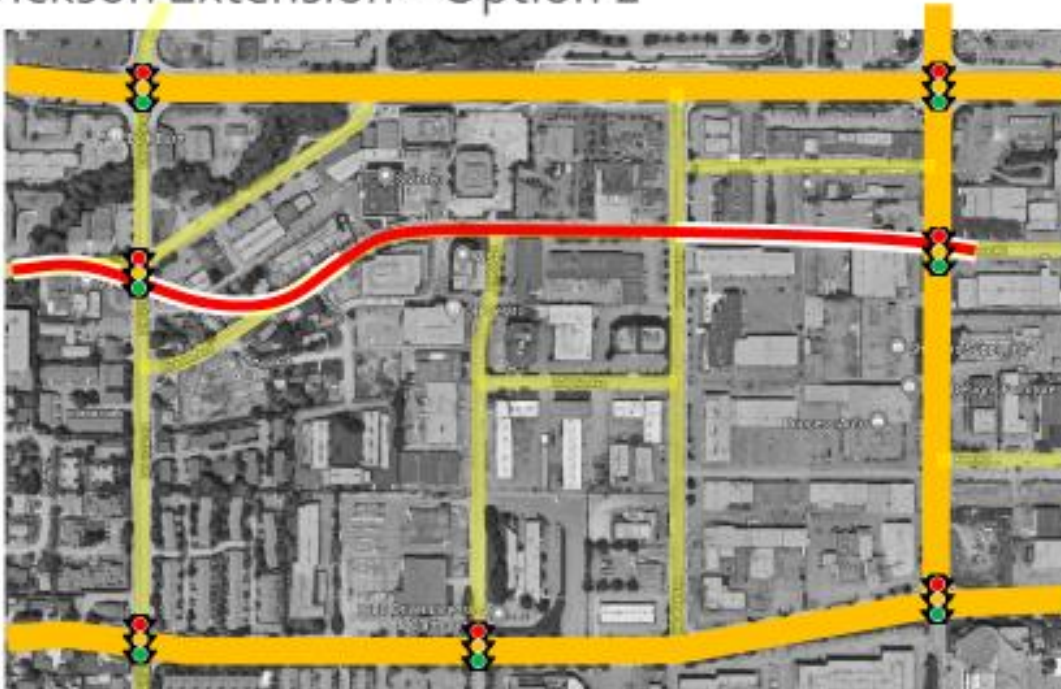


### *Option 2 – Dickson Extension*

Option 2 considers providing an east-west corridor between Burtch and Spall roads by extending Dickson Ave. This option would reconfigure the intersection of Sutherland Ave and Burtch Rd (similar to the Sutherland Ave Extension) but turn tightly onto the existing Dickson Ave alignment, pass through the center of Landmark Centre and connect to Spall Rd across from Windsor Rd.

## Landmark Network Options

### Dickson Extension – Option 2



### *Option 3 – Ritchie Extension*

Option 3, considers providing an east-west corridor between Burtch and Spall roads by extending Ritchie Ave, a new street, across the southern half of Landmark. Connection to the west would be facilitated via a pair of offset signalized intersections on Burtch Rd, linking Sutherland and Ritchie avenues; a configuration similar to Option 1 but with more space between the intersections. Ritchie Ave would connect to Spall Rd across from Kent Rd.

## Landmark Network Options

### Ritchie Extension – Option 3



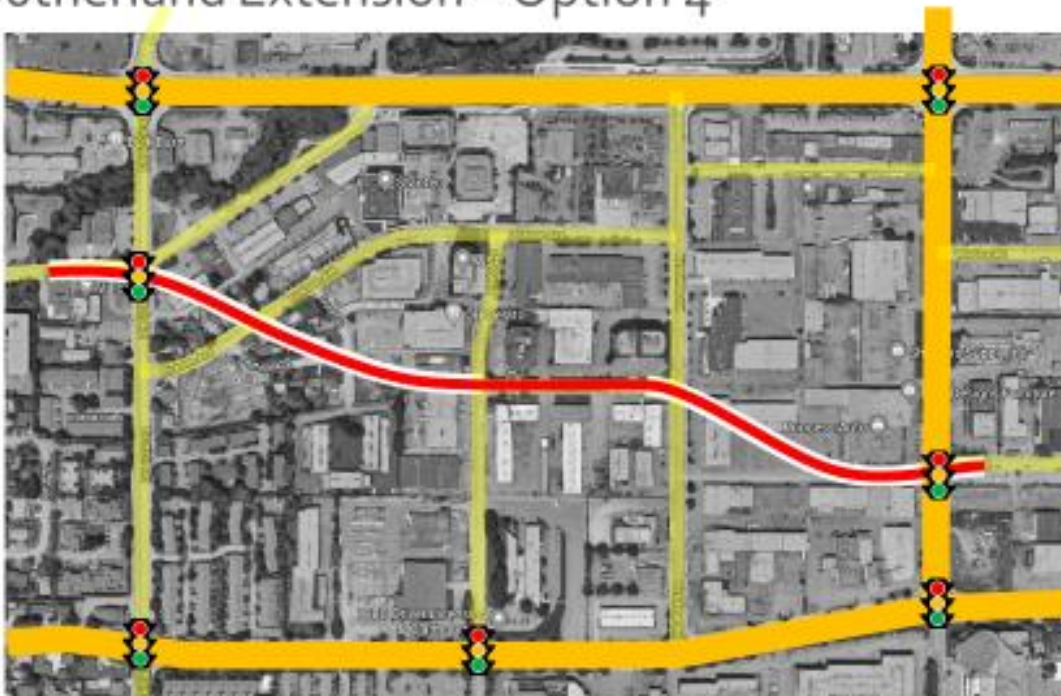


### *Option 4 – Sutherland Extension*

Option 4, Sutherland Extension provides an east-west corridor between Burtch and Spall roads by extending Sutherland Ave east of Burtch Rd. At Burtch Rd the existing Sutherland intersection is shifted south and Sutherland Ave is extended south-east, turning to align with Dolphin Ave. From the intersection of Dolphin Ave and Kirschner Rd the alignment shifts south connecting to Spall Rd across from Kent Rd.

## Landmark Network Options

### Sutherland Extension – Option 4



## Evaluation Approach

The assessment below considered if each option could support future growth, their relative impacts / costs and their relative performance. The criteria below grouped together the objectives of the east-west corridor described above into six accounts. All options have significant costs and impacts, however these impacts are consistent with the scale of existing issues and future development proposed for the Landmark area. As a relative assessment, each option was considered against the others using the following accounts.

1. Alignment – How well does the option provide east-west connectivity across Landmark and how well does it service future development?
2. Connectivity (West) – How well does the alignment connect to Sutherland and Burtch providing a continuous corridor link to the west?
3. Connectivity (East) – How well does the alignment connect to Spall? Does the connection provide a future option to extend further east into Midtown?
4. Transit / Cycling Access – How well does the alignment support improved transit and cycling access into Landmark?
5. Capital Costs – How could capital costs vary between options based on corridor length and major infrastructure elements?
6. Property – How do impacts on adjacent properties vary between options considering the number, degree, and value of impacted properties?

The following sections describe the relative performance of each account for each of the four options.

### *Alignment*

Option 1, Existing Network Improvements, does not provide an east-west connection from Burtch Rd to Spall Rd. Option 1 spot improvements do not sufficiently strengthen the street network to address existing transportation challenges plus future growth. Improvements would not address cycling / transit access to Landmark to support shifts in travel choices.

Option 2, Dickson Extension, provides a continuous east-west connection from Burtch Rd to Spall Rd. While an alignment through Landmark Centre is ideal for transit and cycling access, reduced right-of-way through Landmark Centre would result in insufficient space to accommodate all street functions. The combination of heavy on-street traffic volumes, parkade driveways, transit and cycling all within a 20m right-of-way would be challenging and likely untenable. Option 2 could provide a significant portion of the capacity, combined with land use and mode split changes, required to address existing challenges and future growth.

Option 3, Ritchie Extension, provides a continuous east-west connection from Burtch Rd to Spall Rd. Ritchie's location, south of the densest areas of Landmark, would reduce its effectiveness in servicing Landmark Centre and require significant widening along Burtch Rd to accommodate offset intersections at Burtch Rd / Ritchie Ave and Burtch Rd / Sutherland Ave. Option 3 could provide sufficient capacity, combined with land use and mode split changes, required to address existing challenges and future growth, however its southern alignment reduces its effectiveness.

Option 4, Sutherland Extension, provides a continuous east-west connection from Burtch to Spall. Its location just south of Landmark Centre is close enough to facilitate good vehicle, cycling and transit access to the densest parts of Landmark. Option 4 would provide sufficient capacity, combined with land use and mode split changes, required to address existing challenges and future growth.

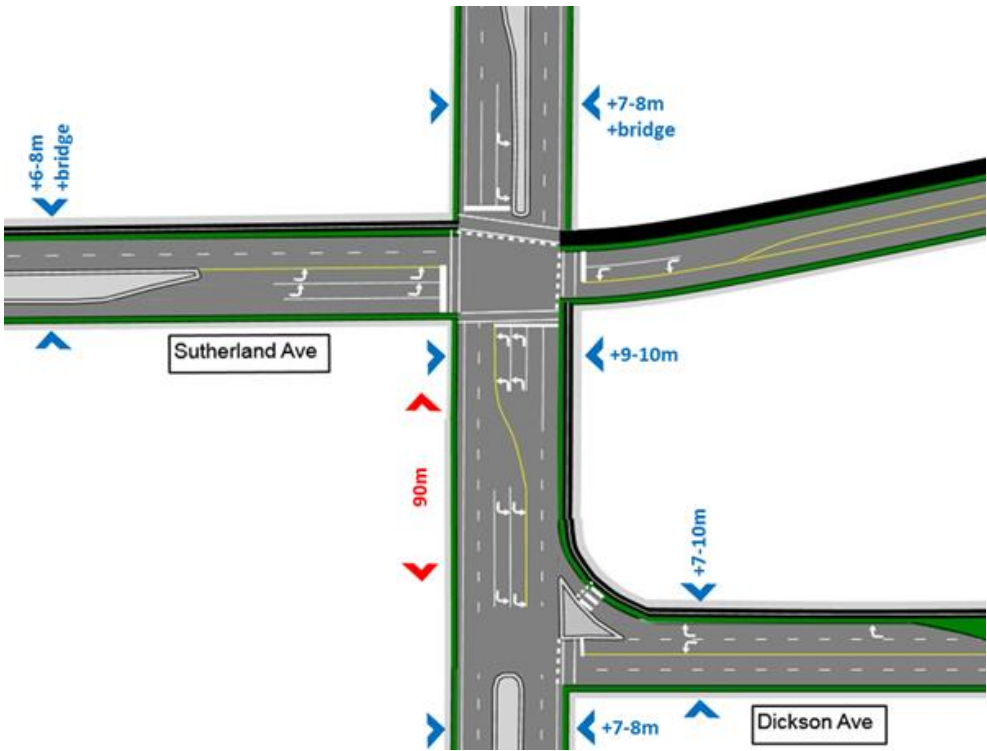
### Evaluation Summary for Alignment

Option	Rank
1 – Improved Existing Network	4
2 – Dickson Extension	3
3 – Ritchie Extension	2
4 – Sutherland Extension	1
<i>Note: The highest rank (1) represents the best alignment with corridor objectives; the lowest rank (4), represents the poorest.</i>	

### Connectivity (West)

Both Dayton and Sutherland Extensions (Options 2 and 4) connect to Sutherland Ave. through a single intersection, providing direct access to Capri and points west. The proposed intersection would be shifted to the south but does not require additional lanes with the exception of single left turn bays and a westbound right turn lane.

Options 1 and 3 require users to travel through two offset intersections to connect to Sutherland Ave via Burtch Rd. Due to the inefficiencies of conveying large volumes of left turns through intersections, dual left turn lanes and corresponding receiving lanes are required at both intersections to meet performance targets (as shown in image below). Based on operational intersection modelling east-west trips are projected to experience roughly three times as much delay through two intersections and require significant widening on Sutherland, Burtch and Dickson/Ritchie approaches, including bridges, relative to Options 2 and 4.



Spacing between Ritchie Ave and Sutherland Ave is sufficient to develop back to back dual left turn bays, however, spacing between Dickson Ave and Sutherland Ave is much less (~90m), insufficient to develop back to back dual left turns, making the viability of this connection operationally infeasible.

#### Evaluation Summary for Connectivity (West)

Option	Rank
1 – Improved Existing Network	4
2 – Dickson Extension	1
3 – Ritchie Extension	3
<b>4 – Sutherland Extension</b>	<b>1</b>
<i>Note: The highest rank (1) represents the best connectivity to the west; the lowest rank (4), represents the poorest.</i>	

#### Connectivity (East)

Both Ritchie and Sutherland Extensions (Options 3 and 4) connect to Spall Ave across from Kent Rd. Connection to Kent Rd provides pedestrians and cyclists a direct route to Orchard Plaza / Park, and retains the ability to consider, through a future planning process, an eastward extension of Sutherland Ave to Midtown. Kent Rd, located ~120m north of Spall Rd, may require side by side left turn bays due to high turn volumes at the intersection of Spall Rd / Springfield Rd; this could trigger widening on Spall Rd between Kent and Springfield roads.

Option 2, Dickson Extension would connect to Spall Rd across from Windsor Rd. A connection at Windsor Rd could provide, with improvements, a more circuitous connection to Orchard Plaza / Park for pedestrians and cyclists but would eliminate the option to consider a future eastward street connection. The proximity of the Spall / Windsor intersection to the Spall / Harvey intersection would make support from the Ministry of Transportation and Infrastructure challenging, if not infeasible.

Option 1, Existing Network Improvements do not provide a connection to Spall Rd and no eastward increase in capacity to the major road network. Trips seeking to access Spall Rd northbound would continue to route through Springfield / Spall or Kirschner / Harvey / Spall; both which contribute to congestion at two of the City's busiest intersections.

#### Evaluation Summary for Connectivity (East)

Option	Rank
1 – Improved Existing Network	4
2 – Dickson Extension	3
3 – Ritchie Extension	1
<b>4 – Sutherland Extension</b>	<b>1</b>
<i>Note: The highest rank (1) represents the best connectivity to the east; the lowest rank (4), represents the poorest</i>	

#### Transit /Cycling Access

Options 1 and 2 both accommodate the extension of the Sutherland Active Transportation Corridor to the heart of Landmark Centre via Dickson Ave. Dickson's existing narrow right-of-way through the core of Landmark Centre would require trade-offs between space and street elements creating a more constrained, less comfortable environment for pedestrians, transit riders and cyclists. On-street parking

would need to be removed and transit stops would need to be located outside the right-of-way pinch point. Option 1, with no connection to Spall would not facilitate cycling connections to services and the transit exchange at Orchard Plaza / Park.

Option 3, Ritchie Extension, could facilitate the extension of the Sutherland Active Transportation Corridor (via Burtch) and transit, however its located south of the densest areas of Landmark; requiring longer walking / cycling trips to access the ATC facility / transit, eroding benefits for cyclists and transit riders.

Option 4, Sutherland Extension, facilitates the extension of Sutherland ATC and transit, immediately adjacent to the densest portions of Landmark with sufficient space to appropriately accommodate transit and cycling street elements.

#### Evaluation Summary for Transit/Cycling Access

Option	Rank
1 – Improved Existing Network	4
2 – Dickson Extension	2
3 – Ritchie Extension	3
<b>4 – Sutherland Extension</b>	<b>1</b>
<i>Note: The highest rank (1) represents the best support of transit and cycling connectivity; the lowest rank (4), represents the poorest.</i>	

#### Capital Costs

Option 1, Existing Network Improvements, would have smaller capital costs due to the smaller scope of improvements. However, at and approaching the Dickson / Burtch / Sutherland offset intersection, costs would be significant. The scope and cost of a 4-Lane / dual left turn intersection would be significantly higher than proposed under Option 4, Sutherland Extension.

Option 2, Dickson Extension, would have similar capital costs to Option 4, Sutherland Extension. Both Options are about the same length and include similar intersections at each end.

Option 3, Ritchie Extension, would have significantly higher capital costs than other options due to additional major intersections (one additional major intersection) and length (25% greater than Options 2 and 4).

Option 4, Sutherland Extension, with an estimated construction cost of approximately \$10m would be higher than Option 1, similar to Option 2 and less than Option 3.

#### Evaluation Summary for Capital Costs

Option	Rank
<b>1 – Improved Existing Network</b>	<b>1</b>
2 – Dickson Extension	2
3 – Ritchie Extension	4
4 – Sutherland Extension	2
<i>Note: The highest rank (1) represents the lowest estimated capital costs; the lowest rank (4), represents the highest</i>	

#### Property

Option 1, Existing Network Improvements, would have the smallest overall property impacts, with a limited scope of work focused around the offset intersections of Dickson / Burtch and Sutherland / Burtch.



However, at the offset intersection, impacts would be significant due to widening of Sutherland, Burtch and Dickson approaching the intersection to accommodate additional turning lanes and ATC connections.

Option 2, Dickson Extension, would have significant property impacts approaching both Burtch and Spall roads, similar to Option 4. At Burtch, intersection re-alignment to the south and extension of Sutherland to the south-east impacts a number of commercial and single family properties. Approaching Spall Rd two significant commercial properties would be impacted. Utilization of Dickson Ave through Landmark Centre reduces impacts in that segment but it will reduce the performance of that segment and widening will be required just outside of Landmark Centre to accommodate some street elements.

Option 3, Ritchie Extension would have the largest property impacts. Both Options 2 and 4 utilize existing street segments (Dolphin / Dickson) to reduce property requirements versus Ritchie which requires land for the full length of its alignment, including several significant residential multi-family sites. In addition, significant widening along Burtch Rd and at the intersection of Burtch Rd and Sutherland Ave further increase impacts. Envisioned within the draft Urban Centre Plan as a roadway that was developed over time concurrent with site redevelopment, more rapid development of Ritchie Ave would be difficult.

Option 4, Sutherland Extension has similar significant property impacts as Option 2, but with additional commercial sites impacted west of Dolphin Ave. Widening along Dolphin Ave would be to the south due to structure constraints to the north. Approaching Spall Rd two significant commercial properties would be impacted.

#### Evaluation Summary for Property Impacts

Option	Rank
<b>1 – Improved Existing Network</b>	<b>1</b>
2 – Dickson Extension	2
3 – Ritchie Extension	4
4 – Sutherland Extension	2
<i>Note: The highest rank (1) represents the least property impacts; the lowest rank (4), represents the greatest property impacts.</i>	

## Multiple Account Evaluation Summary

A summary of ranked results by account is provided below. Based on assessed values Option 4 - Sutherland Extension ranks highest with considerable advantages over the second option, Option 2 - Dickson Extension. The other two options are ranked considerably lower with Option 3 - Ritchie Extension and Option 1 - Existing Network Improvements ranked third and fourth respectively.

Option / Accounts	Alignment	Connectivity (West)	Connectivity (East)	Transit / Cycling Access	Capital Costs	Property Impacts	Total	Rank
1 – Improved Existing Network	4	4	4	4	1	1	18	4
2 – Dickson Extension	3	1	3	2	2	2	13	2
3 – Ritchie Extension	2	3	1	3	4	4	17	3
4 – Sutherland Extension	1	1	1	1	2	2	8	1
<b>Network Option Ranking Rubric:</b> 4= Poorest alignment with objectives - 1= Best alignment with objectives								

Option 1 – Improved Existing Network has the lowest costs and least property impacts but fails to achieve several objectives of the east-west corridor, would not effectively provide sufficient capacity or connectivity to address existing issues or support proposed densities and development and appears infeasible due to limited space between Dickson and Sutherland avenues.

Option 2 – Dickson Extension would have similar costs and property impacts as Option 4 – Sutherland Extension, however its viability is uncertain due to the proximity of its intersection with Spall Rd to Harvey Ave and its constricted right-of-way through Landmark Centre. Option 2 would also eliminate the opportunity to consider a future extension eastward, through future planning processes.

Option 3 – Ritchie Extension would have the largest capital and property impacts, its connectivity as an east-west corridor would be eroded by longer travel times through an additional offset intersection and its location south of the densest parts of Landmark, would not provide effective access for cyclists or transit.

Option 4 – Sutherland Extension would have similar costs and property impacts as Option 2 – Dickson Extension, however its alignment just south of Landmark Centre combined with connectivity at Kent Rd provides a viable alignment, with good connectivity at each end and support bringing cycling and transit to the core of Landmark. Option 4 would retain the ability to consider a future extension eastward to Midtown, through future planning processes.

Considering both the performance, costs and impacts of each of the four options, Option 4 – Sutherland Extension best addresses the transportation challenges of Landmark today and into the future while minimizing capital costs and impacts on adjacent properties.

## Recommendation

Considering the above assessment, the extension of Sutherland Ave through the Landmark area continues to be the recommended transportation network option for in coordination with the other transportation strategies of the Capri-Landmark Urban Centre Plan.