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TRANSIT
PLANNING

WHITE PAPER: TRANSIT SERVICE FOR SOUTH
SHAGANAPPI

2012 | Calgary Transit

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Purpose

This report describes the need for a transit service review in northwest Calgary, and in particular in the South Shaganappi area (**Figure 1**). Calgary Transit currently operates more than 20 bus routes in South Shaganappi representing an annual service investment of approximately \$24 million. Enhancing the effectiveness of this service will help to attract passengers today and tomorrow.

South Shaganappi can be described as having a ‘last mile’ problem, as in customers experience long walks between their transit stop and destination. Many cities with this same problem review bus routes with simplicity in mind, and many are looking at new modes that are less restricted by complicated road networks and congestion.

Area of Change

Several major Calgary destinations call South Shaganappi home: the University of Calgary, Alberta Children’s Hospital, Foothills Medical Centre, and Market Mall to name a few. This area (**Figure 1**) represents Calgary’s second largest employment area and in the 30-year horizon, it is anticipated that this area will grow to include 77,000 residents and 65,000 jobs.

In addition to growth on the university and hospital campuses, a major mixed use development project called West Campus is planned for the lands surrounding Alberta Children’s Hospital. Study of the area transportation network is also underway including a functional plan for Shaganappi Trail and Crowchild Trail.

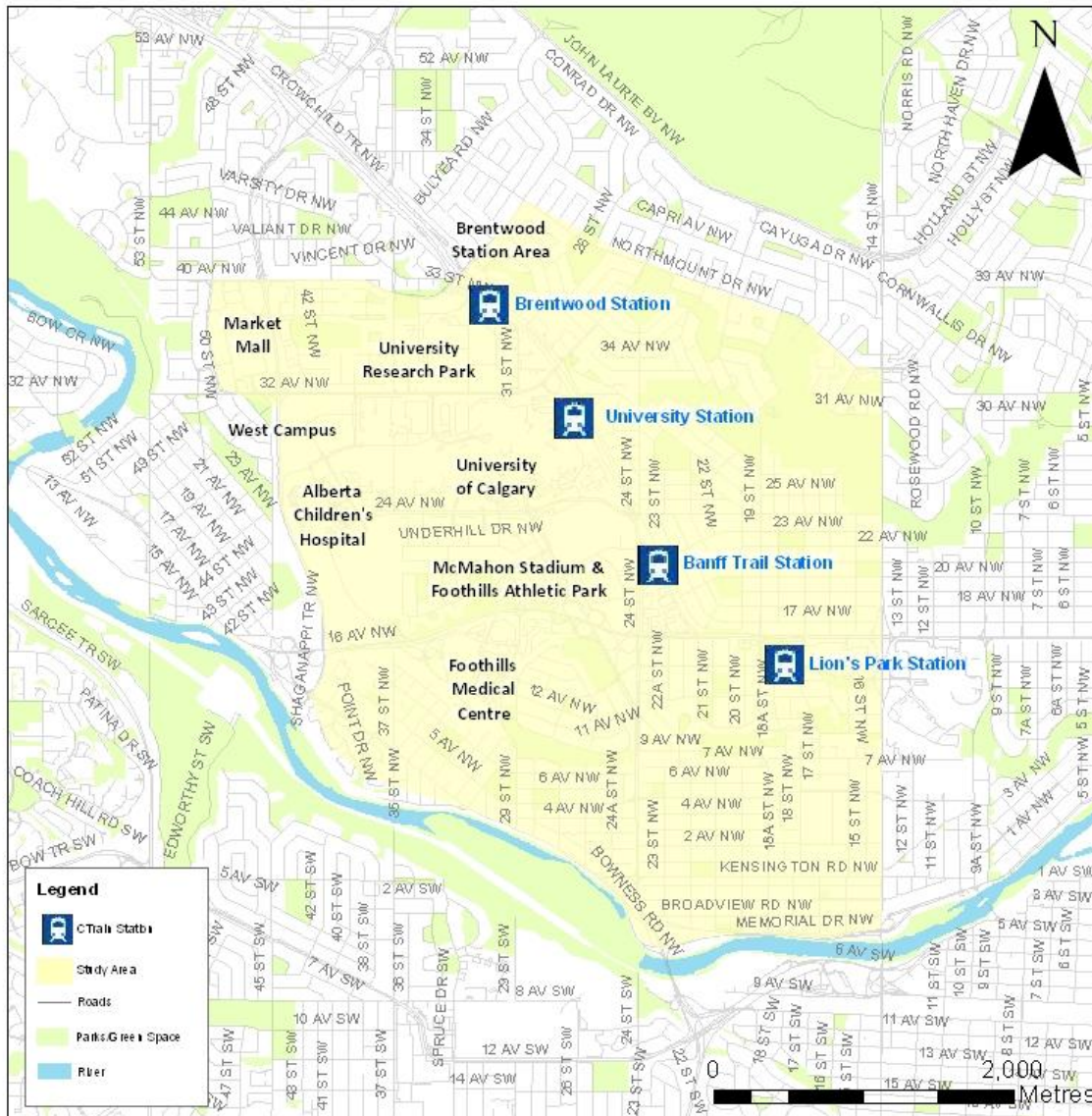
Background

Planning of today’s transportation network in South Shaganappi occurred mainly in the 1970s, including approval of Northwest LRT in the median of Crowchild Trail (CALTS 41). Today’s policies (see **Appendix A**) help define the form and shape of predicted growth in South Shaganappi.

- Municipal Development Plan has identified growth nodes:
 - Major Activity Centre (MAC) at Brentwood, and
 - Community Activity Centre (CAC) at the Market Mall lands
 - 50 % of new growth to occur in existing communities
- Calgary Transportation Plan has identified a Primary Transit Network¹, composed of links with frequent service:
 - Northwest LRT
 - 32 Avenue NW
 - Shaganappi Trail
 - University Drive (and within the UofC campus)
 - 29 Street NW
 - Crowchild Trail
 - 16 Avenue NW

¹ The Primary Transit Network offers ten-minute service through the day: more than 15 hours a day, seven days a week. The transit technology to deliver this frequency should be selected to meet ridership demand and community attributes.

- South Shaganappi Communities Area Plan:
 - “intended to guide both public and private decision making and investment in the South Shaganappi area over the next 30 years.”
- RouteAhead:
 - “the strategic framework to guide public transit in Calgary over the next 30 years.”



Brentwood Station Area
 -Designated as a Major Activity Centre in Calgary's MDP.

University Research Park
 -Managed by four partners: City of Calgary, University of Calgary, Alberta Infrastructure and Calgary Technologies Inc.

McMahon Stadium & Foothills Athletic Park

University of Calgary
 -25,000 undergraduate students, 5,000 graduate students,

Market Mall
 -Designated as a Community Activity Centre in Calgary's MDP.

Alberta Children's Hospital
 -A growing facility with over 3,100 staff in 2011.

West Campus Area
 -A future, mixed-use development area located on the south University of Calgary lands.

Foothills Medical Centre
 -A teaching hospital with more than 11,500 staff.

FIGURE 1: SOUTH SHAGANAPPI & ACTIVITY CENTRES

Access to destinations

In an ideal world, destinations are located a close walk from transit routes. Applying this ideal to the South Shaganappi context would look significantly different than today's development pattern and transit routes (**Figure 2**).

FIGURE 2: IDEAL AND TODAY'S TRANSIT ROUTES



Connecting to the LRT

Calgary's CTrain or LRT network is the backbone of Calgary Transit service. Throughout Calgary supporting bus routes are designed to connect with CTrain stations to give local and regional travel opportunities. In South Shaganappi over 20 bus routes connect with the LRT. That said few destinations fall within a comfortable walk (5 – 10 minutes) of the NW LRT (**Figure 3**).

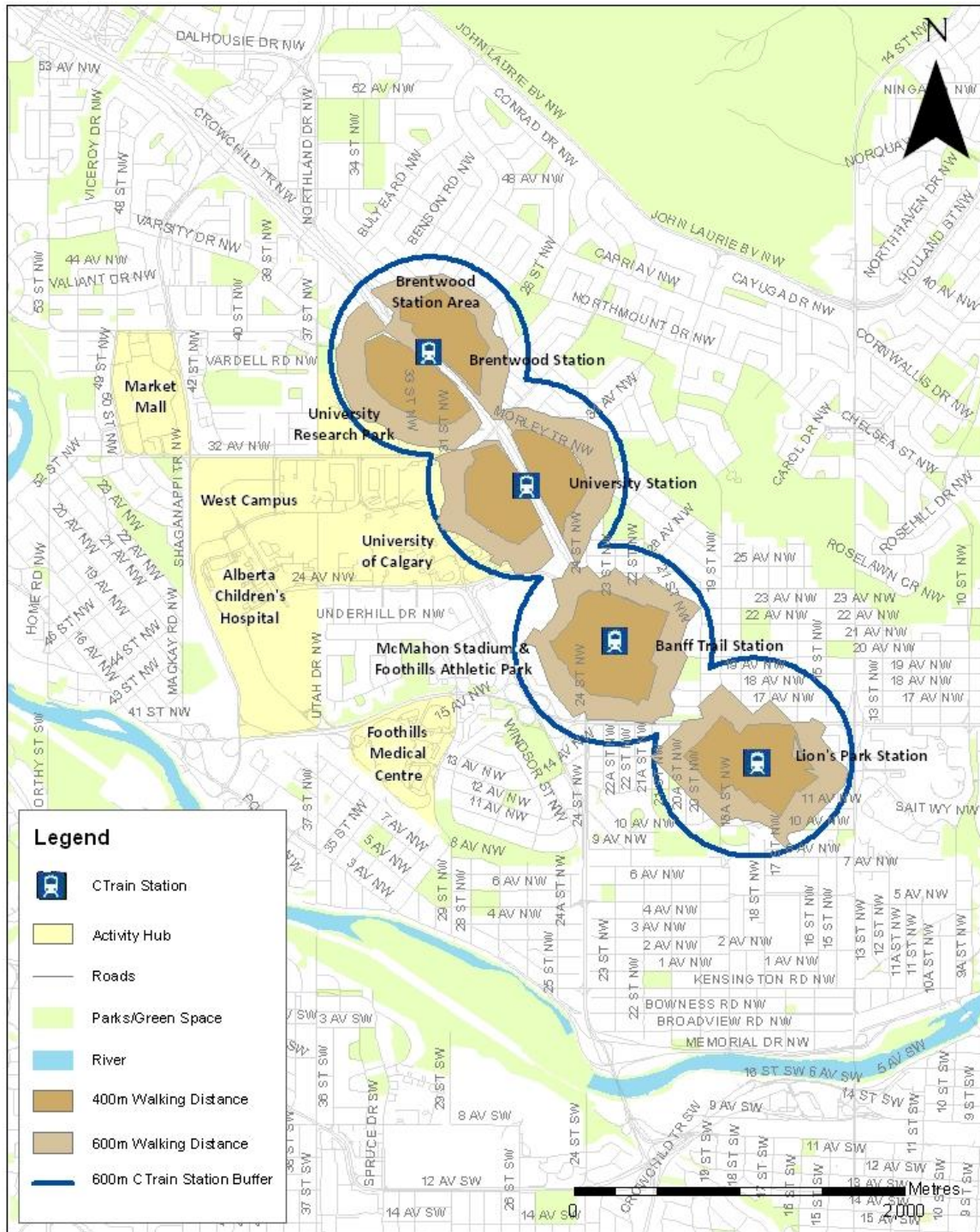


FIGURE 3: TYPICAL CTRAIN WALKING DISTANCES ALONG NORTHWEST LRT

Directness

To provide coverage, or transit customer access, to all destinations in South Shaganappi Calgary Transit’s routes travel along many roadways although few permit direct, short bus connections. In the long term, the majority of transit routes connecting the University and Brentwood Station will travel via Alberta Children’s Hospital. As shown in **Figure 4**, this route today is twice as long as other options on the University campus and is below Calgary Transit’s average travel speed for bus routes (21 km / hr). Future congestion may mean additional delay to bus routes.

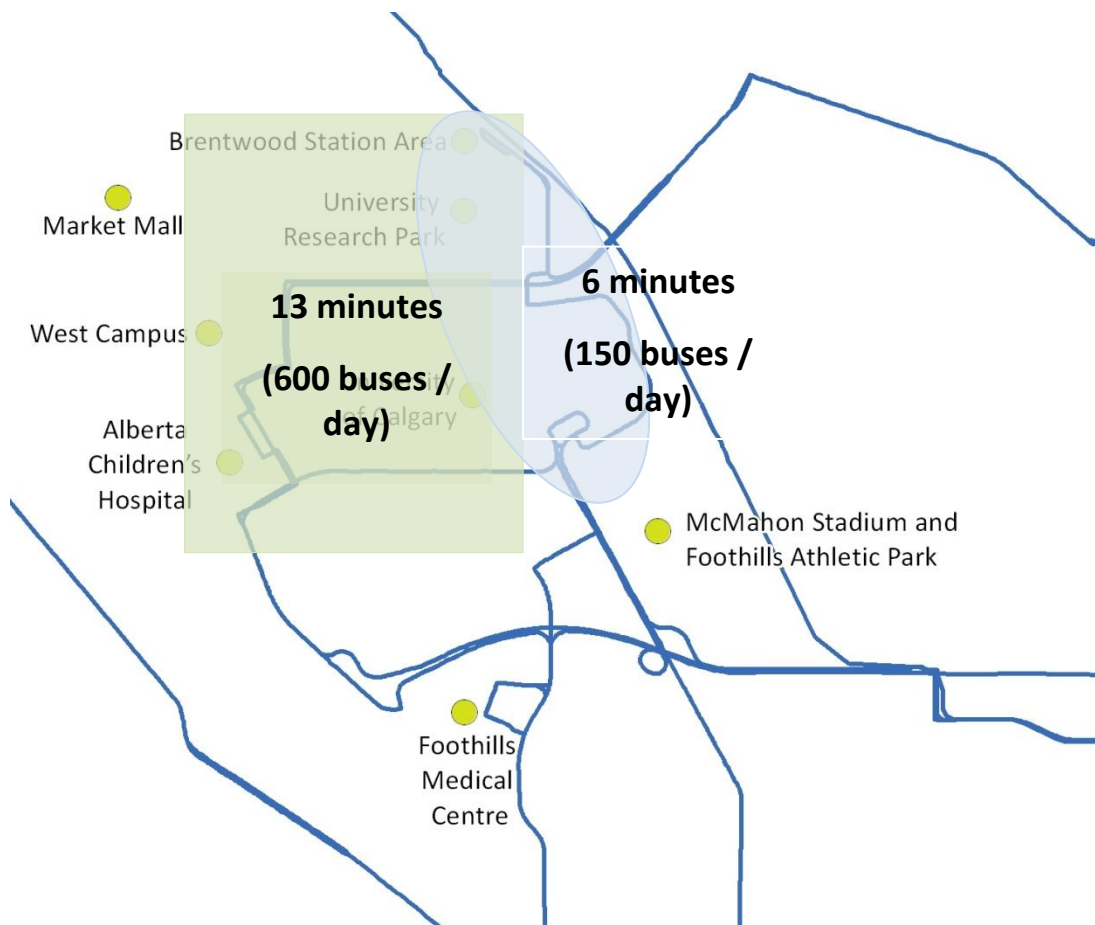


FIGURE 4: TYPICAL TRAVEL TIMES (PRIMARY TRANSIT NETWORK)

Future ridership

The Calgary Transportation Plan envisions transit frequency improvements in South Shaganappi. Improving service frequency alone may not, however, be enough of an improvement to improve travel times and attract new passengers. The City of Calgary has forecast the number of trips the above scenario will attract to transit. The forecast model examines South Shaganappi in two zones. It shows that in 2039, the proportion of travellers using transit versus other modes (i.e. mode split) for the two areas does not achieve the base, city-wide goals set out in Calgary Transportation Plan. In an important, inner city area like South Shaganappi the expectation is to exceed city-wide ridership targets.

Enhancing today's transit service

There are several approaches needing review to improve transit service in the South Shaganappi area. These are described here:

Network Review

Cities like Portland, Oregon have undertaken reviews of their bus networks to create more grid-like patterns. These patterns fit with the Calgary Transportation Plan goals of creating more cross town travel opportunities on transit. In the case of South Shaganappi there may be opportunities to optimize how the more than 20 routes operate.



Transit Priority Review

Adding transit priority, or preference over the private automobile, is occurring throughout Calgary. Many traffic signals now detect approaching buses and either extend a green light or terminate a red light to allow buses a speedier route. In other cases, bus-only lanes and bus-only crossings are added to roadways where transit service is frequent. This approach reflects Calgary Transit's ability to increase the capacity of the transportation network. Living without a car in Calgary should not be cumbersome and transit priority is a big step in making transit service more attractive.

Technology Review

To address today's last mile concerns, a new means of providing transit links is required. The following criteria need to be addressed:

- Frequency (waits under a minute)
- Proven and cost effective
- High capacity
- Accessible
- Appropriate in Calgary's climate
- Enhances safety by adding 'eyes on the street'
- Reduces emissions
- Passenger friendly:
 - Fare integration
 - Help phones and cameras

Appendix B shows how TransLink (the transportation authority for metro-Vancouver) compared nine different technologies to connect Simon Fraser University with their rail (SkyTrain) system.

Possible application – new technology

A hypothetical example of how this might be applied would be to replace Route 91, which connects many of the South Shaganappi destinations: Lion's Park LRT station, Foothills General Hospital, Alberta Children's Hospital, University of Calgary, and Brentwood LRT station with a higher capacity and higher speed 'people mover'. This route costs approximately \$1.5 million / year to operate; if it were replaced with a new technology, the benefits could be:

- Improved frequency (Today: 15 minutes to an hour.)
- Shorter trip length
- Faster travel speed
- Reduced diesel use
- Reduced annual emissions

Replacing Route 91 may be a possibility, although detailed study and partnering with South Shaganappi communities and activity centres will confirm whether a new technology is appropriate: suitability with area master planning, and which route(s) a technology could best support. **Appendix C** lists questions that should be included in a feasibility study for South Shaganappi. Many of the questions are linked with offset costs for public and private partners and suggest that \$1 to \$3 Billion may be saved versus more auto based traditional solutions. Further study should also answer whether a Bow River crossing is appropriate and whether connecting Northwest and West LRT lines is feasible.

Conclusion

Ultimately, providing a high level of service for South Shaganappi customers is Calgary Transit's goal. Review of routes, transit priority and technology opportunities should involve adjacent communities and consider other City and partner studies:

- Shaganappi Trail Functional Plan
- Crowchild Trail Functional Plan
- University of Calgary Transportation Demand Management Plan
- West Campus Master Plan

Enhancing the effectiveness of Calgary Transit's service to South Shaganappi will mean more direct, convenient and reliable service. It also means maximizing the benefits of more than 20 bus routes and a current annual service investment of \$24 Million.

APPENDIX A – Additional Policy References

City of Calgary – Guiding Policies

Municipal Development Plan (MDP)		Calgary Transportation Plan (CTP)
<p>On 2009 September 28, City Council approved a new Municipal Development Plan (MDP) and Calgary Transportation Plan (CTP) that were created through the Plan It Calgary process. These plans describe the vision for a long-term pattern of growth and development in Calgary over the next 60 years and provide policies that will start to create that form of city over the next 30 years. ¹</p>		
Major Activity Centre	Community Activity Centre	Primary Transit Network
<p>Major Activity Centres are areas of high job and population growth located in strategic areas central to larger residential catchment areas and linked city-wide by the Primary Transit Network.²</p>	<p>Community Activity Centres are areas of moderate job and population growth convenient to one or more communities and supported by the Primary Transit Network.²</p>	<p>The Primary Transit Network is defined by level of service – not by mode. It comprises a permanent network of high-frequency transit services (i.e., LRT, <i>Bus Rapid Transit</i> (BRT), <i>streetcars</i>/trams and frequent bus service) that will operate every 10 minutes or less over an extended operating period, seven days a week.³</p>
<p>Brentwood LRT station area is identified as a Major Activity Centre in MDP.</p>	<p>The Market Mall area is identified as a Community Activity Centre in MDP.</p>	<p>Several links are identified in the Primary Transit Network in CTP:</p> <ul style="list-style-type: none"> • Northwest LRT • 32 Avenue NW • Shaganappi Trail • University Drive (and within the UofC campus) • 29 Street NW • Crowchild Trail • 16 Avenue NW

Sources:

1. [http://www.calgary.ca/Transportation/TP/Pages/Planning/Calgary-Transportation-Plan/Calgary-Transportation-Plan-\(CTP\).aspx](http://www.calgary.ca/Transportation/TP/Pages/Planning/Calgary-Transportation-Plan/Calgary-Transportation-Plan-(CTP).aspx)
2. <http://www.calgary.ca/PDA/LUPP/Documents/Publications/mdp-municipal-development-plan.pdf> (Page 2.2)
3. http://www.calgary.ca/Transportation/TP/Documents/CTP2009/calgary_transportation_plan_2009.pdf (Page 3-11)

APPENDIX B – Transit Technology Review (TransLink)

What technologies were considered to meet the need?

The planning study reviewed a number of potential transit solutions for Burnaby Mountain. These included ground based technologies: trolley buses, light rail transit, funicular, rack railway, and SkyTrain; and aerial technologies: reversible ropeway tram (like the Grouse Mountain tram), and different types of gondolas – monocable, 2 and 3 rope, and funitel.

	Diesel bus	Trolleybus	SkyTrain	LRT	Rack railway	Funicular	Aerial tram	Monocable gondola	3S gondola
Accounts	○	○	○	○	○	○	○	○	○
Transportation	○	○	○	○	○	○	○	○	○
Environment	○	○	○	○	○	○	○	○	○
Financial	○	○	○	○	○	○	○	○	○
Deliverability	○	○	○	○	○	○	○	○	○
Urban Development	○	○	○	○	○	○	○	○	○
Social & Community	○	○	○	○	○	○	○	○	○

SCALE RELATIVE TO BASE:
 Worst ← Business as usual → Better

APPENDIX C – Technology Review: Scope

Technology Review: Scope

Calgary Transit recommends studying transit technologies for South Shaganappi to determine if the existing bus transit limitations in South Shaganappi can be addressed. It is proposed that such a study would involve the following elements:

- Passenger travel demands
- Lessons from other urban centres
- Routing and phasing
- Bus route impacts, including whether routes can be simplified or eliminated
- Station locations and integration principles
- Urban design
- Avoided capital spending:
 - Parking structures for transit, NW hospitals and the University of Calgary (\$500 M - \$1B)
 - Road improvements, including upgrades to Crowchild Trail (\$200 - \$500 M) and Shaganappi Trail
- Avoiding operating expenses:
 - Route elimination (\$1.5 – \$3M / year)
 - Route efficiencies (\$2.5 - \$4M / year)
- Emission reductions
- Safety enhancements
- Public support
- Operating and construction costs
- Feasibility and constructability
- Renderings of options