

3 Project Benefits

This section of the Environmental and Socio-economic Review (ESR) describes the anticipated benefits of the Surrey Newton-Guildford Light Rail Transit (LRT) (the Project), including transportation benefits, social and community benefits, economic benefits, and environmental benefits. Transportation and social and community and economic benefits are largely summarized from the March 2018 draft *Phase 1: Surrey-Newton-Guildford LRT Project Business Case* (Partnerships BC, 2018) and informed by the assessment of ESR Sections 7.2 (Traffic and Transportation), 7.3 (Housing, Residential Properties, and Commercial Businesses) and 7.4 (Community and Emergency Services).

3.1 Transportation Benefits

The South of Fraser sub-region, including the City of Surrey (the City), is one of the fastest growing areas in the Lower Mainland and has been established as a priority for transit expansion in several reports, including *Transport 2040: A Transportation Strategy for Metro Vancouver, Now and in the Future* (TransLink, 2008), *Metro Vancouver 2040 Regional Growth Strategy Bylaw* (Metro Vancouver, 2011a), the Regional Transportation Strategy Strategic Framework [adopted by TransLink in 2013 (TransLink, 2018)], and the Regional Mayors' Council Vision for Regional Transportation Investment (2015). Extending LRT infrastructure to link urban centres within the City is also a key component of the transportation vision outlined in the *Transportation Strategic Plan* (City of Surrey, 2008), the City's 10-year Capital Plan that identifies road network improvements and includes supporting projects to be developed to complement LRT.

Over the long-term, the Project is anticipated to provide benefits for transit users, pedestrians, and cyclists, primarily through improved transit accessibility and reliability, travel time savings, increased ridership, improved regional connectivity, and reduced congestion and collisions. Project operation is expected to have a positive effect on traffic volume in the Review Area and nearby highways and transportation corridors. Transportation benefits are discussed in Sections 3.1.1 to 3.1.5.

3.1.1 Improved Transit Accessibility and Reliability

A key Project objective is to improve transit accessibility and reliability for Surrey residents. Between 2016 and 2030, the population of Metro Vancouver is projected to increase by over 20% with roughly one-third of this growth projected for Surrey (BC Stats, 2017; City of Surrey, 2018). Four existing SkyTrain stations are located in Surrey, within the communities of Whalley and Surrey City Centre. The Project will provide a reliable transit option and expand the geographic reach of the existing transit network with 11 new stops that connect growing neighborhoods with the City Centre and with current and future rapid transit in Surrey.

3.1.2 Travel Time Savings

The Project has been designed to provide a reliable transportation option with consistent travel times. At present, travel time on the 96 B-Line is highly variable, with the average end-to-end runtime from Newton Town Centre to Guildford Town Centre taking approximately 29 minutes. In the absence of the Project, a considerable increase in transit and motor vehicle travel times is likely to occur due to increased road congestion associated with increased population size. Since LRT vehicles will run on tracks separated from general purpose traffic and be given priority at intersections, the Project will provide a consistent travel time of 27 minutes, end-to-end.

The Project has been designed to provide more reliable travel times when compared to bus or car alternatives. Estimates of travel time savings compared to the business-as-usual scenario (BAU) are based on outputs from TransLink's Regional Transportation Model, and incorporate access time, wait time, and in-vehicle time. End-to-end travel time of LRT vehicles with the Project is predicted to remain at 27 minutes well into the future (to 2045). In contrast, in the BAU scenario, increased roadway congestion is anticipated to result in increased travel times for the 96 B-Line, from 29 minutes in 2018 to 40 minutes by 2030, and 45 minutes by 2045 (Partnerships BC, 2018). Travel time savings for trips to and from, and within Surrey were calculated for the 2030 and 2045 AM peak hour (7:30AM-8:30AM) by comparing the travel times in the BAU and the LRT scenario (Partnerships BC, 2018). Travel time savings, estimated at \$625 million (Partnerships BC, 2018), will result from increased transit reliability and efficiency, mode shift away from private vehicles, and reduced congestion. Actual travel time savings are estimated at 694,700 and 880,300 daily user-minutes in 2030 and 2045 respectively (Partnerships BC, 2018).

3.1.3 Increased Transit Ridership

Ridership forecasts for the Project were generated using TransLink's Regional Transportation Model Phase 2.2 and are based on TransLink's future year assumptions for SkyTrain and bus networks, and Metro Vancouver's land use forecasts (Partnerships BC, 2018). Daily boardings for the Project are estimated at 42,000-46,000 in 2024 (opening day), 51,000-55,000 in 2030, and 71,000-77,000 in 2045 (Partnerships BC, 2018). By 2045, route ridership for the Project is estimated to be three times higher than ridership on the 96 B-Line in the BAU scenario (Partnerships BC, 2018). Savings on auto operating costs from mode shifts to transit are estimated at \$49 million (Partnerships BC, 2018).

By 2030, more than three million additional annual transit trips are expected on LRT compared to the BAU scenario. By 2045, more than four million additional annual transit trips on LRT are expected to occur over the BAU scenario for a total of 31.5 million annual transit trips by 2045 (Partnerships BC, 2018).

3.1.4 Improved Regional Connectivity

The proposed Project will include 11 stops connecting Newton and Guildford Town Centres via Surrey City Centre (Partnerships BC, 2018). Major exchange points with the bus transit system will be created at the Newton and Guildford LRT stations, and the King George and Surrey Central LRT stations will connect with the existing Expo Line SkyTrain (Partnerships BC, 2018). In addition, the Project will connect to the local and regional cycling network (Partnerships BC, 2018), improve cycling routes along the Alignment, and add additional bicycle parking at LRT stops. The Project design creates new and improved existing connections between neighbourhoods necessary to support residential and employment growth within the City (Partnerships BC, 2018).

Further extending the rail-based transit network into the City is anticipated to address service gaps in the current network while supporting the concentration of urban development. TransLink is working toward increasing the proportion of daily trips made in the Metro Vancouver region via sustainable modes (including public transit, walking, cycling, or carpooling) by 23% to reach a target of 50% by 2041 (Partnerships BC, 2018).

3.1.5 Reduced Congestion and Collisions

The Project design improves the movement of goods across the City and within the Metro Vancouver region by reducing the number of automotive vehicle trips and easing congestion on the road network (Partnerships BC, 2018). A total of 1,600 cars are estimated to be taken off the road because of Project operation, resulting in a mode shift. Mode shifts are also expected to contribute to a decrease in traffic volumes on Highway 1 ramps. Reductions in total vehicle kilometres travelled represent a total collision cost savings (fewer accidents are predicted in the Project case versus BAU scenarios) of \$45 million by 2045 (2016 dollars).

The Project design limits potential conflicts with other road users by providing a dedicated right-of-way for the LRT along the corridor and traffic signal priority at intersections, reducing the risk of collision. A public education and safety campaign for all road users (e.g., vehicle operators, cyclists, and pedestrians) will also be implemented prior to Project operation. Residents, businesses, and schools along the corridor, as well as other areas with high pedestrian and cycling activity, will be a focus of the campaign (Partnerships BC, 2018). Based on experience in other jurisdictions with LRT, dedicated right-of-way systems similar to that of the Project have been found to be safer than buses, resulting in fewer incidents.

The Project includes new signalised crossings and improved sidewalk conditions, contributing to improved pedestrian mobility and safety. New signalized intersections will maintain pedestrian access and reduce the potential for jaywalking at the following locations:

- 104 Avenue, between Whalley Boulevard and 138a Street
- City Parkway at 103 Avenue
- City Parkway at 102A Avenue
- King George Boulevard at 98A Avenue
- King George Boulevard at 98B Avenue
- King George Boulevard and 97A Avenue
- King George Boulevard and 73 Avenue, near Save-On-Foods

Cyclist mobility and safety is also anticipated to benefit from the Project, largely due to improved bicycle routes. Crossing of the Alignment will be restricted to signalized intersections for safety purposes.

3.2 Social and Community Benefits

3.2.1 Facilitating Growth and Liveability

The Regional Growth Strategy for Metro Vancouver identifies rapid transit in the South of Fraser sub-region as a priority (Metro Vancouver, 2011, 2011a). The creation of compact urban areas and complete communities, with access to employment, amenities, services, and sustainable transportation choices, are key goals of the Strategy. The Strategy suggests focusing growth in urban centres and areas served by frequent transit, with specific reference to of Surrey. The Project will help to achieve these goals by linking three urban centres (Newton Town Centre, Surrey City Centre, and Guildford Town Centre) along the Frequent Transit Network (corridors with transit service at least every 15 minutes) and creating a multi-modal street network conducive to the development of compact urban areas and complete communities (see Figure 3-1).

The Project also supports Surrey's vision for improved livability and economic development. The City's *Official Community Plan* prioritizes concentration of urban development within Surrey City Centre, five of Surrey's Town Centres (including Newton and Guildford), and the Frequent Transit Corridors linking these centres, including King George Boulevard and 104 Avenue (City of Surrey, 2014).

The vision for Surrey City Centre is to create a "walkable, high density, transit-oriented downtown" (City of Surrey, 2017). The Project will contribute to this vision by providing an attractive and safe pedestrian-friendly environment and attracting mid-rise housing development that is supported by community services and neighbourhood retail transformation along King George Boulevard and 104 Avenue (Partnerships BC, 2018).

3.2.2 Improved Affordability through Greater Mobility

Improved transit connections, transit-oriented urban development and housing availability will benefit communities, residents, and businesses near the Alignment. The development of transit is an important factor in providing owners and renters with more affordable and sustainable transportation options (Metro Vancouver, 2015). The Project is anticipated to help reduce transportation costs for households by reducing private vehicle use and increasing the use of LRT and other sustainable forms of transportation (e.g., cycling and walking).

3.2.3 Improved Safety

The Project is anticipated to enhance cyclist and pedestrian mobility and safety due to new signalised crossings, protected bicycle lanes, slow down zones and buffered areas. Other safety features of the Project include upgraded sidewalks, safe access to LRT stops, signage, pedestrian crossings, and lighting and shelters at LRT stops. The Project design provides safe areas for passengers to wait at LRT stops through the provision closed-circuit television monitoring, emergency phones, public-address system, canopies, and glazing. LRT vehicles will also be equipped with closed-circuit television (CCTV), emergency phones, and a public-address system.

These and other safety features have been designed in consideration of the Crime Prevention through Environmental Design guidelines. The Project will improve safety near Hjorth Road Elementary through a reduction in traffic along 104 Avenue in front of the school, a new signalized crossing, and supportive infrastructure.

3.2.4 Enhanced Urban Design Features

Investment in LRT is anticipated to benefit the quality and aesthetics of the surrounding urban environment (Partnerships BC, 2018). The Project concept includes a “complete street” design with high quality landscaping, marked crosswalks, and improved station environments, developed to increase safety and improve visual quality along the Alignment (Partnerships BC, 2018).

Figure 3-1 envisions the street scape during Project operation.



City of Surrey



City of Surrey



Figure 3-1: Multi-modal Street Design

3.3 Economic Benefits

3.3.1 Economic Benefits from Transportation Improvements

The total capital cost for Project construction is estimated at \$1,610 million (Partnerships BC, 2018). Construction expenditures could result in substantial opportunities for local businesses to bid on service and supplier contracts related to the Project.

The total annual operation cost for the Project is estimated at \$15.3 million (Partnerships BC, 2018). Service and supplier opportunities for local businesses will be available during operation and maintenance.

Once the Project is operational, the 96 B-Line will be discontinued, resulting in an annual savings on bus service estimated at \$7.1 million [2016 dollars (Partnerships BC, 2018)].

3.3.2 Construction-related Economic Benefits

Project expenditures during construction have the potential to result in direct, indirect, and induced employment through the following pathways:

- Direct employment through Project expenditures on labour during construction and operations.
- Indirect employment through Project purchases of equipment, materials, goods, and services from local and/or regional businesses.
- Induced employment through direct or indirect employee purchase of consumer goods and services from local and/or regional businesses.

Total direct employment associated with Project design, construction, and equipment and vehicle supply/installation is estimated at 3,960 jobs (Partnerships BC, 2018). Total indirect employment of suppliers and service providers is estimated at 2,350 jobs (Partnerships BC, 2018). Induced employment is anticipated to be less than indirect employment.

3.3.3 Wider Economic Benefits

Wider economic benefits may result from the Project due to agglomeration, imperfect competition, and tax revenues from labour market impacts, as follows:

- Agglomeration – Concentration of economic activity from densified urban development can result in greater productivity and lower costs due to lesser distances between commercial properties and access to a wider source of labour.
- Imperfect competition – Reduction in transportation costs can result in increased profits and output of businesses that rely on transportation during the production process.
- Tax revenues from labour market impacts – An increase in the number of people joining the labour force may be observed due to a reduction in commuting costs affecting labour market choices of workers (e.g., workers may choose to pursue more productive jobs). This labour supply and productive jobs effect can result in tax benefits.

Based on these mechanisms, the estimated wider economic benefit of the Project is \$76 million in 2016 dollars (Partnerships BC, 2018).

3.4 Environmental Benefits

The Province’s Climate Action Plan has identified targets for reducing greenhouse gases (GHGs) 33% by 2020 and 80% by 2050, from 2007 levels (Province of BC, 2008). Both the Climate Action Plan and the Climate Leadership Plan (Province of BC, 2016) have identified communities with sustainable transportation options as important participants in reaching the Province’s GHG targets.

The regional goals for improved air quality and GHG management in the Regional Growth Strategy include “protect the environment and respond to climate change impacts” (Metro Vancouver, 2011a). Metro Vancouver’s Integrated Air Quality and GHG Plan includes a goal to improve the Region’s air quality while acknowledging Metro Vancouver’s opportunity to contribute to global climate targets by reducing regional GHG emissions (Metro Vancouver, 2011b).

The Project supports the achievement of provincial, regional and local air quality goals by reducing criteria air contaminants and GHG emissions as a result of mode shift from diesel busses and private vehicles to LRT and increased use of public transit in the City, particularly along King George Boulevard and 104 Avenue.

3.5 References

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