

MEMORANDUM



DATE September 10, 2021
TO Geoffrey Keyworth,
Transportation Engineer

FROM Allison Clavelle, P.Eng.
Transportation Engineer / Principal
FILE 1755.0022.01
SUBJECT Port Moody Third SkyTrain Station
Opportunity Review

1.0 INTRODUCTION

The City of Port Moody (City) is currently served by two stations on the Evergreen Extension of the SkyTrain's Millennium Line. The existing stations at Moody Centre and Inlet Centre facilitate fast, convenient, and efficient transit connections from Port Moody to other centres in the Metro Vancouver region.

The Moody Centre and Seaview neighbourhoods are transforming from low- to mid-density residential, commercial, and industrial land uses to higher density complete communities. The City is experiencing increasing development pressure, with active development applications in both areas. While eastern Moody Centre is well served by rapid transit with the Moody Centre and Inlet Centre stations, western Moody Centre and Seaview are outside of the typical 800 m catchment area for rapid transit stations. Action A.4 from TransPort Moody – Port Moody's Master Transportation Plan – is to support the provision of a third Evergreen station at Queens Street in order to improve transit access from the western portions of the Moody Centre area.¹

Port Moody Council has directed staff to explore options and opportunities for a third SkyTrain station west of Moody Centre Station. The City retained Urban Systems to complete and deliver technical work to support this review. This memorandum summarizes the background conditions that led to this request, highlights the features of existing stations, and includes a high-level assessment of a new station west of Moody Centre in Port Moody.

¹ City of Port Moody (2017), Port Moody Master Transportation Plan.

2.0 BACKGROUND

The Evergreen Extension is a 10.9-kilometre extension of the Millennium Line, running from Lougheed Town Centre in Burnaby to Lafarge Lake-Douglas in Coquitlam. There are two existing Evergreen Extension stations in Port Moody – one at Moody Centre and another at Inlet Centre. The existing stations within Port Moody are approximately 1.31 km apart, with larger distances to stations in neighbouring communities (4.35 km between Moody Centre and Burquitlam; 2.09 km between Inlet Centre and Coquitlam Central).

Stations on the Evergreen Extension, like other rapid transit lines, were chosen because they serve major destinations, have high population and employment densities within the walking catchment area of approximately 800 m, and are an integrated and connected part of the broader transit network. Additional future stations may be identified and included in planning and design work, if it is anticipated that conditions and funding to support rapid transit could exist in the future. The City of Coquitlam's City Centre Area Plan identifies a future station at Falcon Drive.²

According to the Province of British Columbia (Province), the guideway was designed to accommodate a future station in western Moody Centre, near Queens Street, with the caveats that it would be funded by community partners and that it support the goals of transit-oriented development.³ **Figure 1** illustrates the existing and potential future station locations on the Evergreen Line, along with existing station spacing. If located at Queens Street, a future station would be 1 km from Moody Centre and 3.3 km from Burquitlam Station. Although the original commitment was that the track would accommodate a future station at Queens Street, there is interest in exploring station locations further west.

² City of Coquitlam (2020). City Centre Area Plan.

³ City of Port Moody (2013). Council Meeting Information Items: Letter from the Ministry of Transportation and Infrastructure, dated September 6, 2013.
<http://portmoodybc.swagit.com/system/agendas/32823/original/9-24%20PortMoodyCC.pdf?1380090100>

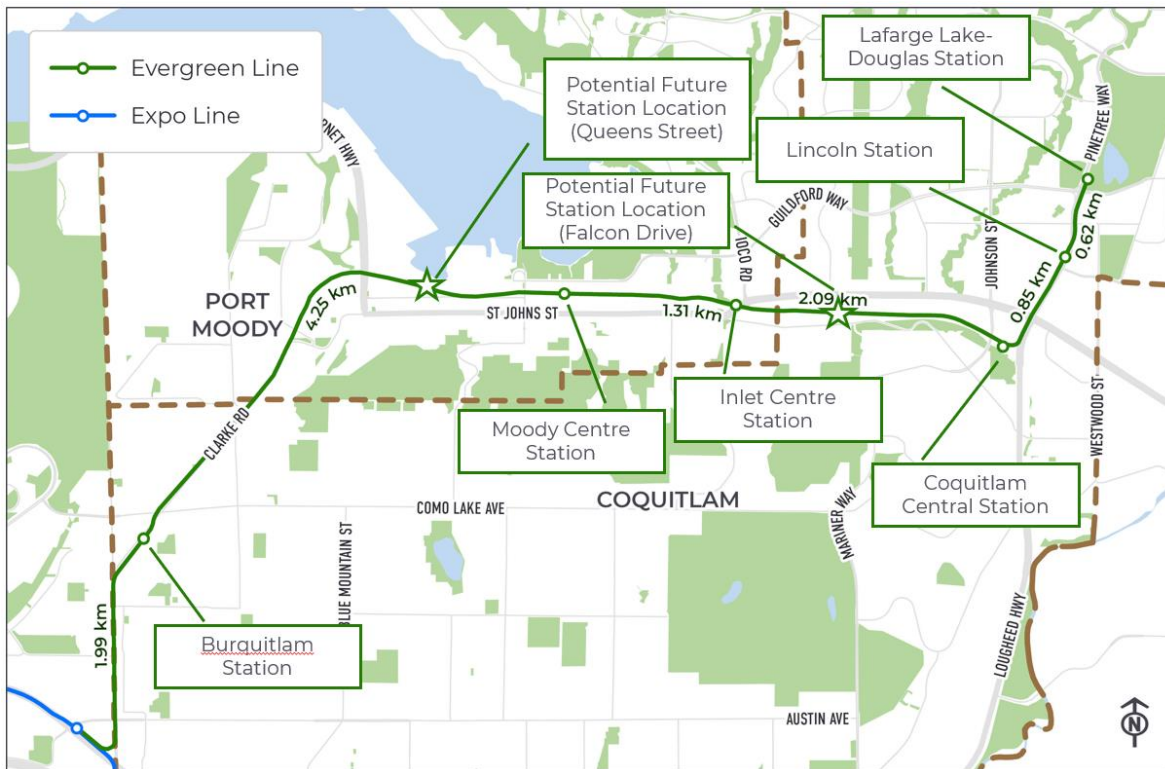


Figure 1: Evergreen Line with Existing and Potential Future Stations

Recently, there has been substantial interest in development opportunities west of the Moody Centre Neighbourhood and in the Seaview Neighbourhood, as well as a number of development applications submitted for consideration by City Council. This has resulted in a desire to consider the potential for a third SkyTrain station in Port Moody. **Figure 2** illustrates the locations of active development applications within central Port Moody. This memorandum will explore whether increased development at this level generates sufficient demand to further explore support for a third SkyTrain Station in **Section 4.2**.

Within the Moody Centre Area, active development applications include four to eight story residential and mixed-use commercial and residential buildings. In the Seaview neighbourhood, the largest current application is Woodland Park. Woodland Park is an affordable housing neighbourhood development for 2,053 units (325 units of non-market rental housing, 1,596 strata units and 132 market rental units). The neighbourhood would include childcare with 93 spaces, 19,000 square feet of retail space and 8.1 acres of parkland, trails and environmental preserve. The development is a 37-minute walk to Moody Centre and 29-minute walk to Burquitlam station.

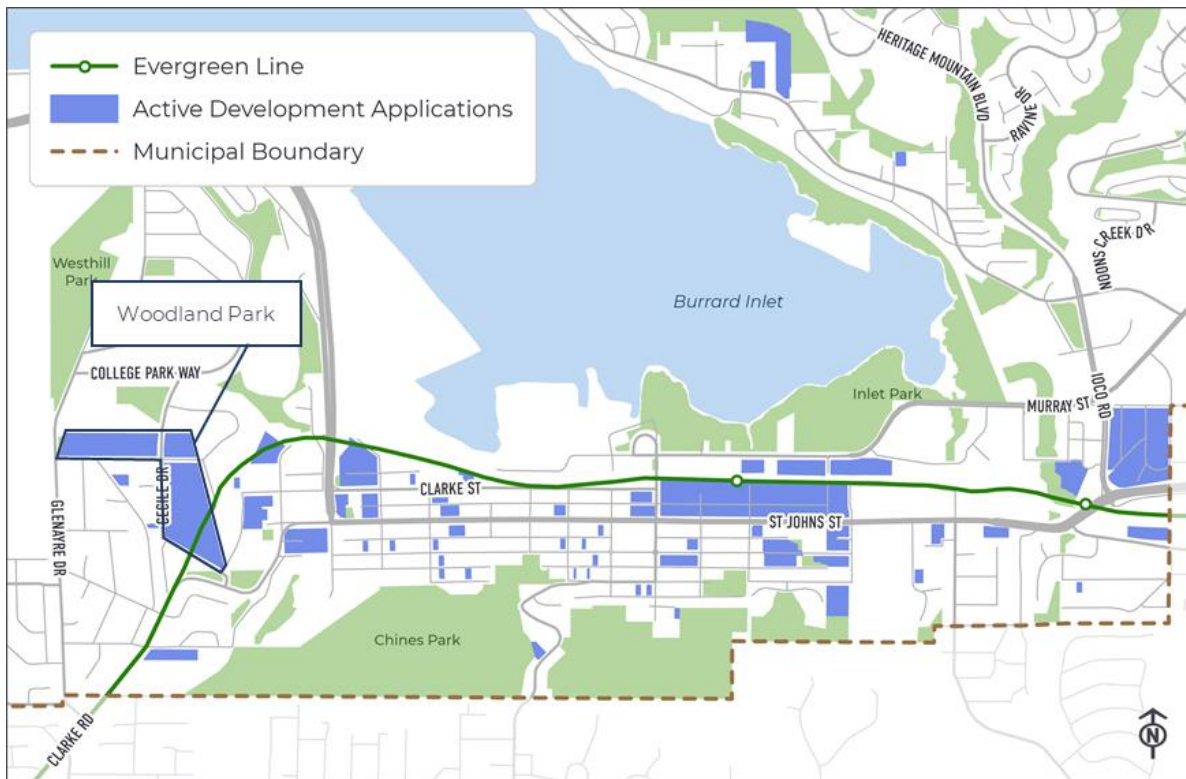


Figure 2: Active Development Applications

In total, current in-stream development applications in western Moody Centre and Seaview could accommodate an additional 7,000 people and 200 jobs. Ongoing work on the Official Community Plan Update indicates the potential for additional increased density across both the Seaview and Oceanfront neighbourhoods. This work points to a conservative estimate of an additional 4,500 people and 1,000 jobs beyond the applications that are currently active.

3.0 EXISTING STATIONS HIGHLIGHTS

This section highlights key information about existing stations in Metro Vancouver's SkyTrain network to provide context for a potential third station in Port Moody. It begins with information about station spacing, location, and design; continues with a summary of the key features of Transit-Oriented Communities and provides examples of existing SkyTrain stations for context.

3.1 STATION SPACING, LOCATION, AND DESIGN

The two most recent SkyTrain extensions delivered in Metro Vancouver are the Canada Line (2009) and the Evergreen Extension (2016). Both lines serve growing communities and have locations identified through planning and design for potential future stations. Existing station spacing for the two lines is summarized in **Table 1**.

Table 1: Station Spacing on SkyTrain Lines, 2021

STATION SPACING ON SKYTRAIN LINES			
	Average (km)	Minimum (km)	Maximum (km)
Canada Line	1.22	0.43	1.86
Evergreen Extension	1.85	0.62	4.25

The Evergreen Extension is illustrated in **Figure 3** and includes six stations with an average station spacing of 1.9 km. The minimum spacing on the line is between Lincoln Station and Lafarge Lake Station, with a distance of 0.6 km, while the longest is 4.3 km between Burquitlam Station and Moody Centre, where the Evergreen Line changes elevation by more than 80 m. . The Canada Line is illustrated in **Figure 4** and includes 15 stations with an average distance of 1.2 km. The minimum spacing of Canada Line Station is 0.4 m between Olympic Village and Broadway-City Hall, and the longest spacing is 1.8 km between Marine Drive and Bridgeport, where the Canada Line crosses the Fraser River.



Figure 3: Station Spacing on Evergreen Line

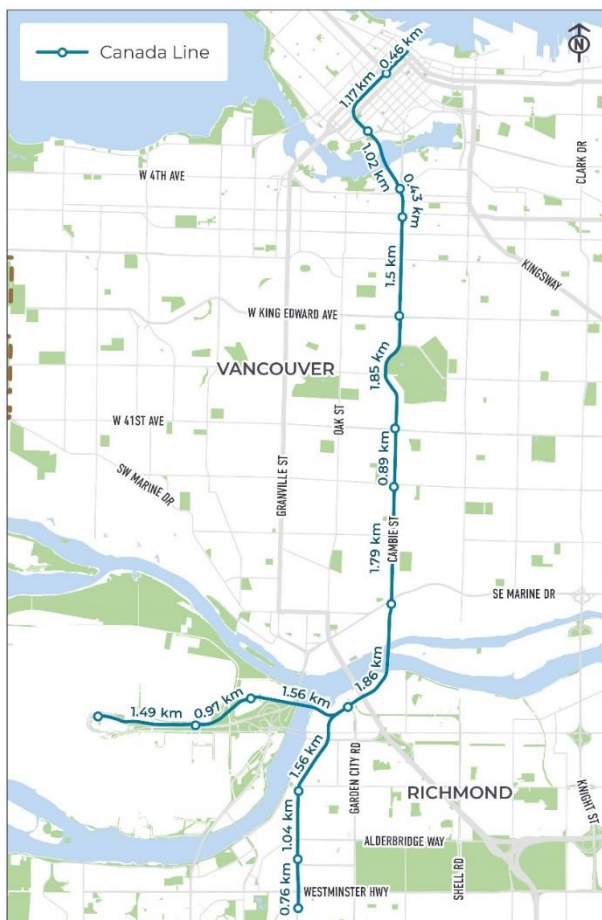


Figure 4: Station Spacing on Canada Line

As noted previously, SkyTrain stations are typically located near high densities of people and jobs, where there are connections to rail and bus networks, and where they serve major destinations. The spacing between SkyTrain stations must balance access with cost, travel time, environmental impacts, physical constraints, and other considerations. As seen above, the distance between stations is most typically between 1 km and 2 km. The distance between Burquitlam and Moody Centre is approximately 4.3 km, the longest gap on the network by far.

SkyTrain stations are typically located along long, straight, and flat (grades of less than 0.5%) stretches of track. Sufficient space must be available around the station to house the station house, stairs, escalators, and other amenities. Stations can have directional platforms located outside the tracks or single platforms in between the tracks, each of which has different space requirements. Stations located underground have additional structural, geotechnical, and accessibility considerations.

To support a potential third SkyTrain station in Port Moody, there must be a section of straight, flat track with sufficient surrounding space for the station and amenities. A station that is close to the existing Moody Centre station can be expected to attract fewer riders than one that is located further away.

3.2 TRANSIT ORIENTED COMMUNITIES

At the regional level, TransLink provides Transit-Oriented Communities Design Guidelines to connect land use planning, urban design, and policy in support of communities where people drive less and use more active transportation and transit. Transit-oriented communities are built around the “6Ds” destinations, distance, design, density, diversity and demand management.⁴ When these 6Ds are applied to neighbourhoods around rapid transit stations, the results are complete, connected, and vibrant communities with high transit usage. Stations in these neighbourhoods are active, busy, and integrated with the surrounding community.

A potential future third SkyTrain station in Port Moody should be located to target locations that have a high likelihood of supporting the “6Ds” of Transit-Oriented Communities.

⁴TransLink (2012). Transit-Oriented Communities Design Guidelines. https://www.translink.ca/-/media/translink/documents/plans-and-projects/managing-the-transit-network/transit_oriented_communities_design_guidelines.pdf

3.3 COMPARATOR STATION HIGHLIGHTS

SkyTrain stations across the region have different contexts, connections, communities, and utilization. Annual SkyTrain boardings in 2019 ranged from 13,271,000 at Waterfront Station – a central connector and key regional destination – to 327,000 at Sea Island Centre. Comparator stations can provide context and lessons learned for a future station in Port Moody. This section includes information about stations in neighbourhoods that share some similar features with Port Moody's Moody Centre and Seaview neighbourhoods followed by some high-level findings about key elements of stations with high boardings.

Highlights from Comparator Stations

Inlet Centre, Port Moody | 694,000 Annual Boardings (2019)

One of the two existing Port Moody Stations, Inlet Centre has a similar mix of multi-family residential and mixed used land uses identified in the OCP. The land use within 800 m of the Inlet Centre Station is illustrated in **Figure 5**. When the Evergreen Extension opened, this area was mixed with single-family homes, townhouses, with some low density commercial and a small number of residential towers. Land use in this area is quickly evolving



Figure 5: Land Use Around Inlet Centre Station

and station boardings have been steadily increasing, up more than 14% from 2017 to 2019. This is faster than the overall increase of annual boardings across the SkyTrain system, which was approximately 9% between 2017 and 2019.

The station provides a central connection for five bus routes, as well as a pick-up / drop-off zone. The site is integrated into Port Moody's cycling network.

In 2019, this station had the fourth lowest number of annual boardings in the broader SkyTrain network.

Moody Centre, Port Moody | 805,000 Annual Boardings (2019)

This station would neighbour a future third Port Moody Skytrain station and is identified in the OCP as mixed use and employment area, with multi-family residential and institutional uses. The land uses identified in the OCP are illustrated in **Figure 6**. Existing land uses include multi-family, low-density commercial, and institutional. This area is also quickly evolving, with annual

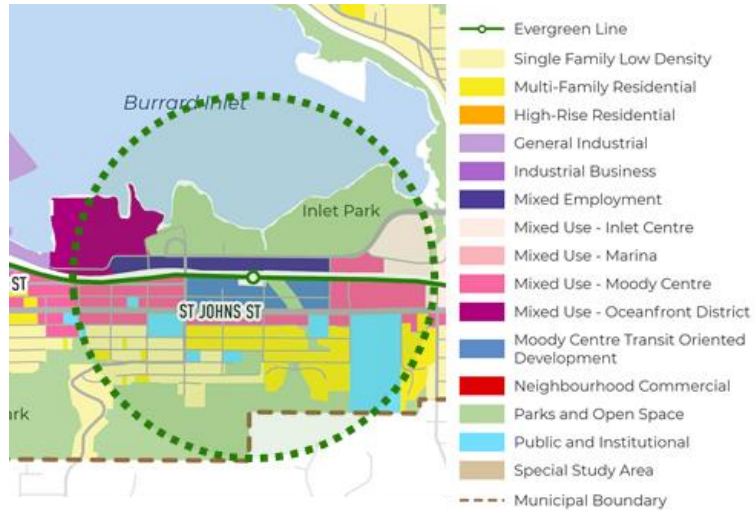


Figure 6: Land Use Around Moody Centre Station

Station increasing more than 26% between 2017 and 2019. Moody Centre is one of the stations with the fastest growing annual boardings in the region.

Moody Centre is also a West Coast Express Station, with easy and integrated access between the two services. Six bus routes connect at the station, which also include secure bicycle parking and a Park and Ride. The site is integrated into Port Moody's cycling network and accessible for pedestrians.

In 2019, this station had the fifth lowest number of annual boardings in the broader SkyTrain network.

22nd Street, New Westminster | 3,452,000 Annual Boardings (2019)

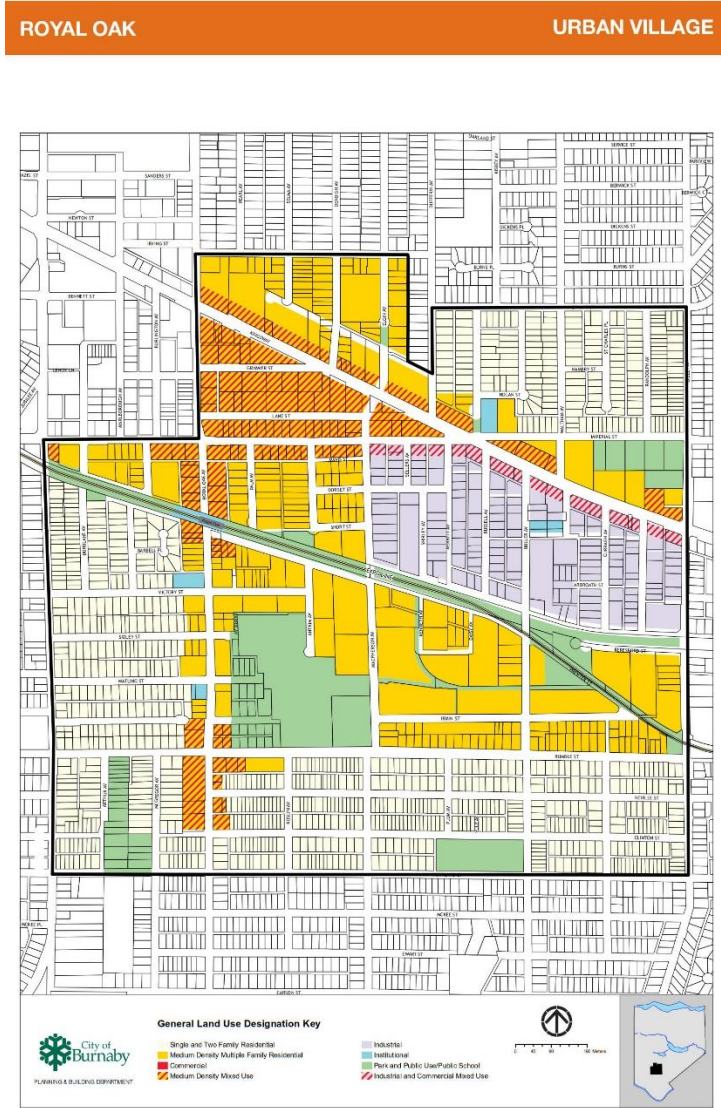
Like western Moody Centre, the 22nd Street Station is located at the base of a hill with low density residential and commercial uses within walking distance of the station. This area is also evolving, and planned for high density, mixed-use growth. Existing boardings are not reflective of the surrounding land use – the station currently serves fewer destinations than a potential Queens Street Station. Boardings at this station increased approximately 12% between 2017 and 2019.

22nd Street station illustrates how network connections contribute to high annual boardings. This station is a regional transit connector and bus exchange for nine routes, including connections from areas of Queensborough, Delta, and eastern Richmond that do not have easy access to the rapid transit network. The station is also integrated with the BC Parkway multi-use pathway.

Royal Oak, Burnaby | Annual boardings (2019) – 1,902,000

The land use around Royal Oak station is similar to what is planned for the area around a potential future Queens Street Station, as illustrated in **Figure 7**. The area around the station has medium density mixed use and medium density residential land uses in addition to some historic single-family homes and industrial area. Annual boardings at this station grew approximately 9% between 2017 and 2019.

Royal Oak is located approximately 1.3 km from Metrotown, which is one of the busiest SkyTrain stations in the region and a major regional destination. One bus route stops at this SkyTrain station and it is integrated with the BC Parkway multi-use pathway.



Plan updated to February 9, 2016.

Figure 7: Royal Oak Station Land Use

Source: City of Burnaby, Royal Oak General Land Use Map

Highlights from Top Five Stations by Annual Boardings

SkyTrain stations with the highest boardings in the region have similar attributes, particularly when referencing against TransLink's Transit-Oriented Communities Design Guidelines. Identifying the common features of these stations builds an understanding of what elements typically contribute to high boardings. The SkyTrain stations with the most ridership in the region are:

- Waterfront, Vancouver with 13,271, 000 annual boardings
- Metrotown, Burnaby with 8,905,000 annual boardings
- Commercial-Broadway, Vancouver with 8,103,000 annual boardings
- Burrard, Vancouver with 7,605,000 annual boardings
- Granville, Vancouver with 6,628,000 annual boardings

The SkyTrain stations in the region that attract the highest annual boardings share these common features:

- Land around each of the stations has features of **Transit-Oriented Development (TOD)**. Local governments and TransLink can facilitate TOD through local area plans, Official Community Plans and regional transit planning. For example, Commercial-Broadway station is guided by the Broadway/Commercial Transit Village Plan which was commissioned in 2006 by the City of Vancouver in partnership with TransLink to supports the area's already high transit ridership with measures that will better integrate both stations into the neighbourhood while increasing the safety, comfort, legibility, and commercial vitality of the immediate station area.
- Each are surrounded by **busy areas with diverse commercial, retail and employment** opportunities. The five busiest SkyTrain stations attract people from across the region for a variety of purposes. For example, each of the stations is within a metropolitan core urban centre which has sufficient office and commercial space ensures that there are jobs and services close to home.⁵
- Each has a **dense residential area within walking distance** from the station, and the vicinity of the station is pedestrian friendly. It is easy for large numbers of people to access the station, and an inviting environment encourages ridership. Each of the stations is home to, and surrounded by, some of the region's most dense

⁵ Metro Vancouver (2011). Metro 2040. <http://www.metrovancouver.org/services/regional-planning/PlanningPublications/RGSAdoptedbyCVRDBoard.pdf>

neighbourhoods (over 15,000 people per square kilometre)⁶ such as the West End, Yaletown and Metrotown.

- Each of the stations **centralizes key transit connections**, whether they are bus exchanges or stops, sea bus or other SkyTrain lines. People are using these stations to travel to other parts of the region. For example, Waterfront Station sees the terminus of three SkyTrain lines, Seabus and 32 bus routes.
- Each of the stations has **limited parking options**, effectively acting as transportation demand management. For example, parking near Burrard station can cost \$4.00 per 30 minutes whereas fare costs \$5.90 for three zones.

SkyTrain stations with high boardings are typically destinations, as well as a means for commuting to other parts of the region – they offer many people an opportunity to work, play and move in a cost-effective and sustainable way. The neighbourhoods around these stations consistently align with the “6Ds” of transit-oriented communities.

4.0 WEST MOODY CENTRE STATION ASSESSMENT

There are a number of factors for consideration to determine whether a new SkyTrain Station is a viable addition to an existing line. These include physical constraints and conditions, and distance from near-by stations. In addition, the benefits expected to be generated by the new station – including increased transit ridership – must offset the costs of increased travel time for existing riders, maintenance, and other considerations. At this preliminary opportunity review stage, the memorandum summarizes available information and considerations that can guide decision making about whether a third SkyTrain station in Port Moody should be pursued through more technical work and discussion with partners, stakeholders, and the public.

4.1 STATION LOCATION REVIEW

Previous sections identified that the average spacing for stations on the Evergreen Line is 1.8 km, with a minimum spacing of 0.6 km and a maximum spacing of 4.3 km. The 4.3 km spacing between Burquitlam Station and Moody Centre Station is the longest across the entire SkyTrain network and adding a station would increase accessibility for the evolving neighbourhoods between these two centres. Station spacing is typically between 1 km and 2 km. The planned future station at Queens Street is approximately 1 km from Moody

⁶Metro Vancouver (2011). Population Density by Census Tracts, 2011.
http://www.metrovancouver.org/services/regional-planning/Maps/2011_Census_Metro_Vancouver_Population_Density_By_Census_Tracts_Map.pdf

Centre, which falls at the low end of this range. There is a high percentage of overlap in the 800 m catchment areas of a proposed Queens Street station and the existing Moody Centre station. This means that some existing and proposed development potentially served by a new station is already within walking distance of rapid transit. A station further west would increase the number of people and jobs within walking distance of transit.

At the time the design of the Evergreen Extension was developed – and then again later during construction – Port Moody City Council expressed interest in pursuing a station further west at either Elgin Street or at the north tunnel portal.⁷ The proposed development at Woodland Park (west of Barnet Highway) has elevated interest in considering a station location west of Queens Street to increase access to transit for the proposed neighbourhood. This area west of Barnet Highway is technically challenging. The track is underground in a tunnel at significant depth. A high-level review of the design drawings indicates that the track is more than 10 m underground (more than three stories deep) within 75 m of Barnet Highway. Grades exceed 1.0% on the existing track west of Barnet Highway and become much steeper and curved as the guideway gains elevation and changes orientation to reach Burquitlam Station. Based on these factors, a station west of Barnet Highway does not appear to be feasible. Two potential future locations that warrant further consideration are the north tunnel portal and the elevated section near Douglas Street.

A 2012 letter from the Province described technical and environmental challenges associated with a station located at the north tunnel portal site, noting impacts to Schoolhouse Creek, increased costs, and construction and traffic impacts.⁸ High-level review of the design drawings for the north tunnel portal indicates that the grade at this location exceeds the grade typical for stations (1.0% vs 0.5%). Additional technical assessment is required to determine if the technical challenges can be mitigated to provide a station at this location.

High-level review of the design drawings also indicated that the Queens Street location was the only guideway segment designed to accommodate a future station. The design drawings identify a station location at Queens Street with an 80 m section of straight, flat

⁷ City of Port Moody (2013). Council Meeting Information Items: Letter from the Ministry of Transportation and Infrastructure, dated September 6, 2013.
<http://portmoodybc.swagit.com/system/agendas/32823/original/9-24%20PortMoodyCC.pdf?1380090100>

⁸ City of Port Moody (2013). Council Meeting Information Items: Letter from the Ministry of Transportation and Infrastructure, dated September 6, 2013.
<http://portmoodybc.swagit.com/system/agendas/32823/original/9-24%20PortMoodyCC.pdf?1380090100>

(0.5% grade) guideway. West of Queens Street, the guideway curves and enters a section of 5% grade, which is not suitable for a station. The section between the Reichhold Weigh Scale and the north tunnel portal is straight; however it does not appear to be suitable for a station as designed due to sections of steep grade (4% to 5%) approaching a crest in the guideway over weight scale from both the east and west. As-built drawings were not available to confirm the attributes of the guideway. Further technical exploration is needed to determine if track reconstruction, construction of parallel track, or other approaches could be utilized to deliver a feasible station, as well as to confirm the ultimate design and suitability of the Queens Street location.

Based on the best available information, the Queens Street location seems to be the most straightforward location to accommodate a potential future station. For the purposes of this work, a Queens Street station has been retained as the primary location for further analysis. The location of the potential future Queens Street Station is approximately 1 km from the existing Moody Centre Station and shares a common catchment area between the two stations. Much of the projected growth in Port Moody is located west of Barnet Highway in the Seaview neighbourhood, which is outside of the typical 800 m catchment of the Queens Street location. This area would be better served by a station west of Queens Street.

To address this gap, the remainder of this memorandum also considers the potential for a station between Queens Street and Barnet Highway. Because design drawings indicate that the guideway was only intended to accommodate a future station at Queens Street, future more detailed technical assessments are needed to understand feasibility of a station between Queens Street and Barnet Highway. A more technically complex station in these locations could also be expected to have a higher design and construction costs. A station west of Barnet Highway does not appear to be feasible.

4.2 RIDERSHIP POTENTIAL

As explored previously, the ridership potential of a SkyTrain station is informed by the features of the surrounding land – in particular, whether it is a transit-oriented community – as well as its ability to serve key connections, and density. While the area between Moody Centre and Burquitlam was not considered suitable for a station when the Evergreen Extension was constructed, the additional

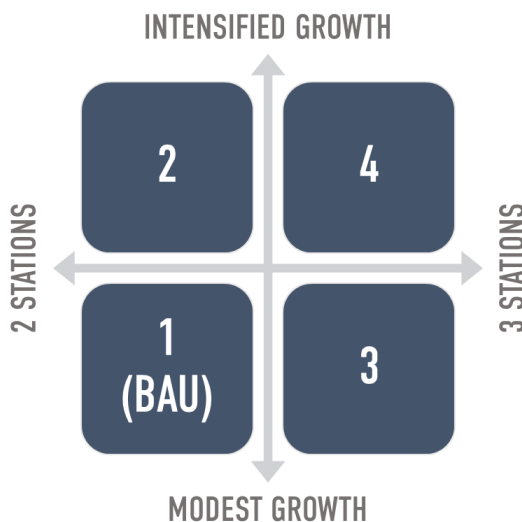
population and density now expected, along with local interest in building a broader neighbourhood that meets the 6Ds of transit-oriented community design - destinations, distance, design, density, diversity and demand management – is expected to increase ridership potential beyond what was originally anticipated.

The Regional Demand Transportation Model (RTM) was used to assess the potential boardings and new transit ridership resulting from a third SkyTrain station in Port Moody.

Four model scenarios were used to inform the assessment:

1. Business as usual (BAU) – this scenario did not include a new station. It includes modest growth in population and employment as defined in the base RTM provided by TransLink. This scenario included population growth of less than 0.5% per year or approximately 600 people by 2035. Jobs were anticipated to grow faster, at about 1.3% a year, or approximately 500 new jobs by 2035.

The Regional Demand Transportation Model (RTM v3.4), which is developed and released by TransLink, is a robust macroscopic transportation demand model for Metro Vancouver. The model considers multiple modes, including passenger vehicles, trucks, transit, pedestrians and cyclists. The model package includes four horizons (2011, 2017, 2035 and 2050). For this work, the 2035 model was used to forecast the expected boardings and new transit ridership generated by a third SkyTrain Station in Port Moody using two different population scenarios.



2. Intensified growth – this scenario did not include a new station. It includes the more intense land use assumptions described in Section 2. Using in-stream development estimates plus conservative assumptions from the Seaview and Oceanview area, as discussed in Section 2.0, leads to a much higher population and employment estimate by 2035. In this revised land use forecast, an additional 11,500 people and 1,200 jobs are expected in the west Moody Centre and Seaview neighborhoods. Additional growth beyond the BAU case was assigned to each of the four Transportation Analysis Zones (TAZ) in the RTM that represent areas within these neighbourhoods where growth is now expected to exceed what is identified in the modest growth scenario. These growth assumptions are illustrated in **Figure 8**.
3. Three stations, modest growth – this scenario adds a new station at Queens Street. It maintains the modest growth assumptions from the BAU case.
4. Three stations, intensified growth – this scenario adds a new station at Queens Street. It includes the more intense land use assumptions described in the Background section and illustrated in **Figure 8**.

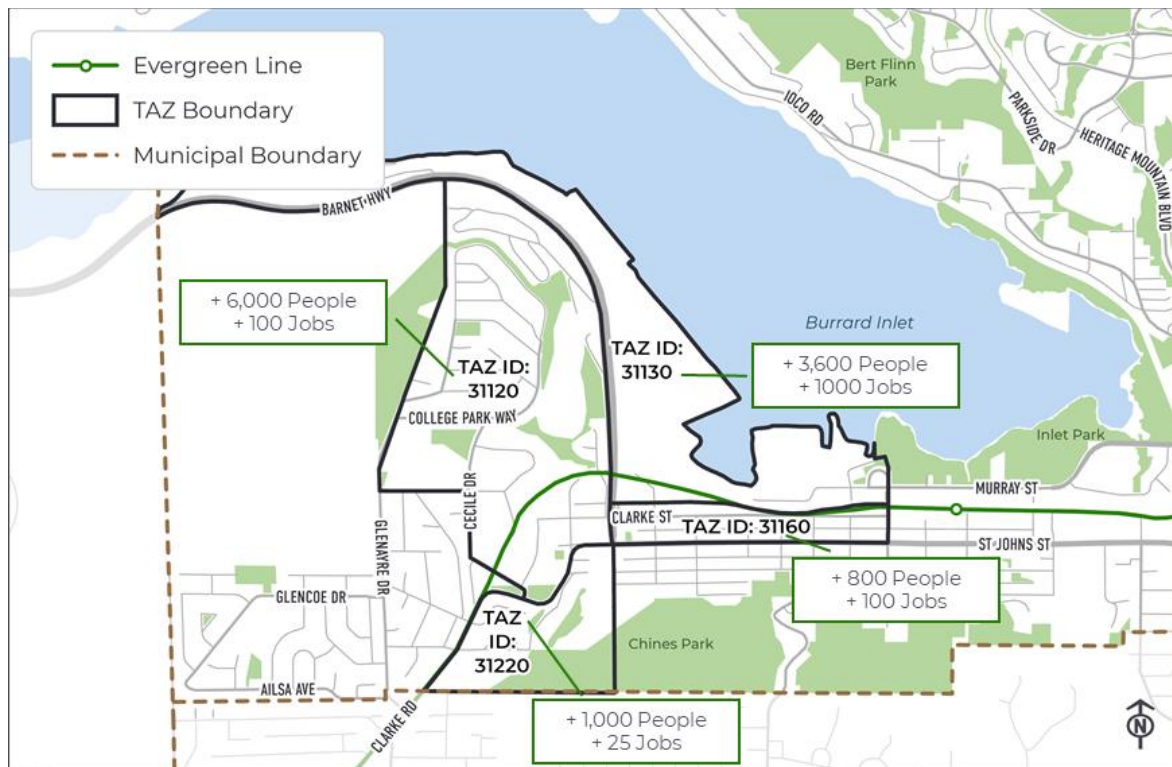


Figure 8: Land Use Assumptions for Intensified Growth Scenario

The RTM forecast indicates that SkyTrain boardings in the Moody Centre neighbourhood are expected to increase in all cases, as summarized in Table 2. In Scenario 1, with only modest population and employment growth, annual boardings at Moody Centre are expected to increase to 1,370,000 per year by 2035. With intensified growth – but no additional stations (Scenario 3) – annual boardings at Moody Centre Station could be expected to increase to more than 1,770,000. This substantial increase of approximately 400,000 annual boardings is consistent with the location of some of the densest development in the area between Barnet Highway and Moody Street, much of which is within walking distance of Moody Centre station.

The addition of the Queens Street station is expected to divert some trips from Moody Centre station, divert some trips from other transit services, and add new riders to the transit system by diverting some driving trips. The analysis of Scenario 4 – with the intensified population growth and addition of Queens Street Station – resulted in 410,000 annual boardings at the Queens Street Station and 1,440,000 annual boardings at Moody Centre. This results in a total of 1,840,000 annual boardings within downtown Port Moody – an increase of approximately 70,000 boardings attributed to the new station. The overall impact on transit ridership resulting from the Queens Street station in both the modest and intensified growth scenarios is relatively small. In Scenario 4, approximately 100 riders per day are diverted from driving to SkyTrain, while another 100 riders are diverted from bus transit to SkyTrain.

Table 2: Summary of Forecast Annual Boardings by Scenario

SCENARIO	QUEENS STREET STATION	MOODY CENTRE STATION	TOTAL (QUEEN STREET & MOODY CENTRE)
2019 Boardings	n/a	805,000	805,000
1. 2035 Modest Growth, No New Station	n/a	1,372,000	1,372,000
2. 2035 Intensified Growth, No New Station	n/a	1,773,000	1,773,000
3. 2035 Modest Growth + New Station	311,000	1,149,000	1,460,000
4. 2035 Intensified Growth + New Station	409,000	1,435,000	1,844,000

As noted earlier, the potential future station location at Queens Street shares part of its catchment area with the existing Moody Centre Station. This means that some of the projected growth in the intensified scenario is served by the Moody Centre Station. The intensified growth scenario also results in more walking and cycling trips, as residents can meet more of their daily needs within their own community.⁹

If a station can be located further west, it will better serve anticipated growth in the Seaview neighbourhood in addition to growth in western Moody Centre. Additional analysis was completed using the RTM under the intensified growth scenario to determine the expected range of results. This analysis indicated that the forecast boardings from a station further west are highly dependent on the ability to provide a direct pedestrian and cycling connection from future Seaview homes to the future station. A new station at Barnet Highway with no direct active transportation connection to the west could have lower boardings than the Queens Street location, while a new station at Barnet Highway with a direct active transportation connection and short walking distance for most residents could generate up to 978,000 annual boardings. Forecasted annual boardings for a station at Barnet Highway in these two active transportation connection scenarios are summarized in Table 3. Annual boardings for scenarios two and three are also repeated here for reference.

Table 3: Summary of Forecast Annual Boardings by Scenario for Station near Barnet Highway

SCENARIO	NEW STATION (QUEENS OR BARNET)	MOODY CENTRE STATION	TOTAL (NEW STATION + MOODY CENTRE)
2. 2035 Intensified Growth, No New Station	n/a	1,773,000	1,773,000
4. 2035 Intensified Growth New Station (Queens)	409,000	1,435,000	1,844,000
5. 2035 Intensified Growth New Station (Barnet, without direct bicycle / pedestrian connection)	205,000	1,568,000	1,773,000
6. 2035 Intensified Growth New Station (Barnet, with direct bicycle / pedestrian connection)	978,000	1,435,000	2,413,000

⁹ The growth in walking and cycling trips in the intensified growth scenario is the main contributor to the lower overall transit trip diversion between scenarios 2 and 4 when compared to the diversion between scenarios 1 and 3.

Annual boardings in all scenarios could be increased by realigning local bus routes and improving transit service to the densifying neighbourhoods in southwestern Port Moody with key connections to the new station.

While the analysis did show potential growth in ridership that aligns with some of the lower volume stations in the SkyTrain network, the relatively low overall growth in boardings calls for further study to determine the overall benefits and impacts of a new station. The values shown here indicate sufficient boarding potential to warrant further exploration. In particular, further study is needed to understand the feasibility and potential costs of a more technically complicated station that would better serve the future residents of the Seaview neighbourhood.

4.3 FUNDING OPPORTUNITIES

SkyTrain stations are most typically constructed as part of overall line / extension delivery. There are a few examples of stations that have been considered or funded for construction separately from mainline SkyTrain construction in Metro Vancouver over the past ten years. These include Lincoln Station on the Evergreen Extension and four stations on the Canada Line – 33rd Avenue, 57th Avenue, YVR Terminal 3, and Capstan. Of these, Lincoln and Capstan are the only stations that have been fully funded and the construction process begun.

Major transportation infrastructure is typically funded through a combination of mechanisms. These can include:

- Partnerships with regional agencies and / or senior levels of government
- Municipal capital budgets
- Partnerships with private industry

For new stations on an existing line, TransLink and senior levels of government have not historically committed funding. This is explored further below; however, it is understood that a new station in Port Moody would most likely have to be funded through private industry and municipal investment. This is consistent with the original position outlined by the Province and discussed earlier.

The remainder of this section provides more detailed historic examples of SkyTrain extension and station costs and funding mechanisms, followed by a short summary identifying the expected cost implications and funding mechanisms for Port Moody.

SkyTrain Extension Costs & Funding Mechanisms

The Evergreen Extension total project budget was \$1.431 billion, which includes the base project scope (\$1.403 billion) and provision for Lincoln Station (\$28 million).¹⁰ Funding for the project included contributions of \$417 million from the Government of Canada, \$400 million from TransLink and \$586 million from the Province of British Columbia.

Two additional SkyTrain lines are being constructed in Metro Vancouver with similar funding mechanisms but slightly different contributions from funders:

- The Surrey-Langley SkyTrain extension is expected to cost \$3.84 billion and is being partially funded by the federal government (\$1.3 billion), with TransLink and Province of British Columbia sharing the balance of \$2.54 billion.
- The Broadway Subway will cost \$2.83 billion and is funded by the Province of British Columbia (\$1.83 billion) with contributions from the Government of Canada (\$896.9 million) and the City of Vancouver (\$99.8 million).

Funding approaches can change if stations primarily benefit a specific development area. For example, Lincoln Station was not part of the original five planned Evergreen Line stations, but was made possible through a unique funding partnership between the City of Coquitlam, Coquitlam Centre Mall and PPP Canada. The station was supported by the City of Coquitlam's density funding mechanism to make the City Centre a sustainable, high-density, urban core and will support more than a dozen existing and planned mixed-use developments. Lincoln Station was constructed and opened alongside the other stations on the Evergreen Line.¹¹

Costs & Funding Mechanisms for New Stations on Existing Lines

The location of Capstan Station was identified during the design and construction of the Canada Line as a potential future station. The track at this location was designed to accommodate a future station; however, there was no construction plan or funding mechanism identified. A group of three developers struck an agreement with the City of Richmond and TransLink through a \$7,800-per-condo-unit charge to create the station at Capstan Way. The total cost of the station was anticipated to be \$31.5 million; however, the total construction cost is now projected to be \$52 million.¹² Construction began in August 2021.

¹⁰ The City of Coquitlam assembled a unique funding arrangement with a private partner and PPP Canada to construct the Lincoln Station.

¹¹ Infrastructure BC (2013). Project Report: Evergreen Line Rapid Transit Project.
<https://www.infrastructurebc.com/files-4/documents/PBCEvergreen.pdf>

¹² City of Richmond (2021). <https://www.richmond.ca/newsevents/city/capstanstation02sep2021.htm>

The funding strategy used by the City of Richmond was the first of its kind in Canada, collecting funds from developers in return for a density bonus.¹³ The City of Richmond established the funding strategy through a framework that consisted of the City Centre Area Plan (a strategic document that is part of the City's Official Community Plan), Zoning Bylaw (the regulatory tool to implement the strategy through density bonusing, parking rate reductions, and park land dedications) and the Capstan Station Capital Reserve Fund Bylaw. The funds were held by the City of Richmond in an interest-bearing bank account until the amount required was fulfilled.

Key features of the City of Richmond's funding strategy include eligibility requirements for developers, and disincentives for those developers who did not want to partake in the density bonus. For example, only residential developments were eligible for the density bonus and only the first 3,250 dwelling units within Capstan Village to promote density in the broader area. Should developers be eligible for the density bonus, a voluntary developer contribution could be made and in return, developers were eligible for a 0.5 floor space ratio density bonus. In addition, proposals for rezoning without the density bonus would not be recommended for approval until total funding for the station was secured. The City of Richmond also included park land requirements (3.25 acres per 1,000 residents) and parking reductions (one parking space per dwelling unit, plus 0.2 spaces per unit for visitor parking). The potential for parking reductions could be maximized by up to 10% by implementing Transportation Demand Management (TDM) measures.

With the prospect of a new SkyTrain station, the City of Richmond was able to raise funds at a much faster rate than expected - in 2012 when the agreement was struck, it was expected to take 15 years to collect the funds, but based on development permit applications, the full amount was achieved nine years ahead of schedule.

Beyond Capstan Station, there has also been activity associated with a future Canada Line station at West 57th Avenue in the City of Vancouver. A single private developer committed \$20 million to a new station in order to support the redevelopment of Vancouver Coastal Health's Pearson Dogwood lands and the surrounding neighbourhood. TransLink has stated that additional costs beyond the commitment would be required for capital costs, fleet maintenance, upgrades to train control and power systems, and wayfinding. Due to the engineering complexities of building on an active underground tunnel, construction costs are expected to substantially exceed those at Capstan at an estimated \$90 million

¹³ City of Richmond (2021). Public Works and Transportation Committee: Capstan Canada Line Station – Status Update. https://www.richmond.ca/agendafiles/Open_PWT_7-20-2021.pdf?utm_source=richmond%20news&utm_campaign=richmond%20news&utm_medium=referral

and the construction timeline may take at least 10 years to ensure disruptions to passengers are kept at a relative minimum. The construction of a new station at West 57th Avenue is not part of the long-term plans of the Mayors' Council on Regional Transportation or TransLink, and TransLink has advised that the project requires more funding.¹⁴ To date, there are no published plans for construction of the station.

If a development levy is to be used as a means to fund a third SkyTrain station, that levy must be set with consideration of both (a) the amount that is required from future development to fund the station's construction (in whole or in part), and (b), the reasonableness of a given rate as determined through analysis of development economic realities. The ability for any development to pay a levy in exchange for additional development rights, reduced parking requirements, quicker approvals process, or other considerations, is a function of the particular values that each of these items has. What those values are, and in turn, how much could be 'captured' to fund a new station, should be determined through case-study financial analyses.

A process of determining appropriate development levies through pro forma financial analyses would consider the following:

- Existing, as-of-right development opportunities (under current zoning), and land transaction information to determine the base value of land parcels (i.e., what a developer would likely pay for a development parcel);
- Residual land valuations of 'baseline' redevelopment opportunities (aligned with the OCP / Area Plans), without allowance for bonus density, parking reductions or approval process prioritization;
- Further residual land valuations to determine the amount of further 'lift' that is generated by density bonusing or other considerations (i.e., what is the value those provisions to the developer);

Assuming a cost of \$100 million and with approximately 5,500 units expected in the surrounding area, a levy of at least \$18,000 per unit would be required to fully fund a new station. The process above would be required to determine a reasonable area-specific levy target could be set that is based on the actual value of density or other policy considerations for development in the subject area.

¹⁴ Vancouver City Council (2017). Motion: Clarity and Transparency Around a Future Canada Line Station at 57th and Cambie. <https://council.vancouver.ca/20171128/documents/motionb3.pdf>

Summary – Costs and Funding Mechanisms

The anticipated cost to construct a new transit station, based on recent examples, is at least \$50 million with costs increasing substantially depending on technical complexity. Any changes to track and / or construction of new track and modifications to tunnels or underground locations can add substantially to costs, complexity, and construction timelines. As illustrated by Lincoln station and Capstan station, the development industry may be willing to fund stations that are directly beneficial to future residents and businesses, particularly when paired with streamlined development approvals processes, density bonusing, parking rate reductions, or other measures. As discussed previously, the City of Richmond utilized an innovative per unit charges paid into a Capital Reserve Fund and later remitted the total fee to TransLink to fund construction. It is anticipated that this option would be available to Port Moody for a future station.

Beyond the cost of the original station, TransLink may expect the City and developer to consider and contribute to additional costs. These may include additional cars required to maintain the same headway, additional operations and maintenance requirements, and other additional costs associated with the new station.

5.0 SUMMARY AND NEXT STEPS

Anticipated growth and development in the area around the Moody Centre and Seaview neighbourhoods are expected to increase transit ridership, walking, and cycling. Developments within 800 m of Moody Centre Station will support growth in annual boardings at that station and are aligned with the '6Ds' of Transit Oriented Communities.

Historic information indicates that the guideway supports a future station at Queens Street. A future station at the Queens Street location would have a catchment that overlaps with the existing Moody Centre station and extends as far west as Charles Street – just past Barnet Highway. A station at this location could be expected to have modest use of approximately 400,000 annual boardings under an intensified growth scenario, with some of those boardings being generated by new riders and others being shifted from Moody Centre Station or existing bus passengers. Based on available information, this station would be relatively simple to develop because the guideway was designed to accommodate a station at this location. The anticipated cost is likely in the same range as the proposed station at Capstan on the Canada Line (\$50 million to \$60 million). This could be funded through a development levy for new units within 800 m of the proposed station. The levy could be paired with other measures, including parking requirement reductions or streamlined application processes.

Analysis indicates that the Seaview neighbourhood would be better served by a station further west. If a direct pedestrian connection can be provided to the Seaview neighbourhood, annual boardings at a western station could more than double those at the Queens Street location. A new station does not appear to be feasible west of Barnet Highway. A new station at the north tunnel portal or near Douglas Street / Reichhold Weigh Scale would be more technically complex and is likely to require parallel track and modifications to the existing guideway – this would substantially increase the cost and require additional study to confirm feasibility. The cost could be expected to exceed \$100 million based on information from other complex station locations. Funding this type of station through development levies would require a higher levy per unit than a station at Queens Street. A levy of at least \$18,000 per unit would be required to fully fund a new station with a capital cost of \$100 million, assuming there are 5,500 units expected to contribute. Financial analysis would be required to determine whether this levy amount can be carried by future development.

Further study is needed to consider the physical feasibility and final location of a future station, as well as to complete a detailed technical assessment of travel time, ridership, concept development, cost estimating, and financial analysis to determine a suitable levy amount. A location near Barnet highway with a direct connection to Seaview for walking and cycling is preferred over options because of the increased ridership potential and improved service for more residents, provided it is feasible and a supportable business case can be developed. Next steps for this work include a feasibility study with conceptual design and cost estimating for each of the potential station areas (i.e north tunnel portal, Douglas Street / Reichhold Weigh Scale, Queens Street). This work will determine the feasibility, cost, and development levy impact of a future station at each location. Future work should include partner, stakeholder, and public consultation.

Sincerely,

URBAN SYSTEMS LTD.

Allison Clavelle, P.Eng.
Principal / Transportation Engineer
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