



To Amir Freund, Project Manager	From Bernard Abelson, Project Manager Mat MacDonald, Project Engineer
Company The City of Nanaimo	Branch 2121 - Vancouver
Re Downtown Nanaimo Mobility Hub: Transit Exchange Location Evaluation: FINAL	Date September 4, 2019 File Number 2121-00433-00

This memorandum outlines the work done to date by McElhanney Ltd. in the assessment and evaluation of transit exchange location options as part of the Downtown Mobility Hub Study.

1. PREVIOUS STUDIES

Watt Consulting Group (Watt) on behalf of the Regional District of Nanaimo (RDN) completed two studies to determine the preferred location of the downtown transit exchange:

1. Cliff Street Transit Exchange – Operational Feasibility Assessment, February 2018
2. Downtown Nanaimo Transit Exchange Study, August 2018

The assessment and evaluation contained in these reports is summarize below.

1.1. Cliff Street Transit Exchange

The study titled *Cliff Street Transit Exchange – Operational Feasibility Assessment* evaluated the option to locate a transit exchange on private property at 30 Cliff Street. A functional overview of the exchange was completed to understand the bus bay allocation, bus routing, and whether the exchange should be a terminus or serve as a mid-point operation exchange.

Methodology

A preliminary functional plan of the exchange was developed to layout bus bays, driver facilities, customer parking and drop off zones, and other infrastructure needs. This location was proposed to be a joint operation between the RDN and the Tofino Bus Company with two bus bays dedicated to Tofino Bus operations.

The Cliff Street location was analyzed and evaluated using the following criteria:

- Operational Turning Movements
- Layover Capacity
- Overall Trip Time

- Garage Travel Time
- Passenger Capacity
- Passenger Accessibility
- System Security
- Ridership Impacts
- Linkages to Other Modes of Transportation
- Catalyst for Area Redevelopment & Revitalization
- Alignment with Land Use / Transportation Plans

Evaluation and Recommendation

The multi-criteria evaluation compared the Cliff Street location to the existing Prideaux Street exchange to provide context for the evaluation. The conclusion of the evaluation was that the Cliff Street location is not recommended as an exchange location. The largest factor in rejecting this site is its limited capacity. The long-term transit plans recommend that the exchange provide 12 bus bays while this site can only accommodate eight, with two of the bays dedicated to Tofino Bus.

Alternatives

The report references potential alternate arrangements that could be considered to better enable the Cliff Street site to serve as a short to medium term exchange location. Alternate arrangements are listed below however no further analysis was provided.

- To increase layover capacity with additional bus bays:
 - Use of a Tofino Bus bay as a contingency location
 - Repurpose a lane on Comox Road for transit use
 - Long term plans for Rapid Transit on Terminal Avenue could open opportunities
- To increase layover capacity through service design:
 - On-street bus layover would be on Comox Road, passenger boarding and transfers at the transit exchange
 - Passenger boarding and transfers on Comox Road, with bus layovers at the transit exchange
 - Through route and/or interline as much service as possible to serve Front Street in both directions
 - Maximize layover time at the outer ends of the routes
 - Rescheduling where possible based on “clockface headways”
 - Consider redistributing Tofino Bus bays at Cliff Street to both sides of the exchange platform
- Improve pedestrian connectivity

1.2. Downtown Nanaimo Transit Exchange Study

The study titled the *Downtown Nanaimo Transit Exchange Study* included an evaluation of the following four sites:

1. “A & B Sound” Alternate Site – located between Wallace Street and Terminal Avenue, west of Commercial Street;
2. “ACME” Alternate Site – located on the triangular shaped parcel between Wallace Street, Commercial Street and the China Steps;
3. Front Street Alternate Site – located on Front Street, north of the intersection of Esplanade and Front Street; and
4. Comox Road Alternate Site – located on Comox Road between Terminal Avenue and Cliff Street.

At the time of the study the City of Nanaimo was considering the following changes to the downtown transportation network:

- The closure of Commercial Street north of Terminal Avenue to vehicle traffic to create a pedestrian plaza
- The realignment of Albert Street to connect to Gordon Street, roughly parallel to China Steps. This realignment would also make it possible to consider consolidating the “A&B Sound” and “ACME” properties

While these changes were only under consideration by the City, they presented a risk to the long-term viability of locating a transit exchange at either site #1 or #2. As a result, the sites under consideration were consolidated into two primary options for further evaluation:

- Terminal Avenue Transit Exchange (Terminal Avenue and Commercial Street), for which two configurations were developed:
 - Option A – widening Terminal Avenue
 - Option B – repurpose the outside lanes of Terminal Avenue
- Front Street Exchange (On-Street) – expansion of the existing Front Street bus bays and augmentation with longer term layover positions on Comox Road.

For each site and option, high-level concept designs were developed and Class “D” cost estimates prepared.

Option A – Widening Terminal Avenue

Key Characteristics

- Terminal Avenue - three eastbound and three westbound on-street bus bays
- Commercial Street - four on-street layover bays
- Property acquisition on southside of Terminal Avenue
- Four lanes of traffic on Terminal Avenue maintained
- Improved sidewalk connections
- Commercial Street north of Terminal Avenue closed to vehicles
- Commercial Street south of Terminal Avenue converted to one-way northbound
- Class “D” capital cost: \$4.7 million

Option B - Repurpose the outside lanes of Terminal Avenue

Key Characteristics

- Terminal Avenue:
 - two westbound bays, one layover bay
 - three eastbound bays, one layover bay
- Commercial Street – three layover bays
- No property acquisitions
- Outside lanes of Terminal Avenue repurposed to transit operations
- Commercial Street north of Terminal remains open
- Commercial Street south of Terminal Avenue converted to one-way northbound
- Class “D” capital cost: \$4.1 million

Front Street Exchange (On-Street)

Key Characteristics

- Two northbound bus bays
- Two southbound bus bays, two layover bays
- Comox Road used for additional layover space
- Replacement of existing pavement marking
- Queuing issues with Gabriola Ferry were unresolved
- Class “D” capital cost: \$380,000

Evaluation and Recommendation

An evaluation of the sites and design options was completed using the same criteria as the Cliff Street Exchange option, and included the following additional criteria:

- Transit Operator Amenities
- Community Impacts
- Class “D” Cost Estimate
- Overall Operating Cost Implications

The evaluation showed that the Terminal Avenue Options A and B had almost identical ratings and a Terminal Avenue location was preferred over the Front Street location. The report proposed that community and stakeholder input should be sought to determine which option best suited the community.

Examining the Front Street location further showed that the concept design only included limited changes to existing infrastructure and right-of-way on Front Street. This is evidenced in the cost estimate being only \$380,000, versus the Terminal Exchanges estimates ranging between \$4.1 and \$4.7 million. As a result, applying similar scale improvements to the Front Street location is likely to significantly influence the evaluation. It is therefore reasonable to further evaluate the Front Street exchange location as an option location for the downtown Transit Exchange.

2. REASSESSMENT OF TRANSIT EXCHANGE LOCATIONS

Taking the above previous studies into account, further discussion with the City and the RDN, and more recent information influencing the location of a transit exchange, **Table 1** compares the three downtown transit exchange locations that have been previously evaluated, namely Terminal Avenue, Front Street and 30 Cliff Street. The location of each is shown in **Figure 1**, taken from the public and stakeholder workshop held as part of the Downtown Nanaimo Mobility Hub project. The figure includes a summary of the comparison in the table.

Based on this evaluation, an exchange on Front Street is recommended.

Table 1 Transit Exchange Location Comparison Summary

Preliminary Evaluation Criteria	Site #1: Terminal Avenue – Options A & B (Possible curb-side exchange located on Terminal and Commercial)	Site #2: Front Street (Possible curb-side exchange located on Front Street at 1 Port Place)	Site #3: 30 Cliff Street (Possible exchange located on off-street property)
Community Context and Proximity to Places of Interest	<ul style="list-style-type: none"> • Medium density, mixed-use land use, primarily commercial and retail • Centrally located in the heart of downtown • Easy walking distance to places of interest 	<ul style="list-style-type: none"> • Redevelopment of adjacent lands to mixed-use, mid-rise development • Borders Port Place shopping centre • On periphery of downtown • Close to significant passenger generators – ferry and cruise ship terminals 	<ul style="list-style-type: none"> • Low density, industrial/service/auto land-uses • Potential future redevelopment complicated by environmental issues • On periphery of downtown • Topography makes walking access challenging
Flexibility of Bus Operations (Turning Movements & Routing)	<ul style="list-style-type: none"> • Restricted bus movements • Inflexible bay assignment due to significant rerouting required for bus turnaround 	<ul style="list-style-type: none"> • Roundabout on Front Street allows for flexible bus operations and routing 	<ul style="list-style-type: none"> • Exchange constrained to property limits • Site can be custom designed to meet operational requirements
Capacity and Future Expansion Opportunity	<ul style="list-style-type: none"> • Meets 10 bus bay requirement • Future expansion results in larger exchange footprint – inconvenient for passengers 	<ul style="list-style-type: none"> • Existing curb-side allows for up to 6 bus bays • Opportunity to incorporate expanded exchange into adjacent land redevelopment 	<ul style="list-style-type: none"> • Likely 6 bus bay limit, however site can be reconfigured • No expansion opportunity unless surrounding area is redeveloped.
Passenger Experience and Proximity to Other Travel Modes	<ul style="list-style-type: none"> • Inconvenient bus transfers due to bus bays located on both sides of the road, likely resulting in jay-walking • Exchange bisected by regional corridor, reducing overall passenger experience • Located on pedestrian desire lines • Easy access to Albert St and other cycling facilities • Relatively remote from ferries and cruise terminals 	<ul style="list-style-type: none"> • Inconvenient bus transfers due to bus bays located on both sides of the road, likely resulting in jay-walking • Exchange bisected by local corridor, reducing overall passenger experience • Connects to pedestrian facilities • Located on Front St cycling route • Easy walking access to Gabriola Ferry and cruise ship terminals • Relatively remote from Nanaimo Ferry terminal 	<ul style="list-style-type: none"> • Exchange can be designed to maximize passenger experience • CEPTD concerns for pedestrians due to semi-industrial location • Relatively close to north end of Waterfront walkway • Easy access to Comox Rd cycling facility • Adjacent to Tofino Bus • Far from ferry and cruise ship terminals
Land / Right of Way (RoW) Ownership	<ul style="list-style-type: none"> • Terminal Ave is Ministry RoW • Commercial Street is City owned • Road widening would require property acquisition 	<ul style="list-style-type: none"> • Front Street is City owned • Road widening would require property acquisition • Possible option to expand onto adjacent undeveloped property through negotiation 	<ul style="list-style-type: none"> • Private property acquisition
Traffic Operations & Safety	<ul style="list-style-type: none"> • Bus movements reduce corridor operations and increase risk of crashes • Terminal Avenue is a regional highway connector requiring high mobility • Increased active mode presence raises safety concerns. 	<ul style="list-style-type: none"> • Bus movements reduce corridor operations and increase risk of crashes • Front Street provides direct access to Gabriola Ferry terminal with drivers distracted rushing to ferry • Increased active mode presence raises safety concerns 	<ul style="list-style-type: none"> • Off-street location reduces adjacent street impacts • Possible need to have bus layovers on-street • Possible need for bus activated signal to give bus priority accessing the regional highway

Figure 1 Transit Exchange Locations



3. PUBLIC AND STAKEHOLDER WORKSHOP AND OPEN HOUSES FEEDBACK

A public and stakeholder workshop and open houses were held between April and June 2019. The report, *Phase 1 Community Input Summary* dated June 2019 details the discussions and questionnaire results from the engagement sessions. From the questionnaire 80% of respondents either agreed or strongly agreed with the permanent transit exchange being located on Front Street versus the other locations.

The feedback results were made more significant by the fact that due to the closure of the Bastion Street Bridge for roadway improvements, the RDN was obliged to temporarily relocate the transit exchange to Front Street as accessing the Prideaux Street location during this closure was problematic and not cost effective. Respondents therefore had firsthand experience of the exchange in the Front Street location and responded based on user experience versus perception only. Besides the formal feedback, the RDN has received additional user feedback favouring the exchange in this location. In addition, from an operational point of view, the RDN supports this location.

4. CONSISTENCY WITH PRIOR PLANNING

Over the years the City and other parties have done several planning studies, some of which are listed below. Locating the transit exchange on Front Street is consistent with these studies.

- Port Drive Waterfront Master Plan, The City of Nanaimo, 2018
- Terminal-Nicol Re-imagined, The City of Nanaimo, 2016
- Transportation Master Plan, The City of Nanaimo, 2014
- Downtown Urban Design Plan and Guidelines, The City of Nanaimo, 2008
- Transit Future Plan, Regional District of Nanaimo, 2014

5. RECOMMENDATION

Based on this memorandum and supported by the fact that a temporary transit exchange is currently operating successfully in the One Port Drive location on Front Street due to the temporary closure of the Bastion Street Bridge, **it is recommended that the downtown transit exchange be permanently relocated to the Front Street, One Port Drive location.** The concept design and layout of the exchange and associated bus operations should be the determined in a subsequent project stage.