Project: Island Rail Corridor

Subject: Vancouver Island Rolling Stock Selection Preliminary Study

Date: November 5th, 2019

For the attention of: Mr. Oliver Schwuchow, Regional Project Manager, South Coast Region

Mr. Schwuchow,

The purpose of this report is to present some of the feasible rail and rollingstock technology solutions for Vancouver Island rail corridor.

In the absence of information regarding the existing corridor, service level requirements, and operational limitation, the following preliminary assumptions have been made based on the following available information:

- The rail service will predominantly provide commuting service throughout the existing island rail corridor of 255 km from Courtney to Victoria via Nanaimo.
- All the track related deficiencies will be addressed to accommodate the safe operation of the selected type of rolling stock up to the maximum track design speed.
- The existing infrastructures such as bridges and rail crossings will be accommodating a rolling stock with a similar or smaller Dynamic Envelope (car dimension) as Via Budd Rail Diesel cars.
- Existing tunnels may need to be modified to accommodate a larger rollingstock Envelope, such for Bi-Level coaches.
- Existing Signaling and Communication infrastructure and its relevant update to accommodate safe operation of both freight and passenger trains has not been considered.
- Station platforms, maintenance and storage depot as well as outpost assumptions have not been considered in this report.
- Acceleration and Deceleration efforts would be affected by a series of factors including technology selection, number of cars in one trainset, brake system type, and axle load which are not being considered at this stage of the report.
- Selection of any fleet will require a provision of spare vehicles to ensure that service levels can be maintained throughout the project life, regardless of possible vehicle failures or planned maintenance intervals. The number of spares will depend on the reliability of the type of vehicle selected, the size of the fleet, and the concept of Operations and Maintenance for the system.

The following chart provides a rough comparison for available rolling stock types and their applications:

Vehicle Type and Standard Application				
Criteria	**100% LFLRV (Elec)**	**Diesel Multiple Unit (DMU) Commuter Class**	**Diesel Locomotive, Bi-Level Coach**	**Budd Rail Diesel Car (legacy fleet)**
Seated+ standing Capacity	200 (2 car)	135+150 (3 car)	162 per car, 12 car set	70 to 90
Commute Distance (km)	5 to 40	5 to 150	20 to 200	20 to 400
Max Op. Speed (km/hr)	50 to 80	140	160	137
Dimension (HxW) meter	3.6 x 2.65	3.6 x 2.65	4.851 x 2.997	3.6 x 2.65
Traction power	750 VDC	630 kW per unit	4000 HP per locomotive	550 hp per car
Platform height (mm)	203	1219	203 (Toronto)	203
Reference Vehicle	Bombardier Flexity	Alstom LINT	Bombardier Bi-Level	Budd Company
Reference Project	Waterloo LRT	Ottawa Trillium Line	West Coast Express	Vancouver Island Rail Corridor

Based on the information available, a few reference projects are listed above as successful operations within Canada.

The Waterloo LRT is a highly integrated urban LRT which provides 5-minute headways and a rapid service using electrified 100% low floor LRVs.

The Ottawa Trillium Line features a modern DMU and provides a high level of service and reliability. The Trillium Line runs a Diesel Light Rail Transit service on an existing Mainline Freight corridor which features numerous sections of Single Track, 15-minute headways, and Stations spaced at intervals of typically one to two kilometers apart.

Bilevel cars have been providing commuter service in Canada's largest cities for several decades using conventional Diesel locomotive technology. These systems are characterized as having very high capacity ridership, stations further apart, with a higher operating speed and longer trip durations.

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