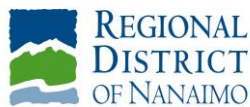


# RDN Service Expansion Proposal

## Route 40 – VIU Express

### January 2019 Implementation



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Project Timeline	
Month	Actions & Deliverables
May 24, 2018	<ul style="list-style-type: none"> <li>Presentation to the RDN Transit Select Committee</li> <li>RDN TSC Decision on the 5000 hour expansion</li> </ul>
June 26, 2018	<ul style="list-style-type: none"> <li>RDN Board Decision on the 5000 hour expansion</li> </ul>
October 17, 2018	<ul style="list-style-type: none"> <li>Scheduling Completion</li> </ul>
November 15, 2018	<ul style="list-style-type: none"> <li>Rider’s Guide Completion</li> </ul>
December, 2018	<ul style="list-style-type: none"> <li>Distribute marketing materials</li> </ul>
<b>January 2, 2019</b>	<ul style="list-style-type: none"> <li><b>Transit Service Implementation</b></li> </ul>

## 1. Purpose

To provide the Regional District of Nanaimo with information to guide decision-making on the 5000-hour expansion.

BC Transit recommends allocating the expansion hours towards Route 40 – VIU Express to:

- Improve and maintain weekday service

## 2. Background

### Expansion Funding Background

**December 12, 2018** -The Regional District of Nanaimo (RDN) board carried a motion to approve 5,000 additional service hours and two expansion buses for 2018/19 for transit priorities to be implemented in September 2018.

A Memorandum of Understanding (MOU) between BC Transit and the Regional District of Nanaimo was signed to initialize work on a service option plan for implementation in September, 2018 (*RDN Expansion Options, 2018*). Three service options were developed: two options included introducing a new service to the Duke Point area and one option included service improvements to Route 40.

**March 22, 2018** – The Transit Select Committee voted against providing service to Duke Point and moved to refer back to staff for further analysis on Route 40 – VIU Express.

### Current Situation

Based on the Regional District of Nanaimo's Transit Select Committee direction on March 22 2018, this report provides further information on transit service improvements on Route 40 VIU Express. As such, the scope of this report is confined to detailed analysis of Route 40 VIU Express. This report outlines the following:

- Background
- Planning Rational
  - Route Overview
  - Route Performance
  - Reported Issues
  - Land Use and Demographic Characteristics
  - Transportation Demand Management
- Detailed Service Change Plan for implementation
- Key Dates for Implementation

### 3. Planning Rationale

The Transit Future Plan (2014) identifies improvements to the Frequent Transit Network (Route 40) as a short to medium term priority. Service improvements (5000 hours) are needed because:

- Analysis indicates that the route currently experiences overcrowding during peak week day spans
- It provides an opportunity to grow system ridership and reduce wait times
- Vancouver Island University is exploring Transportation Demand Management measures which could increase transit demand.
- The Regional District of Nanaimo's population is growing
- PlanNanaimo encourages mixed-used corridors along this route

There are a number of ways to improve service on Route 40, such as increasing peak weekday service, improving off-peak weekday service levels, and more closely matching weekend service to weekday service levels.

#### Medium – Long Range Transit Service Planning

The Regional District of Nanaimo's Transit Future Plan (2014) provides a vision for improving the region's transit network over the next 25 years. Route 40, a Frequent Transit Network (FTN) route provides medium to high density mixed land use corridors with a convenient, reliable, and frequent transit. <sup>1</sup> This route further supports community development by aligning with the strategic direction of the Nanaimo Master Transportation Plan, planNanaimo - Official Community Plan, and neighborhood plans.

#### 3.1 Route 40 – VIU Express Overview

Route 40 is a north-south line, connecting key hubs such as Woodgrove Centre, Country Club, Vancouver Island University, and Prideaux Exchange. The 50-minute trip operates every day of the week and accounts for approximately 32,000 service hours (173 trips) of an approximate total of 124,000 service hours.

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<sup>1</sup> Frequent Transit is defined as service at least 15 minutes between 7:00 a.m. and 10:00 pm.

Figure 1: Route 40 VIU Express



**Service Levels (To Woodgrove)**

Table 1: Service Frequency, Number of Trips (June – Sept)

	Monday through Friday				Saturday			Sunday		
	AM Peak 6:30 – 9:00	Midday 9:00-3:00	PM Peak 3:00-6:00	Evening 6:00-12:00	Morning 7:00-10:30	Midday Peak 10:30-6:00	Evening 6:00-12:00	Morning 7:30-10:00	Midday Peak 10:30-6:00	Evening 6:00-12:00
Number of Trips	9	21	11	11	4	13	7	2	7	2
Frequency (avg)	10 – 15 min	30 min	10 – 15 min	30 min	30 min	30 min	60 min	70 min	70 min	70 min

**Service Levels (To Prideaux)**

Table 2: Service Frequency, Number of Trips (June – Sept)

	Monday through Friday				Saturday			Sunday		
	AM Peak 6:30 – 9:00	Midday 9:00-3:00	PM Peak 3:00-6:00	Evening 6:00-12:00	Morning 7:00-10:30	Midday Peak 10:30-6:00	Evening 6:00-12:00	Morning 7:30-10:00	Midday Peak 10:30-6:00	Evening 6:00-12:00
Number of Trips	13	20	8	9	6	13	5	3	7	2
Frequency (avg)	10 - 15 min	30 min	10 - 15 min	30 min	30 min	30 min	60 min	70 min	70 min	70 min

Table 3: Span of Service

Day	First Trip		Last trip	
	To Prideaux	To Woodgrove	To Prideaux	To Woodgrove
Weekday	6:09	7:09	22:28	23:28
Saturday	6:43	7:42	22:23	23:22
Sunday	7:13	8:12	18:40	19:39

Table 4: Daily and Annual Revenue Hours

	Monday-Friday	Saturday	Sunday	
<b>Daily Hours</b>	<b>114.67</b>	<b>52.82</b>	<b>21.17</b>	<b>TOTAL</b>
<b>Annual Hours</b>	<b>28782.17</b>	<b>2746.64</b>	<b>1079.67</b>	<b>32608.48</b>

### 3.2 Ridership Performance

Route 40 VIU Express is the highest performing route in the Regional District of Nanaimo Transit System.

#### **Key Facts:**

- Accounts for approximately 40 per cent of total system ridership. <sup>2</sup>
- Accounts for approximately 25 per cent of the total system hours
- During key weekdays periods defined here as 7:00 am to 10:00 am and 4:00 – 7:00 pm, Route 40 accounts for approximately 30 per cent of total system ridership. <sup>3</sup>
- Approximately 42 rides / hours in peak weekdays periods <sup>4</sup> compared to the system average of approximately 23 rides / hour. <sup>5</sup>

#### **Farebox Information**

Each vehicle is equipped with a GFI farebox to collect fares. These passenger transactions can also be used to provide an understanding of ridership data. GFI analysis indicates that approximately 600 people board during peak weekday periods between 7:00 am – 10:00 am and 4:00 – 7:00 pm, respectively. The data shown below is aggregated by time span and both directions of travel (to Woodgrove and to Prideaux Exchange).

<sup>2</sup> Based on GFI data from the last six months (September 2017 – February 2018).

<sup>3</sup> Based on GFI data collected in the past six months

<sup>4</sup> Based on field data collected in April, 2018

<sup>5</sup> Based on GFI data collected in the past six months

Table 5: Route 40 GFI Farebox Ridership

<b>DAY</b>	<b>AVERAGE DAILY RIDERSHIP</b>	
<b>TIME</b>	<b>7:00 – 10:00 am</b>	<b>4:00 – 7:00 pm</b>
MONDAY	645.3	547.7
TUESDAY	702.6	593.1
WEDNESDAY	753.3	655.5
THURSDAY	693.4	681.2
FRIDAY	622.6	583.7

GFI analysis provides evidence that weekday travel demand is highest when NDSS and VIU is in session. The boardings for each time span fluctuate depending on the time of the day, however the largest observed difference in the afternoon coincides with NDSS school bell times. This is shown between 15:00 and 16:00 Monday – Friday, as NDSS’ bell time is 1:46 on Monday and Friday and 3:00 Tuesday-Thursday. The data shown below is aggregated by time span and both directions of travel (to Woodgrove and to Prideaux Exchange). To further understand travel demand and passenger loads, detailed stop level activity counts were conducted (see 3.3 *Reported Issues*).

Table 6: Route 40 Average Rides (GFI) Northbound and Southbound (past six months)

<b>Time Span</b>	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
7:00 – 8:00	148.3	180.2	191.7	171.8	155.9
8:00 – 9:00	195.3	214.9	229	211.5	208.1
9:00 – 10:00	124.1	155.1	171.5	142.9	126.2
10:00 – 11:00	127.9	152.5	161.1	140.5	132.4
11:00 - 12:00	155.1	200.5	181	192.9	169.8
12:00 - 13:00	180	206.4	207.4	197.5	212.4
13:00 - 14:00	207.1	209.3	218	211.2	285.5
14:00 - 15:00	336.9	253.6	245.7	255.8	362.1
15:00 - 16:00	243.6	434.2	431.8	411.2	313.7
16:00 – 17:00	209.8	260.3	286.7	260.3	232.3
17:00 – 18:00	144.5	160.7	178	181.6	165.2
18:00 – 19:00	87.7	104	111.2	125	104.2
19:00 – 20:00	63.7	68.1	79.6	88.2	82



### 3.3 Reported Issues

#### 3.3.1 Weekday Service Capacity Standards

Detailed stop level activity counts were conducted for two weeks during peak weekday times by BC Transit and Regional District of Nanaimo staff. BC Transit's general standards for capacity were applied to determine the capacity of each trip. The standards are as follows:

Table 7: XN 40 Excelsior Capacity Standards

Classification	# of Passengers
More than 20 under capacity	0-14
10-20 under capacity	15-24
Near Capacity	25-33
Capacity	34
Crowded (1-15 Standees)	35-49
Overcapacity	50+

#### 3.3.2 Overcapacity Trips

Analysis indicated that six trips were observed to be overcapacity and five trips were observed to be crowded (10-15 standees) as per the guidelines listed above. The exact overcapacity trips are as follows.

Table 8: Overcapacity Trips (To Prideaux)

Trip Time	Leave Location	Passenger Load	Classification
7:27	Woodgrove Exchange	52	Overcapacity (> 52)
7:34	Woodgrove Exchange	53	Overcapacity (> 52)
7:40	Woodgrove Exchange	51	Overcapacity (> 52)
7:40	Bowen/Kenworth (Overload)	53	Overcapacity (> 52)

Table 9: Overcapacity Trips (To Woodgrove)

Trip Time	Leave Location	Passenger Load	Classification
13:55	VIU Exchange (Overload)	52	Overcapacity (> 52)
14:56	Prideaux Exchange	89	Overcapacity (> 52)

### 3.3.3 Crowded Trips

Five trips were observed to be overcrowded. As travel demand grows, additional pressure may occur on these trips. The trips are as follows:

Table 10: Crowded Trips (To Prideaux)

Trip Time	Leave Location	Passenger Load	Classification
7:19	Woodgrove	42	Crowded (35 - 49)
14:08	Woodgrove	42	Crowded (35 - 49)

Table 11: Crowded Trips (To Woodgrove)

Trip Time	Leave Location	Passenger Load	Classification
14:45	Prideaux	45	Crowded (35 - 49)
15:10	Prideaux (Overload)	49	Crowded (35 - 49)
16:59	Prideaux	42	Crowded (35 - 49)

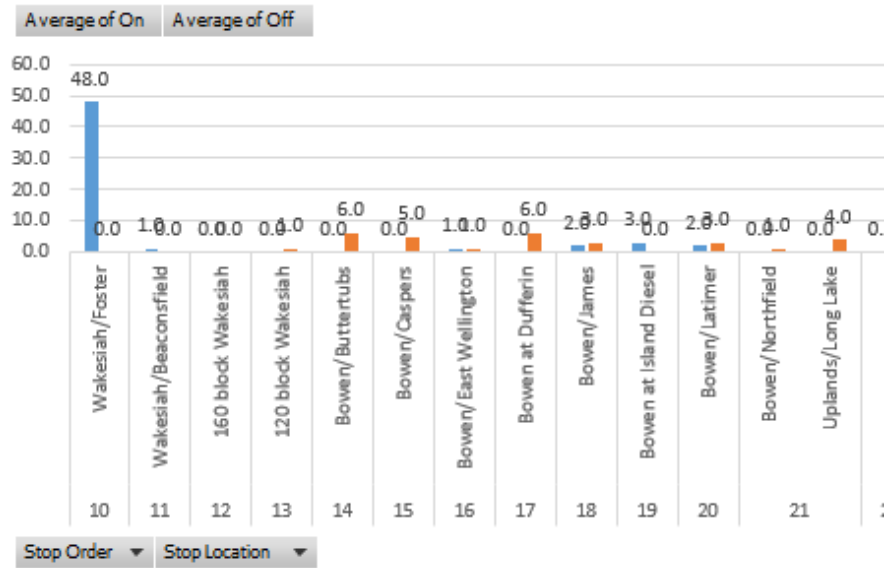
### 3.3.4 Travel Patterns

Stop level analysis indicates that Wakesiah / Foster (NDSS stop) and Vancouver Island University stops have the highest activity when trips are overcrowded. Further analysis suggests that the highest activity points are between Country Club and Prideaux Exchange when travelling southbound while northbound patterns are more dispersed from Prideaux Exchange to Woodgrove Centre.

Figure 3: Northbound NDSS Bus Stop



Figure 2: Snapshot of Northbound 3:10 trip



### 3.3.5 Unscheduled Overload Trips

Additional unscheduled overload trips occur during the school year to match the ridership demand from Nanaimo District Secondary School and Vancouver Island University. The trips are as follows:

Table 12: Overload Trips (Unscheduled)

Trip Time	NDSS Bell Time	Day	Leave Location
7:40	8:30 AM	Mon-Fri	Bowen/Kenworth
13:55	1:46 PM	Mon/Fri	VIU Exchange
15:10	3:00 PM	Tues/Wed/Thurs	NDSS (Wakesiah/Foster)

### 3.3.6 Weekend Service

BC Transit recommends providing approximately 60 per cent of weekday service level on Saturdays and 40 per cent on Sundays. The RDN Transit Future Plan (2014) encourages weekend service levels to increase to a 30-minute frequency to grow ridership. Currently, Saturday and Sunday Service levels are low relative to the weekdays with service operating every 30-60 minutes. Furthermore, Saturday service accounts for approximately 50 per cent of weekday service and Sunday service accounts for approximately 19 per cent of weekday service.

Table 13: Route 40 Daily and Annual Service Hours

Route	Day	Hours / Year	Hours / Day	Percentage of Weekday
40	Monday	5274.82	114.67	-
40	Tuesday	5733.50		
40	Wednesday	5848.17		
40	Thursday	5962.84		
40	Friday	5962.84		
40	Saturday	2746.64	52.82	46.06%
40	Sunday	1079.67	21.17	18.46%
	<b>TOTAL</b>	<b>32608.48</b>		

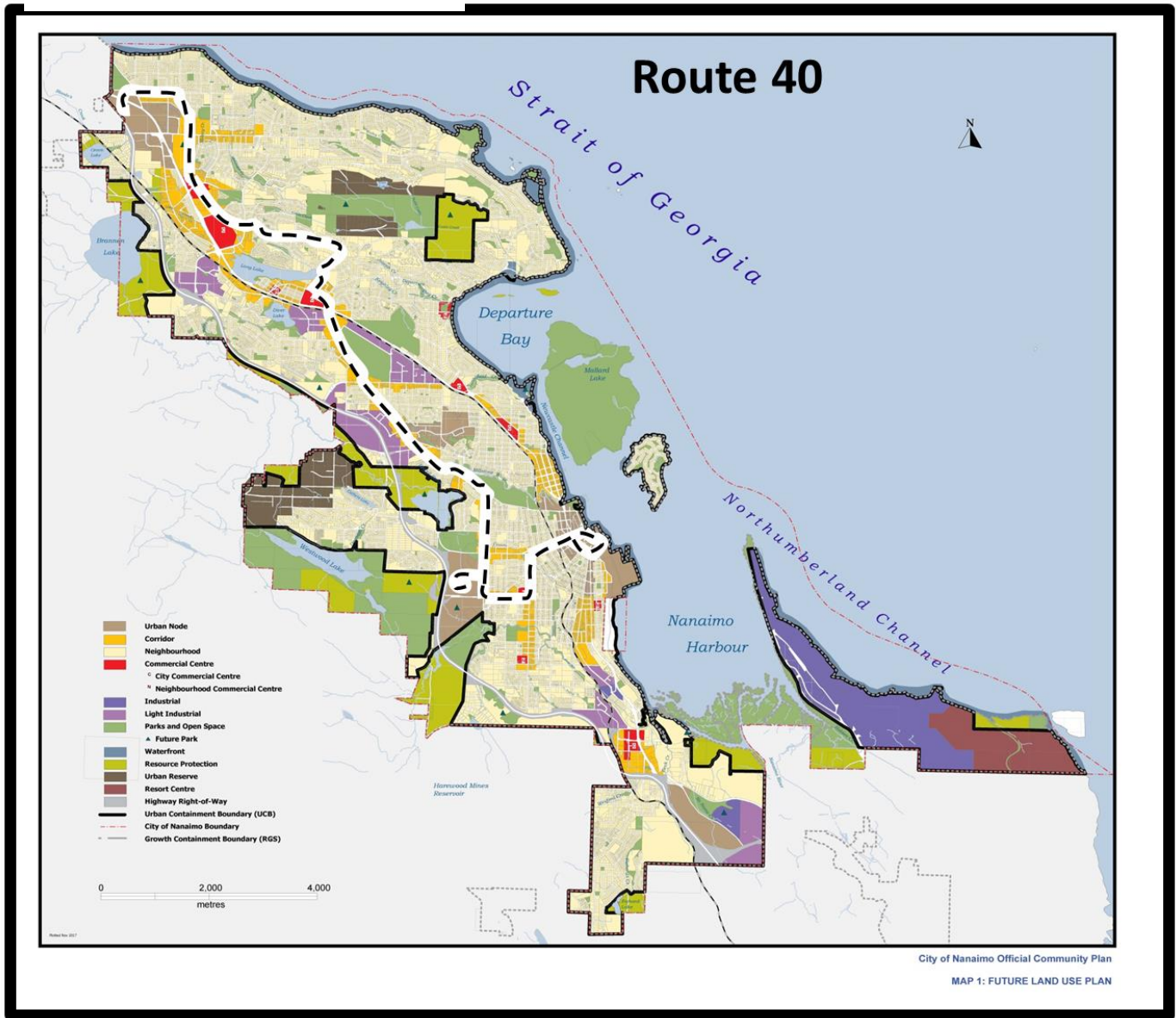
### 3.4 Future Growth

A growing population and land use intensification coupled with transportation demand management measures will likely lead to travel mode shifts.

#### 3.4.1 Land Use Characteristics

Transit supportive land use policies include designating areas as medium-high density mixed-use corridors. PlanNanaimo encourages future growth to be planned along corridors to continue supporting sustainable communities. The Plan also designates corridors as the connection between Urban Nodes and Neighbourhood for transit routes. Route 40 - VIU Express routes along a number of urban nodes and mixed used corridors, supporting transit growth (PlanNanaimo – Official Community Plan). The Future Land Use Plan shown below is layered with Route 40 – VIU Express to provide a visual representation.

Figure 3: OCP Land Use Map



### 3.4.2 Demographic Characteristics

Given that Route 40 – VIU Express accounts for approximately 40 per cent of the ridership in the entire transit system and routes along a mixed-use Corridor, it is expected that as the population increases, ridership will increase. The route provides coverage to approximately 25,000 residents and 18,000 employees within a 400m buffer <sup>6</sup> or a 5 minute walk distance.

Table 14: Regional District of Nanaimo Population

Area	Population (2011)	Population (2016)	Per cent Increase (2011 – 2016)	Projected Population
City of Nanaimo	83,810	90,504	8%	113,000 (2031) <sup>7</sup>
Regional District of Nanaimo	146,574	155,698	6%	231,184 (2036) <sup>8</sup>

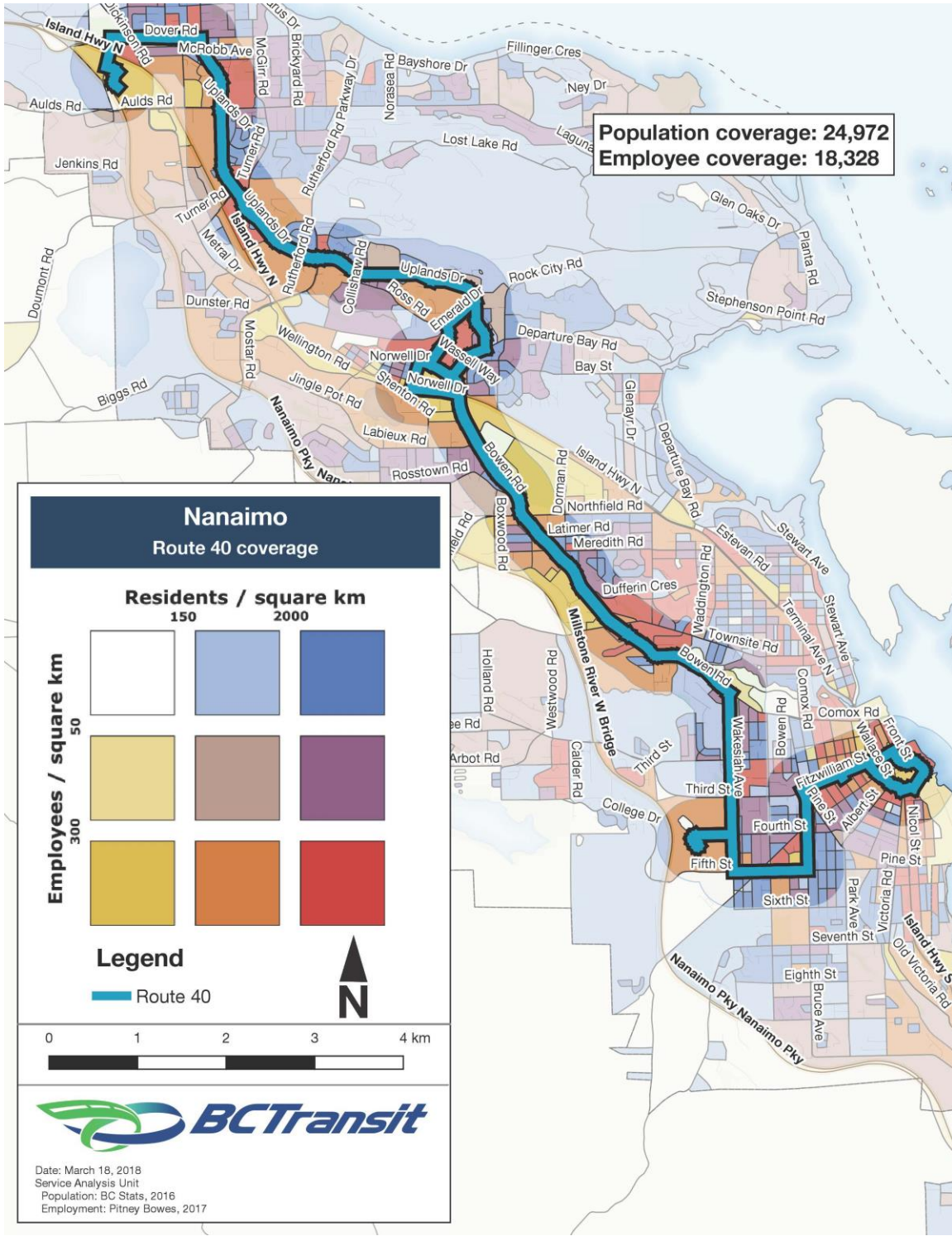
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<sup>6</sup> RDN's service standards stipulate that at least 90% of residents and employees are within 400 meters walking distance of a transit route.

<sup>7</sup> Statistics Canada, 2016.

<sup>8</sup> Regional District of Nanaimo.

Figure 4: Population and Employment Map



## **Transportation Demand Management**

Vancouver Island University is currently exploring TDM measures. Evidence indicates that increasing the price of parking and limiting the supply will cause travel mode shifts, which could potentially increase transit ridership. In concert with TDM measures, implementing a UPASS system has yielded a 20-30 per cent mode share for university students in other communities across British Columbia.

Context:

- Approximately 9000 students enrolled and approximately 1000 permanent and temporary staff employed at VIU in the 2016/2017 year <sup>9</sup>
- There are 2,168 parking spaces, distributed amongst 23 different parking lots <sup>10</sup> with 71 per cent allocated to General Paid Parking. <sup>11</sup> There were approximately 1900 parking permits in circulation in 2017.
- Field observations by Watt Consulting group determined that parking utilization was at or above 90 per cent throughout all times of the day.

A recent report, *VIU Transportation Demand Management Strategy* by Watt Consulting Group, commissioned by VIU brought forth the following recommendations that could impact transit ridership:

- Increase parking rates by 50 per cent by 2022<sup>12</sup>
- Reduce the number of parking permits to no more than 10 per cent of available student parking spaces.
- Pursue a student U-Pass system and subsidize the Employee ProPASS program

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<sup>9</sup> VIU Transportation Demand Management Strategy Report (2018). Watt Consulting Group

<sup>10</sup> VIU Transportation Demand Management Strategy Report (2018). Watt Consulting Group

<sup>11</sup> Student parking is \$45/month, \$150/semester, \$300/year. For parking in General Access lots: \$2.50 per two hours to a maximum of \$8 per twelve hours

<sup>12</sup> VIU Transportation Demand Management Strategy Report (2018). Watt Consulting Group



## 4. Service Implementation Specifications

In order to maintain on-time performance and match ridership demand, it is recommended the 5000 hours be prioritized as follows:

Provide additional peak weekday trips to match ridership demand as evidenced by the analysis conducted (see 3.3 Reported Issues), as well as even out the midday schedule and add the 'overload' runs to the regular service schedule.

*Table 15: Service Specifications*

Action	Annual Hours	Months	Objective
Provide additional weekday trips	5,000	Sept – June	-10 minute frequency in peak hours -15 min frequency min -30 min frequency in evenings -previous 'overload' runs scheduled into regular service

## 5. Implementation Plan

### Implementation Timeline

The timeline below outlines key milestones for the January 2, 2019 implementation.



Date	Deliverable	Owner / Lead
May 24, 2018	Service Change Plan presented to the Regional District of Nanaimo Transit Select Committee	BCT
May, 2018	Implementation MOU issued to the RDN for review and signature	BCT, RDN
October 17, 2018	Schedule Completion	RDN
November 15, 2018	Riders Guide completion	BCT
December, 2018	Riders Guide released, website updated and marketing/media/public outreach	BC, RDN
January 2, 2019	Service Implementation	BCT, RDN

## 6. Marketing and Communication Plan

A comprehensive marketing and communication plan will be developed to communicate these proposed changes effectively to the public. This plan has the following objectives:

- To make the public aware of the new transit service and other transit services in the region
- To obtain user feedback
- To ease implementation
- To promote ridership and community support for transit

The marketing and communication plan will include the following components:

- On-street outreach (BC Transit and RDN staff at key stops)
- Additional marketing and customer information will be provided
  - » Advertising (print, radio, and online/social media)
  - » On-board bus information
  - » Distribution of new Rider's Guides
  - » BC Transit website & Customer Information Line
  - » Posters at bus stops.
  - » Service preview on the BC Transit website and Google Transit
  - » Media Briefing

## 7. Future Service Improvements

The Transit Future Plan (2014) identified multiple priorities for the Regional District of Nanaimo transit system. A target of approximately 400,000 service hours by 2039 was determined to enhance travel opportunities to key destinations, improve travel times and reliability, and grow ridership to a 5 per cent mode share. In order to realize the goals and priorities of plan, the following have been identified as a priority.

### Weekend Service Improvements – Route 40 VIU Express

RDN Transit Future Plan (2014) encourages weekend service levels to increase to a 30-minute frequency. BC Transit recommends providing approximately 60 per cent of weekday service level on Saturdays and 40 per cent on Sundays to grow ridership. Currently, Saturday and Sunday Service levels are low relative to the weekdays with service operating every 30-60 minutes. Saturday service accounts for approximately 50 per cent of weekday service and Sunday service accounts for approximately 19 per cent of weekday service.

### South Nanaimo Local Area Transit Plan

BC Transit and the Regional District of Nanaimo are currently developing a local area transit plan for South Nanaimo. The plan will outline service improvements, including the simplification of the following routes: Route 7 (Cinnabar / Cedar), Route 5 (Fairview), Route 6 (Harewood), and Route 30 (NRGH). This plan will be shaped by ridership analysis, an evaluation of network benefits and tradeoffs, and public engagement input.<sup>13</sup>

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<sup>13</sup> South Nanaimo Local Area Plan Progress: <https://bctransit.com/nanaimo/transit-future/local-area-transit-plans>

## Regional District of Nanaimo Transit Improvements

BC Transit and the Regional District of Nanaimo actively monitor transit ridership, growth, current and future land uses and developments, and travel patterns to best provide service that matches demand.