ROADS ASSET MANAGEMENT PROGRAM REPORT
VILLAGE OF BELCARRA

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Glossary

20 Year Average Annual Life (AAI) Investment – the annual investment needed to pay for expected infrastructure replacements over the next 20 years (within the 20-year horizon).

Average Annual Life Cycle Investment (AALCI) – the annual investment needed to sustain existing infrastructure over its service life.

Estimated Useful Life – the number of years an asset is expected to last. These numbers are based on provincial and TCA guidelines, unless better site-specific information is available.

Expected Remaining Life – the overall percent remaining of expected useful life of the assets.

Forecasted Replacement Needs – the cumulative cost to replace assets that reach their full life expectancy in that year.

Historic Cost – the cost of the asset when it was originally built.

Infrastructure Deficit (Backlog) – a measure of the value of infrastructure that has passed its theoretical service life.

Investment Profile – an outlook of potential investment per year based on total replacement value, expected remaining life, infrastructure backlog and annual life cycle investment.

Replacement Value – the estimated replacement cost of an asset at current market value.

Summary and Background

SUMMARY

The roads asset management plan conducted by USL is based upon a newly developed inventory of assets, which includes estimations of the current replacement value for each asset. An Asset Replacement Forecast was created to provide a high level overview of when assets might need to be replaced based on their projected service life, and how much that might cost. This information is helpful for understanding and communicating financial planning, policy development and implementation, and risk assessment. The forecast is based upon reasonable assumptions and current best estimates, and has been constructed to facilitate future updating of the input data and results.

Two scenarios were considered for the forecast to minimize discrepancies caused by assumptions. One scenario used standard 25-year services lives, while the other used condition-based service lives as provided by Belcarra staff. Identical in each scenario were results for the total replacement value of VoB's roads assets and the average expected remaining life, which were found to be $2.06 million and 73% respectively. Only the 25-year scenario produced an infrastructure deficit (the amount of infrastructure that has passed the theoretical service life), which was $181,000. Between both scenarios, the 20 Year Average Annual Investment (AAI) had a mean of $100,000, and the Average Annual Life Cycle Investment (AALCI) had a mean of $82,000.

PROJECT SCOPE AND FUNDING

The scope of work for the Roads Asset Management Program includes:

- Program kick-off
- Compile road assets inventory
- Field verification of road widths (spot checks)
- 20-year asset replacement forecast
- Recommendations for lifecycle optimization
- Asset Management Report
- Presentation to staff and/or Council

This scope is based upon the 2017 Updated Work Plan, which was modified from the original work plan provided in 2015 titled "Building an Asset Management Program for Roads".

Funding for this project has been obtained in the form of an Asset Management Planning Grant, which has allowed the village to carry forward with the 2017 Updated Work Plan and Roads Asset Management Program.

This report summarizes the objective, approach and outcome of each of these items of work, and provides recommendations for further improving the asset replacement forecast in the future.

WHAT IS ASSET MANAGEMENT?

The *Asset Management for Sustainable Service Delivery: A BC Framework* defines asset management as "an integrated process, bringing together skills, expertise, and activities of people; with information about a community's physical assets; and finances; so that informed decisions that support sustainable service delivery can be made." People, information, assets and finances provide the core areas of the asset management framework as shown below.

People – working together and understanding the need for asset management in order to support the planning and implementation of asset management is vital for an effective program.

Information – compiling and maintaining complete information allows for sound risk assessment and continually informs financial decisions as information is collected and updated over time.

Assets – An Inventory of the physical infrastructure owned by a community, which enables service delivery to members, includes water, wastewater and drainage systems; transportations systems; parks and recreation facilities; and equipment/fleet.

Finances – Understanding the long-term costs required to replace and maintain assets, along with projecting anticipated life-expectancy, allows for a proactive approach to planning that can reduce costs and mitigate risks.

DRIVERS FOR ASSET MANAGEMENT AT THE VILLAGE OF BELCARRA

In order to plan for a sustainable future, it is important to develop an inventory of current assets, understand how assets are providing value to the community, what future generations will require and a plan for how these requirements will be funded. Building an asset management program that informs community decision-making allows for effective management of current resources and infrastructure which facilitates a proactive approach to strengthening infrastructure and the community.

In the Corporate Plan 2016-2020 and Corporate Strategic Plan 2015-2018, the Village of Belcarra identifies Infrastructure and Asset Management as a priority that will allow the village to optimize maintenance cycles, capital expenditure, and funding plans. Moreover, in the 2016-2020 Financial Plan Belcarra acknowledges roads as being a capital asset without fully known long-term financial needs, and states an objective of “[providing] funds sufficient to fund needed & desired capital works when required”.

Asset management will help Belcarra develop effective maintenance cycles, which can prevent many issues regarding the current road conditions. A 2013 investigation by exp Services Inc. identified significant cracking, patching and settlement issues, in addition to intermittent alligator cracking. This was confirmed during USL’s field investigation where sloughing, potholes, and cracking were also noticed in areas not included in exp’s study. While the deficiencies identified were often minor, they indicate that some roads may be approaching their useful life.

Inventory and Asset Valuation

A complete inventory and valuation of assets containing asset condition and costs is essential for building a comprehensive asset management program.

OBJECTIVE

To work with the Village to develop an asset inventory. Determine the replacement value of roads infrastructure based on the developed Inventory.

APPROACH

Data was collected to answer these three questions:

1. What road assets does the Village own?
2. How much are they worth?
3. What is the estimated remaining life of the road assets?

Information collected through the steps outlined below provided a high-level understanding of assets and investment needs.

STEP 1

Collect Information – Initial data collection of the Village's roads inventory began with a TCA spreadsheet that was updated as of 2015. The data in this spreadsheet was used as a starting point to form the Asset Replacement Forecast and included details such as road IDs and segments, road materials, lengths and widths, and disposal or reconstruction years. From this data, information gaps and data that needed confirmation were identified.

STEP 2

Meeting with Superintendent of Public Works – USL met with the Village's Superintendent of Public Works to discuss information gaps in the provided TCA data, historical works and the current condition of each road segment. Also confirmed were installation or renewal years, anticipated service lives for each road segment, disposed or updated road sections, and right-of-way. Other topics regarding the Village's roads that were discussed included:

- Plans for future works
- Previous construction issues

STEP 3

Field Verification – USL conducted a visual inspection to confirm data obtained from the TCA, and to collect new data in order to ensure an accurate and up-to-date inventory and asset management plan. Data gathered in the field included:

- Measurements of road widths (spot checks only)
- Identification of roads possessing curbs (including approximate curb lengths)
- Current road conditions (noting issues such as cracking or potholes)
- Photographs of relevant road sections and conditions

As per the 2017 Work Plan, USL's field inspection only consisted of spot checks for certain road segments, particularly the width and curb length of roads upgraded during the 2012 water main construction project.

The following table shows the complete list of data sources that were compiled to form the Asset Replacement Forecast.

SOURCE	MATERIAL
Village of Belcarra	• 2015 TCA Data (Excel) • Information provided by Belcarra Staff • USL field investigation (spot-checks)

***A list of specific information provided by Belcarra Staff can be found in the Asset Replacement Forecast spreadsheet delivered separately.

STEP 4

Complete Inventory Information – Further detail was added to the inventory as outlined below to allow for forecasting of future replacement costs and anticipated replacement timeline.

- **Replacement Value –** the cost associated with each asset to replace it at current market value.
- **Install Date and Estimated Useful Life –** The estimated useful life is the number of years an asset is expected to last. These numbers are based on provincial and TCA guidelines for one scenario, and information provided by Belcarra staff for the other scenario.

INPUTS AND ASSUMPTIONS

Typical information collected for each asset included: description; material; length; width; year installed; unit cost; service life; and replacement value.

The complete inventory and asset valuation data is included in an Excel workbook provided as a separate deliverable to this report.

After reviewing all information obtained through the TCA, on-site meeting, and field verification, assumptions were made for any missing pieces of data needed to complete the inventory. General assumptions made are outlined below:

- Useful service life was assumed to be 25 years (the theoretical service life outline in the "Guide to the Amortization of Tangible Capital Assets" by the BC Local Government Infrastructure and Finance Division), or as provided by Belcarra staff based on anecdotal knowledge of the road substructure and performance.
- Road lengths from the 2015 TCA Data spreadsheet (compared with the Village's water map) and curbs lengths approximated during field investigation are sufficiently accurate.
- Road widths obtained either from the TCA or through field investigation are constant for the given section.
- Roads that were not installed or renewed within recent recollection were assumed to be installed during the Village of Belcarra's incorporation in 1979.
- Provided replacement unit rates are sufficiently accurate, and are based upon projects of a small to medium sized scope.

Replacement unit costs were provided by Belcarra staff and were generally based on recent local tenders. In addition, 17% for engineering and 25% for contingency was included.

Note that assumptions should be updated over time as new information becomes available.

GAPS IN DATA

The Village of Belcarra now owns a roads asset inventory with very few information gaps. The information gathered is sufficiently complete and accurate to provide a good foundation for asset and maintenance management.

If the Village wants to continue to improve the accuracy of the data for other purposes, the following data gaps could be addressed:

- Confirm length of road sections
- Confirm location and lengths of roads containing curb

- Update current condition of road (note any items requiring maintenance)

Generally, the Village considered their current roads inventory (as represented by the 2015 TAC) to be fairly accurate, although they were aware that some road widths may have changed when roads were repaved as part of the 2012 water upgrade project. Spot-checks conducted during USL's field investigation suggested that some of the inventory data was incorrect to varying degrees. Given the discrepancy between current data and actual road asset characteristics, it may benefit the Village to perform a field survey of their assets, to confirm details such as road lengths, widths, and curb lengths which would help improve the Asset Replacement Forecast.

Although there is room for improvement in the Village's road assets inventory, none of the variations between data sources were too large or significant enough to have a considerable impact on the results of the asset replacement forecast.

RESULTS/OUTCOMES

The main deliverables from this stage of the project is a spreadsheet in MS Excel that contains all of the information compiled to-date about the assets.

This inventory is the foundation for building a strong asset management program. With regular updating and maintenance, it will also be a valuable database that informs community planning, risk assessment, policy development, TCA reporting and other priorities relating to infrastructure and finance.

20 Year Asset Replacement Forecast

The Asset Replacement Forecast is a high-level view of the cost of asset replacement over time based on estimated service life and replacement costs of assets. This report is useful for understanding and communicating strategic-level risk, developing long term financial plans, and informing policy development and actions. It should be used as a theoretical analysis based on reasonable assumptions.

OBJECTIVE

Develop a forecast of when assets will need to be replaced and what it will cost. Determine the estimated annual sustainable funding level that is required to replace the assets at the end of their useful lives.

APPROACH

Asset replacement value, age and expected useful life information was taken from the asset inventory to develop the Asset Replacement Forecast.

In addition to data collection and asset valuation, the following steps were taken:

- Determined annual investments for the Village's road system
- Compiled an investment model (in MS Excel format) for road assets
- Estimated total and average annual theoretical investments for asset renewal

The Asset Replacement Forecast was conducted for two scenarios, one using standard estimated 25 year service lives and the other with expected service lives based on Belcarra staff predictions. The two scenarios were used to compare the forecast renewal needs between different data sources, resulting in a more accurate prediction of the investment needs.

ASSUMPTIONS

Despite having assembled a complete inventory with sufficiently accurate data, the long-term forecast is still based upon a set of assumptions. Assumptions regarding formation of the Asset Replacement Forecast are outlined below.

- Road and curb service lives are a reasonable estimate of the remaining service life. However, the history of Belcarra's logging roads and inconsistent substructure make this difficult to predict.

- Replacement cost unit rates provided are sufficiently accurate, and are based upon projects of a small to medium sized scope.
- Lifecycle investment forecast results include Belcarra Bay Road and part of Bedwell Bay road, which may have future funding provided by possible MRN status.
- Planning of upcoming works is not accounted for (for example, Belcarra staff suggested the municipal hall segment may need renewal in 2017 at a cost of about $90,000)

Similar to assumptions made in the completion of the asset inventory, these assumptions should be updated as new information becomes available.

RESULTS/OUTCOMES

The Asset Replacement Forecast Summary provides a baseline snapshot (high level overview of assets as of today) for all of the Village's road assets.

Asset Category	Replacement Value - Total	Average of Expected Remaining Life	Sum of Infrastructure Deficit (Backlog)	Sum of 20 Year Average Annual Investment	Sum of Average Annual Life Cycle Investment
Road System - Provided SLs	$2,056,000	73%	$0	$97,000	$81,000
Road System - 25 Year SLs	$2,056,000	73%	$181,000	$103,000	$83,000
Average	**$2,056,000**	**73%**	**$90,500**	**$100,000**	**$82,000**

In forecasting potential infrastructure replacement needs and costs over the next 20 years, spikes on the Investment Profile graphs indicate areas of potential risk where a higher investment may be required to replace infrastructure that is reaching its full life expectancy in that year. These are not certain costs as they are based on estimates; however, this outlook is beneficial in proactively planning and addressing infrastructure renewal.

The resulting 20 Year Average Annual Life Cycle Investment (AAI) and Average Annual Life Cycle Investment (AALCI) of the two scenarios were nearly identical, and the spikes on the Investment Profiles were generally in agreement. The consistency between scenarios which have different service lives for a number of assets, means the forecast is sufficiently reliable given the available information. Between the two scenarios, the average AAI and AALCI were $100,000 and $82,000 respectively.

It should be noted that the most significant risk in the 20 year forecast occurs in the final year. This is identical in both scenarios due to renewal of many road segments during the 2012 water upgrade project.

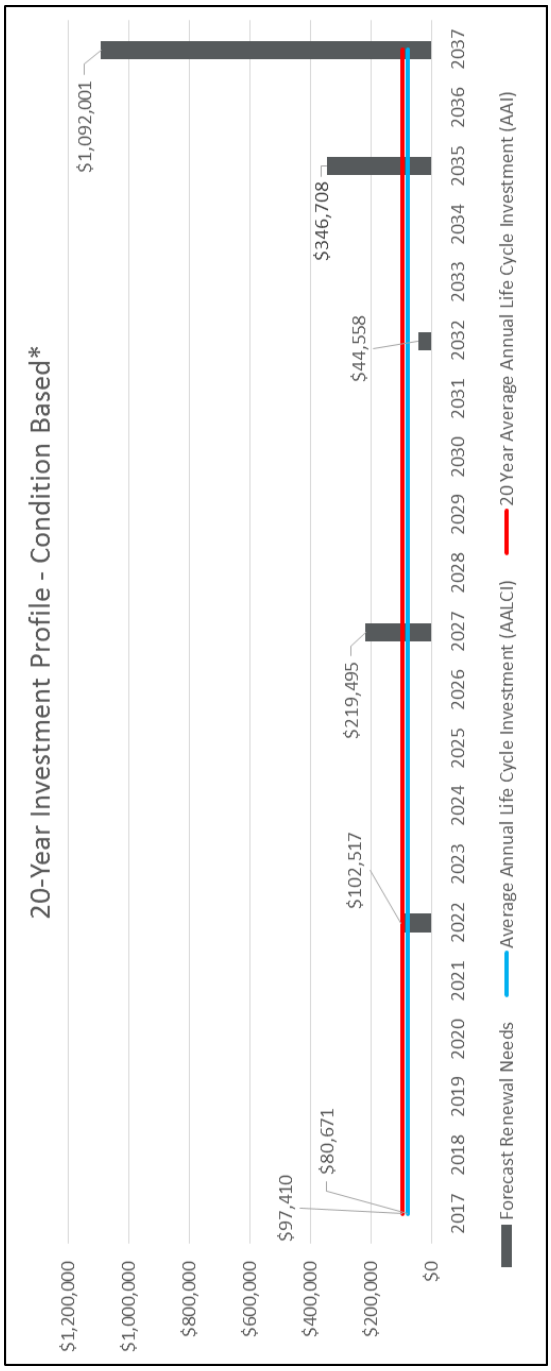
Belcarra currently receives about $75,000 per year of funding for the MRN section of Bedwell Bay Road, with anticipation that road segments leading up to Whiskey Cove Lane (mainly Belcarra Bay Road) will be granted MRN status in the near future. MRN and Non-MRN roads are not considered separately in this forecast, and therefore MRN funding may be used to offset investment costs.

The Forecast also identifies the infrastructure deficit (backlog), which is the total value of all assets that are past their theoretical expected useful life. The standard 25–year scenario shows an infrastructure deficit for a small number of roads segments that have never been renewed, however using condition-based service lives there is no backlog. These assets should be inspected as their expected useful lives may have been met or exceeded, despite the staff's best estimates.

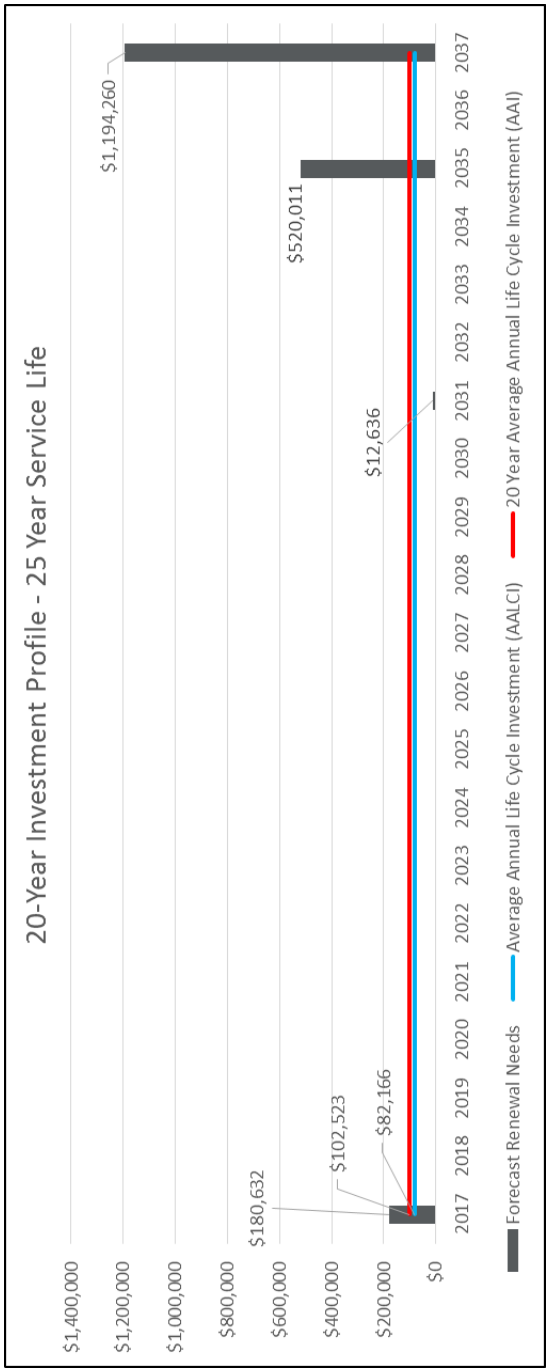
Total estimated replacement value of all roads infrastructure equals $2.06 million. The baseline snapshot is shown with the full Asset Replacement Forecast attached as a separate deliverable.

THE VILLAGE OF BELCARRA: ASSET REPLACEMENT FORECAST SUMMARY

BASELINE SNAPSHOT:



*Based on staff input on remaining useful life.



Moving forward

The Asset Replacement Forecast can be used to inform the sustainable level of funding required for the road network. As mentioned in the previous section, the asset inventory should be updated and maintained as new infrastructure is acquired, assets are replaced or renewed, condition information is obtained, and infrastructure costs are updated. These changes to the inventory will also update the Asset Replacement Forecast. The Excel workbook containing the full information required to generate the Asset Replacement Forecast is provided as a separate deliverable.

If updated consistently, this forecast can continue to provide a forward-looking view of potential investments and risks which will inform future planning and policy decisions and allow for a pro-active approach to addressing infrastructure needs.

There are some clear next steps that the Village can take to continue to build their asset management program:

Immediate term:

- Adjust funding levels for the road network
- Conduct condition inspection for at-risk assets as identified through the infrastructure backlog (25 year service life scenario) to identify maintenance needs and required funding
- Note any inventory or condition changes that may occur as a result of the T-patch renovations that are anticipated to be completed on Bedwell Bay Road in 2017
- Determine a sustainable approach to asset renewal, to inform the development of an asset renewal reserve and policy

Medium term:

- Perform a field survey of assets to obtain better accuracy of road and curb data
- Develop and implement maintenance management strategies and assess current maintenance practices

Ongoing actions:

- Update the asset inventory when new information about assets is obtained
- Assess changes to the Asset Replacement Forecast and Investment Profile including level of risk, maintenance cycles, and renewal costs

- Development and implementation of a maintenance management scheduling and task tracking system (Outlook calendar, excel spreadsheet, and update Maintenance Management Plan)
- Continue to review the asset renewal forecast results, identifying potential risks such as high renewal costs, asset failure, or disruption in service delivery

Conclusion

Through this Asset Management Plan, the Village of Belcarra now has an understanding and forecast of how to manage their roads assets. Continuous improvement in Asset Management practices, including maintaining records and inventories, will continue to build the program, thus ensuring it is a valuable resource for planning and community decision making in the future.

Appendix A:
Asset Inventory and Valuation

Condition Based Service Life

	Physical Details												Financial Information			Investment Summary			
	Asset ID	Description-1	Description-2	Name	From	To	Material	Length	Width	Year Installed or Renewed	Service Life	Age	Replacement Value - Total	Expected Remaining Life	Infrastructure Deficit (Backlog)	1st Replace	20 Year Total	20 Year Average Annual Investment	Average Annual Life Cycle Investment
Roads	R0001	Road Surface	Asphalt	Senkler Rd	Bedwell Bay Rd	Cul-de-sac	Asphalt	238	5.60	2012	25	5	$52,629	80%	$0	2037	$52,629	$2,506.14	$2,105
	R0002	Road Surface	Asphalt	Senkler Rd	Cul-de-sac	3295 Senkler Rd	Asphalt	80	5.00	2012	25	5	$15,795	80%	$0	2037	$15,795	$790	$632
	R0003	Road Surface	Asphalt	Marine Ave	Kelly Rd	North Cul-de-sac	Asphalt	260	4.90	2012	25	5	$50,307	80%	$0	2037	$50,307	$2,515	$2,012
	R0004	Road Surface	Asphalt	Marine Ave	North Cul-de-sac	Tatlow ROW	Asphalt	24	3.60	2012	25	5	$3,412	80%	$0	2037	$3,412	$171	$136
	R0005	Road Surface	Asphalt	Kelly Rd	Bedwell Bay Rd	Marine Ave	Asphalt	240	4.80	2012	25	5	$45,490	80%	$0	2037	$45,490	$2,274	$1,820
	R0006	Road Surface	Asphalt	Marine Ave	Kelly Rd	3918 Marine Ave	Asphalt	573	5.40	2010	17	7	$122,182	59%	$0	2027	$122,182	$6,109	$7,187
	R0007	Road Surface	Asphalt	Marine Ave	3918 Marine Ave	South Cul-de-sac	Asphalt	143	3.40	2010	17	7	$19,199	59%	$0	2027	$19,199	$960	$1,129
	R0008	Road Surface	Asphalt	Marine Ave	Young Rd	4022 Marine Ave	Asphalt	122	3.70	2012	25	5	$17,825	80%	$0	2037	$17,825	$891	$713
	R0010	Road Surface	Asphalt	Marine Ave	4048 Marine Ave	4172 Marine Ave	Asphalt	238	5.00	2012	25	5	$46,990	80%	$0	2037	$46,990	$2,350	$1,880
	R0010b	Road Surface	Gravel	4022 Marine Access Paving			Gravel	66	3.04	2012	25	5	$2,347	80%	$0	2037	$2,347	$117	$94
	R0011	Road Surface	Asphalt	West Rd	4172 Marine Ave	Bedwell Bay Rd	Asphalt	167	5.50	2012	25	5	$36,269	80%	$0	2037	$36,269	$1,813	$1,451
	R0012	Road Surface	Asphalt	Midden Rd	Bedwell Bay Rd	Belcarra Bay Rd	Asphalt	222	5.90	1979	43	38	$51,721	12%	$0	2022	$51,721	$2,586	$1,203
	R0013	Road Surface	Asphalt	Belcarra Bay Rd	Midden Rd	Bedwell Bay Rd	Asphalt	201	6.40	1979	43	38	$50,797	12%	$0	2022	$50,797	$2,540	$1,181
	R0014	Road Surface	Asphalt	Belcarra Bay Rd	Bedwell Bay Rd	Turtlehead Rd	Asphalt	427	5.20	2012	25	5	$87,678	80%	$0	2037	$87,678	$4,384	$3,507
	R0015	Road Surface	Asphalt	Belcarra Bay Rd	Turtlehead Rd	Salish Rd	Asphalt	78	6.40	2010	25	7	$19,712	72%	$0	2035	$19,712	$986	$788
	R0016	Road Surface	Asphalt	Belcarra Bay Rd	Salish Rd	Whiskey Cove Ln	Asphalt	314	6.30	1980	47	37	$78,114	21%	$0	2027	$78,114	$3,906	$1,662
	R0017	Road Surface	Asphalt	Coombe Ln	Whiskey Cove Ln	5220 Coombe Ln	Asphalt	130	3.60	2012	25	5	$18,480	80%	$0	2037	$18,480	$924	$739
	R0018	Road Surface	Asphalt	Coombe Ln	5220 Coombe Ln	Cul-de-sac	Asphalt	158	5.30	2012	25	5	$33,067	80%	$0	2037	$33,067	$1,653	$1,323
	R0019	Road Surface	Asphalt	Whiskey Cove Ln	Coombe Ln	Cul-de-sac	Asphalt	60	5.40	2012	25	5	$12,794	80%	$0	2037	$12,794	$640	$512
	R0020	Road Surface	Asphalt	Salish Rd	Belcarra Bay Rd	Robson Rd	Asphalt	119	6.00	2012	25	5	$28,194	80%	$0	2037	$28,194	$1,410	$1,128
	R0021	Road Surface	Asphalt	Robson Rd	Salish Rd	4995 Robson Rd	Asphalt	87	6.00	2012	30	5	$20,612	83%	$0	2042	$0	$0	$687
	R0022	Road Surface	Asphalt	Robson Rd	Salish Rd	4915 Robson Rd	Asphalt	70	6.00	2012	30	5	$16,585	83%	$0	2042	$0	$0	$553
	R0023	Road Surface	Asphalt	Turtlehead Rd	Belcarra Bay Rd	Upper West Cul-de-sac	Asphalt	340	4.30	2012	40	5	$57,731	88%	$0	2052	$0	$0	$1,443
	R0024	Road Surface	Asphalt	Turtlehead Rd	194 Turtlehead Rd	Lower Cul-de-sac	Asphalt	57	4.30	2012	30	5	$9,678	83%	$0	2042	$0	$0	$323
	R0025	Road Surface	Asphalt	Recycle Facility			Asphalt	80	4.00	2006	26	11	$12,636	58%	$0	2032	$12,636	$632	$486
	R0026	Road Surface	Asphalt	Main Ave	Bedwell Bay Rd	Tatlow ROW	Asphalt	430	6.00	2012	25	5	$101,878	80%	$0	2037	$101,878	$5,094	$4,075
	R0027	Road Surface	Asphalt	Main Ave	Tatlow ROW	Cul-de-sac	Asphalt	400	4.80	2012	25	5	$75,816	80%	$0	2037	$75,816	$3,791	$3,033
	R0028	Road Surface	Asphalt	Watson Rd	Bedwell Bay Rd	Cul-de-sac	Asphalt	76	5.00	2010	22	7	$15,005	68%	$0	2032	$15,005	$750	$682
	R0029	Road Surface	Asphalt	Young Rd	Marine Ave	4005 Young Rd	Asphalt	126	3.40	2010	22	7	$16,916	68%	$0	2032	$16,916	$846	$769
	R0030	Road Surface	Asphalt	Bedwell Bay Rd	Boundary	Senkler Rd	Asphalt	338	7.00	2010	25	7	$93,427	72%	$0	2035	$93,427	$4,671	$3,737
	R0031	Road Surface	Asphalt	Bedwell Bay Rd	Senkler Rd	Watson Rd	Asphalt	145	7.00	2010	25	7	$40,080	72%	$0	2035	$40,080	$2,004	$1,603
	R0032	Road Surface	Asphalt	Bedwell Bay Rd	Watson Rd	Bostock Rd	Asphalt	700	7.00	2010	25	7	$193,489	72%	$0	2035	$193,489	$9,674	$7,740
	R0033	Road Surface	Asphalt	Bedwell Bay Rd	4082 Bedwell Bay	Main Ave	Asphalt	778	7.00	2012	25	5	$215,049	80%	$0	2037	$215,049	$10,752	$8,602
	R0034	Road Surface	Asphalt	Bedwell Bay Rd	4082 Bedwell Bay	Midden Rd	Asphalt	790	7.00	2012	25	5	$218,366	80%	$0	2037	$218,366	$10,918	$8,735
	R0035	Road Surface	Asphalt	Municipal Hall	4084 Bedwell Bay		Asphalt	50	15.00	2012	25	5	$29,616	80%	$0	2037	$29,616	$1,481	$1,185
Curbs	C001	Curb	Asphalt	Senkler Rd	Bedwell Bay Rd	Cul-de-sac	Asphalt	150	-	2012	25	5	$9,653	80%	$0	2037	$9,653	$483	$386
	C002	Curb	Asphalt	Kelly Rd	Bedwell Bay Rd	Marine Ave	Asphalt	200	-	2012	25	5	$12,870	80%	$0	2037	$12,870	$644	$515
	C004	Curb	Asphalt	West Rd	4172 Marine Ave	Bedwell Bay Rd	Asphalt	140	-	2012	25	5	$9,009	80%	$0	2037	$9,009	$450	$360
	C005	Curb	Asphalt	Coombe Ln	5220 Coombe Ln	Cul-de-sac	Asphalt	35	-	2012	25	5	$2,252	80%	$0	2037	$2,252	$113	$90
	C006	Curb	Asphalt	Whiskey Cove Ln	Coombe Ln	Cul-de-sac	Asphalt	45	-	2012	25	5	$2,896	80%	$0	2037	$2,896	$145	$116
	C007	Curb	Asphalt	Robson Rd	Salish Rd	4915 Robson Rd	Asphalt	50	-	2012	25	5	$3,218	80%	$0	2037	$3,218	$161	$129
	C008	Curb	Asphalt	Turtlehead Rd	Belcarra Bay Rd	Upper West Cul-de-sac	Asphalt	20	-	2012	25	5	$1,287	80%	$0	2037	$1,287	$64	$51
	C009	Curb	Asphalt	Main Ave	Bedwell Bay Rd	Tatlow ROW	Asphalt	200	-	2012	25	5	$12,870	80%	$0	2037	$12,870	$644	$515
	C010	Curb	Asphalt	Main Ave	Tatlow ROW	Cul-de-sac	Asphalt	150	-	2012	25	5	$9,653	80%	$0	2037	$9,653	$483	$386
	C011	Curb	Asphalt	Young Rd	Marine Ave	4005 Young Rd	Asphalt	30	-	2010	25	7	$1,931	72%	$0	2035	$1,931	$97	$77
	C012	Curb	Asphalt	Bedwell Bay Rd	Watson Rd	Bostock Rd	Asphalt	530	-	2010	25	7	$34,106	72%	$0	2035	$34,106	$1,705	$1,364
	C013	Curb	Asphalt	Bedwell Bay Rd	4082 Bedwell Bay	Main Ave	Asphalt	540	-	2010	25	7	$34,749	72%	$0	2035	$34,749	$1,737	$1,390
	C014	Curb	Asphalt	Bedwell Bay Rd	4082 Bedwell Bay	Midden Rd	Asphalt	170	-	2012	25	5	$10,940	80%	$0	2037	$10,940	$547	$438
Total													$2,055,316.95		$0		$1,950,711	$97,410	$80,671

25-Year Service Life

	Physical Details											Financial Information			Investment Summary			
	Asset ID	Description-1	Description-2	Name	From	To	Material	Length	Width	Year Installed or Renewed	Service Life	Age	Replacement Value - Total	Expected Remaining Life	Infrastructure Deficit (Backlog)	1st Replace	20 Year Total	20 Year Average Annual Investment	Average Annual Life Cycle Investment
Roads	R0001	Road Surface	Asphalt	Senkler Rd	Bedwell Bay Rd	Cul-de-sac	Asphalt	238	5.60	2012	25	5	$52,629	80%	$0	2037	$52,629	$2,506.14	$2,105
	R0002	Road Surface	Asphalt	Senkler Rd	Cul-de-sac	3295 Senkler Rd	Asphalt	80	5.00	2012	25	5	$15,795	80%	$0	2037	$15,795	$790	$632
	R0003	Road Surface	Asphalt	Marine Ave	Kelly Rd	North Cul-de-sac	Asphalt	260	4.90	2012	25	5	$50,307	80%	$0	2037	$50,307	$2,515	$2,012
	R0004	Road Surface	Asphalt	Marine Ave	North Cul-de-sac	Tatlow ROW	Asphalt	24	3.60	2012	25	5	$3,412	80%	$0	2037	$3,412	$171	$136
	R0005	Road Surface	Asphalt	Kelly Rd	Bedwell Bay Rd	Marine Ave	Asphalt	240	4.80	2012	25	5	$45,490	80%	$0	2037	$45,490	$2,274	$1,820
	R0006	Road Surface	Asphalt	Marine Ave	Kelly Rd	3918 Marine Ave	Asphalt	573	5.40	2010	25	7	$122,182	72%	$0	2035	$122,182	$6,109	$4,887
	R0007	Road Surface	Asphalt	Marine Ave	3918 Marine Ave	South Cul-de-sac	Asphalt	143	3.40	2010	25	7	$19,199	72%	$0	2035	$19,199	$960	$768
	R0008	Road Surface	Asphalt	Marine Ave	Young Rd	4022 Marine Ave	Asphalt	122	3.70	2012	25	5	$17,825	80%	$0	2037	$17,825	$891	$713
	R0010	Road Surface	Asphalt	Marine Ave	4048 Marine Ave	4172 Marine Ave	Asphalt	238	5.00	2012	25	5	$46,990	80%	$0	2037	$46,990	$2,350	$1,880
	R0010b	Road Surface	Gravel	4022 Marine Access Paving			Gravel	66	3.04	2012	50	5	$2,347	90%	$0	2062	$0	$0	$47
	R0011	Road Surface	Asphalt	West Rd	4172 Marine Ave	Bedwell Bay Rd	Asphalt	167	5.50	2012	25	5	$36,269	80%	$0	2037	$36,269	$1,813	$1,451
	R0012	Road Surface	Asphalt	Midden Rd	Bedwell Bay Rd	Belcarra Bay Rd	Asphalt	222	5.90	1979	25	38	$51,721	0%	$51,721	2017	$51,721	$2,586	$2,069
	R0013	Road Surface	Asphalt	Belcarra Bay Rd	Midden Rd	Bedwell Bay Rd	Asphalt	201	6.40	1979	25	38	$50,797	0%	$50,797	2017	$50,797	$2,540	$2,032
	R0014	Road Surface	Asphalt	Belcarra Bay Rd	Bedwell Bay Rd	Turtlehead Rd	Asphalt	427	5.20	2012	25	5	$87,678	80%	$0	2037	$87,678	$4,384	$3,507
	R0015	Road Surface	Asphalt	Belcarra Bay Rd	Turtlehead Rd	Salish Rd	Asphalt	78	6.40	2010	25	7	$19,712	72%	$0	2035	$19,712	$986	$788
	R0016	Road Surface	Asphalt	Belcarra Bay Rd	Salish Rd	Whiskey Cove Ln	Asphalt	314	6.30	1980	25	37	$78,114	0%	$78,114	2017	$78,114	$3,906	$3,125
	R0017	Road Surface	Asphalt	Coombe Ln	Whiskey Cove Ln	5220 Coombe Ln	Asphalt	130	3.60	2012	25	5	$18,480	80%	$0	2037	$18,480	$924	$739
	R0018	Road Surface	Asphalt	Coombe Ln	5220 Coombe Ln	Cul-de-sac	Asphalt	158	5.30	2012	25	5	$33,067	80%	$0	2037	$33,067	$1,653	$1,323
	R0019	Road Surface	Asphalt	Whiskey Cove Ln	Coombe Ln	Cul-de-sac	Asphalt	60	5.40	2012	25	5	$12,794	80%	$0	2037	$12,794	$640	$512
	R0020	Road Surface	Asphalt	Salish Rd	Belcarra Bay Rd	Robson Rd	Asphalt	119	6.00	2012	25	5	$28,194	80%	$0	2037	$28,194	$1,410	$1,128
	R0021	Road Surface	Asphalt	Robson Rd	Salish Rd	4995 Robson Rd	Asphalt	87	6.00	2012	25	5	$20,612	80%	$0	2037	$20,612	$1,031	$824
	R0022	Road Surface	Asphalt	Robson Rd	Salish Rd	4915 Robson Rd	Asphalt	70	6.00	2012	25	5	$16,585	80%	$0	2037	$16,585	$829	$663
	R0023	Road Surface	Asphalt	Turtlehead Rd	Belcarra Bay Rd	Upper West Cul-de-sac	Asphalt	340	4.30	2012	25	5	$57,731	80%	$0	2037	$57,731	$2,887	$2,309
	R0024	Road Surface	Asphalt	Turtlehead Rd	194 Turtlehead Rd	Lower Cul-de-sac	Asphalt	57	4.30	2012	25	5	$9,678	80%	$0	2037	$9,678	$484	$387
	R0025	Road Surface	Asphalt	Recycle Facility			Asphalt	80	4.00	2006	25	11	$12,636	56%	$0	2031	$12,636	$632	$505
	R0026	Road Surface	Asphalt	Main Ave	Bedwell Bay Rd	Tatlow ROW	Asphalt	430	6.00	2012	25	5	$101,878	80%	$0	2037	$101,878	$5,094	$4,075
	R0027	Road Surface	Asphalt	Main Ave	Tatlow ROW	Cul-de-sac	Asphalt	400	4.80	2012	25	5	$75,816	80%	$0	2037	$75,816	$3,791	$3,033
	R0028	Road Surface	Asphalt	Watson Rd	Bedwell Bay Rd	Cul-de-sac	Asphalt	76	5.00	2010	25	7	$15,005	72%	$0	2035	$15,005	$750	$600
	R0029	Road Surface	Asphalt	Young Rd	Marine Ave	4005 Young Rd	Asphalt	126	3.40	2010	25	7	$16,916	72%	$0	2035	$16,916	$846	$677
	R0030	Road Surface	Asphalt	Bedwell Bay Rd	Boundary	Senkler Rd	Asphalt	338	7.00	2010	25	7	$93,427	72%	$0	2035	$93,427	$4,671	$3,737
	R0031	Road Surface	Asphalt	Bedwell Bay Rd	Senkler Rd	Watson Rd	Asphalt	145	7.00	2010	25	7	$40,080	72%	$0	2035	$40,080	$2,004	$1,603
	R0032	Road Surface	Asphalt	Bedwell Bay Rd	Watson Rd	Bostock Rd	Asphalt	700	7.00	2010	25	7	$193,489	72%	$0	2035	$193,489	$9,674	$7,740
	R0033	Road Surface	Asphalt	Bedwell Bay Rd	4082 Bedwell Bay	Main Ave	Asphalt	778	7.00	2012	25	5	$215,049	80%	$0	2037	$215,049	$10,752	$8,602
	R0034	Road Surface	Asphalt	Bedwell Bay Rd	4082 Bedwell Bay	Midden Rd	Asphalt	790	7.00	2012	25	5	$218,366	80%	$0	2037	$218,366	$10,918	$8,735
	R0035	Road Surface	Asphalt	Municipal Hall	4084 Bedwell Bay		Asphalt	50	15.00	2012	25	5	$29,616	80%	$0	2037	$29,616	$1,481	$1,185
Curbs	C001	Curb	Asphalt	Senkler Rd	Bedwell Bay Rd	Cul-de-sac	Asphalt	150	-	2012	25	5	$9,653	80%	$0	2037	$9,653	$483	$386
	C002	Curb	Asphalt	Kelly Rd	Bedwell Bay Rd	Marine Ave	Asphalt	200	-	2012	25	5	$12,870	80%	$0	2037	$12,870	$644	$515
	C004	Curb	Asphalt	West Rd	4172 Marine Ave	Bedwell Bay Rd	Asphalt	140	-	2012	25	5	$9,009	80%	$0	2037	$9,009	$450	$360
	C005	Curb	Asphalt	Coombe Ln	5220 Coombe Ln	Cul-de-sac	Asphalt	35	-	2012	25	5	$2,252	80%	$0	2037	$2,252	$113	$90
	C006	Curb	Asphalt	Whiskey Cove Ln	Coombe Ln	Cul-de-sac	Asphalt	45	-	2012	25	5	$2,896	80%	$0	2037	$2,896	$145	$116
	C007	Curb	Asphalt	Robson Rd	Salish Rd	4915 Robson Rd	Asphalt	50	-	2012	25	5	$3,218	80%	$0	2037	$3,218	$161	$129
	C008	Curb	Asphalt	Turtlehead Rd	Belcarra Bay Rd	Upper West Cul-de-sac	Asphalt	20	-	2012	25	5	$1,287	80%	$0	2037	$1,287	$64	$51
	C009	Curb	Asphalt	Main Ave	Bedwell Bay Rd	Tatlow ROW	Asphalt	200	-	2012	25	5	$12,870	80%	$0	2037	$12,870	$644	$515
	C010	Curb	Asphalt	Main Ave	Tatlow ROW	Cul-de-sac	Asphalt	150	-	2012	25	5	$9,653	80%	$0	2037	$9,653	$483	$386
	C011	Curb	Asphalt	Young Rd	Marine Ave	4005 Young Rd	Asphalt	30	-	2010	25	7	$1,931	72%	$0	2035	$1,931	$97	$77
	C012	Curb	Asphalt	Bedwell Bay Rd	Watson Rd	Bostock Rd	Asphalt	530	-	2010	25	7	$34,106	72%	$0	2035	$34,106	$1,705	$1,364
	C013	Curb	Asphalt	Bedwell Bay Rd	4082 Bedwell Bay	Main Ave	Asphalt	540	-	2010	25	7	$34,749	72%	$0	2035	$34,749	$1,737	$1,390
	C014	Curb	Asphalt	Bedwell Bay Rd	4082 Bedwell Bay	Midden Rd	Asphalt	170	-	2012	25	5	$10,940	80%	$0	2037	$10,940	$547	$438
Total													$2,055,317		$180,632		$2,052,969	$102,523	$82,166