SQUAMISH
HARDWIRED for ADVENTURE

District of Squamish

Business Case Title:	*New Tandem Axle Vacuum Truck for Utilities*
To:	Council / CLT
Prepared by:	Ben Kineshanko, Scott Lamont, Chris Stanger, Bob Smith
Date submitted:	October 23, 2018

Supplementary Business Case Information for:	
☐ Proposed Service Level Change	☐ Special Operating Projects Future Years
☒ Special Project Request	☐ Capital Plan Future years

Type of Project:	
☐ Operating Project	☒ Capital project

Division:	Public Works	General Manager:	Gary Buxton
Department:	Utilities	Budget Manager:	Bob Smith

Project Summary & Recommendation

Provide a brief description of the project.

Procurement of a tandem axle combination vacuum truck for the Public Works Division (which is a requirement when working around electrical and gas infrastructure). Unit is capable of hydroexcavating (digging holes using vacuum and high pressure water), sanitary and storm sewer flushing and blockage removal, lift station cleaning and emergency response, WWTP tank cleaning, catch basin cleaning and other general solid / liquid vacuum pick up jobs.

Terms of Reference

Include more in depth discussion around the following:

Background

Discuss the problem/opportunity. Where we've been, where we are now, where we are headed.

Sanitary Sewer and Stormwater Master Plans both recommend regular flushing and cleaning of the sanitary and storm sewer collection systems. In addition Currently the DOS owns 23 sanitary sewer lift stations (soon to be 27 with incoming development) that require quarterly and sometimes monthly cleaning. Currently this work is not being completed to industry best practice standards and when completed was historically done so using a contracted service located in Squamish. This contractor has sold their truck and the service is no longer available in Squamish. When needed a truck has to come

from Vancouver adding delay time, often days, and incurring travel cost and minimum 8 hour charge out.

In addition this piece of equipment will be used for hydroexcavating during planned, reactive and emergency water, sewer, storm and roads operating and capital projects. This work will be completed much more safely and efficiently. Furthermore worker health and safety will be improved as hydroexcavating is a safer method of daylighting utilities as it drastically reduces the likely hood of damaging existing and unmarked underground infrastructure (e.g. water, sewer, storm, gas, hydro, tel) during excavating.

Hydroexcavation work is currenly completed using the Districts street sweeper unit which is not designed for heavy excavation work. This has resulted in premature wear and damage to the street sweeper unit and therefore a reduced level of service for roads and active transportation routes throughout the District due to equipment downtime and inavailability due to it's use for alternative purposes.

Desired Result: General Goals & Specific Objectives	
General Goals List and explain how they support the Strategic, Capital, or Annual Action Plan (To reference Strategic Plan Item- Use Header Name and include Bullet Point number)	**Specific Objectives** Specific Objectives should relate directly to goals and identfify the Related Action Plan item
Reduce health and safety risk for staff related to excavation	Avoid breaking gas and electrical infrastructure and injuring workers. Will reduce need for workers to enter trench in some cases.
Reduce risk related to damaging existing infrastructure during excavation	Avoid breaking gas, fiber, electrical and other sensitive infrastructure during excavation.
Reduce risk to environment related to inability to respond in a timely fashion during infrastructure failure and power outages	Increased ability to pump out lift stations and clean up spills effectively and efficiently.
Reduce risk related to claims for sewer and storm back-ups and overflows	Clean sanitary and storm sewers to best practices standards and easily and efficiently remove blockages when the do occur.
Meet industry best practice standards for preventative maintenance	Clean 20% of sanitary and storm sewers every year. Clean lift stations multiple times per year. Clean WWTP tanks every 1 – 3 years.

Adhere to recommendations of Sewer and Storm Master Plans as approved by Council	Clean 20% of sanitary and storm sewers every year.
Improve excavation efficiency	More accurate means of excavation means smaller excavations and reduced removal of paved surfaces. Faster digging as the change of breaking existing infrastructure is drastically reduced using hydroexcavation methods.
Respond more effectively to hazardous material spills / environmental emergencies	Ability to quickly and efficiently clean up spills (sewage, hydrocarbons, hazardous materials).
Reduce cost to property owners for new and upgraded services	Smaller excavation required and therefore less ashphalt, concrete, road base and fill.

Stakeholders
List and discuss their interests

- Public Works Department (Utilities, Roads & Drainage, Parks, Fleet, Electrical)
- Engineering Department
- Information Technology
- Roads and active transportation users

Limitations
Discuss any limitations (resources, labour, $$...)

- Will operate equipment using existing staff compliment in 2019
- Will review staffing requirement for 2020. This business case includes an additional staff member will be dedicated to operating this equipment
- Current sweeper downtime will be significantly reduced but could not be quantified for this business case but is estimated at 20%

Assumptions
Note any assumptions (projected costs, benefits, interest rates, inflation rates…)
Provide sources where applicable

- Assumed equipment maintenance costs are 150% of existing sweeper maintenance cost
- Assumed 20% of total gravity sewer length (industry best practice) for sanitary and storm sewer flushing
- Hourly District rate of $141/hour for this business case includes replacement purchase of vacuum truck in 10 years ($66k/year), a full-time operator ($86k/year), estimated maintenance and ownership cost ($60k/year) divided by current use per year (1500 hours)
- Hourly contracted rate for in-town vacuum truck services (which are currently not available) is $225/hour

- Presently the DOS pays a 4-hour surcharge to hire vacuum trucks from Metro Vancouver for day rates plus per deim for multi-day projects.

Alternatives

Discuss how they do/do not meet goals & objectives, and how they align with the Strategic Plan

- Continue with traditional excavation methods
- Use contract services (at a significant premium) for sewer cleaning and hydroexcavating

Quantitative Analysis

Please use the excel template "Business Case- Appendix A" to generate the figures below

(Please be sure to include all negative or Nil values)

"Cent on the Dollar" Investment ($) Calculates Internal District funding required per dollar of investment required	$1.00	
% External Funding (%) Percentage of External investment as a percentage of the whole investment	0%	
Break Even Point (Years) Calculates the amount of time required to repay the investment	Total Investment: 4.86 years	Net Investment: 4.86 years
Return (Loss) on Investment over 10 years (%) Calculates the profits of an investment as a percentage of the original cost	Total Investment: 84.80%	Net Investment: 84.80%
Net present value of Cash Flows ($) Compares the present value of outflows and inflows over a period of time. Considers interest.	Total Investment: $495,841	Net Investment: $495,841
Payback of Project Investment (Years) The amount of time (years) it takes for expected cash inflows to cover the initial cash outflow	Total Investment: 4.86 years	Net Investment: 4.86 years

Please ensure the Quantitative Analysis section above has been completed with figures from the "Business Case Template- Appendix A" (Found on the Intranet under Finance Templates).
Please Note: A completed copy of this Appendix is required with the final Business Case submission.

Qualitative Analysis

Discuss how this project supports the following Strategic Plan Priority Focus Areas

(If areas are not supported- please note that as well)

Open and Enterprising Government:	Increases in-house capacity to conduct preventative maintenance and respond faster to reactive and emergency maintenance events.
Healthy Community:	Reduces sanitary and storm sewer overflows and back-ups that could cause property damage.

Economy:	Create local jobs
Environment:	Improves Public Works ability to respond to spills. Reduces contaminants exiting the storm water drainage system by removing sediment
Other:	

Business Case Template- Appendix A Quanititative Analysis

Instructions:
Please refer to the related budget request forms to ensure that numbers are representative of request.
Only include special or new revenue/funding sources specific to this request; i.e. do not include general taxation or utility fee revenues unless a new fee is being created as a result of the program.
Grey cells are input cells. Enter positive numbers only. Assume Year 1 is the first year of your project regardless of which year it is scheduled to start in the financial plan.
Remember to record all results that are highlighted in yellow (positive,negative, or NA) into your Business Case's "Quantitative Analysis" Section

SQUAMISH
HARDWIRED for ADVENTURE

Business Case Title: ("Presentation Name" from budget submission form)	**New Tandem Axle Vacuum Truck for Utilities**
Prepared By:	**Ben Kineshanko, Scott Lamont, Chris Stanger, Bob Smith**
Type of Business Case:	**Special Project - Capital**

Project Investment

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Total Project Investment (Total project cost excluding operating impacts)	$ 600,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 600,000
External Contributions to Project Investment (Grants and Contributions)	-	-	-	-	-	-	-	-	-	-	-
Net Capital Investment	**$ 600,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 600,000**
"Cent On The Dollar" Investment											**$ 1.00**
% External Funding											**0%**

Operational Impact

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Operational Revenues and Savings Expected											
Indicate financial benefits achieved from the project or service level change.											
Please provide a brief description of estimated revenue, savings or benefit.											
**An example of "New Savings created through new operational efficiencies" would be a reduction in Repairs, Maintenance Costs, or Labour hours											
Description: Contracted Hydroexcavating (90 days x 8 hours/day)	$ 162,000	$ 162,000	$ 162,000	$ 162,000	$ 162,000	$ 162,000	$ 162,000	$ 162,000	$ 162,000	$ 162,000	$ 1,620,000
Description: Contracted Catch basin cleaning using sweeper (60 days x 8 hours/day)	108,000	108,000	108,000	108,000	108,000	108,000	108,000	108,000	108,000	108,000	1,080,000
Description: Existing contracted sanitary sewer flushing contractor (105 km / 5 x $1600 / km) (Estimated 150 hours per year)	33,750	33,750	33,750	33,750	33,750	33,750	33,750	33,750	33,750	33,750	
Description: Proposed contracted storm sewer flushing contractor (72 km / 5 x $1600 / km) (Estimated 120 hours per year)	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	27,000	270,000
Total New Revenue or Cost Savings	$ 330,750	$ 330,750	$ 330,750	$ 330,750	$ 330,750	$ 330,750	$ 330,750	$ 330,750	$ 330,750	$ 330,750	$ 2,970,000
Increase in Operational Costs:											
Record all increased Operational Costs											
Please provide a brief description outlining the nature of the expenditure.											
Please contact your Financial Specialist for assistance determining debt service costs if applicable.											
Please do not include any 'Initial "Project Investment' amounts already considered above											
Description: In-house Hydroexcavating (90 days x 8 hours/day)	$ 101,520	$ 101,520	$ 101,520	$ 101,520	$ 101,520	$ 101,520	$ 101,520	$ 101,520	$ 101,520	$ 101,520	$ 1,015,200
Description: In-house catch basin cleaning using sweeper (60 days x 8 hours/day)	67,680	67,680	67,680	67,680	67,680	67,680	67,680	67,680	67,680	67,680	676,800
Description: Existing in-house sanitary sewer flushing contractor (105 km / 5 x $1600 / km) (Estimated 150 hours per year)	21,150	21,150	21,150	21,150	21,150	21,150	21,150	21,150	21,150	21,150	
Description: Proposed in-house storm sewer flushing contractor (72 km / 5 x $1600 / km) (Estimated 120 hours per year)	16,920	16,920	16,920	16,920	16,920	16,920	16,920	16,920	16,920	16,920	169,200
Total Operational Costs	$ 207,270	$ 207,270	$ 207,270	$ 207,270	$ 207,270	$ 207,270	$ 207,270	$ 207,270	$ 207,270	$ 207,270	$ 1,861,200
Operating Cash Flow Surplus/(Deficit)	**$ 123,480**	**$ 123,480**	**$ 123,480**	**$ 123,480**	**$ 123,480**	**$ 123,480**	**$ 123,480**	**$ 123,480**	**$ 123,480**	**$ 123,480**	**$ 1,108,800**
Cumulative Cash Flow	**$ 123,480**	**$ 246,960**	**$ 370,440**	**$ 493,920**	**$ 617,400**	**$ 740,880**	**$ 864,360**	**$ 987,840**	**$ 1,111,320**	**$ 1,234,800**	

Cash Flow Summary (For Info only):	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Total Investment Plus Net Operating Cash Flows	$ (476,520)	$ 123,480	$ 123,480	$ 123,480	$ 123,480	$ 123,480	$ 123,480	$ 123,480	$ 123,480	$ 123,480	$ 508,800
Cumulative	(476,520)	(353,040)	(229,560)	(106,080)	17,400	140,880	264,360	387,840	511,320	634,800	
Net Investment Plus Net Operating Cash Flows	(476,520)	123,480	123,480	123,480	123,480	123,480	123,480	123,480	123,480	123,480	508,800
Cumulative	(476,520)	(353,040)	(229,560)	(106,080)	17,400	140,880	264,360	387,840	511,320	634,800	
-	1	2	3	4	5	6	7	8	9	10	
Break Even on Total Investment (Years)					**4.86**						
Breakeven on Net Investment (Years)					**4.86**						

Analysis

Return (Loss) on Project Investment % Over 10 Years

Total Investment		**Net Investment**	
Total Project Investment (If Applicable)	$ 600,000	Total Project Investment Less External Funding	$ 600,000
Net Operating Cash Flow	1,108,800	Net Operating Cash Flow	1,108,800
Return/(Loss) on Total Investment Cost %	**84.80%**	**Return/(Loss) on Net Investment Cost %**	**84.80%**

Net Present Value of Cash Flows Over 10 Years

Total Investment Plus Net Operating Cash Flows		**Net Investment Plus Net Operating Cash Flows**	
Initial Project Investment (If Applicable)	$ 600,000	Initial Project Investment Less External Funding	$ 600,000
Interest Rate	2.49%	Interest Rate	2.49%
Net Present Value of Total Investment	**495,841**	**Net Present Value of Net Investment**	**495,841**

Payback of Project Investment - Based on Actual Cash Flow Over 10 Years

Total Investment Payback Period- Actual Years (Within 10 Years)	**4.86** Years	**Net Investment Payback Period- Actual Years (Within 10 Years)**	**4.86** Years

Notes

Business Case Template- Appendix A Quanititative Analysis

Instructions:

Please refer to the related budget request forms to ensure that numbers are representative of request.

Only include special or new revenue/funding sources specific to this request; i.e. do not include general taxation or utility fee revenues unless a new fee is being created as a result of the program.

Grey cells are input cells. Enter positive numbers only. Assume Year 1 is the first year of your project regardless of which year it is scheduled to start in the financial plan.

Remember to record all results that are highlighted in yellow (positive,negative, or NA) into your Business Case's "Quantitative Analysis" Section

SQUAMISH
HARDWIRED *for* ADVENTURE

Record any additional comments here

Cost of contracted vacuum truck is $225/hour all found (Total cost of ownership and replacement, w/operator). Cost of DOS vacuum truck ownership is $141/hour all found.