

Bowen Park - Functional Design Options Analysis

	EVALUATION CRITERIA						Option Rating
	ENVIRONMENTAL RISK	ARCHAEOLOGICAL RISK	CONSTRUCTABILITY CONCERNS	STAKEHOLDER IMPACT DURING CONSTRUCTION	CONSTRUCTION COST	LONG TERM OPERATIONAL CONCERNS	
A. ON-LINE REPLACEMENT: OPEN CUT	Medium – Open Trench near Millstone River. Impact to adjacent trees to be significant due to trench size and equipment needed	Medium – Potential area near upstream end of pipe. Likelihood of archeological findings is higher near bodies of water	Medium – Existing pipe to be removed and replaced. Significant bypass pumping is required.	Low – Trenching through public park. Pathway to be closed during construction however alternate routes available.	Medium - 3.0M to 4.0M	Low – Open Cut Trenching provides greatest control for grading	1 (Preferred)
B. ON-LINE REPLACEMENT: PIPE BURSTING	Medium – Entrance and exit pits could impact adjacent trees.	Medium – Potential area near upstream end of pipe. Likelihood of archeological findings is higher near bodies of water	Medium/High – Existing pipe to be pipe burst. Significant bypass pumping is required. Pipe diameter increase, bedrock layer, slope, and adjacent trees could pose issues to pipe bursting	Medium – Trenching through public park. Pathway to be closed during construction	Medium - 3.5M to 4.5M	Medium – Pipe bursting would follow existing pipe inverts. Concerns at bedrock transitions as pipe may burst upwards instead of radially	3
C. ALTERNATE ALIGNMENT: OPEN CUT OR HORIZONTAL DIRECTION DRILLING	Low – Trenching away from Millstone River in roadway	Low – No registered locations along alignment	High – Existing pipe to be abandoned in- place. Extremely deep trenching required (12m+) along new alignment	High – Trenching along Bowen Road. Significant impacts to traffic along route	High - 5.0M to 6.0M	Medium – Open Cut Trenching provides greatest control for grading. Directional Drilling cannot meet low sewer grades	4
D. Millstream Parkway Siphon	Medium – Two stream crossings and pressurized sewer conduit in close proximity to Millstone River. Would still need to seismically upgrade curvilinear section of existing sewer and ultimately replace 600mm AC	Medium – Moves alignment much closer to the Millstone River and would result in significant excavation of native material there generating a higher chance of archeological findings.	Medium – Alignment is centred along existing roadway but may encounter rock.	Medium – Trenching through public park. Pathway to be closed during construction.	Medium – 3.0M to 4.0M	High – Maintenance concerns and odour issues with siphon. High potential for public disturbance or additional cost for odour control (bio-bed, etc.). Does not address future upgrade of existing sewer for condition or seismic.	2