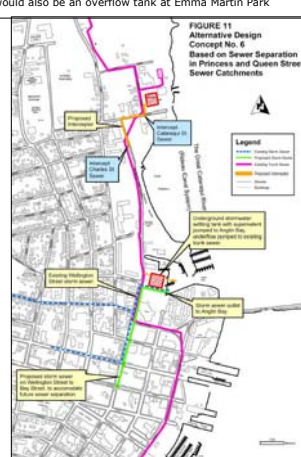
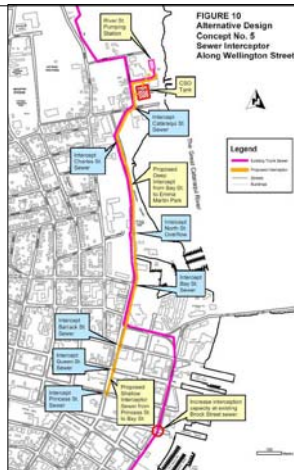


Overflow Control along Harbourfront Trunk Sewer, Brock Street to River Street: ALTERNATIVE DESIGN CONCEPTS

ADC 4 is based on a deep tunnel bored in bedrock 15 to 20 m below the surface. The tunnel would provide storage of sewer overflows, which would then be pumped out to the River Street Pumping Station

ADC 5 is based on a relatively shallow interceptor through the downtown area, along Wellington Street. The new interceptor would continue northward along Wellington Street to a new underground storage tank at Emma Martin Park.

ADC 6 is based on sewer separation in the downtown core area (Princess, Queen and Barrack Streets). To provide outlet for new storm sewers, a new sewer would be built along Wellington Street, and an underground tank near Anglin Bay would provide stormwater treatment. There would also be an overflow tank at Emma Martin Park



Overflow Control along Harbourfront Trunk Sewer, Brock Street to River Street
EVALUATION OF DESIGN OPTIONS

		Capital cost	Annual operating costs	Impact on archaeological resources	Impacts during construction on businesses, residents and vehicle traffic	Subsurface contamination in downtown area (Brock St. to Bay St.)
		\$	\$	Rank	Rank	Probability of encountering coal tar contamination during construction
Deep Interceptor Sewer Options (same depth as existing Harbourfront Trunk Sewer)						
1A	Ontario / Place D'Armes / Wellington	> \$ 11.8 Million	\$ 40,000	7 (Highest impact)	4	High probability of encountering coal tar contamination, and possibility of inducing coal tar migration by sewer trench excavation into bedrock. Estimated cost implications \$ 1.0 million or more
1B	Ontario / Barrack / Wellington	> \$ 11.7 Million	\$ 40,000	3	5	
1C	Ontario / Place D'Armes / King St to north of OHIP building to Wellington	> \$ 11.3 Million	\$ 40,000	4	3	
2A	Brock/ King / Place D'Armes / Wellington	> \$ 11.4 Million	\$ 40,000	4	6	
2B	Brock St to King St, along King St to north of OHIP building to Wellington	> \$ 11.3 Million	\$ 40,000	5	7	
3	Brock St to Wellington St, along Wellington from Brock St to Emma Martin Park	> \$ 11.1 Million	\$ 40,000	6	8	Lower probability of encountering coal tar contamination if deep interceptor sewer built along Wellington Street than if built along Ontario St or King Street.
Deep Tunnel Option						
4	Deep Storage Tunnel in bedrock, same route as 1A	\$ 13.5 Million	\$ 63,000	1 (lowest impact)	1 (lowest impact)	Tunnel construction in bedrock may encounter coal tar in downtown area and could result in coal tar migration towards tunnel. Cost implications estimated as over \$600,000
Wellington Street Shallow Interceptor in Downtown Area						
5	Shallow interceptor along Wellington St from Princess to Bay, to deeper interceptor Bay to Emma Martin Park	\$ 8.6 Million	\$ 40,000	2	2	Lowest probability of encountering coal tar contamination.
Downtown Sewer Separation Scenario						
6	Downtown sewer separation, storm outlet sewer along Wellington to storm tank at Anglin Bay; CSO interceptor from Charles St to CSO tank at Emma Martin Park	\$ 16.2 Million	\$ 62,000	2	9 (Highest impact)	

Overflow Control along Harbourfront Trunk Sewer, Brock Street to River Street
COST ANALYSIS of ALTERNATIVE DESIGN CONCEPTS

Alternative Design Concept		Interceptor sewer, incl. associated road reconstruction	Storage Tanks	Construction Contingency Allowance	Allowance for Contaminated Subsurface Materials	Allowance for Archaeological Investigations and Monitoring	Total Project Construction Cost	Annual Operating and Maintenance
Deep Interceptor Sewer to CSO tank at Emma Martin Park								
1A	Ontario / Place D'Armes / Wellington	\$ 3,990,000	\$ 3,730,000	\$ 1,550,000	> \$ 2.2 million	\$ 380,000	> \$ 11.8 million	\$ 40,000
1B	Ontario / Barrack / Wellington	\$ 4,090,000		\$ 1,570,000		\$ 190,000	> \$ 11.7 million	
1C	Ontario / Place D'Armes / King St and north of OHIP building to Wellington	\$ 3,600,000		\$ 1,470,000		\$ 330,000	> \$ 11.3 million	
2A	King Street / Place D'Armes / Wellington	\$ 3,980,000	\$ 3,730,000	\$ 1,540,000	> \$ 2.2 million	\$ 240,000	> \$ 11.4 million	\$ 40,000
2B	King Street and north of OHIP building to Wellington	\$ 3,900,000		\$ 1,530,000		\$ 160,000	> \$ 11.3 million	
3	Wellington Street from Brock Street to Emma Martin Park	\$ 4,390,000	\$ 3,730,000	\$ 1,630,000	> \$ 1.3 million	\$ 110,000	> \$ 11.1 million	\$ 40,000
Tunnel Option								
4	Deep Storage Tunnel in bedrock, including three construction access shafts, tunnel lining, sewer connections pumping system and operational control system	Estimated construction cost: \$10,700,000		\$ 2,140,000	\$ 620,000	\$ 40,000	\$ 13,500,000	\$ 63,000
Wellington Street Shallow Interceptor to Deep Interceptor Option								
5	Shallow interceptor along Wellington from Princess to Bay, deeper interceptor alongside existing HTS north of Bay to CSO tank at Emma Martin Park	\$ 2,330,000	\$ 3,730,000	\$ 1,212,000	\$ 1,276,000	\$ 90,000	\$ 8,638,000	\$40,000
Downtown Sewer Separation Scenario								
6	New storm sewer on Wellington St. to 2,200 m ³ stormwater tank at Anglin Bay; CSO interceptor sewer from Charles St. to 3,500 m ³ CSO tank at Emma Martin Park	CSO Interceptor and storm outlet sewer: \$1,680,000 Downtown Sewer separation: \$6,000,000 Total: \$7,680,000	CSO tank: \$ 2,650,000 Storm tank: \$2,150,000 Total: \$4,800,000	\$ 2,496,000	\$ 1,142,000	\$ 90,000	\$ 16,208,000	\$62,000