

50 Year Net Present Value Calculations

Inflation rate, LESS:
 expected interest rate to
 be earned: 1.0 %

REVISED August 20, 2016

Option 1					Option 2					Option 3					Option 4					Option 5					Option 6				
INITIAL CAPITAL REQUIRED TO FUND THE OPTION [i.e.: \$ needed at year 2016] \$35,937,982					INITIAL CAPITAL REQUIRED TO FUND THE OPTION [i.e.: \$ needed at year 2016] \$36,834,197					INITIAL CAPITAL REQUIRED TO FUND THE OPTION [i.e.: \$ needed at year 2016] \$21,321,383					INITIAL CAPITAL REQUIRED TO FUND THE OPTION [i.e.: \$ needed at year 2016] \$27,398,972					INITIAL CAPITAL REQUIRED TO FUND THE OPTION [i.e.: \$ needed at year 2016] \$27,157,611					INITIAL CAPITAL REQUIRED TO FUND THE OPTION [i.e.: \$ needed at year 2016] \$29,217,890				
Year	Capital cost	annual O&M cost outlay	total outlay in year	total NPV/yr.	Year	Capital cost	annual O&M cost outlay	total outlay in year	total NPV/yr.	Year	Capital cost	annual O&M cost outlay	total outlay in year	total NPV/yr.	Year	Capital cost	annual O&M cost outlay	total outlay in year	total NPV/yr.	Year	Capital cost	annual O&M cost outlay	total outlay in year	total NPV/yr.	Year	Capital cost	annual O&M cost outlay	total outlay in year	total NPV/yr.
1	\$30,905,084	\$78,074	\$30,983,158	\$30,983,158	1	\$31,877,945	\$76,885	\$31,954,830	\$31,954,830	1	\$14,202,263	\$110,437	\$14,312,700	\$14,312,700	1	\$21,540,300	\$90,884	\$21,631,184	\$21,631,184	1	\$21,422,708	\$88,964	\$21,511,672	\$21,511,672	1	\$23,427,936	\$89,818	\$23,517,754	\$23,517,754
2		\$78,855	\$78,855	\$31,062,013	2		\$77,654	\$77,654	\$32,032,484	2		\$111,541	\$111,541	\$14,424,241	2		\$91,793	\$91,793	\$21,722,977	2		\$89,854	\$89,854	\$21,601,526	2		\$90,716	\$90,716	\$23,608,470
3		\$79,643	\$79,643	\$31,141,656	3		\$78,430	\$78,430	\$32,110,914	3		\$112,657	\$112,657	\$14,536,898	3		\$92,711	\$92,711	\$21,815,688	3		\$90,752	\$90,752	\$21,692,278	3		\$91,623	\$91,623	\$23,700,094
4		\$80,440	\$80,440	\$31,222,096	4		\$79,215	\$79,215	\$32,190,129	4		\$113,783	\$113,783	\$14,650,682	4		\$93,638	\$93,638	\$21,909,325	4		\$91,660	\$91,660	\$21,783,938	4		\$92,540	\$92,540	\$23,792,633
5		\$81,244	\$81,244	\$31,303,340	5		\$80,007	\$80,007	\$32,270,136	5		\$114,921	\$114,921	\$14,765,603	5		\$94,574	\$94,574	\$22,003,900	5		\$92,576	\$92,576	\$21,876,514	5		\$93,465	\$93,465	\$23,886,098
6		\$82,057	\$82,057	\$31,385,396	6		\$80,807	\$80,807	\$32,350,943	6		\$116,070	\$116,070	\$14,881,673	6		\$95,520	\$95,520	\$22,099,420	6		\$93,502	\$93,502	\$21,970,016	6		\$94,400	\$94,400	\$23,980,498
7		\$82,877	\$82,877	\$31,468,274	7		\$81,615	\$81,615	\$32,432,558	7		\$117,231	\$117,231	\$14,998,904	7		\$96,475	\$96,475	\$22,195,895	7		\$94,437	\$94,437	\$22,064,453	7		\$95,344	\$95,344	\$24,075,841
8		\$83,706	\$83,706	\$31,551,979	8		\$82,431	\$82,431	\$32,514,989	8		\$118,403	\$118,403	\$15,117,308	8		\$97,440	\$97,440	\$22,293,335	8		\$95,381	\$95,381	\$22,159,834	8		\$96,297	\$96,297	\$24,172,138
9		\$84,543	\$84,543	\$31,636,522	9		\$83,255	\$83,255	\$32,598,244	9		\$119,587	\$119,587	\$15,236,895	9		\$98,414	\$98,414	\$22,391,749	9		\$96,335	\$96,335	\$22,256,170	9		\$97,260	\$97,260	\$24,269,398
10		\$85,388	\$85,388	\$31,721,911	10		\$84,088	\$84,088	\$32,682,332	10		\$120,783	\$120,783	\$15,357,678	10		\$99,398	\$99,398	\$22,491,148	10		\$97,299	\$97,299	\$22,353,468	10		\$98,233	\$98,233	\$24,367,631
11		\$86,242	\$86,242	\$31,808,153	11		\$84,929	\$84,929	\$32,767,261	11		\$121,991	\$121,991	\$15,479,670	11		\$100,392	\$100,392	\$22,591,540	11		\$98,272	\$98,272	\$22,451,740	11		\$99,215	\$99,215	\$24,466,846
12		\$87,105	\$87,105	\$31,895,258	12		\$85,778	\$85,778	\$32,853,039	12		\$123,211	\$123,211	\$15,602,881	12		\$101,396	\$101,396	\$22,692,937	12		\$99,254	\$99,254	\$22,550,994	12		\$100,207	\$100,207	\$24,567,053
13		\$87,976	\$87,976	\$31,983,233	13		\$86,636	\$86,636	\$32,939,675	13		\$124,443	\$124,443	\$15,727,324	13		\$102,410	\$102,410	\$22,795,347	13		\$100,247	\$100,247	\$22,651,241	13		\$101,209	\$101,209	\$24,668,262
14		\$88,855	\$88,855	\$32,072,089	14		\$87,502	\$87,502	\$33,027,177	14		\$125,688	\$125,688	\$15,853,011	14		\$103,434	\$103,434	\$22,898,781	14		\$101,249	\$101,249	\$22,752,490	14		\$102,221	\$102,221	\$24,770,483
15		\$89,744	\$89,744	\$32,161,833	15		\$88,377	\$88,377	\$33,115,555	15		\$126,944	\$126,944	\$15,979,956	15		\$104,469	\$104,469	\$23,003,250	15		\$102,262	\$102,262	\$22,854,752	15		\$103,243	\$103,243	\$24,873,727
16		\$90,641	\$90,641	\$32,252,475	16		\$89,261	\$89,261	\$33,204,816	16		\$128,214	\$128,214	\$16,108,170	16		\$105,514	\$105,514	\$23,108,764	16		\$103,284	\$103,284	\$22,958,037	16		\$104,276	\$104,276	\$24,978,003
17		\$91,548	\$91,548	\$32,344,022	17		\$90,154	\$90,154	\$33,294,970	17		\$129,496	\$129,496	\$16,237,666	17		\$106,569	\$106,569	\$23,215,332	17		\$104,317	\$104,317	\$23,062,354	17		\$105,319	\$105,319	\$25,083,322
18		\$92,463	\$92,463	\$32,436,486	18		\$91,055	\$91,055	\$33,386,025	18		\$130,791	\$130,791	\$16,368,457	18		\$107,634	\$107,634	\$23,322,967	18		\$105,360	\$105,360	\$23,167,714	18		\$106,372	\$106,372	\$25,189,693
19		\$93,388	\$93,388	\$32,529,874	19		\$91,966	\$91,966	\$33,477,991	19		\$132,099	\$132,099	\$16,500,556	19		\$108,711	\$108,711	\$23,431,677	19		\$106,414	\$106,414	\$23,274,128	19		\$107,436	\$107,436	\$25,297,129
20		\$94,322	\$94,322	\$32,624,196	20		\$92,885	\$92,885	\$33,570,876	20		\$133,420	\$133,420	\$16,633,976	20		\$109,798	\$109,798	\$23,541,475	20		\$107,478	\$107,478	\$23,381,607	20		\$108,510	\$108,510	\$25,405,639
21		\$95,265	\$95,265	\$32,719,461	21		\$93,814	\$93,814	\$33,664,690	21		\$134,754	\$134,754	\$16,768,730	21		\$110,896	\$110,896	\$23,652,371	21		\$108,553	\$108,553	\$23,490,160	21		\$109,595	\$109,595	\$25,515,234
22		\$96,218	\$96,218	\$32,815,679	22		\$94,752	\$94,752	\$33,759,443	22		\$136,102	\$136,102	\$16,904,832	22		\$112,005	\$112,005	\$23,764,376	22		\$109,639	\$109,639	\$23,599,798	22		\$110,691	\$110,691	\$25,625,925
23		\$97,180	\$97,180	\$32,912,859	23		\$95,700	\$95,700	\$33,855,143	23		\$137,463	\$137,463	\$17,042,294	23		\$113,125	\$113,125	\$23,877,500	23		\$110,735	\$110,735	\$23,710,533	23		\$111,798	\$111,798	\$25,737,723
24		\$98,152	\$98,152	\$33,011,010	24		\$96,657	\$96,657	\$33,951,800	24		\$138,837	\$138,837	\$17,181,132	24		\$114,256	\$114,256	\$23,991,756	24		\$111,842	\$111,842	\$23,822,375	24		\$112,916	\$112,916	\$25,850,639
25		\$99,133	\$99,133	\$33,110,144	25		\$97,624	\$97,624	\$34,049,423	25		\$140,226	\$140,226	\$17,321,357	25		\$115,399	\$115,399	\$24,107,155	25		\$112,961	\$112,961	\$23,935,336	25		\$114,045	\$114,045	\$25,964,684
26		\$100,125	\$100,125	\$33,210,268	26		\$98,600	\$98,600	\$34,148,023	26		\$141,628	\$141,628	\$17,462,985	26		\$116,553	\$116,553	\$24,223,707	26		\$114,090	\$114,090	\$24,049,426	26		\$115,185	\$115,185	\$26,079,869
27		\$101,126	\$101,126	\$33,311,394	27		\$99,586	\$99,586	\$34,247,609	27		\$143,044	\$143,044	\$17,606,029	27		\$117,718	\$117,718	\$24,341,426	27		\$115,231	\$115,231	\$24,164,657	27		\$116,337	\$116,337	\$26,196,207
28		\$102,137	\$102,137	\$33,413,531	28		\$100,582	\$100,582	\$34,348,191	28		\$144,475	\$144,475	\$17,750,504	28		\$118,895	\$118,895	\$24,460,321	28		\$116,383	\$116,383	\$24,281,041	28		\$117,501	\$117,501	\$26,313,707
29		\$103,158	\$103,158	\$33,516,690	29		\$101,587	\$101,587	\$34,449,778	29		\$145,919	\$145,919	\$17,896,423	29		\$120,084	\$120,084	\$24,580,405	29		\$117,547	\$117,547	\$24,398,588	29		\$118,676	\$118,676	\$26,432,383
30		\$104,190	\$104,190	\$33,620,880	30		\$102,603	\$102,603	\$34,552,381	30		\$147,379	\$147,379	\$18,043,802	30		\$121,285	\$121,285	\$24,701,690	30		\$118,723	\$118,723	\$24,517,311	30		\$119,862	\$119,862	\$26,552,245
31		\$105,232	\$105,232	\$33,726,112	31		\$103,629	\$103,629	\$34,656,011	31		\$148,852	\$148,852	\$18,192,654	31		\$122,498	\$122,498	\$24,824,188	31		\$119,910	\$119,910	\$24,637,221	31		\$121,061	\$121,061	\$26,673,306
32		\$106,284	\$106,284	\$33,832,396	32		\$104,666	\$104,666	\$34,760,676	32		\$150,341	\$150,341	\$18,342,995	32		\$123,723	\$123,723	\$24,947,911	32		\$121,109	\$121,109	\$24,758,330	32		\$122,272	\$122,272	\$26,795,578
33		\$107,347	\$107,347	\$33,939,743	33		\$105,712	\$105,712	\$34,866,389	33		\$151,844	\$151,844	\$18,494,840	33		\$124,960	\$124,960	\$25,072,871	33		\$122,320	\$122,320	\$24,880,650	33		\$123,494	\$123,494	\$26,919,073
34		\$108,421	\$108,421	\$34,048,164	34		\$106,769	\$106,769	\$34,973,158	34		\$153,363	\$153,363	\$18,648,202	34		\$126,210	\$126,210	\$25,199,081	34		\$123,543	\$123,543	\$25,004,194	34		\$124,729	\$124,729	\$27,043,802
35		\$109,505	\$109,505	\$34,157,668	35		\$107,837	\$107,837	\$35,080,995	35		\$154,896	\$154,896	\$18,803,099	35		\$127,472	\$127,472	\$25,326,552	35		\$124,779	\$124,779	\$25,128,973	35		\$125,977	\$125,977	\$27,169,779
36		\$110,600	\$110,600	\$34,268,268	36		\$108,916	\$108,916	\$35,189,911	36		\$156,445	\$156,445	\$18,959,544	36		\$128,747	\$128,747	\$25,455,299	36		\$126,027	\$126,027	\$25,254,999	36		\$127,236	\$127,236	\$27,297,015
37		\$111,706	\$111,706	\$34,379,974	37		\$110,005	\$110,005	\$35,299,915	37		\$158,010	\$158,010	\$19,117,554	37		\$130,034	\$130,034	\$25,585,333	37		\$127,287	\$127,287	\$25,382,286	37		\$128,509	\$128,509	\$27,425,524
38		\$112,823	\$112,823	\$34,492,797	38		\$111,105	\$111,105	\$35,411,020	38		\$159,590	\$159,590	\$19,277,144	38		\$131,334	\$131,334	\$25,716,667	38		\$128,560	\$128,560	\$25,510,846	38		\$129,794	\$129,794	\$27,555,318
39																													

OPTION # 1

deep new gravity sanitary sewers, and existing storm system - minimize private pumping systems

		COMPONENT DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST	
1.0	NEW GRAVITY SANITARY PIPELINE						
1.1		150-200 diameter DR 35 PVC mains [INCLUDING MANHOLES]		(Lin.m.)			
	1.1.1	New main in road rights of way - No rock					
		0 to 2 metres deep		1070	\$550	\$588,500	
		2-3 metres deep		2501	\$700	\$1,750,700	
		3-5 metres deep		5008	\$1,100	\$5,508,800	
				8579	Lin.m.	\$7,848,000	
	1.1.2	Rock premium in road rights of way		(cu.m.)			
		0 to 2 metres deep		1142	\$100	\$114,240	
		2-3 metres deep		4764	\$150	\$714,600	
		3-5 metres deep		12588	\$200	\$2,517,552	
		sub total		18494	cu.m.	\$3,346,392	\$11,194,392
1.2		250-300 diameter DR35 PVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST	
	1.2.1	New main in road rights of way - No rock					
		0 to 2 metres deep		120	\$600	\$72,000	
		2-3 metres deep		595	\$750	\$446,250	
		3-5 metres deep		395	\$1,150	\$454,250	
				1110	Lin.m.	\$972,500	
	1.2.2	Rock premium in road rights of way		(cu.m.)			
		0 to 2 metres deep		41	\$100	\$4,080	
		2-3 metres deep		951	\$150	\$142,673	
		3-5 metres deep		1476	\$200	\$295,120	
		sub total		2468	cu.m.	\$441,873	\$1,414,373
1.3		375-450 diameter DR35 PVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST	
	1.3.1	New main in road rights of way - No rock					
		0 to 2 metres deep		0	\$700	\$0	
		2-3 metres deep		178	\$875	\$155,750	
		3-5 metres deep		0	\$1,300	\$0	
				178	Lin.m.	\$155,750	
	1.3.2	Rock premium in road rights of way		(cu.m.)			
		0 to 2 metres deep		0	\$100	\$0	
		2-3 metres deep		279	\$150	\$41,875	
		3-5 metres deep		0	\$200	\$0	
		sub total		279	cu.m.	\$41,875	\$197,625
1.4		525-600 diameter RPVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST	
	1.4.1	New main in road rights of way - No rock					
		0 to 2 metres deep		0	\$875	\$0	
		2-3 metres deep		0	\$1,075	\$0	
		3-5 metres deep		0	\$1,500	\$0	
				0	Lin.m.	\$0	
	1.4.2	Rock premium in road rights of way		(cu.m.)			
		0 to 2 metres deep		0	\$100	\$0	
		2-3 metres deep		0	\$150	\$0	
		3-5 metres deep		0	\$200	\$0	
		sub total		0	cu.m.	\$0	\$0
		SUB-TOTAL - Gravity Mains		9867			\$12,806,389
2.0	RE-USE EXISTING COMBINED GRAVITY SEWER PIPE						
	2.1	rehab of existing manholes - 1st phase	each	0	\$3,000	\$0	
	2.2	rehab mains - via lining - 1st phase	lin.m.	0	\$300	\$0	
	2.3	replacement or capacity upgrading of existing pipes on Upland and along Lansdowne, to suit Q5 storm conveyance. Assume 50% of 500 metre section shown to be under sized is decided in need of short term upgrading to 300mm dia. PVC.	lin.m.	250	\$650	\$162,500	
		SUB-TOTAL - Re-use of Existing Gravity Pipeline					\$162,500

OPTION # 1

deep new gravity sanitary sewers, and existing storm system - minimize private pumping systems

		COMPONENT DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST		
3.0	NEW SERVICE CONNECTIONS [includes separation at the dwelling, consistent for all]							
3.1	100 - 150 diameter DR28 PVC gravity services [including inspection chamber at P/L]							
	Portion in road rights of way							
		TYPE A - Short (<20m), Shallow (<3m)		180	\$7,000	\$1,260,000		
		TYPE A - Short (<20m), Deep (>3m)		127	\$10,000	\$1,270,000		
		TYPE B - Long (>20m), Shallow (<3m)		10	\$12,000	\$120,000		
		TYPE B - Long (>20m), Deep (>3m)		8	\$20,000	\$160,000		
		sub-total		325		\$2,810,000		
	Portion on private property							
		TYPE 1 - Short (<20m), Shallow (<3m)		43	\$9,000	\$387,000		
		TYPE 1 - Short (<20m), Deep (>3m)		51	\$12,000	\$612,000		
		TYPE 2 - Long (>20m), Shallow (<3m)		103	\$15,000	\$1,545,000		
		TYPE 2 - Long (>20m), Deep (>3m)		48	\$25,000	\$1,200,000		
		sub-total		245		\$3,744,000		
		SUB-TOTAL - Gravity Services					\$6,554,000	
	50 diameter HDPE low pressure services [including ball & check valves at P/L]							
	Portion in road rights of way							
		TYPE A - Pressure Shallow		66	\$3,000	\$198,000		
		sub-total		66		\$198,000		
	Portion on private property							
		TYPE 1 - Pressure Shallow		49	\$3,500	\$171,500		
		sub-total		49		\$171,500		
		SUB-TOTAL - Pressure Services					\$369,500	
4.0	EXISTING PRIVATE SERVICE RECONNECTIONS							
	4.1	'live' reconnections at time of main install		80	\$1,000	\$80,000		
	4.2	reconnect after main testing		0				
		SUB-TOTAL - Service Reconnections					\$80,000	
5.0	NEW MUNICIPALLY OWNED PRESSURE SEWERS AT SHALLOW DEPTH [blvd. areas]							
	5.1	50 - 75mm dia		0	\$325	\$0		
	5.2	100mm dia		0	\$375	\$0		
	5.3	150mm dia		0	\$450	\$0		
	5.4	air valves		0	\$4,000	\$0		
	5.5	pigging stations / clean outs		0	\$2,000	\$0		
	5.6	isolation valves		0	\$1,500	\$0		
		SUB-TOTAL - Municipally Owned Pressure Services					\$0	
6.0a	MUNICIPAL PUMPING STATIONS							
		new lift stations	each	0	\$250,000	\$0		
		SUB-TOTAL - Municipal Pumping stations					\$0	
6.0b	PRIVATE - INDIVIDUAL HOME PUMPING STATIONS							
			each	49	\$9,000	\$441,000		
		SUB-TOTAL - Privately Owned Pumping stations					\$441,000	
7.0	NEW CATCH BASINS AND LEADS							
			each	0	\$4,000	\$0		
		SUB-TOTAL - Catch-basins and Leads					\$0	
8.0	REPLACEMENT OF SHALLOW SECTIONS OF EXISTING PIPE, IN ORDER TO CONNECT NEW SERVICES TO NEW DEEPER SEWERS (APPLICABLE TO OPTIONS 1 & 2 ONLY.							
		Option 1, assume 50% of new san service connections will require a 3 m portion of existing main to be replaced	each	190	\$1,000	\$190,000	\$190,000	
		SUB-TOTAL - CAPITAL COSTS					\$20,603,389	
		add: predesign level, Class 'C' construction contingency allowance	30%				\$6,181,016.8	
		add: contingency for engineering, project management consulting, archeological risk, District's admin costs, permitting fees and other soft costs	20%				\$4,120,677.9	
		GRAND TOTAL - CAPITAL COSTS					\$30,905,084	
9.0	LIFECYCLE COSTS - ANNUAL O&M COSTS							
		annual maintenance of new or upgraded municipally owned gravity pipelines / manholes	0.50% of capital value [net of contingencies]		\$12,968,889	\$64,844.45		
		annual maintenance of municipally owned pressure sewers	0.25% of capital value [net of contingencies]		\$0	\$0.00		
		annual maintenance of municipal pumping stations, including power consumption	2.50% of capital value [net of contingencies]		\$0	\$0.00		
		annual maintenance of private pumping stations, including power consumption	3.00% of capital value [net of contingencies]		\$441,000	\$13,230.00		
		SUB-TOTAL - ANNUAL O&M COSTS					\$78,074	
10.0	CAPITAL COST BREAKDOWN							
		overall total cost for this option - [including contingencies]			\$30,905,084	\$79,041		
		overall cost for the municipality's share of the project - [including contingencies]			\$24,250,334	\$62,021.31		
		overall cost to residents' share of the project - [including contingencies]			\$6,654,750	\$17,019.82		
		high side cost per dwelling unit to residents' share of the project - [including contingencies]				\$20,250	\$37,500	
		low side cost per dwelling unit to residents' share of the project - [including contingencies]				\$17,250	\$13,500	
					\$79,041			

OPTION # 2

deep new gravity storm sewers, and existing combined as sanitary system - minimize private pumping systems

		COMPONENT DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST		
1.0		NEW GRAVITY SANITARY PIPELINE						
1.1		150-200 diameter DR 35 PVC mains [INCLUDING MANHOLES]		(Lin.m.)				
	1.1.1	New main in road rights of way - No rock						
		0 to 2 metres deep		892	\$550	\$490,600		
		2-3 metres deep		2595	\$700	\$1,816,500		
		3-5 metres deep		3994	\$1,100	\$4,393,400		
				7481	Lin.m.	\$6,700,500		
	1.1.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		1004	\$100	\$100,448		
		2-3 metres deep		4069	\$150	\$610,344		
		3-5 metres deep		10706	\$200	\$2,141,216		
		sub total		15780	cu.m.	\$2,852,008	\$9,552,508	
1.2		250-300 diameter DR35 PVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST		
	1.2.1	New main in road rights of way - No rock						
		0 to 2 metres deep		340	\$600	\$204,000		
		2-3 metres deep		192	\$750	\$144,000		
		3-5 metres deep		105	\$1,150	\$120,750		
				637	Lin.m.	\$468,750		
	1.2.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		490	\$100	\$48,960		
		2-3 metres deep		174	\$150	\$26,163		
		3-5 metres deep		170	\$200	\$33,915		
		sub total		834	cu.m.	\$109,038	\$577,788	
1.3		375-450 diameter DR35 PVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST		
	1.3.1	New main in road rights of way - No rock						
		0 to 2 metres deep		125	\$700	\$87,500		
		2-3 metres deep		506	\$875	\$442,750		
		3-5 metres deep		0	\$1,300	\$0		
				631	Lin.m.	\$530,250		
	1.3.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		46	\$100	\$4,625		
		2-3 metres deep		420	\$150	\$62,937		
		3-5 metres deep		0	\$200	\$0		
		sub total		466	cu.m.	\$67,562	\$597,812	
1.4		525-600 diameter RPVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST		
	1.4.1	New main in road rights of way - No rock						
		0 to 2 metres deep		0	\$875	\$0		
		2-3 metres deep		977	\$1,075	\$1,050,275		
		3-5 metres deep		155	\$1,500	\$232,500		
				1132	Lin.m.	\$1,282,775		
	1.4.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		0	\$100	\$0		
		2-3 metres deep		2059	\$150	\$308,880		
		3-5 metres deep		1426	\$200	\$285,200		
		sub total		3485	cu.m.	\$594,080	\$1,876,855	
		SUB-TOTAL - Gravity Mains		9881			\$12,604,963	
2.0	RE-USE EXISTING COMBINED GRAVITY SEWER PIPE		UNIT	QUANTITY	UNIT PRICE	TOTAL COST		
	2.1	rehab of existing manholes - 1st phase	each	10	\$3,000	\$30,000		
	2.2	rehab mains - via lining - 1st phase	lin.m.	500	\$300	\$150,000		
	2.3	replacement of existing combined sewer, to suit short term operational requirements	lin.m.	0	\$600	\$0		
		SUB-TOTAL - Re-use of Existing Gravity Pipeline					\$180,000	

OPTION # 2

deep new gravity storm sewers, and existing combined as sanitary system - minimize private pumping systems

	COMPONENT DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST		
3.0	NEW SERVICE CONNECTIONS [includes separation at the dwelling, consistent for all]						
3.1	100 - 150 diameter DR28 PVC gravity services [including inspection chamber at P/L]						
	Portion in road rights of way						
	TYPE A - Short (<20m), Shallow (<3m)		199	\$7,000	\$1,393,000		
	TYPE A - Short (<20m), Deep (>3m)		113	\$10,000	\$1,130,000		
	TYPE B - Long (>20m), Shallow (<3m)		10	\$12,000	\$120,000		
	TYPE B - Long (>20m), Deep (>3m)		8	\$20,000	\$160,000		
	sub-total		330		\$2,803,000		
	Portion on private property						
	TYPE 1 - Short (<20m), Shallow (<3m)		50	\$9,000	\$450,000		
	TYPE 1 - Short (<20m), Deep (>3m)		43	\$12,000	\$516,000		
	TYPE 2 - Long (>20m), Shallow (<3m)		108	\$15,000	\$1,620,000		
	TYPE 2 - Long (>20m), Deep (>3m)		49	\$25,000	\$1,225,000		
	sub-total		250		\$3,811,000		
	SUB-TOTAL - Gravity Services					\$6,614,000	
	50 diameter HDPE low pressure services [including ball & check valves at P/L]						
	Portion in road rights of way						
	TYPE A - Pressure Shallow		61	\$3,000	\$183,000		
	sub-total		61		\$183,000		
	Portion on private property						
	TYPE 1 - Pressure Shallow		48	\$3,500	\$168,000		
	sub-total		48		\$168,000		
	SUB-TOTAL - Pressure Services					\$351,000	
4.0	EXISTING SERVICE RECONNECTIONS						
4.1	'live' reconnections at time of main install						
4.2	reconnect after main testing						
	SUB-TOTAL - Service Reconnections		80	\$1,000	\$80,000		
	SUB-TOTAL - Service Reconnections					\$80,000	
5.0	NEW MUNICIPALLY OWNED PRESSURE SEWERS AT SHALLOW DEPTH [blvd. areas]						
5.1	50 - 75mm dia						
5.2	100mm dia						
5.3	150mm dia						
5.4	air valves						
5.5	pigging stations / clean outs						
5.6	isolation valves						
	SUB-TOTAL - Municipally Owned Pressure Services					\$0	
6.0a	MUNICIPAL PUMPING STATIONS						
	new lift stations	each	0	\$250,000	\$0		
	SUB-TOTAL - Municipal Pumping stations					\$0	
6.0b	PRIVATE - INDIVIDUAL HOME PUMPING STATIONS						
		each	48	\$9,000	\$432,000		
	SUB-TOTAL - Privately Owned Pumping stations					\$432,000	
7.0	NEW CATCH BASINS AND LEADS						
		each	200	\$4,000	\$800,000		
	SUB-TOTAL - Catch-basins and Leads					\$800,000	
8.0	REPLACEMENT OF SHALLOW SECTIONS OF EXISTING PIPE, IN ORDER TO CONNECT NEW SERVICES TO NEW DEEPER SEWERS (APPLICABLE TO OPTIONS 1 & 2 ONLY.						
	Option 1, assume 50% of new san service connections will require a 3 m portion of existing main to be replaced	each	190	\$1,000	\$190,000	\$190,000	
	SUB-TOTAL - CAPITAL COSTS					\$21,251,963	
	add: pre-design level, Class 'C' contingency allowance	30%				\$6,375,588.9	
	add: contingency for engineering, project management consulting, archeological risk, District's admin costs, permitting fees and other soft costs	20%				\$4,250,392.6	
	GRAND TOTAL - CAPITAL COSTS					\$31,877,945	
9.0	LIFECYCLE COSTS - ANNUAL O&M COSTS				TOTAL CAPITAL VALUE		
	annual maintenance of new or upgraded municipally owned gravity pipelines / manholes	0.50% of capital value [net of contingencies]		\$12,784,963	\$63,924.82		
	annual maintenance of municipally owned pressure sewers	0.25% of capital value [net of contingencies]		\$0	\$0.00		
	annual maintenance of municipal pumping stations, including power consumption	2.50% of capital value [net of contingencies]		\$0	\$0.00		
	annual maintenance of private pumping stations, including power consumption	3.00% of capital value [net of contingencies]		\$432,000	\$12,960.00		
	SUB-TOTAL - ANNUAL O&M COSTS					\$76,885	
10.0	CAPITAL COST BREAKDOWN			Total	Average Cost/Unit	APPROX. COST PER RESIDENT UNIT WITH NEW PUMPS	APPROX. COST PER RESIDENT UNIT WITHOUT NEW PUMPS
	overall total cost for this option - [including contingencies]			\$31,877,945	\$81,529.27		
	overall cost for the municipality's share of the project - [including contingencies]			\$25,141,445	\$64,300.37		
	overall cost to residents' share of the project - [including contingencies]			\$6,736,500	\$17,228.90		
	high side cost per dwelling unit to residents' share of the project - [including contingencies]					\$20,250	\$37,500
	low side cost per dwelling unit to residents' share of the project - [including contingencies]					\$17,250	\$13,500
					\$81,529		

OPTION # 3

Proposed Pumped Low Pressure Sanitary Sewer and Existing System as Storm Drain

		COMPONENT DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST		
1.0		NEW GRAVITY SANITARY PIPELINE						
1.1		150-200 diameter DR 35 PVC mains [INCLUDING MANHOLES]		(Lin.m.)				
	1.1.1	New main in road rights of way - No rock						
		0 to 2 metres deep		0	\$550	\$0		
		2-3 metres deep		0	\$700	\$0		
		3-5 metres deep		0	\$1,100	\$0		
				0	Lin.m.	\$0		
	1.1.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		0	\$100	\$0		
		2-3 metres deep		0	\$150	\$0		
		3-5 metres deep		0	\$200	\$0		
		sub total		0	cu.m.	\$0	\$0	
1.2		250-300 diameter DR35 PVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST		
	1.2.1	New main in road rights of way - No rock						
		0 to 2 metres deep		0	\$600	\$0		
		2-3 metres deep		0	\$750	\$0		
		3-5 metres deep		0	\$1,150	\$0		
				0	Lin.m.	\$0		
	1.2.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		0	\$100	\$0		
		2-3 metres deep		0	\$150	\$0		
		3-5 metres deep		0	\$200	\$0		
		sub total		0	cu.m.	\$0	\$0	
1.3		375-450 diameter DR35 PVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST		
	1.3.1	New main in road rights of way - No rock						
		0 to 2 metres deep		0	\$700	\$0		
		2-3 metres deep		0	\$875	\$0		
		3-5 metres deep		0	\$1,300	\$0		
				0	Lin.m.	\$0		
	1.3.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		0	\$100	\$0		
		2-3 metres deep		0	\$150	\$0		
		3-5 metres deep		0	\$200	\$0		
		sub total		0	cu.m.	\$0	\$0	
1.4		525-600 diameter RPVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST		
	1.4.1	New main in road rights of way - No rock						
		0 to 2 metres deep		0	\$875	\$0		
		2-3 metres deep		0	\$1,075	\$0		
		3-5 metres deep		0	\$1,500	\$0		
				0	Lin.m.	\$0		
	1.4.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		0	\$100	\$0		
		2-3 metres deep		0	\$150	\$0		
		3-5 metres deep		0	\$200	\$0		
		sub total		0	cu.m.	\$0	\$0	
		SUB-TOTAL - Gravity Mains		0			\$0	
2.0		RE-USE EXISTING COMBINED GRAVITY SEWER PIPE						
	2.1	rehab of existing manholes - 1st phase	each	0	\$3,000	\$0		
	2.2	rehab mains - via lining - 1st phase	lin.m.	0	\$300	\$0		
	2.3	replacement or capacity upgrading of existing pipes on Upland and along Lansdowne, to suit Q5 storm conveyance. Assume 50% of 500 metre section shown to be under sized is decided in need of short term upgrading to 300mm dia. PVC.	lin.m.	250	\$650	\$162,500		
		SUB-TOTAL - Re-use of Existing Gravity Pipeline					\$162,500	

OPTION # 3

Proposed Pumped Low Pressure Sanitary Sewer and Existing System as Storm Drain

	COMPONENT DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST	
3.0	NEW SERVICE CONNECTIONS [includes separation at the dwelling, consistent for all]					
3.1	100 - 150 diameter DR28 PVC gravity services [including inspection chamber at P/L]					
	Portion in road rights of way					
	TYPE A - Short (<20m), Shallow (<3m)		0	\$7,000	\$0	
	TYPE A - Short (<20m), Deep (>3m)		0	\$10,000	\$0	
	TYPE B - Long (>20m), Shallow (<3m)		0	\$12,000	\$0	
	TYPE B - Long (>20m), Deep (>3m)		0	\$20,000	\$0	
	sub-total		0		\$0	
	Portion on private property					
	TYPE 1 - Short (<20m), Shallow (<3m)		0	\$9,000	\$0	
	TYPE 1 - Short (<20m), Deep (>3m)		0	\$12,000	\$0	
	TYPE 2 - Long (>20m), Shallow (<3m)		0	\$15,000	\$0	
	TYPE 2 - Long (>20m), Deep (>3m)		0	\$25,000	\$0	
	sub-total		0		\$0	
	SUB-TOTAL - Gravity Services					\$0
	50 diameter HDPE low pressure services [including ball & check valves at P/L]					
	Portion in road rights of way					
	TYPE A - Pressure Shallow		391	\$3,000	\$1,173,000	
	sub-total		391		\$1,173,000	
	Portion on private property					
	TYPE 1 - Pressure Shallow		374	\$3,500	\$1,309,000	
	sub-total		374		\$1,309,000	
	SUB-TOTAL - Pressure Services					\$2,482,000
4.0	EXISTING SERVICE RECONNECTIONS					
	4.1 'live' reconnections at time of main install		0	\$1,000	\$0	
	4.2 reconnect after main testing		0			
	SUB-TOTAL - Service Reconnections					\$0
5.0	NEW MUNICIPALLY OWNED PRESSURE SEWERS AT SHALLOW DEPTH [blvd. areas]					
	50 - 75mm dia		8424	\$325	\$2,737,800	
	100mm dia		1401	\$375	\$525,375	
	150mm dia		0	\$450	\$0	
	air valves		10	\$4,000	\$40,000	
	pigging stations / clean outs		39	\$2,000	\$78,000	
	isolation valves		51	\$1,500	\$76,500	
	SUB-TOTAL - Municipally Owned Pressure Services					\$3,457,675
6.0a	MUNICIPAL PUMPING STATIONS					
	new lift stations	each	0	\$250,000	\$0	
	SUB-TOTAL - Municipal Pumping stations					\$0
6.0b	PRIVATE - INDIVIDUAL HOME PUMPING STATIONS					
		each	374	\$9,000	\$3,366,000	
	SUB-TOTAL - Privately Owned Pumping stations					\$3,366,000
7.0	NEW CATCH BASINS AND LEADS					
		each	0	\$4,000	\$0	
	SUB-TOTAL - Catch-basins and Leads					\$0
8.0	REPLACEMENT OF SHALLOW SECTIONS OF EXISTING PIPE, IN ORDER TO CONNECT NEW SERVICES TO NEW DEEPER SEWERS (APPLICABLE TO OPTIONS 1 & 2 ONLY.					
	Option 1, assume 50% of new san service connections will require a 3 m portion of existing main to be replaced	each	0	\$1,000	\$0	\$0
	SUB-TOTAL - CAPITAL COSTS					\$9,468,175
	add: pre-design level, Class 'C' contingency allowance	30%				\$2,840,452.5
	add: contingency for engineering, project management consulting, archeological risk, District's admin costs, permitting fees and other soft costs	20%				\$1,893,635.0
	GRAND TOTAL - CAPITAL COSTS					\$14,202,263
9.0	LIFECYCLE COSTS - ANNUAL O&M COSTS				TOTAL CAPITAL VALUE	
	annual maintenance of new or upgraded municipally owned gravity pipelines / manholes	0.50% of capital value [net of contingencies]		\$162,500	\$812.50	
	annual maintenance of municipally owned pressure sewers	0.25% of capital value [net of contingencies]		\$3,457,675	\$8,644.19	
	annual maintenance of municipal pumping stations, including power consumption	2.50% of capital value [net of contingencies]		\$0	\$0.00	
	annual maintenance of private pumping stations, including power consumption	3.00% of capital value [net of contingencies]		\$3,366,000	\$100,980.00	
	SUB-TOTAL - ANNUAL O&M COSTS					\$110,437
10.0	CAPITAL COST BREAKDOWN				APPROX. COST PER RESIDENT UNIT WITH NEW PUMPS	APPROX. COST PER RESIDENT UNIT WITHOUT NEW PUMPS
	overall total cost for this option - [including contingencies]		Total	Average Cost/Unit		
			\$14,202,263	\$36,322.92		
	overall cost for the municipality's share of the project - [including contingencies]		\$7,189,763	\$18,388.14		
	overall cost to residents' share of the project - [including contingencies]		\$7,012,500	\$17,934.78		
	high side cost per dwelling unit to residents' share of the project - [including contingencies]				\$20,250	n/a
	low side cost per dwelling unit to residents' share of the project - [including contingencies]				\$17,250	n/a
				\$36,323		

OPTION # 4

Proposed Hybrid System: Shallow Gravity Storm Drain System, Pumped Storm Drain System where Necessary and Existing System as Sanitary Sewer

		COMPONENT DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST		
1.0		NEW GRAVITY SANITARY PIPELINE						
1.1		150-200 diameter DR 35 PVC mains [INCLUDING MANHOLES]		(Lin.m.)				
	1.1.1	New main in road rights of way - No rock						
		0 to 2 metres deep		3633	\$550	\$1,998,150		
		2-3 metres deep		1398	\$700	\$978,600		
		3-5 metres deep		315	\$1,100	\$346,500		
				5346	Lin.m.	\$3,323,250		
	1.1.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		4708	\$100	\$470,816		
		2-3 metres deep		1417	\$150	\$212,616		
		3-5 metres deep		479	\$200	\$95,760		
		sub total		6604	cu.m.	\$779,192	\$4,102,442	
1.2		250-300 diameter DR35 PVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST		
	1.2.1	New main in road rights of way - No rock						
		0 to 2 metres deep		1157	\$600	\$694,200		
		2-3 metres deep		120	\$750	\$90,000		
		3-5 metres deep		0	\$1,150	\$0		
				1277	Lin.m.	\$784,200		
	1.2.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		1065	\$100	\$106,488		
		2-3 metres deep		189	\$150	\$28,305		
		3-5 metres deep		0	\$200	\$0		
		sub total		1254	cu.m.	\$134,793	\$918,993	
1.3		375-450 diameter DR35 PVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST		
	1.3.1	New main in road rights of way - No rock						
		0 to 2 metres deep		310	\$700	\$217,000		
		2-3 metres deep		0	\$875	\$0		
		3-5 metres deep		0	\$1,300	\$0		
				310	Lin.m.	\$217,000		
	1.3.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		115	\$100	\$11,470		
		2-3 metres deep		0	\$150	\$0		
		3-5 metres deep		0	\$200	\$0		
		sub total		115	cu.m.	\$11,470	\$228,470	
1.4		525-600 diameter RPVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST		
	1.4.1	New main in road rights of way - No rock						
		0 to 2 metres deep		853	\$875	\$746,375		
		2-3 metres deep		210	\$1,075	\$225,750		
		3-5 metres deep		0	\$1,500	\$0		
				1063	Lin.m.	\$972,125		
	1.4.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		1185	\$100	\$118,520		
		2-3 metres deep		441	\$150	\$66,150		
		3-5 metres deep		0	\$200	\$0		
		sub total		1626	cu.m.	\$184,670	\$1,156,795	
		SUB-TOTAL - Gravity Mains		7996			\$6,406,700	
2.0		RE-USE EXISTING COMBINED GRAVITY SEWER PIPE						
	2.1	rehab of existing manholes - 1st phase	each	10	\$3,000	\$30,000		
	2.2	rehab mains - via lining - 1st phase	lin.m.	500	\$300	\$150,000		
	2.3	replacement of existing combined sewer, to suit short term operational requirements	lin.m.	0	\$600	\$0		
		SUB-TOTAL - Re-use of Existing Gravity Pipeline					\$180,000	

OPTION # 4

Proposed Hybrid System: Shallow Gravity Storm Drain System, Pumped Storm Drain System where Necessary and Existing System as Sanitary Sewer

	COMPONENT DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST	
3.0	NEW SERVICE CONNECTIONS [includes separation at the dwelling, consistent for all]					
3.1	100 - 150 diameter DR28 PVC gravity services [including inspection chamber at P/L]					
	Portion in road rights of way					
	TYPE A - Short (<20m), Shallow (<3m)		196	\$7,000	\$1,372,000	
	TYPE A - Short (<20m), Deep (>3m)		3	\$10,000	\$30,000	
	TYPE B - Long (>20m), Shallow (<3m)		12	\$12,000	\$144,000	
	TYPE B - Long (>20m), Deep (>3m)		0	\$20,000	\$0	
	sub-total		211		\$1,546,000	
	Portion on private property					
	TYPE 1 - Short (<20m), Shallow (<3m)		76	\$9,000	\$684,000	
	TYPE 1 - Short (<20m), Deep (>3m)		1	\$12,000	\$12,000	
	TYPE 2 - Long (>20m), Shallow (<3m)		93	\$15,000	\$1,395,000	
	TYPE 2 - Long (>20m), Deep (>3m)		1	\$25,000	\$25,000	
	sub-total		171		\$2,116,000	
	SUB-TOTAL - Gravity Services					\$3,662,000
	50 diameter HDPE low pressure services [including ball & check valves at P/L]					
	Portion in road rights of way					
	TYPE A - Pressure Shallow		180	\$3,000	\$540,000	
	sub-total		180		\$540,000	
	Portion on private property					
	TYPE 1 - Pressure Shallow		167	\$3,500	\$584,500	
	sub-total		167		\$584,500	
	SUB-TOTAL - Pressure Services					\$1,124,500
4.0	EXISTING PRIVATE SERVICE RECONNECTIONS					
	4.1 'live' reconnections at time of main install		40	\$1,000	\$40,000	
	4.2 reconnect after main testing		0		\$0	
	SUB-TOTAL - Service Reconnections					\$40,000
5	NEW MUNICIPALLY OWNED PRESSURE SEWERS AT SHALLOW DEPTH [blvd. areas]					
	50 - 75mm dia		400	\$325	\$130,000	
	100mm dia		0	\$375	\$0	
	150mm dia		0	\$450	\$0	
	air valves		0	\$4,000	\$0	
	pigging stations / clean outs		4	\$2,000	\$8,000	
	isolation valves		4	\$1,500	\$6,000	
	SUB-TOTAL - Municipally Owned Pressure Services					\$144,000
6.0a	MUNICIPAL PUMPING STATIONS					
	new lift stations	each	2	\$250,000	\$500,000	
	SUB-TOTAL - Municipal Pumping stations					\$500,000
6.0b	PRIVATE - INDIVIDUAL HOME PUMPING STATIONS					
		each	167	\$9,000	\$1,503,000	
	SUB-TOTAL - Privately Owned Pumping stations					\$1,503,000
7.0	NEW CATCH BASINS AND LEADS					
		each	200	\$4,000	\$800,000	
	SUB-TOTAL - Catch-basins and Leads					\$800,000
8.0	REPLACEMENT OF SHALLOW SECTIONS OF EXISTING PIPE, IN ORDER TO CONNECT NEW SERVICES TO NEW DEEPER SEWERS (APPLICABLE TO OPTIONS 1 & 2 ONLY.					
	Option 1, assume 50% of new san service connections will require a 3 m portion of existing main to be replaced	each	0	\$1,000	\$0	\$0
	SUB-TOTAL - CAPITAL COSTS					\$14,360,200
	add: predesign level, Class 'C' contingency allowance	30%				\$4,308,060.0
	add: contingency for engineering, project management consulting, archeological risk, District's admin costs, permitting fees and other soft costs	20%				\$2,872,040.0
	GRAND TOTAL - CAPITAL COSTS					\$21,540,300
9.0	LIFECYCLE COSTS - ANNUAL O&M COSTS					
	annual maintenance of new or upgraded municipally owned gravity pipelines / manholes	0.50% of capital value [net of contingencies]		\$6,586,700	\$32,933.50	
	annual maintenance of municipally owned pressure sewers	0.25% of capital value [net of contingencies]		\$144,000	\$360.00	
	annual maintenance of municipal pumping stations, including power consumption	2.50% of capital value [net of contingencies]		\$500,000	\$12,500.00	
	annual maintenance of private pumping stations, including power consumption	3.00% of capital value [net of contingencies]		\$1,503,000	\$45,090.00	
	SUB-TOTAL - ANNUAL O&M COSTS					\$90,884
10.0	CAPITAL COST BREAKDOWN					
	overall total cost for this option - [including contingencies]		Total	Average Cost/Unit	APPROX. COST PER RESIDENT UNIT WITH NEW PUMPS	APPROX. COST PER RESIDENT UNIT WITHOUT NEW PUMPS
			\$21,540,300	\$55,090.28		
	overall cost for the municipality's share of the project - [including contingencies]		\$15,175,050	\$38,810.87		
	overall cost to residents' share of the project - [including contingencies]		\$6,365,250	\$16,279.41		
	high side cost per dwelling unit to residents' share of the project - [including contingencies]				\$20,250	\$37,500
	low side cost per dwelling unit to residents' share of the project - [including contingencies]				\$17,250	\$13,500
				\$55,090		

OPTION # 5

Proposed Hybrid System: Shallow Gravity Sanitary Sewer System, Community Pump Stations, Pumped Sanitary System where Necessary and Existing System as Storm Drain

		COMPONENT DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST		
1.0		NEW GRAVITY SANITARY PIPELINE						
1.1		150-200 diameter DR 35 PVC mains [INCLUDING MANHOLES]		(Lin.m.)				
	1.1.1	New main in road rights of way - No rock						
		0 to 2 metres deep		4870	\$550	\$2,678,500		
		2-3 metres deep		1553	\$700	\$1,087,100		
		3-5 metres deep		705	\$1,100	\$775,500		
				7128	Lin.m.	\$4,541,100		
	1.1.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		5456	\$100	\$545,600		
		2-3 metres deep		2032	\$150	\$304,776		
		3-5 metres deep		1072	\$200	\$214,320		
		sub total		8559	cu.m.	\$1,064,696	\$5,605,796	
1.2		250-300 diameter DR35 PVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST		
	1.2.1	New main in road rights of way - No rock						
		0 to 2 metres deep		1020	\$600	\$612,000		
		2-3 metres deep		100	\$750	\$75,000		
		3-5 metres deep		0	\$1,150	\$0		
				1120	Lin.m.	\$687,000		
	1.2.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		957	\$100	\$95,710		
		2-3 metres deep		319	\$150	\$47,813		
		3-5 metres deep		0	\$200	\$0		
		sub total		1276	cu.m.	\$143,523	\$830,523	
1.3		375-450 diameter DR35 PVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST		
	1.3.1	New main in road rights of way - No rock						
		0 to 2 metres deep		63	\$700	\$44,100		
		2-3 metres deep		110	\$875	\$96,250		
		3-5 metres deep		0	\$1,300	\$0		
				173	Lin.m.	\$140,350		
	1.3.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		140	\$100	\$13,986		
		2-3 metres deep		61	\$150	\$9,158		
		3-5 metres deep		0	\$200	\$0		
		sub total		201	cu.m.	\$23,144	\$163,494	
1.4		525-600 diameter RPVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST		
	1.4.1	New main in road rights of way - No rock						
		0 to 2 metres deep		0	\$875	\$0		
		2-3 metres deep		0	\$1,075	\$0		
		3-5 metres deep		0	\$1,500	\$0		
				0	Lin.m.	\$0		
	1.4.2	Rock premium in road rights of way		(cu.m.)				
		0 to 2 metres deep		0	\$100	\$0		
		2-3 metres deep		0	\$150	\$0		
		3-5 metres deep		0	\$200	\$0		
		sub total		0	cu.m.	\$0	\$0	
		SUB-TOTAL - Gravity Mains		8421			\$6,599,812	
2.0		RE-USE EXISTING COMBINED GRAVITY SEWER PIPE						
	2.1	rehab of existing manholes - 1st phase	each	0	\$3,000	\$0		
	2.2	rehab mains - via lining - 1st phase	lin.m.	0	\$300	\$0		
	2.3	replacement or capacity upgrading of existing pipes on Upland and along Lansdowne, to suit Q5 storm conveyance. Assume 50% of 500 metre section shown to be under sized is decided in need of short term upgrading to 300mm dia. PVC.	lin.m.	250	\$650	\$162,500		
		SUB-TOTAL - Re-use of Existing Gravity Pipeline					\$162,500	

OPTION # 5

Proposed Hybrid System: Shallow Gravity Sanitary Sewer System, Community Pump Stations, Pumped Sanitary System where Necessary and Existing System as Storm Drain

	COMPONENT DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST	
3.0	NEW SERVICE CONNECTIONS [includes separation at the dwelling, consistent for all]					
3.1	100 - 150 diameter DR28 PVC gravity services [including inspection chamber at P/L]					
	Portion in road rights of way					
	TYPE A - Short (<20m), Shallow (<3m)		185	\$7,000	\$1,295,000	
	TYPE A - Short (<20m), Deep (>3m)		24	\$10,000	\$240,000	
	TYPE B - Long (>20m), Shallow (<3m)		12	\$12,000	\$144,000	
	TYPE B - Long (>20m), Deep (>3m)		0	\$20,000	\$0	
	sub-total		221		\$1,679,000	
	Portion on private property					
	TYPE 1 - Short (<20m), Shallow (<3m)		69	\$9,000	\$621,000	
	TYPE 1 - Short (<20m), Deep (>3m)		10	\$12,000	\$120,000	
	TYPE 2 - Long (>20m), Shallow (<3m)		95	\$15,000	\$1,425,000	
	TYPE 2 - Long (>20m), Deep (>3m)		7	\$25,000	\$175,000	
	sub-total		181		\$2,341,000	
	SUB-TOTAL - Gravity Services					\$4,020,000
	50 diameter HDPE low pressure services [including ball & check valves at P/L]					
	Portion in road rights of way					
	TYPE A - Pressure Shallow		170	\$3,000	\$510,000	
	sub-total		170		\$510,000	
	Portion on private property					
	TYPE 1 - Pressure Shallow		153	\$3,500	\$535,500	
	sub-total		153		\$535,500	
	SUB-TOTAL - Pressure Services					\$1,045,500
4.0	EXISTING PRIVATE SERVICE RECONNECTIONS					
	4.1 'live' reconnections at time of main install		40	\$1,000	\$40,000	
	4.2 reconnect after main testing		0		\$0	
	SUB-TOTAL - Service Reconnections					\$40,000
5	NEW MUNICIPALLY OWNED PRESSURE SEWERS AT SHALLOW DEPTH [blvd. areas]					
	50 - 75mm dia		1540	\$325	\$500,500	
	100mm dia		0	\$375	\$0	
	150mm dia		0	\$450	\$0	
	air valves		3	\$4,000	\$12,000	
	pigging stations / clean outs		7	\$2,000	\$14,000	
	isolation valves		7	\$1,500	\$10,500	
	SUB-TOTAL - Municipally Owned Pressure Services					\$537,000
6.0a	MUNICIPAL PUMPING STATIONS					
	new lift stations	each	2	\$250,000	\$500,000	
	SUB-TOTAL - Municipal Pumping stations					\$500,000
6.0b	PRIVATE - INDIVIDUAL HOME PUMPING STATIONS					
		each	153	\$9,000	\$1,377,000	
	SUB-TOTAL - Privately Owned Pumping stations					\$1,377,000
7.0	NEW CATCH BASINS AND LEADS					
		each	0	\$4,000	\$0	
	SUB-TOTAL - Catch-basins and Leads					\$0
8.0	REPLACEMENT OF SHALLOW SECTIONS OF EXISTING PIPE, IN ORDER TO CONNECT NEW SERVICES TO NEW DEEPER SEWERS (APPLICABLE TO OPTIONS 1 & 2 ONLY.					
	Option 1, assume 50% of new san service connections will require a 3 m portion of existing main to be replaced	each	0	\$1,000	\$0	\$0
	SUB-TOTAL - CAPITAL COSTS					\$14,281,812
	add: predesign level, Class 'C' contingency allowance	30%				\$4,284,543.6
	add: contingency for engineering, project management consulting, archeological risk, District's admin costs, permitting fees and other soft costs	20%				\$2,856,362.4
	GRAND TOTAL - CAPITAL COSTS					\$21,422,718
9.0	LIFECYCLE COSTS - ANNUAL O&M COSTS					
	annual maintenance of new or upgraded municipally owned gravity pipelines / manholes	0.50% of capital value [net of contingencies]		\$6,762,312	\$33,811.56	
	annual maintenance of municipally owned pressure sewers	0.25% of capital value [net of contingencies]		\$537,000	\$1,342.50	
	annual maintenance of municipal pumping stations, including power consumption	2.50% of capital value [net of contingencies]		\$500,000	\$12,500.00	
	annual maintenance of private pumping stations, including power consumption	3.00% of capital value [net of contingencies]		\$1,377,000	\$41,310.00	
	SUB-TOTAL - ANNUAL O&M COSTS					\$88,964
10.0	CAPITAL COST BREAKDOWN					
	overall total cost for this option - [including contingencies]		Total	Average Cost/Unit	APPROX. COST PER RESIDENT UNIT WITH NEW PUMPS	APPROX. COST PER RESIDENT UNIT WITHOUT NEW PUMPS
			\$21,422,718	\$54,790		
	overall cost for the municipality's share of the project - [including contingencies]		\$14,982,468	\$38,318.33		
	overall cost to residents' share of the project - [including contingencies]		\$6,440,250	\$16,471.23		
	high side cost per dwelling unit to residents' share of the project - [including contingencies]				\$20,250	\$37,500
	low side cost per dwelling unit to residents' share of the project - [including contingencies]				\$17,250	\$13,500
				\$54,790		

OPTION # 6

Proposed Hybrid System: Shallow Gravity Sanitary Sewer System, Community Pump Stations, Pumped Sanitary System where Necessary and Existing System as Storm Drain

COMPONENT DESCRIPTION		UNIT	QUANTITY	UNIT PRICE	TOTAL COST	
1.0	NEW GRAVITY SANITARY PIPELINE					
1.1	150-200 diameter DR 35 PVC mains [INCLUDING MANHOLES]		(Lin.m.)			
1.1.1	New main in road rights of way - No rock					
		0 to 2 metres deep	4356	\$550	\$2,395,800	
		2-3 metres deep	1406	\$700	\$984,200	
		3-5 metres deep	1406	\$1,100	\$1,546,600	
			7168	Lin.m.	\$4,926,600	
1.1.2	Rock premium in road rights of way		(cu.m.)			
		0 to 2 metres deep	3879	\$100	\$387,872	
		2-3 metres deep	2069	\$150	\$310,392	
		3-5 metres deep	5619	\$200	\$1,123,744	
	sub total		11567	cu.m.	\$1,822,008	\$6,748,608
1.2	250-300 diameter DR35 PVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST	
1.2.1	New main in road rights of way - No rock					
		0 to 2 metres deep	1020	\$600	\$612,000	
		2-3 metres deep	100	\$750	\$75,000	
		3-5 metres deep	0	\$1,150	\$0	
			1120	Lin.m.	\$687,000	
1.2.2	Rock premium in road rights of way		(cu.m.)			
		0 to 2 metres deep	957	\$100	\$95,710	
		2-3 metres deep	319	\$150	\$47,813	
		3-5 metres deep	0	\$200	\$0	
	sub total		1276	cu.m.	\$143,523	\$830,523
1.3	375-450 diameter DR35 PVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST	
1.3.1	New main in road rights of way - No rock					
		0 to 2 metres deep	63	\$700	\$44,100	
		2-3 metres deep	110	\$875	\$96,250	
		3-5 metres deep	0	\$1,300	\$0	
			173	Lin.m.	\$140,350	
1.3.2	Rock premium in road rights of way		(cu.m.)			
		0 to 2 metres deep	140	\$100	\$13,986	
		2-3 metres deep	61	\$150	\$9,158	
		3-5 metres deep	0	\$200	\$0	
	sub total		201	cu.m.	\$23,144	\$163,494
1.4	525-600 diameter RPVC mains [INCLUDING MANHOLES]	UNIT	(Lin.m.)	UNIT PRICE	TOTAL COST	
1.4.1	New main in road rights of way - No rock					
		0 to 2 metres deep	0	\$875	\$0	
		2-3 metres deep	0	\$1,075	\$0	
		3-5 metres deep	0	\$1,500	\$0	
			0	Lin.m.	\$0	
1.4.2	Rock premium in road rights of way		(cu.m.)			
		0 to 2 metres deep	0	\$100	\$0	
		2-3 metres deep	0	\$150	\$0	
		3-5 metres deep	0	\$200	\$0	
	sub total		0	cu.m.	\$0	\$0
	SUB-TOTAL - Gravity Mains		8461			\$7,742,624
2.0	RE-USE EXISTING COMBINED GRAVITY SEWER PIPE					
2.1	rehab of existing manholes - 1st phase	each	0	\$3,000	\$0	
2.2	rehab mains - via lining - 1st phase	lin.m.	0	\$300	\$0	
2.3	replacement or capacity upgrading of existing pipes on Upland and along Lansdowne, to suit Q5 storm conveyance. Assume 50% of 500 metre section shown to be under sized is decided in need of short term upgrading to 300mm dia. PVC.	lin.m.	250	\$650	\$162,500	
	SUB-TOTAL - Re-use of Existing Gravity Pipeline					\$162,500

OPTION # 6

Proposed Hybrid System: Shallow Gravity Sanitary Sewer System, Community Pump Stations, Pumped Sanitary System where Necessary and Existing System as Storm Drain

	COMPONENT DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST	
3.0	NEW SERVICE CONNECTIONS [includes separation at the dwelling, consistent for all]					
3.1	100 - 150 diameter DR28 PVC gravity services [including inspection chamber at P/L]					
	Portion in road rights of way					
	TYPE A - Short (<20m), Shallow (<3m)		185	\$7,000	\$1,295,000	
	TYPE A - Short (<20m), Deep (>3m)		42	\$10,000	\$420,000	
	TYPE B - Long (>20m), Shallow (<3m)		12	\$12,000	\$144,000	
	TYPE B - Long (>20m), Deep (>3m)		0	\$20,000	\$0	
	sub-total		239		\$1,859,000	
	Portion on private property					
	TYPE 1 - Short (<20m), Shallow (<3m)		79	\$9,000	\$711,000	
	TYPE 1 - Short (<20m), Deep (>3m)		9	\$12,000	\$108,000	
	TYPE 2 - Long (>20m), Shallow (<3m)		96	\$15,000	\$1,440,000	
	TYPE 2 - Long (>20m), Deep (>3m)		15	\$25,000	\$375,000	
	sub-total		199		\$2,634,000	
	SUB-TOTAL - Gravity Services					\$4,493,000
	50 diameter HDPE low pressure services [including ball & check valves at P/L]					
	Portion in road rights of way					
	TYPE A - Pressure Shallow		152	\$3,000	\$456,000	
	sub-total		152		\$456,000	
	Portion on private property					
	TYPE 1 - Pressure Shallow		135	\$3,500	\$472,500	
	sub-total		135		\$472,500	
	SUB-TOTAL - Pressure Services					\$928,500
4.0	EXISTING PRIVATE SERVICE RECONNECTIONS					
	4.1 'live' reconnections at time of main install		40	\$1,000	\$40,000	
	4.2 reconnect after main testing		0		\$0	
	SUB-TOTAL - Service Reconnections					\$40,000
5	NEW MUNICIPALLY OWNED PRESSURE SEWERS AT SHALLOW DEPTH [blvd. areas]					
	50 - 75mm dia		1540	\$325	\$500,500	
	100mm dia		0	\$375	\$0	
	150mm dia		0	\$450	\$0	
	air valves		3	\$4,000	\$12,000	
	pigging stations / clean outs		7	\$2,000	\$14,000	
	isolation valves		7	\$1,500	\$10,500	
	SUB-TOTAL - Municipally Owned Pressure Services					\$537,000
6.0a	MUNICIPAL PUMPING STATIONS					
	new lift stations	each	2	\$250,000	\$500,000	
	SUB-TOTAL - Municipal Pumping stations					\$500,000
6.0b	PRIVATE - INDIVIDUAL HOME PUMPING STATIONS					
		each	135	\$9,000	\$1,215,000	
	SUB-TOTAL - Privately Owned Pumping stations					\$1,215,000
7.0	NEW CATCH BASINS AND LEADS					
		each	0	\$4,000	\$0	
	SUB-TOTAL - Catch-basins and Leads					\$0
8.0	REPLACEMENT OF SHALLOW SECTIONS OF EXISTING PIPE, IN ORDER TO CONNECT NEW SERVICES TO NEW DEEPER SEWERS (APPLICABLE TO OPTIONS 1 & 2 ONLY.					
	Option 1, assume 50% of new san service connections will require a 3 m portion of existing main to be replaced	each	0	\$1,000	\$0	\$0
	SUB-TOTAL - CAPITAL COSTS					\$15,618,624
	add: predesign level, Class 'C' contingency allowance	30%				\$4,685,587.2
	add: contingency for engineering, project management consulting, archeological risk, District's admin costs, permitting fees and other soft costs	20%				\$3,123,724.8
	GRAND TOTAL - CAPITAL COSTS					\$23,427,936
9.0	LIFECYCLE COSTS - ANNUAL O&M COSTS					
	annual maintenance of new or upgraded municipally owned gravity pipelines / manholes	0.50% of capital value [net of contingencies]		\$7,905,124	\$39,525.62	
	annual maintenance of municipally owned pressure sewers	0.25% of capital value [net of contingencies]		\$537,000	\$1,342.50	
	annual maintenance of municipal pumping stations, including power consumption	2.50% of capital value [net of contingencies]		\$500,000	\$12,500.00	
	annual maintenance of private pumping stations, including power consumption	3.00% of capital value [net of contingencies]		\$1,215,000	\$36,450.00	
	SUB-TOTAL - ANNUAL O&M COSTS					\$89,818
10.0	CAPITAL COST BREAKDOWN					
	overall total cost for this option - [including contingencies]		Total	Average Cost/Unit	APPROX. COST PER RESIDENT UNIT WITH NEW PUMPS	APPROX. COST PER RESIDENT UNIT WITHOUT NEW PUMPS
			\$23,427,936	\$59,918		
	overall cost for the municipality's share of the project - [including contingencies]		\$16,885,686	\$43,185.90		
	overall cost to residents' share of the project - [including contingencies]		\$6,542,250	\$16,732.10		
	high side cost per dwelling unit to residents' share of the project - [including contingencies]				\$20,250	\$37,500
	low side cost per dwelling unit to residents' share of the project - [including contingencies]				\$17,250	\$13,500
				\$59,918		