Appendix A

Evaluation Tables

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS																	
		BRIDGEVIEW PS (#77)	SPRING GARDEN PS (#38)	GRANDVIEW PS (#74)	BAYSHORE PS (#73)	GARDEN TRAILS PS (#92)	UNSWORTH PS (#71)	DANFORTH PS (#41)	LASALLE PS (#54)	OAKLANDS PS (#40)	131 NORTHSORE PS (#72)	CARDINAL DR PS (#48)	374 NORTHSHORE PS (#57)	EDGEWATER PS (#37)	STILLWATER PS (#70)	INDIAN ROAD PS (#68)	Burlington WWTP	**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
1	**Hydraulic Status**																		
	Current Capacity vs Current Demand	169%	10%	282%	120%	69%	201%	115%	130%	66%	81%	64%	52%	39%	24%	80%			
	Current Capacity vs 2031 Demand	176%	10%	293%	119%	67%	194%	116%	166%	95%	80%	63%	51%	39%	24%	80%			
2	**Condition Status**																		
	Condition rating																		
	Age (years)	17	29	29	29	6	38	37	U/C	28	37	40	40	39	35	35			
3	**Operational Status**																		
	Solution Description	Upgrade existing pumping stations (LC renewal)																Continue to upgrade existing PS as necessary	
1. Financial (in millions)																			
▪	Capital (Sewer)	$0															$0	$0	
▪	LCC (Capital)	$1.55	$1.03	$1.24	$1.31	$2.17	$1.18	$1.04	$1.45	$4.14	$0.77	$1.35	$3.16	$1.03	$1.42	$0.89	$0	$23.74	
▪	LCC (FM)	$0.39	$0.29	$0.70	$0.47	$1.30	$0.30	$0.19	$0.20	$0.86	$0.17	$0.16	$1.06	$0.08	$0.14	$0.36	$0	$6.65	
▪	LCC (Operating)	$0.29	$0.17	$0.38	$0.26	$0.72	$0.19	$0.13	$0.33	$1.26	$0.04	$0.23	$1.06	$0.11	$0.13	$0.08	$0	$5.38	
▪	LCC (Maintenance)	$0.45	$0.15	$0.30	$0.21	$1.07	$1.54	$0.15	$0.43	$0.63	$0.24	$0.77	$1.28	$0.32	$0.23	$0.60	$0	$8.36	
	Total	$2.67	$1.64	$2.61	$2.25	$5.26	$3.21	$1.52	$2.41	$6.89	$1.22	$2.50	$6.56	$1.53	$1.92	$1.93	$0	$44.13	

R.V. Anderson Associates Limited
RVA # 081707

TABLE A1
EA DECISION MATRIX
BURLINGTON WEST – OPTION 1

Force Main Existing Gravity Sewer Proposed Gravity Sewer

	OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS																	
	BRIDGEVIEW PS (#77)	SPRING GARDEN PS (#38)	GRANDVIEW PS (#74)	BAYSHORE PS (#73)	GARDEN TRAILS PS (#92)	UNSWORTH PS (#71)	DANFORTH PS (#41)	LASALLE PS (#54)	OAKLANDS PS (#40)	131 NORTHSORE PS (#72)	CARDINAL DR PS (#48)	374 NORTHSHORE PS (#57)	EDGEWATER PS (#37)	STILLWATER PS (#70)	INDIAN ROAD PS (#68)	Burlington WWTP	**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
2. Environmental																		
▪ Terrestrial environment impact during construction	Located within ANSI and woodlands, and designated areas system High	Located within ANSI and woodlands, and designated areas system High	Located within ANSI and woodlands, and designated areas system High	Located within ANSI and woodlands, and designated areas system High	Located within ANSI and woodlands, and designated areas system High	Located within ANSI and woodlands, and designated areas system High	Located in regulated area and /or buffer Low	Located in regulated area and woodlands	Located in regulated area and /or buffer Low	Located in regulated area and woodlands	Located in regulated area and woodlands	Located in regulated area and woodlands	Located in regulated area and woodlands	Located in regulated area and /or buffer Low	Located in regulated area and /or buffer Low			A total of 11 pumping stations are identified as potentially high risk. Pumping stations are located within the Hamilton RAP Area, which is an area of concern. Overflows/spills in this area would occur in an area of the lake of low water circulation.
▪ Terrestrial environment long term impact	High	High	High	High	High	High	Low	Medium	Low	Medium	Medium	Medium	Medium	Low	Low			
▪ Aquatic environment impact during construction	High	Medium	Medium	Medium	Medium	Low	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium			
▪ Aquatic environment long term impact	high	Med	Low	High	Med	Low	High	Low	Med	Med	Low	High	High	High	High			
▪ Ability to meet regulatory constraints	High risk site	High risk site	High risk site	High risk site	High risk site	High risk site	High risk site	Medium risk site	Low risk site	Medium risk site	Medium risk site	High risk site	High risk site	High risk site	High risk site			
3. Social																		
▪ Visual/Aesthetic Impact during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction		MED	Assuming all pumping stations will be improved, as needed.
▪ Visual/Aesthetic Impact – Long Term	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered		LOW	Assuming the footprints of the existing pumping stations are not altered.

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS																	**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
		BRIDGEVIEW PS (#77)	SPRING GARDEN PS (#38)	GRANDVIEW PS (#74)	BAYSHORE PS (#73)	GARDEN TRAILS PS (#92)	UNSWORTH PS (#71)	DANFORTH PS (#41)	LASALLE PS (#54)	OAKLANDS PS (#40)	131 NORTHSORE PS (#72)	CARDINAL DR PS (#48)	374 NORTHSHORE PS (#57)	EDGEWATER PS (#37)	STILLWATER PS (#70)	INDIAN ROAD PS (#68)	Burlington WWTP			
	▪ Odour/Noise	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions			LOW	Existing pumping stations have limited odour and noise conditions.
	▪ Operations and Maintenance Activities – Long Term	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed			LOW	Equipment will be replaced in each pumping station, as required.
	▪ Impact on Adjacent Land (General/Land Use Planning	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land			LOW	Any capacity changes in the necessary stations would be within the pumping station footprint.
	○ Archaeological	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources			LOW	Assuming all work involved will includes internal modifications to the pumping stations, and replacement of the existing pumping station on the same site in the future, there will be no impact to archaeological resources.
	○ Heritage	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources			LOW	Assuming all or future work would include internal modifications and/or replacement of the existing pumping station using the same building footprint and requiring no additional property, no direct or indirect impacts are expected. However, if additional property is required and dependent on the proximity of adjacent cultural heritage resources, construction operations could result in impacts to cultural heritage resources.
	○ First Nations	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified			LOW	No registered sites identified.

TABLE A1
EA DECISION MATRIX
BURLINGTON WEST – OPTION 1

Force Main Existing Gravity Sewer Proposed Gravity Sewer

	OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS																	**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
	BRIDGEVIEW PS (#77)	SPRING GARDEN PS (#38)	GRANDVIEW PS (#74)	BAYSHORE PS (#73)	GARDEN TRAILS PS (#92)	UNSWORTH PS (#71)	DANFORTH PS (#41)	LASALLE PS (#54)	OAKLANDS PS (#40)	131 NORTHSORE PS (#72)	CARDINAL DR PS (#48)	374 NORTHSHORE PS (#57)	EDGEWATER PS (#37)	STILLWATER PS (#70)	INDIAN ROAD PS (#68)	Burlington WWTP		
▪ Reduction of Risk of Basement Flooding	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased		LOW	No change, as pumping station capacities will not be increased.
4. Operations / Technical																		
▪ Operations issues	Ops: G E&P: G D&C: G O/F: N	Ops: G E&P: G D&C: G O/F: N	Ops: G E&P: A D&C: A O/F: N	Ops: G E&P: A D&C: A O/F: N	Ops: G E&P: G D&C: G O/F: N	Ops: A E&P: A D&C: A O/F: N	Ops: G E&P: A D&C: A O/F: N	Ops: A E&P: A D&C: A O/F: N	Ops: G E&P: G D&C: G O/F: N	Ops: G E&P: A D&C: A O/F: N	Ops: G E&P: A D&C: A O/F: N	Ops: G E&P: G D&C: G O/F: N	Ops: G E&P: A D&C: G O/F: N	Ops: G E&P: A D&C: A O/F: N	Ops: A E&P: A D&C: A O/F: N		Ops: G E&P: A D&C: A O/F: N	<u>Ops, E&P, D&C:</u> G = Good A = Average P = Poor <u>O/F:</u> H = High M = Medium L= Low N = None
▪ Maintenance	Average	Average	Average	Average	Average	Average	Average	Average	Average	Average	Average	Average	Average	Average	High	High	Average	
▪ Constructability	Average	Average	Average	Average	Complex	Easy	Easy	Average	Average	Average	Easy	Complex	Easy	Average	Average	Complex	Average	
▪ Approvals (design compliance)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Potential	N/A	

TABLE A1
EA DECISION MATRIX
BURLINGTON WEST – OPTION 1

Force Main Existing Gravity Sewer Proposed Gravity Sewer

OPTION 2 – INSTALL TRUNK (GRAVITY) SEWERS TO REPLACE CERTAIN EXISTING PUMPING STATIONS

		BRIDGEVIEW PS (#77)	SPRINGGARDEN PS (#38)	GRANDVIEW PS (#74)	BAYSHORE PS (#73)	GARDEN TRAILS PS (#92)	UNSWORTH PS (#71)	DANFORTH PS (#41)	OAKLANDS PS (#40)	LASALLE PS (#54)	131 NORTHSHORE PS (#72)	CARDINAL DR PS (#48)	374 NORTHSHORE PS (#57)	EDGEWATER PS (#37)	STILLWATER PS (#70)	INDIAN ROAD PS (#68)	Burlington WWTP	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
1	**Hydraulic Status**																		
	Current Capacity vs Current Demand	169%	10%	282%	120%	69%	201%	115%	130%	66%	81%	64%	52%	39%	24%	80%			
	Current Capacity vs 2031 Demand	176%	10%	293%	119%	67%	194%	116%	166%	95%	80%	63%	51%	39%	24%	80%			
2	**Condition Status**																		
	Condition rating																		
	Age	17	29	29	29	6	38	37	U/C	28	37	40	40	39	35	35			
3	**Operational Status**																		
	Solution Description	Upgrade existing pumping station (LC renewal)	Replace PS with Sewer	Replace PS with Sewer	Replace PS with Sewer	Replace PS with Sewer	Replace PS with Sewer	Replace PS with Sewer	Replace PS with Sewer	Replace PS with Sewer	Replace PS with Sewer	Replace PS with Sewer	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Replace PS with Sewer	Upgrade existing pumping station (LC renewal)		Replace 11 PS's with gravity sewers	
1.	**Financial (in millions)**																		
▪	Capital (Sewer)	$0.00	$0.87	$6.54	$12.53	$5.86	$6.32	$15.54	$5.00	$13.94	$1.82	$1.04	$0.00	$0.00	$2.12	$0.00		$71.58	
▪	Capital (PS)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$5.00	$0	$0		$5.00	
▪	LCC (Capital)	$1.55	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$3.16	$1.03	$0.00	$0.89		$6.63	
▪	LCC (FM)	$0.39	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.06	$0.08	$0.00	$0.36		$1.89	

TABLE A1
EA DECISION MATRIX
BURLINGTON WEST – OPTION 2

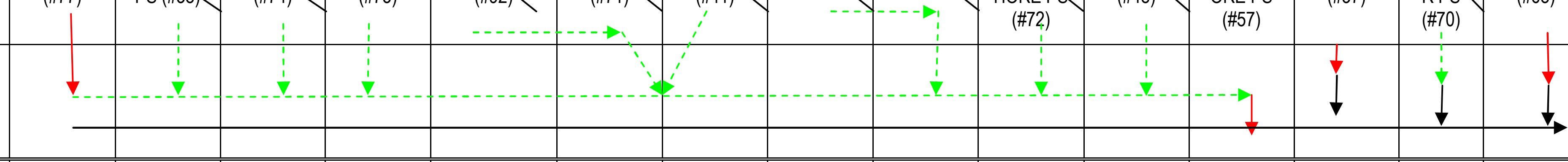
Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 2 – INSTALL TRUNK (GRAVITY) SEWERS TO REPLACE CERTAIN EXISTING PUMPING STATIONS																	**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
		BRIDGEVIEW PS (#77)	SPRING GARDEN PS (#38)	GRANDVIEW PS (#74)	BAYSHORE PS (#73)	GARDEN TRAILS PS (#92)	UNSWORTH PS (#71)	DANFORTH PS (#41)	OAKLANDS PS (#40)	LASALLE PS (#54)	131 NORTHSHORE PS (#72)	CARDINAL DR PS (#48)	374 NORTHSHORE PS (#57)	EDGEWATER PS (#37)	STILL WATER PS (#70)	INDIAN ROAD PS (#68)	Burlington WWTP		
▪	LCC (Operating)	$0.29	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1.06	$0.11	$0.00	$0.08		$1.54	
▪	LCC (Maintenance)	$0.45	$0.00	$0.47	$0.87	$0.33	$0.33	$1.03	$0.33	$1.03	$0.00	$0.00	$1.28	$0.32	$0.14	$0.60		$7.17	
Total		$2.67	$0.87	$7.01	$13.40	$6.19	$6.65	$16.57	$5.33	$14.97	$1.82	$1.04	$6.56	$1.53	$2.26	$1.93		$88.81	
	2. Environmental																		
	▪ Terrestrial environment impact during construction	Located within ANSI and woodlands, and designated areas system High	Proximity to 4 SAR, ESA, ANSI, wooded area, greenlands, Grindstone creek valley High	n/a include in local #38	Proximity to 3 SAR, ESA, ANSI, wooded area, greendlands, proximity to shorelie High	Proximity to Grindstone creek, 1 SAR, ESA, ANSI, wooded area, greenlands High	n/a include in local #92	Proximity to shoreline Mod-high	n/a include in #40	Proximity to shoreline, 4 potential creek crossings Mod-high	Proximity to smaller tributary Moderate	Proximity to shoreline, 2 crossings Mod-high (up to #37 tie in)	Located in regulated area and woodlands	Located in regulated area and woodlands	Proximity to shoreline Mod-high	Located in regulated area and /or buffer Low			
	▪ Terrestrial environment long term impact	High	None		None	None		None		None	None	None	Medium	Medium	None	Low			
	▪ Aquatic environment impact during construction	High	Same as terrestrial		Same as terrestrial	Same as terrestrial		Same as terrestrial		Same as terrestrial	Same as terrestrial	Same as terrestrial	Medium	Medium	Same as terrestrial	Medium			
	▪ Aquatic environment long term impact	high	None		None	None		None		None	None	None	High	High	None	High			
	▪ Ability to meet regulatory constraints	High risk site	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	High risk site	High risk site	Typical	High risk site			

TABLE A1
EA DECISION MATRIX
BURLINGTON WEST – OPTION 2

Force Main — Existing Gravity Sewer — Proposed Gravity Sewer

OPTION 2 – INSTALL TRUNK (GRAVITY) SEWERS TO REPLACE CERTAIN EXISTING PUMPING STATIONS



	BRIDGEVIEW PS (#77)	SPRING GARDEN PS (#38)	GRANDVIEW PS (#74)	BAYSHORE PS (#73)	GARDEN TRAILS PS (#92)	UNSWORTH PS (#71)	DANFORTH PS (#41)	OAKLANDS PS (#40)	LASALLE PS (#54)	131 NORTHSHORE PS (#72)	CARDINAL DR PS (#48)	374 NORTHSHORE PS (#57)	EDGEWATER PS (#37)	STILLWATER PS (#70)	INDIAN ROAD PS (#68)	Burlington WWTP		OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
3. Social																			
▪ Visual/Aesthetic Impact during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction			HIGH	Assuming all pumping stations will be improved, as needed, or removed, and sewers installed.
▪ Visual/Aesthetic Impact – Long Term	No change, as facility footprint will not be altered	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	No change, as footprint of facility will not be altered			LOW	Assuming the footprints of the existing pumping stations are not altered.
▪ Odour/Noise	Existing facility has limited odour and noise conditions	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	Existing facility has limited odour and noise conditions	Existing facility has limited odour and noise conditions	No issues, as facility will not be in use	Existing facility has limited odour and noise conditions			LOW	Existing pumping stations have limited odour and noise conditions.
▪ Operations and Maintenance Activities – Long Term	Less maintenance required, as old equipment will be replaced, as needed	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	No operations or maintenance required	Less maintenance required, as old equipment will be replaced, as needed			LOW	Equipment will be replaced in each pumping station, as required, or the station will be removed.
▪ Impact on Adjacent Land	Primarily Residential Area – No long	Primarily Residential Area – Less	Primarily Residential Area – Less	Primarily Residential Area – Less	Primarily Residential Area – Less potential for	Primarily Residential Area – Less	Primarily Residential Area – Less	Primarily Residential Area – Less	Primarily Residential Area – Less	Primarily Residential Area – Less	Primarily Residential Area – Less	Primarily Residential Area – No long	Primarily Residential Area – No long	Primarily Residential Area – Less	Primarily Residential Area – No long				

Force Main Existing Gravity Sewer Proposed Gravity Sewer

	OPTION 2 – INSTALL TRUNK (GRAVITY) SEWERS TO REPLACE CERTAIN EXISTING PUMPING STATIONS																	**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
	BRIDGEVIEW PS (#77)	SPRING GARDEN PS (#38)	GRANDVIEW PS (#74)	BAYSHORE PS (#73)	GARDEN TRAILS PS (#92)	UNSWORTH PS (#71)	DANFORTH PS (#41)	OAKLANDS PS (#40)	LASALLE PS (#54)	131 NORTHSHORE PS (#72)	CARDINAL DR PS (#48)	374 NORTHSHORE PS (#57)	EDGEWATER PS (#37)	STILL WATER PS (#70)	INDIAN ROAD PS (#68)	Burlington WWTP		
(General/Land Use Planning	term impacts on adjacent land	potential for long term impact on adjacent land (spills, odour)	potential for long term impact on adjacent land (spills, odour)	potential for long term impact on adjacent land (spills, odour)	long term impact on adjacent land (spills, odour)	potential for long term impact on adjacent land (spills, odour)	potential for long term impact on adjacent land (spills, odour)	potential for long term impact on adjacent land (spills, odour)	potential for long term impact on adjacent land (spills, odour)	potential for long term impact on adjacent land (spills, odour)	potential for long term impact on adjacent land (spills, odour)	term impacts on adjacent land	term impacts on adjacent land	potential for long term impact on adjacent land (spills, odour)	term impacts on adjacent land			
○ Archaeological	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources		HIGH	While it is assumed that the new trunk sewer will be installed within the existing ROW, much of the adjacent lands contain archaeological potential based on: Previously identified sites; Proximity to water; Historic features (derived from 1877 historic atlas). Potential shaft sites may be in areas of archaeological potential.
○ Heritage	No impacts on cultural heritage resources	Potential impacts on cultural heritage resources	Potential impacts on cultural heritage resources	Potential impacts on cultural heritage resources	Potential impacts on cultural heritage resources	Potential impacts on cultural heritage resources	Potential impacts on cultural heritage resources	Potential impacts on cultural heritage resources	Potential impacts on cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources		HIGH	While it is assumed that new gravity and trunk sewers will be installed within the existing ROW, there are 34 previously identified adjacent cultural heritage resources which could be impacted by construction operations dependent upon proximity of resources to the road ROW and vibration effects in relation to structural materials.
○ First Nations	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified			LOW	No registered sites identified.
▪ Reduction of Risk of Basement Flooding	No change, as capacity will not be increased	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	No change, as capacity will not be increased	No change, as capacity will not be increased	Reduced risk of basement flooding, as gravity sewers will increase capacity	No change, as capacity will not be increased			LOW	Overall, reduced risk of basement flooding, as sewers will increase capacity.

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 2 – INSTALL TRUNK (GRAVITY) SEWERS TO REPLACE CERTAIN EXISTING PUMPING STATIONS																		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
		BRIDGEVIEW PS (#77)	SPRING GARDEN PS (#38)	GRANDVIEW PS (#74)	BAYSHORE PS (#73)	GARDEN TRAILS PS (#92)	UNSWORTH PS (#71)	DANFORTH PS (#41)	OAKLANDS PS (#40)	LASALLE PS (#54)	131 NORTHSHORE PS (#72)	CARDINAL DR PS (#48)	374 NORTHSHORE PS (#57)	EDGEWATER PS (#37)	STILL WATER PS (#70)	INDIAN ROAD PS (#68)	Burlington WWTP			
	4. Operations / Technical																				
	▪ Operations issues	Ops: G E&P: G D&C: G O/F: N	Local gravity sewer – no operational concerns: Good										Ops: G E&P: G D&C: G O/F: N	Ops: G E&P: A D&C: G O/F: N	Local GS: Good	Ops: A E&P: A D&C: A O/F: N				<u>Ops, E&P, D&C:</u> G = Good A = Average P = Poor <u>O/F:</u> H = High M = Medium L= Low N = None
	▪ Maintenance	Average	435m of local (res): Low	120m of local (res): Low	440m of local (res): Low	960m of local (res): Low	300m of local (res): Low	730m of local (res): Low	920m of local (res): Low	120m of local (res): Low	910m of local (res): Low	520m of local (res): Low	Average	Average	135m of local (res): Low	High	High		Low	
	▪ Constructability	Average	Average	Easy	Average	Complex	Average	Complex	Complex	Easy	Complex	Complex	Complex	Easy	Average	Average	Complex		Average	
	▪ Approvals (design compliance)	N/A	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	N/A	N/A	Typical	N/A	Potential		Typical	

TABLE A1
EA DECISION MATRIX
BURLINGTON WEST – OPTION 2

Force Main Existing Gravity Sewer Proposed Gravity Sewer

OPTION 3 – INSTALL TRUNK (GRAVITY) INTECEPTOR & LOCAL CONNECTING SEWERS TO REPLACE EXISTING PUMPING STATIONS

		BRIDGEVIEW PS (#77)	SPRINGGARDEN PS (#38)	GRANDVIEW PS (#74)	BAYSHORE PS (#73)	GARDEN TRAILS PS (#92)	UNSWORTH PS (#71)	DANFORTH PS (#41)	LASALLE PS (#54)	OAKLANDS PS (#40)	131 NORTHSHORE PS (#72)	CARDINAL DR PS (#48)	374 NORTHSHORE PS (#57)	EDGEWATER PS (#37)	STILLWATER PS (#70)	INDIAN ROAD PS (#68)	Burlington WWTP (Trunk Sewer)	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
1	**Hydraulic Status**																		
	Current Capacity vs Current Demand	169%	10%	282%	120%	69%	201%	115%	130%	66%	81%	64%	52%	39%	24%	80%			
	Current Capacity vs 2031 Demand	176%	10%	293%	119%	67%	194%	116%	166%	95%	80%	63%	51%	39%	24%	80%			
2	**Condition Status**																		
	Condition rating																		
	Remaining life	17	29	29	29	6	38	37	U/C	28	37	40	40	39	35	35			
3	**Operational Status**																		
	Solution Description	Replace PS with Trunk Sewer																Replace 15 PS's with Trunk Sewer	
1. Financial (in millions)																			
▪	Capital (Sewer)	$1.50	$0.87	$6.54	$12.53	$5.86	$6.32	$15.54	$5.00	$13.94	$1.82	$1.04	$1.45	$2.31	$2.12	$13.18		$90.02	
▪	LCC (FM)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00	
▪	LCC (Operating)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00	
▪	LCC (Maintenance)	$0.00	$0.00	$0.47	$0.87	$0.33	$0.33	$1.03	$0.33	$1.03	$0.00	$0.00	$0.00	$0.00	$0.14	$0.95		$5.48	
	Total	$1.50	$0.87	$7.01	$13.40	$6.19	$6.65	$16.57	$5.33	$14.97	$1.82	$1.04	$1.45	$2.31	$2.26	$14.13		$95.50	

TABLE A1
EA DECISION MATRIX
BURLINGTON WEST – OPTION 3

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 3 – INSTALL TRUNK (GRAVITY) INTECEPTOR & LOCAL CONNECTING SEWERS TO REPLACE EXISTING PUMPING STATIONS																	
		BRIDGEVIEW PS (#77)	SPRINGGARDEN PS (#38)	GRANDVIEW PS (#74)	BAYSHORE PS (#73)	GARDEN TRAILS PS (#92)	UNSWORTH PS (#71)	DANFORTH PS (#41)	LASALLE PS (#54)	OAKLANDS PS (#40)	131 NORTHSHORE PS (#72)	CARDINAL DR PS (#48)	374 NORTHSHORE PS (#57)	EDGEWATER PS (#37)	STILLWATER PS (#70)	INDIAN ROAD PS (#68)	Burlington WWTP (Trunk Sewer)		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
	2. Environmental																			
	▪ Terrestrial environment impact during construction	n/a no local sewer identified	Proximity to 4 SAR, ESA, ANSI, wooded area, greenlands, Grindstone creek valley High	n/a include in local #38	Proximity to 3 SAR, ESA, ANSI, wooded area, greendlands, proximity to shorelie High	Proximity to Grindstone creek, 1 SAR, ESA, ANSI, wooded area, greenlands High	n/a include in local #92	Proximity to shoreline Mod-high	n/a include in #40	Proximity to shoreline, 4 potential creek crossings Mod-high	Proximity to smaller tributary Moderate	Proximity to shoreline, 2 crossings Mod-high (up to #37 tie in)	Proximity to shoreline Mod-high	Proximity to shoreline Mod-high	Proximity to shoreline Mod-high	Proximity to shoreline Mod-high	Low – assumes all new sewers will be constructed by tunnel. From Pumping Station 72 to 70 – intersects a number of tributaries that drain directly to Lake Ontario. Assumed to be crossed by tunnel. If these are open cut, this option would be re-evaluated as high risk to natural environment features and specifically aquatic features.			
	▪ Terrestrial environment long term impact		None		None	None		None		None	None	None	None	None	None	None			
	▪ Aquatic environment impact during construction		Same as terrestrial		Same as terrestrial	Same as terrestrial		Same as terrestrial		Same as terrestrial	Same as terrestrial	Same as terrestrial	Same as terrestrial	Same as terrestrial	Same as terrestrial	Same as terrestrial			
	▪ Aquatic environment long term impact		None		None	None		None		None	None	None	None	None	None	None			
	▪ Ability to meet regulatory constraints	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Complex			

TABLE A1
EA DECISION MATRIX
BURLINGTON WEST – OPTION 3

Force Main — Existing Gravity Sewer — Proposed Gravity Sewer

	OPTION 3 – INSTALL TRUNK (GRAVITY) INTECEPTOR & LOCAL CONNECTING SEWERS TO REPLACE EXISTING PUMPING STATIONS																		
	BRIDGEVIEW PS (#77)	SPRING GARDEN PS (#38)	GRANDVIEW PS (#74)	BAYSHORE PS (#73)	GARDEN TRAILS PS (#92)	UNSWORTH PS (#71)	DANFORTH PS (#41)	LASALLE PS (#54)	OAKLANDS PS (#40)	131 NORTHSHORE PS (#72)	CARDINAL DR PS (#48)	374 NORTHSHORE PS (#57)	EDGEWATER PS (#37)	STILLWATER PS (#70)	INDIAN ROAD PS (#68)	Burlington WWTP (Trunk Sewer)		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
3. Social																			
▪ Visual/Aesthetic Impact during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction			HIGH	Assuming all pumping stations will be removed and sewers installed.
▪ Visual/Aesthetic Impact – Long Term	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.			LOW	Assuming all stations are removed.
▪ Odour/Noise	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use			LOW	All pumping stations will be removed.
▪ Operations and Maintenance Activities – Long Term	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required			LOW	Pumping stations will not be in use, and sewers require minimal operation.

Force Main — Existing Gravity Sewer — Proposed Gravity Sewer

	OPTION 3 – INSTALL TRUNK (GRAVITY) INTECEPTOR & LOCAL CONNECTING SEWERS TO REPLACE EXISTING PUMPING STATIONS																
	BRIDGEVIEW PS (#77)	SPRING GARDEN PS (#38)	GRANDVIEW PS (#74)	BAYSHORE PS (#73)	GARDEN TRAILS PS (#92)	UNSWORTH PS (#71)	DANFORTH PS (#41)	LASALLE PS (#54)	OAKLAND S PS (#40)	131 NORTHSHORE PS (#72)	CARDINAL DR PS (#48)	374 NORTHSHORE PS (#57)	EDGEWATER PS (#37)	STILLWATER PS (#70)	INDIAN ROAD PS (#68)	Burlington WWTP (Trunk Sewer)	**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
▪ Impact on Adjacent Land (General/Land Use Planning	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)		LOW	All pumping stations will be removed.
○ Archaeological	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	**Archaeological Potential (1 registered site)**		HIGH	While it is assumed that the new gravity sewer will be installed within the existing ROW, much of the adjacent lands contain archaeological potential. A significant # of sites have been registered between the area of Francis Rd and Maple Ave. Potential shaft sites may be in areas of archaeological potential.
○ Heritage	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources		HIGH	While it is assumed that new gravity and trunk sewers will be installed within the existing ROW, there are 75 previously identified adjacent cultural heritage resources which could be impacted by construction operations dependent upon proximity of resources to the road ROW and vibration effects in relation to structural materials.
○ First Nations	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified		LOW	No registered sites identified.
▪ Reduction of Risk of Basement Flooding	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity		LOW	Reduced risk of basement flooding, as all pumping stations will be replaced with gravity sewers.

TABLE A1
EA DECISION MATRIX
BURLINGTON WEST – OPTION 3

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 3 – INSTALL TRUNK (GRAVITY) INTECEPTOR & LOCAL CONNECTING SEWERS TO REPLACE EXISTING PUMPING STATIONS																	
		BRIDGEVIEW PS (#77)	SPRING GARDEN PS (#38)	GRANDVIEW PS (#74)	BAYSHORE PS (#73)	GARDEN TRAILS PS (#92)	UNSWORTH PS (#71)	DANFORTH PS (#41)	LASALLE PS (#54)	OAKLANDS PS (#40)	131 NORTHSHORE PS (#72)	CARDINAL DR PS (#48)	374 NORTHSHORE PS (#57)	EDGEWATER PS (#37)	STILLWATER PS (#70)	INDIAN ROAD PS (#68)	Burlington WWTP (Trunk Sewer)		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
	4. Operations / Technical																			
	▪ Operations issues	Local gravity sewer – no operational concerns: Good															Trunk GS odour/ Low flow: Good		Good	
	▪ Maintenance	750m of local (res): Low	435m of local (res): Low	120m of local (res): Low	440m of local (res): Low	960m of local (res): Low	300m of local (res): Low	730m of local (res): Low	920m of local (res): Low	120m of local (res): Low	910m of local (res): Low	520m of local (res): Low	725m of local (res): Low	1155 m of local (res): Low	135m of local (res): Low	240m of local (res): Low	Flat slope requires flushing: Low		Low	
	▪ Constructability	Complex	Average	Easy	Average	Complex	Average	Complex	Complex	Easy	Complex	Complex	Complex	Complex	Easy	Easy	Complex		Average-Complex	
	▪ Approvals (design compliance)	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Complex	Complex		Typical	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS										
		PINEDALE PS (#30)	ELIZABETH GARDENS PS (#31)	5061 LAKESHORE PS (#32)	APPLEBY PS (#67)	4281 LAKESHORE PS (#35)	3237 LAKESHORE PS (#34)	JUNCTION PS #33)	BELLVIEW PS (#69)	Burlington WWTP		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
1	**Hydraulic Status**												
	Current Capacity vs Current Demand	36%	90%	95%	39%	180%	101%	111%	34%				
	Current Capacity vs 2031 Demand	39%	97%	97%	52%	179%	104%	142%	37%				
2	**Condition Status**												
	Condition rating												
	Remaining life	27	32	38	35	46	6	46	40				
3	**Operational Status**												
	Solution Description	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)		Continue to upgrade exiting PS as necessary	
1. Financial (in millions)													
	▪ Capital (sewer)	$0										$0	
	▪ LCC (Capital)	$10.31	$20.86	$9.11	$1.04	$6.34	$7.54	$8.18	$1.21			$64.60	
	▪ LCC (FM)	$7.28	$20.47	$0.08	$0.20	$6.83	$3.93	$2.32	$0.01			$41.13	
	▪ LCC (Operating)	$7.14	$26.31	$3.65	$0.13	$2.06	$6.99	$2.51	$0.18			$48.96	
	▪ LCC (Maintenance)	$3.88	$7.12	$2.23	$0.50	$2.81	$2.27	$1.22	$0.11			$20.13	
	Total	$28.62	$74.75	$15.07	$1.87	$18.04	$20.73	$14.23	$1.51			$174.82	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS											
		PINEDALE PS (#30)	ELIZABETH GARDENS PS (#31)	5061 LAKESHORE PS (#32)	APPLEBY PS (#67)	4281 LAKESHORE PS (#35)	3237 LAKESHORE PS (#34)	JUNCTION PS #33)	BELLVIEW PS (#69)	Burlington WWTP		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
	2. Environmental												
	▪ Terrestrial environment impact during construction	Within Greenlands system and regulated area	FM is within Greenlands, Woodlands and CH Regulated area	FM, PS Within Greenlands, Woodlands and CH Regulated area	FM, PS Within Greenlands, Woodlands and CH Regulated area	FM, PS Within Greenlands, Woodlands and CH Regulated area	FM, PS Within Greenlands, Woodlands and CH Regulated area	Within wooded and CH regulated area	Low				A total of 4 high risk pumping stations are identified based on the evaluation.
	▪ Terrestrial environment long term impact	Med	High	High	Med	High	Med	Med	Low				
	▪ Aquatic environment impact during construction	Within regulated area and major watercourse	Close to watercourse and shoreline	Adjacent to creek system and regulated area	Immediate vicinity of the shoreline	In a regulated area within a creek valley	In the mouth of a creek system and regulated area, close to shoreline	In a minor tributary mouth close to shoreline, regulated area.	Low				
	▪ Aquatic environment long term impact	High	Med	Med	High	High	High	High	Low				
	▪ Ability to meet regulatory constraints	Med Risk	High Risk	High Risk	Med Risk	High Risk	Med Risk	High Risk	Low Risk				
	3. Social												
	▪ Visual/Aesthetic Impact during construction	Increased vehicular traffic and noise during construction	Increased vehicular traffic and noise during construction	Increased vehicular traffic and noise during construction	Increased vehicular traffic and noise during construction	Increased vehicular traffic and noise during construction	Increased vehicular traffic and noise during construction	Increased vehicular traffic and noise during construction	Increased vehicular traffic and noise during construction			MED	Assuming all pumping stations will be improved, as needed.
	▪ Visual/Aesthetic Impact – Long Term	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered			LOW	Assuming the footprints of the existing pumping stations are not altered.
	▪ Odour/Noise	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions			LOW	Existing pumping stations have limited odour and noise conditions.
	▪ Operations and Maintenance Activities – Long Term	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed			LOW	Equipment will be replaced in each pumping station, as required.

TABLE A2
EA DECISION MATRIX
BURLINGTON EAST – OPTION 1

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS										**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
		PINEDALE PS (#30)	ELIZABETH GARDENS PS (#31)	5061 LAKESHORE PS (#32)	APPLEBY PS (#67)	4281 LAKESHORE PS (#35)	3237 LAKESHORE PS (#34)	JUNCTION PS #33)	BELLVIEW PS (#69)	**Burlington WWTP**			
				needed									
	▪ Impact on Adjacent Land (General/Land Use Planning	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land			LOW	Any capacity changes in the necessary stations would be within the pumping station footprint.
	○ Archaeological	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources			LOW	Assuming all work involved will includes internal modifications to the pumping stations, and replacement of the existing pumping station on the same site in the future, there will be no impact to archaeological resources.
	○ Heritage	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources			LOW	Assuming all or future work would include internal modifications and/or replacement of the existing pumping station using the same building footprint and requiring no additional property, no direct or indirect impacts are expected. However, if additional property is required and dependent on the proximity of adjacent cultural heritage resources, construction operations could result in impacts to cultural heritage resources.
	○ First Nations	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified			LOW	No registered sites identified.
	▪ Reduction of Risk of Basement Flooding	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased			LOW	No change, as pumping station capacities will not be increased.
	4. Operations / Technical												
	▪ Operations issues	Ops: G E&P: G D&C: G O/F: N	Ops: G E&P: G D&C: G O/F: L	Ops: G E&P: P D&C: P O/F: N	Ops: G E&P: A D&C: A O/F: N	Ops: A E&P: A D&C: A O/F: L	Ops: G E&P: G D&C: G O/F: N	Ops: G E&P: G D&C: G O/F: N	Ops: A E&P: A D&C: A O/F: N			Ops: G E&P: A D&C: A-G O/F: L	<u>Ops, E&P, D&C:</u> G = Good A = Average P = Poor <u>O/F:</u> H = High M = Medium L= Low N = None
	▪ Maintenance	Low	High	Average	Average	Average	Average	Low	High	High		Average-High	
	▪ Constructability	Complex	Complex	Complex	Average	Complex	Complex	Complex	Average	Complex		Complex	
	▪ Approvals (design compliance)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Potential		N/A	

Force Main → Existing Gravity Sewer ⇢ Proposed Gravity Sewer

		OPTION 2 – CONSTRUCT NEW TRUNK SEWER TO REPLACE CERTAIN EXISTING PUMPING STATIONS											
		PINEDALE PS	ELIZABETH GARDENS PS	5061 LAKESHORE PS	APPLEBY PS	4281 LAKESHORE PS	3237 LAKESHORE PS	JUNCTION PS	BELLVIEW PS	Burlington WWTP		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
1	**Hydraulic Status**												
	Current Capacity vs Current Demand	36%	90%	95%	39%	180%	101%	111%	34%	N/A			
	Current Capacity vs 2031 Demand	39%	97%	97%	52%	179%	104%	142%	37%	N/A			
2	**Condition Status**									N/A			
	Condition rating									N/A			
	Remaining life	27	32	38	35	46	6	46	40	N/A			
3	**Operational Status**									N/A			
	Solution Description	Replace existing pumping station with trunk gravity sewer.	Replace existing pumping station with trunk gravity sewer.	Replace existing pumping station with trunk gravity sewer.	Replace existing pumping station with trunk gravity sewer.	Upgrade existing pumping station (LC renewal	Upgrade existing pumping station (LC renewal	Upgrade existing pumping station (LC renewal	Replace existing pumping station with trunk gravity sewer.	Upgrade existing pumping station (LC renewal)		Replace 5 stations with trunk gravity sewers and upgrade WWTP.	
1. Financial (millions)													
	▪ Capital (sewer)	$2.16	$12.70	$2.60	$10.03	$0.00	$0.00	$0.00	$0.54			$28.03	
	▪ Capital (PS)	$0	$0	$0	$0	$5.00	$0	$0	$0			$5.00	
	▪ LCC (Capital)	$0.00	$0.00	$0.00	$0.00	$6.34	$7.54	$8.18	$0.00			$22.06	
	▪ LCC (FM)	$0.00	$0.00	$0.00	$0.00	$6.83	$3.93	$2.32	$0.00			$13.09	
	▪ LCC (Operating)	$0.00	$0.00	$0.00	$0.00	$2.06	$6.99	$2.51	$0.00			$11.55	

TABLE A2
EA DECISION MATRIX
BURLINGTON EAST – OPTION 2

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 2 – CONSTRUCT NEW TRUNK SEWER TO REPLACE CERTAIN EXISTING PUMPING STATIONS											
		PINEDALE PS	ELIZABETH GARDENS PS	5061 LAKESHORE PS	APPLEBY PS	4281 LAKESHORE PS	3237 LAKESHORE PS	JUNCTION PS	BELLVIEW PS	Burlington WWTP		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
	▪ LCC (Maintenance)	$0.00	$0.95	$0.20	$0.72	$2.81	$2.27	$1.22	$0.00			$8.16	
	Total	$2.16	$13.65	$2.80	$10.75	$18.04	$20.73	$14.23	$0.54			$82.89	
	2. Environmental												
	▪ Terrestrial environment impact during construction	Proximity to shoreline, greenlands, wooded area High	Proximity to shoreline,greenlands, wooded area High	Proximity to creek valley, greenlands, wooded area Mod-High	Proximity to shoreline Mod-High	FM, PS Within Greenlands, Woodlands and CH Regulated area	FM, PS Within Greenlands, Woodlands and CH Regulated area	Within wooded and CH regulated area	Within wooded and CH regulated area				The option removes all but 2 high risk pumping station sites. It is noted that this option is represented as the decommissioning of up to 4 pumping stations that would be diverted to PS35. As a result, it is likely this PS35 would require expansion as it is already considered over-capacity.
	▪ Terrestrial environment long term impact	None	None	None	None	High	Med	Med	Med				
	▪ Aquatic environment impact during construction	Same as Terrestrial	Same as Terrestrial	Same as Terrestrial	Same as Terrestrial	In a regulated area within a creek valley	In the mouth of a creek system and regulated area, close to shoreline	In a minor tributary mouth close to shoreline, regulated area.	In a minor tributary mouth close to shoreline, regulated area.				
	▪ Aquatic environment long term impact	None	None	None	None	High	High	High	High				
	▪ Ability to meet regulatory constraints	Typical	Typical	Typical	Typical	High Risk	Med Risk	High Risk	High Risk				
	3. Social												
	▪ Visual/Aesthetic Impact during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction			HIGH	Assuming all pumping stations will be improved, as needed, or removed, and sewers installed.
	▪ Visual/Aesthetic Impact – Long Term	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space..	No change, as footprint to facility will not be altered	No change, as footprint to facility will not be altered	No change, as footprint to facility will not be altered	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space..			LOW	Assuming the footprints of the existing pumping stations are not altered.

TABLE A2
EA DECISION MATRIX
BURLINGTON EAST – OPTION 2

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 2 – CONSTRUCT NEW TRUNK SEWER TO REPLACE CERTAIN EXISTING PUMPING STATIONS										**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
		PINEDALE PS	ELIZABETH GARDENS PS	5061 LAKESHORE PS	APPLEBY PS	4281 LAKESHORE PS	3237 LAKESHORE PS	JUNCTION PS	BELLVIEW PS	**Burlington WWTP**			
	▪ Odour/Noise	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	Existing facility has limited odour and noise conditions	Existing facility has limited odour and noise conditions	Existing facility has limited odour and noise conditions	No issues, as facility will not be in use			LOW	Existing pumping stations have limited odour and noise conditions.
	▪ Operations and Maintenance Activities – Long Term	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	No operations or maintenance required			LOW	Equipment will be replaced in each pumping station, as required, or the station will be removed.
	▪ Impact on Adjacent Land (General/Land Use Planning	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – No long term impacts on adjacent land	Primarily Residential Area – No long term impacts on adjacent land	Primarily Residential Area – No long term impacts on adjacent land	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)			LOW	Any capacity changes in the necessary stations would be within the pumping station footprint.
	○ Archaeological	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	No Impact to archaeological resources	No Impact to archaeological resources	**Archaeological Potential (1 registered site)**	No Impact to archaeological resources		HIGH	While it is assumed that the new trunk sewer will be installed within the existing ROW, much of the adjacent lands contain archaeological potential based on: Previously identified sites; Proximity to water; Historic features (derived from 1877 historic atlas). Potential shaft sites may be in areas of archaeological potential.
	○ Heritage	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources		HIGH	While it is assumed that new gravity and trunk sewers will be installed within the existing ROW, there are 19 previously identified adjacent cultural heritage resources which could be impacted by construction operations dependent upon proximity of resources to the road ROW and vibration effects in relation to structural materials.
	○ First Nations	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified			LOW	No registered sites identified in the study area.
	▪ Reduction of Risk of Basement Flooding	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	Reduced risk of basement flooding, as gravity sewers will increase capacity			LOW	Overall, reduced risk of basement flooding, as sewers will increase capacity.
	4. Operations / Technical												
	▪ Operations issues	Local gravity sewer – no operational concerns: Good				Ops: A E&P: A D&C: A O/F: L	Ops: G E&P: G D&C: G O/F: N	Ops: G E&P: G D&C: G O/F: N	Local gravity sewer – no operational concerns: Good				<u>Ops, E&P, D&C:</u> G = Good A = Average P = Poor <u>O/F:</u> H = High M = Medium L= Low N = None

TABLE A2
EA DECISION MATRIX
BURLINGTON EAST – OPTION 2

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 2 – CONSTRUCT NEW TRUNK SEWER TO REPLACE CERTAIN EXISTING PUMPING STATIONS											
		PINEDALE PS	ELIZABETH GARDENS PS	5061 LAKESHORE PS	APPLEBY PS	4281 LAKESHORE PS	3237 LAKESHORE PS	JUNCTION PS	BELLVIEW PS	**Burlington WWTP**		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
	▪ Ease of maintenance	1080m of local (res): Low	0m of local (res): Low	0m of local (res): Low	215m of local (res): Low	Average	Average	Low	270m of local (res): Low	High		Low	
	▪ Constructability	Complex	Easy	Easy	Easy	Complex	Complex	Complex	Average	Complex		Average	
	▪ Regional / MOE design compliance	Typical	Typical	Typical	Typical	N/A	N/A	N/A	Typical	Potential		Typical	

TABLE A2
EA DECISION MATRIX
BURLINGTON EAST – OPTION 2

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 3 – CONSTRUCT NEW TRUNK SEWER TO REPLACE ALL EXISTING PUMPING STATIONS										
		PINEDALE PS	ELIZABETH GARDENS PS	5061 LAKESHORE PS	APPLEBY PS	4281 LAKESHORE PS	3237 LAKESHORE PS	JUNCTION PS	BELLVIEW PS	Burlington WWTP (Trunk Sewer)		OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
1	**Hydraulic Status**												
	Current Capacity vs Current Demand	36%	90%	95%	39%	180%	101%	111%	34%				
	Current Capacity vs 2031 Demand	39%	97%	97%	52%	179%	104%	142%	37%				
2	**Condition Status**												
	Condition rating												
	Remaining life	27	32	38	35	46	6	46	40				
3	**Operational Status**												
	Solution Description	Replace existing pumping stations with trunk gravity sewer.								Upgrade existing pumping station (LC renewal)		Replace 8 stations with trunk gravity sewers and upgrade WWTP.	
1. Financial (in millions)													
	▪ Capital (sewer)	$2.16	$12.70	$2.60	$10.03	$23.00	$21.60	$26.20	$0.54			$98.83	
	▪ LCC (FM)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00			$0.00	
	▪ LCC (Operating)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00			$0.00	
	▪ LCC (Maintenance)	$0.00	$0.95	$0.20	$0.72	$1.73	$1.62	$1.97	$0.00			$7.18	
	Total	$2.16	$13.65	$2.80	$10.75	$24.73	$23.22	$28.17	$0.54			$106.01	

TABLE A2
EA DECISION MATRIX
BURLINGTON EAST – OPTION 3

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 3 – CONSTRUCT NEW TRUNK SEWER TO REPLACE ALL EXISTING PUMPING STATIONS											
		PINEDALE PS	ELIZABETH GARDENS PS	5061 LAKESHORE PS	APPLEBY PS	4281 LAKESHORE PS	3237 LAKESHORE PS	JUNCTION PS	BELLVIEW PS	**Burlington WWTP (Trunk Sewer)**		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
	2. Environmental												
	▪ Terrestrial environment impact during construction	Proximity to shoreline, greenlands, wooded area High	Proximity to shoreline,greenlands, wooded area High	Proximity to creek valley, greenlands, wooded area Mod-High	Proximity to shoreline Mod-High	n/a – on trunk sewer line	n/a – on trunk sewer line	n/a – on trunk sewer line	No sensitivities identified Low	Low However, this option intersects 5 major tributaries that drain directly to Lake Ontario waterfront. If these are open cut, this option would be re-evaluated as high risk to natural environment features and specifically aquatic features.			
	▪ Terrestrial environment long term impact	None	None	None	None				None				
	▪ Aquatic environment impact during construction	Same as Terrestrial	Same as Terrestrial	Same as Terrestrial	Same as Terrestrial				Same as Terrestrial				
	▪ Aquatic environment long term impact	None	None	None	None				None				
	▪ Ability to meet regulatory constraints	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Complex			
	3. Social												
	▪ Visual/Aesthetic Impact during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction			HIGH	Assuming all pumping stations will be removed and sewers installed.
	▪ Visual/Aesthetic Impact – Long Term	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.			LOW	Assuming all stations are removed.
	▪ Odour/Noise	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use			LOW	All pumping stations will be removed.
	▪ Operations and Maintenance Activities – Long	No operations or maintenance	No operations or maintenance	No operations or maintenance	No operations or maintenance	No operations or maintenance	No operations or maintenance	No operations or maintenance	No operations or maintenance			LOW	Pumping stations will not be in use, and sewers require minimal operation.

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 3 – CONSTRUCT NEW TRUNK SEWER TO REPLACE ALL EXISTING PUMPING STATIONS											
		PINEDALE PS	ELIZABETH GARDENS PS	5061 LAKESHORE PS	APPLEBY PS	4281 LAKESHORE PS	3237 LAKESHORE PS	JUNCTION PS	BELLVIEW PS	**Burlington WWTP (Trunk Sewer)**		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
	Term	required	required	required	required	required	required	required	required				
	▪ Impact on Adjacent Land (General/Land Use Planning	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)			LOW	All pumping stations will be removed.
	○ Archaeological	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	**Archaeological Potential (1 registered site)**	Archaeological Potential		HIGH	While it is assumed that the new gravity sewer will be installed within the existing ROW, much of the adjacent lands contain archaeological potential based on: Previously identified sites; Proximity to water; Historic features (derived from 1877 historic atlas). Potential shaft sites may be in areas of archaeological potential. Potential shaft sites may be in areas of archaeological potential.
	○ Heritage	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources		HIGH	While it is assumed that new gravity and trunk sewers will be installed within the existing ROW, there are 27 previously identified adjacent cultural heritage resources which could be impacted by construction operations dependent upon proximity of resources to the road ROW and vibration effects in relation to structural materials.
	○ First Nations	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified			LOW	No registered sites identified.
	▪ Reduction of Risk of Basement Flooding	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity			LOW	Reduced risk of basement flooding, as all pumping stations will be replaced with gravity sewers.
	4. Operations / Technical												
	▪ Operations issues	Local gravity sewer – no operational concerns: Good								Trunk GS odour/ Low flow: Good		Good	
	▪ Ease of maintenance	1080m of local (res): Low	0m of local (res): Low	0m of local (res): Low	215m of local (res): Low	0m of local (res): Low	0m of local (res): Low	0m of local (res): Low	270m of local (res): Low	Flat slope requires flushing: Low		Low	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 3 – CONSTRUCT NEW TRUNK SEWER TO REPLACE ALL EXISTING PUMPING STATIONS											
		PINEDALE PS	ELIZABETH GARDENS PS	5061 LAKESHORE PS	APPLEBY PS	4281 LAKESHORE PS	3237 LAKESHORE PS	JUNCTION PS	BELLVIEW PS	**Burlington WWTP (Trunk Sewer)**		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
	▪ Constructability	Complex	Easy	Easy	Easy	Easy	Easy	Easy	Average	Average		Easy-Average	
	▪ Approvals (design compliance)	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical		Typical	

TABLE A2
EA DECISION MATRIX
BURLINGTON EAST – OPTION 3

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS											
		SHELDON CREEK PS	TIMBER LANE PS	WEST RIVER PS 28	YACHT CLUB PS 29	MARINE DRIVE PS	BELVEDERE PS	CORONATION PARK PS	HIXON STREET PS	WEST 18 PS		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
1	**Hydraulic Status**												
	Current Capacity vs Current Demand	121%	109%	163%	129%	234%	177%	23%	10%	67%			
	Current Capacity vs 2031 Demand	122%	107%	163%	273%	234%	188%	23%	10%	72%			
2	**Condition Status**												
	Condition rating												
	Age	28	35	44	N/A	41	48	25	25	50			
3	**Operational Status**												
	Solution Description	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal and capacity upgrade)			Upgrade 6 small stations, 2 medium stations and 1 large station (Capacity increase and LC renewal)
1. Financial (in millions)													
▪	Capital (Sewers)	$0								$0		$0	
▪	LCC (Capital)	$3.33	$0.85	$2.62	$0.62	$9.16	$2.78	$1.45	$1.31	$11.85		$33.98	
▪	LCC (FM)	$0.74	$0.12	$0.58	$0.20	$0.42	$0.04	$0.02	$0.02	$1.26		$3.40	
▪	LCC (Operating)	$0.42	$0.02	$0.58	$0.02	$0.94	$0.22	$0.10	$0.09	$9.46		$11.85	
▪	LCC (Maintenance)	$3.29	$0.20	$2.78	$0.26	$1.49	$0.90	$0.33	$0.25	$2.93		$12.44	
	Total	$7.79	$1.19	$6.55	$1.10	$12.00	$3.95	$1.90	$1.67	$25.50		$61.66	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

	OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS											
	SHELDON CREEK PS	TIMBER LANE PS	WEST RIVER PS 28	YACHT CLUB PS 29	MARINE DRIVE PS	BELVEDERE PS	CORONATION PARK PS	HIXON STREET PS	WEST 18 PS		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
2. Environmental												
▪ Terrestrial environment impact during construction	CH Regulation Limit, Greenlands and Wooded area	Ch Regulation Limit	P.S, FM 2 element occurrences of rare species, within Bronte Valley , ESA, Wooded area, Greenlands,	P.S, FM 2 element occurrences of rare species, within Bronte Valley , ESA buffer, Wooded area, Greenlands	2 element occurrences of rare species near this area	Low risk	Low risk	Low risk site	P.S, FM within wooded area and buffer area , OP Woodlands			
▪ Terrestrial environment long term impact	Med	Low	High	High	Low	Low	Low	Low	Med			
▪ Aquatic environment impact during construction	Lower end of creek system	Along shoreline habitat	Along Bronte Creek	Along Bronte Creek	Low Risk	Low Risk	Within MNR water buffer	Low risk				
▪ Aquatic environment long term impact	Med	High	High	High	Low	Low	Med	Low	Low			
▪ Ability to meet regulatory constraints	Medium risk	Low risk	High risk	High risk	Low risk	Low risk	Low risk	Low risk	Medium risk			
3. Social												
▪ Visual/Aesthetic Impact during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction		MED	Assuming all pumping stations will be improved, as needed.
▪ Visual/Aesthetic Impact – Long Term	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered		LOW	Assuming the footprints of the existing pumping stations are not altered.
▪ Odour/Noise	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions		LOW	Existing pumping stations have limited odour and noise conditions.

Force Main Existing Gravity Sewer Proposed Gravity Sewer

	OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS											
	SHELDON CREEK PS	TIMBER LANE PS	WEST RIVER PS 28	YACHT CLUB PS 29	MARINE DRIVE PS	BELVEDERE PS	CORONATION PARK PS	HIXON STREET PS	WEST 18 PS		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
▪ Operations and Maintenance Activities – Long Term	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed		LOW	Equipment will be replaced in each pumping station, as required.
▪ Impact on Adjacent Land (General/Land Use Planning)	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Commercial Area - No long term impacts on adjacent land	Primarily Recreational Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Recreational Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land		LOW	Any capacity changes in the necessary stations would be within the pumping station footprint.
○ Archaeological	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources		LOW	Assuming all work involved will includes internal modifications to the pumping stations, and replacement of the existing pumping station on the same site in the future, there will be no impact to archaeological resources.
○ Heritage	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources		LOW	Assuming all or future work would include internal modifications and/or replacement of the existing pumping station using the same building footprint and requiring no additional property, no direct or indirect impacts are expected. However, if additional property is required and dependent on the proximity of adjacent cultural heritage resources, construction operations could result in impacts to cultural heritage resources.
○ First Nations	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified		LOW	No registered sites identified in the study area.
▪ Reduction of Risk of Basement Flooding	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased		LOW	No change, as pumping station capacities will not be increased.
4. Operations / Technical												
▪ Operations issues	Ops: Good E&P: Avg D&C: Avg O/F: High	Ops: Good E&P: Poor D&C: Good O/F: None	Ops: Poor E&P: Poor D&C: Poor O/F: High	Ops: Good E&P: Poor D&C: Good O/F: Low	Ops: Poor E&P: Good D&C: Poor O/F: None	Ops: Good E&P: Poor D&C: Good O/F: Low	Ops: Good E&P: Good D&C: Good O/F: None	Ops: Good E&P: Good D&C: Good O/F: None	Ops: Good E&P: Good D&C: Good O/F: None		Ops: Good E&P: Average D&C: Average O/F: Low	<u>Ops, E&P, D&C:</u> G = Good A = Average P = Poor <u>O/F:</u> H = High M = Medium L= Low N = None
▪ Maintenance	High	Average	High	Average	High	Average	Average	Average	High		Average to High	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS											
		SHELDON CREEK PS	TIMBER LANE PS	WEST RIVER PS 28	YACHT CLUB PS 29	**MARINE DRIVE PS**	BELVEDERE PS	CORONATION PARK PS	HIXON STREET PS	**WEST 18 PS**		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
	▪ Constructability	Average	Easy	Complex	Average	Easy	Easy	Average	Average	Complex		Average	
	▪ Approvals (design compliance)	N/A	N/A	Potential	Potential	N/A	N/A	N/A	N/A	Potential		Potential	

TABLE A3
EA DECISION MATRIX
OAKVILLE SW WEST – OPTION 1

		OPTION 2 – INSTALL TRUNK (GRAVITY) SEWERS TO REPLACE EXISTING PUMPING STATIONS										
		SHELDON CREEK PS	TIMBER LANE PS	**WEST RIVER PS**	YACHT CLUB PS	**MARINE DRIVE PS**	BELVEDERE PS	CORONATION PARK PS	HIXON STREET PS	**WEST 18 PS**	**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
1	**Hydraulic Status**											
	Current Capacity vs Current Demand	121%	109%	163%	129%	234%	177%	23%	10%	67%		
	Current Capacity vs 2031 Demand	122%	107%	163%	273%	234%	188%	23%	10%	72%		
2	**Condition Status**											
	Condition rating											
	Age	28	35	44	N/A	41	48	25	25	50		
3	**Operational Status**											
	Solution Description	Decommission existing pumping stations and install new gravity sewer to West River PS		Upgrade existing pumping station (LC renewal and capacity upgrade)	Upgrade existing pumping station (LC renewal)	Decommission existing pumping stations and install new gravity sewer to West 18 PS		Upgrade existing pumping station (LC renewal)	Decommission existing pumping station and install new gravity sewer to West 18 PS	Upgrade existing pumping station (LC renewal and capacity upgrade)		Decommission 5 Pumping stations Upgrade 2 small stations where gravity sewers are not practical(LC renewal) Upgrade 1 medium PS (Capacity increase and LC renewal) Upgrade 1 large PS (Capacity increase and LC renewal)
1. Financial (in millions)												
▪	Capital (sewer)	$10.75	$0.67	$0	$0	$12.61	$4.97	$0	$0.05	$0	$29.05	
▪	Capital (PS)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
▪	LCC (Capital)	$0	$0	$2.62	$0.62	$0	$0	$1.45	$0	$11.85	$16.54	
▪	LCC (FM)	$0	$0	$0.58	$0.20	$0	$0	$0.02	$0	$1.26	$2.06	
▪	LCC (Operating)	$0	$0	$0.58	$0.02	$0	$0	$0.10	$0	$9.46	$10.16	

	OPTION 2 – INSTALL TRUNK (GRAVITY) SEWERS TO REPLACE EXISTING PUMPING STATIONS											
	~~SHELDON CREEK PS~~	~~TIMBER LANE PS~~	**~~WEST RIVER PS~~**	YACHT CLUB PS	**~~MARINE DRIVE PS~~**	~~BELVEDERE PS~~	CORONATION PARK PS	~~HIXON STREET PS~~	**WEST 18 PS**		**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
▪ LCC (Maintenance)	$0.81	$0	$2.78	$0.26	$0.93	$0.37	$0.33	$0	$2.93		$8.41	
Total	$11.56	$0.67	$6.56	$1.10	$13.54	$5.34	$1.90	$0.05	$25.50		$66.22	
2. Environmental												
▪ Terrestrial environment impact during construction	None (on trunk sewer line)	Proximity to shoreline Mod-high Impact	P.S, FM 2 element occurrences of rare species, within Bronte Valley , ESA, Wooded area, Greenlands,	P.S, FM 2 element occurrences of rare species, within Bronte Valley , ESA buffer, Wooded area, Greenlands	Proximity to 1 SAR Low – mod Impact	None (on trunk sewer line)	Low risk	None (on trunk sewer line)	P.S, FM within wooded area and buffer area , OP Woodlands			This alternative does not remove the 2 high risk pumping stations from service. The 2 sites to be retained (28 and 29) are in the mouth of Bronte Creek. Terrestrial and aquatic impacts for tunnel of deep sewers are considered low as shaft locations can be situated away from sensitive locations. Any dewatering or sub-surface impacts are not addressed in this assessment.
▪ Terrestrial environment long term impact		None	High	High	None		Low		Med			
▪ Aquatic environment impact during construction		Proximity to shoreline Mod-high Impact	Along Bronte Creek	Along Bronte Creek	Proximity to 1 SAR Low – mod Impact		Within MNR water buffer					
▪ Aquatic environment long term impact		None	High	High	None		Med		Low			
▪ Ability to meet regulatory constraints	Typical	Typical	High risk	High risk	Typical	Typical	Low risk	Typical	Medium risk			
3. Social												
▪ Visual/Aesthetic Impact during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction		HIGH	Assuming all pumping stations will be improved, as needed, or removed, and sewers installed.

	OPTION 2 – INSTALL TRUNK (GRAVITY) SEWERS TO REPLACE EXISTING PUMPING STATIONS										**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
		~~SHELDON CREEK PS~~	~~TIMBER LANE PS~~	**WEST RIVER PS**	YACHT CLUB PS	**~~MARINE DRIVE PS~~**	~~BELVEDERE PS~~	CORONATION PARK PS	~~HIXON STREET PS~~	**WEST 18 PS**		
	▪ Visual/Aesthetic Impact – Long Term	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	No change, as footprint of facility will not be altered	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	No change, as footprint of facility will not be altered	LOW	Assuming the footprints of the existing pumping stations are not altered.
	▪ Odour/Noise	No issues, as facility will not be in use	No issues, as facility will not be in use	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	No issues, as facility will not be in use	No issues, as facility will not be in use	Existing facility has limited odour/noise conditions	No issues, as facility will not be in use	Existing facility has limited odour/noise conditions	LOW	Existing pumping stations have limited odour and noise conditions.
	▪ Operations and Maintenance Activities – Long Term	No operations or maintenance required	No operations or maintenance required	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	No operations or maintenance required	No operations or maintenance required	Less maintenance required, as old equipment will be replaced, as needed	No operations or maintenance required	Less maintenance required, as old equipment will be replaced, as needed	LOW	Equipment will be replaced in each pumping station, as required, or the station will be removed.
	▪ Impact on Adjacent Land (General/Land Use Planning	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Commercial Area – No long term impacts on adjacent land	Primarily Residential Area – No long term impacts on adjacent land	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – No long term impacts on adjacent land	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – No long term impacts on adjacent land	LOW	Any capacity changes in the necessary stations would be within the pumping station footprint.
	○ Archaeological	Archaeological Potential	Archaeological Potential	Archaeological Potential	No Impact to archaeological resources	Archaeological Potential	Archaeological Potential	No Impact to archaeological resources	Archaeological Potential	Archaeological Potential	HIGH	While it is assumed that the new gravity sewer will be installed within the existing ROW, much of the adjacent lands contain archaeological potential based on: Previously registered sites; Proximity to water; Historic features (including historic transportation routes and pioneer homesteads). Potential shaft sites may be in areas of archaeological potential.
	○ Heritage	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	HIGH	While it is assumed that new gravity and trunk sewers will be installed within the existing ROW, there are 6 previously identified adjacent cultural heritage resources which could be impacted by construction operations dependent upon proximity of resources to the road ROW and vibration effects in relation to structural materials.
	○ First Nations	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	LOW	No registered sites identified.
	▪ Reduction of Risk of Basement Flooding	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	No change, as capacity will not be increased	No change, as capacity will not be increased	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	No change, as capacity will not be increased	Reduced risk of basement flooding, as gravity sewers will increase capacity	No change, as capacity will not be increased	LOW	Overall, reduced risk of basement flooding, as sewers will increase capacity.

	OPTION 2 – INSTALL TRUNK (GRAVITY) SEWERS TO REPLACE EXISTING PUMPING STATIONS										**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
		SHELDON CREEK PS	TIMBER LANE PS	**WEST RIVER PS**	YACHT CLUB PS	**MARINE DRIVE PS**	BELVEDERE PS	CORONATION PARK PS	HIXON STREET PS	**WEST 18 PS**		
	4. Operations / Technical											
	▪ Operations issues	Local gravity sewer – no operational concerns: Good		Ops: Poor E&P: Poor D&C: Poor O/F: High	Ops: Good E&P: Poor D&C: Good O/F: Low	Local gravity sewer – no operational concerns: Good		Ops: Good E&P: Good D&C: Good O/F: None	Local GS– no operational concerns: Good		Average	Ops, E&P, D&C: G = Good A = Average P = Poor O/F: H = High M = Medium L= Low N = None
	▪ Maintenance	0m of local (res): Low	335m of local (res): Low	High	Average	130m of local (comm): Low	35m of local (res): Low	Average	25m of local (res): Low	High	Low-Average	
	▪ Constructability	Easy	Average	Complex	Average	Easy	Easy	Average	Easy	Complex	Average	
	▪ Approvals (design compliance)	Typical	Typical	Typical	Potential	Typical	Typical	N/A	Typical	Typical	Complex	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 3 – INSTALL TRUNK (GRAVITY) INTERCEPTOR TO REPLACE EXISTING PUMPING STATIONS										
		SHELDON CREEK PS	TIMBER LANE PS	WEST RIVER PS	YACHT CLUB PS	MARINE DRIVE PS	BELVEDERE PS	CORONATION PARK PS	HIXON STREET PS	Trunk Sewer (WEST 18 PS)	**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
1	**Hydraulic Status**											
	Current Capacity vs Current Demand	121%	109%	163%	129%	234%	177%	23%	10%	67%		
	Current Capacity vs 2031 Demand	122%	107%	163%	273%	234%	188%	23%	10%	72%		
2	**Condition Status**											
	Condition rating											
	Age	28	35	44	N/A	41	48	25	25	50		
3	**Operational Status**											
	Solution Description	Decommission existing pumping stations and install new gravity sewer to West 18 PS No local sewers are needed to connect West River PS & Marine Drive PS to the new gravity trunk sewer, because they are part of the current trunk sewer system.							Decommission existing pumping station and install new gravity sewer on Hixon Street	Upgrade existing pumping station (LC renewal and capacity upgrade)		Decommission 8 Pumping stations Upgrade 1 large PS (Capacity increase, lower wet well and LC renewal) (West 18) Install 4 km gravity sewer Install 1.3 km local sewer
1. Financial												
▪	Capital (sewer)	$10.75	$0.67	$2.62	$8.55	$12.61	$4.97	$1.02	$0.05	$0	$41.24	
▪	LCC (Capital)	$0								$11.85	$11.85	
▪	LCC (Operating)	$0								$9.46	$9.46	
▪	LCC (Maintenance)	$0.81	$0	$0.16	$0.64	$0.93	$0.37	$0.07	$0	$2.93	$5.90	
	Total	$11.56	$0.67	$2.78	$9.19	$13.54	$5.34	$1.09	$0.505	$25.50	$69.71	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

	OPTION 3 – INSTALL TRUNK (GRAVITY) INTERCEPTOR TO REPLACE EXISTING PUMPING STATIONS										
	SHELDON CREEK PS	TIMBER LANE PS	WEST RIVER PS	YACHT CLUB PS	MARINE DRIVE PS	BELVEDERE PS	CORONATION PARK PS	HIXON STREET PS	**Trunk Sewer (WEST 18 PS)**	**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
2. Environmental											
▪ Terrestrial environment impact during construction	None (on trunk sewer line)	Proximity to shoreline Mod-high Impact	Proximity to mouth of Bronte Cr, 2 SAR, ESA, wooded area, Greenlands High risk	None (on trunk sewer line)	Proximity to 1 SAR Low – mod Impact	None (on trunk sewer line)	None (on trunk sewer line)	None (on trunk sewer line)	High Impact A new deep sewer is proposed to cross Bronte Creek valley. This may be a problematic and/or challenging area to cross from a regulatory perspective. It is assumed to be crossed by tunnel.		
▪ Terrestrial environment long term impact		None	None		None						
▪ Aquatic environment impact during construction		Proximity to shoreline Mod-high Impact	Proximity to mouth of Bronte Cr, 2 SAR, ESA, wooded area, Greenlands High risk		Proximity to 1 SAR Low – mod Impact						
▪ Aquatic environment long term impact		None	None		None						
▪ Ability to meet regulatory constraints	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	High risk due to a proposed crossing of Bronte Creek and valley system.		
3. Social											
▪ Visual/Aesthetic Impact during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction		HIGH	Assuming all pumping stations will be removed and sewers installed.

Force Main Existing Gravity Sewer Proposed Gravity Sewer

	OPTION 3 – INSTALL TRUNK (GRAVITY) INTERCEPTOR TO REPLACE EXISTING PUMPING STATIONS									**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
	SHELDON CREEK PS	TIMBER LANE PS	WEST RIVER PS	YACHT CLUB PS	MARINE DRIVE PS	BELVEDERE PS	CORONATION PARK PS	HIXON STREET PS	**Trunk Sewer (WEST 18 PS)**		
▪ Visual/Aesthetic Impact – Long Term	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.		LOW	Assuming all stations are removed.
▪ Odour/Noise	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use		LOW	All pumping stations will be removed.
▪ Operations and Maintenance Activities – Long Term	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required		LOW	Pumping stations will not be in use, and sewers require minimal operation.
▪ Impact on Adjacent Land (General/Land Use Planning)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Commercial Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)		LOW	All pumping stations will be removed.
○ Archaeological	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential		HIGH	While it is assumed that the new gravity sewer will be installed within the existing ROW, much of the adjacent lands contain archaeological potential based on: Previously registered sites; Proximity to water; Historic features (including historic transportation routes and pioneer homesteads). Potential shaft sites may be in areas of archaeological potential.
○ Heritage	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources		HIGH	While it is assumed that new gravity and trunk sewers will be installed within the existing ROW, there are 6 previously identified adjacent cultural heritage resources which could be impacted by construction operations dependent upon proximity of resources to the road ROW and vibration effects in relation to structural materials.
○ First Nations	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified		LOW	No registered sites identified.

Force Main Existing Gravity Sewer Proposed Gravity Sewer

	OPTION 3 – INSTALL TRUNK (GRAVITY) INTERCEPTOR TO REPLACE EXISTING PUMPING STATIONS									**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
	SHELDON CREEK PS	TIMBER LANE PS	WEST RIVER PS	YACHT CLUB PS	MARINE DRIVE PS	BELVEDERE PS	CORONATION PARK PS	HIXON STREET PS	**Trunk Sewer (WEST 18 PS)**		
▪ Reduction of Risk of Basement Flooding	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity		LOW	Reduced risk of basement flooding, as all pumping stations will be replaced with gravity sewers.
4. Operations / Technical											
▪ Operations issues	Local gravity sewer – no operational concerns: Good								Trunk GS odour/ Low flow: Good	Good	
▪ Maintenance	0m of local (res): Low	335m of local (res): Low	260m of local (comm): Low	25m of local (comm): Low	130m of local (comm): Low	35m of local (res): Low	35m of local (res): Low	25m of local (res): Low	Flat slope requires flushing: Low	Low	
▪ Constructability	Easy	Average	Average	Easy	Easy	Easy	Easy	Easy	Complex	Easy-Average	
▪ Approvals (design compliance)	Typical	Typical	Complex	Complex	Typical	Typical	Typical	Typical	Complex	Typical-Complex	

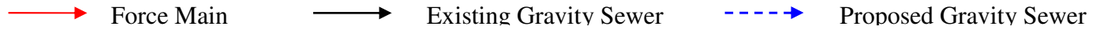
Force Main Existing Gravity Sewer Proposed Gravity Sewer

OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS

		OVERTON PLACE PS	FIRST STREET PS	NAVY STREET PS	WATER STREET PS	WALKER STREET PS	RIVERSIDE PS	SHEPPARD ROAD PS	REBECCA STREET PS	LAKEWOOD PS	SHORE WOOD PS	BIRCH LANE PS	WESTDALE PS	STIRLING DRIVE PS	WEST 18 PS	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
1	**Hydraulic Status**																
	Current Capacity vs Current Demand	34%	79%	93%	14%	68%	33%	111%	736%	234%	33%	116%	88%	47%	67%		
	Current Capacity vs 2031 Demand	34%	78%	105%	16%	76%	34%	126%	855%	235%	33%	116%	88%	46%	72%		
2	**Condition Status**																
	Condition rating																
	Remaining life	41	25	25	43	14	47	37	12	39	10	46	45	6	50		
3	**Operational Status**																
	Solution Description		Upgrade existing small pumping station (LC renewal)	Upgrade existing medium pumping station (LC renewal)	Upgrade existing small pumping station (LC renewal)	Upgrade existing medium pumping station (LC renewal)	Upgrade existing medium pumping station (LC renewal)	Upgrade existing small pumping station (LC renewal)	Upgrade existing large pumping station (LC renewal)	Upgrade existing medium pumping station (LC renewal)	Upgrade existing medium pumping station (LC renewal)	Upgrade existing medium pumping station (LC renewal)	Upgrade existing medium pumping station (LC renewal)	Upgrade existing small pumping station (LC renewal)	Upgrade existing large pumping station (LC renewal)		Upgrade 5 small stations, 7 medium stations and 2 large stations (Capacity increase and LC renewal)
1. Financial (in millions)																	
▪	Capital (sewer)	$0														$0	
▪	LCC (Capital)	$2.86	$1.88	$4.09	$2.25	$8.89	$6.87	$1.78	$4.84	$2.25	$0.98	$4.45	$3.09	$1.59	$19.91	$65.73	
▪	LCC (FM)	$0.49	$0.62	$1.92	$0.03	$1.74	$1.28	$0.34	$0.19	$1.14	$0.36	$1.08	$1.08	$0.41	$0	$10.68	
▪	LCC (Operating)	$0.23	$0.13	$0.57	$0.33	$0.38	$0.71	$0.13	$0.65	$0.18	$0.07	$0.33	$0.26	$0.16	$16.11	$20.24	
▪	LCC (Maintenance)	$0.90	$0.83	$0.74	$0.56	$2.90	$0.62	$0.78	$0.65	$2.74	$0.64	$0.72	$1.07	$0.46	$4.99	$18.76	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

	OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS															
	OVERTON PLACE PS	FIRST STREET PS	NAVY STREET PS	WATER STREET PS	WALKER STREET PS	RIVERSIDE PS	SHEPPARD ROAD PS	REBECCA STREET PS	LAKEWOOD PS	SHORE WOOD PS	BIRCH LANE PS	WESTDALE PS	STIRLING DRIVE PS	WEST 18 PS	**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
Total	$4.48	$3.46	$7.33	$3.16	$13.91	$9.47	$3.02	$8.42	$4.39	$2.05	$6.59	$5.49	$2.62	$41.01	$115.42	
2. Environmental																
▪ Terrestrial environment impact during construction	med	low	med	med	low	med	med	low	low	low	med	med	high	Official plan and MNR wooded areas med		
▪ Terrestrial environment long term impact	med	low	med	med	low	med	med	low	low	low	med	med	high	med		
▪ Aquatic environment impact during construction	Within the 16 Mile Creek valley Med	Immediate vicinity of the shoreline med	Close to mouth of 16 Mile Creek valley and shoreline med	In wooded area of creek valley med	Immediate vicinity of shoreline med	Within buffer area of 16 Mile Creek valley med	Within buffer area of 16 Mile Creek valley and ESA med	low	Immediate vicinity of the shoreline med	low	Immediate vicinity of the shoreline, small tributary high	Immediate vicinity of the shoreline med	Immediate vicinity of the shoreline low	low		10 pumping stations are identified as high risk as they are in the immediate vicinity of the shoreline.
▪ Aquatic environment long term impact	Medium	High	High	High	High	High	High	Low	High	Low	High	High	Med	Med		
▪ Ability to meet regulatory constraints	Medium risk	High risk	High risk	High risk	High risk	High risk	High risk	Low risk	High risk	Low risk	High risk	High risk	High risk	Medium risk		
3. Social																
▪ Visual/Aesthetic Impact during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction		MED	Assuming all pumping stations will be improved, as needed.



	OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS															OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
	OVERTON PLACE PS	FIRST STREET PS	NAVY STREET PS	WATER STREET PS	WALKER STREET PS	RIVERSIDE PS	SHEPPARD ROAD PS	REBECCA STREET PS	LAKEWOOD PS	SHORE WOOD PS	BIRCH LANE PS	WESTDALE PS	STIRLING DRIVE PS	WEST 18 PS			
▪ Visual/Aesthetic Impact – Long Term	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered			LOW	Assuming the footprints of the existing pumping stations are not altered.
▪ Odour/Noise	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions			LOW	Existing pumping stations have limited odour and noise conditions.
▪ Operations and Maintenance Activities – Long Term	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed			LOW	Equipment will be replaced in each pumping station, as required.
▪ Impact on Adjacent Land (General/Land Use Planning	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Commercial Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Commercial Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land			LOW	Any capacity changes in the necessary stations would be within the pumping station footprint.
○ Archaeological	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources		LOW	Assuming all work involved will includes internal modifications to the pumping stations, and replacement of the existing pumping station on the same site in the future, there will be no impact to archaeological resources.
○ Heritage	No impact to cultural heritage resources	Potential impacts to one cultural heritage resource	No impact to cultural heritage resources	No impact to cultural heritage resources	No impact to cultural heritage resources	No impact to cultural heritage resources	No impact to cultural heritage resources	No impact to cultural heritage resources	No impact to cultural heritage resources	No impact to cultural heritage resources	No impact to cultural heritage resources	No impact to cultural heritage resources	No impact to cultural heritage resources	No impact to cultural heritage resources		HIGH	Should the First Street PS require replacement, expansion, or external modifications there may be direct or indirect impacts on adjacent cultural heritage resources, given that this PS is located within the boundaries of a heritage conservation district.

TABLE A4
EA DECISION MATRIX
OAKVILLE SW EAST – OPTION 1

→ Force Main → Existing Gravity Sewer ⇢ Proposed Gravity Sewer

	OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS															
	OVERTON PLACE PS	FIRST STREET PS	NAVY STREET PS	WATER STREET PS	WALKER STREET PS	RIVERSIDE PS	SHEPPARD ROAD PS	REBECCA STREET PS	LAKEWOOD PS	SHORE WOOD PS	BIRCH LANE PS	WESTDALE PS	STIRLING DRIVE PS	WEST 18 PS	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
○ First Nations	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified		LOW	No registered sites identified.
▪ Reduction of Risk of Basement Flooding	No change as capacity will not be increased	No change as capacity will not be increased	No change as capacity will not be increased	No change as capacity will not be increased	No change as capacity will not be increased	No change as capacity will not be increased	No change as capacity will not be increased	No change as capacity will not be increased	No change as capacity will not be increased	No change as capacity will not be increased	No change as capacity will not be increased	No change as capacity will not be increased	No change as capacity will not be increased		LOW	No change, as pumping station capacities will not be increased.
4. Operations / Technical																
▪ Operations issues	Ops: G E&P: A D&C: A O/F: L	Ops: A E&P: A D&C: A O/F: N	Ops: P E&P: G D&C: A O/F: L	Ops: G E&P: G D&C: G O/F: N	Ops: P E&P: P D&C: P O/F: M	Ops: G E&P: P D&C: P O/F: H	Ops: G E&P: A D&C: G O/F: N	Ops: P E&P: G D&C: G O/F: H	Ops: G E&P: G D&C: G O/F: N	Ops: G E&P: G D&C: G O/F: N	Ops: G E&P: G D&C: G O/F: L	Ops: G E&P: G D&C: G O/F: L	Ops: P E&P: G D&C: P O/F: N	Ops: G E&P: G D&C: G O/F: N	Ops: P E&P: G D&C: A O/F: L	<u>Ops, E&P, D&C:</u> G = Good A = Average P = Poor <u>O/F:</u> H = High M = Medium L= Low N = None
▪ Maintenance	Avg	Avg	High	Avg	High	High	Avg	High	Avg	Avg	Avg	Avg	High	High	Average-High	
▪ Constructability	Easy	Easy	Complex	Easy	Complex	Easy	Easy	Complex	Easy	Average	Easy	Easy	Average	Complex	Average	
▪ Approvals (design compliance)	N/A	N/A	N/A	Potential	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Potential	N/A	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

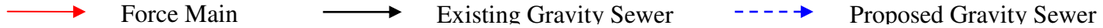
		OPTION 2 – INSTALL COMBINATION OF LOCAL AND TRUNK GRAVITY SEW\ER TO REPLACE CERTAIN PUMPING STATIONS														**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
		OVERTON PLACE PS	FIRST STREET PS	NAVY STREET PS	WATER STREET PS	WALKER STREET PS	RIVERSIDE PS	SHEPPARD ROAD PS	REBECCA STREET PS	LAKEWOOD PS	SHORE WOOD PS	BIRCH LANE PS	WESTDALE PS	STIRLING DRIVE PS	WEST 18 PS		
1	**Hydraulic Status**																
	Current Capacity vs Current Demand	34%	79%	93%	14%	68%	33%	111%	736%	234%	33%	116%	88%	47%	67%		
	Current Capacity vs 2031 Demand	34%	78%	105%	16%	76%	34%	126%	855%	235%	33%	116%	88%	46%	72%		
2	**Condition Status**																
	Condition rating																
	Remaining life	41	25	25	43	14	47	37	12	39	10	46	45	6	50		
3	**Operational Status**																
	Solution Description	Upgrade existing small pumping station (LC renewal)	Install local gravity sewer to connect to flow of Navy St PS. (1250m)	Install local gravity sewer to connect to flow of Water St PS. (260m)	Upgrade existing small pumping station (LC renewal). Cannot remove due to river.	Remove and install trunk gravity sewer. (566m)	Remove and install trunk gravity sewer. (784m)	Remove and install local gravity sewer and connect into sewer constructed for Riverside PS. (20m)	Upgrade existing large pumping station. (LC renewal). Cannot remove, holding tank.	Remove and install trunk gravity sewer. (760m)	Remove and extend current sewer out of MH14239 to MH13829. (170m)	Lower and upgrade medium pumping station (LC renewal).	Remove and install local sewer to send flow to Birch Lane PS. (1520m)	Remove and install local gravity sewer from Stirling PS to near West 18 PS. (670m)	Upgrade existing large pumping station (LC renewal and capacity upgrade)		Upgrade 2 small stations, 1 medium station and 2 large stations (Capacity increase and LC renewal). Install 3.8 km of trunk gravity sewer from Birch Lane PS to the MH where Sheppard Road & Riverside PS's flow into on Lakeshore Road East. Install 4.3 km of local gravity sewer to connect flows from former pumping stations to the new trunk gravity sewer.

→ Force Main → Existing Gravity Sewer --→ Proposed Gravity Sewer

	OPTION 2 – INSTALL COMBINATION OF LOCAL AND TRUNK GRAVITY SEW\ER TO REPLACE CERTAIN PUMPING STATIONS															
	OVERTON PLACE PS	FIRST STREET PS	NAVY STREET PS	WATER STREET PS	WALKER STREET PS	RIVERSIDE PS	SHEPPARD ROAD PS	REBECCA STREET PS	LAKEWOOD PS	SHORE WOOD PS	BIRCH LANE PS	WESTDALE PS	STIRLING DRIVE PS	WEST 18 PS	**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
1. Financial (in millions)																
▪ Capital (sewer)	$0	$9.00	$2.28	$0	$6.53	$1.57	$3.43	$0	$7.82	$12.72	$0	$16.33	$7.03	$0	$66.71	
▪ Capital (PS)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	
▪ LCC (capital)	$2.86	$0	$0	$2.25	$0	$0	$0	$4.84	$0	$0	$4.45	$0	$0	$19.91	$34.31	
▪ LCC (FM)	$0.49	$0	$0	$0.03	$0	$0	$0	$0.19	$0	$0	$1.08	$0	$0	$0	$1.79	
▪ LCC (Operating)	$0.23	$0	$0	$0.33	$0	$0	$0	$0.65	$0	$0	$0.33	$0	$0	$16.11	$17.65	
▪ LCC (Maint.)	$0.90	$0.61	$0.09	$0.56	$0.41	$0	$0.07	$2.74	$0.47	$0.87	$0.72	$1.14	$0.51	$4.99	$14.08	
Total	$4.48	$9.61	$2.37	$3.16	$6.94	$1.57	$3.50	$8.42	$8.29	$13.59	$6.59	$17.47	$7.54	$41.01	$134.54	
2. Environmental																
▪ Terrestrial environment impact during construction	med	Proximity to shoreline Mod-high	Proximity to shoreline, and mouth of 16 Mile Creek Mod-high	med	Proximity to shoreline Mod-high	Proximity to 16 Mile Cr valley, ESA High	Proximity to 16 Mile Cr valley, wooded area, greenlands	low	Proximity to shoreline Mod-high	Low	med	Proximity to shoreline, 1 SAR, wooded area High	Proximity to 1 SAR, wooded areas Mod			This option removes 8 of 10 high risk sites.
▪ Terrestrial environment long term impact	med	None	None	med	None	None	None	low	None	None	med	None	None			
▪ Aquatic environment impact during construction	Within the 16 Mile Creek valley Med	Proximity to shoreline Mod-high	Proximity to shoreline, and mouth of 16 Mile Creek Mod-high	In wooded area of creek valley med	Proximity to shoreline Mod-high	Proximity to 16 Mile Cr valley, ESA High	Proximity to 16 Mile Cr valley, wooded area, greenlands	low	Proximity to shoreline Mod-high	Low	Immediate vicinity of the shoreline, small tributary high	Proximity to shoreline, 1 SAR, wooded area High	Proximity to 1 SAR, wooded areas Mod			

Force Main Existing Gravity Sewer Proposed Gravity Sewer

	OPTION 2 – INSTALL COMBINATION OF LOCAL AND TRUNK GRAVITY SEW\ER TO REPLACE CERTAIN PUMPING STATIONS															
	OVERTON PLACE PS	FIRST STREET PS	NAVY STREET PS	WATER STREET PS	WALKER STREET PS	RIVERSIDE PS	SHEPPARD ROAD PS	REBECCA STREET PS	LAKEWOOD PS	SHORE WOOD PS	BIRCH LANE PS	WESTDALE PS	STIRLING DRIVE PS	WEST 18 PS	**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
▪ Aquatic environment long term impact	Medium	None	None	High	None	None	None	Low	None	None	High	None	None			
▪ Ability to meet regulatory constraints	Medium risk	Typical	Typical	High risk	Typical	Typical	Typical	Low risk	Typical	Typical	High risk	Typical	Typical	Complex		
3. Social																
▪ Visual/Aesthetic Impact during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction		HIGH	Assuming all pumping stations will be improved, as needed, or removed, and sewers installed.
▪ Visual/Aesthetic Impact – Long Term	No change, as footprint of facility will not be altered	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	No change, as footprint of facility will not be altered	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	No change, as footprint of facility will not be altered	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	No change, as footprint of facility will not be altered	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.		LOW	Assuming the footprints of the existing pumping stations are not altered.
▪ Odour/Noise	Existing facility has limited odour/noise conditions	No issues, as facility will not be in use	No issues, as facility will not be in use	Existing facility has limited odour/noise conditions	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	Existing facility has limited odour/noise conditions	No issues, as facility will not be in use	No issues, as facility will not be in use	Existing facility has limited odour/noise conditions	No issues, as facility will not be in use	No issues, as facility will not be in use		LOW	Existing pumping stations have limited odour and noise conditions.
▪ Operations and Maintenance Activities – Long Term	Less maintenance required, as old equipment will be replaced, as needed	No operations or maintenance required	No operations or maintenance required	Less maintenance required, as old equipment will be replaced, as needed	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	Less maintenance required, as old equipment will be replaced, as needed	No operations or maintenance required	No operations or maintenance required	Less maintenance required, as old equipment will be replaced, as needed	No operations or maintenance required	No operations or maintenance required		LOW	Equipment will be replaced in each pumping station, as required, or the station will be removed.



	OPTION 2 – INSTALL COMBINATION OF LOCAL AND TRUNK GRAVITY SEW\ER TO REPLACE CERTAIN PUMPING STATIONS															
	OVERTON PLACE PS	FIRST STREET PS	NAVY STREET PS	WATER STREET PS	WALKER STREET PS	RIVERSIDE PS	SHEPPARD ROAD PS	REBECCA STREET PS	LAKEWOOD PS	SHORE WOOD PS	BIRCH LANE PS	WESTDALE PS	STIRLING DRIVE PS	WEST 18 PS	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
▪ Impact on Adjacent Land (General/Land Use Planning	Primarily Residential Area – No long term impacts on adjacent land	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Commercial Area – No long term impacts on adjacent land	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Commercial Area – No long term impacts on adjacent land	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – No long term impacts on adjacent land	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)		LOW	Any capacity changes in the necessary stations would be within the pumping station footprint.
○ Archaeological	Archaeological Potential	Archaeological Potential	Archaeological Potential	No Impact to archaeological resources	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential		HIGH	While it is assumed that the new gravity sewer will be installed within the existing ROW, much of the adjacent lands contain archaeological potential based on: Proximity to water; Historic features (derived from 1877 historic atlas). Potential shaft sites may be in areas of archaeological potential.
○ Heritage	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources		HIGH	While it is assumed that new gravity and trunk sewers will be installed within the existing ROW, there are 30 previously identified adjacent cultural heritage resources which could be impacted by construction operations. It should also be noted that gravity sewers are proposed within two heritage conservation districts and therefore construction operations may result in disturbance to numerous resources dependent upon proximity of resources to road right of way.
○ First Nations	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified		LOW	No registered sites identified.
▪ Reduction of Risk of Basement Flooding	No change, as capacity will not be increased	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity interceptor will increase capacity	No change, as capacity will not be increased	Reduced risk of basement flooding, as gravity interceptor will increase capacity	Reduced risk of basement flooding, as gravity interceptor will increase capacity	Reduced risk of basement flooding, as gravity interceptor will increase capacity	No change, as capacity will not be increased	Reduced risk of basement flooding, as gravity interceptor will increase capacity	Reduced risk of basement flooding, as gravity interceptor will increase capacity	No change, as capacity will not be increased	Reduced risk of basement flooding, as gravity interceptor will increase capacity	Reduced risk of basement flooding, as gravity interceptor will increase capacity		LOW	Overall, reduced risk of basement flooding, as sewers will increase capacity.

Force Main Existing Gravity Sewer Proposed Gravity Sewer

	OPTION 2 – INSTALL COMBINATION OF LOCAL AND TRUNK GRAVITY SEW\ER TO REPLACE CERTAIN PUMPING STATIONS														**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
	OVERTON PLACE PS	FIRST STREET PS	NAVY STREET PS	WATER STREET PS	WALKER STREET PS	RIVERSIDE PS	SHEPPARD ROAD PS	REBECCA STREET PS	LAKEWOOD PS	SHORE WOOD PS	BIRCH LANE PS	WESTDALE PS	STIRLING DRIVE PS	WEST 18 PS		
4. Operations / Technical																
▪ Operations issues	Ops: G E&P: A D&C: A O/F: L	Local gravity sewer – no operational concerns: Good		Ops: G E&P: G D&C: G O/F: N	Local gravity sewer – no operational concerns: Good			Ops: P E&P: G D&C: G O/F: H	Local gravity sewer – no operational concerns: Good		Ops: G E&P: G D&C: G O/F: L	Local gravity sewer – no operational concerns: Good				Ops, E&P, D&C: G = Good A = Average P = Poor O/F: H = High M = Medium L= Low N = None
▪ Maintenance	Avg	468m of local (res): Low	552m of local (res): Low	Avg	566m of local (res): Low	784m of local (res): Low	1255m of local (res): Low	High	760m of local (res): Low	560m of local (res): Low	Avg	590m of local (res): Low	116m of local (res): Low	High	Low-Average	
▪ Constructability	Easy	Easy	Easy	Easy	Easy	Easy	Easy	Complex	Easy	Easy	Easy	Easy	Easy	Complex	Easy	
▪ Approvals (design compliance)	N/A	Typical	Typical	Potential	Typical	Typical	Typical	N/A	Typical	Typical	N/A	Complex	Typical	Potential	Typical	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 3 – INSTALL TRUNK (GRAVITY) INTECEPTOR & LOCAL CONNECTING SEWERS TO REPLACE EXISTING PUMPING STATIONS																
		OVERTON PLACE PS (#75)	FIRST STREET PS (#16)	NAVY STREET PS (#18)	WATER STREET PS (#7)	WALKER STREET PS (#21)	RIVERSIDE PS (#46)	SHEPPARD ROAD PS (#47)	REBECCA STREET PS (#81)	LAKEWOOD PS (#20)	SHORE WOOD PS (#52)	BIRCH LANE PS (#23)	WESTDALE PS (#24)	STIRLING DRIVE PS (#56)	WEST 18 PS	**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
1	**Hydraulic Status**																
	Current Capacity vs Current Demand	34%	79%	93%	14%	68%	33%	111%	736%	234%	33%	116%	88%	47%	67%		
	Current Capacity vs 2031 Demand	34%	78%	105%	16%	76%	34%	126%	855%	235%	33%	116%	88%	46%	72%		
2	**Condition Status**																
	Condition rating																
	Remaining life	41	25	25	43	14	47	37	12	39	10	46	45	6	50		
3	**Operational Status**																
	Solution Description	Construct new local sewers to connect existing pumping station drainage areas to new trunk sewer. Install 8.0 km of new gravity trunk sewer from West 18 PS to existing trunk sewer where Overton Lane PS connects. Install 2.8 km of new local gravity sewer from each PS to new trunk sewer. Upgrade 1 large PS (Capacity increase, lower wet well and LC renewal) (West 18)													Upgrade existing PS		Decommission 13 Pumping stations
1. Financial (in millions)																	
▪	Capital (sewer)	$16.36	$9.00	$2.28	$1.61	$6.53	$1.57	$3.43	$7.35	$7.82	$12.72	$9.75	$16.33	$7.03	$0	$101.78	
▪	LCC (Capital)	$0													$19.91	$19.91	
▪	LCC (FM)	$0													$0	$0	
▪	LCC (Operating)	$0													$16.11	$16.11	
▪	LCC (Maint.)	$0.56	$0.61	$0.09	$0.12	$0.41	$0	$0.07	$0.55	$0.47	$0.87	$0.64	$1.14	$0.51	$4.99	$11.03	
	Total	$16.92	$9.61	$2.37	$1.73	$6.94	$1.57	$3.50	$7.90	$8.29	$13.59	$10.39	$17.47	$7.54	$41.01	$148.83	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

	OPTION 3 – INSTALL TRUNK (GRAVITY) INTECEPTOR & LOCAL CONNECTING SEWERS TO REPLACE EXISTING PUMPING STATIONS															
	OVERTON PLACE PS (#75)	FIRST STREET PS (#16)	NAVY STREET PS (#18)	WATER STREET PS (#7)	WALKER STREET PS (#21)	RIVERSIDE PS (#46)	SHEPPARD ROAD PS (#47)	REBECCA STREET PS (#81)	LAKEWOOD PS (#20)	SHORE WOOD PS (#52)	BIRCH LANE PS (#23)	WESTDALE PS (#24)	STIRLING DRIVE PS (#56)	WEST 18 PS	**OVERALL RATING**	**COMMENTARY ALL PUMPING STATIONS COMBINED**
2. Environmental																
▪ Terrestrial environment impact during construction	Proximity to 16 Mile Cr valley, ESA, wooded area, greenlands High	Proximity to shoreline Mod-high	Proximity to shoreline, and mouth of 16 Mile Creek Mod-high	n/a (on trunk sewer line)	Proximity to shoreline Mod-high	Proximity to 16 Mile Cr valley, ESA High	Proximity to 16 Mile Cr valley, wooded area, greenlands	n/a (on trunk sewer line)	Proximity to shoreline Mod-high	Low	Proximity to shoreline Mod-high	Proximity to shoreline, 1 SAR, wooded area High	Proximity to 1 SAR, wooded areas Mod	Low to Medium– assumes there are 3 major creek crossings and extensive woodland coverage along the route, and it may be difficult to fully avoid these features along this route. Crossings may be problematic from a regulatory perspective.		
▪ Terrestrial environment long term impact	None	None	None		None	None	None		None	None	None	None	None			
▪ Aquatic environment impact during construction	Proximity to 16 Mile Cr valley, ESA, wooded area, greenlands High	Proximity to shoreline Mod-high	Proximity to shoreline, and mouth of 16 Mile Creek Mod-high		Proximity to shoreline Mod-high	Proximity to 16 Mile Cr valley, ESA High	Proximity to 16 Mile Cr valley, wooded area, greenlands		Proximity to shoreline Mod-high	Low	Proximity to shoreline Mod-high	Proximity to shoreline, 1 SAR, wooded area High	Proximity to 1 SAR, wooded areas Mod			
▪ Aquatic environment long term impact	None	None	None		None	None	None		None	None	None	None	None			
▪ Ability to meet regulatory constraints	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Complex		
3. Social																
▪ Visual/Aesthetic Impact during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction		HIGH	Assuming all pumping stations will be removed and sewers installed.

Force Main   Existing Gravity Sewer   Proposed Gravity Sewer

OPTION 3 – INSTALL TRUNK (GRAVITY) INTECEPTOR & LOCAL CONNECTING SEWERS TO REPLACE EXISTING PUMPING STATIONS

	OVERTON PLACE PS (#75)	FIRST STREET PS (#16)	NAVY STREET PS (#18)	WATER STREET PS (#7)	WALKER STREET PS (#21)	RIVERSIDE PS (#46)	SHEPPARD ROAD PS (#47)	REBECCA STREET PS (#81)	LAKEWOOD PS (#20)	SHOREWOOD PS (#52)	BIRCH LANE PS (#23)	WESTDALE PS (#24)	STIRLING DRIVE PS (#56)	WEST 18 PS	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
▪ Visual / Aesthetic Impact – Long Term	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.		LOW	Assuming all stations are removed.
▪ Odour/Noise	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use		LOW	All pumping stations will be removed.
▪ Operations and Maintenance Activities – Long Term	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required		LOW	Pumping stations will not be in use, and sewers require minimal operation.
▪ Impact on Adjacent Land (General/Land Use Planning	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Commercial Area - Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area - Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area - Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area - Less potential for long term impact on adjacent land (spills, odour)	Primarily Commercial Area - Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)		LOW	All pumping stations will be removed.
○ Archaeological	Archaeological Potential (See Appendix ?)	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	HIGH	While it is assumed that the new gravity sewer will be installed within the existing ROW, much of the adjacent lands contain archaeological potential based on: Proximity to water; Historic features (derived from 1877 historic atlas). Potential shaft sites may be in areas of archaeological potential.
○ Heritage	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	HIGH	While it is assumed that new gravity and trunk sewers will be installed within the existing ROW, there are 29 previously identified adjacent cultural heritage resources which could be impacted by construction operations. It should also be noted that gravity sewers are proposed within two heritage conservation districts and therefore construction operations may result in disturbance to numerous resources dependent upon proximity of resources to

Force Main Existing Gravity Sewer Proposed Gravity Sewer

	OPTION 3 – INSTALL TRUNK (GRAVITY) INTECEPTOR & LOCAL CONNECTING SEWERS TO REPLACE EXISTING PUMPING STATIONS																
	OVERTON PLACE PS (#75)	FIRST STREET PS (#16)	NAVY STREET PS (#18)	WATER STREET PS (#7)	WALKER STREET PS (#21)	RIVERSIDE PS (#46)	SHEPPARD ROAD PS (#47)	REBECCA STREET PS (#81)	LAKEWOOD PS (#20)	SHORE WOOD PS (#52)	BIRCH LANE PS (#23)	WESTDALE PS (#24)	STIRLING DRIVE PS (#56)	WEST 18 PS	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
																road right of way.
○ First Nations	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified		LOW	No registered sites identified.
▪ Reduction of Risk of Basement Flooding	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity		LOW	Reduced risk of basement flooding, as all pumping stations will be replaced with gravity sewers.
4. Operations / Technical																
▪ Operations issues	Local gravity sewer – no operational concerns: Good													Trunk GS odour/ Low flow: Good	Good	
▪ Maintenance	4480m of local (res): Low	468m of local (res): Low	552m of local (res): Low	0m of local (res): Low	566m of local (res): Low	784m of local (res): Low	1255m of local (res): Low	0m of local (res): Low	760m of local (res): Low	560m of local (res): Low	625m of local (res): Low	590m of local (res): Low	116m of local (res): Low	Flat slope requires flushing: Low	Low	
▪ Constructability	Complex	Average	Complex	Easy	Complex	Complex	Complex	Easy	Complex	Complex	Complex	Complex	Easy	Average	Complex	
▪ Approvals (design compliance)	Typical	Typical	Typical	Complex	Typical	Typical	Typical	Typical	Typical	Typical	Complex	Complex	Typical	Typical	Typical	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS

		RAYMAP PLACE PS (#15)	CHARTWELL PS (#42)	ARGYLE PS (#14)	BEL AIR ESTATES PS (#13)	GAIRLOCH GARDENS PS (#17)	CUMNOCK CRESCENT PS (#44)	JOSHUA CREEK PS (#99)	MORRISON HEIGHTS PS (#43)	ENNIS CLAIRE PS (#11)	WEAVER AVENUE PS (#45)	NINTH LINE PS (#12)	CHANCERY LANE PS (#10	CARRINGTON PLACE PS (#9)	CEDARBERRY PS (#8)	OSE WWTP	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
1	**Hydraulic Status**																	
	Current Capacity vs Current Demand	56%	49%	63%	166%	52%	195%	58%	196%	26%	58%	151%	43%	118%	12%			
	Current Capacity vs 2031 Demand	32%	48%	62%	162%	85%	198%	77%	188%	50%	55%	153%	41%	113%	13%			
2	**Condition Status**																	
	Condition rating																	
	Age	25	45	35	22	33	36	5	37	38	38	42	35	38	33			
3	**Operational Status**																	
	Solution Description	Upgrade existing pumping stations (LC renewal)														Upgrade existing pumping station (LC renewal)		Upgrade 14 stations and upgrade OSE WWTP PS.
1. Financial (in millions)																		
▪	Capital (sewer)	$0															$0	
▪	LCC (Capital)	$1.03	$1.19	$1.81	$0.82	$1.19	$1.19	$0.87	$1.04	$3.39	$1.19	$11.10	$1.35	$1.93	$2.33		$30.44	
▪	LCC (FM)	$0.16	$1.60	$0.32	$1.46	$0.06	$0.10	$0.40	$0.28	$0.28	$0.30	$16.28	$0.68	$1.78	$0.10		$23.80	
▪	LCC (Operating)	$0.21	$0.47	$0.54	$0.11	$0.25	$0.29	$0.23	$0.18	$0.23	$0.93	$15.71	$0.60	$0.81	$0.27		$20.83	
▪	LCC (Maint.)	$0.20	$0.15	$0.23	$0.21	$0.34	$0.18	$0.52	$0.95	$0.52	$0.63	$3.78	$0.15	$0.72	$0.15		$8.73	
	Total	$1.61	$3.41	$2.90	$2.60	$1.85	$1.77	$2.02	$2.45	$4.42	$3.06	$46.86	$2.77	$5.23	$2.85		$83.80	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS

	RAYMAP PLACE PS (#15)	CHARTWELL PS (#42)	ARGYLE PS (#14)	BEL AIR ESTATES PS (#13)	GAIRLOCH GARDENS PS (#17)	CUMNOCK CRESCENT PS (#44)	JOSHUA CREEK PS (#99)	MORRISON HEIGHTS PS (#43)	ENNIS CLAIRE PS (#11)	WEAVER AVENUE PS (#45)	NINTH LINE PS (#12)	CHANCERY LANE PS (#10	CARRINGTON PLACE PS (#9)	CEDARBERRY PS (#8)	OSE WWTP	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
2. Environmental																	
▪ Terrestrial environment impact during construction	low	low	low	low	med	med	med	med	low	high	low	low	low	high			A total of 9 pumping stations are identified as high risk due to proximity to shorelines, aquatic features within valleys, or multi-designated terrestrial constraints.
▪ Terrestrial environment long term impact	low	low	low	low	med	med	med	med	low	high	low	low	low	high			
▪ Aquatic environment impact during construction	low	med	low	med	med	med	high	med	med	med	low	med	med	med			
▪ Aquatic environment long term impact	low	High due to proximity to shoreline	Low	High due to proximity to shoreline	High due to proximity to shoreline	Med Near a tributary of a major valley	High Due to number of aquatic intersections	Medium	High due to proximity to shoreline	High Situated on a creek valley	Low	High due to proximity to shoreline	High due to proximity to shoreline	High Situated on a creek valley			
▪ Ability to meet regulatory constraints	Low risk	High risk	Low risk	High risk	High risk	Medium Risk	High risk	Medium risk	High risk	High risk	Low risk	High risk	High risk	High risk			
3. Social																	
▪ Visual/Aesthetic Impact during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction		MED	Assuming all pumping stations will be improved, as needed.
▪ Visual/Aesthetic Impact – Long Term	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered		LOW	Assuming the footprints of the existing pumping stations are not altered.

Force Main Existing Gravity Sewer Proposed Gravity Sewer

OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS

	RAYMAP PLACE PS (#15)	CHARTWELL PS (#42)	ARGYLE PS (#14)	BEL AIR ESTATES PS (#13)	GAIRLOCH GARDENS PS (#17)	CUMNOCK CRESCENT PS (#44)	JOSHUA CREEK PS (#99)	MORRISON HEIGHTS PS (#43)	ENNIS CLAIRE PS (#11)	WEAVER AVENUE PS (#45)	NINTH LINE PS (#12)	CHANCERY LANE PS (#10	CARRINGTON PLACE PS (#9)	CEDARBERRY PS (#8)	OSE WWTP	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
▪ Odour/Noise	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions		LOW	Existing pumping stations have limited odour and noise conditions.
▪ Operations and Maintenance Activities – Long Term	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed		LOW	Equipment will be replaced in each pumping station, as required.
▪ Impact on Adjacent Land (General/Land Use Planning	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land	Primarily Residential Area - No long term impacts on adjacent land		LOW	Any capacity changes in the necessary stations would be within the pumping station footprint.
○ Archaeological	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources	No Impact to archaeological resources		LOW	Assuming all work involved will includes internal modifications to the pumping stations, and replacement of the existing pumping station on the same site in the future, there will be no impact to archaeological resources.
○ Heritage	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources		LOW	Assuming all or future work would include internal modifications and/or replacement of the existing pumping station using the same building footprint and requiring no additional property, no direct or indirect impacts are expected. However, if additional property is required and dependent on the proximity of adjacent cultural heritage resources, construction operations could result in impacts to cultural heritage resources.
○ First Nations	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified		LOW	No registered sites identified in the study area.

Force Main Existing Gravity Sewer Proposed Gravity Sewer

OPTION 1 – MAINTAIN ALL EXISTING PUMPING STATIONS

	RAYMAP PLACE PS (#15)	CHARTWELL PS (#42)	ARGYLE PS (#14)	BEL AIR ESTATES PS (#13)	GAIRLOCH GARDENS PS (#17)	CUMNOCK CRESCENT PS (#44)	JOSHUA CREEK PS (#99)	MORRISON HEIGHTS PS (#43)	ENNIS CLAIRE PS (#11)	WEAVER AVENUE PS (#45)	NINTH LINE PS (#12)	CHANCERY LANE PS (#10	CARRINGTON PLACE PS (#9)	CEDARBERRY PS (#8)	OSE WWTP	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
▪ Reduction of Risk of Basement Flooding	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased		LOW	No change, as pumping station capacities will not be increased.
4. Operations / Technical																	
▪ Operations issues	Ops: A E&P: G D&C: G O/F: N	Ops: A E&P: A D&C: A O/F: N	Ops: A E&P: G D&C: A O/F:N	Ops: G E&P: G D&C: A O/F: L	Ops: G E&P: G D&C: G O/F: N	Ops: G E&P: G D&C: G O/F: N	Ops: G E&P: G D&C: G O/F: N	Ops: G E&P: G D&C: G O/F: N	Ops: A E&P: A D&C: G O/F: N	Ops: G E&P: A D&C: P O/F: N	Ops: G E&P: P D&C: A O/F: M	Ops: A E&P: A D&C: A O/F: N	Ops: A E&P: P D&C: A O/F: N	Ops: G E&P: A D&C: A O/F: N		Ops: A-G E&P: A D&C: A O/F: L	Ops, E&P, D&C: G = Good A = Average P = Poor O/F: H = High M = Medium L= Low N = None
▪ Maintenance	Average	Average	Average	Average	Average	Average	Average	Average	Average	Average	High	High	Average	Average	High	Average	
▪ Constructability	Average	Easy	Easy	Average	Average	Easy	Average	Easy	Average	Easy	Complex	Easy	Easy	Average	Complex	Easy-Average	
▪ Approvals (design compliance)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Potential	N/A	N/A	N/A	Potential	N/A	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

		OPTION 2 – INSTALL LOCAL & TRUNK GRAVITY SEWERS TO REPLACE CERTAIN EXISTING PUMPING STATIONS																OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
		RAYMAP PLACE PS	CHARTWELL PS	ARGYLE PS	BEL AIR ESTATES PS	GAIRLOCH GARDENS PS	CUMNOCK CRESCENT PS	JOSHUA CREEK PS	MORRISON HEIGHTS PS	ENNIS CLAIRE PS	WEAVER AVENUE PS	NINTH LINE PS	CHANCERY LANE PS	CARRINGTON PLACE PS	CEDARBERRY PS	OSE WWTP		
1	**Hydraulic Status**																	
	Current Capacity vs Current Demand	56%	49%	63%	166%	52%	195%	58%	196%	26%	58%	151%	43%	118%	12%			
	Current Capacity vs 2031 Demand	32%	48%	62%	162%	85%	198%	77%	188%	50%	55%	153%	41%	113%	13%			
2	**Condition Status**																	
	Condition rating																	
	Remaining life	25	45	35	22	33	36	5	37	38	38	42	35	38	33			
3	**Operational Status**																	
	Solution Description	Replace existing pumping station with local gravity sewer.	Replace existing pumping station with local gravity sewer.	Replace existing pumping station with trunk gravity sewer.	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station. (LC renewal)	Replace existing pumping station with local gravity sewer.	Upgrade existing pumping station (LC renewal)	Replace existing pumping station with local gravity sewer.	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Upgrade existing pumping station (LC renewal)	Replace existing pumping station with local gravity sewer.	Upgrade existing pumping station (LC renewal)	Replace existing pumping station with local gravity sewer.	Upgrade existing pumping station (LC renewal)		Upgrade 8 stations (Capacity increase and LC renewal) and replace 7 stations with new gravity sewers.
1. Financial (in millions)																		
▪	Capital (sewer)	$3.97	$2.49	$5.69	$0.00	$0.00	$0.24	$0.00	$0.56	$0.00	$0.00	$0.00	$6.05	$0.00	$0.17		$19.16	
▪	Capital (PS)	$0.00	$0.00	$0.00	**$0**	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$11.10	$0.00	$0.00	$0.00		$0	
▪	LCC (Capital)	$0.00	$0.00	$0.82	$1.19	$0.00	$0.87	$0.00	$1.19	$3.39	$11.10	$0.00	$2.33	$0.00	$0.00		$20.90	
▪	LCC (PS)	$0.00	$0.00	$1.46	$0.06	$0.00	$0.40	$0.00	$0.28	$0.30	$16.28	$0.00	$1.78	$0.00	$0.00		$20.56	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

OPTION 2 – INSTALL LOCAL & TRUNK GRAVITY SEWERS TO REPLACE CERTAIN EXISTING PUMPING STATIONS

	RAYMAP PLACE PS	CHARTWELL PS	ARGYLE PS	BEL AIR ESTATES PS	GAIRLOCH GARDENS PS	CUMNOCK CRESCENT PS	JOSHUA CREEK PS	MORRISON HEIGHTS PS	ENNIS CLAIRE PS	WEAVER AVENUE PS	NINTH LINE PS	CHANCERY LANE PS	CARRINGTON PLACE PS	CEDARBERRY PS	OSE WWTP	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
▪ LCC (Operating)	$0.00	$0.00	$0.11	$0.25	$0.00	$0.23	$0.00	$0.23	$0.93	$15.71	$0.00	$0.81	$0.00	$0.00		$18.26	
▪ LCC (Maintenance)	$0.14	$0.38	$0.21	$0.34	$0.00	$0.52	$0.00	$0.52	$0.63	$3.78	$0.40	$0.72	$0.00	$0.14		$7.90	
Total	$2.62	$6.06	$2.60	$1.85	$0.24	$2.02	$0.56	$2.23	$5.25	$46.86	$6.45	$5.63	$0.17	$2.62		$86.78	
2. Environmental	**15**	**42**	**14**	**13**	**17**	**44**	**99**	**43**	**11**	**45**	**12**	**10**	**9**	**8**			
▪ Terrestrial environment impact during construction	Low	Proximity to shoreline Mod-high	Low	low	med	Proximity to creek system, wooded area, greenlands Mod	med	Proximity to creek valley, wooded area, greenlands Mod	low	high	low	Proximity to shoreline Mod-high	low	Proximity to creek valley, wooded area, potentially greenlands Mod			
▪ Terrestrial environment long term impact	None	None	None	low	med	None	med	None	low	high	low	None	low	None			This option eliminates all but 1 high risk pumping station.
▪ Aquatic environment impact during construction	Same as Terrestrial	Same as Terrestrial	Same as Terrestrial	med	med	Same as Terrestrial	high	Same as Terrestrial	med	med	low	Same as Terrestrial	med	Same as Terrestrial			Terrestrial and aquatic impacts for tunnel of deep sewers are considered low as shaft locations can be situated away from sensitive locations. Any dewatering or sub-surface impacts are not addressed in this assessment.
▪ Aquatic environment long term impact	None	None	None	High due to proximity to shoreline	High due to proximity to shoreline	None	High Due to number of aquatic intersections	None	High due to proximity to shoreline	High Situated on a creek valley	Low	None	High due to proximity to shoreline	None			
▪ Ability to meet regulatory constraints	Typical	Typical	Typical	High risk	High risk	Typical	High risk	Typical	High risk	High risk	Low risk	Typical	High risk	Typical			

Force Main Existing Gravity Sewer Proposed Gravity Sewer

OPTION 2 – INSTALL LOCAL & TRUNK GRAVITY SEWERS TO REPLACE CERTAIN EXISTING PUMPING STATIONS

	RAYMAP PLACE PS	CHARTWELL PS	ARGYLE PS	BEL AIR ESTATES PS	GAIRLOCH GARDENS PS	CUMNOCK CRESCENT PS	JOSHUA CREEK PS	MORRISON HEIGHTS PS	ENNIS CLAIRE PS	WEAVER AVENUE PS	NINTH LINE PS	CHANCERY LANE PS	CARRINGTON PLACE PS	CEDARBERRY PS	OSE WWTP	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
3. Social																	
▪ Visual/Aesthetic Impact during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction		HIGH	Assuming all pumping stations will be improved, as needed, or removed, and sewers installed.
▪ Visual/Aesthetic Impact – Long Term	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	No change, as footprint of facility will not be altered	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	No change, as footprint of facility will not be altered	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	No change, as footprint of facility will not be altered	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.		LOW	Assuming the footprints of the existing pumping stations are not altered.
▪ Odour/Noise	No issues, as facility will not be in use	No issues, as facility will not be in use	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	No issues, as facility will not be in use	Existing facility has limited odour/noise conditions	No issues, as facility will not be in use	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	Existing facility has limited odour/noise conditions	No issues, as facility will not be in use	Existing facility has limited odour/noise conditions	No issues, as facility will not be in use		LOW	Existing pumping stations have limited odour and noise conditions.
▪ Operations and Maintenance Activities – Long Term	No operations or maintenance required	No operations or maintenance required	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	No operations or maintenance required	Less maintenance required, as old equipment will be replaced, as needed	No operations or maintenance required	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	Less maintenance required, as old equipment will be replaced, as needed	No operations or maintenance required	Less maintenance required, as old equipment will be replaced, as needed	No operations or maintenance required		LOW	Equipment will be replaced in each pumping station, as required, or the station will be removed.
▪ Impact on Adjacent Land (General/Land Use Planning	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – No long term impacts on adjacent land	Primarily Residential Area – No long term impacts on adjacent land	Primarily Residential Area – No long term impacts on adjacent land	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – No long term impacts on adjacent land	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – No long term impacts on adjacent land	Primarily Residential Area – No long term impacts on adjacent land	Primarily Residential Area – No long term impacts on adjacent land	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – No long term impacts on adjacent land	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)		LOW	Any capacity changes in the necessary stations would be within the pumping station footprint.

→ Force Main → Existing Gravity Sewer ⇢ Proposed Gravity Sewer

OPTION 2 – INSTALL LOCAL & TRUNK GRAVITY SEWERS TO REPLACE CERTAIN EXISTING PUMPING STATIONS

	RAYMAP PLACE PS	CHARTWELL PS	ARGYLE PS	BEL AIR ESTATES PS	GAIRLOCH GARDENS PS	CUMNOCK CRESCENT PS	JOSHUA CREEK PS	MORRISON HEIGHTS PS	ENNIS CLAIRE PS	WEAVER AVENUE PS	NINTH LINE PS	CHANCERY LANE PS	CARRINGTON PLACE PS	CEDARBERRY PS	OSE WWTP	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
○ Archaeological	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential		HIGH	While it is assumed that the new gravity sewer will be installed within the existing ROW, much of the adjacent lands contain archaeological potential based on: Proximity to water; Historic features (derived from 1877 historic atlas). Potential shaft sites may be in areas of archaeological potential.
○ Heritage	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources		HIGH	While it is assumed that new gravity and trunk sewers will be installed within the existing ROW, there are 22 previously identified adjacent cultural heritage resources which could be impacted by construction operations dependent upon proximity of resources to the road ROW and vibration effects in relation to structural materials.
○ First Nations	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified		LOW	No registered sites identified in the study area.
▪ Reduction of Risk of Basement Flooding	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	Reduced risk of basement flooding, as gravity sewers will increase capacity	No change, as capacity will not be increased	Reduced risk of basement flooding, as gravity sewers will increase capacity	No change, as capacity will not be increased	No change, as capacity will not be increased	No change, as capacity will not be increased	Reduced risk of basement flooding, as gravity sewers will increase capacity	No change, as capacity will not be increased	Reduced risk of basement flooding, as gravity sewers will increase capacity		LOW	Overall, reduced risk of basement flooding, as sewers will increase capacity.
4. Operations / Technical																	
▪ Operations issues	Local gravity sewer – no operational concerns: Good			Ops: G E&P: G D&C: A O/F: L	Ops: G E&P: G D&C: G O/F: N	Local GS: Good	Ops: G E&P: G D&C: G O/F: N	Local GS: Good	Ops: A E&P: A D&C: G O/F: N	Ops: G E&P: A D&C: P O/F: N	Ops: G E&P: P D&C: A O/F: M	Local GS: Good	Ops: A E&P: P D&C: A O/F: N	Local GS: Good			Ops, E&P, D&C: G = Good A = Average P = Poor O/F: H = High M = Medium L= Low N = None
▪ Maintenance	160m of local (res): Low	340m of local (res): Low	340m of local (res): Low	Average	Average	120m of local (res): Low	Average	280m of local (res): Low	Average	Average	High	375m of local (res): Low	Average	85m of local (res): Low	High	Low-Average	
▪ Constructability	Easy	Average	Average	Average	Average	Easy	Average	Average	Average	Easy	Complex	Average	Easy	Easy	Comple	Average	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

	OPTION 2 – INSTALL LOCAL & TRUNK GRAVITY SEWERS TO REPLACE CERTAIN EXISTING PUMPING STATIONS																
	RAYMAP PLACE PS	CHARTWELL PS	ARGYLE PS	BEL AIR ESTATES PS	GAIRLOCH GARDENS PS	CUMNOCK CRESCENT PS	JOSHUA CREEK PS	MORRISON HEIGHTS PS	ENNIS CLAIRE PS	WEAVER AVENUE PS	NINTH LINE PS	CHANCERY LANE PS	CARRINGTON PLACE PS	CEDARBERRY PS	OSE WWTP	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
															x		
▪ Approvals (design compliance)	Typical	Typical	Typical	N/A	N/A	Typical	N/A	Typical	N/A	N/A	Potential	Typical	N/A	Typical	Potential	Typical	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

OPTION 3 – INSTALL TRUNK (GRAVITY) SEWERS TO REPLACE EXISTING PUMPING STATIONS

		RAYMAR PLACE PS	CHARTWELL PS	ARGYLE PS	BEL AIR ESTATES PS	GAIRLOCH GARDENS PS	CUMNOCK CRESCENT PS	JOSHUA CREEK PS	MORRISON HEIGHTS PS	ENNIS CLAIRE PS	WEAVER AVENUE PS	NINTH LINE PS	CHANCERY LANE PS	CARRINGTON PLACE PS	CEDARBERRY PS	Trunk Sewer (OSE WWTP)	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
1	**Hydraulic Status**																	
	Current Capacity vs Current Demand	56%	49%	63%	166%	52%	195%	58%	196%	26%	58%	151%	43%	118%	12%			
	Current Capacity vs 2031 Demand	32%	48%	62%	162%	85%	198%	77%	188%	50%	55%	153%	41%	113%	13%			
2	**Condition Status**																	
	Condition rating																	
	Remaining life	25	45	35	22	33	36	5	37	38	38	42	35	38	33			
3	**Operational Status**																	
	Solution Description	Replace existing pumping stations with trunk gravity sewer.														Upgrade existing pumping station (LC renewal)		Replace 14 stations with trunk gravity sewers and upgrade OSE WWTP.
1. Financial (in millions)																		
	▪ Capital (sewer)	$3.97	$2.49	$5.69	$5.70	$1.80	$0.24	$0.40	$0.56	$7.41	$0.28	$10.50	$6.05	$5.38	$0.17		$50.64	
	▪ LCC (PS)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$10.00**	$10.00	
	▪ LCC (FM)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		$0	
	▪ LCC (Operating)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	**$0.90**	$0.90	
	▪ LCC (Maint.)	$0.27	$0.14	$0.38	$0.38	$0.10	$0.00	$0.00	$0.00	$0.00	$0.50	$0.79	$0.00	$0.40	$0.34		$3.28	
	Total	$4.24	$2.62	$6.06	$6.07	$1.90	$0.24	$0.40	$0.56	$7.41	$0.78	$11.29	$6.05	$5.78	$0.51	**$10.90**	$64.81	

Force Main Existing Gravity Sewer Proposed Gravity Sewer

OPTION 3 – INSTALL TRUNK (GRAVITY) SEWERS TO REPLACE EXISTING PUMPING STATIONS

	RAYMAR PLACE PS	CHARTWELL PS	ARGYLE PS	BEL AIR ESTATES PS	GAIRLOCH GARDENS PS	CUMNOCK CRESCENT PS	JOSHUA CREEK PS	MORRISON HEIGHTS PS	ENNIS CLAIRE PS	WEAVER AVENUE PS	NINTH LINE PS	CHANCERY LANE PS	CARRINGTON PLACE PS	CEDARBERRY PS	Trunk Sewer (OSE WWTP)	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
2. Environmental																	
▪ Terrestrial environment impact during construction	Low	Proximity to shoreline Mod-high	Low	Proximity to 1 SAR, shoreline Mod-high	Proximity to 1 SAR, shoreline Mod-high	Proximity to creek system, wooded area, greenlands Mod	Proximity to wooded area, greenlands, aquatic feature High	Proximity to creek valley, wooded area, greenlands Mod	Proximity to shoreline Mod-high	Proximity to creek valley, wooded area, greenlands Mod		Proximity to shoreline Mod-high	Proximity to shoreline Mod-high	Proximity to creek valley, wooded area, potentially greenlands Mod	Low – assumes all new sewers will be constructed by tunnel. Intersects 2 tributaries that drain directly to Lake Ontario. Assumed to be crossed by tunnel. If these are open cut, this option would be re-evaluated as medium to high risk to natural environment features and specifically aquatic features		
▪ Terrestrial environment long term impact	None	None	None	None	None	None	None	None	None	None	n/a (on trunk sewer line)	None	None	None			
▪ Aquatic environment impact during construction	Same as Terrestrial	Same as Terrestrial	Same as Terrestrial	Same as Terrestrial	Same as Terrestrial	Same as Terrestrial	Same as Terrestrial	Same as Terrestrial	Same as Terrestrial	Same as Terrestrial		Same as Terrestrial	Same as Terrestrial	Same as Terrestrial			
▪ Aquatic environment long term impact	None	None	None	None	None	None	None	None	None	None		None	None	None			
▪ Ability to meet regulatory constraints	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Typical	Complex		
3. Social																	
▪ Visual/Aesthetic Impact during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction	Increased vehicular traffic, noise during construction		HIGH	Assuming all pumping stations will be removed and sewers installed.

Force Main — Existing Gravity Sewer — Proposed Gravity Sewer

OPTION 3 – INSTALL TRUNK (GRAVITY) SEWERS TO REPLACE EXISTING PUMPING STATIONS

	RAYMAR PLACE PS	CHARTWELL PS	ARGYLE PS	BEL AIR ESTATES PS	GAIRLOCH GARDENS PS	CUMNOCK CRESCENT PS	JOSHUA CREEK PS	MORRISON HEIGHTS PS	ENNIS CLAIRE PS	WEAVER AVENUE PS	NINTH LINE PS	CHANCERY LANE PS	CARRINGTON PLACE PS	CEDARBERRY PS	Trunk Sewer (OSE WWTP)	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
▪ Visual/Aesthetic Impact – Long Term	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.	More aesthetically pleasing as above ground portions will be removed. Land can be turned into a green space.		LOW	Assuming all stations are removed.
▪ Odour/Noise	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use	No issues, as facility will not be in use		LOW	All pumping stations will be removed.
▪ Operations and Maintenance Activities – Long Term	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required	No operations or maintenance required		LOW	Pumping stations will not be in use, and sewers require minimal operation.
▪ Impact on Adjacent Land (General/Land Use Planning	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)	Primarily Residential Area – Less potential for long term impact on adjacent land (spills, odour)		LOW	All pumping stations will be removed.
○ Archaeological	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential	Archaeological Potential		HIGH	While it is assumed that the new gravity sewer will be installed within the existing ROW, much of the adjacent lands contain archaeological potential based on: Proximity to water; Historic features (derived from 1877 historic atlas). Potential shaft sites may be in areas of archaeological potential.
○ Heritage	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	No impacts to cultural heritage resources	Potential impacts to cultural heritage resources	No impacts to cultural heritage resources		HIGH	While it is assumed that new gravity sewers will be installed within the existing ROW, there are 14 previously identified adjacent cultural heritage resources which could be impacted by construction operations dependent upon proximity of resources to

Force Main Existing Gravity Sewer Proposed Gravity Sewer

	OPTION 3 – INSTALL TRUNK (GRAVITY) SEWERS TO REPLACE EXISTING PUMPING STATIONS																
	RAYMAR PLACE PS	CHARTWELL PS	ARGYLE PS	BEL AIR ESTATES PS	GAIRLOCH GARDENS PS	CUMNOCK CRESCENT PS	JOSHUA CREEK PS	MORRISON HEIGHTS PS	ENNIS CLAIRE PS	WEAVER AVENUE PS	NINTH LINE PS	CHANCERY LANE PS	CARRINGTON PLACE PS	CEDARBERRY PS	Trunk Sewer (OSE WWTP)	OVERALL RATING	COMMENTARY ALL PUMPING STATIONS COMBINED
																	the road ROW and vibration effects in relation to structural materials.
○ First Nations	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified	No registered sites identified		LOW	No registered sites identified.
▪ Reduction of Risk of Basement Flooding	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity	Reduced risk of basement flooding, as gravity sewers will increase capacity		LOW	Reduced risk of basement flooding, as all pumping stations will be replaced with gravity sewers.
4. Operations / Technical																	
▪ Operations issues	Local gravity sewer – no operational concerns: Good														Trunk GS odour/ Low flow: Good	Good	
▪ Maintenance	160m of local (res): Low	340m of local (res): Low	340m of local (res): Low	345m of local (res): Low	225m of local (res): Low	120m of local (res): Low	200m of local (res): Low	280m of local (res): Low	380m of local (res): Low	140m of local (res): Low	0m of local (res): Low	375m of local (res): Low	440m of local (res): Low	85m of local (res): Low	Flat slope requires flushing: Low	Low	
▪ Constructability	Easy	Average	Average	Average	Easy	Easy	Easy	Average	Average	Easy	Average	Average	Average	Easy	Complex	Average	
▪ Approvals (design compliance)	Typical	Typical	Typical	Complex	Typical	Typical	Typical	Typical	Complex	Typical	Typical	Typical	Typical	Typical	Complex	Typical	