



Municipality of Tweed

2022 Budget

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21. Budget Reconciliation, O.Reg. 284/09

Municipality of Tweed
2022 Budget Meeting Agenda – Part 1
November 30, 2021 at 9:00 a.m.

- | | |
|--|-------------|
| 1. Call to Order | 9:00-9:01 |
| 2. Protection Services Long Term Capital Plan and Capital Budget (tab 16) | 9:01-9:30 |
| 3. General Governemnt Long Term Capital Plan and Capital Budget (tab 15) | 9:30-10:00 |
| 3. Recreation Services and Planning Services Long Term Capital Plan and Capital Budget (tab 18) | 10:00-10:45 |
| 4. Transportation Services and Environmental Services Long Term Capital Plan and Capital Budget (tab 17) | 10:45-11:30 |
| 5. Capital Budget Summary (tab 14) | 11:30-11:45 |
| 8. Adjournment | 11:45 |

**Municipality of Tweed
2022 Capital Budget Planned Financing Sources**

Account	Capital Project	2022 Budgeted Expense	Federal Funding	Provincial Funding	Other Grant Funding	Reserve Funding	Reserve Funds Funding	Obligatory Reserve Fund Funding	Other Funding Sources	Municipal Tax Impact	Notes
01-110-58012	Washroom Improvements	17,000.00				17,000.00				-	Convert public washroom at Council Chambers area into accessible washroom
01-110-58014	Annual Computer Renewals	5,360.00				5,000.00				360.00	Annual needs based on long term capital plan
01-110-58014	Annual Printer Renewals	1,130.00				550.63				579.37	Annual needs based on long term capital plan
01-110-58014	Council iPad Renewals	6,000.00				5,000.00				1,000.00	Replacement with each election
01-110-58024	Unfunded 2021 Roof Project	9,527.67				9,527.67				-	Due to rising costs, Council approved funding remainder in 2022 for this project
01-110-58025	Building Repairs	30,000.00				30,000.00				-	2021 carry over project for administration renovations
01-110-58025	Emergency Exit Improvements	15,000.00				15,000.00				-	Some of the emergency exits for the administration office do not have the panic bars or steps that do not meet code. Propose installing panic bars on 3 doors and improve steps outside 1 door on south side of building that is currently too high of a drop
01-110-58025	Heating repairs									-	Heating duct work in the administration building needs replacement as it is not to code; in addition, there are 3 different heating sources that are conflicting with each other - consideration to convert to a single heat source
01-110-58026	Annual Office Furniture Renewals	1,800.00				1,800.00				-	Annual needs based on long term capital plan
01-110-58132	Electronic sign	15,000.00								15,000.00	
01-110-58132	Coming Events sign	4,500.00								4,500.00	
01-110-58100	CAPITAL Non-Budget Items	10,000.00								10,000.00	Set amount for potential unknown capital items. In 2021 it funded the required phone system upgrades.
		<u>115,317.67</u>	-	-	-	<u>83,878.30</u>	-	-	-	<u>31,439.37</u>	
01-210-58000	Roof replacement	45,000.00				45,000.00				-	Roof was partially repaired with addition this year, the remainder of the roof is required to be completed. Costs based on verbal estimate from local contractor. To be funded with remainder of the fire hall reserve from 2021 plus municipal building reserve for the remainder of costs

**Municipality of Tweed
2022 Capital Budget Planned Financing Sources**

Account	Capital Project	2022 Budgeted Expense	Federal Funding	Provincial Funding	Other Grant Funding	Reserve Funding	Reserve Funds Funding	Obligatory Reserve Fund Funding	Other Funding Sources	Municipal Tax Impact	Notes
01-210-58011	Unfunded 2021 Firehall Addition Project	4,892.14								4,892.14	Due to rising costs, Council approved funding remainder in 2022 for this project
01-210-58132	Rescue Equipment										
01-210-58132	Vehicle Replacement	60,000.00				60,000.00				-	Costs based on verbal estimate from local dealer for a 1 ton truck to replace the 2010 Dodge Crew Cab
		<u>109,892.14</u>	-	-	-	105,000.00	-	-	-	4,892.14	
01-310-58131	Vanderwater Road	652,860.00						652,860.00		-	Hwy 37 to Ervine Rd 30 mm Hotmix Everlife
01-310-58131	Queensborough Road	240,000.00		132,396.00				107,140.00		464.00	Bany Rd to Boundary, Hall parking lot with asphalt, gutter, catch basin, 50 mm HL3 Hotmix
01-310-58131	King Street	25,000.00								25,000.00	Queensborough 30mm Everlife Hotmix
01-310-58131	Charles Rd stormwater management	15,000.00								15,000.00	Stage 1 of Jewell Engineering Proposal
01-310-58131	Sidewalk	8,000.00								8,000.00	50 metres on St. Joseph St where low and holding water/ice
01-310-58131	Victoria Cemetery fencing	17,808.00								17,808.00	750' of 4' chain link, 9 gauge mesh, residential frame with single vehicle gate and double vehicle gate
01-310-58132	Tandem Plow/Wing combination	280,000.00				280,000.00				-	Like to purchase new with rent to own option as backhoe needs \$20,000 work on engine
01-310-58132	Backhoe	170,000.00				118,656.34				51,343.66	
01-310-58132	Mower for Holland Tractor	48,000.00								48,000.00	
01-310-58132	Patrol Truck (replace 300)	55,000.00								55,000.00	
01-310-58133	Greatrix Bridge	328,025.00				48,698.00				277,329.00	
01-310-58133	Pre-engineering Joe Allore Bridge	108,500.00				108,500.00				-	
		<u>1,946,193.00</u>	-	132,396.00	-	555,852.34	-	760,000.00	-	497,944.66	
01-330-58014	GRAVEL PIT Esker Rd Pit Licence	13,590.00						13,590.00		-	
		<u>13,590.00</u>	-	-	-	-	-	13,590.00	-	-	
01-410-58022	SANITARY SEWER OCWA	16,667.00				16,667.00				-	
		<u>16,667.00</u>	-	-	-	16,667.00	-	-	-	-	
01-420-58023	River Crossing	1,029,682.51	404,800.00	337,333.33		287,549.18				-	Green Stream 2 grant application
01-420-58001	Water Tower Interior Coating									-	
01-420-58001	Water filter media system	45,000.00				45,000.00				-	
01-420-58011	WATER Water Meters & Hydrants & V	30,000.00				30,000.00				-	2 hydrants and shut off valves
01-420-58022	WATER OCWA	25,728.00				25,728.00				-	
		<u>1,130,408.51</u>	<u>404,800.00</u>	<u>337,333.33</u>	-	<u>388,275.18</u>	-	-	-	-	
01-440-58000	BluMetric Hunt Road	22,400.00					22,400.00			-	
01-440-58000	BluMetric Marlbank Road	5,700.00					5,700.00			-	
		<u>28,100.00</u>	-	-	-	-	28,100.00	-	-	-	
01-510-58000	Recreation Area Shelter	40,000.00				40,000.00				-	

**Municipality of Tweed
2022 Capital Budget Planned Financing Sources**

Account	Capital Project	2022 Budgeted Expense	Federal Funding	Provincial Funding	Other Grant Funding	Reserve Funding	Reserve Funds Funding	Obligatory Reserve Fund Funding	Other Funding Sources	Municipal Tax Impact	Notes
01-510-58000	Repainting barns	2,500.00								2,500.00	
01-510-58000	Royal Victoria Parkette Gazebo	40,000.00				37,340.50				2,659.50	
01-510-58018	Tree removal and replanting	15,000.00								15,000.00	
01-510-58019	Garbage and recycling receptacles	5,000.00								5,000.00	
01-510-58038	PARKS Planters	1,000.00								1,000.00	
01-510-58039	Christmas/Seasonal Decorations	10,000.00				5,000.00				5,000.00	
01-510-58050	LED lighting at Stoco/Chareilton	45,000.00								45,000.00	
01-510-58050	Chareilton in-field screenings and edggr	10,000.00								10,000.00	
01-510-58050	Pumptrack/skatepark	250,000.00			200,000.00			43,154.19		6,845.81	
01-510-58050	Fencing	5,000.00								5,000.00	
01-510-58050	Beach sand	25,000.00								25,000.00	
01-510-58132	New mower	15,000.00								15,000.00	
01-510-58132	Rake for tractor	1,000.00								1,000.00	
01-510-58132	Aqua thruster (2)	20,000.00								20,000.00	
		<u>484,500.00</u>	-	-	200,000.00	82,340.50	-	43,154.19	-	159,005.31	
01-512-58014	HAMLET REC Actinolite Hall Improver	3,000.00								3,000.00	
01-514-58014	HAMLET REC Marlbank Pavilion Impr	3,000.00								3,000.00	
01-516-58014	HAMLET REC Queensborough Hall Irr	3,000.00								3,000.00	
01-516-58020	Queensborough Hall Renovations	357,000.00			256,400.00					100,600.00	
01-518-58014	HAMLET REC Thomasburg Hall Impro	3,000.00								3,000.00	
		<u>369,000.00</u>	-	-	256,400.00	-	-	-	-	112,600.00	
01-520-58000	Arena - upstairs renovations	25,000.00				25,000.00				-	
01-520-58000	Arena - accessible lift/washroom	102,000.00			85,000.00	17,000.00				-	
01-520-58132	Dehumidifiers	45,000.00				45,000.00				-	
01-520-58132	Ice edger	6,000.00				6,000.00				-	
01-520-58132	Cameras - parking lot	3,000.00				623.00				2,377.00	
01-520-58132	Canteen - grill	1,500.00								1,500.00	
01-520-58132	Scrolling message board	1,650.00								1,650.00	
01-520-58132	Control box for score clock	6,000.00				6,000.00				-	
01-520-58132	Floor scrubber	4,000.00				4,000.00				-	
		<u>194,150.00</u>	-	-	85,000.00	103,623.00	-	-	-	5,527.00	
01-525-58000	Splashpad filter pump replacement	3,000.00								3,000.00	
01-525-58000	Splashpad rain diverter	20,000.00				1,250.00				18,750.00	
01-525-58000	Splashpad replace painting instead of 1	500.00								500.00	
		<u>23,500.00</u>	-	-	-	1,250.00	-	-	-	22,250.00	
01-555-58000	Pool liner	200,000.00				89,000.00				111,000.00	
01-555-58052	Gas heater to pool	25,000.00								25,000.00	
		<u>225,000.00</u>	-	-	-	89,000.00	-	-	-	136,000.00	
01-125-58017	Hydrant Painting	4,000.00								4,000.00	
01-125-58132	Banners	6,000.00								6,000.00	
		<u>10,000.00</u>	-	-	-	-	-	-	-	10,000.00	
		<u>4,666,318.32</u>	404,800.00	489,729.33	541,400.00	1,425,886.32	41,690.00	803,154.19	-	979,658.48	

**Municipality of Tweed
Long Term Capital Plan - Administration**

Asset	Year Acquired/ Last Updated	Expected Replacement/ Renovation	Historical Cost	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Elevator	2017	2042	40,000.00										
Hungerford Office (Lions)	2018	2058	82,802.12										
Furnace (rooftop units)	2014	2034	83,486.22										
Administration building	2011	2051	300,850.98	62,000.00									
Admin ramp/railings	2015	2055	18,545.00										
Elzevir Office	1990	2030	118,036.80									118,036.80	
Admin Bldg Signage	2012	2032	5,762.67										
Library - HVAC system	2020	2035	66,601.90										
Parking Lot pavement	2016	2036	17,362.32										
Electronic sign	2021	2022	14,093.34	19,500.00									
Computers		every 5 years	32,209.10	5,360.00	5,360.00	5,360.00	5,360.00	5,360.00					
Furniture		Every 15 years	27,224.89	1,800.00	1,800.00	1,800.00	1,800.00	1,800.00	1,800.00	1,800.00	1,800.00	1,800.00	1,800.00
Debit Machine	2007	Not to be renewed	2,500.00										
Fax Machine	2012	2027	594.30						594.30				
Filing Cabinets	2012	Not to be renewed	7,151.08										
Kitchen Fridge	2008	2023	600.00		600.00								
Map Cabinet	2007	Not to be renewed	1,600.00										
Kitchen Microwave	1989	2026	200.00					200.00					
Phone system	2021	2041	7,341.98										
Printers	2020	every 5 years	5,657.51	1,130.00	1,130.00	1,130.00	1,130.00	1,130.00					
iPads	2012	every 4 years	5,837.74	6,000.00				6,000.00					
Solar Panel - Country Garage	2013	2033	40,610.38										
Total Costs			839,068.33	95,790.00	8,890.00	8,290.00	8,290.00	14,490.00	2,394.30	1,800.00	1,800.00	119,836.80	1,800.00
Administration Capital Reserve			22,700.00	12,350.63	2,783.34	1,937.50	1,870.00	3,558.53	200.00				
Municipal Building Reserve			267,114.40	62,000.00								118,036.80	
Remaining Amounts to be Funded				21,439.37	6,106.66	6,352.50	6,420.00	10,931.47	2,194.30	1,800.00	1,800.00	1,800.00	1,800.00
2022 Transfer to Reserves Requirement			36,460.53	-	3,053.33	2,117.50	1,605.00	2,186.29	365.72	257.14	225.00	200.00	180.00
5 Year basis only - Admin			9,327.84										
5 Year basis only - building			-										

**Municipality of Tweed
Long Term Capital Plan - Administration**

Asset	2032	2033	2034	2035	2036	2040	2041	2042	2051	2055	2058
Elevator								40,000.00			
Hungerford Office (Lions)											82,802.12
Furnace (rooftop units)			83,486.22								
Administration building						60,000.00			300,850.98		
Admin ramp/railings										18,545.00	
Elzevir Office											
Admin Bldg Signage	5,762.67										
Library - HVAC system				66,601.90							
Parking Lot pavement					17,362.32						
Electronic sign											
Computers											
Furniture	1,800.00	1,800.00	1,800.00	1,800.00	1,800.00						
Debit Machine											
Fax Machine											
Filing Cabinets											
Kitchen Fridge											
Map Cabinet											
Kitchen Microwave											
Phone system							7,341.98				
Printers											
iPads											
Solar Panel - Country		40,610.38									
Garage											
Total Costs	7,562.67	42,410.38	85,286.22	68,401.90	19,162.32	60,000.00	7,341.98	40,000.00	300,850.98	18,545.00	82,802.12
Administration Capital Reserve											
Municipal Building Reserve			83,486.22	3,591.38							
Remaining Amounts to be Funded	7,562.67	42,410.38	1,800.00	64,810.52	19,162.32	60,000.00	7,341.98	40,000.00	300,850.98	18,545.00	82,802.12
2022 Transfer to Reserves Requirement	687.52	3,534.20	138.46	4,629.32	1,277.49	3,157.89	367.10	1,904.76	10,028.37	545.44	2,237.90
5 Year basis only - Admin											
5 Year basis only - building											

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2022 Capital Budget Planned Financing Sources**

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01-110-58014	Annual Computer Renewals	5,360.00				5,000.00				360.00	Annual needs based on long term capital plan
01-110-58014	Annual Printer Renewals	1,130.00				550.63				579.37	Annual needs based on long term capital plan
01-110-58014	Council iPad Renewals	6,000.00				5,000.00				1,000.00	Replacement with each election
01-110-58024	Unfunded 2021 Roof Project	9,527.67				9,527.67				-	Due to rising costs, Council approved funding remainder in 2022 for this project
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01-110-58025	Heating repairs									-	Heating duct work in the administration building needs replacement as it is not to code; in addition, there are 3 different heating sources that are conflicting with each other - consideration to convert to a single heat source
01-110-58026	Annual Office Furniture Renewals	1,800.00				1,800.00				-	Annual needs based on long term capital plan
01-110-58132	Electronic sign	15,000.00								15,000.00	
01-110-58132	Coming Events sign	4,500.00								4,500.00	
01-110-58100	CAPITAL Non-Budget Items	10,000.00								10,000.00	Set amount for potential unknown capital items. In 2021 it funded the required phone system upgrades.
		<u>115,317.67</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>83,878.30</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>31,439.37</u>	

**Municipality of Tweed
Long Term Capital Plan - Fire Department**

Asset	Year	Expected Replacement/ Renovation	Historical Cost/Estimated Replacement	2022	2023	2024	2025	2026	2027	2029
	Acquired / Last Updated									
Driveway	2019	2023	2,000.00		2,000.00		2,000.00		2,000.00	2,000.00
Firehall and renovations	2021	2040	357,137.13	45,000.00			40,000.00			
Fire Hall Gas Furnace	2017	2037	22,000.00							
Mobile Generators	2006	2030	72,345.00							
Extraction Tool	2014	2029	8,500.00							8,500.00
Portable Pump	2016	2026	8,500.00					8,500.00		
Jaws of Life	2016	2026	18,000.00					18,000.00		
Water Pump	2012	2023	8,500.00		8,500.00					
Airpack bottles/masks	2019	2034	5,800.00							
Air Pacs	2012	2027	102,000.00						102,000.00	
Air Pacs	2017	2032	41,000.00							
Air Pacs	2020	2035	20,171.15							
Air compressor	2015	2030	42,500.00							
Radios/pagers	2015	2023	18,000.00		18,000.00					
Repeater Tower	2021	2036	20,000.00							
Grass Fire Skid Unit	2019	2034	17,000.00							
Offroad Vehicle	2020	2035	22,500.00							
Rescue Equipment	2006	2023	45,000.00		45,000.00					
Infrared Camera	2014	2024	8,000.00			8,000.00				
2015 Tanker Truck	2018	2038	310,000.00							
2010 Dodge Crew Cab	2017	2022	60,000.00	60,000.00						
06 International Pumper	2007	2027	600,000.00						600,000.00	
Tanker Truck	2016	2036	385,000.00							
Rescue Van	2010	2030	300,000.00							
ATV Trailer	2020	2035	5,000.00							
Grass Fire Trailer	2010	2030	5,000.00							
Air bags	2021	2036	9,000.00							
Total Costs			2,512,953.28	105,000.00	73,500.00	8,000.00	42,000.00	26,500.00	704,000.00	10,500.00
Current Fire Building Reserve Used				23,202.02						
Current Fire Equipment Reserve Used				60,000.00	71,500.00	8,000.00	-	26,500.00	33,000.00	
Remaining Amounts to be Funded				21,797.98	2,000.00	-	42,000.00	-	671,000.00	10,500.00
2022 Transfer to Reserves Requirement			306,539.14	-	1,000.00	-	10,500.00	-	111,833.33	1,312.50
5 year basis only - building			11,833.33							
5 year basis only - equipment			111,500.00							

**Municipality of Tweed
Long Term Capital Plan - Fire Department**

Asset	2030	2031	2032	2034	2035	2036	2037	2038	2040
Driveway		2,000.00							
Firehall and renovations									1,500,000.00
Fire Hall Gas Furnace							22,000.00		
Mobile Generators	72,345.00								
Extraction Tool									
Portable Pump									
Jaws of Life									
Water Pump									
Airpack bottles/masks				5,800.00					
Air Pacs									
Air Pacs			41,000.00						
Air Pacs					20,171.15				
Air compressor	42,500.00								
Radios/pagers									
Repeater Tower						20,000.00			
Grass Fire Skid Unit				17,000.00					
Offroad Vehicle					22,500.00				
Rescue Equipment									
Infrared Camera								310,000.00	
2015 Tanker Truck									
2010 Dodge Crew Cab									
06 International Pumper									
Tanker Truck						385,000.00			
Rescue Van	300,000.00								
ATV Trailer					5,000.00				
Grass Fire Trailer	5,000.00								
Air bags						9,000.00			
Total Costs	419,845.00	2,000.00	41,000.00	22,800.00	47,671.15	414,000.00	22,000.00	310,000.00	1,500,000.00
Current Fire Building Reserve Used									
Current Fire Equipment Reserve Used									
Remaining Amounts to be Funded	419,845.00	2,000.00	41,000.00	22,800.00	47,671.15	414,000.00	22,000.00	310,000.00	1,500,000.00
2022 Transfer to Reserves Requirement	46,649.44	200.00	3,727.27	1,753.85	3,405.08	27,600.00	1,375.00	18,235.29	78,947.37
5 year basis only - building									
5 year basis only - equipment									

**Municipality of Tweed
2022 Capital Budget Planned Financing Sources**

Account	Capital Project	2022 Budgeted Expense	Federal Funding	Provincial Funding	Other Grant Funding	Reserve Funding	Reserve Funds Funding	Obligatory Reserve Fund Funding	Other Funding Sources	Municipal Tax Impact	Notes
01-210-58000	Roof replacement	45,000.00				45,000.00					- Roof was partially repaired with addition this year, the remainder of the roof is required to be completed. Costs based on verbal estimate from local contractor. To be funded with remainder of the fire hall reserve from 2021 plus municipal building reserve for the remainder of costs
01-210-58011	Unfunded 2021 Firehall Addition Proje	4,892.14								4,892.14	Due to rising costs, Council approved funding remainder in 2022 for this project
01-210-58132	Vehicle Replacement	60,000.00				60,000.00					- Costs based on verbal estimate from local dealer for a 1 ton truck to replace the 2010 Dodge Crew Cab
		109,892.14	-	-	-	105,000.00	-	-	-	4,892.14	

Municipality of Tweed
Long Term Capital Plan - Public Works Water Sewer

Asset	Year Acquired / Last Updated	Expected Replacement/ Renovation	Replacement Cost Estimates	2022	2023	2024	2025	2026	2027	2028
<i>Per Asset Management Plan - Priorities</i>										
Lost Channel Bridge (6) - Lost Channel Rd										
Catons Bridge N (8) - Carss Rd										
Catons Bridge S (7) - Carss Rd										
East Red Bridge (30) - Black River Rd							-			
West Red Bridge (31) - Black River Rd							-			
Morton Memorial Bridge (19)										
Ross Bridge (40)										
Joe Trudeau Bridge (49)										
Moira River N Connection (Bridge St E to Moira St)		2022	1,029,682.51	1,029,682.51						
Hydrant 70		2022	15,000.00	15,000.00						
Queensborough Rd (Barry Road to Boundary and Hall Parking Lot) & Stormwater		2022	240,000.00	240,000.00						
Charles Rd (Charles Court to end)		2023	120,000.00		120,000.00					
Pomeroy Court (College to end)		2023	5,915.00		5,915.00					
Pomeroy Court (College to end) - Water		2023	37,400.00		37,400.00					
Pomeroy Court (College to end) - Sewer		2023	24,000.00		24,000.00					
Rocky Alter Bridge (12) - Allore Rd		2024	855,000.00			855,000.00				
Arthur (Brooklyn to Louisa)		2024	61,456.00			61,456.00				
Arthur (Brooklyn to Louisa) - Water		2024	224,400.00			224,400.00				
Arthur (Brooklyn to Louisa) - Sewer		2024	131,500.00			131,500.00				
Arthur - Hydrant 84, 83 and 82		2024	30,000.00			30,000.00				
Reynolds Culvert (38) - Flinton Road		2025	510,000.00				510,000.00			
Hungerford (Park to Metcalf)		2025	65,260.00				65,260.00			
Hungerford (Park to Metcalf) - Water		2025	246,992.00				246,992.00			
Hungerford (Park to Metcalf) - Sewer		2025	148,500.00				148,500.00			

Municipality of Tweed
Long Term Capital Plan - Public Works Water Sewer

Asset	Year		Replacement Cost Estimates	2022	2023	2024	2025	2026	2027	2028
	Acquired / Last Updated	Expected Renovation/ Replacement/								
Hydrant 94 and 93		2025	20,000.00				20,000.00			
Quinns Lane (Victoria St to Colborne)		2025	13,943.00				13,943.00			
Sexsmith (Hwy 7 to end)		2025	37,950.00				37,950.00			
James St S (River E to George)		2026	35,000.00					35,000.00		
James St S (River E to George) - Water		2026	62,900.00					62,900.00		
James St S (River E to George) - Sewer		2026	64,000.00					64,000.00		
Jamieson E (Victoria N to James N)		2026	79,831.00					79,831.00		
Jamieson E (Victoria N to James N) - Water		2026	325,550.00					325,550.00		
Jamieson E (Victoria N to James N) - Sewer		2026	192,500.00					192,500.00		
Jamieson E - Hydrant 64		2026	10,000.00					10,000.00		
Hannah (Louisa to James N)		2026	17,428.00					17,428.00		
Hannah (Louisa to James N) - Water		2026	78,200.00					78,200.00		
Hannah (Louisa to James N) - Sewer		2026	46,000.00					46,000.00		
James St N (Jamieson to Hannah)		2026	20,271.00					20,271.00		
James St N (Jamieson to Hannah) - Water		2026	95,200.00					95,200.00		
James St N (Jamieson to Hannah) - Sewer		2026	52,500.00					52,500.00		
Moira (Brooklyn to Hwy 37)		2027	133,528.00						133,528.00	
Moira (Brooklyn to Hwy 37) - Water		2027	441,150.00						441,150.00	
Moira (Arthur to Hwy 37) - Sewer		2027	265,500.00						265,500.00	
Moira - Hydrant 43		2027	10,000.00						10,000.00	
<u>All Other Assets</u>										
Hydrants (1)				15,000.00						
Vanderwater Rd (Hwy 37 to Ervine Road)		2022	652,860.00	652,860.00						
King St (Queensborough)		2022	25,000.00	25,000.00						
Charles Rd Stormwater Management		2022		15,000.00						
Greatrix Bridge - Robinson Rd		2022	22,670.60	326,025.00						
Joe Allore Bridge (#46)		2023	108,500.00	108,500.00	1,590,000.00					
McClellan St		2023	900,000.00		900,000.00					

**Municipality of Tweed
Long Term Capital Plan - Public Works Water Sewer**

Asset	Year Acquired / Last Updated	Expected Replacement/ Renovation	Replacement Cost Estimates	2022	2023	2024	2025	2026	2027	2028
McClellan St - Water		2023	300,000.00		300,000.00					
McClellan St - Sewer		2023	300,000.00		300,000.00					
Dowling Bridge		2024	585,000.00			585,000.00				
Roads - all others noted in AMP										11,096,840.00
Bridges - all others noted in AMP										2,151,000.00
Water - all others noted in AMP										4,035,299.00
Sewer - all others noted in AMP										1,621,563.00
Stormwater - all others noted in AMP										
<u>Per TCA (other assets not yet in AMP)</u>										
2 Ton		2023	100,000.00		100,000.00					
Stoco Garage	2010	2050	102,453.83							
Stoco Sand Dome	2016	2036	98,701.86							
Marlbank Sand Dome	2006	2046	106,106.00							
Countryman Garage	1978	2040	79,948.80							
Countryman Salt Dome	1978	2025	38,569.05				38,569.05			
Actinolite Garage	1992	2032	181,301.75							
Actinolite Sand Dome	1992	2032	103,390.00							
Quanset Hut	1975	2030	25,458.02							
PW Dome	2010	2050	53,628.80							
2006 Case/580 Backhoe	2006	2022	170,000.00	170,000.00						
2008 550 Ford Dump Truck/Plow	2008	2025	280,000.00							280,000.00
New Dump truck/plow		2022	280,000.00	280,000.00						
2008 Sterling Lt9513 Tandem	2008	2025	300,000.00							300,000.00
2008 F250 Pickup	2008	2022	55,000.00	55,000.00						
2011 Intern 7600 Tandem	2011	2023	300,000.00		300,000.00					
2011 Excavator	2011	2023	227,120.54		227,120.54					
2012 Intern 7600 Tandem	2012	2024	300,000.00			300,000.00				
1997 Holland Tractor	1997	2030	15,264.00	48,000.00						
2020 Ford F150	2020	2030	29,500.00							
2013 John Deere Loader	2013	2023	175,102.50		175,102.50					
2016 Ford 1/2 Ton	2016	2026	37,019.93					37,019.93		
2015 Mack Tandem	2015	2025	242,847.79				242,847.79			
2015 Mack Truck	2016	2026	229,669.00					229,669.00		
2017 Mack Tandem Plow & Wing	2018	2028	265,663.59							265,663.59
1996 Volvo/L-70 Loader	2013	2028	70,486.15							70,486.15
2002 Volvo/G740 Grader	2018	2033	213,074.20							

Municipality of Tweed
Long Term Capital Plan - Public Works Water Sewer

Asset	Year			2022	2023	2024	2025	2026	2027	2028
	Acquired / Last Updated	Expected Renovation	Replacement Cost Estimates							
2014 1/2 Ton Truck	2018	2028	17,119.00							17,119.00
Gravel Packer	2019	2039	20,835.36							
GPS Indicators	2015	2025	19,524.38				19,524.38			
Sidewalk Plow blower & broom	2016	2026	67,451.50					67,451.50		
Sweeper Brush	2013	2023	1,765.54		1,765.54					
Grader	2019	2039	380,993.33							
Stoco Shop Furnace	2019	2039	40,308.15							
Culvert Steamer	2021	2061	17,512.90							
Culvert Steamer	1990	2030	20,000.00							
Hunt Rd Well - WDS	2013	2033	11,137.40							
Maribank Rd Well WDS	2013	2033	8,335.24							
Weigh scales	2013	2023	43,536.80		43,536.80					
WDS Compactor 936 Cat	2008	2023	93,628.85		93,628.85					
WDS Scale Bldg	2013	2053	12,856.09							
WDS Depot	2008	2048	141,733.60							
2007 JD 605C Crawler Loader	2021	2037	97,587.84							
Total Costs			13,715,218.90	2,980,067.51	4,218,469.23	2,187,356.00	1,923,586.22	1,413,520.43	850,178.00	19,257,970.74
Gas Tax Funding				760,000.00	400,041.00	400,041.00	400,041.00	400,041.00	400,041.00	400,041.00
OCIF Funding				132,396.00	132,396.00	132,396.00	132,396.00	132,396.00	132,396.00	132,396.00
Other Grants				742,133.33						
Current Waste Reserve Fund Used			1,268,947.07		137,165.65					
Current Road Reserve Used			398,656.34	398,656.34						
Current Bridge Reserve Used			244,514.71	157,196.00	87,318.71					
Current Water Reserve			653,190.00	317,549.18	337,400.00	- 1,759.18				
Current Sewer Reserve			616,231.06	-	324,000.00	131,500.00	148,500.00	12,231.06		
Remaining Amounts to be Funded				472,136.66	2,800,147.87	1,525,178.18	1,242,649.22	868,852.37	317,741.00	18,725,533.74
2022 Transfer to Reserves Requirement			6,367,965.15	-	1,400,073.94	508,392.73	310,662.31	173,770.47	52,956.83	2,675,076.25
5 year	Water		190,094.73							
	Sewer		262,405.12							
	Roads		912,005.03							
	Bridges		1,081,351.40							
	Waste		-							

**Municipality of Tweed
Long Term Capital Plan - Public Works Water Sewer**

Asset	2029	2030	2031	2032	2033	2035	2036	2037	2038	2039	2040
McClellan St - Water											
McClellan St - Sewer											
Dowling Bridge											
Roads - all others noted in AMP	1,559,268.00	1,683,296.00	1,150,479.00	989,568.00	2,333,175.00		834,000.00				
Bridges - all others noted in AMP	3,232,500.00										
Water - all others noted in AMP	627,200.00	395,250.00	40,000.00	20,000.00	10,000.00		100,000.00	10,000.00	217,650.00	60,000.00	
Sewer - all others noted in AMP	296,253.00	233,500.00				60,000.00			123,552.00	60,000.00	20,000.00
Stormwater - all others noted in AMP											
<u>Per TCA (other assets not yet in AMP)</u>											
2 Ton											
Stoco Garage											
Stoco Sand Dome							98,701.86				
Maribank Sand Dome											79,948.80
Countryman Garage											
Countryman Salt Dome											
Actinolite Garage				181,301.75							
Actinolite Sand Dome				103,390.00							
Quanset Hut		25,458.02									
PW Dome											
2006 Case/580 Backhoe											
2008 550 Ford Dump Truck/Plow											
New Dump truck/plow											
2008 Sterling Lt9513 Tandem											
2008 F250 Pickup											
2011 Intern 7600 Tandem											
2011 Excavator											
2012 Intern 7600 Tandem											
1997 Holland Tractor		15,264.00									
2020 Ford F150		29,500.00									
2013 John Deere Loader											
2016 Ford 1/2 Ton											
2015 Mack Tandem											
2015 Mack Truck											
2017 Mack Tandem Plow & Wing											
1996 Volvo/L-70 Loader											
2002 Volvo/G740 Grader					213,074.20						

**Municipality of Tweed
Long Term Capital Plan - Public Works Water Sewer**

Asset	2029	2030	2031	2032	2033	2035	2036	2037	2038	2039	2040
2014 1/2 Ton Truck											
Gravel Packer										20,835.36	
GPS Indicators											
Sidewalk Plow blower & broom											
Sweeper Brush											
Grader										40,308.15	
Stoco Shop Furnace										11,137.40	
Culvert Steamer											
Culvert Steamer		20,000.00									
Hunt Rd Well - WDS					11,137.40						
Marbank Rd Well WDS					8,335.24						
Weigh scales											
WDS Compactor 936 Cat											
WDS Scale Bldg											
WDS Depot											
2007 JD 605C Crawler Loader								97,587.84			
Total Costs	5,715,221.00	2,402,268.02	1,190,479.00	1,294,259.75	2,575,721.84	60,000.00	1,032,701.86	107,587.84	341,202.00	192,280.91	99,948.80
Gas Tax Funding	400,041.00	400,041.00	400,041.00	400,041.00	400,041.00		669,208.00		76,410.00		
OCIF Funding	132,396.00	132,396.00	132,396.00	132,396.00	132,396.00		264,792.00		264,792.00		
Other Grants											
Current Waste Reserve Fund Used					19,472.64			97,587.84			
Current Road Reserve Used											
Current Bridge Reserve Used											
Current Water Reserve											
Current Sewer Reserve											
Remaining Amounts to be Funded	5,182,784.00	1,869,831.02	658,042.00	761,822.75	2,023,812.20	60,000.00	98,701.86	10,000.00	-	192,280.91	99,948.80
2022 Transfer to Reserves Requirement	647,848.00	207,759.00	65,804.20	69,256.61	168,651.02	4,285.71	6,580.12	625.00	-	10,682.27	5,260.46

**Municipality of Tweed
Long Term Capital Plan - Public Works Water Sewer**

Asset	2042	2044	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055
McClellan St - Water												
McClellan St - Sewer												
Dowling Bridge												
Roads - all others noted in AMP												
Bridges - all others noted in AMP												
Water - all others noted in AMP	30,000.00	10,000.00	60,000.00	20,000.00	40,000.00	140,000.00		90,350.00	60,000.00		50,000.00	10,000.00
Sewer - all others noted in AMP								971,500.00				
Stormwater - all others noted in AMP												
<u>Per TCA (other assets not yet in AMP)</u>												
2 Ton												
Stoco Garage								102,453.83				
Stoco Sand Dome												
Marlbank Sand Dome			106,106.00									
Countryman Garage												
Countryman Salt Dome												
Actinolite Garage												
Actinolite Sand Dome												
Quanset Hut												
PW Dome								53,628.80				
2006 Case/580 Backhoe												
2008 550 Ford Dump Truck/Plow												
New Dump truck/plow												
2008 Sterling Lt9513 Tandem												
2008 F250 Pickup												
2011 Intern 7600 Tandem												
2011 Excavator												
2012 Intern 7600 Tandem												
1997 Holland Tractor												
2020 Ford F150												
2013 John Deere Loader												
2016 Ford 1/2 Ton												
2015 Mack Tandem												
2015 Mack Truck												
2017 Mack Tandem Plow & Wing												
1996 Volvo/L-70 Loader												
2002 Volvo/G740 Grader												

**Municipality of Tweed
Long Term Capital Plan - Public Works Water Sewer**

Asset	2042	2044	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055
2014 1/2 Ton Truck												
Gravel Packer												
GPS Indicators												
Sidewalk Plow blower & broom												
Sweeper Brush												
Grader												
Stoco Shop Furnace												
Culvert Steamer												
Culvert Steamer												
Hunt Rd Well - WDS												
Marlbank Rd Well WDS												
Weigh scales												
WDS Compactor 936 Cat										12,856.09		
WDS Scale Bldg												
WDS Depot					141,733.60							
2007 JD 605C Crawler Loader												
Total Costs	30,000.00	10,000.00	166,106.00	20,000.00	181,733.60	140,000.00	156,082.63	1,061,850.00	60,000.00	12,856.09	50,000.00	10,000.00
Gas Tax Funding												
OCIF Funding												
Other Grants												
Current Waste Reserve Fund Used					141,733.60					12,856.09		
Current Road Reserve Used												
Current Bridge Reserve Used												
Current Water Reserve												
Current Sewer Reserve												
Remaining Amounts to be Funded	30,000.00	10,000.00	166,106.00	20,000.00	40,000.00	140,000.00	156,082.63	1,061,850.00	60,000.00	-	50,000.00	10,000.00
2022 Transfer to Reserves Requirement	1,428.57	434.78	6,644.24	769.23	1,481.48	5,000.00	5,382.16	35,395.00	1,935.48	-	1,515.15	294.12

**Municipality of Tweed
Long Term Capital Plan - Public Works Water Sewer**

Asset	2056	2057	2058	2059	2061	2071	2074	2076	2082	2083	2084
McClellan St - Water											
McClellan St - Sewer											
Dowling Bridge											
Roads - all others noted in AMP											
Bridges - all others noted in AMP											
Water - all others noted in AMP	1,030,000.00	10,000.00	40,000.00	40,000.00			1,000,000.00		1,000,000.00		1,347,437.00
Sewer - all others noted in AMP						5,000,000.00		450,000.00			1,012,468.00
Stormwater - all others noted in AMP										2,330,000.00	
<u>Per TCA (other assets not yet in AMP)</u>											
2 Ton											
Stoco Garage											
Stoco Sand Dome											
Maribank Sand Dome											
Countryman Garage											
Countryman Salt Dome											
Actinolite Garage											
Actinolite Sand Dome											
Quanset Hut											
PW Dome											
2006 Case/580 Backhoe											
2008 550 Ford Dump											
Truck/Plow											
New Dump truck/plow											
2008 Sterling Lt9513 Tandem											
2008 F250 Pickup											
2011 Intern 7600 Tandem											
2011 Excavator											
2012 Intern 7600 Tandem											
1997 Holland Tractor											
2020 Ford F150											
2013 John Deere Loader											
2016 Ford 1/2 Ton											
2015 Mack Tandem											
2015 Mack Truck											
2017 Mack Tandem Plow & Wing											
1996 Volvo/L-70 Loader											
2002 Volvo/G740 Grader											

**Municipality of Tweed
Long Term Capital Plan - Public Works Water Sewer**

Asset	2056	2057	2058	2059	2061	2071	2074	2076	2082	2083	2084
2014 1/2 Ton Truck											
Gravel Packer											
GPS Indicators											
Sidewalk Plow blower & broom											
Sweeper Brush											
Grader											
Stoco Shop Furnace											
Culvert Steamer					17,512.90						
Culvert Steamer											
Hunt Rd Well - WDS											
Marlbank Rd Well WDS											
Weigh scales											
WDS Compactor 936 Cat											
WDS Scale Bldg											
WDS Depot											
2007 JD 605C Crawler Loader											
Total Costs	1,030,000.00	10,000.00	40,000.00	40,000.00	17,512.90	5,000,000.00	1,000,000.00	450,000.00	1,000,000.00	2,330,000.00	2,359,905.00
Gas Tax Funding											
OCIF Funding											
Other Grants											
Current Waste Reserve Fund Used											
Current Road Reserve Used											
Current Bridge Reserve Used											
Current Water Reserve											
Current Sewer Reserve											
Remaining Amounts to be Funded	1,030,000.00	10,000.00	40,000.00	40,000.00	17,512.90	5,000,000.00	1,000,000.00	450,000.00	1,000,000.00	2,330,000.00	2,359,905.00
2022 Transfer to Reserves Requirement	29,428.57	277.78	1,081.08	1,052.63	437.82	100,000.00	18,867.92	8,181.82	16,393.44	37,580.65	37,458.81

**Municipality of Tweed
Long Term Capital Plan - Public Works Water Sewer**

Asset	2085	2088	2089	2090	2098	2099	2101	2102	2106	2107	2108
McClellan St - Water											
McClellan St - Sewer											
Dowling Bridge											
Roads - all others noted in AMP											
Bridges - all others noted in AMP											
Water - all others noted in AMP			160,650.00		1,500,000.00	258,400.00	430,950.00	204,000.00	774,350.00	197,200.00	527,000.00
Sewer - all others noted in AMP						132,000.00	186,000.00	116,000.00		187,000.00	244,500.00
Stormwater - all others noted in AMP	2,610,000.00	270,000.00		580,000.00							
<u>Per TCA (other assets not yet in AMP)</u>											
2 Ton											
Stoco Garage											
Stoco Sand Dome											
Marlbank Sand Dome											
Countryman Garage											
Countryman Salt Dome											
Actinolite Garage											
Actinolite Sand Dome											
Quanset Hut											
PW Dome											
2006 Case/580 Backhoe											
2008 550 Ford Dump Truck/Plow											
New Dump truck/plow											
2008 Sterling Lt9513 Tandem											
2008 F250 Pickup											
2011 Intern 7600 Tandem											
2011 Excavator											
2012 Intern 7600 Tandem											
1997 Holland Tractor											
2020 Ford F150											
2013 John Deere Loader											
2016 Ford 1/2 Ton											
2015 Mack Tandem											
2015 Mack Truck											
2017 Mack Tandem Plow & Wing											
1996 Volvo/L-70 Loader											
2002 Volvo/G740 Grader											

**Municipality of Tweed
Long Term Capital Plan - Public Works Water Sewer**

Asset	2085	2088	2089	2090	2098	2099	2101	2102	2106	2107	2108
2014 1/2 Ton Truck											
Gravel Packer											
GPS Indicators											
Sidewalk Plow blower & broom											
Sweeper Brush											
Grader											
Stoco Shop Furnace											
Culvert Steamer											
Culvert Steamer											
Hunt Rd Well - WDS											
Maribank Rd Well WDS											
Weigh scales											
WDS Compactor 936 Cat											
WDS Scale Bldg											
WDS Depot											
2007 JD 605C Crawler Loader											
Total Costs	2,610,000.00	270,000.00	160,650.00	580,000.00	1,500,000.00	390,400.00	616,950.00	320,000.00	774,350.00	384,200.00	771,500.00
Gas Tax Funding											
OCIF Funding											
Other Grants											
Current Waste Reserve Fund Used											
Current Road Reserve Used											
Current Bridge Reserve Used											
Current Water Reserve											
Current Sewer Reserve											
Remaining Amounts to be Funded	2,610,000.00	270,000.00	160,650.00	580,000.00	1,500,000.00	390,400.00	616,950.00	320,000.00	774,350.00	384,200.00	771,500.00
2022 Transfer to Reserves Requirement	40,781.25	4,029.85	2,362.50	8,405.80	19,480.52	5,005.13	7,711.88	3,950.62	9,110.00	4,467.44	8,867.82

**Municipality of Tweed
Long Term Capital Plan - Public Works Water Sewer**

Asset	2109	2111	2112	2115
McClellan St - Water				
McClellan St - Sewer				
Dowling Bridge				
Roads - all others noted in AMP				
Bridges - all others noted in AMP				
Water - all others noted in AMP	1,215,500.00	1,345,550.00		280,500.00
Sewer - all others noted in AMP	673,000.00	783,998.00		156,000.00
Stormwater - all others noted in AMP			10,000.00	

Per TCA (other assets not yet in AMP)

2 Ton
 Stoco Garage
 Stoco Sand Dome
 Marlbank Sand Dome
 Countryman Garage
 Countryman Salt Dome
 Actinolite Garage
 Actinolite Sand Dome
 Quanset Hut
 PW Dome
 2006 Case/580 Backhoe
 2008 550 Ford Dump
 Truck/Plow
 New Dump truck/plow
 2008 Sterling Lt9513 Tandem
 2008 F250 Pickup
 2011 Intern 7600 Tandem
 2011 Excavator
 2012 Intern 7600 Tandem
 1997 Holland Tractor
 2020 Ford F150
 2013 John Deere Loader
 2016 Ford 1/2 Ton
 2015 Mack Tandem
 2015 Mack Truck
 2017 Mack Tandem Plow & Wing
 1996 Volvo/L-70 Loader
 2002 Volvo/G740 Grader

**Municipality of Tweed
Long Term Capital Plan - Public Works Water Sewer**

Asset	2109	2111	2112	2115
2014 1/2 Ton Truck				
Gravel Packer				
GPS Indicators				
Sidewalk Plow blower & broom				
Sweeper Brush				
Grader				
Stoco Shop Furnace				
Culvert Steamer				
Culvert Steamer				
Hunt Rd Well - WDS				
Marlbank Rd Well WDS				
Weigh scales				
WDS Compactor 936 Cat				
WDS Scale Bldg				
WDS Depot				
2007 JD 605C Crawler Loader				
Total Costs	1,888,500.00	2,129,548.00	10,000.00	436,500.00
Gas Tax Funding				
OCIF Funding				
Other Grants				
Current Waste Reserve Fund Used				
Current Road Reserve Used				
Current Bridge Reserve Used				
Current Water Reserve				
Current Sewer Reserve				
Remaining Amounts to be Funded	1,888,500.00	2,129,548.00	10,000.00	436,500.00
2022 Transfer to Reserves Requirement	21,460.23	23,661.64	109.89	4,643.62

**Municipality of Tweed
2022 Capital Budget Planned Financing Sources**

Account	Capital Project	2022 Budgeted Expense	Federal Funding	Provincial Funding	Other Grant Funding	Reserve Funding	Reserve Funds Funding	Obligatory Reserve Fund Funding	Other Funding Sources	Municipal Tax Impact	Notes
01-310-58131	Vanderwater Road	652,860.00						652,860.00		-	Hwy 37 to Ervine Rd 30 mm Hotmix Everlife
01-310-58131	Queensborough Road	240,000.00		132,396.00				107,140.00		464.00	Barry Rd to Boundary, Hall parking lot with asphalt, gutter, catch basis, 50 mm HL3 Hotmix
01-310-58131	King Street	25,000.00								25,000.00	Queensborough 30mm Everlife Hotmix
01-310-58131	Charles Rd stormwater management	15,000.00								15,000.00	Stage 1 of Jewell Engineering Proposal
01-310-58131	Sidewalk	8,000.00								8,000.00	50 metres on St. Joseph St where low and holding water/ice
01-310-58131	Victoria Cemetery fencing	17,808.00								17,808.00	750' of 4' chain link, 9 gauge mesh, residential frame with single vehicle gate and double vehicle gate
01-310-58132	Tandem Plow/Wing combination	280,000.00				280,000.00				-	Like to purchase new with rent to own option as backhoe needs \$20,000 work on engine
01-310-58132	Backhoe	170,000.00					118,656.34			51,343.66	
01-310-58132	Mower for Holland Tractor	48,000.00								48,000.00	
01-310-58132	Patrol Truck (replace 300)	55,000.00								55,000.00	
01-310-58133	Greatrix Bridge	326,025.00					48,696.00			277,329.00	
01-310-58133	Pre-engineering Joe Allore Bridge	108,500.00					108,500.00			-	
		<u>1,946,193.00</u>	<u>-</u>	<u>132,396.00</u>	<u>-</u>	<u>555,852.34</u>	<u>-</u>	<u>760,000.00</u>	<u>-</u>	<u>497,944.66</u>	
01-330-58014	GRAVEL PIT Esker Rd Pit Licence	13,590.00						13,590.00		-	
		<u>13,590.00</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>13,590.00</u>	<u>-</u>	<u>-</u>	
01-410-58022	SANITARY SEWER OCWA	16,667.00						16,667.00		-	
		<u>16,667.00</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>16,667.00</u>	<u>-</u>	<u>-</u>	
01-420-58023	River Crossing	1,029,682.51	404,800.00	337,333.33		287,549.18				-	Green Stream 2 grant application
01-420-58001	Water Tower Interior Coating									-	
01-420-58001	Water filter media system	45,000.00				45,000.00				-	
01-420-58011	WATER Water Meters & Hydrants & V	30,000.00				30,000.00				-	2 hydrants and shut off valves
01-420-58022	WATER OCWA	25,726.00				25,726.00				-	
		<u>1,130,408.51</u>	<u>404,800.00</u>	<u>337,333.33</u>	<u>-</u>	<u>388,275.18</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	
01-440-58000	BluMetric Hunt Road	22,400.00						22,400.00		-	
01-440-58000	BluMetric Marbank Road	5,700.00						5,700.00		-	
		<u>28,100.00</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>28,100.00</u>	<u>-</u>	<u>-</u>	



October 1, 2021

Municipality of Tweed
255 Metcalfe Street
TWEED, ON
K0K 3J0

Attention: Mr. Allan Broek,
Public Works Manager

**RE: Charles Road – Stormwater Management Plan
Engineering Services Proposal
Jewell Engineering Inc. File No. 210-5025**

Mr. Broek:

Thank you for reaching out to us to provide you with a quotation to complete the preliminary design of the stormwater management plan for the Charles Road area. Residents have experienced flooding of their front yards and some basement flooding has also been reported.

As we discussed, the drainage concerns faced by the residents are related to the lack of drainage infrastructure along the roads and more specifically the outlets to Stoco Lake.

A majority of the drainage is currently controlled by a single catch basin with a pipe outlet to Stoco Lake located between two residences. A solution will include expansion of the capacity of this outlet and may also include seeking opportunities for additional outlets.

We would recommend detailed topographic survey be undertaken of the area to include the road, ditches and existing drainage infrastructure, driveways and front yards of the residences. Jewell would review the drainage capacity of the existing infrastructure and propose improvements that may include additional ditching, storm sewers, catch basins and outlets to Stoco Lake.

(Cont...)

BELLEVILLE
(HEAD OFFICE)
1-71 Millenium Pkwy.
Belleville ON K8N 4Z5
Tel: 613-969-1111
info@jewelleng.ca

TOLL FREE
1-800-966-4338

KINGSTON
208-4 Cataraqui St.
Kingston ON K7K 1Z7
Tel: 613-389-7250
kingston@jewelleng.ca

MISSISSAUGA
200A-2155 Leanne Blvd.
Mississauga ON L5K 2K8
Tel: 905-855-1592
mississauga@jewelleng.ca

www.jewelleng.ca



Professional Engineers
Ontario

Authorized by the Association of Professional Engineers
of Ontario to offer professional engineering services.



We will provide you with preliminary drawings with a design concept and estimated costs. Since the preferred solution is not yet known, it is difficult to anticipate what the engineering effort will be to complete final design drawings. There will be an approval required from Quinte Conservation for any solution. We envision that if storm sewers form part of the solution, an application to the Ministry of the Environment for an ECA will be required.

Thus, we suggest the project proceed in three (3) stages.

Stage 1 would be preliminary design. This will include:

- detailed topographic field survey of the ditches, roads, driveways, existing services and front yard areas of the homes,
- hydrologic and hydraulic design with report,
- pre-consultation with approval agencies
- preliminary design drawings, and
- estimate of costs

Jewell would be pleased to also attend a council meeting as the project is presented.

Stage 2 would include detailed design, approvals and tendering. Another important consideration will be the potential encroachment onto private property. Depending on the outcome of the preliminary design, an OLS may need to be engaged to confirm legal boundaries of properties. We would be able to provide a quotation for stage 2 once we fully understand the level of effort that will be required upon completion of Stage 1.

Stage 3 would include the Contract Administration and Inspection Phase of the project. The scope of work of this phase and anticipated construction duration will not be known until the completion of design. We would be able to provide a quotation for stage 3 once we fully understand the level of effort that will be required upon completion of Stage 2.

(Cont...)

Stage 1 – Preliminary Design

1. Base Plan and Topo Survey

Jewell will complete topographic survey of the Charles Road including centreline, edge of pavement or travelled portion of the road, ditch line and OG shots along the inferred property boundary. We will also locate all driveways and driveway culverts as well as cross culverts including the sizes and inverts. Any aboveground services that are visible will also be picked up including utility poles, guys, and pedestals. Jewell uses precise GPS survey equipment that captures accurate data in three dimensions. The survey data is directly imported into our 3D Civil Design software that is used to create the base drawing.

From the survey data, we will develop contours with intervals of 0.5m (or a smaller interval as the site demands). Where additional topographic information is required, we will supplement our precise survey with Lidar.

2. Stormwater Management Plan

Aided by the grading information, Jewell will review the existing drainage regime and determine weaknesses of the system as well as identify opportunities to improve drainage. We will prepare a preliminary stormwater management plan showing a preferred concept that will be fitting to the locale and present a robust and cost conscious solution.

Jewell will liaise with the Municipality of Tweed and Quinte Conservation Authority in the development of the concept in an effort to find a solution that will be acceptable to the agencies.

Our findings will be published in a letter report.

3. Conceptual Drawings

Preliminary engineering drawings will be prepared showing the existing conditions and the proposed drainage improvements. The drawings will be provided in plan view and will show the land contours, an aerial image, proposed ditching or storm sewer improvements, and all outlets to Stoco Lake.

The drawings will be provided digitally and in hard copy.

(Cont...)

4. Cost Estimate

Jewell will prepare an engineer’s estimate of the proposed improvements showing the estimated quantities and unit prices.

FEE SCHEDULE

No.	Task	Estimated Cost
1	Base Plan and Topographic Survey	\$4,500
2	Stormwater Management Plan	\$4,500
3	Conceptual Drawings	\$3,900
4	Cost Estimate	\$1,200
	Total	\$14,100

Additional effort that is required due to revisions or changes to the concept plan will be quoted to the client or if agreed to in advance will be billed on our hourly rates.

RATES

All work will be completed at the following standard hourly rates, plus 2% per year starting in 2022. All costs are exclusive of HST.

Staff	Hourly Rate
Company Director	165
Project Lead / Municipal Engineer	100
Senior Water Resources Engineer / Project Manager	170
Stormwater Engineer	100
Engineer In Training	75
AutoCAD Technician	65
Survey Crew	135
Clerk	65
Inspector	70
Travel	\$0.52/km
Disbursements	At Cost

(Cont...)

If you have any questions, please feel free to contact the undersigned.

Sincerely,



Bryon Keene, P.Eng.
Jewell Engineering Inc.

TWEED CHARLES ROAD SWM CONCEPTUAL DESIGN 2021 SEPT 30

AGREEMENT

I, Allan Broek, on behalf of Municipality of Tweed, accept the proposal from Jewell Engineering Inc. to perform the services and terms described in this proposal dated October 1, 2021 based on the rates provided. A signed copy of this proposal returned to Jewell Engineering Inc. shall be considered authorization to proceed.

This proposal is valid for sixty (60) days. Jewell Engineering Inc. reserves the right to renegotiate the terms and conditions of this proposal after sixty (60) days.

Allan Broek

Date





Preliminary

17.22

Table 1
Preliminary Pre-Construction Cost Estimate
Replacement of Greatrix Bridge
Municipality of Tweed

Item	Task Description	Unit	Alternative 1 Precast Concrete Box Culvert		
			Estimated Quantity	Unit Cost	Total Cost
1	Detailed Design & Engineering	LS	1	\$5,000	\$5,000
2	Tendering & Contracting	LS	0	\$7,500	\$0
3	Geotechnical Site Investigation	LS	0	\$10,000	\$0
4	Environmental Approvals (Additional)	LS	1	\$5,000	\$5,000
5	Construction General Requirements	% of Construction	1	5%	\$12,000
6	Traffic Control Measures	LS	1	\$5,000	\$5,000
7	Environmental Protection Measures	LS	1	\$5,000	\$5,000
8	Existing Bridge Demolition & Removal	LS	1	\$15,000	\$15,000
9	Site Preparation	LS	1	\$20,000	\$20,000
10	Utility Relocations	LS	1	\$20,000	\$20,000
11	6.2m x 15m Precast Concrete Box Culvert Supply & Installation	LS	1	\$150,000	\$150,000
12	6.2m Span Bridge	LS			
13	Site Restoration & Protection	LS	1	\$15,000	\$15,000
14	Construction Material Testing	% of Construction	3.0%	-	\$6,750
P1	Rock Removal (Provisional)	m ³			
Subtotal					\$258,750
CA1	Contract Administration	% of Construction	5%	-	\$12,938
<i>Contingency</i>		<i>% of Subtotal</i>	20%	-	\$54,338
Total - High Range					\$326,025

Carried from 2021 - 277,329
48,696

Allan Broek

From: matt@jewelleng.ca
Sent: September 16, 2021 3:19 PM
To: pubwks@twp.tweed.on.ca
Subject: Joe Allore Bridge

Hello Al,

Hope you had a great vacation.

I have run some figures on the replacement of the Joe Allore Bridge. Using 2021 construction dollars, I am estimating replacement costs as follows:

Replacement with Single Lane Bridge

Construction Cost \$1,250,000 + HST
Engineering, EA, Contract Administration & Contingency (25%) \$312,500 + HST

Total Single Lane Bridge Replacement Cost \$1,562,500 + HST

Replacement with Two Lane Bridge

Construction Cost \$1,550,000 + HST
Engineering, EA, Contract Administration & Contingency (25%) \$387,500 + HST

Total Two Lane Bridge Replacement Cost \$1,937,500 + HST

Should you have any questions or wish to discuss further, please contact me at your convenience.

Regards,

Matt MacDonald, P.Eng.
President



Jewell Engineering
1-71 Millennium Parkway
Belleville, ON
K8N 4Z5
Phone 613.969.1111
Fax 613.969.8988

A handwritten signature in blue ink, appearing to be a stylized cursive name.

Tweed Victoria Cemetery Board
Box 1051, Tweed, Ontario, K0K 3J0

Attention: Allan Broek
Public Works Manager

RECEIVED

SEP 27 2021

MUNICIPALITY OF TWEED

PER 

17.24

Greetings Allan,

Have the estimate now from Walsh fencing and have written a letter to the council to go with it. As I had talked to you first I thought it best to give it through you. Please let me know if there is anything further the board or I need to do.

As I did not want my covering letter to be more than a page I did not mention that we had talked about the fact the fence would need to probably be set back a bit more to prevent damage from the sidewalk snowplow. We recognized that it is an ongoing problem hard to prove but certainly there are many dings in the fence consistent with the height of the plow.

Thank you for your attention to this matter. We do appreciate it.

Sincerely, Barbara Goode

Dated: September 27, 2021



Tweed Victoria Cemetery Board

Box 1051 Tweed, Ontario, K0K 3J0

Proposal For New Fence at Victoria Cemetery Tweed Ontario

To Madame Mayor and Municipality of Tweed Councillors,

In July I wrote to Allen Broek on behalf of the Tweed Victoria Cemetery Board to ask what could be done about the fence and the damage that appears to occur from the sidewalk snowplow. This issue was raised at our June 28th 2021 annual meeting and it was requested that a letter be sent to the municipality. Allen answered immediately and met with myself and my husband to look at the fence. We were very impressed with how helpful he was. On inspection there is lots of damage probably from many years; the fence is very old and in a bad state of repair. He suggested we get some quotes and make a proposal to the municipality.

As I have only been chairperson since May 2018 I made the effort to read through the minutes and information from all the previous years. I discovered that in 1999 a letter was sent to the municipality "regarding damage done to the fence from snow removal by the municipality". That is a direct quote from the minutes. I could not find any answer to that request.

The other interesting fact is that myself and the secretary can not find any documentation that shows who actually owns the cemetery. Two long time board members have opposing views, one thinking it is the board, the other the municipality. I did phone the office to ask that question and have never heard back.

Since being involved with Victoria cemetery I have started to pay attention to all the cemeteries I see. Unfortunately our Victoria cemetery looks rundown because of that old fence. And I am embarrassed by it. We have actually had people who want to buy a plot look at the cemetery and then choose another cemetery they say looks better in a neighbouring location.

The reality is we can not afford to replace the fence. We have \$7,000 in our operating budget and unable to access some savings until October 2022. We have little income but manage with what we get to pay for the superintendent and the grave digging. This past year we have not sold any plots and that is one source of income.

We are wondering if there are any grants available or we partner with several parties to pay for the fence. We only have one quote but Walsh are the main fence people and it is very reasonable. Also the fencing material they use now is coated so no need for repainting and no rust problems.

Please find enclosed the quote from Walsh fencing. I look forward to further conversation.

Sincerely, Barbara Goode , Chair Tweed Victoria Cemetery board. Dated September 26, 2012

Barbara Goode

JOB ESTIMATE

17.26

1745191 ONTARIO LTD.
A WALSH FENCING
1021 HWY 37, RR # 1
CORBYVILLE, ON K0K 1V0
PHONE: 613.962.2261 FAX 613.968.8957
walshfencing@bellnet.ca

DATE: 13-Sep-21

TO: Don Sedore
6711 Hwy 37
Tweed, ON K0K 3J0
P- 613 478 3275

NO EMAIL

DESCRIPTION:

<u>LOCATION: Victoria Cemetery</u>
Install 750' of 4' all white or black chain link, 9 gauge mesh, residential frame, (1) single vehicle gate and (1) double vehicle gate. Take down and dispose of old fence.

TOTAL MATERIAL & LABOUR \$17,500.00

13% HST \$2,275.00

TOTAL ESTIMATE \$19,775.00

HST 82275 2820 RT0001

AUTHORIZATION TO PROCEED :

DATE _____

Joe/09 sept 21

Customer Signature



20 Private Road, RR # 2
Marmora, ON
K0K 2M0
Phone: (613) 472-2131
Fax: (613) 472-6045

17.27

October 28, 2021

Allan Broek,
Public Works Manager,
Municipality of Tweed
255 Metcalf Street
Postal Bag 729
Tweed, ON K0K 3J0

Dear Mr. Broek,

RE: 2022 Capital & Major Maintenance Expenditure Recommendations

On behalf of the Ontario Clean Water Agency (OCWA), we have enclosed a rolling six-year list of major maintenance recommendations as per our Services Agreement. OCWA suggests the following improvements/upgrades to ensure the long-term health and operation of your facilities.

Please note that as per the requirements of the Drinking Water Quality Management Standard (DWQMS), the outcomes of the risk assessment conducted for your water and wastewater facilities were considered and any related items have been included in the recommendations.

We would be happy to meet with you to discuss the recommendations, projected expenses, and assist with selecting the best course of action.

Thank-you,

A handwritten signature in black ink, appearing to read "Amber Coupland", is written over a faint circular stamp.

Amber Coupland
Operations Manager
Deloro Cluster
Ontario Clean Water Agency
Ph. 613-472-2131 ext 3
Cell. 613-921-3989

cc: Gloria Raybone, CPA, CA, CAO/Treasurer, Municipality of Tweed



No.	Scope of Work	2022	2023	2024	2025	2026	2027
	Tweed Water						
1	Annual UV Maintenance	\$1,457	\$1,486	\$1,516	\$1,546	\$1,577	\$1,609
2	Annual Lifting Device Inspections	\$955	\$974	\$994	\$1,013	\$1,034	\$1,054
3	Annual Flow Meter Calibrations	\$1,040	\$1,061	\$1,082	\$1,104	\$1,126	\$1,148
4	Annual Diesel Maintenance	\$911	\$929	\$948	\$967	\$986	\$1,006
5	Annual Backflow Preventer Inspections	\$213	\$217	\$222	\$226	\$231	\$235
6	Trojan Reference Sensor and UV Parts	\$5,030	\$3,121	\$3,183	\$3,247	\$3,312	\$3,378
7	De-chlor pucks	\$510	\$520	\$531	\$541	\$552	\$563
8	Load of Salt (Brine Solution)	\$0	\$0	\$0	\$0	\$16,000	\$0
9	Chlorine Parts and Maintenance	\$5,610	\$5,722	\$5,837	\$5,953	\$6,072	\$6,194
10	Replace Three Hydrants in Town	**	**	**	**	**	**
11	Repair Five Leaking Hydrants	**	**	**	**	**	**
12	Water Tower Internal Re-coating	\$650,000					
13	Water Treatment Plant Media Replacement	\$45,000	\$0	\$0	\$0	\$0	\$0
14	Contingency to Cover Unexpected Breakdowns	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
	Total Estimate - Recommended Capital	\$70,726	\$24,030	\$24,313	\$24,597	\$40,890	\$25,187

No.	Scope of Work	2022	2023	2024	2025	2026	2027
	Tweed Wastewater						
1	Annual Lifting Device Inspections	\$874	\$892	\$909	\$928	\$946	\$965
2	Annual Flow Meter Calibrations	\$936	\$955	\$974	\$993	\$1,013	\$1,033
3	Annual Wetwell Cleanouts	\$2,155	\$2,198	\$2,242	\$2,287	\$2,333	\$2,380
4	Annual Diesel Maintenance	\$1,280	\$1,306	\$1,332	\$1,358	\$1,385	\$1,413
5	pH Probe and Buffers	\$422	\$430	\$439	\$448	\$457	\$466
6	Lagoon Annual Blower Maintenance	\$1,000	\$1,020	\$1,040	\$1,061	\$1,082	\$1,104
7	SPS Tree & Brush Removal	**	**	**	**	**	**
8	Contingency to Cover Unexpected Breakdowns	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
	Total Estimate - Recommended Capital	\$16,667	\$16,801	\$16,936	\$17,075	\$17,216	\$17,360



Tweed Elevated Tank Video Inspection



Client : OCWA
Representative : Amber Coupland, Operations Manager
Project : Internal video inspection and external visual, where accessible.
Method : Potable water-dedicated video ROV with colour camera and lighting.
Object : Elevated steel tank, full of water and in-service
Location : Tweed, ON
Date : July 28, 2020
AIS Job no. : 20200128-01-OCWA

Prepared by: Paul Keenan



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1.0 Introduction:

At the request of the Ontario Clean Water Agency, as part of normal due diligence and routine maintenance, an underwater video survey, using a disinfected submersible ROV with lighting and high-resolution camera, was performed inside the Tweed elevated, steel water tank, while in-service and full of water. The disinfection of the ROV and umbilical cable was performed immediately prior to entering the elevated tank using sodium hypochlorite and potable water supplied by OCWA personnel.

The main reasons for the survey were to check the overall internal condition of the tank coating and components, type and amount of floor sediment and identify any other anomalies while leaving the tank on-line and full of water. The entire video survey was recorded and a copy of the video, in computer media format, is supplied with this report.

2.0 Equipment:

Submersible video ROV with high-resolution tilt camera and lighting.

3.0 Conclusions:

- 3.1 There are areas of coating failure on the internal tank walls, topside of the tank floor hatchway, surface of the dry riser, overflow opening and underside of tank roof.
- 3.2 There is very little sediment seen on the floor but there is dark staining at the water level fluctuation zones on the tank and dry riser.
- 3.3 The roof top vent screening assembly and other roof top items appear in good condition.
- 3.4 The external tank coating appears in good condition. Some growth deposits are seen on the underside of the angled section of steel plating.

4.0 Recommendations:

- 4.1 OCWA personnel to review the inspection video and this report.
- 4.2 Plan to surface prep and recoat the internal surfaces of this tank, including the floor bottom hatch cover.
- 4.3 Request from AIS NDE information on other services relating to tank recoating using NACE approved coatings, above and below ground piping inspections, for example.



5.0 Inspection/Discussion:

The potable water dedicated video ROV and umbilical were disinfected, immediately prior to entering the tank, using sodium hypochlorite and potable water supplied by OCWA operations then lowered into the top of the elevated tank through the square roof top hatchway adjacent to the access ladder. The ROV was “flown” to areas of interest to view the floor, inlet-outlet nozzle, underside of tank roof structure, dry riser, tank walls and floor hatchway.

This is a brand-new submersible video inspection ROV and so movements around the inside of the tank were made using extreme caution so there was no chance of entangling the ROV and cable. There are two video files; 1st file begins at clock-time 12:08:30 and the 2nd file begins at 12:38:55. Suggest the viewers of the video use “fast-forward” to move through footage to areas of interest.



Roof top vent assembly in good condition



Roof top vent screening from another angle



Underside of roof structure viewed from manway



View down at dry riser and overflow from roof

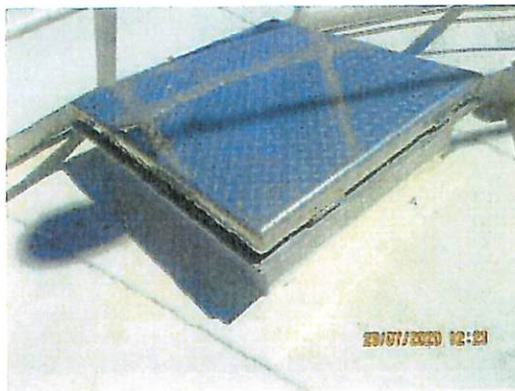
Results are an interpretation of the inspection method, not a guarantee.



Typical internal wall view of coating failures



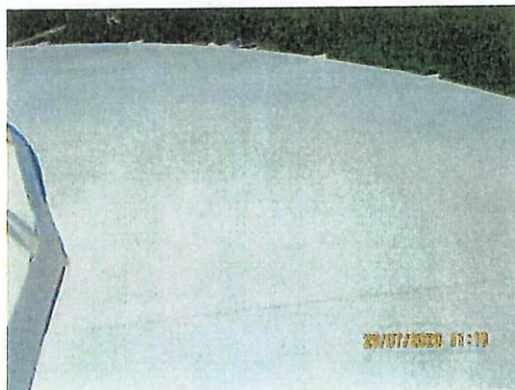
Tank roof hatch opened to allow ROV access



Tank roof hatch closed and secured after survey



Dry riser hatchway open for roof access



Random section of tank roof; coating in good condition.



Another random view of tank roof plating

Results are an interpretation of the inspection method, not a guarantee.



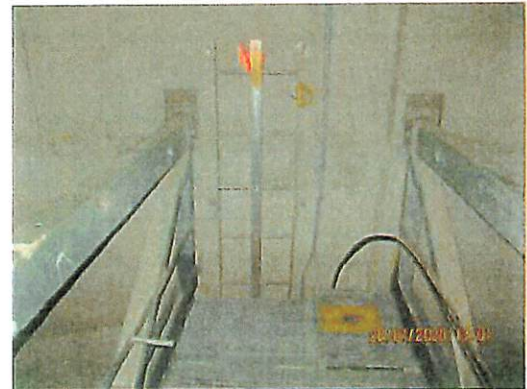
View directly up dry riser; roof hatch secured



View straight down the dry riser and ladder



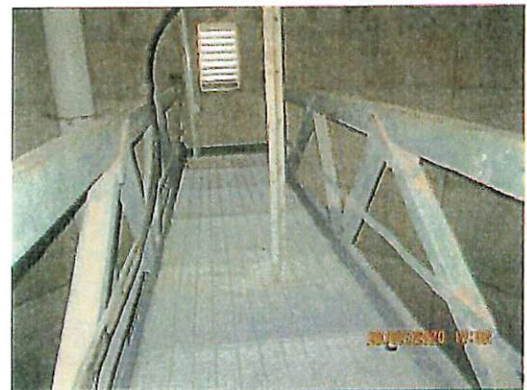
Underside of tank floor hatch



Top end of ground to catwalk ladder



Overflow piping and inlet-outlet pipe section



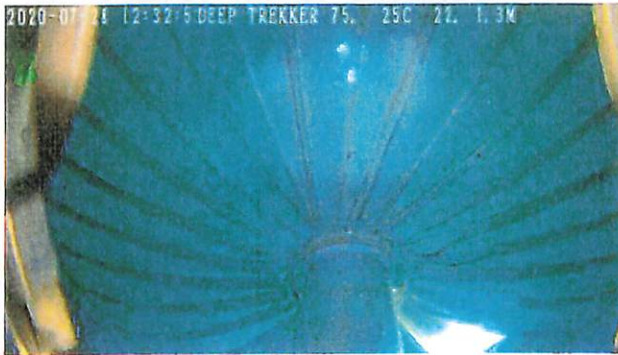
Catwalk and bottom of roof access ladder

Results are an interpretation of the inspection method, not a guarantee.



Pulley used for hoisting equipment to tank catwalk

Overall view – looking up - of concrete structure



Overall view of underside of tank roof structure

Inlet-outlet pipe, hatch cover, thin sediment layer



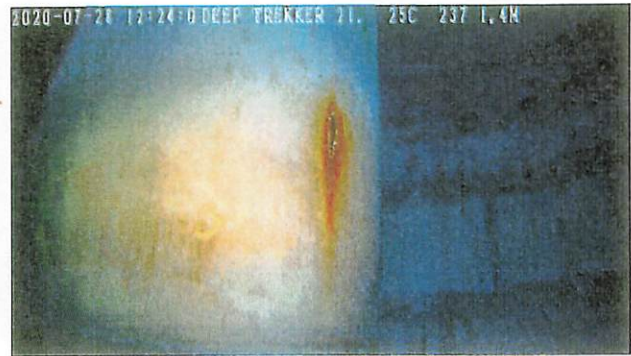
View up dry riser and attached overflow opening

Coating failure at the water level fluctuation zone

Results are an interpretation of the inspection method, not a guarantee.



Coating loss at dry riser bottom, thin layer of sediment



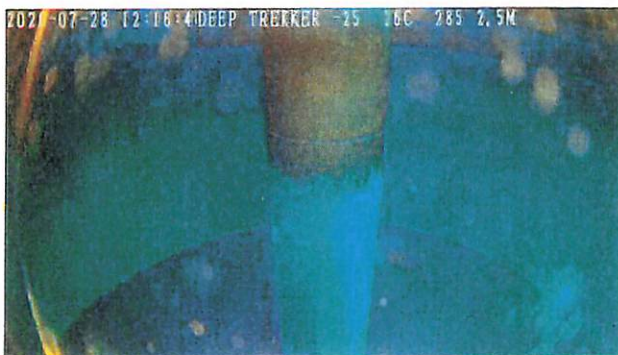
Coating failure on dry riser



Areas of coating failure on upper areas of dry riser



Typical section of wall to roof intersection



Staining on dry riser at water level fluctuation zone



Straight down, wide view of tank floor

Results are an interpretation of the inspection method, not a guarantee.



Wide view of tank wall random coating failures



Wide view of floor and lower dry riser



Residue and "growth" deposits under angled section



Tower skirt entry door secured after survey



17.38

27 October 2021

Mr. Allan Broek
Public Works Manager
Municipality of Tweed
255 Metcalf Street
Tweed, ON K0K 3J0

RE: Annual Monitoring & Reporting, Engineering Services & Contingency Work

Dear Allan:

This letter is to provide you with the “budgetary” costs for the **2022** annual monitoring and reporting work on the Municipality of Tweed’s Waste Disposal Sites (WDSs) and Public Works Yard. In addition, it provides budget information for items that are proposed for closure, follow-up for remediation work, and potential mitigation measures/contingency work.

Please note that I have currently added 20% for increases to personnel charge out rates and for analytical costs. As you know inflation has been increasing and is expected to do so, and employment costs have seen a significant increase over the last year. None of these rates have been determined for 2022 yet, and we are expected to have more refined costs in the later parts of 2021 or early 2022. The analytical testing laboratories have already notified us that are anticipating increases for 2022 but have not put any numbers to that yet.

Annual Monitoring & Reporting

The 2022 annual budgets for monitoring and reporting and for advice on operational issues for the Municipality’s WDSs are \$20,400 for Hunt Road and \$29,400 for Marlbank Road. As mentioned, we will revisit this once 2022 rates are available and aim to come up with lower budgets if possible.



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BluMetric Environmental Inc.

The Tower, The Woolen Mill, 4 Catarqui Street, Kingston, Ontario, Canada K7K 1Z7

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Additional Work to the Typical Annual Monitoring & Reporting

The above budget estimates are for the traditional annual monitoring and reporting. The following additional costs are included in the 2022 work:

Hunt Road WDS

- Potential additional contingency sampling at Hunt Road WDS assumed for one event (\$4,200), this work was not required in 2021.
- Following approval of the Site Closure Plan by the MECP, prepare the tender documents for the work to be carried out by a private contractor, if not to be carried out directly by Municipal workers (\$10,000). This cost does not include assistance with the tendering, construction oversight during the closure work, over final reporting on the actual closure work completed. It is assumed that the actual closure work will be carried out in 2023.
- Attend one meeting with the landowners adjacent to the Site to inform them of the requirements for the Contaminant Attenuation Zone (CAZ) around the Site (\$6,200). This work was not carried out in 2021, we have moved it forward to the budget for 2022 if required.
- Answer questions from the Municipality about Land Registry Requirements for Hunt Road WDS, if required (\$2,000). Does not include costs for legal fees, surveys etc.

Marlbank Road WDS - Contingency Sampling and Additional Work to Address RUV Exceedances

Surface water contingency sampling was required in 2018 but was not required in 2019, 2020, or 2021. An amount of \$4,200 is being carried in case it is required for an assumed one event in 2022.

Marlbank Road Public Works – Final Verification Sampling & Spill Response Plan

Work remaining and recommendations were provided in BluMetric's environmental sampling at the Public Works Yard at Marlbank Road. As indicated in the email from the MECP inspector (14-Jun-2021). The following work must be completed:

- Once water is present in the ditch, one additional round of surface water samples (2 samples plus QA/QC) are to be collected in the spring of 2022 to assess potential for ongoing fuel-related impacts. Samples should be tested for PHCs and BTEX. The results must be reported to the MECP. A budget price for this work has been estimated to be (\$1,500).

The following recommendations were made with respect to the above work:

- Preventative measures, for example, CSA approved storage bins, drip trays, or other secondary containment) should be considered to prevent future potential spills.
- The Municipality should have a Spill Action Plan developed for the Site and train Municipal staff to follow the procedures outlined in the Spill Action Plan.

If the Spill Action Plan has not already been carried out and you would like BluMetric to do an inventory of the fuel, fuel equipment, and other hazardous materials on-site in 2022 and prepare a Spill Action Plan for the Site we are prepared to carry out this work for \$5,000. Should the Municipality just need an inventory of the fuel, fuel equipment and Spill Action Plan without consideration for other hazardous material it could be reduced to \$3,000. We are assuming the training of Municipal personnel will be carried out by others.

Summary of Annual Monitoring and Reporting Costs

Table 1 provides a summary of budget estimates for work that we anticipate have a potential to be required in 2022. These costs do not include HST.

17.41

Operating Expenses

Table 1: Annual Monitoring and Reporting Costs

Site	Annual Monitoring/Report/Engineering Services	Totals
Marbank Rd	24,000	
Hunt Rd	20,400	
2021 Annual Monitoring		\$44,400
Hunt Road Additional Work		
Potential Contingency Sampling	\$4,200	
Prepare Tender Documents for Site Closure	\$10,000 (end of 2022- beginning of 2023)	
Meeting with Landowners	\$6,200	
Assistance with Land Registration	\$2,000	\$
		\$22,400
Maribank Road WDS Additional Work		
Potential Contingency Sampling	\$4,200	\$4,200
Maribank Road Public Works Yard Additional Work		
Additional Verification SW Samples & Report	\$1,500	
Inventory of Materials and Spill Action Plan	\$5,000 <i>I HAVE OUR OWN Spill action Plan</i>	\$6,500
		\$77,500

We assume that the Letter for the Auditors & Updated Closure Costs \$2,000 will not be required in 2022.

Thank you again for this opportunity to provide you with a cost estimate for the 2022 Annual Monitoring and Reporting. We welcome the opportunity to continue our working relationship with the Municipality of Tweed.

Please feel free to call the undersigned if you have any questions at (613) 531-2725 ext. 245, or Cell 613-238-0423.

Respectfully submitted,
BluMetric Environmental Inc.

Iris O'Connor

Iris O'Connor, P.Eng.
 Project Engineer



Asset Management Plan Report Version 1.2

Municipality of Tweed
County of Hastings, Ontario

Version 1.2: August 31, 2021
Version 1.1: June 28, 2021
Version 1.0: December 06, 2019
Greenview File: 169.21.003



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1.0 Introduction

1.1 Municipal Information

The Municipality of Tweed (Municipality) is an amalgamated municipality in southern and central Hastings County, Ontario, comprised of the former geographic Township of Grimsthorpe, Township of Elzevir, Township of Hungerford, and the Village of Tweed.

Based on 2016 Census data (Statistics Canada, 2019), the Municipality had a population of 6,044 (Table 1). Per 2016 Census data (Statistics Canada, 2019), the land area of the Municipality was approximately 953 square kilometres (km²); however, based on mapping data provided by the County of Hastings (2019), the land area of the Municipality, including the geographic Township of Grimsthorpe, Elzevir, and Hungerford (and the Village of Tweed) was approximately 975 km². For the purposes of this study, the approximate land area of 975 km² has been used. The Municipality's population density per km² is reportedly 6.3, based on Statistics Canada's reported land area, and 6.2 based on the County of Hastings reported land area. As of 2016, there were reportedly 3,023 private dwellings within the municipality, with 2,569 dwellings occupied by usual residents.

The Municipality's operating budget in 2018 (total municipal expenditures) was approximately \$6,800,000.

This Asset Management Plan (AMP; Version 1.2) Report has been prepared in general accordance with the requirements of Ontario Regulation (O.Reg.) 588/17 – Asset Management Planning for Municipal Infrastructure (Appendix A).

1.2 Purpose and Scope (Updated August 2021)

This AMP Report is intended to be a resource tool for the Municipality in decision-making processes with respect to the quantification, management, maintenance, upgrade, and replacement of municipal infrastructure and assets, to assess how assets are managed in a way that continues to provide the current level of service expected by the Municipality and its ratepayers in future, and provide a financial assessment of municipal assets with a focus on the five (5) and ten (10) year planning horizon, and with consideration of a thirty (30) year and total life expectancy planning period. This AMP Report is a tool to be reviewed concurrently with municipal budgets, financial reports, financial information returns, audited tangible capital asset reports, and any other reports or documents relevant to municipal asset management and infrastructure project planning.

The purpose of this AMP Report is to summarize the work completed by the Municipality in 2019 with respect to asset management planning (Version 1.0 of AMP; Greenview, 2019d), with a specific focus on meeting (or exceeding) the requirements of O.Reg. 588/17 (Appendix A), as well as to integrate work completed in 2020/2021 with respect to Stormwater Assets (Version 1.1 of AMP; Greenview, 2021b) and to update specific Water Supply Services assets (Version 1.2 of AMP). The Province of Ontario's requirements for an AMP were first published in the document entitled *Building Together – Guide for Municipal Asset Management Plans* (Guide; Ministry of Infrastructure, 2012), and this AMP Report has been prepared with consideration of the requirements of the Guide, in addition to O.Reg. 588/17.

The scope of this AMP Report (Version 1.2) is consistent with the requirements of the Guide (Ministry of Infrastructure, 2012), and the selected core asset categories as prescribed by the Municipality for this project. With respect to the requirements of O.Reg. 588/17, this AMP Report (Version 1.2) includes the review of all core municipal assets. The scope of this AMP Report (Version 1.2) includes the following applicable core asset categories:

1. Roads.
2. Bridges and Large Culverts.
3. Water Supply Services (*Updated – August 2021*).
4. Wastewater Services.
5. Stormwater Assets (*New – June 2021*).

2.0 State of Local Infrastructure

The following sections are intended to provide a summary of the detailed review of municipal core assets including:

1. Table Summary.
2. Definitions.
3. Proposed Data Verification and Condition Assessment Policy.
4. Roads.
5. Bridges and Large Culverts.
6. Water Supply Services (*Updated – August 2021*).
7. Wastewater Services.
8. Stormwater Assets (*New – June 2021*).

2.1 Table Summary (*Updated August 2021*)

In 2019, 2020, and 2021, Greenview Environmental Management Limited (Greenview) completed a detailed review of all core assets, including roads, bridges and large culverts, water supply services, wastewater services, and stormwater assets for the Municipality. Reviews of related documents and data sources were completed by Greenview, including:

1. Mapping data for the road, water and wastewater systems, and stormwater assets of the Municipality available from the County of Hastings.
2. 2018 OSIM Bridge Inspection Report, and related documents on bridges and large culverts in the Municipality, as prepared by Jewel Engineering Inc.
3. Historical drinking water system reports for the Municipality's water supply system, as prepared by the Ontario Clean Water Agency (OCWA).
4. Historical drinking water system inspection reports for the Municipality's water supply system, as prepared by the Ontario Ministry of the Environment, Conservation, and Parks (MECP).
5. Other drinking water system-related documents (as were available).
6. Historical wastewater reports for the Municipality's wastewater system, as prepared by OCWA.
7. Environmental Compliance Approvals (ECAs) for various components of the Municipality's wastewater services.
8. Other wastewater system-related documents (as were available).
9. 2018 Tangible Capital Assets Report and 2018 Continuity of Reserves and Reserve Funds, as prepared by Baker Tilly KDN LLP.
10. Field observation and topographic surveying of pertinent stormwater asset infrastructure to assess resiliency of stormwater infrastructure.
11. Assessment of authority flood mapping as it relates to flooding potential in the Municipality.
12. Other historical Municipal information, as may have been available.

Additionally, multiple in-person and teleconference meetings were held with Public Works staff and Greenview, to discuss any gaps in data that became apparent through the development of this AMP Report (Versions 1.0, 1.1, and 1.2).

The focus of much of the work related to the AMP Report (Version 1.0; Greenview, 2019d) concentrated on Tables 4a to 4d (Detailed Summary of Municipal Assets) and on Tables 5a to 5d (Financial Assessment and Projections), while the focus of AMP Report (Version 1.1) was to integrate new information on stormwater assets into the AMP (Tables 4e and 5e). As part of this AMP Report (Version 1.2), specific updates were applied to water supply services Asset IDs WS21-76 and WS21-88 and related tables.

The following sub-sections describe each of the relevant Table sets of this AMP Report (Version 1.2).

2.1.1 Table 1 – Municipal Study Area Characteristics

Table 1 – Municipal Study Area Characteristics summarizes specific municipal characteristics available from Statistics Canada and from the County of Hastings, including current population, households, land area, and population density. This table was included in the AMP Report in order to provide additional context to the Municipality's core assets.

2.1.2 Tables 2a/2b/2c/2d/2e – Core Asset Summary Tables (Updated August 2021)

Tables 2a, 2b, 2c, 2d, and 2e are summary tables that have been prepared in order to easily identify pertinent asset management planning details for the Municipality, including data that specifically is reported in order to satisfy Community Level of Service (qualitative descriptions) and/or Technical Levels of Service (technical metrics) requirements of O.Reg. 588/17.

2.1.3 Table 3a – General Summary of Municipal Assets (Updated August 2021)

Table 3a – General Summary of Municipal Assets is a summary of the financial assessment and projections from Tables 5a to 5e for the core assets of the Municipality.

Table 3a includes the dollars available from current municipal reserve accounts recommended to be applied to pertinent assets (in column "2019"), and recommendations for municipal dollars to be saved in applicable reserve accounts in Years 2 through 10, in order to replace/upgrade assets in specific asset categories at the end of their useful lifespan.

Table 3a also includes columns that sum the municipal reserve dollars required to replace/upgrade assets in each asset category for a Total – 10 Year, Total – 30 year, and Total Required Reserve (Replacement Cost) perspective.

Additionally, the Estimated Borrowing Cost and the Difference between borrowing money to replace/upgrade assets and saving municipal reserve dollars for the replacement/upgrade of assets has also been calculated, based on Infrastructure Ontario's lending rate as of July 8, 2019 on Tables 5a to 5d, and the lending rate as of June 23, 2021 for Table 5e.

2.1.4 Tables 3b and 3c – Municipal Reserves (Updated August 2021)

Tables 3b and 3c are tables that are specific to the Municipality's reserve accounts.

As part of the AMP Report (Version 1.0; Greenview, 2019d), Tables 3b (Municipal Reserves and Allocation Summary) and 3c (Detailed Municipal Reserves Allocation Calculations) were created in an effort to correlate current Municipal reserves that would apply to each asset category. Current reserves were divided into reserves that are applicable to the AMP and to reserves that are not applicable to the AMP. Reserves that were applicable to the AMP, whether directly to specific assets categories, operating departments, or specific assets, or generally to asset categories, were used to reduce the Projected Contributions to Reserves in Tables 5a to 5d. As part of Version 1.1 of the AMP, stormwater assets were added to Tables 3b and 3c; however, no specific funds were included to stormwater related assets as no known funds were understood to be allocated within municipal reserves specific to stormwater assets. Minor changes were applied to Tables 3b and 3c as part of Version 1.2 of the AMP with respect to the specific changes to Asset IDs WS21-76 and WS21-88 and related tables.

On Table 3b – Municipal Reserves and Allocation Summary, current reserves are apportioned to municipal asset categories, either specifically if the reserve account is specific to a particular asset type or non-specifically if the reserve account is related to a general asset category. For example, the Municipality has a reserve account named "Public Works – Bridges" and the funds in that account have been divided between the Municipality's bridges and large culverts based on the total replacement/upgrade cost of both asset types.

Table 3c – Detailed Municipal Reserves Allocation Calculations is related to Table 3b, such that it describes in

detail exactly how Municipal reserves have been, or not been, applied to Municipal core assets. It details a Summary of Reserves Applicable to Core Assets and a Summary of Reserves Not Applicable to Core Assets.

The intent of Table 3c is to provide the reader of the AMP Report with more detailed information about the allocation of Municipal reserves as well as providing context and direct linkages between the AMP Report and the Municipality's annual Continuity of Reserves and Reserve Funds and the annual Consolidated Financial Statements, as prepared by the Municipality's auditors.

2.1.5 Tables 4a/4b/4c/4d/4e – Detailed Summary of Municipal Assets *(Updated August 2021)*

Tables 4a (Roads), 4b (Bridges and Large Culverts), 4c (Water Supply Services), 4d (Wastewater Services), and 4e (Stormwater Assets) have been prepared in general accordance with O.Reg. 588/17 – Asset Management Planning for Municipal Infrastructure and Building Together – Guide for Municipal Asset Management Plans (Guide; Ministry of Infrastructure, 2012).

Asset-specific information is included based on the asset category in question; however, Tables 4a/4b/4c/4d/4e all include general asset information like Asset ID, Asset Name, Year in Service, Asset Life Expectancy, Projected Replacement or Upgrade Year, details from the Municipality's Tangible Capital Asset Report (as applicable and as available), Replacement and/or Maintenance Cost (or equivalent), Condition Rating, and Current Level of Service.

2.1.6 Tables 5a/5b/5c/5d/5e – Financial Assessment and Projections *(Updated August 2021)*

Tables 5a (Roads), 5b (Bridges and Large Culverts), 5c (Water Supply Services), 5d (Wastewater Services), and 5e (Stormwater Assets) have been prepared in general accordance with O.Reg. 588/17 – Asset Management Planning for Municipal Infrastructure and Building Together – Guide for Municipal Asset Management Plans (Guide; Ministry of Infrastructure, 2012).

Tables 5a/b/c/d/e have been provided in order to itemize the amount of money required to be put into reserves on an annual basis for each asset in order to replace/upgrade each asset at the end of their remaining useful life. Values included in the column for "2019" represent the current reserve values calculated for each asset, based on known 2018 reserve fund values as prepared by the Municipality's auditors (as shown in the column "Current Reserves 2018"). Similarly for updates related to stormwater assets are included starting with the year "2021" on Table 5e. The column on Tables 5a/b/c/d/e named "Reserve Planning Balance" has been designed to take the values identified in the column "Current Reserves (2018)" and subtract that value from "Reconstruction/Rehabilitation Cost" in the case of road assets, "Total Upgrade Cost" in the case of bridge and large culvert assets, and from "Replacement and/or Upgrade Cost" in the case of water supply services and wastewater services assets. Updates to the AMP tables and report related to more recent Tangible Capital Asset Reports and related municipal reserves were beyond the scope of Versions 1.1 and 1.2 of the AMP Report, which was focused solely on the addition and incorporation of stormwater assets to the AMP Report (Version 1.1) and minor changes to Asset IDs WS21-76 and WS21-88 (Version 1.2). Future AMP updates can consider overall updates of this nature.

Additionally, the "Total Reserve (30 Year)" and "Total Required Reserve" have been reported for each specific asset, as well as a column that indicates the "Estimated Borrowing Cost" for replacement of each asset based on current lending rates from Infrastructure Ontario (IO), as of July 8, 2019. The lending rate as of June 23, 2021 was also included for Table 5e. The difference in cost between borrowing and saving sufficient monies for asset replacement is indicated in the column "Difference (Borrowing – Savings)".

Given the significant cost of many of the core assets from a replacement or upgrade perspective, it is unlikely that all of the noted assets with a Projected Replacement or Upgrade Year of 2019 (or previous), or a poor condition rating, can be replaced/upgraded at the time of the noted Upgrade Year. It is recommended that the Municipality determine the priority status of replacement or upgrade for each of the noted assets based on the condition rating, current level of service, available funding options, and capital budgets. Consideration of

alternative maintenance options that could extend the asset life expectancy or improve the condition rating of each asset, and/or alternative funding opportunities are recommended to be investigated, in particular for the very high-value assets.

2.1.7 Tables 6a/6b/6c/6d/6e – Priority Assets Recommended for Further Review *(Updated August 2021)*

Tables 6a/6b/6c/6d/6e have been prepared to provide a summary reference for any assets that have been recommended as priorities for further review, upgrade, or replacement by the Municipality as part of their asset management planning initiatives.

Details on assets recommended for further review are included in Section 6.0 – Priorities and Recommendations of the AMP Report Version 1.2.

2.2 Definitions *(Updated June 2021)*

The following is a select list of definitions which explain some elements of the Detailed Summary of Municipal Assets Tables (4a to 4e), for review considerations. In cases where the definition of a specific element was understood to be self-evident, they were not included below.

Item	Definition	Example
Asset ID	An Asset ID tag was assigned to each asset to allow for easier reference and sorting purposes. The year the Asset ID was created is included in the naming convention.	<ul style="list-style-type: none"> Roads = R19-01 Stormwater Assets = STW20-06
Detailed Asset Description	Used to describe assets that share similar characteristics with each other. Detailed Asset Descriptions vary dependent on asset groups.	<ul style="list-style-type: none"> LCB (low class bituminous pavement) Bridge
Geographic Township	Used to define the location of the asset in the Municipality.	<ul style="list-style-type: none"> Hungerford, Elzevir, Grimsthorpe
Year in Service / or Last Upgrade Year	Age of the asset, year asset was purchased, the year the asset was put into service, or the year the asset was last upgraded. Year in Service is always a "year".	<ul style="list-style-type: none"> 2015
Asset Life Expectancy	The number of years the asset is anticipated to be useful/functional.	<ul style="list-style-type: none"> Bridges = based on OSIM reports Roads = based on estimates and PCI values Water/Wastewater/Stormwater assets - based on estimates of the Municipality, information from OCWA, and/or industry standards
Projected Replacement or Upgrade Year	The year an asset should be replaced and or upgraded. Estimated based on the sum of the current year and Asset Life Expectancy.	<ul style="list-style-type: none"> Alexander Street <ul style="list-style-type: none"> Current Year = 2019 Asset Life Expectancy = 11 years Projected Replacement or Upgrade Year = (2019 + 11) = 2030
Tangible Capital Asset Report Financials	Based on information prepared by Municipal auditors in a Tangible Capital Assets Report, and applied to assets directly or shared amongst assets on a per unit basis (i.e. in the case of linear assets). Includes Original Value (Starting Balance), Accumulated Amortization, Additions and Betterments, and Ending Value (Net Book Value).	<ul style="list-style-type: none"> Net Book Value = (Original Value – Accumulated Amortization + Additions and Betterments)

Replacement and/or Upgrade Cost	Anticipated total cost of replacement/upgrade/maintenance of an asset (as applicable). For roads, "Replacement and/or Upgrade Cost" replaced with "Reconstructions / Rehabilitation Cost". For bridges, "Replacement and/or Upgrade Cost" replaced with "Total Upgrade Cost".	<ul style="list-style-type: none"> • New road, bridge, water asset, wastewater asset
Condition Rating	A scale which identifies the current condition of a given asset. Roads = Condition Rating based on established Pavement Condition Index (PCI), with Good = PCI > 75, Fair = PCI < 75 and > 50, and Poor = PCI < 50. Bridges = Condition Rating based on Bridge Condition Index (BCI), with Good = BCI >70, Fair = BCI < 70 and > 60, and Poor = BCI < 60. Other assets = Scale using Good, Fair, or Poor rating, based on observations from Municipal Staff and/or consultants.	<ul style="list-style-type: none"> • Alexander Street <ul style="list-style-type: none"> - PCI = 88 - Condition Rating = Good
Current Level of Service	Defined as the level of service required for the asset to be maintained to meet the service requirements of the Municipality and its ratepayers. Includes consideration of social, political, environmental, and economic outcomes that the Municipality delivers. The scale is from one (1) to five (5), where one (1) is very low priority and five (5) is very high priority.	<ul style="list-style-type: none"> • High Class Bituminous (HCB) roads with a Municipal Class of 2 (5 = very high priority) • Gravel roads with a Municipal Class of 6 with no exit (1 – very low priority)

2.3 Proposed Data Verification and Condition Assessment Policy

In accordance with Section 7 of O.Reg. 588/17, this AMP Report should be re-evaluated at a minimum of every five (5) years; however, it is recommended that this AMP Report be reviewed annually as part of the Municipality's budgeting process, in order to incorporate priority items and actions, and update information relevant to this AMP Report (i.e. current Condition Ratings, new studies, new assets, etc.).

Other studies (and/or updates to studies) to establish qualitative descriptions and technical metrics for core assets and/or all assets should be completed by a municipality every two (2) years, in accordance with Section 5 (2) of O.Reg. 588/17.

Tangible Capital Asset Report information for each asset could be updated annually, based on the results of each year's audited Tangible Capital Assets Report by the Municipality's auditors.

Asset Life Expectancies could be updated following completion of significant maintenance/upgrade activities, in order to note the anticipated extended life of the asset and prolong the Projected Replacement or Upgrade Year.

Replacement and/or Upgrade Costs could be updated as new/more current information becomes available, as applicable.

Condition Ratings could be updated by the Municipality on an as-needed basis, based on municipal review/observations and/or by third-party investigations (i.e. consultant reviews). The ideal case would be to update Condition Ratings annually, and at a minimum every two (2) years.

2.4 Roads

The following information in this section is based on Table 4a – Detailed Summary of Municipal Assets (Roads), which was prepared using information from the Road Needs Study (Greenview, 2019a), 2018 Tangible Capital Assets Report (Baker Tilly, 2019), and information provided by the Municipality. This information is reported in order to meet with the requirements of O.Reg. 588/17. This information can be found directly on Table 2a – 2019 Road Network Summary.

Based on the 2019 Road Needs Study (Greenview, 2019a) and information provided by the Municipality, the Municipality maintains a road network with a total road length of approximately 410.74 km. The respective road surface types and total lengths are as follows:

Road Type	Number of Road Sections	Total Length in Kilometres (km)	No. of Lane Kilometres (km)	Percentage of Total Road Network
Gravel	166	253.89	507.79	61.81%
HCB	103	30.60	61.20	7.45%
LCB	106	126.25	252.50	30.74%
TOTAL	375	410.74	821.48	100.00%

Road information by Geographic Township is summarized as follows:

Road Type	Grimsthorpe Township	Elzevir Township	Hungerford Township (& Village of Tweed)	Multi-Township Road Sections (Hungerford & Elzevir)	TOTAL
Total Length in Kilometres (km)					
Gravel	0.00	55.96	189.58	8.36	253.89
High Class Bituminous (HCB)	0.00	0.28	30.32	0.00	30.60
Low Class Bituminous (LCB)	0.26	25.80	100.19	0.00	126.25
<i>Percentage of Total Road Network</i>	<i>0.06%</i>	<i>19.97%</i>	<i>77.93%</i>	<i>2.03%</i>	<i>100.00%</i>
TOTAL	0.26	82.04	320.09	8.36	410.74

Road information by Municipal Road Class is summarized as follows:

Municipal Road Class	Total Length in Kilometres (km)	Percentage of Total Road Network (%)
Class 2	0.58	0.14%
Class 3	16.22	3.95%
Class 4	75.12	18.29%
Class 5	15.89	3.87%
Class 6	302.94	73.75%
TOTAL	410.74	100.00%

Road Information by Municipal Road Class Description is summarized as follows:

Municipal Road Class Description	Total Length in Kilometres (km)	No. of Lane Kilometres (km)	Percentage of Total Road Network (%)	Land Area – Municipality of Tweed (km ²)	Road Density (km/km ²)
Arterial	0.58	1.15	0.14%	975	0.0012
Major Collector	27.36	54.73	6.66%		0.056
Minor Collector	62.74	125.48	15.27%		0.129
Local	319.81	639.61	77.86%		0.656
Partially Maintained	0.26	0.51	0.06%		0.00053
TOTAL	410.74	821.48	100.00%	975	0.421

Road information by Pavement Condition Index (PCI) is summarized as follows:

Road Type	Average PCI	Average Condition Rating	% PCI 75-100	% PCI 50-75	% PCI <50
		(good / fair / poor)	Good	Fair	Poor
High Class Bituminous (HCB)	81.25	Good	17.87%	9.33%	0.27%
Low Class Bituminous (LCB)	70.11	Fair	10.13%	17.33%	0.80%
Gravel	73.01	Fair	22.40%	21.33%	0.53%
TOTAL	74.45	Fair	50.40%	48.00%	1.60%

The anticipated total required maintenance cost (gravel roads) and/or replacement cost (LCB/HCB roads) for each road surface type, based on industry standards and information supplied by the Municipality are:

Road Surface Type	Anticipated Total Replacement and/or Maintenance Cost (30-Year)
Gravel	\$ 7,500,000
High Class Bituminous (HCB)	\$ 6,566,911
Low Class Bituminous (LCB)	\$ 16,212,229
TOTAL	\$ 30,279,140

In accordance with the requirements of Section 5 (2) of O.Reg. 588/17 regarding the average age of each road surface type, the following average ages of road sections within the Municipality by pavement type are as follows:

Road Surface Type	Average Road Section Age
Gravel	Zero (0) years
High Class Bituminous (HCB)	17 years
Low Class Bituminous (LCB)	9 years

With respect to gravel road sections, maintenance operations are completed annually (and on-going), and therefore the average age of gravel road sections may be described as zero (0) years. The age of various road sections are not interpreted to represent a best practice for managing road assets. It is recommended that the Municipality utilize more quantitative measures for managing road assets, like Pavement Condition Index (PCI) to plan for road asset improvements. Available information on the average age of each road asset category are included on Table 4a.

The above noted summaries of road data are included in the 2019 Road Needs Study (Greenview, 2019a), and has been included here to satisfy the requirements of O.Reg. 588/17. Detailed mapping completed in order to satisfy the requirements of O.Reg. 588/17 with respect to community levels of service (qualitative descriptions), with a focus on the connectivity of roads, pavement types, and current condition rating are included in the 2019 Road Needs Study (Greenview, 2019a). Assumptions and notes related to roads are included on Table 4a – Detailed Summary of Municipal Assets (Roads).

The financial strategy for the upgrade and/or replacement of municipal roads are discussed in Section 5.0 of this report and in Table 5a.

2.5 Bridges and Large Culverts

The following information in this section is based on Table 4b – Detailed Summary of Municipal Assets (Bridges and Large Culverts), which was prepared using information from the 2018 OSIM Bridge Inspection Submission

(Jewell Engineering, 2019), the Municipality's 2018 Tangible Capital Assets Report, and information provided by the Municipality. This information can be found directly on Table 2b – 2019 Bridges and Large Culvert Summary.

Based on the 2018 OSIM Bridge Inspection Submission (Jewell Engineering, 2019), the Municipality maintains a total of fifty-two (52) bridges and/or large culverts (> 3.0 metres) that are inspected every two (2) years, at a minimum. The following details are provided as a summary of the bridge and large culvert assets for the Municipality (Table 4b):

Structure Type	Quantity	Average Age (years)	Replacement and/or Upgrade Cost
Bridges	45	29	\$ 23,804,500
Culverts	7	7	\$ 1,265,000
TOTAL	52	16	\$ 25,069,500

In accordance with the requirements of O.Reg. 588/17, the community levels of service (qualitative descriptions) for the bridges and large culverts in the Municipality include provision for traffic from motor vehicles, heavy transport vehicles, emergency vehicles, pedestrians, and cyclists. With respect to technical levels of service (technical metrics), the following is a summary of the % Load Restrictions and % Dimensional Restrictions of the Municipality's bridges and large culvert, as noted on Table 2b.

Structure Type	Quantity	% Loading Restrictions	% Dimensional Restriction
Bridges	45	44%	58%
Culverts	7	0%	14%
TOTAL	52	38%	52%

Additional details on the Municipality's bridges and large culverts can be found in the 2018 OSIM Bridge Inspection Submission (Jewell Engineering, 2018) and on Table 4b.

Assumptions and notes related to bridges and large culverts are included on Table 4b – Detailed Summary of Municipal Assets (Bridges & Large Culverts).

The financial strategy for the upgrade and/or replacement of Municipal bridges and large culverts is discussed in Section 5.0 of this report and in Table 5b.

2.6 Water Supply Services *(Updated August 2021)*

The following information in this section is based on Table 4c – Detailed Summary of Municipal Assets (Water Supply Services), which was prepared using information from applicable water supply services-related documentation (as included as appendices in the Water Asset Study, Greenview, 2019b), the Municipality's 2018 Tangible Capital Assets Report, and information provided by the Municipality. This information can be found directly on Table 2c – 2019 Water Supply Services Summary. As part of this AMP Report Version 1.2, updates to Asset IDs WS21-67 and WS21-88 were applied, which corresponding changes to the following data:

Asset Description & Class		Construction Material	Quantity	Units	Average Age (years)	Replacement and/or Maintenance Cost
Building	Distribution		1	#	22	\$ 1,500,000
Building	Treatment		1	#	21	\$ 1,000,000
Equipment	Distribution		5	#	7	\$ 2,085,000
Water Main	Distribution	Cast Iron	7,570	m	82	\$ 7,257,190
Water Main	Distribution	PVC	8,002	m	17	\$ 6,801,887
Equipment	Hydrant		97	#	20	\$ 970,000
Equipment	Treatment		8	#	14	\$ 275,000
TOTAL		-	-	-	33	\$ 19,889,077

With respect to technical levels of service (technical metrics), the following is a summary of the requirements of O.Reg. 588/17 for water supply services assets:

Percentage of Properties Connected to Municipal Water System	Percentage of Properties where Fire Flow is Available	No. of Connection Days per Year where a Boil Water Advisory Notice is in Place Compared to the Total Number of Properties Connected to the Municipal Water System	No. of Connection-Days per Year Due to Water Main Breaks Compared to the Total Number of Properties Connected to the Municipal Water System
= (730 / 4,695)	= (730 / 4,695)	= (730 x 2) / 730	= (10 x 2) / 730
= 15.5%	= 15.5%	= 2	= 0.027

Detailed mapping completed in order to satisfy the requirements of O.Reg. 588/17 with respect to community levels of service (qualitative descriptions), with a focus on the areas of the Municipality that are connected to the municipal water system and have fire flow, are included in the Water Asset Study (Greenview, 2019b). Assumptions and notes related to water supply services are included on Table 4c – Detailed Summary of Municipal Assets (Water Supply Services).

The financial strategy for the upgrade and/or replacement of the Municipality’s water supply services assets are discussed in Section 5.0 of this report and in Table 5c.

2.7 Wastewater Services

The following information in this section is based on Table 4d – Detailed Summary of Municipal Assets (Wastewater Services), which was prepared using information from applicable wastewater services-related documentation (as included as appendices in the Wastewater Asset Study, Greenview, 2019c), the Municipality’s 2018 Tangible Capital Assets Report, and information provided by the Municipality. This information can be found directly on Table 2d – 2019 Wastewater Services Summary.

Asset Description and Class		Sewer Type	Quantity	Units	Average Age (years)	Replacement and/or Maintenance Cost
Facility	Distribution		2	#	44	\$ 450,000
Equipment	Distribution		5	#	5	\$ 98,000
Equipment	Treatment		3	#	15	\$ 155,000
Land	Treatment		2	#	44	\$ 200,000
Sewer	Distribution	PVC	6,982	m	16	\$ 3,490,965
Sewer	Distribution	Asbestos Cement	6,146	m	81	\$ 3,072,868
Sewer	Distribution	Forcemain	1,570	m	44	\$ 785,000
TOTAL					45	\$ 8,251,833

With respect to technical levels of service (technical metrics), the following is a summary of the requirements of O.Reg. 588/17 for wastewater services assets:

Percentage of Properties Connected to the Municipal Wastewater System	No. of Events per Year Where Combined Sewer Flow in the Municipal Wastewater System Exceeds System Capacity Compared to the Total Number of Properties Connected to the Municipal Wastewater System	No. of Connection-Days per Year Due to Wastewater Backups Compared to the Total Number of Properties Connected to the Municipal Wastewater System	No. of Effluent Violations per Year Due to Wastewater Discharge Compared to the Total Number of Properties Connected to the Municipal Wastewater System
= (730 / 4,695)	The municipal wastewater system does not have combined sewers.	No connection-days occur when a wastewater service issue arises, as there are no interruptions in service as bypassing and/or discharges are undertaken to avoid backups.	= (3 / 730)
= 15.5%			= 0.004

Detailed mapping (and related information) completed in order to satisfy the requirements of O.Reg. 588/17 with respect to community levels of service (qualitative descriptions), with a focus on the areas of the Municipality that are connected to the municipal wastewater system, are included in the Wastewater Asset Study (Greenview, 2019c). Assumptions and notes related to wastewater services are included on Table 4d – Detailed Summary of Municipal Assets (Wastewater Services).

The financial strategy for the upgrade and/or replacement of the Municipality's wastewater services assets are discussed in Section 5.0 of this report and in Table 5d.

2.8 Stormwater Assets (New June 2021)

The following information in this section is based on Table 4e – Detailed Summary of Municipal Assets (Stormwater Assets), which was prepared using information from applicable stormwater services-related documentation (as included as appendices in the Stormwater Asset Study, Greenview, 2021a), the Municipality's 2018 Tangible Capital Assets Report, and information provided by the Municipality. This information can be found directly on Table 2e – 2020 Stormwater Asset Summary.

Based on information presented in the Stormwater Asset Study (Greenview, 2021a), seven (7) catchment areas were identified within the Village of Tweed, and five (5) catchment areas in the Municipality's hamlets, including Actinolite, Marlbank, Queensborough, Stoco, and Thomasburg. The catchment area in Actinolite was not reviewed in detail, as it is understood that there are no known stormwater assets located within the hamlet.

Asset Description	Number of Catchment Areas	Total Hectares (ha)	Total Inlet Structures (#)	Total Outlet Structures (#)	Total Properties At Risk to Flooding to 100-year Storm (#)	Total Systems Not Resilient to a 5-year Storm (#)	Average Age (years)	Replacement and/or Maintenance Cost
Catchment Area (Small)	7	8	20	6	61	0	25	\$ 160,000
Catchment Area (Medium)	2	12	49	2	5	1	32	\$ 490,000
Catchment Area (Large)	2	110	226	3	0	1	37	\$ 1,960,000
Catchment Area (Multi)	1	30	61	individual outlets	10	-	37	\$ 610,000
TOTAL	12	160	356	11	76	2	35	\$ 3,220,000

Detailed mapping (and related information) completed in order to satisfy the requirements of O.Reg. 588/17 with respect to community levels of service (qualitative descriptions), with a focus on stormwater catchment areas of the Municipality, are included in the Stormwater Asset Study (Greenview, 2021a). Assumptions and notes related to stormwater assets are included on Table 4e – Detailed Summary of Municipal Assets (Stormwater Assets).

With the exception of the stormwater assets in the hamlet of Stoco (approximately 10 years old), the exact ages of stormwater assets within the Municipality are not well defined, as their various installation dates are understood to predate current senior staff’s experience at the Municipality. For this reason, a review of the known asset ages for wastewater assets in the vicinity of the stormwater catchment areas was completed, with estimated installation dates ranges for stormwater-related assets established as likely between 1983 and 1988. If additional information on the various ages of stormwater assets within the Municipality becomes available, the Year in Service for assets within the catchment areas could be updated accordingly in future.

With respect to technical levels of service (technical metrics), the following is a summary of the requirements of O.Reg. 588/17 for stormwater assets:

Percentage of Properties in Municipality that are Resilient to 100-year Storm	Percentage of Municipal Stormwater Management System Resilient to a 5-year Storm
= (4,870 Total Properties in Municipality) - (76 Properties At Risk to 100-year Storm) ÷ (4,870 Total Properties in Municipality) x 100%	= (Total Number of Inlet Structures – Inlet Structures in Tweed East) ÷ (Total Number of Inlet Structures) x 100%
= 98.44%	92.42%

The financial strategy for the upgrade and/or replacement of the Municipality’s stormwater assets are discussed in Section 5.0 of this report and in Table 5e.

3.0 Current Levels of Service *(Updated August 2021)*

For the purposes of this AMP Report, level of service is defined as the level of service required for an asset to be maintained to meet the service requirements of the Municipality and its ratepayers. Determination of current level of service includes consideration of social, political, environmental, and economic outcomes that the Municipality delivers. For the purposes of Version 1.2 AMP Report and associated tables, the scale is from one (1) to five (5), where one (1) is very low priority and five (5) is very high priority.

Generally, the current and desired level of service for service issues for each asset category are understood to be relatively consistent. At this time, it is understood that the Municipality does not have the resources (i.e. budget) to increase the level of service for its assets in the short-term, and it is the Municipality's objective to maintain their existing asset base in the best and most effective way possible, given their existing resources. Current levels of service as established by the Municipality as part of this Version 1.2 AMP Report are included in Tables 4a to 4e in columns labeled "Current Level of Service".

As part of any re-evaluation of this AMP Report (as described in Section 2.3 of this AMP Report), levels of service should be concurrently re-evaluated.

The following are descriptions of the current level of service and performance measures review for each of the asset categories included in this Version 1.2 AMP Report.

3.1 Roads

Gravel roads are currently understood to have the following service issues: grading, resurfacing, calcium treatment, brushing, ditching, winter plowing, winter sanding/salting, washout repairs, and shoulder maintenance.

Similarly, paved roads (including HCB and LCB) are currently understood to have the following service issues: sweeping, patching/potholes, shoulder maintenance, resurfacing/sealant, brushing, winter plowing, winter sanding/salting, ditching, and washout repairs.

Current levels of service for the Municipality's roads were reported as part of this AMP Report in Table 4a, and were dependent on pavement type (HCB, LCB, or gravel) and the Municipal Classes identified in the Municipality's *Level of Service Policy – Minimum Maintenance Standards* (Municipality of Tweed, 2018) and in general accordance with O.Reg. 239/02 – Minimum Maintenance Standards for Municipal Highways.

For the purposes of this AMP Report, the following Levels or Service have been designated to specific road sections as follows:

Municipal Road Class	Level of Service (1 = very low, 5 = very high)
Road Class 2 (Arterial)	5
Road Class 3 (Major Collector)	4
Road Class 4 (Minor Collector)	3
Road Class 5 (Local)	2
Road Class 6 (Local or Partially-Maintained)	1

In a general sense, HCB and LCB roads within the Municipality were determined to have the highest level of service (generally values of 5, 4, or 3), whereas gravel roads were determined to have lower levels of service (generally between 2 and 1). The lowest levels of service for road sections in the Municipality were determined to be gravel road sections that do not connect with other roads (i.e. dead-ends).

Table 4a identifies all road sections evaluated as part of this AMP Report and their respective Current Levels of Service.

3.2 Bridges and Large Culverts

Bridges and large culverts are currently understood to have the following service issues: sweeping, blockages, damage (i.e. guide rails), supports (bridges only), winter plowing, winter sanding/salting, surface, and failure. Service issues should be noted in biennial (every 2 years) OSIM reports, as prepared by a Professional Engineer.

Levels of Service for each bridge and large culvert within the Municipality have been reported based on the road on which the bridge or large culvert is located and the Level of Service for that road section, as noted above in Section 3.1 of this AMP Report.

Table 4b identifies all bridges and large culverts evaluated as part of this AMP Report and their respective Current Levels of Service.

3.3 Water Supply Services

All water supply services assets connected to the Municipality's water services system are considered critical to public health and safety and any issues, whether minor or major, should be addressed equally. This applies to assets related to the process or chemical feed system, mechanical and electrical systems, wells, water mains, hydrants, service connections, pumps, valves and related equipment.

Levels of Service for all elements of the Municipality's water supply services are understood to be very high (Level of Service = 5), given their importance to public health and safety (i.e. safe drinking water, fire services, etc.).

Table 4c identifies all water supply services assets evaluated as part of this AMP Report and their respective Current Levels of Service.

3.4 Wastewater Services

All wastewater services assets connected to the Municipality's wastewater services are considered critical to public health and safety and any issues, whether minor or major, should be addressed equally. This applies to assets related to the sanitary sewers, process and chemical feed system, mechanical and electrical systems, service connections, pumps, valves and related equipment.

Levels of Service for all elements of the Municipality's wastewater services are understood to be very high (Level of Service = 5), given their importance to public health and safety (i.e. protection from contamination, safe drinking water, etc.).

Table 4d identifies all wastewater services assets evaluated as part of this AMP Report and their respective Current Levels of Service.

3.5 Stormwater Assets (New June 2021)

Stormwater assets connected to the Municipality's stormwater catchment areas were reviewed by the Municipality as part of the asset assessment activities, and stormwater assets in catchment areas located within the Village of Tweed were generally designated with higher Levels of Service than stormwater assets in catchment areas associated with the hamlets located in the Municipality (as stormwater assets in the Municipality's hamlets were generally less complex than those located within the Village of Tweed). This applies to assets related to catchbasins, piping, headwalls, outlets, and related assets.

Levels of Service for elements of the Municipality's stormwater assets within the Village of Tweed were understood to be medium to very high (Levels of Service = 3 to 5), while within the Municipality's hamlets they were understood to be low (Level of Service = 2).

Table 4e identifies all stormwater assets evaluated as part of this AMP Report and their respective Current Levels of Service.

4.0 Procurement and Options Analysis

The following sections discuss procurement methods and options analysis for the Municipality's assets reviewed as part of this AMP Report.

4.1 Procurement Methods

Procurement of new or replacement assets should be completed in accordance with any applicable Municipality procurement bylaws.

Due to the rural nature of many parts of the Municipality and the distance of the Municipality from large urban centres, challenges with regards to procurement of services or products are anticipated, as there are generally fewer available service providers in the vicinity of the Municipality than in more densely populated areas. Depending on the circumstances, the rural nature of the Municipality can have positive and negative impacts on the cost of procurement of products and services. In cases where local service providers are available, the cost for services are generally expected to be less than city prices; however, where no local service providers are available, then the cost for services are generally expected to be elevated as distance-related factors emerge (i.e. elevated mobilization costs, etc.).

Multi-municipal cooperation in new or replacement projects for assets and services could be considered as part of the Municipality's procurement methods. Multi-municipal cooperation as part of procurement methods can have a positive effect from an economies of scale perspective, with the potential of financial benefits to all parties involved.

If any amendments to the Municipality's procurement bylaw are required to enter into multi-municipal agreements or partnerships, they should be considered by the Municipality on a per project basis.

As part of the budgeting of future projects, the Municipality should consider the design-build-finance-maintain model for budgeting purposes (i.e. AFP model), in order to apply due consideration to the total lifecycle costs of asset-related projects.

4.2 Options Analysis Review *(Updated June 2021)*

Options analysis could be considered when the Municipality is reviewing maintenance, upgrade, or replacement of assets. This can help the Municipality to provide the needed level of service for its assets to its ratepayers.

Options analysis generally involves the following process of establishing project alternatives:

1. Option identification.
2. Feasibility analysis.
3. Option selection.

Financial assessment and projections for each asset category are included Tables 5a to 5e of this AMP Report, and discussed in Section 5.0. Financial projections were developed in straight-line amortizations. If necessary, for any future asset replacement activities, more detailed reviews of replacement costs could be developed, and this AMP Report should be updated accordingly with any new or updated information.

Direct benefits and costs for an asset upgrade or replacement project should be considered on a per asset basis as part of an options analysis process, with specific consideration of the following (as may be applicable):

- Efficiencies and network effects.
 - Ontario Regulation [O.Reg.] 397/11 - Energy Conservation and Demand Management Plans.
 - Labour and vehicle operating cost savings.
 - Multi-municipal cooperation.
 - Performance improvements.

- Investment scheduling and waste minimization.
 - Delay projects that could be impacted by any expansion activities (i.e. roads).
 - Coordinate multiple asset upgrades/replacements (i.e. roads, water supply services, wastewater services, stormwater assets).
- Health and Safety.
 - Accident reduction.
 - Property damage reduction.
 - Injury reduction.
- Environmental Impacts.
 - Greenhouse gas emissions.
 - Nutrient loading.
 - Groundwater and surface water impacts.
 - Drainage impacts/improvements.
 - Climate change.

Indirect benefits and costs for an asset upgrade or replacement project should be considered on a per asset basis, with specific consideration of the following (as may be applicable):

- Municipal well-being and health.
- Amenity values.
 - Public facilities (i.e. washrooms, parks, etc.).
- Culturally/historically significant assets.
 - Historical buildings.
 - Parks and land improvements.
- Municipal image.

As this AMP Report is designed to be an asset planning tool for the Municipality, an assessment of the risks associated with all potential asset maintenance, upgrade, or replacement should be considered using an approach that allows for comparative analysis of the options available. Risks associated with each option could be based on quantitative data (if available). In instances when quantitative data is not available as part of the comparative analysis review, qualitative measures could be utilized with the intent of determining the probability of the occurrence of risk events.

Due to the fact that the Municipality is a small, rural municipality with limited resources, additional study focused on quantitative data gathering with respect to specific risk assessments could be reviewed in future as part of updates to this AMP Report, if deemed valuable by the Municipality (Section 5.5 of this AMP Report).

For any review of this AMP Report, any opportunities to save resources by coordinating solutions to multiple problems concurrently should be explored. Specifically, and as part of any decision-making process, the following opportunities should be considered:

1. Multi-municipal cooperation and contract negotiation.
2. Joint service boards.
3. Shared and/or uploading of services to the upper tier (i.e. County of Hastings).

5.0 Financial Strategy

The following sections discuss the financial strategy for the Municipality's assets reviewed as part of this AMP Report.

5.1 Summary and Definitions *(Updated August 2021)*

The financial strategy for the Municipality was developed with the assistance of Municipal staff and Greenview, and is considered the critical component of this AMP Report. The financial strategy is designed to employ basic fundamentals and assumptions, such that the Municipality could amend and/or update this AMP Report in future years as information and data becomes available.

Tables 5a to 5e – Financial Assessment and Projections describe the core municipal assets included in this AMP Report by asset category including:

- Table 5a - Financial Assessment and Projections – Roads.
- Table 5b - Financial Assessment and Projections – Bridges & Large Culverts.
- Table 5c - Financial Assessment and Projections – Water Supply Services *(Updated – August 2021)*.
- Table 5d - Financial Assessment and Projections – Wastewater Services.
- Table 5e - Financial Assessment and Projections – Stormwater Assets *(New – June 2021)*.

Based on the scope of this AMP Report, Tables 5a to 5e account for an all-inclusive review of the replacement (or upgrade) costs for each core asset, and consideration has been given by the Municipality relative to non-infrastructure solutions, maintenance activities, renewal/rehabilitation activities, replacement activities, disposal activities, and expansion activities associated with the replacement costs identified.

A practical and detailed review was completed by the Municipality and Greenview in the determination of replacement costs, including, but not limited to, actual expenditures on similar assets and/or research completed by the Municipality or Greenview on actual costs of replacement within the last two (2) to three (3) years (where possible).

A summary of the financial assessment and projections of Tables 5a to 5e is included in Table 3a – General Summary of Municipal Assets. As noted in Section 2.0 of this AMP Report, Tables 3b (Municipal Reserves and Allocation Summary) and 3c (Detailed Municipal Reserves Allocation Calculations) were created in an effort to correlate current Municipality reserves that would apply to each asset category. Current reserves were divided into reserves that are applicable to this AMP Report and to reserves that are not applicable to this AMP Report. Reserves that are applicable to this AMP Report, whether directly to specific assets categories, operating departments, or specific assets, or generally to asset categories, were used to reduce the Projected Contributions to Reserves in Table 5a to 5e. As noted in Section 2.0, the Municipality should complete a detailed review on their current reserve funds to determine if any other reserve funds (or portions of reserve funds) could be applied against any core asset categories in this AMP Report.

Tables 5a to 5e incorporate pertinent information required from Tables 4a to 4e, as well as detailing the proposed annual contributions to reserves required to upgrade/replace each municipal asset over its remaining useful life. In the event that an asset has already reached its projected replacement or upgrade year, then the proposed annual contribution to reserves is determined to be equal to the replacement cost of the asset; however, if the asset has not reached the projected replacement or upgrade year, then the value included for Year 1 is equal to the amount of available reserves calculated for the given asset, and the cost of upgrade/replacement (replacement cost) is divided over the remaining useful life years.

Proposed annual contributions to reserves are determined with focus on the five (5) and ten (10) year planning horizon, and with consideration of the thirty (30) year and total life expectancy planning perspective. The proposed annual contributions to reserves (for each year) are the recommended total monies to be saved per year by the Municipality in order to replace/upgrade each asset at the end of its useful life.

For comparison purposes, the estimated borrowing cost is calculated based on the cost for the Municipality to borrow the required monies from Infrastructure Ontario to upgrade/replace each asset, consistent with recent lending rates. Lending rates can be updated on Tables 5a to 5e at any time, to reflect the most recent rates available when this AMP Report is under review by the Municipality. The term of the loan is assumed to be generally equal to asset life expectancy, rounded up to the nearest five (5) years, to a maximum of a thirty (30) year lending term. Additionally, the difference in cost to the Municipality between borrowing or saving the required funds to upgrade/replace each asset is calculated and identified as difference (borrowing – savings). This calculation is designed to illustrate the monetary benefits to the Municipality of saving money (as part of their reserves) in advance of asset upgrade/replacement, in comparison to the high costs of borrowing; however, in some cases, borrowing money to upgrade and/or replace a municipal asset may be the appropriate action (as may be applicable).

The proposed annual contributions to reserves and associated replacement costs assume the Municipality will need to obtain all funds required to upgrade/replace each asset without the assistance of Federal or Provincial funding, grants, or any other assistance.

Assumptions and notes associated with Tables 5a to 5e are included on each individual table.

5.2 Integration with Municipal Budgets

The financial strategy was developed with a cost-based approach, using real-life upgrade/replacement costs for assets, as currently understood by the Municipality. This AMP Report is not directly integrated with municipal budgets and is designed to be an independent, third-party review of the actual assets owned and managed by the Municipality.

This AMP Report should be reviewed, updated, and utilized with consideration of future municipal budgets, existing municipal reserves, Financial Information Returns (FIR), audited Financial Reports, audited Tangible Capital Asset Reports, and any other pertinent financial or planning documents of the Municipality.

On an annual basis, or at least every two (2) years, it is recommended that any new municipal assets not represented in this AMP Report be included for future planning purposes.

5.3 Maintenance Versus Upgrade/Replacement of Assets

As the upgrade and/or replacement costs of each asset are understood to be generally costly to the Municipality, particularly in years where multiple assets require at least some level of upgrade or replacement, maintenance activities on assets should be strongly considered as a viable alternative.

Maintenance activities can be used to prolong the asset life expectancy, improve the condition rating of the asset, and in some cases revise the year in service of the asset where maintenance activities improved the condition of the asset to a like-new state.

The benefits of an appropriate maintenance schedule for municipal assets include, but may not be limited to, the following:

- Increasing available funds to be used in other maintenance, upgrades, or replacement of assets.
- Prolonging asset life expectancies beyond accounting-based estimates/pre-determined values.
- Allowing for additional years for the Municipality to save/budget for replacement assets.

5.4 Assumptions on Future Changes in Population and Economic Activity

Given the small, rural nature of the Municipality, significant changes in population and economic activity are not expected within the next 10-year and 30-year planning horizons. Conditions are anticipated to remain generally consistent with current Statistics Canada data (Table 1). Per Statistics Canada, the population percent change

in the Municipality between 2011 to 2016 was -0.2%, which was interpreted to represent a generally steady-state for the Municipality's population.

Based on the above, the following is interpreted to be pertinent to lifecycle activities for municipal assets:

1. Maintaining levels of service at current levels for municipal assets is interpreted to be possible, based on the current tax base.
2. Lifecycle activities for specific core municipal assets should be considered on a case-by-case basis by Municipal Staff and/or consultants, but in general, lifecycle activities for similar assets (i.e. roads, bridges, etc.) should be conducted in a consistent manner, and be based on appropriate studies/reviews and technical metrics.
3. As part of the determination of lifecycle activities that differ from replacement/upgrade (or similar), the Municipality should also consider if risk elements are subsequently increased as it pertains to level of service on a case-by-case basis for any municipal asset.
4. Decision-making processes with respect to level of service and risk should be completed with consideration of the lowest cost alternative, whilst maintaining the desired level of service for its ratepayers over the short and long-term planning horizons.

5.5 Detailed Risk Assessments and Asset Management Planning Activities

A detailed risk assessment for the core-assets of the Municipality was not part of the scope of the AMP Report (Version 1.2). However, in future it may be desirable for the Municipality to consider analysing their core assets from a risk management perspective. Risk may be defined in various way; however, the following two (2) examples of the definition of risk are interpreted to be useful for establishing context:

1. Federation of Canadian Municipalities (FCM) Definition:
 - The product of the likelihood and consequence of an undesirable event or circumstance (i.e. Risk = (Likelihood X Consequence)).
2. ISO 55000:2014 – Asset Management Definition:
 - The effect of uncertainty on objectives (or result to be achieved). An effect is a deviation from the expected – either positive or negative.

Risk management involves a focus on identifying and assessing risk and determining methods to mitigate the risk from multiple potential risk elements: Examples of risk elements include:

1. Deteriorating or aging assets.
2. Threats to public health and safety.
3. Natural disasters.
4. Climate change.
5. Downgrading Level of Service of assets.

As part of risk assessment activities, there are many tools that can be utilized including the Bowtie model, Risk Matrix model, and Decision Tree model, among others. The appropriate model to utilize should be examined at the time of implementation of detailed risk assessments for municipal assets.

5.6 Determination of Priority Assets for Replacement/Upgrade *(Updated June 2021)*

The determination of priority assets for replacement or upgrade should be considered based upon multiple factors, rather than on a singular element (i.e. Projected Replacement or Upgrade Year). It is recommended that the determination of a priority asset for replacement or upgrade should, at a minimum, consider the following aspects, as indicated in Tables 4a to 4e:

1. Year in Service.
2. Asset Life Expectancy.
3. Projected Replacement or Upgrade Year.
4. Condition Rating (or PCI/BCI, in case of road or bridge assets).
5. Current Level of Service.

Determination of priority assets for replacement or upgrade should also consider available municipal budget monies, available municipal reserves, or any Federal or Provincial funding or grants available at that time. Any special projects, as determined by the Municipality prior to the development of this AMP Report, should also be considered for priority asset status (as may be applicable).

6.0 Priorities and Recommendations *(Updated August 2021)*

Based on the data presented in Tables 4a to 4e, and Tables 5a to 5e, the following is a summary of the priority assets, by category, that should be considered for replacement and/or upgrade (or additional review) by the Municipality as part of this AMP Report (Version 1.2).

6.1 Roads

Based on the details presented in Table 4a – Detailed Summary of Municipal Assets (Roads) and related field investigations of the Municipality's roads in the 2019 Road Needs Study (Greenview, 2019a), the following priority road sections are recommended to be investigated further as part of future road reconstruction/rehabilitation, and/or maintenance opportunities. The priority road sections for further investigation were determined by the following procedure:

1. Sorting the data for all road sections by pavement type, based on the PCI (lowest to highest).
2. Sorting the top ten (10) road sections with the lowest PCI by Current Level of Service (highest level of service = 5, lowest level of service = 1), and then by PCI value.

The top five (5) road sections with the lowest PCI values were then selected and included the sections below. In cases where road sections in the top 10 had identical PCI values and Current Levels of Service, then they were included, in order to not preferentially select road sections based on alphabetical order. For this reason, both Sections 6.1.1 (HCB Road Sections) and 6.1.3 (Gravel Road Section) have six (6) road sections identified below, and Section 6.1.2 (LCB Road Sections) has seven (7) road sections identified in their respective table.

It is recommended that the Municipality consider population density and traffic volumes (i.e. established through traffic studies) in order to further review the above noted list of potential priority road sections for reconstruction, rehabilitation and/or maintenance.

Priority road assets recommended for further review are summarized in Table 6a of this AMP Report.

6.1.1 HCB Road Sections

The following HCB road sections have been identified as assets that should be considered for additional review as part of asset management planning initiatives in the Municipality. Six (6) HCB road sections are included below:

Asset ID	Asset Name	Detailed Asset Desc.	Road Location From	Road Location To	Section Length (m)	Asset Life Expectancy	PCI (0-100)	Current Level of Service	Recon. / Rehab. Cost
R19-194	Marlbank Road	HCB	Bethel Road	Mulroney Lane	703	5	57	4	\$ 158,619
R19-200	Marlbank Road	HCB	East Hungerford Road	St. Edmunds Road	397	5	57	4	\$ 88,123
R19-205	Marlbank Road	HCB	Mulroney Lane	Kenner Court	886	6	60	4	\$ 190,163
R19-286	Quinns Lane	HCB	Victoria Street	Colborne Street	95	4	46	2	\$ 13,943
R19-149	James Street North	HCB	Jamieson Street	Hannah Street	100	5	56	2	\$ 20,271
R19-268	Pomeroy Court	HCB	College Street	End	52	5	56	2	\$ 5,915

6.1.2 LCB Road Sections

The following LCB road sections have been identified as assets that should be considered for additional review as part of asset management planning initiatives in the Municipality. Seven (7) LCB road sections are included below:

Asset ID	Asset Name	Detailed Asset Desc.	Road Location From	Road Location To	Section Length (m)	Asset Life Expectancy	PCI (0-100)	Current Level of Service	Recon. / Rehab. Cost
R19-245	Napanee Road	LCB	Moneymore Road	Municipal Boundary	2,015	4	41	3	\$ 270,804
R19-244	Napanee Road	LCB	Marlbank Road	Moneymore Road	561	4	44	3	\$ 73,231
R19-334	Store Street	LCB	Hungerford Street	Highway 37	333	5	50	2	\$ 38,778
R19-313	Sexsmith Road	LCB	Highway 7	End	264	4	49	1	\$ 37,950
R19-47	Charles Road	LCB	Charles Court	End	470	5	50	1	\$ 59,083
R19-296	Rapids Road	LCB	Martin Road	Marrisett Road	1,498	5	50	1	\$ 186,000
R19-342	Sulphide Road	LCB	Potter Settlement Road	Peter Street	1,850	5	50	1	\$ 260,231

6.1.3 Gravel Road Sections

The following gravel road sections have been identified as assets that should be considered for additional review as part of asset management planning initiatives in the Municipality. Six (6) gravel road sections are included below:

Asset ID	Asset Name	Detailed Asset Desc.	Road Location From	Road Location To	Section Length (m)	Asset Life Expectancy	PCI (0-100)	Current Level of Service	Recon. / Rehab. Cost
R19-160	Kaladar Street	Gravel	Bridgewater Road	Highway 37	215	n/a	52	2	To be determined
R19-150	James Street South	Gravel	George Street	River Street	134	n/a	55	2	To be determined
R19-266	Peterson Road	Gravel	Highway 7	End	560	n/a	44	1	To be determined
R19-14	Bethel Road	Gravel	Mulrone Lane	End	80	n/a	48	1	To be determined
R19-80	Deroche Road	Gravel	Conchie Road	Deroche Lane	1,422	n/a	50	1	To be determined
R19-175	Lingham Lake Road	Gravel	Boundary	End	6,500	n/a	50	1	To be determined

6.2 Bridges and Large Culverts

Based on a review of the 2018 OSIM Bridge Inspection Submission (Jewell Engineering, 2019), specific repair and rehabilitation requirements were noted for the Municipality's bridges and large culverts. Details regarding

each bridge or large culvert are included on Table 4b – Detailed Summary of Municipal Assets (Bridges and Large Culverts).

Based on the details presented in Table 4b – Detailed Summary of Municipal Assets (Bridges and Large Culverts), and reported in the 2018 OSIM Bridge Inspection Submission (Jewell Engineering, 2019), the following priority bridges and large culverts are recommended to be investigated further as part of future repairs, reconstruction/rehabilitation, replacement and/or maintenance opportunities. The priority bridges and large culverts for further investigation were determined by the following procedure:

1. Sorting the data for all bridges and large culverts based on the Bridge Condition Index (BCI) from lowest BCI to highest BCI.
2. Sorting the top ten (10) bridges and large culverts with the lowest BCI by Current Level of Service (highest level of service = 5, lowest level of service = 1), and then by BCI value.

The top five (5) bridges and large culverts recommended for further review based on the above-noted process are as follows:

Asset ID	Asset Name	Detailed Asset Desc.	Asset Life Expectancy Remaining (years)	Condition Rating	BCI (0-100)	Current Level of Service	Replacement and/or Upgrade Cost
BC19-39	Reynolds Culvert (Bridge #38)	Culvert	10	Poor	44.76	3	\$510,000
BC19-41	Rocky Alter Bridge (Bridge #12)	Bridge	5	Poor	21.13	1	\$855,000
BC19-26	Lost Channel Bridge (Bridge #6)	Bridge	5	Poor	23.06	1	\$2,158,000
BC19-13	East Red Bridge (Bridge #30)	Bridge	5	Poor	27.83	1	\$495,000
BC19-05	Catons Bridge North Structure (Bridge #8)	Bridge	5	Poor	28.42	1	\$1,555,000

Given that the Catons Bridge South Structure (Bridge #7) also has a similarly poor BCI rating as its North Structure counterpart (Bridge #8), it is recommended that it be included in any further investigations for repairs, reconstruction/rehabilitation, or replacement activities as they are located in approximately the same location. Similarly, the West Red Bridge (Bridge #31) reportedly has a poor condition rating and a BCI of 50.93, similar to its East Red Bridge counterpart, so consideration of further investigations of the West Red Bridge concurrently with investigations at the East Red Bridge are recommended. Details regarding the West Red Bridge and the Catons Bridge South Structure are as follows:

Asset ID	Asset Name	Detailed Asset Desc.	Asset Life Expectancy Remaining (years)	Condition Rating	BCI (0-100)	Current Level of Service	Replacement and/or Upgrade Cost
BC19-06	Catons Bridge South Structure (Bridge #7)	Bridge	5	Poor	31.17	1	\$ 1,555,000
BC19-52	West Red Bridge (Bridge #31)	Bridge	5	Poor	50.93	1	\$ 815,000

Priority bridge and large culvert assets recommended for further review are summarized in Table 6b of this AMP Report.

6.3 Water Supply Services (Updated August 2021)

Based on the details presented in Table 4c – Detailed Summary of Municipal Assets (Water Supply Services),

and reported in the Water Asset Study (Greenview, 2019b), the following priority water supply services assets are recommended to be investigated further as part of future repairs, reconstruction/rehabilitation, replacement and/or maintenance opportunities. The priority water supply services assets for further investigation were determined by the following procedure:

1. Sorting the data for all water supply services assets based on the condition rating, from lowest (poor) to highest (good).

Given that the current level of service for all water supply services assets were understood to have the highest level of service (Level of Service = 5), further sorting by current level of service was not deemed to be significant, and an alternative method of priority sorting was required.

The following alternative priority sorting methodology was utilised:

1. Given that water supply services assets that were identified as having a "poor" condition rating were dominantly Fire Hydrants, all Fire Hydrant assets with a "poor" condition rating were then sorted by Year in Service (or Last Upgrade Year). The five (5) oldest Fire Hydrants with a "poor" condition rating were identified as follows:

Asset ID	Asset Name	Detailed Asset Desc.	Asset Class	Year in Service	Condition Rating	Additional Information	Replacement and/or Upgrade Cost
WS19-187	Fire Hydrant (No. 82)	Equipment	Hydrant	1931	Poor	Leaking from operating nut. Formerly #429.	\$ 10,000
WS19-199	Fire Hydrant (No. 94)	Equipment	Hydrant	1949	Poor	Leaking from operating nut. Caps need gaskets. To be replaced. Formerly #432.	\$ 10,000
WS19-198	Fire Hydrant (No. 93)	Equipment	Hydrant	1950	Poor	To be replaced. Formerly #433.	\$ 10,000
WS19-185	Fire Hydrant (No. 80)	Equipment	Hydrant	1953	Poor	To be replaced. Formerly #406.	\$ 10,000
WS19-175	Fire Hydrant (No. 70)	Equipment	Hydrant	1969	Poor	Caps need new gaskets. Formerly #415.	\$ 10,000

The replacement and/or upgrade costs of approximately \$10,000 per hydrant represent the cost to replace and install a full, new hydrant; however, based on observations of deficiencies in 2019 (i.e. during the fire flow testing completed by Lakeshore Hydrant Services Inc.), only two (2) of the five (5) hydrants noted above are understood to require replacement. It is recommended that as many of the Fire Hydrants identified on Table 4c as requiring maintenance only (not replacement) be considered as part of municipal budgeting in the short-term planning period. Ultimately, thirty-three (33) Fire Hydrants in the Village of Tweed were identified as being in "poor" condition, and require either maintenance or replacement (Table 4c).

As it pertains to other water supply services assets (excluding Fire Hydrants), the following sorting methodology was conducted in order to determine water supply services assets for further investigation:

1. Sorting the data for all water supply services assets based on the condition rating, from lowest (poor) to highest (good), followed by sorting on Year in Service (or Last Upgrade Year).

The sorting of water supply services assets (excluding Fire Hydrants) by this methodology resulted in an asset set of Water Mains of similar age and construction material, with the exception of WS21-67 which was understood to have a "poor" condition rating and others identified as "fair":

Asset ID	Asset Name	Asset Class	Construction Material	Location		Length (m)	Year in Service	Condition Rating	Replacement and/or Upgrade Cost
				Location From	Location To				
WS21-67	Water Main	Distribution	Cast Iron	Moira River North Connection		91	1930	Poor	\$ 900,000
				Bridge Street East	Moira Street				
WS19-31	Water Main	Distribution	Cast Iron	Hungerford Road		291	1925	Fair	\$ 246,992
				Park Avenue	Metcalf Street				
WS19-33	Water Main	Distribution	Cast Iron	James Street North		112	1925	Fair	\$ 95,200
				Jamieson Street East	End (South-East)				
WS19-34	Water Main	Distribution	Cast Iron	James Street South		74	1925	Fair	\$ 62,900
				River Street East	End (North-West)				
WS19-35	Water Main	Distribution	Cast Iron	Jamieson Street East		95	1925	Fair	\$ 80,750
				Mary Street	Colborne Street				
WS19-36	Water Main	Distribution	Cast Iron	Jamieson Street East		97	1925	Fair	\$ 82,450
				Louisa Street	Mary Street				
WS19-37	Water Main	Distribution	Cast Iron	Jamieson Street East		94	1925	Fair	\$ 79,900
				James Street North	Louisa Street				
WS19-38	Water Main	Distribution	Cast Iron	Jamieson Street East		97	1925	Fair	\$ 82,450
				Colborne Street	Victoria Street North				

Priority water supply services assets recommended for further review are summarized in Table 6c of this AMP Report.

6.4 Wastewater Services

Based on the details presented in Table 4d – Detailed Summary of Municipal Assets (Wastewater Services), and reported in the Wastewater Asset Study (Greenview, 2019c), the following priority wastewater services assets are recommended to be investigated further as part of future repairs, reconstruction/rehabilitation, replacement and/or maintenance opportunities. The priority wastewater services assets for further investigation were determined by the following procedure:

1. Sorting the data for all wastewater services assets based on the condition rating, from lowest (poor) to highest (good), followed by sorting on Year in Service (or Last Upgrade Year).

The sorting of wastewater services assets by this methodology resulted in an asset set of Sewer Mains of

generally similar age and construction material:

Asset ID	Asset Name	Asset Class	Construction Material	Location		Length (m)	Year in Service	Condition Rating	Replacement and/or Upgrade Cost
				Location From	Location To				
WW19-70	Sewer Mains	Distribution	Asbestos Cement	Moira Street		291	1930	Poor	\$ 145,500
				Highway 37	Old Bogart Road				
WW19-71	Sewer Mains	Distribution	Asbestos Cement	Moira Street		240	1930	Poor	\$ 120,000
				Old Bogart Road	Arthur Street				
WW19-14	Sewer Mains	Distribution	Asbestos Cement	Arthur Street		263	1931	Poor	\$ 131,500
				Brooklyn Road	Louisa Street				
WW19-31	Sewer Mains	Distribution	Asbestos Cement	Hannah Street		92	1925	Fair	\$ 46,000
				Louisa Street	James Street North				
WW19-38	Sewer Mains	Distribution	Asbestos Cement	James Street North		105	1925	Fair	\$ 52,500
				Jamieson Street East	Hannah Street				
WW19-39	Sewer Mains	Distribution	Asbestos Cement	James Street South		128	1925	Fair	\$ 64,000
				River Street East	George Street				
WW19-41	Sewer Mains	Distribution	Asbestos Cement	Jamieson Street East		102	1925	Fair	\$ 51,000
				Colborne Street	Victoria Street North				
WW19-42	Sewer Mains	Distribution	Asbestos Cement	Jamieson Street East		96	1925	Fair	\$ 48,000
				Colborne Street	Mary Street				
WW19-43	Sewer Mains	Distribution	Asbestos Cement	Jamieson Street East		90	1925	Fair	\$ 45,000
				Louisa Street	James Street North				
WW19-44	Sewer Mains	Distribution	Asbestos Cement	Jamieson Street East		97	1925	Fair	\$ 48,500
				Mary Street	Louisa Street				

In addition to the above noted Sewer Main sections that are recommended for further review, the Municipality has an immediate need to expand the capacity of their existing waste stabilization ponds. The existing two (2) waste stabilization ponds are understood to be in fair condition at this time; however, their volumetric capacity is understood to be insufficient for the volumes of wastewater requiring treatment, resulting in unplanned and

planned wastewater discharges to the adjacent Stoco Lake. A new waste stabilization pond is required to address the deficiency in wastewater flow generated in the Village of Tweed.

Priority wastewater services assets recommended for further review are summarized in Table 6d of this AMP Report.

6.5 Stormwater Assets (New June 2021)

Based on the details presented in Table 4e – Detailed Summary of Municipal Assets (Stormwater Assets), and reported in the Stormwater Asset Study (Greenview, 2021a), the following priority stormwater assets are recommended to be investigated further as part of future repairs, reconstruction/rehabilitation, replacement and/or maintenance opportunities. The priority stormwater assets for further investigation were determined by the following procedure:

1. Sorting the data for all stormwater assets based on the current level of service, whether the catchment area systems were interpreted to be resilient to a 5-year storm, and condition rating, from lowest (poor) to highest (good).

The sorting of stormwater assets by this methodology resulted in an asset set recommended for further review as follows:

Asset ID	Asset Name, Description, Area (ha)	Inlets (#)	Outlets (#)	Number of Properties At Risk of Flooding to 100-year Storm	Systems Resilient to a 5-year Storm	Year in Service	Condition Rating	Level of Service	Replacement and/or Upgrade Cost
STW20-06	Tweed Centre Catchment Area (Large) 60 ha	172	1	0	No	1983	fair	5	\$ 1,720,000
STW20-09	Tweed East Catchment Area (Medium) 6 ha	27	1	0	No	1988	fair	4	\$ 270,000
STW20-12	Tweed North Catchment Area (Multi) 30 ha	61	individual outlets	10	Yes	1983	fair	4	\$ 610,000
STW20-01	Actinolite Catchment Area (Small) 1 ha	unknown	unknown	10	unknown	unknown	unknown	unknown	unknown

With respect to further review of the above noted stormwater related assets, the following additional review activities are recommended:

1. Stormwater catchment areas of Tweed Centre (STW20-06) and Tweed East (STW20-09) are recommended to be reviewed in additional detail, in order to better establish whether there are any undetermined factors that influenced the calculations of whether the two (2) catchment area systems were resilient to a 5-year storm. Based on available information at the time of completion of the Stormwater Asset Study (Greenview, 2021a), the Estimated Inlet Flow rates for both Tweed Centre and Tweed East were larger than the Estimated Outlet Flow rates, resulting in both catchment area systems being identified as not resilient to a 5-year storm. Additional study is recommended to confirm or disprove these preliminary calculations.
2. Based on the review of the Tweed North catchment area (STW20-12), the stormwater systems in this catchment area were determined to be complex, with an unknown quantity of outlets identified as a data gap, with assumed discharge to the Moira River. Additional study is recommended in this area to further establish the quantity of outlets and better understand how stormwater is managed in the catchment area.
3. At the time of completion of the Stormwater Asset Study, it was understood that there were no known stormwater assets located within the small catchment area associated with the hamlet of Actinolite (STW20-01); however, if any stormwater assets are identified within the hamlet of Actinolite in the future, then additional study is recommended to be completed in the catchment area to establish specific locations of any/all inlet and outlet locations, and related components, and have them integrated into the Municipality's Asset Management Planning documents.

Priority stormwater assets recommended for further review are summarized in Table 6e of this AMP Report.

6.6 Coordination of Asset Replacements/Upgrades (Updated June 2021)

Given the interconnection of surficial linear assets (i.e. roads, bridges and large culverts) and sub-surface linear assets (i.e. water mains, sewer mains, stormwater assets, etc.), the Municipality should consider combining asset replacements/upgrades where the upgrade/replacement of one (1) asset may impact other asset categories in the same area (i.e. if a water main requires replacement, also consider replacement of the sewer mains, stormwater assets, and road pavement surface in the same area). Similarly, the Municipality may consider extending a replacement schedule for a given asset in order to time its replacement with a planned replacement schedule for another related asset.

Financial benefits (i.e. cost savings) may be attained with this asset management approach.

6.7 Recommendations for Future Asset Management Planning Activities (Updated June 2021)

It is recommended that, as part of any future development of this AMP Report, the Municipality should consider completing a detailed operational review of all assets, with a focus on the potential for decreasing the quantity of existing Municipal assets (i.e. buildings, vehicles, etc.) while at the same time maintaining the current level of service expected by its ratepayers. Inclusion of all Municipal asset categories in a future AMP is required by no later than July 1, 2023, per Section 5 (1) of O.Reg. 588/17 (Appendix A).

Updates to studies related to Municipality assets should be completed in accordance with timelines outlined in O.Reg. 588/17 (as applicable).

As noted in Section 5.5, it is recommended that the Municipality consider conducting a detailed risk analysis for municipal assets as part of future asset management planning activities to further assist in the decision-making process of establishing priority assets for additional review, upgrade and/or replacement.

7.0 Closing

Greenview has prepared this Asset Management Plan Report (Version 1.2) in order to meet with the requirements of O.Reg. 588/17 – Asset Management Planning for Municipal Infrastructure, including the following core asset categories:

1. Roads.
2. Bridges and Large Culverts.
3. Water Supply Services (*Updated August 2021*).
4. Wastewater Services.
5. Stormwater Assets (*New June 2021*)

This report is governed by the attached statement of service conditions and limitations (Appendix B).

All respectfully submitted by,

Greenview Environmental Management Limited



Dan Hagan, P.Geol.
Senior Project Manager / Geologist



Tyler H. Peters, P.Eng.
Project Director

8.0 Selected References

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Municipality of Tweed
Long Term Capital Plan - Community Development, Parks, and Recreation Departments

Asset	Year	Expected	Historical	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	Acquired/ Last Updated	Replacement/ Renovation												
Arena	2010	2030	1,255,899.85	127,000.00	105,000.00	65,000.00	20,000.00					2,000,000.00	140,000.00	
Arena Hot Water Tank	2013	2023	1,765.54		1,765.54									
Arena Lights	2017	2032	176,684.45											176,684.45
Arena Dehumidifiers	2014	2022	31,545.60	45,000.00						50,000.00				
Zamboni (includes refurb and ice)	2006	2024	160,694.33			185,000.00			5,000.00			5,000.00		
Arena cooling tower	2015	2025	15,912.00				15,912.00							
Arena compressor	2017	2032	28,317.30											35,000.00
Cameras - parking lot		2022		3,000.00										
Canteen - Grill		2022		1,500.00										
Scrolling Message Board		2022		1,650.00										
Control Box for Score clock		2022		6,000.00										
Ice edger		2022		6,000.00					6,000.00					
Floor scrubber		2022		4,000.00										
Maribank Ball Diamond Fencing	2013	2023	4,273.92		7,500.00									
Ball Diamond Upgrades	2017	2027	48,536.42						48,536.42					
Stoco Ball Diamond Netting	2019	2029	9,259.60								9,259.60			
Ball Diamond Netting	2018	2018	17,641.26							17,641.26				
LED lighting Stoco/Charelton		2022	45,000.00	45,000.00										
Charlton In-Field screenings and		2022		10,000.00										
Pumptrack/Skatepark		2022		250,000.00										
New Recreation Area Shelter		2022		40,000.00										
Fencing		2022		5,000.00										
Tree Removal and Replanting		Annual		15,000.00	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00		
Garbage and Recycling		2022		5,000.00										
Beach sand		2022		25,000.00										
Aqua Thruster (2)		2022		20,000.00										
Tweed Open Shelter	1992	2032	30,000.00											30,000.00
Park Washroom	1987	2027	34,637.40						34,637.40					
Maribank Pavillion	2020	2060	94,000.00											
Stoco Pavillion	2016	2031	41,454.06										41,454.06	
Tweed Storage	2012	2032	5,689.42											5,689.42
Barns		2022	-	2,500.00										
Tweed Playground Equip	2021	2041	314,574.19											
Maribank Playground Equip	2017	2037	13,006.28											
Outdoor fitness equipment	2018	2033	50,000.00											
Fountain	2021	2028	10,542.34							10,542.34				
Mower - 13 Kubota	2013	2023	11,571.23		15,000.00									
Benches	2019	2039	4,948.11											
Picnic tables	2019	2039	3,250.72											
Vacuum sweeper	2019	2039	2,784.97											
Riding mower - 15	2015	2025	10,563.04				15,000.00							
Riding mower - Kubota	2020	2030	14,135.00									15,000.00		
Mower		2022		15,000.00										
Truck with Dump Box		2023			70,000.00									
Grass catcher	2016	2036	5,088.00											
Rake for tractor		2022		1,000.00										
Royal Victoria Parkette Gazebo		2022	25,000.00	40,000.00										
Planters		2022		1,000.00										
2009 GMC Pickup	2009	2024	35,000.00			35,000.00								
2018 Dodge Truck	2018	2033	32,555.08											
Decorations		Annual		10,000.00	5,000.00	5,000.00	5,000.00	5,000.00	5,000.00	5,000.00	5,000.00	5,000.00		
Boat Launch	2018	2048	154,326.03											
Boat Launch Parking	2018	2028	14,587.30							14,587.30				
Pool	2010	2022	193,840.02	200,000.00										
Pool pumps		2028	8,000.00							8,000.00				

Municipality of Tweed
Long Term Capital Plan - Community Development, Parks, and Recreation Departments

Asset	Year Acquired/ Last Updated	Expected Replacement/ Renovation	Historical Cost	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Gas heater to pool		2022		25,000.00										
Splash Pad	2015	2035	456,963.02	23,500.00	1,500.00		2,000.00	1,000.00	4,500.00	2,000.00				
Kiwanis Pavilion	2014	2054	96,788.64											
Queensborough Hall	2011	2022	45,062.21	357,000.00										
Actinolite Hall	2011	2051	21,270.26											
Actinolite Furnace	2019	2039	6,410.88											
Thomasburg Hall	2012	2052	18,426.98											
Thomasburg Furnace	2019	2039	3,943.20											
Jailhouse Signage	2013	2033	2,947.52											
Jailhouse Building	1898	2040	7,880.40											
Hydrant Painting		Annual		4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00		
Banners		2022		6,000.00										
Tweed Welcome Signs	2019	2039	8,242.24											
Total Costs			3,573,038.81	1,294,150.00	215,765.54	300,000.00	67,912.00	16,000.00	113,673.82	117,770.90	24,259.60	2,035,000.00	181,454.06	247,373.87
Other grants				541,400.00										
Parks and recreation reserve to				77,340.50										
Parkland reserve fund to use				43,154.19										
Splash pad reserve to use				1,250.00										
Pool reserve to use				89,000.00										
Heritage reserve to use														
Arena reserve to use				103,623.00										
Remaining Amounts to be Funded				438,382.31	215,765.54	300,000.00	67,912.00	16,000.00	113,673.82	117,770.90	24,259.60	2,035,000.00	181,454.06	247,373.87
2022 Transfer to Reserves Requirement			604,128.82	-	107,882.77	100,000.00	16,978.00	3,200.00	18,945.64	16,824.41	3,032.45	226,111.11	18,145.41	22,488.53
5 year basis only - arena			147,527.44											
5 year basis only - parks			91,478.97											
5 year basis only - splashpad			2,200.00											
5 year basis only - pool			-											
5 year basis only - community development/heritage			5,800.00											

Municipality of Tweed
Long Term Capital Plan - Community Development, Parks, and Recreation Departments

Asset	2033	2035	2036	2037	2039	2040	2041	2048	2051	2052	2054	2060
Arena												
Arena Hot Water Tank												
Arena Lights												
Arena Dehumidifiers												
Zamboni (includes refurb and ice												
Arena cooling tower												
Arena compressor												
Cameras - parking lot												
Canteen - Grill												
Scrolling Message Board												
Control Box for Score clock												
Ice edger												
Floor scrubber												
Maribank Ball Diamond Fencing												
Ball Diamond Upgrades												
Stoco Ball Diamond Netting												
Ball Diamond Netting												
LED lighting Stoco/Charelton												
Charlton In-Field screenings and												
Pumptrack/Skatepark												
New Recreation Area Shelter												
Fencing												
Tree Removal and Replanting												
Garbage and Recycling												
Beach sand												
Aqua Thruster (2)												
Tweed Open Shelter												
Park Washroom												
Maribank Pavillion												94,000.00
Stoco Pavillion												
Tweed Storage												
Barns												
Tweed Playground Equip							314,574.19					
Maribank Playground Equip				13,006.28								
Outdoor fitness equipment	50,000.00											
Fountain												
Mower - 13 Kubota												
Benches					4,948.11	2,500.00	2,500.00					
Picnic tables					3,250.72							
Vacuum sweeper					2,784.97							
Riding mower - 15												
Riding mower - Kubota												
Mower												
Truck with Dump Box												
Grass catcher			5,088.00									
Rake for tractor												
Royal Victoria Parkette Gazebo												
Planters												
2009 GMC Pickup												
2018 Dodge Truck	32,555.08											
Decorations												
Boat Launch								175,000.00				
Boat Launch Parking												
Pool												
Pool pumps												

Municipality of Tweed
Long Term Capital Plan - Community Development, Parks, and Recreation Departments

Asset	2033	2035	2036	2037	2039	2040	2041	2048	2051	2052	2054	2060
Gas heater to pool												
Splash Pad		456,963.02										
Kiwanis Pavillion											96,788.64	
Queensborough Hall									45,062.21			
Actinolite Hall									21,270.26			
Actinolite Furnace					6,410.88							
Thomasburg Hall										18,426.98		
Thomasburg Furnace					3,943.20							
Jailhouse Signage	2,947.52											
Jailhouse Building						7,880.40						
Hydrant Painting												
Banners												
Tweed Welcome Signs					8,242.24							
Total Costs	85,502.60	456,963.02	5,088.00	13,006.28	29,580.12	10,380.40	317,074.19	175,000.00	66,332.47	18,426.98	96,788.64	94,000.00
Other grants												
Parks and recreation reserve to												
Parkland reserve fund to use												
Splash pad reserve to use												
Pool reserve to use												
Heritage reserve to use	2,947.52					7,880.40						
Arena reserve to use												
Remaining Amounts to be	82,555.08	456,963.02	5,088.00	13,006.28	29,580.12	2,500.00	317,074.19	175,000.00	66,332.47	18,426.98	96,788.64	94,000.00
2022 Transfer to Reserves	6,879.59	32,640.22	339.20	812.89	1,643.34	131.58	15,853.71	6,481.48	2,211.08	594.42	2,932.99	2,410.26
5 year basis only - arena												
5 year basis only - parks												
5 year basis only - splashpad												
5 year basis only - pool												
5 year basis only - community development/heritage												

**Municipality of Tweed
2022 Capital Budget Planned Financing Sources**

Account	Capital Project	2022 Budgeted Expense	Federal Funding	Provincial Funding	Other Grant Funding	Reserve Funding	Reserve Funds Funding	Obligatory Reserve Fund Funding	Other Funding Sources	Municipal Tax Impact	Notes
01-510-58000	Recreation Area Shelter	40,000.00				40,000.00				-	
01-510-58000	Repainting barns	2,500.00								2,500.00	
01-510-58000	Royal Victoria Parkette Gazebo	40,000.00				37,340.50				2,659.50	
01-510-58018	Tree removal and replanting	15,000.00								15,000.00	
01-510-58019	Garbage and recycling receptacles	5,000.00								5,000.00	
01-510-58038	PARKS Planters	1,000.00								1,000.00	
01-510-58039	Christmas/Seasonal Decorations	10,000.00				5,000.00				5,000.00	
01-510-58050	LED lighting at Stoco/Chareilton	45,000.00								45,000.00	
01-510-58050	Chareilton in-field screenings and edgi	10,000.00								10,000.00	
01-510-58050	Pumptrack/skatepark	250,000.00			200,000.00			43,154.19		6,845.81	
01-510-58050	Fencing	5,000.00								5,000.00	
01-510-58050	Beach sand	25,000.00								25,000.00	
01-510-58132	New mower	15,000.00								15,000.00	
01-510-58132	Rake for tractor	1,000.00								1,000.00	
01-510-58132	Aqua thruster (2)	20,000.00								20,000.00	
		484,500.00	-	-	200,000.00	82,340.50	-	43,154.19	-	159,005.31	
01-512-58014	HAMLET REC Actinolite Hall Improver	3,000.00								3,000.00	
01-514-58014	HAMLET REC Marlbank Pavilion Impr	3,000.00								3,000.00	
01-516-58014	HAMLET REC Queensborough Hall In	3,000.00								3,000.00	
01-516-58020	Queensborough Hall Renovations	357,000.00			256,400.00					100,600.00	
01-518-58014	HAMLET REC Thomasburg Hall Imprc	3,000.00								3,000.00	
		369,000.00	-	-	256,400.00	-	-	-	-	112,600.00	
01-520-58000	Arena - upstairs renovations	25,000.00				25,000.00				-	
01-520-58000	Arena - accessible lift/washroom	102,000.00			85,000.00	17,000.00				-	
01-520-58132	Dehumidifiers	45,000.00				45,000.00				-	
01-520-58132	Ice edger	6,000.00				6,000.00				-	
01-520-58132	Cameras - parking lot	3,000.00				623.00				2,377.00	
01-520-58132	Canteen - grill	1,500.00								1,500.00	
01-520-58132	Scrolling message board	1,650.00								1,650.00	
01-520-58132	Control box for score clock	6,000.00				6,000.00				-	
01-520-58132	Floor scrubber	4,000.00				4,000.00				-	
		194,150.00	-	-	85,000.00	103,623.00	-	-	-	5,527.00	
01-525-58000	Splashpad filter pump replacement	3,000.00								3,000.00	
01-525-58000	Splashpad rain diverter	20,000.00				1,250.00				18,750.00	
01-525-58000	Splashpad replace painting instead of	500.00								500.00	
		23,500.00	-	-	-	1,250.00	-	-	-	22,250.00	
01-555-58000	Pool liner	200,000.00				89,000.00				111,000.00	
01-555-58052	Gas heater to pool	25,000.00								25,000.00	
		225,000.00	-	-	-	89,000.00	-	-	-	136,000.00	

**Municipality of Tweed
2022 Capital Budget Planned Financing Sources**

Account	Capital Project	2022 Budgeted Expense	Federal Funding	Provincial Funding	Other Grant Funding	Reserve Funding	Reserve Funds Funding	Obligatory Reserve Fund Funding	Other Funding Sources	Municipal Tax Impact	Notes
01-125-58017	Hydrant Painting	4,000.00								4,000.00	
01-125-58132	Banners	6,000.00								6,000.00	
		<u>10,000.00</u>	-	-	-	-	-	-	-	<u>10,000.00</u>	

Queensborough Community Centre Structural Assessment



Prepared for:

The Municipality of Tweed

255 Metcalf St.
Postal Bag 729
Tweed, Ontario
K0K 3J0

Submitted by:

Q&E Engineering Inc.
684 Moneymore Road,
Roslin, Ontario
K0K 2Y0

T: (613) 707-0706
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- APPENDIX B – Photographs

1. BACKGROUND AND INTRODUCTION

The week of July 26, 2021, the Municipality of Tweed was notified that the Queensborough Community Centre had several noted deficiencies. On August 4, 2021 a local Contractor assessed the structure and recommended that the kitchen addition be replaced. On August 5, 2021, Greenview Environmental completed a preliminary assessment of the structure as part of their asset management review. Their report recommended closure of the structure until a structural Engineer could assess the condition of the building. At the August 24, 2021 Council Meeting, the Municipality resolved to close the structure until the repairs are completed.

At the request of Ms. Gloria Raybone, CAO/Treasurer, Q&E Engineering Inc. completed a structural assessment of the Community Centre on September 15, 2021.

The existing Community Centre is a single-story brick masonry building founded on stone rubble foundation. The floor and roof are of wood construction. The year of construction was noted as 1901. It is understood that the original building was occupied as a schoolhouse and was later converted to a community hall (assembly occupancy). A contemporary timber framed structure on masonry (block) foundation was added to the west side of the original structure circa 2010. It is understood that the addition was designed and constructed by local volunteers. The building has been closed since early 2020 at the start of the Covid-19 pandemic. It is understood that the Municipality has not utilized the HVAC system in this building since its closure.

The original building, measuring approximately 40 feet x 56 feet, is comprised of a large event space and two small bathrooms and a utility/storage space at the front of the building (north side). The addition, measuring approximately 16 feet x 20 feet, has been used as a kitchen space for events. An approximate layout of the building has been included for reference in Appendix A. Select photographs of the building have been included in Appendix B.

The scope of work for this assessment included visual inspection of the exposed/accessible areas of the structure, removal of localized floor structure for visual access to the subfloor space, structural analysis/evaluation of select structural components, and a report summarizing findings and recommendations for corrective action and associated costs to help the Municipality effectively plan for future use of the building.

2. Observations

2.1 Original Building Floor

The original building floor consists of timber floorboards and 2x10 rough sawn floor joists spaced at 16 inches on center. Localized sagging of the floor was noted near the north (front) exterior wall. A small hole was cut in the washroom floor to allow for visual inspection. The crawl space floor in this area was covered in batt insulation that was moist at the time of inspection. The presence of the batt insulation has likely been contributing to moisture accumulation in this area. The extent of the batt insulation could not be confirmed. It appeared that the joists were supported by wood blocking at approximate mid span of the joists. The blocking appeared loose which suggests some of the blocking may have rotted and is no longer providing support to the joists. In addition, the joists appeared moist and localized areas of severe rot was observed. Given the exposure condition in this area and the observed floor sag, it is speculated that the joists near the front of the building are likely in poor condition.

Floorboards had been previously removed in a section of flooring on the south side of the building which allowed for review of the floor joists and the crawlspace in this section. There were no signs of insulation in this portion of the floor and the area in general appeared to be relatively dry compared to the area near the front of the building described above. The floor joists in this area had been replaced, presumably in conjunction with the

floorboard replacement. The newer joists are nail laminated 2 ply 2x10 SPF dimension lumber, which generally appeared to be in good condition.

2.2 Original Building Roof

The original building roof trusses appeared to be in good condition. The bell tower was not accessible for inspection, however, there were no obvious signs of structural distress when viewed from the exterior. The overhang soffit and overhang outriggers on the south side of the building were significantly deteriorated. Localized deterioration was also noted in the fascia boards along the other sides of the original building. It is speculated that some of the roof truss top chord overhangs may have sustained deterioration behind the areas of fascia board deterioration. This will need to be further investigated during future rehabilitation work.

2.3 Original Building Exterior

The original building exterior is comprised of a stacked stone rubble foundation and masonry brick walls. The adjacent land does not provide positive drainage away from the building. A garden box located along the south side of the building appeared to be an area where water tends to pool. The grade at the southwest corner of the building is currently above the top of the foundation.

Localized cracking and mortar loss was noted in several locations in the brick and stone foundation. The most prominent deterioration (mortar loss) was found in the northeast corner of the foundation within the crawl space of the kitchen addition.

2.4 Kitchen Addition

The addition consists of conventional wood framed walls, pre-engineered wood roof trusses, and a wood floor support on 8-inch block wall foundation walls founded on poured concrete strip footings. The wall and roof structure generally appeared to be in good condition.

A hole was cut in the floor to gain access into the crawl space to facilitate inspection of the floor and foundation. The footing was found to have insufficient ground cover to provide frost protection. Minimum ground cover for this area is 5 feet, the current ground for the existing footings were found to vary from 2.5 to 3.5 feet. The crawl space was not fully backfilled and the clear height to underside of the floor joists was approximately 3 feet. An existing downspout was noted to have been discharging rainwater at the northwest corner of the addition. The combined effect of poor drainage, lack of backfill, and insufficient ground cover has caused significant cracking throughout and an inward bulge of approximately 1 inch in the west block wall.

The crawl space was moist at the time of inspection, and it is assumed to be consistent due to limited ventilation. This exposure condition has caused widespread rot along the bottom of the existing 2x10 floor joists, reducing their strength.

3. Recommendations and Conclusions

Based on our review and findings the following repair recommendations should be completed prior to reopening of the Community Centre:

- Remove wet batt insulation in the crawl space of the original building to help reduce moisture accumulation
- Install mechanical ventilation to help keep the crawl space of the original building dry.
- Repair original floor structure and replace floorboards
- Replace deteriorated outrigger, soffit boards, and fascia board.
- Install drip edge to roof structure.

- Repair original stone foundation and brick by repointing with lime-based mortar.
- Remove the existing garden at the rear of the building and regrade as required.
- Install subdrain around perimeter of foundation and allow for future hookup to municipal services.
- Demolish addition and reconstruct with proper footings and foundation walls

Given the size of the addition, and the type of deficiencies noted, it would not be cost effective to repair. As community centres are required by the Ontario Building Code (OBC) to be designed for assembly occupancy loading, the Community Centre does not fall under Part 9 of the OBC and the repair work and reconstruction of the addition will need to be designed and stamped by a Professional Engineer.

Table 1 summarizes the budgetary cost estimates to complete the above recommended repairs:

Repair Recommendations	Construction Cost Estimate
1. Repair original floor structure and replace floorboards	\$85,000
2. Replace all fascia boards, install drip edge, and repair west roof overhang	\$15,000
3. Repair bricks and stone foundation	\$20,000
4. Replace addition	\$100,000

Table 1. Summary of budgetary construction cost estimates

The Municipality should also consider completing a hazardous building material survey to facilitate the work. In addition to the above estimates, an additional budget of 12% should be allocated for engineering and inspection services.

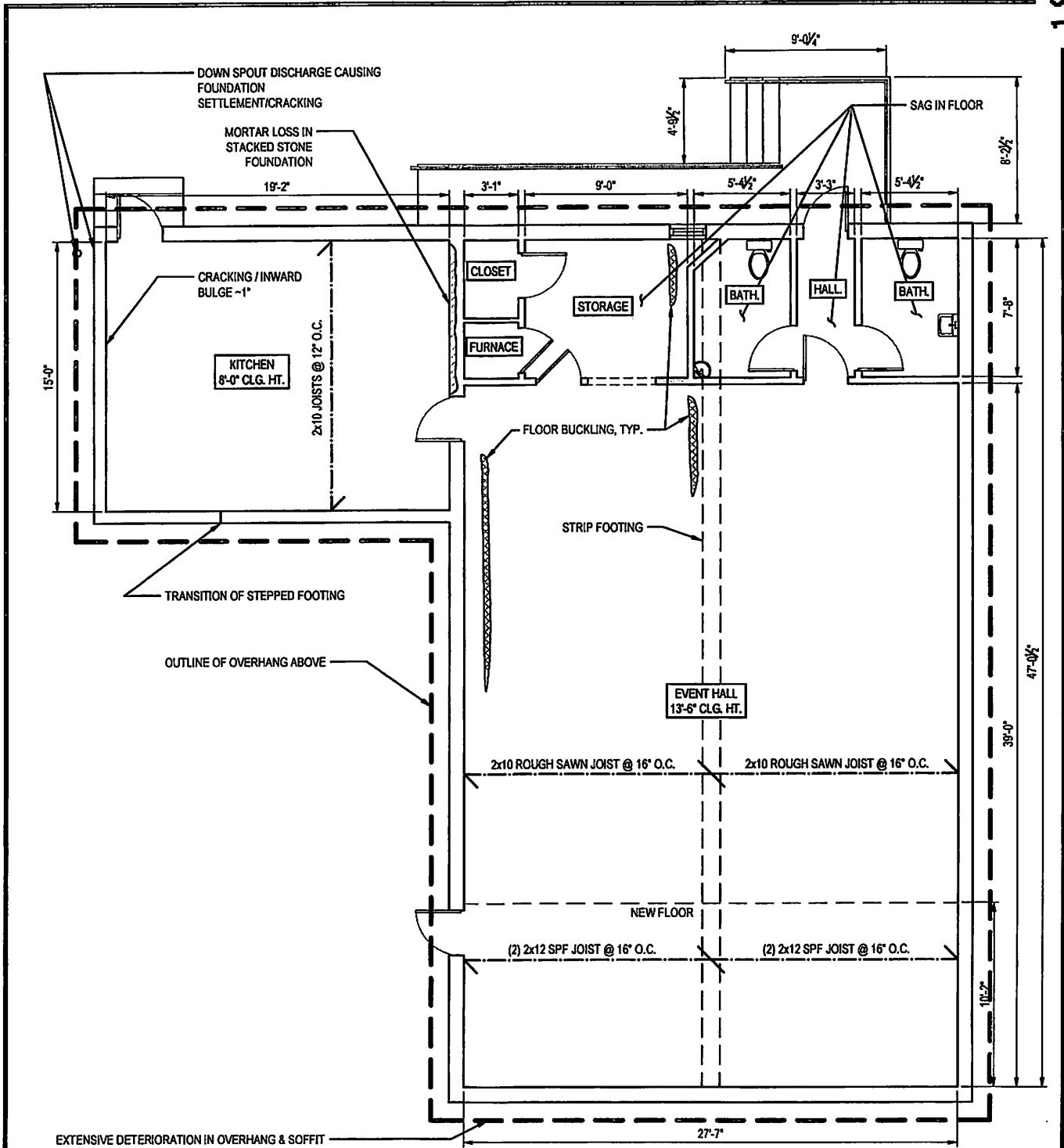
Respectfully Submitted,

Q&E Engineering Inc.



Quan Tan, P.Eng.
Consulting Engineer/Office Manager

Appendix A Approximate Building Sketches



DRAWING NOTES:
 MAIN BUILDING: 1297.5 SQ. FT.
 KITCHEN ADDITION: 287.5 SQ. FT.

Q&E ENGINEERING INC.
 CIVIL-STRUCTURAL ENGINEERS

684 MONEYMORE ROAD, ROSLIN, ON.,
 O. (613) 707-0706
 M. (613) 813-2808
 E. info@qe-engineering.com

DWG NAME:

**GROUND LEVEL
 FLOOR PLAN**

PROJECT INFORMATION:
 QUEENSBOROUGH COMMUNITY CENTRE

DATE SEPT 2021

SCALE 1/8" = 1'-0"

S1

Appendix B Photos



Photo 1. Building north elevation (front)



Photo 2. Building west elevation



Photo 3. Building south elevation (rear)



Photo 4. Building east elevation

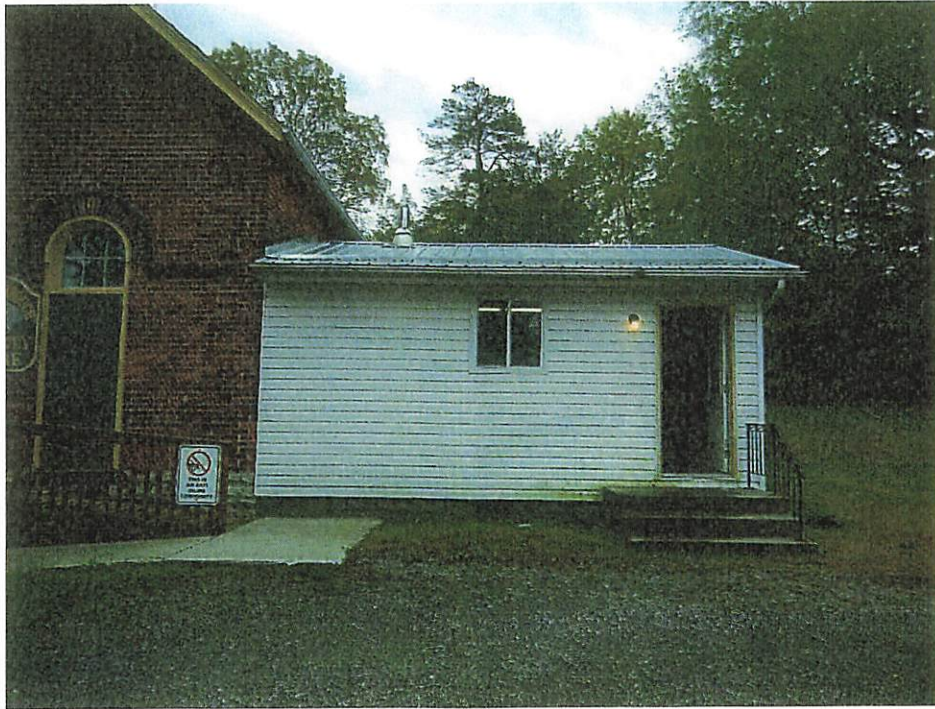


Photo 5. Addition north elevation (front)



Photo 6a. Localized cracking in NW foundation

6b. Localized cracking in SW foundation



Photo 7. Damaged soffit in addition



Photo 8. Mortar loss in exterior stacked stone foundation



Photo 9. Grading above foundation line



Photo 10. Water pooling and mortar loss at SE building corner



Photo 11. Localized step cracking in brick wall (several locations have been previously repaired)

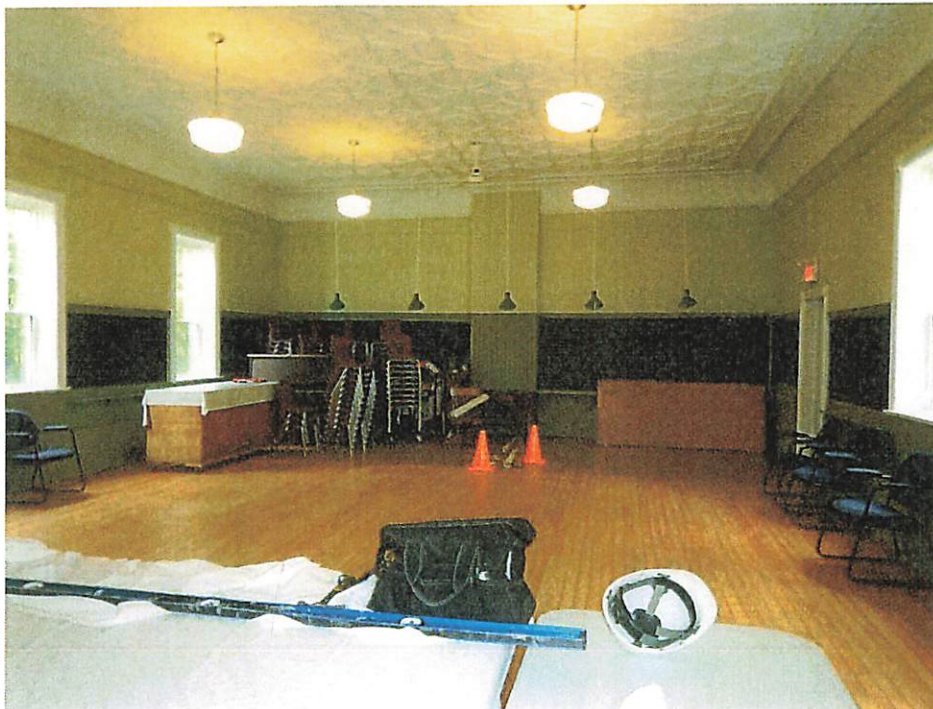


Photo 12. Interior facing south



Photo 13. Removed floorboards on south side of building



Photo 14. Storage Space



Photo 15. NE bathroom



Photo 16. One location of heaved floorboards



Photo 17. Lower attic space of original building looking west



Photo 18. Upper attic space of original building in good condition



Photo 19. Crawlspace on south side of original building



Photo 20. Damp batt insulation found in crawlspace under NW bathroom

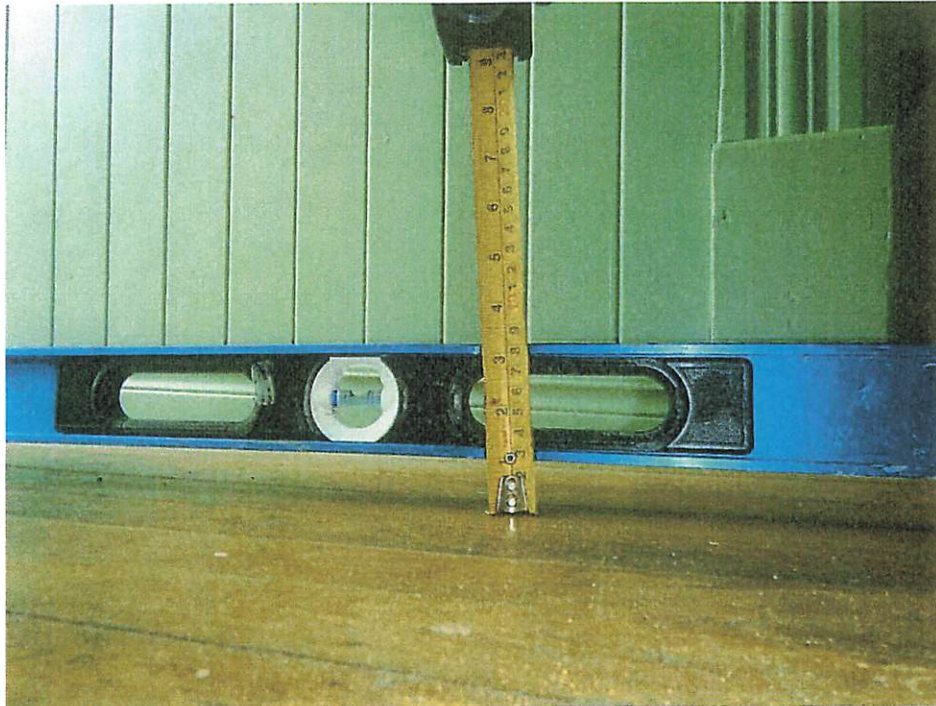


Photo 21. Photo illustrating depth of sagging in north hallway



Photo 22. Crawlspace under addition looking west



Photo 23. Crawlspace under addition showing connection to original structure



Photo 24. Crawlspace under addition showing condition of floor joists



Photo 25. Wide crack in addition foundation wall



Photo 26. Photo illustrating 2" shift in addition foundation wall



Photo 27. Photo illustrating extent of rot in addition floor joists