



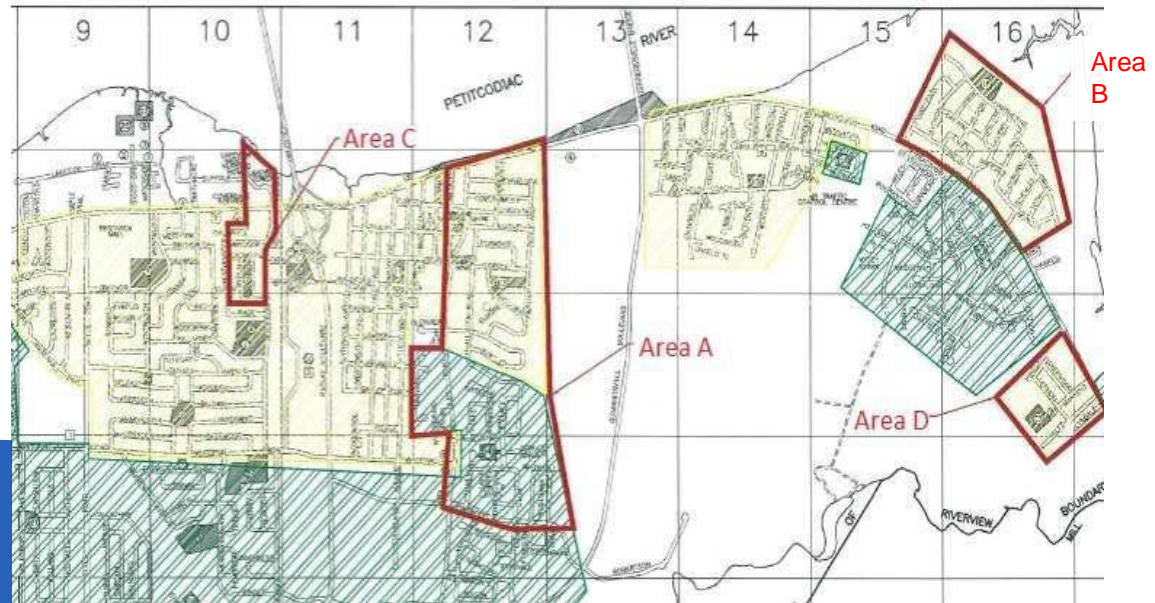
STORMWATER STUDY by: WSP

AREA A- McALLISTER

AREA B- POINT PARK

AREA C- BYRON/BALMORAL

AREA D- BRIDGEDALE



- A storm event that took place on May 25th, 2016, saw approximately 85mm of rainfall over a 120 minute period.
- Flooding was reported in the McAllister Park Subdivision, primarily on Hebron Street, Berkley Drive, McAllister Road and Grindstone Drive.
- Both basement and surface flooding were reported.



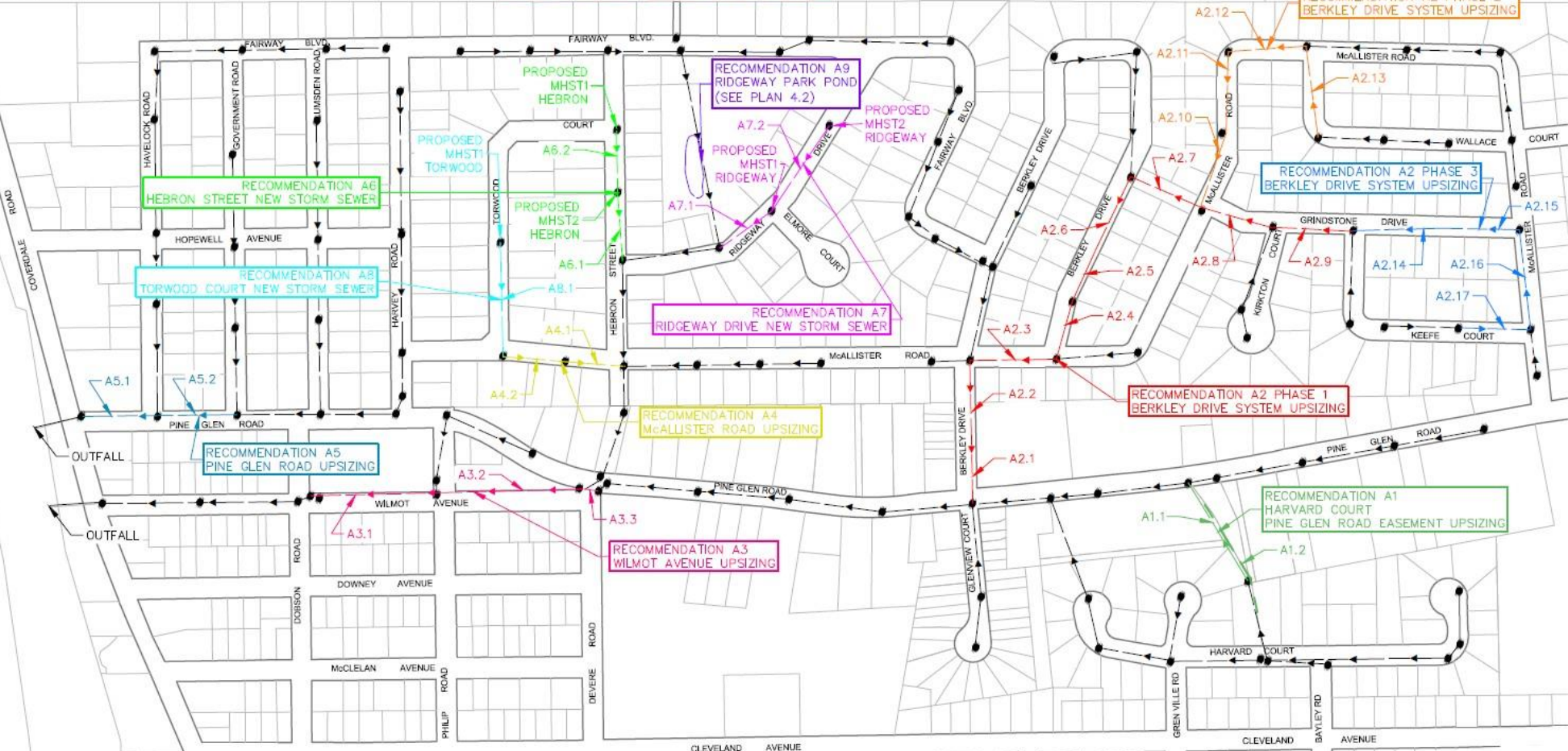
RECOMMENDATION A1				
SECTION	LENGTH	SIZE	SLOPE	FLOW L/S
A1.1	114.1m	900mm	0.6%	1221.2
A1.2	MAJOR DRAIN RELIEF SWALE			

RECOMMENDATION A2 PHASE 1				
SECTION	LENGTH	SIZE	SLOPE	FLOW L/S
A2.1	65.9m	1050mm	0.5%	1205.8
A2.2	73.8m	900mm	0.4%	1047.8
A2.3	84.4m	750mm	0.9%	855.5
A2.4	58.0m	600mm	2.3%	742.9
A2.5	58.2m	600mm	1.5%	727.3
A2.6	76.0m	600mm	1.6%	708.8
A2.7	73.5m	525mm	2.7%	614.7
A2.8	74.0m	450mm	1.7%	287.7
A2.9	77.9m	450mm	0.9%	217.9

RECOMMENDATION A2 PHASE 2				
SECTION	LENGTH	SIZE	SLOPE	FLOW L/S
A2.10	75.4m	525mm	0.5%	262.0
A2.11	79.3m	525mm	0.1%	255.5
A2.12	76.6m	450mm	1.2%	222.4
A2.13	90.2m	375mm	0.3%	101.3

RECOMMENDATION A2 PHASE 3				
SECTION	LENGTH	SIZE	SLOPE	FLOW L/S
A2.14	84.9m	450mm	0.9%	157.4
A2.15	78.7m	450mm	1.1%	137.8
A2.16	98.0m	450mm	0.3%	138.1
A2.17	76.0m	375mm	0.3%	104.9

GOLF CLUB ROAD (Private)



RECOMMENDATION A3				
SECTION	LENGTH	SIZE	SLOPE	FLOW L/S
A3.1	136.1	1200mm	1.5%	3505.6
A3.2	138.6m	1200mm	1.4%	3450.1
A3.3	4.5m	1050mm	1.3%	2849.8

RECOMMENDATION A5				
SECTION	LENGTH	SIZE	SLOPE	FLOW L/S
A5.1	75.0m	750mm	0.8%	762.9
A5.2	77.0m	600mm	0.9%	528.1

RECOMMENDATION A7				
SECTION	LENGTH	SIZE	SLOPE	FLOW L/S
A7.1	62.4m	450mm	1.0%	160.3
A7.2	100.2m	300mm	1.0%	52.4

RECOMMENDATION A4				
SECTION	LENGTH	SIZE	SLOPE	FLOW L/S
A4.1	57.7m	450mm	0.6%	166.0
A4.2	60.5m	450mm	0.5%	156.8

RECOMMENDATION A6				
SECTION	LENGTH	SIZE	SLOPE	FLOW L/S
A6.1	65.6m	375mm	0.5%	78.8
A6.2	61.6m	300mm	1.6%	63.7

RECOMMENDATION A8				
SECTION	LENGTH	SIZE	SLOPE	FLOW L/S
A8.1	111.6m	300mm	0.5%	31.5

Plan 4.1
Area A - Wilmot & Pine Glen Outfalls
Proposed System Upgrades



SCALE 1:4000
FEB 2018





Figure 3-4 Ponding Limits at Sag on Harvard Court
See recommendation A1



Figure 3-5 Ponding Limits at Sag at Old Public Works Storage Yard
Minor ditching required



Figure 3-7 Ponding Limits at Sag on Lady Slipper Court
No recommendation at this time only at reconstruction of the Court.

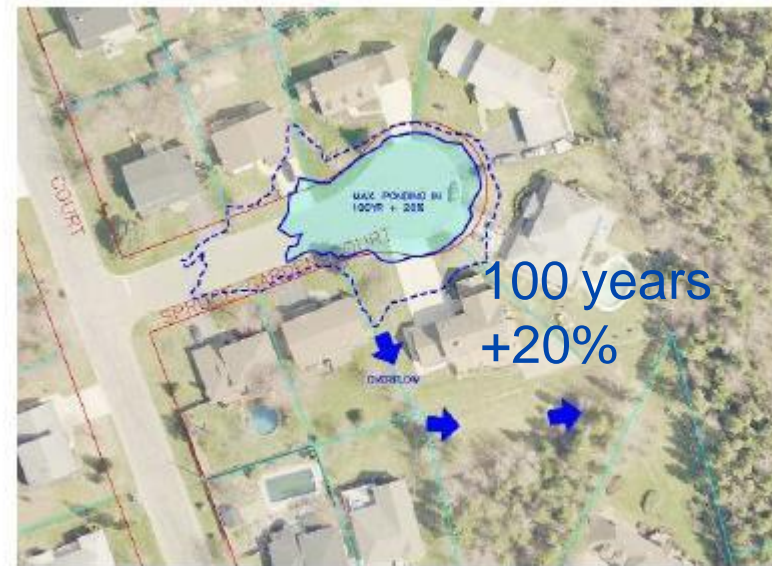
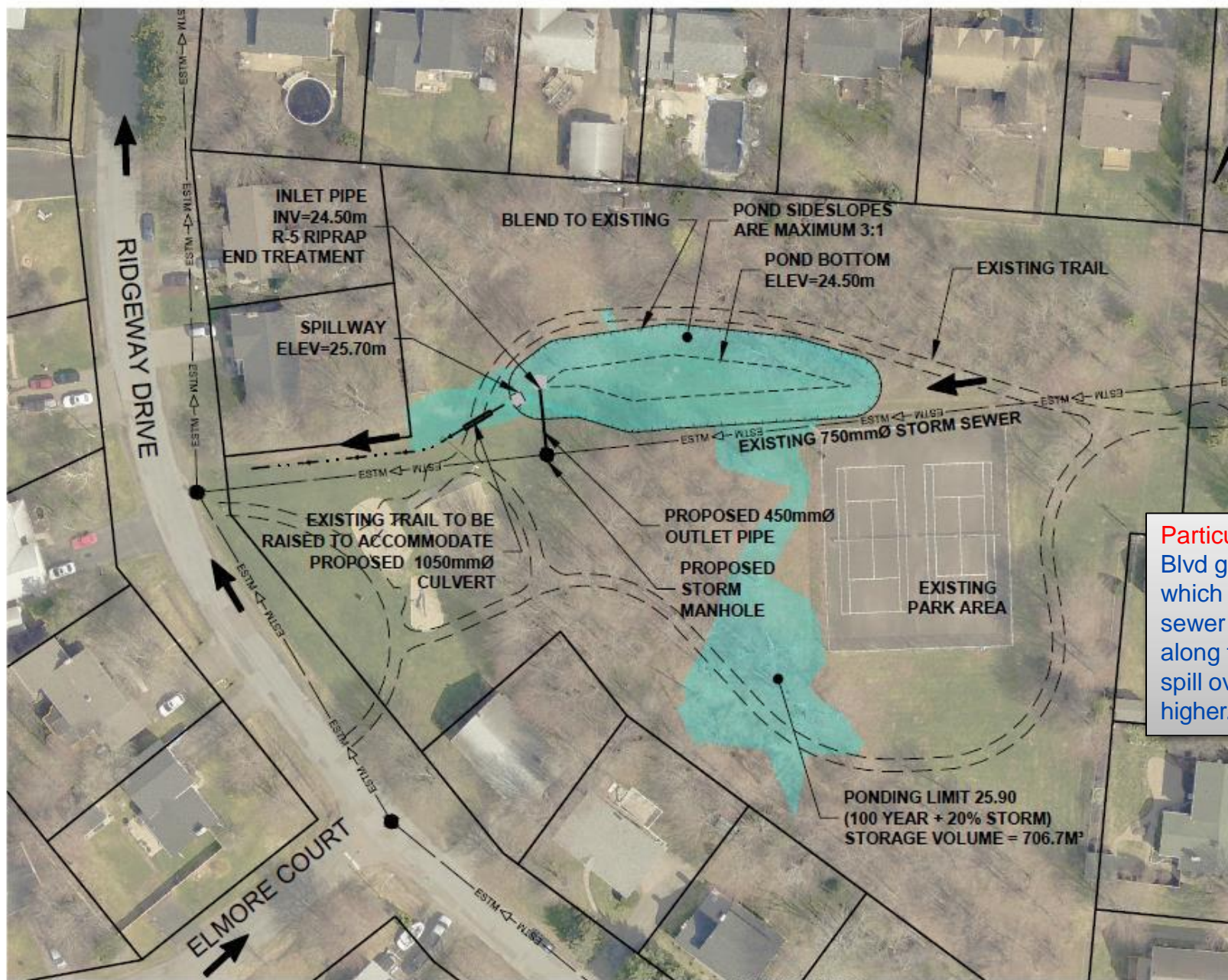


Figure 3-8 Ponding Limits at Sag in Spruce Garden Court
Ensure drainage plan of future subdivision accommodate overland flow



POND STAGE-AREA TABLE	
ELEVATION(m)	AREA(m ²)
24.50	215.2
24.75	294.5
25.00	377.4
25.25	463.7
25.50	553.6
25.75	646.9
26.00	743.8
26.20(TOP)	824.4

Particular Interest: The Fairway Blvd golf course has a watercourse which drains directly into our storm sewer system. A berm now located along the Golf course property will spill over for the 25 year storm and higher.

NOTE:
525mmØ ORIFICE PLATE TO BE
INSTALLED ON 750mmØ GOLF COURSE
INLET BEHIND FAIRWAY BLVD.

SCALE: 1:1000 METRIC



Plan 4.2
Area A
Proposed System Analysis
RIDGWAY PARK POND



SCALE 1:1000
FEB 2018



AREA B : POINT PARK

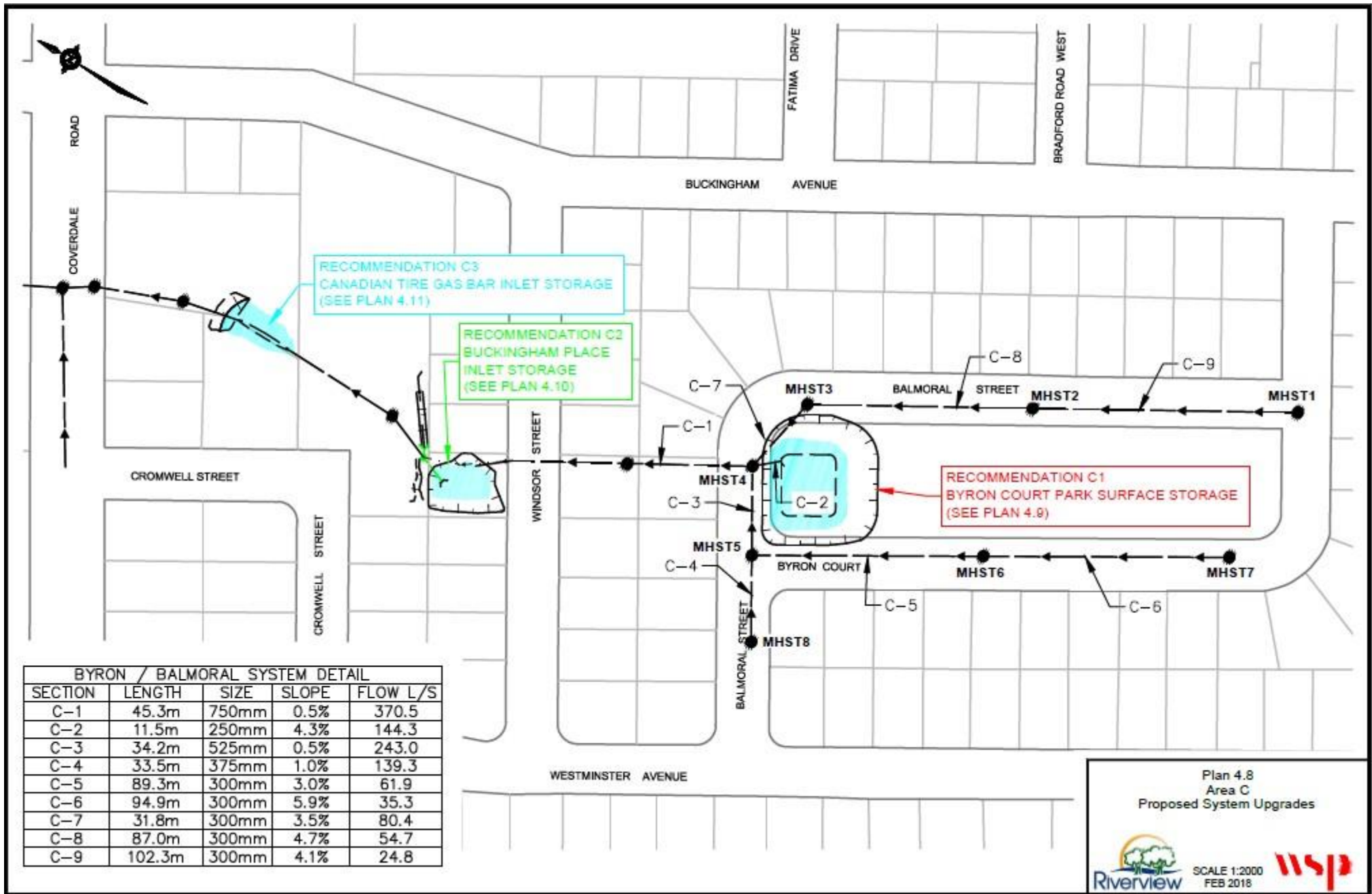
Ealey Crescent and Bloor Drive

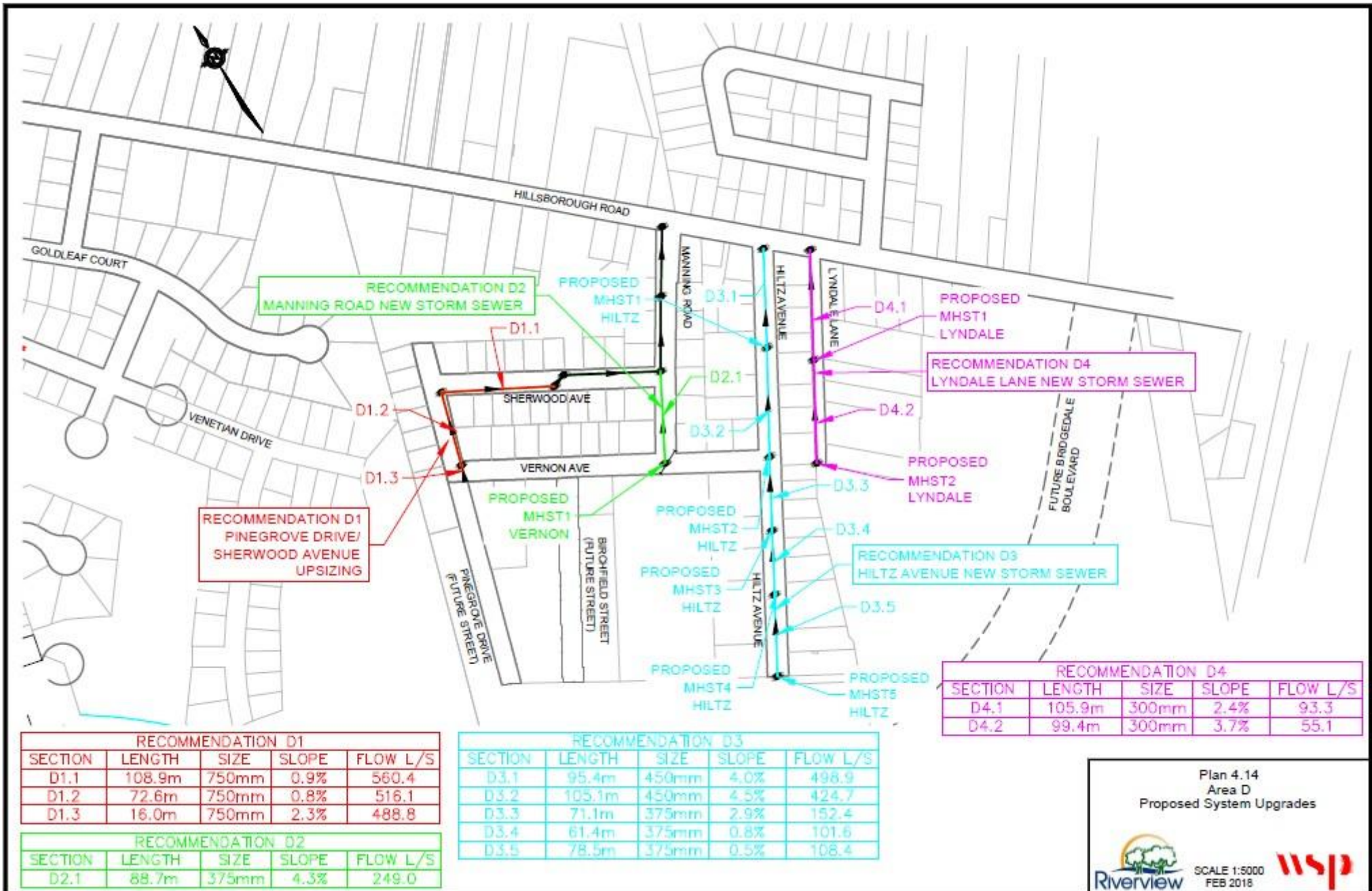
- Undersized pipe at the top of Bloor Drive.
- Sag on Ealey
 - ✓ All will be resolved as part of the 2018 local improvement with a major drain relief.

Muncey Drive

- The HGL rises above the street surface.
 - ✓ Will be resolved as part of the local improvement on Weir
 - ✓ Combine three outfalls off Weir Drive into two outfalls to increase discharge flows to create higher scour velocity in an attempt to keep channel open and minimize maintenance.







Improvement Project Prioritization Worksheet

NUMBER	PROJECT IDENTIFIER	PROJECT DESCRIPTION	PRELIM. COST ESTIMATE (INCL. CONS, ENG, CONTINGENCY, 15% HST)	CRITERIA #1	CRITERIA #2	CRITERIA #3 - WEIGHT 3		CRITERIA #4 - WEIGHT 2		CRITERIA #5 - WEIGHT 2		CRITERIA #3 to #5 SUMMARY
				REQUIRES COORD. WITH TOWN CAPITAL PROJECTS?	IMPROVEMENT SEQUENCE REQUIREMENTS?	REPORTS OF FLOODING IN THE AREA		TOTAL NO. PROPERTIES TO BENEFIT FROM THE WORK		EFFECTIVE REDUCTION IN DAMAGING SURFACE FLOODING		WEIGHTED TOTAL FROM CRITERIA #3 THRU #5
				YES/NO	YES/NO - IF YES, WITH WHICH?	YES/NO	RATING NO.	ACTUAL NO. OF PROP.	RATING NO.	DEGREE OF REDUCTION	RATING NO.	
1	A10	McAllister ICDs	\$ 84,560.65	N	N	N	0	All	4	Major Reduction	4	16
2	B6	Point Park ICDs	\$ 30,417.50	N	N	N	0	All	4	Major Reduction	4	16
3	C4	Byron and Balmoral ICDs	\$ 5,475.15	N	N	N	0	All	4	Major Reduction	4	16
4	D6	Bridgedale ICDs	\$ 4,258.45	N	N	N	0	All	3	Major Reduction	4	14
5	A2	Berkley Drive System Upsizing (Phase 1-3)	\$ 1,491,446.07	N	N	Y	1	127	4	Major Reduction	4	19
6	B1	Bloor Drive/Ealey Crescent Major Drain Relief	\$ 343,147.42	Y	Y - First	N	0	24	2	Moderate Reduction	2	8
7	C1	Byron Court Park Surface Storage	\$ 116,727.16	Y	N	N	0	4	1	Moderate Reduction	2	6
8	A9	Ridgeway Park Pond	\$ 76,553.24	N	N	Y	1	17	2	Major Reduction	4	15
9	A3	Wilmot Avenue Upsizing	\$ 777,661.41	N	N	N	0	18	2	Moderate Reduction	2	8
10	B4	Muncey Drive Upsizing	\$ 142,163.79	N	Y - First	N	0	26	2	Moderate Reduction	2	8
11	C2	Buckingham Place Inlet Storage	\$ 38,348.86	N	N	N	0	3	1	Moderate Reduction	2	6
12	C3	Canadian Tire Gas Bar Inlet Storage	\$ 10,836.23	N	N	N	0	2	1	Moderate Reduction	2	6
13	A1	Harvard Court - Pine Glen Road Easement Upsizing	\$ 144,987.14	N	N	N	0	10	1	Small Reduction	1	4
14	A6	Hebron Street New Storm Sewer	\$ 133,456.78	Y	N	Y	1	10	1	No Change	0	5
15	A7	Ridgeway Drive New Storm Sewer	\$ 147,905.09	Y	N	Y	1	10	1	No Change	0	5
16	A4	McAllister Road Upsizing	\$ 143,874.78	N	Y - First	Y	1	7	1	Small Reduction	1	7
17	B3	Weir Drive New Storm Sewer	\$ 351,702.34	Y	Y - B4	N	0	23	2	No Change	0	4
18	A5	Pine Glen Road Upsizing	\$ 205,356.15	N	N	N	0	15	2	Small Reduction	1	6
19	D1	Pinegrove Drive/Sherwood Avenue Upsizing	\$ 192,390.69	N	N	Y	1	17	2	Small Reduction	1	9
20	A8	Torwood Court New Storm Sewer	\$ 71,481.13	Y	Y - A4	N	0	9	1	No Change	0	2
21	B2	Nowlan Drive New Storm Sewer	\$ 71,481.13	Y	Y - B1	N	0	9	1	No Change	0	2
22	B5	Cosburn Drive New Storm Sewer	\$ 173,379.75	Y	Y - B4, B3	N	0	17	2	No Change	0	4
23	D2	Manning Road New Storm Sewer	\$ 69,580.03	Y	N	N	0	5	1	No Change	0	2
24	D3	Hiltz Avenue New Storm Sewer	\$ 319,003.53	Y	N	N	0	29	2	No Change	0	4
25	D4	Lyndale Lane New Storm Sewer	\$ 140,680.94	Y	N	N	0	14	2	No Change	0	4

CRITERIA #3 RATING TABLE	
REPORTS OF FLOODING IN THE AREA	RATING NO.
NO	0
YES	1

CRITERIA #4 RATING TABLE	
TOTAL NO. PROPERTIES BENEFITING	RATING NO.
0	0
1 TO 10	1
11 TO 50	2
51 TO 100	3
MORE THAN 100	4

CRITERIA #5 RATING TABLE	
EFF. REDUCTION IN SURF. FLOODING	RATING NO.
NO CHANGE	0
SMALL REDUCTION	1
MODERATE RED.	2
MAJOR REDUCTION	4



Recommendations

- ✓ The most common and affective recommendation is the installation of Inlet Control Devices on all catch basins. This will be done by PW within the study area as early as 2019.
- ✓ Upgrading of storm sewers. Now part of the 10 yr Transportation Capital Plan.
- ✓ Sags in the streets design causing ponding water will require major drain relief. Stormwater Design Standards are in place since 2003 which considers both minor (pipe) and major (overland) storm systems.
- ✓ Open ditch streets are recommended to be fitted with curb and storm sewer designed in accordance with stormwater design guidelines and consideration for climate change.
- ✓ Eliminating ditches and curbing the street will improve the major drain hydraulics and eliminate ponding from undersized driveway culverts.



Financial

- ✓ 26 Recommendations for a total of almost \$5.3M.
- ✓ 2 recommendations are already part of the 2018 Capital for a value of \$460k.
- ✓ 12 recommendations are able to be combined with other work on the street to create a saving (restoration and engineering) of \$1M.
- ✓ 6 recommendations involving placements of ICDs and storm water storage improvements can be done by PW for a total savings of \$100k.
- ✓ Leaving \$3.7M to be added to the 10 yr Capital Transportation Plan. All projects are being proposed between 2019 and 2029.

