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The Regional Municipality of Durham
COUNCIL INFORMATION PACKAGE
April 13, 2018

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There are no Durham Municipalities Correspondence

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Advisory Committee Minutes

There are no Advisory Committee Minutes

Members of Council – Please advise the Regional Clerk at clerks@durham.ca by 9:00 AM on the Monday one week prior to the next regular Committee of the Whole meeting, if you wish to add an item from this CIP to the Committee of the Whole agenda.

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The Regional Municipality of Durham
Information Report

From:	Commissioner of Planning and Economic Development
Report:	#2018-INFO-53
Date:	April 13, 2018

Subject:

2016 Census of Population – Immigration and ethnocultural diversity, housing, Aboriginal peoples, education, labour, journey to work, language of work, and mobility and migration
File: D01-03

Recommendation:

Receive for information

Report:

1. Purpose

1.1 On October 25, 2017, Statistics Canada released the fifth 2016 Census of Population data set of statistics (immigration and ethnocultural diversity, housing, and Aboriginal peoples) for municipalities across Canada.

1.2 On November 29, 2017, the final data set (education, labour, journey to work, language of work, and mobility and migration) was released.

1.3 This report highlights changes in the characteristics of Durham Region's population. Attachment 1 summarizes key statistics related to immigration and ethnocultural diversity, housing, Aboriginal peoples, education, labour, journey to work, language of work, and mobility and migration for Durham Region, the Greater Toronto and Hamilton Area (GTHA) and Ontario.

2. Immigration and ethnocultural diversity

2.1 In 2016, immigrants (including non-permanent residents), comprised 24.1% (153,930 people) of Durham's population, which represents an increase to the

proportion of immigrant population reported in 2011 (21.3%), 2006 (20.7%) and 2001 (19.1%).

2.2 Durham had the lowest percentage of immigrants in the GTHA. Peel had the highest proportion of immigrant population (53.2%), followed by Toronto (50.5%), York (48.2%), Halton (30.5%) and Hamilton (25.9%).

2.3 The greatest proportion of immigrants moved to Durham from countries within Asia (36.3%), followed by: Europe (31.4%); the Americas (26.6%); Africa (5.3%); and Oceania (0.4%).

2.4 A total of 10,315 recent immigrants settled in Durham between 2011 and 2016, representing 1.6% of the Region's total population. The majority of recent immigrants moved from countries within Asia (60%), followed by: the Americas (21.3%); Europe (10.4%); Africa (7.4%); and Oceania (0.7%).

2.5 In 2016, visible minorities comprised 27.1% of Durham's population, which represents an increase from 2011 (20.7%), 2006 (16.8%) and 2001 (12.4%). Respondents who reported being South Asian (8.6%), Black (8%), Filipino (2.3%) and Chinese (1.9%) comprise the largest groups of visible minorities.

2.6 In Durham, visible minorities represent a lower percentage of their respective populations than Ontario (30.5%) and the GTHA (47.2%), but a higher percentage than Canada (23.7%). Within the GTHA, the majority of Peel's population (62.9%) identified being a visible minority, followed by Toronto (52.2%), York (49.6%), Halton (26.2%), and Hamilton (19.6%).

2.7 In 2016, the majority of Durham's population reported having ethnic origins of European (65.2%) and North American (32%) descent. Other notable ethnic origin groups in the Region included Asian (17.7%) and Caribbean (7.7%).

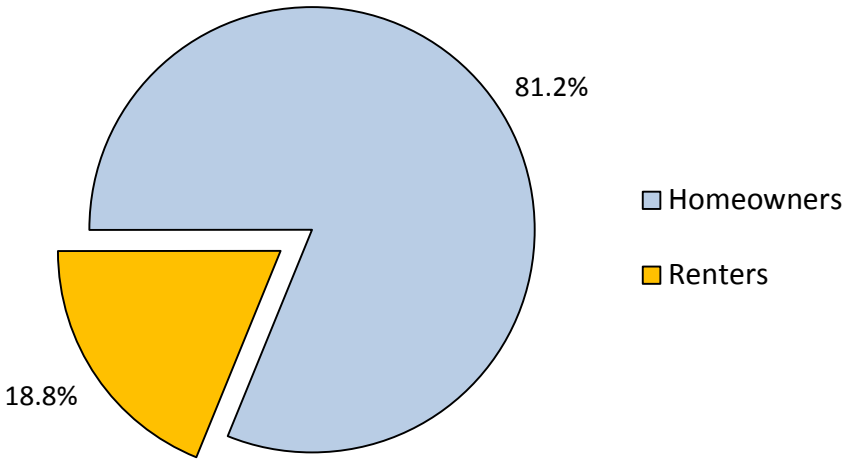
2.8 Within the GTHA, the overall percentage share of population reporting European (50.9%) and North American (17%) ethnic origins are significantly less than Durham (70.6% and 32.3% respectively). The share of Asian ethnic origins was the most notable difference between the GTHA (37.3%) and Durham (17.7%).

3. Housing

3.1 The average value of dwellings in Durham increased from $335,936 in 2011 to $503,610 in 2016 (+49.9%). The average value of dwellings in Durham was lower than Ontario ($506,409), and the GTHA ($691,470). The average value of

dwellings in Durham was highest in Uxbridge ($663,689), followed by Pickering ($584,044), and Whitby ($548,489).

3.2 In Durham, 81.2% of households were owners and 18.8% were renters. By comparison, Durham had a lower percentage of renters than Ontario (30.2%) and the GTHA (32.7%). Toronto had the highest percentage of renters in the GTHA (47.2%), while York Region had the highest percentage of owners (85.8%). Within Durham, Clarington had the highest percentage of owners (88.1%) and Oshawa had the highest percentage of renters (31.5%).



3.3 In 2016, 74.9% of Durham households spent less than 30% of their total income on shelter, compared to 75% in 2011 and 82.2% in 2006. In 2016, 72.3% of Ontario and 67.8% of GTHA households spent less than 30% of income on shelter costs.

3.4 Average shelter costs for homeowners increased 12.4% from $1,443 in 2011 to $1,622 in 2016. Average monthly shelter costs for homeowners in Durham was higher than the Ontario average ($1,463), but lower than the GTHA average ($1,704). Within the GTHA, the average monthly shelter costs for homeowners was highest in York ($1,846) and lowest in Hamilton ($1,350). Within Durham, Ajax had the highest average shelter costs for homeowners ($1,805), while Brock had the lowest ($1,428).

3.5 Average shelter costs for renters increased 19.6% from $955 in 2011 to $1,142 in 2016. By comparison, Durham's average monthly shelter costs for renters was lower than the GTHA average ($1,233), but higher than the Ontario average ($1,109). Within Durham, Brock ($896) had the lowest and Pickering ($1,359) had

the highest average monthly shelter costs for renters.

4. Aboriginal Peoples

4.1 In 2016, 11,930 persons in Durham (2% of the population) reported identity with at least one Aboriginal group. This represents an increase from 2011 (8,905 persons or 1.5%) and 2006 (6,565 persons or 1.2%).

4.2 Within the GTHA, Hamilton (2.3%) had the highest percentage of population identifying with at least one Aboriginal group, followed by Durham (2%), Halton (1%), Toronto (0.9%), Peel (0.7%) and York (0.5%).

5. Education

5.1 The proportion of Durham residents holding a post-secondary certificate, diploma or degree increased from 53.1% in 2011 to 53.9% in 2016. Similarly Durham residents with a high school diploma or equivalent increased from 29.8% to 29.9%, while the percentage of Durham residents that did not have a certificate, diploma or degree declined from 17.1% to 16.2%.

5.2 Halton (62.7%) had the highest proportion of residents with a certificate, diploma or degree, followed by Toronto (59.1%), York (58.1%), Peel (54.7%), Durham (53.9%), and Hamilton (51.6%). Within Durham, Whitby (58.1%) had the highest percentage of residents with a certificate, diploma or degree.

5.3 In 2016, 27.2% of Durham residents held a college, CEGEP or other non-university certificate or diploma; 20.2% had a university certificate, diploma or degree at the bachelor level or above; and 6.6% had an apprenticeship or trades certificate or diploma.

5.4 The most popular major field of study in Durham is ‘business, management and public administration’ (22%), followed by ‘architecture, engineering and related technologies’ (20.4%) and ‘health and related fields’ (14.4%).

6. Labour

6.1 In 2016, there were 352,750 people in Durham’s labour force. The unemployment rate in Durham Region declined from 8.6% in 2011 to 8% in 2016. The participation rate also declined, from 69.2% to 67.4%. Within Durham’s labour force, those who were self-employed increased from 8.7% to 10.1%.

6.2 In 2016, the most common occupation in Durham was: ‘sales and service’ (23.6%);

followed by ‘business, finance and administration’ (16.8%)’; ‘trades, transport and equipment operators’ (14.7%);‘education, law and social, community & government services’ (12%); and ‘management occupations’ (11.7%).

6.3 In 2016, 11.6% of the employed labour force in Durham worked in the ‘retail trade’, industry followed by ‘health care and social assistance’ (10.7%) and ‘manufacturing’ (8.3%).

6.4 Within the GHTA, most people were employed in ‘retail trade’ (10.9%), followed by ‘professional, scientific and technical services’ (10.2%) and ‘health care and social assistance’ (9.6%). In Ontario, the most common industry was also ‘retail trade’ (11.2%), followed by ‘health care and social assistance’ (10.4%) and ‘manufacturing’ (9.8%).

6.5 In Durham, 54.3% of workers were full-time employees and 45.7% were part-time. The highest percentage of full-time employees in Durham was Clarington (55.8%), followed by Whitby (54.7%) and Pickering (54.6%).

6.6 By comparison, in the GTHA, 51.8% of the work force worked full-time and 48.2% were part-time. Ontario’s labour force was comprised of 52.3% full-time employees and 47.7% part-time.

7. Journey to work

7.1 In 2016, a total of 6.7% of Durham residents worked from home. This compares with 7.2% in the GTHA and 7.3% in Ontario.

7.2 The percentage of workers that drove to work in Durham declined from 79.5% in 2011 to 64.9% in 2016. The next most popular mode of transportation for employees to travel to work was public transit (22.3%), followed by passenger (5.7%), walk (5%), and bicycle (1.3%).

8. Language of work

8.1 In 2016, English was the language most often spoken at work in Durham for 98.3% of workers. The percentage of workers that spoke French most often at work in Durham (0.4%) was the same in the GTHA (0.4%), but higher in Ontario (1.2%). Non-official languages were less frequently spoken at work in Durham (0.4%) than in the GTHA (2.4%) and Ontario (1.5%).

9. Mobility and migration

9.1 In 2016, 89.7% of Durham residents did not move within the past year, 4.5% of residents moved within Durham, while 5.8% of Durham residents were migrants. Durham had a higher percentage of non-movers than both Ontario (87.6%) and the GTHA (87.6%).

10. Conclusion

10.1 The 2016 Census information will be used as input to various Regional projects, including the upcoming Municipal Comprehensive Review (Regional Official Plan Update), Development Charges Study, annual Five-year Servicing and Financing Study and updating the Durham Region Profile.

10.2 A copy of this report will be forwarded to the area municipalities and will be made available on the Region's website.

11. Attachments

Attachment #1: Summary of Key Statistics from the 2016 Census of Population, 5th & 6th Releases.

Respectfully submitted,

Original signed by

B.E. Bridgeman, MCIP, RPP
Commissioner of Planning and
Economic Development

Attachment 1

Statistics Canada 2016 Census of Population, Fifth and Sixth Release

Table 1
Immigration in Durham

Immigration	Ajax	Brock	Clarington	Oshawa	Pickering	Scugog	Uxbridge	Whitby	Durham
Immigrants	46,335	990	11,045	26,975	31,155	2,155	2,660	29,555	150,885
Before 1981	11,240	630	5,940	11,925	11,455	1,570	1,540	11,175	55,475
1981 to 1990	7,520	115	1,645	3,765	4,850	210	330	4,285	22,725
1991 to 2000	12,255	90	1,550	4,290	6,775	130	375	5,615	31,090
2001 to 2010	11,735	105	1,460	5,035	6,155	150	305	6,340	31,275
2011 to 2016	3,585	45	455	1,950	1,930	100	115	2,140	10,315
Americas	30.4%	14.1%	21.7%	23.2%	28.8%	11.8%	16.9%	25.4%	26.6%
Europe	14.8%	65.7%	57.9%	45.3%	24.6%	75.2%	62.2%	34.8%	31.4%
Africa	5.9%	2.0%	3.8%	4.8%	5.5%	1.2%	3.0%	5.9%	5.3%
Asia	48.5%	18.2%	16.0%	26.3%	40.7%	10.7%	17.3%	33.5%	36.3%
Oceania	0.3%	0.0%	0.6%	0.3%	0.4%	0.7%	0.9%	0.4%	0.4%

Table 2
Immigration in the GTHA

Immigration	Durham	Halton	Peel	Toronto	York	Hamilton	GTHA	Ontario
Immigrants	150,885	160,165	706,835	1,266,005	515,225	130,365	2,929,480	3,852,145
Before 1981	55,475	48,245	134,265	294,065	119,395	50,625	702,070	1,077,745
1981 to 1990	22,725	18,710	94,105	171,565	75,145	16,570	398,820	513,995
1991 to 2000	31,090	29,940	171,230	281,870	139,815	23,695	677,640	834,510
2001 to 2010	31,275	42,790	213,135	330,550	129,465	26,330	773,545	953,730
2011 to 2016	10,315	20,485	94,105	187,950	51,405	13,150	377,410	472,170
Americas	26.6%	13.6%	15.9%	16.7%	8.3%	13.0%	15.2%	15.5%
Europe	31.4%	38.2%	18.7%	23.6%	23.2%	48.6%	24.6%	29.7%
Africa	5.3%	6.9%	5.8%	6.1%	4.1%	5.7%	5.7%	5.9%
Asia	36.3%	40.9%	59.4%	53.3%	64.3%	32.2%	54.2%	48.5%
Oceania	0.4%	0.4%	0.2%	0.3%	0.2%	0.3%	0.3%	0.3%

Table 3
Visible Minorities in Durham

Visible Minorities	Ajax	Brock	Clarington	Oshawa	Pickering	Scugog	Uxbridge	Whitby	Durham
South Asian	24,895	70	1,540	6,035	13,820	145	165	8,345	55,025
Chinese	3,400	45	505	2,185	2,455	90	240	3,180	12,105
Black	19,860	40	2,495	8,715	9,810	120	255	10,085	51,380
Filipino	5,685	35	590	2,105	3,410	60	90	2,550	14,530
Latin American	1,670	25	570	1,260	1,135	45	95	1,340	6,135
Arab	1,980	0	280	975	1,520	20	50	960	5,780
Southeast Asian	665	15	220	495	400	55	15	525	2,395
West Asian	2,900	10	145	600	1,580	0	70	1,260	6,565
Korean	175	40	105	150	295	25	20	350	1,165
Japanese	215	15	85	260	310	40	40	455	1,415
Other	3,185	0	350	1,250	2,285	30	95	1,170	8,380
Multiple	2,910	25	340	1,210	2,030	40	65	1,860	8,475
Total population	67,540	315	7,225	25,245	39,050	675	1,205	32,090	173,330

Table 4
Visible Minorities in the GTHA

Visible Minorities	Durham	Halton	Peel	Toronto	York	Hamilton	GTHA	Ontario
South Asian	55,025	50,075	434,105	338,965	116,695	22,105	1,016,970	1,150,415
Chinese	12,105	19,980	63,745	299,460	244,320	10,070	649,680	754,550
Black	51,380	15,230	131,060	239,850	27,775	20,245	485,540	627,715
Filipino	14,530	11,135	57,205	152,715	25,870	8,150	269,605	311,675
Latin American	6,135	8,945	31,060	77,160	13,650	8,425	145,375	195,950
Arab	5,780	12,515	42,500	36,030	13,105	10,330	120,260	210,435
Southeast Asian	2,395	2,905	23,415	41,645	14,050	6,505	90,915	133,855
West Asian	6,565	4,180	13,435	60,325	41,735	4,800	131,040	154,670
Korean	1,165	4,890	6,630	41,640	16,955	2,090	73,370	88,935
Japanese	1,415	1,675	2,595	13,410	2,755	1,060	22,910	30,830
Other	8,380	2,760	25,470	36,975	7,310	2,530	83,425	97,970
Multiple	8,475	4,710	23,335	47,675	16,985	3,745	104,925	128,585
Total population	173,330	138,995	854,565	1,385,850	541,200	100,060	3,194,000	3,885,585

Table 5
Ethnic Origin in Durham

Ethnic Origin	Ajax	Brock	Clarington	Oshawa	Pickering	Scugog	Uxbridge	Whitby	Durham
North American Aboriginal	2,000	505	3,955	7,260	1,855	775	660	3,480	20,485
Other North American origins	21,860	4,420	33,585	54,580	18,875	7,840	7,020	35,760	183,940
European	52,870	8,995	70,020	111,880	51,170	17,165	16,920	87,880	416,905
Caribbean	18,530	70	2,715	8,030	9,955	160	345	9,475	49,295
Latin, Central and South American	5,425	55	1,525	3,050	3,715	160	310	3,740	17,980
African	7,135	25	1,155	3,480	3,700	115	155	3,930	19,695
Asian	44,030	260	4,655	15,225	26,810	585	980	20,890	113,445
Oceania	175	25	145	270	190	50	45	265	1,160

Table 6
Ethnic Origin in the GTHA

Ethnic Origin	Durham	Halton	Peel	Toronto	York	Hamilton	GTHA	Ontario
North American Aboriginal	20,485	9,590	14,265	35,630	9,930	17,665	107,565	518,300
Other North American origins	183,940	118,785	156,130	345,705	130,745	129,550	1,064,855	3,220,595
European	416,905	372,150	514,265	1,288,855	523,255	383,000	3,498,430	8,151,470
Caribbean	49,295	14,405	110,740	165,735	28,270	12,725	381,170	462,600
Latin, Central and South American	17,980	14,550	52,510	113,815	24,720	11,785	235,360	322,210
African	19,695	16,245	67,825	146,870	27,410	14,435	292,480	414,095
Asian	113,445	116,160	669,595	1,079,290	514,515	74,200	2,567,205	3,100,450
Oceania	1,160	1,085	1,570	5,790	1,040	825	11,470	20,680

Table 7
Households in Durham

Households	Ajax	Brock	Clarington	Oshawa	Pickering	Scugog	Uxbridge	Whitby	Durham
Owner households	32,380	3,725	28,935	42,875	27,025	7,140	6,605	36,280	184,965
Median value of dwellings	$501,102	$324,603	$400,945	$370,343	$550,323	$473,831	$599,872	$501,324	$450,398
Average value of dwellings	$546,871	$413,794	$447,499	$397,934	$584,044	$538,168	$663,689	$548,489	$503,610
Median monthly shelter costs	$1,830	$1,366	$1,529	$1,396	$1,671	$1,296	$1,544	$1,746	$1,599
Average monthly shelter costs	$1,805	$1,428	$1,535	$1,423	$1,714	$1,464	$1,744	$1,719	$1,622
Less than 30% of income	72.6%	72.5%	80.6%	70.3%	74.8%	78.9%	77.9%	78.3%	74.9%
30% or more on shelter costs	27.4%	27.5%	19.4%	29.7%	25.2%	21.1%	22.1%	21.7%	25.1%
Renter households	5,170	805	3,880	19,720	3,875	1,100	1,045	7,255	42,930
Median monthly shelter costs	$1,146	$823	$1,148	$1,015	$1,376	$1,138	$1,099	$1,112	$1,083
Average monthly shelter costs	$1,208	$896	$1,197	$1,070	$1,359	$1,143	$1,186	$1,168	$1,142
Less than 30% of income	56.6%	51.2%	53.9%	49.6%	54.2%	50.5%	51.2%	55.5%	52.3%
30% or more on shelter costs	43.4%	48.8%	46.1%	50.4%	45.8%	49.5%	48.8%	44.5%	47.7%
Subsidized housing	13.9%	19.3%	8.4%	14.7%	11.7%	13.6%	11.9%	20.9%	14.8%

Table 8
Households in the GTHA

Households	Durham	Halton	Peel	Toronto	York	Hamilton	GTHA	Ontario
Owner households	184,965	156,165	327,825	587,095	306,535	143,050	1,705,635	3,601,825
Median value	$450,398	$647,574	$572,983	$601,922	$800,284	$399,370	$602,874	$400,496
Average value	$503,610	$715,422	$618,409	$754,015	$871,831	$430,555	$691,470	$506,409
Median monthly shelter costs	$1,599	$1,699	$1,770	$1,496	$1,746	$1,227	$1,601	$1,299
Avg. monthly shelter costs	$1,622	$1,785	$1,774	$1,682	$1,846	$1,350	$1,704	$1,463
Less than 30% of income	74.9%	76.3%	68.2%	63.4%	68.6%	73.9%	67.8%	72.3%
30% or more on shelter costs	25.1%	23.7%	31.8%	36.6%	31.4%	26.1%	32.2%	27.7%
Renter households	42,930	36,810	102,350	525,835	50,535	68,545	827,005	1,559,720
Median monthly shelter costs	$1,083	$1,360	$1,248	$1,201	$1,401	$892	$1,194	$1,045
Avg. monthly shelter costs	$1,142	$1,405	$1,264	$1,242	$1,417	$947	$1,233	$1,109
Less than 30% of income	52.3%	54.9%	54.7%	53.2%	48.2%	54.6%	53.2%	54.3%
30% or more on shelter costs	47.7%	45.1%	45.3%	46.8%	51.8%	45.4%	46.8%	45.7%
Subsidized housing	14.8%	11.3%	13.9%	15.1%	12.5%	15.5%	14.6%	15%

Table 9
Housing in Durham

Housing	Ajax	Brock	Clarington	Oshawa	Pickering	Scugog	Uxbridge	Whitby	Durham
1960 or before	2,710	1,790	4,610	16,350	2,375	2,240	1,670	3,845	35,590
1961 to 1980	6,465	1,395	5,270	22,835	8,150	2,345	1,685	7,330	55,475
1981 to 1990	8,520	700	5,850	7,810	8,910	1,450	1,235	8,230	42,715
1991 to 2000	5,485	350	6,805	5,045	6,635	995	1,145	8,840	35,305
2001 to 2005	5,060	110	3,565	3,220	1,775	685	805	8,205	23,420
2006 to 2010	6,065	110	3,570	3,925	1,195	395	790	4,570	20,630
2011 to 2016	3,255	80	3,160	3,400	1,880	160	330	2,500	14,775
Suitable	35,150	4,385	31,935	59,840	29,630	8,100	7,525	42,010	218,585
Not suitable	2,395	155	905	2,755	1,290	165	140	1,520	9,320
Minor repairs	36,360	4,160	31,590	58,045	29,745	7,745	7,240	42,080	216,955
Major repairs	1,190	385	1,250	4,555	1,180	520	425	1,445	10,950

Table 10
Housing in the GTHA

Housing	Durham	Halton	Peel	Toronto	York	Hamilton	GTHA	Ontario
1960 or before	35,590	24,320	28,220	363,125	21,445	74,470	547,170	1,293,135
1961 to 1980	55,475	50,090	117,990	347,615	49,940	61,565	682,675	1,449,585
1981 to 1990	42,715	26,945	77,185	109,900	71,730	24,785	353,260	709,135
1991 to 2000	35,305	25,995	77,040	85,645	70,170	20,635	314,790	622,565
2001 to 2005	23,420	24,890	57,230	58,310	54,365	9,835	228,050	396,130
2006 to 2010	20,630	23,225	39,665	67,530	49,325	10,165	210,540	368,235
2011 to 2016	14,775	17,520	32,850	80,800	40,105	10,155	196,205	330,390
Suitable	218,585	186,525	387,290	978,105	338,835	200,675	2,310,015	4,858,170
Not suitable	9,320	6,450	42,885	134,820	18,250	10,925	222,650	311,005
Minor repairs	216,955	185,730	412,040	1,034,330	345,995	196,785	2,391,835	4,851,335
Major repairs	10,950	7,245	18,140	78,595	11,090	14,815	140,835	317,840

Table 11
Aboriginal People in Durham

Aboriginal	Ajax	Brock	Clarington	Oshawa	Pickering	Scugog	Uxbridge	Whitby	Durham
Aboriginal	1,190	395	2,330	4,645	1,070	530	375	1,995	12,535
	1.0%	3.5%	2.6%	2.9%	1.2%	2.5%	1.8%	1.6%	2.0%
First Nations	590	250	1,260	2,695	550	360	240	1,115	7,055
Métis	455	115	940	1,665	460	145	115	730	4,625
Other	155	10	125	285	65	25	25	150	850

Table 12
Aboriginal People in the GTHA

Aboriginal	Durham	Halton	Peel	Toronto	York	Hamilton	GTHA	Ontario
Aboriginal	12,535	5,455	9,120	23,065	5,915	12,135	68,225	374,395
	2.0%	1.0%	0.7%	0.9%	0.5%	2.3%	1.0%	2.8%
First Nations	7,055	3,010	5,420	14,380	3,380	8,445	41,690	236,680
Métis	4,625	2,025	2,950	7,270	2,070	3,085	22,025	120,585
Other	850	425	755	1,420	465	600	4,515	17,130

Table 13
Education in Durham

Education	Ajax	Brock	Clarington	Oshawa	Pickering	Scugog	Uxbridge	Whitby	Durham
None	14,400	1,935	12,385	26,395	10,375	2,965	2,520	13,865	84,835
High school diploma	27,770	3,150	21,740	42,195	22,125	5,530	5,305	28,785	156,585
Apprenticeship or trades	5,140	1,010	5,465	9,530	4,520	1,615	1,290	5,790	34,375
College; CEGEP or other non-university	22,480	2,095	21,825	33,305	17,970	4,570	4,165	25,305	131,710
University certificate or diploma	2,460	175	1,260	1,910	1,960	305	385	2,010	10,470
University degree	23,290	1,125	11,395	17,775	19,160	3,240	3,995	25,530	105,505

Table 14
Education in the GTHA

Education	Durham	Halton	Peel	Toronto	York	Hamilton	GTHA	Ontario
None	84,835	53,790	193,220	377,340	144,850	87,880	941,915	1,935,355
High school diploma	156,585	108,215	314,145	561,095	234,965	125,450	1,500,455	3,026,100
Apprenticeship or trades	34,375	20,100	52,600	94,005	40,135	30,600	271,815	664,180
College; CEGEP or other non-university	131,710	91,080	203,965	362,080	157,790	99,070	1,045,695	2,298,715
University certificate or diploma	10,470	10,725	30,045	65,015	26,115	8,155	150,525	242,005
University degree	105,505	149,935	325,435	835,255	301,685	89,910	1,807,725	2,872,085

Table 15
Labour Force in Durham

Labour Force	Ajax	Brock	Clarington	Oshawa	Pickering	Scugog	Uxbridge	Whitby	Durham
Labour force	67,415	6,170	51,440	81,425	51,835	11,870	12,295	70,295	352,750
Employed	61,865	5,810	47,650	73,470	47,690	11,220	11,580	65,080	324,375
Unemployed	5,550	355	3,785	7,955	4,145	650	720	5,215	28,380
Not in the labour force	28,130	3,315	22,620	49,685	24,275	6,360	5,365	30,985	170,735
Participation rate	70.6%	65.1%	69.5%	62.1%	68.1%	119.4%	69.6%	69.4%	67.4%
Employment rate	64.8%	61.3%	64.3%	56%	62.7%	111.6%	65.6%	64.3%	62%
Unemployment rate	8.2%	5.8%	7.4%	9.8%	8%	5.5%	5.9%	7.4%	8%

Table 16
Labour Force in the GTHA

Labour Force	Durham	Halton	Peel	Toronto	York	Hamilton	GTHA	Ontario
Labour force	352,750	302,950	753,110	1,483,680	604,200	278,640	3,775,330	7,141,675
Employed	324,375	284,770	691,470	1,361,375	565,295	259,065	3,486,350	6,612,150
Unemployed	28,380	18,180	61,640	122,305	38,905	19,575	288,985	529,525
Not in the labour force	170,735	130,895	366,295	811,105	301,340	162,415	1,942,785	3,896,765
Participation rate	67.4%	69.8%	67.3%	64.7%	66.7%	63.2%	66%	64.7%
Employment rate	62%	65.6%	61.8%	59.3%	62.4%	58.7%	60.9%	59.9%
Unemployment rate	8%	6%	8.2%	8.2%	6.4%	7%	7.7%	7.4%

Table 17
Labour in Durham

Workers	Ajax	Brock	Clarington	Oshawa	Pickering	Scugog	Uxbridge	Whitby	Durham
Employee	59,520	5,140	45,630	71,875	45,015	9,720	10,110	62,040	309,055
	91.0%	84.1%	90.5%	91.2%	89.2%	82.7%	83.6%	90.2%	89.9%
Self Employed	5,860	970	4,755	6,965	5,430	2,025	1,985	6,705	34,690
	9.0%	15.9%	9.4%	8.8%	10.8%	17.2%	16.4%	9.8%	10.1%
Full-time	36,915	3,490	29,520	43,840	28,950	6,775	6,800	39,355	195,635
	54.5%	54.0%	55.8%	53.0%	54.6%	53.7%	54.0%	54.7%	54.3%
Part-time	30,785	2,970	23,405	38,955	24,095	5,835	5,800	32,580	164,420
	45.5%	46.0%	44.2%	47.0%	45.4%	46.3%	46.0%	45.3%	45.7%

Table 18
Labour in the GTHA

Workers	Durham	Halton	Peel	Toronto	York	Hamilton	GTHA	Ontario
Employee	309,055	261,140	647,680	1,254,610	502,935	243,900	3,219,320	6,146,035
	89.9%	87.7%	88.6%	87.3%	85.1%	89.7%	87.7%	88.2%
Self Employed	34,690	36,620	83,190	182,930	87,715	28,085	453,230	824,595
	10.1%	12.3%	11.4%	12.7%	14.9%	10.3%	12.3%	11.8%
Full-time	195,635	171,560	394,335	750,555	329,290	149,070	1,990,445	3,837,565
	54.3%	54.9%	51.9%	49.9%	53.1%	52.1%	51.8%	52.3%
Part-time	164,420	140,955	365,940	752,445	291,170	137,070	1,852,000	3,504,645
	45.7%	45.1%	48.1%	50.1%	46.9%	47.9%	48.2%	47.7%

Table 19
Journey to Work in Durham

Journey to Work	Ajax	Brock	Clarington	Oshawa	Pickering	Scugog	Uxbridge	Whitby	Durham
Driver	42,125	4,625	38,025	54,100	32,980	8,675	8,545	47,075	236,150
Passenger	3,695	220	2,625	4,950	2,605	555	695	3,195	18,540
Public Transit	9,865	55	2,365	6,780	6,960	145	355	7,490	34,015
Walk	1,355	260	1,120	2,760	1,055	450	460	1,575	9,025
Bicycle	275	10	95	230	115	15	50	175	970
Worked at Home	3,700	610	2,960	3,815	3,235	1,260	1,405	4,860	21,845

Table 20
Journey to Work in the GTHA

Journey to Work	Durham	Halton	Peel	Toronto	York	Hamilton	GTHA	Ontario
Driver	236,150	202,865	482,165	575,260	395,785	183,830	2,076,055	4,375,215
Passenger	18,540	14,555	44,075	57,170	32,935	17,350	184,625	372,480
Public Transit	34,015	27,940	100,595	463,005	65,320	25,540	716,415	888,920
Walk	9,025	8,035	14,215	107,665	12,025	11,210	162,175	320,015
Bicycle	970	1,590	1,900	34,355	1,460	2,245	42,520	75,460
Worked at Home	21,845	25,675	38,220	101,275	48,950	15,785	251,750	480,290

Table 21
Language of Work in Durham

Language of Work	Ajax	Brock	Clarington	Oshawa	Pickering	Scugog	Uxbridge	Whitby	Durham
English	68,445	6,610	53,480	84,340	53,450	12,815	12,890	72,880	236,150
French	305	0	265	410	190	40	40	390	18,540
Non-official languages	425	0	175	310	345	10	25	255	34,015

Table 22
Language of Work in the GTHA

Language of Work	Durham	Halton	Peel	Toronto	York	Hamilton	GTHA	Ontario
English	236,150	202,865	482,165	575,260	395,785	183,830	2,076,055	4,375,215
French	18,540	14,555	44,075	57,170	32,935	17,350	184,625	372,480
Non-official languages	34,015	27,940	100,595	463,005	65,320	25,540	716,415	888,920

Table 23
Mobility and Migration in Durham

Mobility Status	Ajax	Brock	Clarington	Oshawa	Pickering	Scugog	Uxbridge	Whitby	Durham
Moved within 1 year	10,645	1,075	8,800	20,710	8,525	1,745	2,030	11,530	567,835
Non-migrants	4,465	375	3,635	10,680	3,325	630	825	4,455	65,050
Migrants	6,180	695	5,165	10,025	5,200	1,110	1,210	7,075	28,390
Internal migrants	5,570	680	4,995	9,420	4,750	1,085	1,160	6,570	36,660
Intraprovincial migrants	5,330	660	4,705	8,930	4,495	1,070	1,120	6,240	34,230
Interprovincial migrants	240	20	290	490	255	15	40	330	32,550
External migrants	610	10	165	610	455	30	50	500	1,685
Moved within 5 years	73,130	7,265	56,020	89,695	59,055	14,775	13,790	80,195	393,925
Non-migrants	39,000	3,515	29,590	59,175	27,395	5,675	6,360	39,385	210,090
Migrants	15,745	1,035	12,995	29,445	10,160	2,200	2,355	16,065	90,005
Internal migrants	23,255	2,485	16,590	29,730	17,230	3,470	4,005	23,320	120,090
Intraprovincial migrants	20,395	2,410	16,100	27,265	15,415	3,325	3,885	20,765	109,555
Interprovincial migrants	19,850	2,340	15,455	26,095	14,960	3,235	3,725	19,885	105,545
External migrants	540	70	645	1,170	460	100	155	880	4,015

Table 24
Mobility and Migration in the GTHA

Mobility Status	Durham	Halton	Peel	Toronto	York	Hamilton	GTHA	Ontario
Moved within 1 year	567,835	474,155	1,193,235	2,284,060	979,135	460,065	5,958,485	11,475,985
Non-migrants	65,050	61,435	164,795	379,490	111,595	62,295	844,660	1,631,005
Migrants	28,390	27,370	92,470	253,780	55,650	40,575	498,235	941,380
Internal migrants	36,660	34,070	72,325	125,710	55,950	21,720	346,435	689,625
Intraprovincial migrants	34,230	28,320	47,125	65,770	42,645	17,035	235,125	535,180
Interprovincial migrants	32,550	26,190	42,080	49,990	39,815	15,315	205,940	467,890
External migrants	1,685	2,125	5,045	15,780	2,830	1,715	29,180	67,290
Moved within 5 year	393,925	315,050	798,505	1,516,110	687,285	320,160	4,031,035	7,887,825
Non-migrants	210,090	195,410	497,920	1,040,010	356,485	179,495	2,479,410	4,658,215
Migrants	90,005	81,275	270,380	639,060	169,945	113,675	1,364,340	2,545,875
Internal migrants	120,090	114,135	227,540	400,955	186,540	65,820	1,115,080	2,112,340
Intraprovincial migrants	109,555	90,645	131,905	184,120	133,665	50,675	700,565	1,562,375
Interprovincial migrants	105,545	84,180	121,635	141,135	126,340	46,210	625,045	1,380,900
External migrants	4,015	6,465	10,270	42,985	7,325	4,460	75,520	181,480

If this information is required in an accessible format, please contact 1-800-372-1102 ext. 2564

The Regional Municipality of Durham
Information Report

From:	Commissioner of Planning and Economic Development
Report:	#2018-INFO-54
Date:	April 13, 2018

Subject:

Carruthers Creek Watershed Plan Update, File: D07-17-10

Recommendation:

Receive for information

Report:

1. Purpose

1.1 The purpose of this report is to provide Committee with an outline of the Work Plan and Communications and Consultation Strategy to be implemented as part of Phase 2 of the Carruthers Creek Watershed Plan update.

2. Background

2.1 On April 1, 2015, Regional Council authorized staff to engage the Toronto and Region Conservation Authority (TRCA) in a consulting capacity to update the Carruthers Creek Watershed Plan on the Region's behalf. In June of 2015, the TRCA received Board authorization to enter into a servicing agreement with the Region and to initiate the project.

2.2 The Watershed Plan update is being completed in two Phases over a four year period. Phase 1 of the project, which culminated in the preparation of seven technical reports characterizing the watershed's existing conditions, was completed in the fall of 2017, as described in Commissioner's Report #2017-COW-218. In keeping with Council's direction, the technical reports were circulated to staff at the City of Pickering and the Town of Ajax for review and comment.

2.3 In December of 2017 TRCA hosted a meeting with staff from the Town of Ajax, City of Pickering and Region of Durham. The purpose of the meeting was to provide an overview of the completed technical studies, outline the major components and consultation approach for Phase 2, and have a facilitated discussion on the vision and management philosophy for the watershed.

2.4 Town of Ajax and City of Pickering staff provided comments on the Phase 1 technical studies in February and March of 2018. TRCA staff have received the comments and provided written responses.

2.5 Phase 2 of the Carruthers Creek Watershed Plan update has been initiated. This report outlines the Work Plan and the Communications and Consultation Strategy that will be implemented as part of Phase 2 of the project.

3. Phase 2 Work Plan

3.1 In accordance with the approved work plan, Phase 2 of the Watershed Plan update consists of seven steps that will be completed over a two-year period. A full breakdown of the seven steps is provided in Attachment #1, and can also be summarized as follows:

Step 1: Establish updated goals and objectives for the watershed;
Step 2: Based on the conditions observed through Phase 1 and other watershed health assessments, develop targets for the watershed and identify the actions required to achieve the goals and objectives;
Step 3: Establish watershed response methodologies / assessments that will be used to measure how the watershed could be expected to respond to changes in land use and other factors, such as climate change;
Step 4: Develop, model and evaluate five scenarios for the watershed, consisting of historic conditions, existing conditions, approved development (as per current Official Plan designations), enhanced natural heritage system, and a development scenario with an enhanced natural heritage system;
Step 5: Formulate and evaluate candidate management actions to achieve the desired state of watershed health;
Step 6: Develop management recommendations; and
Step 7: Deliver the completed Watershed Plan.

3.2 The Carruthers Creek Watershed Plan update is scheduled to be completed by late 2019. Similar to the work completed to date, Phase 2 will be subject to a peer review process.

4. Communications and Consultation Strategy

4.1 As part of Phase 2, TRCA will undertake extensive stakeholder and public consultation. A Communications and Consultation Strategy has been prepared, outlining the proposed consultation activities, which include the following:

a. Maintain and update a website dedicated to the Carruthers Creek Watershed Plan update containing information on the project scope, timeline, and key milestone outcomes;
b. Utilize a project specific email address to receive and respond to inquiries;
c. Conduct online survey(s) related to the project;
d. Create and distribute outreach and communication tools, including information cards at public locations / events;
e. Conduct in-person outreach through the use of pop-up workshops and Public Information Centres;
f. Conduct stakeholder outreach through small group meetings, including presentations to various advisory committees;
g. Continue to report to the Region of Durham Committee of the Whole at key milestones;
h. Conduct staff to staff meetings with representatives from the Region of Durham, the Town of Ajax and the City of Pickering; and
i. Utilize media and social media communications to provide updates on the project and study deliverables.

4.2 Consultation will occur in stages throughout Phase 2 of the Watershed Plan update. The first stage of consultation will engage stakeholders and the public on the goals and objectives of the Watershed Plan. The next stage of consultation will solicit feedback on the draft management recommendations, with the final stage of consultation focusing on the draft final Watershed Plan. The Communications and Consultation Strategy can be found in Attachment #2.

5. Conclusion

5.1 Committee will be kept apprised of the study progress through Phase 2 of the project, including an update report in early 2019.

5.2 A copy of this report will be forward to the Toronto and Region Conservation Authority, the Town of Ajax and the City of Pickering.

6. Attachments

Attachment #1: Correspondence dated March 27, 2018 from Gary S. Bowen, TRCA, outlining the Phase 2 Work Plan

Attachment #2: Correspondence dated March 27, 2018 from Gary S. Bowen, TRCA, outlining the Communication and Consultation Strategy

Respectfully submitted,

Original signed by

B.E. Bridgeman, MCIP, RPP
Commissioner of Planning and
Economic Development

Toronto and Region Conservation
for The Living City

27 March 2018

Brad Anderson,
Principal Planner, Policy Planning and Special Studies
Planning and Economic Development
Regional Municipality of Durham
PO Box 623
605 Rossland Road East
Whitby, Ontario
L1N 6A3

Sent via email: brad.anderson@durham.ca

RE: Carruthers Creek Watershed Plan Phase 2 Work Plan

Dear Mr. Anderson:

I am pleased to provide the following overview of Phase 2 work planned for the Carruthers Creek Watershed Plan for 2018 and 2019. Our consultation plans for Phase 2 are under separate cover.

Phase 2 of the study has begun. In this phase of the Watershed Plan, TRCA scientists and Planners will evaluate current land use and management practices in all areas of the watershed, assess the ecological integrity of the Greenbelt lands in the mid-reaches, and assess the need for retrofits and improvements to storm water management, water quality, flood risk, and the natural heritage system in the urbanised southern portion of the watershed.

The approach for Phase 2 builds on advancements in science, monitoring, collective knowledge, and experience gained by TRCA based on more than five decades of completing Watershed Plans across our jurisdiction. At the same time, our team of professionals will incorporate new insights from innovative Watershed Planning methodologies to ensure the best recommendations are made to manage Carruthers Creek watershed.

TRCA consulted the wide array of governments and others who use our Watershed Plans as part of our "Next Generation" of Watershed Planning. As a result of this feedback, and an extensive literature review to document emerging science in studying watersheds, we created a framework to guide the development of new Watershed Plans to better facilitate their implementation and better serve our partners. This framework guides our development of the Carruthers Creek Watershed Plan.

Further, TRCA staff are involved in the Province's process to develop new guidance for mandatory Watershed Planning for municipalities. TRCA will ensure that the Carruthers Creek Watershed Plan meets and exceeds the newly released provincial guidance and will provide more details on our compliance later in 2018.

Phase 2 of the Watershed Plan will be completed over a two-year period. The work to be undertaken is complex, is expected to be iterative and adapt to insights gained as the study evolves, it is therefore not a linear process. Staff are confident that our process is state of the art. To be certain, TRCA has retained John Kinkead to review the study design and work plan for Phase 2 to ensure they are comprehensive, and to confirm that the Carruthers Creek Watershed Plan will meet and exceed emerging Provincial directives for Watershed Planning. Mr. Kinkead will provide his initial assessment of the work plan directly to the Region. TRCA further proposes that Mr. Kinkead serve a broader independent peer review role in this phase, as he did in Phase 1, to assure the Region that TRCA's technical work continues to be objective and based on the best available science.

TRCA's overall four-year work plan for the Carruthers Creek Watershed Plan process is outlined in our submission approved by the Region in April 2015. The steps to be completed in Phase 2 are attached (Attachment 1).

As TRCA progresses through Phase 2 of the Carruthers Creek Watershed Plan update, we look forward to continuing the collaborative working relationship established with Durham Region in Phase 1, and to growing our working relationship with the City of Pickering and Town of Ajax. Cooperation and collaboration will be essential to build a strong foundation for implementation following completion of the Watershed Plan.

Please do not hesitate to contact me if I may be of further assistance or you have questions.

Sincerely,

Gary S. Bowen
Watershed Specialist

Attachment (1)

Toronto and Region Conservation
for The Living City

Carruthers Creek Watershed Plan Phase 2

STEP 1: Establish Goals and Objectives for the Watershed

TIMING
January to June 2018

PURPOSE
Review the fundamental building blocks provided in the 2003 Watershed Plan and supporting documents in the context of advancements in scientific approaches and language since the last Watershed Plan was completed. The goals and objectives will be revisited throughout the plan development process to ensure implementation of the new management actions can meet these goals.

WORK TO BE DONE
TECHNICAL

- Review Goals, Objectives, Management Actions from 2003 Watershed Plan, 2004 Fisheries Management Plan, other supporting documents: assess gaps, add new information, update/remove elements which are no longer relevant

CONSULTATION

- Consult public and stakeholders on vision and management philosophy from 2003 Watershed Plan which will form the principles of the new plan

STEP 2: Current Watershed Conditions

TIMING
January to June 2018

PURPOSE
Protocols for watershed health assessment follow a similar process to that of the 2003 Watershed Plan, with appropriate scientific and engineering knowledge of the evolving state of best practice. Based on the biophysical conditions observed from 2015 and 2016 field studies and previous watershed health assessment ratings and targets, develop current targets for the watershed which will identify the actions required to achieve the goals and objectives. Begin integration of the seven Phase 1 technical reports to derive a holistic view of the watershed based on the separate studies.

WORK TO BE DONE
TECHNICAL

- The various subject matter experts (SMEs) on the staff technical team will assess the targets from 2003 Watershed Health Ratings Report for relevance, updating, gaps, and set new targets

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- Begin the integration exercise based on the Phase 1 technical reports and management recommendations, a comprehensive exercise which requires a multi-disciplinary approach.

STEP 3: Watershed Response "Tool Box"

TIMING

January to December 2018

PURPOSE

The "tool box" is a collection of models and evaluation methodologies which assess various criteria from the land use scenarios. The modelling results and findings from the terrestrial and aquatic response methodologies illustrate how the watershed can reasonably be expected to respond to land use changes, and other factors such as climate change, based on the best available science. TRCA scientists and planners will interpret the outcomes in order to develop recommended management actions which protect, restore, and enhance Carruthers Creek watershed.

WORK TO BE DONE

TECHNICAL

- SWAT (Soil and Water Assessment Tool) model which assesses surface water quality set up and calibrated (initial data from Phase 1)
- Groundwater model set up and calibrated
- Hydrology model set up and calibrated (initial data from Phase 1)
- Assess options/tools to evaluate watershed's terrestrial response
- Assess options/tools to evaluate watershed's aquatic response
- Surface water quantity report based on stream flow gauges completed and peer reviewed

CONSULTATION

- Review Hydrology model results with Ajax and Pickering staff

STEP 4: Watershed Scenario Evaluation

TIMING

January to September 2018

PURPOSE

Develop five scenarios for the watershed, evaluating past, current, future, and potential future watershed conditions to be analysed using state-of-the-art modelling and watershed response tools. Knowledge garnered will be shared amongst the technical experts, allowing for integration of outputs and best outcomes for the overall health of the watershed.

WORK TO BE DONE

TECHNICAL

Finalise mapping for each of the five scenarios, each subsequent scenario builds on the previous, ranging from historic conditions (1999) to development as per current approved Official Plans to 2031 and an enhanced Natural Heritage System, plus prospective development post-2031.

- Using various inputs such as Official Plans, existing natural cover, older TRCA Terrestrial Natural Heritage System plans, etc., delineate an enhanced Natural Heritage System for use in the future scenarios
- Evaluate opportunities for urban forestry enhancement
- Complete Ecosystem Services Valuation study and identify Green Infrastructure features/ practices which could be incorporated into existing urban areas and in new urban development

- Complete a storm water management retrofit study

CONSULTATION
- Review scenario criteria/conditions with Ajax and Pickering staff

STEP 5: Evaluate Management Actions

TIMING
July 2018 to June 2019

PURPOSE
Formulate candidate management actions which will be evaluated when recommendations are developed, to ensure that the overall conditions in the watershed will sustain the desired state of health once the plan is adopted and implemented.

WORK TO BE DONE
TECHNICAL
- Management actions will be derived as the modelling is carried out and the terrestrial and aquatic response tools are applied. Actions tend to be specific and are expected to arise through non-linear, multi-disciplinary analysis, as all SMEs integrate their findings. Actions will be evaluated against the plan's draft recommendations, goals, and objectives.

STEP 6: Draft Management Recommendations

TIMING
July 2018 to September 2019

PURPOSE
Develop draft recommendations for the optimal management of the watershed based on the most advanced scientific knowledge available. They will be practical and make the best use of partnerships and available resources, and anticipate the challenges ahead. The recommendations inform the management actions and guide the implementation of the Watershed Plan.

WORK TO BE DONE
TECHNICAL
- Management recommendations will be evaluated against meeting the vision, management philosophy, goals, and objectives established earlier in the process. This is a non-linear, multi-disciplinary exercise which involves all SMEs and is integrated with other steps throughout the process.

CONSULTATION
- Review draft management recommendations with Ajax and Pickering staff
- Consult public and stakeholders about draft management recommendations

STEP 7: Final Watershed Plan

TIMING

October to December 2019

PURPOSE

Complete the process to develop the Carruthers Creek Watershed Plan.

WORK TO BE DONE

TECHNICAL

- Finalise the Watershed Plan document.

CONSULTATION

- Once received by Durham Council, TRCA will post the final Watershed Plan for stakeholder and public comment, dates to be determined.

#	Key Tasks	Schedule
1	Complete scenario evaluation	2018 – Q4
2	Peer Review of 2018 technical work	2019 – Q1
3	Recommendations and implementation schedule	2019 – Q2
4	Peer Review of 2019 technical work	2019 – Q3
5	Study complete	2019 – Q4

Toronto and Region Conservation for The Living City

3 April 2018

Brad Anderson,
Principal Planner, Policy Planning and Special Studies
Planning and Economic Development
Regional Municipality of Durham
PO Box 623
605 Rossland Road East
Whitby, Ontario
L1N 6A3

Sent via email: brad.anderson@durham.ca

RE: Carruthers Creek Watershed Plan Phase 2 Communications and Consultation

Dear Mr. Anderson:

I am pleased to provide an outline of TRCA's stakeholder and public consultation plans for Phase 2 of the Carruthers Creek Watershed Plan.

As you are aware, TRCA is developing the Carruthers Creek Watershed Plan as an update to an earlier plan completed in 2003 with extensive input from stakeholders, watershed municipalities, and the public. Public and stakeholder consultation are a key part of the Watershed Planning process and TRCA's objective is to reach a wide audience which includes but is not limited to watershed residents, stakeholders, and neighbours. To that end, we have developed a communications and consultation strategy which is multi-pronged and intended to reach not only with those who are familiar with the watershed, but also new audiences who may have limited knowledge of Carruthers Creek watershed. We feel this is a sound approach to engaging a broad segment of the public and receiving balanced feedback throughout the process.

We have outlined the general communications and consultation strategy in Attachment 1. To further explain our comprehensive approach to community outreach, we have provided detail on the key audiences and how we propose to interact with each of these groups in Attachment 2.

At our December 2017 meeting with staff from the City of Pickering and Town of Ajax, we discussed how cooperation and collaboration at the political, staff, stakeholder, and neighbourhood levels will be essential for successful community outreach and the overall success of the Watershed Plan. Through consultation, we will share our knowledge and the recommended approaches to manage this watershed, and we will listen to watershed residents,

local decision makers, and neighbouring stakeholders who are equally interested in the watershed's health.

We look forward to continuing to work with Durham Region staff as we develop this watershed plan update, and to growing our working relationship with staff from Ajax and Pickering throughout the process.

Please do not hesitate to contact me if I may be of further assistance or you have questions.

Sincerely,

Gary S. Bowen
Watershed Specialist

Attachments (2)

Attachment 1

Carruthers Creek Watershed Plan Communications and Consultation Strategy

1.0 GOAL OF THE COMMUNICATION AND CONSULTATION

The goal is to inform and consult with the public and stakeholders in and neighbouring the watershed to create awareness about the new Watershed Plan, and to review and consider input on the vision and management philosophy, draft management recommendations, and finally the draft Carruthers Creek Watershed Plan.

2.0 OBJECTIVES FOR THE REVIEW AND WATERSHED PLAN UPDATE

The primary objectives of the Carruthers Creek Watershed Plan are:

- To update the understanding of existing conditions in the watershed through scientific research and analysis of the physical characteristics of the watershed.
- To identify important watershed management priorities and action in urban and rural areas of the watershed for the present and into the future.
- To continuously build on and refine, sustain, and reinforce the 2003 implementation framework. The vision and management philosophy for the watershed will be updated and supported with new goals and objectives based on the study findings.
- To ensure that Durham Region has the right information and knowledge base to make decisions which affect the watershed.
- To ensure that this Watershed Plan meets or exceeds new provincial guidance for mandatory Watershed Plans to municipal land use planning.
- To showcase leading edge scientific methodology and analyses demonstrating TRCA's Watershed Plan development process as state-of-the-art, and exemplify our "next generation" of Watershed Plans.

3.0 KEY AUDIENCES

The focus of the communications is informing the general public, and consulting residents and stakeholders in and neighbouring the watershed. Stakeholders expected to be affected by, and who will have an interest in, this Watershed Plan will be identified as consultation progresses. A summary table on communication and consultation methods categorised by audience accompanies this strategy.

4.0 HIGH LEVEL CONSIDERATIONS FOR DEVELOPING THE WATERSHED PLAN

Phase 1: Completion of extensive scientific studies to update Carruthers Creek watershed's baseline physical conditions and establish the technical foundation for the Watershed Plan.

Phase 2: Build on the work completed in Phase 1, review potential land use scenarios, and short and long-term watershed management actions.

The starting point for this update is the Watershed Plan for Duffins Creek and Carruthers Creek (2003).

The management philosophy and past objectives and management actions will be the basis for developing the updated Watershed Plan. Key considerations for developing the new Watershed Plan include the following:

- Build an understanding amongst the public and stakeholders of what the Watershed Plan is, how it is being developed, the process and timelines.
- Explain how this Watershed Plan meets and exceeds the provincial requirements for Watershed Plans which serve municipal interests.
- Address the status of the 2003 Watershed Plan (*i.e.*, goals, objectives, and management actions, progress to date).
- Identify sensitivities of Carruthers Creek watershed's natural heritage.
- Communicate how the Watershed Plan's development will benefit from new information and studies completed since the 2003 plan.
- Demonstrate how the Watershed Plan will be used to guide and direct activities in the watershed in the future – including public and private use.

5.0 KEY MESSAGES ABOUT THE WATERSHED PLAN

An important aim is to provide clear information about the purpose of the Carruthers Creek Watershed Plan. Key messages will be used to develop website material, responses to frequently asked questions (FAQs), stakeholder materials, and information for online consultation and the news media. Key messages will focus on the anticipated needs of different audiences and be updated as necessary. Clear, consistent and direct communication on what the study is about, and what it is not, will contribute to greater public understanding about the watershed and the Watershed Plan.

Content for key messages to be used in the consultation materials will be prepared by TRCA in collaboration with the Region of Durham. The following key messages communicate the purpose, scope, and expected outcomes for the Carruthers Creek Watershed Plan:

- The purpose of the Watershed Plan update is to undertake a review of the watershed considering the 2003 management actions, existing conditions, new information and studies since 2003, as well as current scientific thinking, in order to develop a comprehensive plan to protect, restore, and enhance the whole watershed – lower, middle, and upper reaches.
- The 2003 Watershed Plan included a set of eight goals and twenty-five objectives which made up the overall management strategy. There has been significant progress in implementing these recommendations. This plan is a unique investment by the Region of Durham in original work to understand the environmental conditions in the watershed that have evolved since 2003.
- The work is being undertaken by the TRCA on a fee-for-service basis on behalf of the Region of Durham. TRCA's role is to provide professional, scientific, and evidence based recommendations for the protection, restoration, and enhancement of Carruthers Creek watershed. This involves providing information, analysis, and management recommendations to assist the Region with its consideration of planning and infrastructure decisions, as well as protection of Durham's natural heritage and water resources.
- TRCA will ensure the final Plan meets and exceeds the provincial guidance for Watershed Plans.

- The recommendations from this update will be based on peer reviewed scientific research and analysis. Peer review is being undertaken by an independent third party to ensure impartiality and rigour in the review and findings.

- Land use planning decisions are outside the scope of the Watershed Plan. This plan is not about making land use recommendations or commenting on development proposals or Greenbelt designation in Carruthers Creek watershed.

- The update will examine alternative land use scenarios in order to analyse the potential implications associated with land use changes and identify measures for protection, restoration, and enhancement. The analysis will not recommend a preferred scenario but rather identify recommendations which are important to ensure the sustainability of the watershed regardless of land use changes. This will ensure that the Region of Durham has the best knowledge base in order to make decisions about planning policy.

6.0 PROPOSED CONSULTATION ACTIVITIES

The communications and consultation strategy for the Watershed Plan focuses on interrelated streams of stakeholder and public consultation. Specific deliverables include the following:

Phase 2 Consultation Methods and Deliverables
1. **Project Website** with notice that Phase 2 is underway, scope of work, timelines; Frequently Asked Questions (FAQs); mailing list for updates at key milestones; revisit 2003 vision statement and management philosophy with feedback mechanism for public comments.
2. Use a **dedicated email address** on the project website as a one-window approach for receiving emails pertaining to the plan: carruthers@trca.on.ca. Respond to inquiries where appropriate.
3. **Conduct online survey(s)** to receive input on the 2003 Carruthers Creek Vision and Management Philosophy and input on issues and opportunities (2018) and feedback on draft management recommendations (2019).
4. **Create outreach/communication tools** *i.e.,* postcards for distribution by TRCA, area municipalities, and other groups, at public events over 2018/2019 to raise awareness of Watershed Plan (drive people to website for more info).
5. **In-person outreach** to reach a wide array of audiences through "pop-ups" throughout the watershed (2018 - 2019). Potential Public Information Centre (2019) to receive feedback on draft management recommendations.
6. **Stakeholder outreach** through small group meetings to provide information and discuss watershed management objectives and recommendations: TRCA Regional Watershed Alliance, Durham Environmental Advisory Committee, Durham Agricultural Advisory Committee, Ajax Environmental Advisory Committee, golf courses, former Task Force members, ENGOs, other stakeholder groups.
7. **Reports to Region of Durham Council** at key milestones at the direction of Durham staff.
8. **Staff to Staff meetings**: Interactive coordination meetings with Durham, Pickering, and Ajax at key milestones.
9. **Media and Social Media Communications** through the preparation of content for social media, news releases, and updates on study deliverables.

7.0 CONTINUOUS IMPROVEMENT AND RISK MANAGEMENT

As the communications and consultation strategy is delivered, it will be adapted to meet project needs. The following actions have been identified upfront to minimise and manage risk:

- Establish principal point of contact at Region of Durham and at TRCA for inquiries about the Carruthers Creek Watershed Plan and issues management.
- Use a dedicated email address as a one-window approach for receiving emails pertaining to the Watershed Plan.
- Monitor and adapt communications and consultation approach as needed. Undertake continuous improvement based on the response to issues.
- Review media coverage and outreach.

Carruthers Creek Watershed Plan Update - Communication and Consultation Methods and Audiences

The Carruthers Creek Watershed Plan has the potential to be of interest to residents across Pickering and Ajax, to environmental stakeholders, landowners, farmers, golf course operators, businesses, and land developers. As such, various audiences will have different levels of knowledge of and interest in the watershed itself, and the scientific research, vision, management philosophy and draft recommendations for the watershed plan. Our consultation efforts will utilise a variety of formats and tools to share information and gather input. Opportunities for consultation throughout Phase 2 are focused on stages of watershed plan development:

1. 2003 Vision and Management Philosophy (Goals and Key Elements): Q1 to Q3 – 2018
2. Draft Management Recommendations: Q1 to Q2 – 2019
3. Final Draft Watershed Plan: Q3 to Q4 - 2019

To understand the best methods for sharing information and type of consultation activities which may be successful in reaching a wide array of potential audiences, background work has been undertaken to research audiences who may have an interest in or be affected by the project. Preliminary Audiences and Stakeholders are listed in the table below. Where specific groups are known at this time, these have been identified and the list will be updated regularly. The project website will be a primary consultation tool to enable ongoing feedback throughout the Watershed Plan process.

As the communications and consultation strategy is delivered, it will be adapted to meet project needs.

Key Audiences Identified	Methods of contact and consultation throughout 2018 to 2019
Region of Durham	Staff to staff meetings, communications and staff presentations to Council
DEAC	Present to DEAC x 3 (on vision, on draft management recommendations, on draft plan)
DAAC	Present to DAAC x 3 (on vision, on draft management recommendations, on draft plan)
Town of Ajax, City of Pickering	Staff to staff meetings: interactive coordination meetings at key milestones Direct contact with Councillors/Authority Members at each stage of Phase 2 Present to Councils at key milestones. Present to Ajax EAC on draft management recommendations.
Residents across the watershed	**News Media -** Initial media release to direct residents to the website and survey **Social Media** via project website, main TRCA website, TRCA Facebook, TRCA email lists, TRCA twitter; Durham, Ajax, and Pickering social media channels **Google ads -** Pending cost review **Post-cards** distributed via Durham, Pickering, Ajax municipal facilities (municipal offices, libraries, community centres, etc.) driving people to website. First postcard to align with online survey. Subsequent postcards to inform on where to review draft recommendations.

Key Audiences Identified	Methods of contact and consultation throughout 2018 to 2019
	On-line Survey via project website to garner input on vision and management philosophy. Promoted through media release and postcards. **Pop-Ups** – go to where people gather across the watershed to provide information and seek input on the vision and draft management recommendations. Number and timing to be determined pending cost review. **Sharing information through:** • TRCA events/venues/outlets: notice at Claremont FC, media release; share with partner groups; distribute at TRCA Durham stewardship and other events; present to TRCA Regional Watershed Alliance and other TRCA citizen committees for Durham projects (e.g., Greenwood Conservation Lands, Goodwood Conservation Area) • Durham potential events/venues: Durham Cycling Coalition email notice, other events TBD. • Ajax potential events/venues: Green Living Days, Doors Open Ajax, GLSLCI conference, Trail Fest, Audley Rec Centre, Carruthers Marsh Pavilion, Paradise Park, Main Library, farmers' market, operations/works open house, Councillors' newsletters/communications • Pickering potential events/venues: ESP Forum, Pickering Town Centre, Main Library, recreation centres depending on events, Artfest/Ribfest/Big Give/Seniors fest, Canada Day celebration, farmers' market, operations/works open house; OPG Pickering CAC; Councillors' newsletters/communications **Public Information Centre at Durham Region HQ:** To be determined
2003 Individual Task Force Members	Email notice with media release and invitation to participate in survey and meet in person Small group meeting at Claremont x1
ENGOs	Small group x 1 (Q2 – 2018) Purpose of meeting to share information on the work plan, overview of scientific work completed and to respond to issues and concerns
Golf courses	Small group meeting x 1, potential 2nd meeting on draft management recommendations
Developers, businesses	Mail/email notice to Durham BILD, Durham Home Builders Association, reach through news media and Council presentations
Post-secondary, Secondary, Elementary Schools	Post card to schools attending Claremont Outdoor Ed Centre; other outreach pending cost review

If this information is required in an accessible format, please contact 1-800-372-1102 ext. 2564

The Regional Municipality of Durham
Information Report

From:	Commissioner of Planning and Economic Development
Report:	#2018-INFO-55
Date:	April 13, 2018

Subject:

Durham Region Broadband Strategy: Phase One, File: D24-12

Recommendation:

Receive for information

Report:

1. Purpose

1.1 The purpose of this report is to provide a status update on the Durham Region Broadband Strategy, and to provide a copy of the Phase One report.

1.2 At the January 18th, 2017 Regional Council Meeting, staff were directed to undertake the preparation of a Regional Broadband Strategy. The Broadband Strategy is being undertaken in order to understand the current conditions within the Region, identify the needs of businesses, residents and government agencies, and to provide recommendations to achieve increased Internet connectivity.

2. Background

2.1 In December of 2016, the Federal Government launched the Connect to Innovate (CTI) program. The focus of the CTI program was to provide funding for projects that build new backbone broadband[1] infrastructure or provide last mile infrastructure to eligible areas that are currently underserved.

1 Broadband generally refers to Internet service that is always on and available at higher speeds than traditional dial up Internet services. There are several forms of broadband Internet service including Digital Subscriber Line, Cable, Satellite and Fiber-Optic.

2.2 The CTI program identified 20 rural locations within Durham Region that were eligible under the program for the development of new backbone infrastructure. The Region's southern urbanized areas were not eligible for funding.

2.3 In order to be considered, applicants were required to identify who would build, own and operate the network, as well as who would manage the project. In addition, applicants were required to have a track record in operating Internet infrastructure, or demonstrate that the appropriate resources with experience in deploying and operating Internet infrastructure were part of the project team.

2.4 During the application process, there was a desire by some stakeholders and members of Council for Regional staff to coordinate and submit a Region-wide application. The CTI program allows various entities (private sector, provincial, municipal and not-for-profit) or groups of entities to apply, provided the criteria outlined above have been demonstrated. Accordingly, the Region would have been required to partner with an Internet service provider (ISP) in order to make an application. The Region was approached by an ISP about submitting an application; however, Durham was not positioned at the time with the necessary administrative and legal instruments to facilitate partnering with an ISP within the application deadline. As an alternative, the Commissioner of Planning and Economic Development provided letters of support to applicants pursuing funding under the CTI program.

2.5 At the time of writing this report, there have been no announcements regarding successful CTI projects within the Greater Toronto Area.

2.6 It is anticipated that there will be future funding opportunities made available. In advance of any program details being announced at this time, staff are investigating how the Region can be administratively prepared to participate in future funding opportunities. Should a funding program be released in advance of the Region completing the Broadband Strategy, staff will report to Committee on a recommended approach based on the program details.

3. Context

3.1 The availability of broadband Internet is a priority for Canadian communities. Broadband infrastructure plays a crucial role in supporting economic competitiveness and quality of life by enabling an ever-increasing reliance on Internet based applications. In recognition of the important role that broadband Internet plays, the Canadian Radio-television and Telecommunications Commission

(CRTC) ruled in 2016 that access to broadband Internet is a basic service that should be available to all Canadians.

3.2 Regional Council, through the Durham Region Strategic Plan: 2015-2019, has recognized and prioritized the importance of technological innovation. This is reflected in following the Strategic goals and objectives:

- A.1: Propel the business and investment climate forward in Durham Region to enable more local employment;
- A.3: Promote and actively capitalize on opportunities to make Durham Region a primer destination that attracts and retains entrepreneurs, innovators, visitors and residents;
- A.4: Renew our commitment to enhance the economic viability of Durham's agricultural sector to advance sustainable and innovative agricultural production practices and promote food system security; and
- A.5: Find new ways to work with our partners to revitalize and grow Durham Region's position as a renowned centre of technological excellence.

3.3 The Durham Region Economic Development Strategy and Action Plan (2017-2021) was endorsed by Council on May 10, 2017, setting a bold vision that "Durham Region will be the most prosperous and innovative region in North America". This will be accomplished by being:

- A supporter of business;
- A builder of jobs and the economy;
- A highly effective collaborator and facilitator; and
- The choice location for business, investment and labour.

3.4 There is a strong focus in the Economic Development Strategy and Action Plan on the evolution of Durham's Economic Sectors into modern, hi-tech and innovative industries. Reliable broadband, particularly in north Durham, has been identified as a key challenge that must be overcome in order to support business. To achieve this goal and to support the vision of Durham Region as the "high-tech innovation eastern gateway along the 401 tech corridor", the Economic Development Strategy and Action Plan identifies the Region and its area municipalities as facilitators of high-speed broadband.

3.5 Durham Region has historically supported the deployment of broadband infrastructure by successfully coordinating applications under the "Rural

Connections" broadband programs offered by the Province of Ontario. These programs focus on funding for projects that provide increased connectivity in rural areas.

4. Project Update

4.1 In March of 2017, an internal Steering Committee was established to provide oversight on the Regional Broadband Strategy. The Steering Committee includes representation from the Works Department, Finance Department, Corporate Services Department, Planning and Economic Development Department, and the Office of the CAO.

4.2 Phase One of the Region's Broadband Strategy was undertaken in order to better understand the current conditions within the Region and to identify the needs of businesses, residents, and government agencies. Phase Two will be undertaken over the coming months and will provide recommendations on the Region's role in the delivery of broadband and appropriate actions to support increased connectivity. Phase Two will result in the preparation of a final Broadband Strategy.

4.3 Actionable Intelligence Inc. was retained in late August of 2017 to assist the Region in the development of the Strategy. Consultation with internal departments and external stakeholders was conducted during the fall of 2017. Following the completion of consultation and secondary research, the attached report, entitled "Durham Region Broadband Strategy Development: Phase One Summary" (see Attachment #1) was completed. The Phase One Summary:

a. Identifies of the needs and trends of various broadband users within Durham Region;
b. Establishes the preliminary connectivity targets, based on the needs of users (based on historical bandwidth demand and growth);
c. Describes the current connectivity conditions within the Region, including service gaps where needs are not currently being met or are unlikely to be met in the future;
d. Discusses technology options to achieve connectivity; and
e. Identifies potential roles and projects the Region (and other stakeholders) may undertake to achieve increased connectivity.

5. Durham Region's Current Connectivity Conditions

5.1 A critical aspect of the Broadband Strategy was to assess the current connectivity conditions across Durham Region. By understanding the location and type of

broadband infrastructure and locations where service is lacking, priority areas could be determined.

5.2 Under ideal circumstances, ISPs would have provided detailed mapping and information regarding their broadband networks. However, since ISPs consider this information confidential and proprietary, the network information was not shared with the Region. In the absence of this proprietary network information, alternative methods were developed to assess connectivity conditions across the Region.

5.3 Actionable Intelligence undertook stakeholder consultation and data analysis to assess the current state of broadband connectivity. The data analysis consisted of assessing the highest level of Internet service offered by ISPs at over 600 residential properties and some small businesses. This analysis reveals that broadband services are generally available from at least one ISP within Durham's urban residential areas at speeds that meet or exceed the target for households and small businesses set by the CRTC (download speeds of 50 Mbps and upload speeds of 10 Mbps)[2]. Within Durham's rural areas, services are generally not available at the target speed. In the case of the Township of Brock, there were no locations that met the CRTC's target speeds.

5.4 Through consultation, stakeholders confirmed lower levels of service in rural areas. In addition, there was a strong focus on the challenges for businesses in achieving desired service levels at an acceptable cost. In particular, businesses described the ISP model that requires a business to pay for the extension of broadband service to their buildings as cost-prohibitive. Examples were provided of businesses that chose not to locate within particular employment/business areas in Durham due to limited broadband connectivity. Further details related to service gaps are outlined in Section 6.0 of the Phase One Report.

5.5 In addition to the gap analysis provided by Actionable Intelligence Inc., research conducted by other sources was considered. As part of Phase One, staff reviewed existing studies that characterize broadband connectivity within Southern Ontario. In this regard, Dr. Reza Rajabiun, a Research Fellow with the Ted Rodgers School of Information Technology Management at Ryerson University, has provided a separate memo entitled "Preliminary Analysis of the State of Broadband Internet

2 Download speed is the rate at which data is transferred from the Internet to the user's device. Upload speed is the rate at which data is transferred from the user's device to the Internet. Download speeds are typically higher than upload speeds, as most users download more data than they upload. A common measurement of download and upload speeds is megabits per second (Mbps).

Connectivity in the Durham Region" (see Attachment #2). Generally speaking, the findings, which are based on Internet speed measurements confirm that broadband connectivity is better in the urban areas, while the rural areas (and in particular Brock Township) have among the lowest levels of connectivity in the Greater Toronto Area.

6. Determining and Achieving Connectivity Targets

6.1 The Phase One Report describes emerging trends and needs of various sectors of broadband users. Based on these needs and trends, connectivity targets have been established for residential, business, and institutional / government users. These targets are based on five year intervals and reflect the general trend towards increasing connectivity across all sectors. The proposed connectivity targets are provided in the table below.

Timeframe	Residential	Micro & Small Business	Medium & Large Business, Institutional, Government and Post-Secondary Institutions
Current - 2022	50/10 Mbps	Up to 100/100 Mbps	Up to 1 /1 Gbps[3]
2023-2028	100/25 Mbps	Up to 500/500 Mbps	Up to 10 /10 Gbps
2029- 2034	150/50 Mbps	Up to 1 / 1 Gbps	Up to 50/50 Gbps

6.2 In order to achieve the proposed connectivity targets, the Phase One Report describes the range of potential roles that the Region could play in the delivery of broadband. These roles generally fall into one of the following three categories:

a. **Limiting the Region's role** by leaving the provision of broadband services solely to the private market;
b. **Providing a Supportive Role** by creating a collaborative environment, streamlining government processes, creating and maintaining a broadband information database, promoting communication between various levels of government and

3 A common measurement for download and upload speed is megabytes per second (Mbps). Higher speeds may be expressed as gigabytes per second (Gbps). 1 gigabyte is equal to 1,000 megabytes.

Internet service providers, and developing policies that support broadband deployment; and

c. **Establishing a Direct Role in Broadband Deployment** by acting as an anchor tenant in key locations, providing direct municipal funding, and/or deploying a municipal broadband network including the potential for leasing excess capacity.

6.3 A more thorough description of the potential roles is provided in Section 8.0 of the Phase One Report. An evaluation of each of the roles and a recommendation on the preferred roles for the Region will be addressed as part of Phase Two.

7. Conclusions and Next Steps

7.1 Phase One of the Broadband Strategy is complete. The Phase One Summary report will be circulated to the Area Municipalities and electronically provided to all stakeholders that participated in consultation (e.g. representatives from public utility corporations, post-secondary institutions, health care, etc.). Comments on the Phase One Report will be taken into consideration as part of the next phase of the project.

7.2 Phase Two of the Regional Broadband Strategy has been initiated. Phase Two focuses on evaluating and scoping the various roles and actions for the Region identified through Phase One, developing an implementation plan, finalizing connectivity goals, and delivery of the final Broadband Strategy in the fall of 2018.

8. Attachments

Attachment #1:	Durham Region Broadband Strategy Development: Phase One Summary, Actionable Intelligence Inc., February 21, 2018
Attachment #2:	Memorandum: Preliminary Analysis of the State of Broadband Internet Connectivity in the Durham Region, Reza Rajabiun, LLM, PhD, March 19, 2018
Attachment #3:	Glossary of Technical Terms

Respectfully submitted,

Original signed by

B.E. Bridgeman, MCIP, RPP
Commissioner of Planning and
Economic Development

ACTIONABLE
INTELLIGENCE
inc

Durham Region Broadband Strategy Development
Phase One Summary

Actionable Intelligence Inc.
Laura Bradley
Maureen O'Higgins

Date: February 21, 2018

Table of Contents

Appendices

1.0: Executive Summary

Phase One of the Broadband Strategy for the Regional Municipality of Durham was to assess the current conditions of broadband internet across the Region and to review current user and technology trends. During Phase One, over 100 individuals were engaged through stakeholder consultation and over 600 residential properties were surveyed to assess Internet service availability. Through this work, Durham Region's current connectivity conditions can be described as follows:

- Most urban residential areas have access to broadband service that meet or exceed the current target set by the Canadian Radio-television and Telecommunications Commission (CRTC).
- Rural Durham, as a result of the broadband technology deployed in these areas, generally do not have service available that meet the CRTC target.
- Many businesses indicated that the cost of paying for the capital build to their building/premise was too expensive for them to take advantage of new broadband technology (i.e. fibre). Smaller businesses often have to complete a cost benefit to determine if the capital cost can be justified. Due to the high capital cost of building such infrastructure, ISPs often do not build the infrastructure before a business requests the service.

Based on a review of the current and future needs of broadband users and industry trends, preliminary connectivity targets have been established. In order to achieve these targets, a range of roles, projects and programs have been identified that the Region, and partner municipalities, may undertake in order to support broadband deployment. These roles range in scope, commitment, and cost.

Phase Two of this project will culminate in the preparation of a Regional Broadband Strategy. The Strategy will outline an implementation plan and scope the roles and actions required by stakeholders in order to enhance connectivity in support the Region's connectivity targets.

2.0: Introduction

The global economy, and society as a whole, is becoming increasingly digital and online. Government services, business functions, and entertainment options are continuing to evolve into online digital formats. As a result, access to high speed broadband[1] Internet is increasingly being recognized as a crucial driver in the quality of life for citizens and the economic competitiveness of communities.

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[1] Broadband generally refers to Internet service that is always on and available at higher speeds than traditional dial up Internet services. There are several forms of broadband Internet service including Digital Subscriber Line (DSL), Cable, Satellite and Fibre-Optic. A review of the various technology options for broadband services is provided in Section 7.0 of this report.

In December 2016, the Canadian Radio-television and Telecommunications Commission (CRTC) ruled that access to broadband Internet is a basic service that should be available to all Canadians. In addition, CRTC has established a 2021 broadband service target that 90% of all Canadian households and small businesses of have access to 50 mbps download[2] and 10 mbps upload speeds with an unlimited data cap.

In early 2017, Durham Regional Council directed staff to undertake the preparation of a Regional Broadband Strategy. The purpose of the Broadband Strategy is to understand the current conditions within the Region, identify the needs of businesses, residents and government agencies, and provide recommendations on necessary actions in order to achieve increased connectivity.

The following objectives were established to guide the project:

- Identify broadband needs of government entities, businesses and residents and ensure there is affordable, equitable connectivity throughout the region.
- Identify the broadband infrastructure required to ensure businesses, students and all residents in Durham can remain competitive and grow in an increasingly connected world.
- Identify the types of projects that are of interest to the private and public sectors. Include justification for investments in broadband infrastructure that improves service delivery and enhances the Region's economic competitiveness.
- Foster a culture of collaboration among Regional, area municipal, and private sector broadband initiatives.
- Identify current trends and future scenarios of connectivity in order to ensure the Region is future-focused.
- Develop a business model that emphasizes a collaborative approach to encouraging private and public investments in connectivity.
- Consolidate information and data to ensure the Region and area municipalities are 'application ready' for funding opportunities similar to the Government of Canada's Connect to Innovate program.

3.0: Overview of Phase One of Strategy Development

The development of Durham's Broadband Strategy is being carried out in two phases. The focus of Phase One was to undertake the necessary consultation and secondary research in order to understand the current conditions and the needs of broadband users within Durham Region. By understanding the current and future needs of users as well as the availability of broadband and any associated service gaps, strategic directions and priorities can be identified.

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[2] Download speed is the rate at which data is transferred from the Internet to the user's device. Upload speed is the rate at which data is transferred from the user's device to the Internet. Download speeds are typically higher than upload speeds, as most users download more data than they upload. A common measurement of download and upload speeds is megabits per second (mbps).

The following was undertaken as part of Phase One:

- **A Needs Analysis** identifying the needs and interests of public and private sector stakeholders, as well as current trends in residential, business, and institutional sectors. The Needs Analysis primarily relies on the results from stakeholder consultation and secondary research.
- **A Gap Analysis** identifying current broadband services and various gaps in service delivery within the Region. Service availability and associated gaps were identified through consultation sessions and Internet service data analysis.
- **An Assessment of the Appropriate Roles and Scope** that should be taken by the Region and area municipalities to enhance and support the delivery of broadband services. Stakeholder consultation and secondary research was used to identify a range of potential roles the Region and area municipalities could undertake to assist in the deployment of broadband infrastructure.
- **An Analysis of "Intelligent / Smart Community"** initiatives and awards, and the associated potential benefits and economic impacts. This analysis primarily relies upon secondary research.

Stakeholder consultation played an important role in Phase One of the project. A series of stakeholder consultation sessions were held during September and October of 2017. There was broad representation from the following groups that attended one or more of the stakeholder sessions:

- Various departmental staff from the Regional Municipality of Durham
- All area municipalities
- Libraries
- Emergency services (Police, Fire, Emergency Medical Services)
- Post-secondary institutions
- Healthcare organizations
- Public utility corporations
- The business community (through economic development organizations, boards of trade, chambers of commerce, business improvement area associations as well as business owners and operators and the Durham Agricultural Advisory Committee)

These stakeholder groups were selected because they were able to provide a profile of government, institutional and business user needs for broadband Internet services across the Region. Internet Service Providers (ISPs) were also consulted on an individual basis, recognizing that their business plans and infrastructure may be confidential. The major ISPs that operate in Durham were contacted several times, but chose not to participate. While residents were not directly consulted, the needs and gaps within the residential market were assessed through secondary research and data analysis, which is discussed later in the document.

Over 100 individuals were engaged through in person or telephone-based consultation. In addition, during the first three weeks of November 2017, a comment sheet was made available for stakeholders that were unable to attend a consultation session, or for those wishing to provide additional comments. Over 100 completed comment sheets were received.

4.0: Identifying User Needs

A needs analysis was conducted in Phase One to identify user expectations of broadband services within Durham Region. This analysis was developed through stakeholder consultation and secondary research on industry trends, with the goal of identifying current and future needs.

Four sectors were examined to identify market trends and user needs, as follows:

- Government
- Institutions
- Business
- Residential

A Durham Region context map is provided in Appendix #1.

4.1: Trends Affecting All Sectors

Across all sectors, video is the largest component of internet bandwidth[3] use. Video use is commonly associated with entertainment, but is also increasingly used for functions such as educational/instructional, medical, conferencing, training and security.

Other drivers of bandwidth demand across all sectors include cloud computing and the Internet of things[4] (IoT). Cloud computing is an emerging information technology that allows computer functions that are hosted elsewhere to be accessed over the Internet. Examples of cloud computing include retrieving data or using computer applications (programs) that are hosted at a central location, which are accessed remotely using an Internet connection. Cloud computing relies on Internet connectivity and is a driver of increased broadband requirements.

The Internet of things (IoT) is a general term used to describe a broad range of devices that are constructed with embedded electronics, software, and sensors that connect to a network in order to exchange data. IoT is used in a vast range of applications across

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[3] In computer networks, bandwidth is used to describe the amount of data that can be carried from one point to another in a given period of time. A common measurement is megabits per second (Mbps).

[4] The Internet of Things (IoT) uses sensors to collect data from a variety of devices (for example, street lights, parking spots, water systems). The data is then used to manage the assets that the sensors are attached to. The data is transmitted over the Internet to another location where it is received and processed.

many sectors, but can generally be divided between consumer, business, and infrastructure. The implementation of IoT technologies requires Internet access to transmit the continuous exchange between individual devices and the servers / computers in the network.

4.2: Regional and Area Municipal Governments

Regional and area municipal governments are evolving their business models to continually adopt information technology into their services and operations. There is an increasing reliance on broadband connectivity to optimize government's core business operations as well as to offer e-government services to residents and business.

A 2015 report on e-government for the European Parliament indicates that Information and Communications Technologies (ICT) can improve processing efficiency and result in cost savings for municipalities.[5] This document also indicates a reduction in administrative burden, by making it faster and less expensive for citizens to interact with government. E-government can also increase transparency which is considered an advantage of this model. The Association of Municipalities Ontario (AMO) also released a paper in August of 2017, entitled "#OnMuniOnline Towards Digital Transformation and Opportunities for Ontario's Municipal Governments", outlining trends and the adoption of technology and e-government by Ontario municipalities. Municipal governments in Ontario are in varying stages of the shift toward digital transformation and e-government services. Initiatives and experiences of other municipalities will be considered in Phase Two when developing proposed recommended approaches for Durham Region.

4.2.1: Connectivity Required for Municipal Operations

Most government operations and facilities require broadband connectivity in order to provide the services for which they are responsible. Municipal governments are constantly reviewing the needs of various facilities and assessing required enhancements to ICT infrastructure in order to support their operations. Broadband connectivity is necessary to support ICT, including the increasing trend towards centralizing municipal service centres.

In many cases, the storage of information at centralized data centers requires constant communications between multiple locations. This type of Internet traffic and connectivity is driving the need for greater speeds and capacity in municipal networks. The following municipal applications are increasing the need for broadband connectivity:

- **Traffic Management:** traffic signals programmed and managed remotely from an operations centre, requiring real-time connectivity.

[5] E-Government, Using Technology to Improve Public Services and Democratic Participation, European Parliamentary Services Research, 2015.

- **Transit Stops and Stations:** connectivity may be provided along transit stops and stations to provide real-time travel data.
- **Geographic Information Systems:** visual, data intensive systems that provide mapping and data analysis tools to inform decision making, requiring high-speeds of connectivity to be useful in the field.
- **Smart City Platforms:** the increasing adoption of sensors, information technologies and applications including Internet of things (IoT) for real-time monitoring and management of municipal infrastructure and service systems by municipal departments. Services such as water, traffic lights, road salting, and others, are moving towards IoT technologies.
- **Web-Based Applications:** web-based applications and backups, including cloud services, are allowing municipalities to increase collaboration opportunities while managing costs.[6]
- **Field Operations:** increasingly, municipal staff need real-time access to data in the field to access, update, or create information. These requirements range from public health staff requiring access to client records, to public works staff updating infrastructure related information.
- **Public Works Facilities and Depots:** access to online repair manuals and online parts catalogs are now required. They use software tools to schedule road maintenance and snow and ice management. These facilities may use software as a service (SaaS), backup their data offsite, and access systems located at a central administrative site. Operating systems and software must also be updated regularly. All of this requires broadband connectivity, sometimes to rural locations.
- **Video Surveillance:** cameras at major intersections and municipal facilities generate very large volumes of data and contribute to connectivity requirements.
- **Pervasive Video:** municipalities are increasing their use of video for collaboration, communications, training, citizen interaction, security management, and entertainment. Increasing video quality and pervasiveness contribute significantly to data capacity requirements.

4.2.2: Connectivity required for e-government Services

Municipal and regional governments are deploying e-government services to provide enhanced service access for their citizens. E-government services that are available from "anywhere at any time" have the ability to increase citizen involvement and may solve certain accessibility constraints. In jurisdictions where there is less service capacity or where there is unequal access to e-government services, there will be an expectation that government at all levels should be working towards correcting the problem.

The following list includes examples of e-government services that contribute towards increasing broadband requirements[7]:

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[6] York Region Broadband Strategy

- **Web sites and social media presence:** provides a high volume of information on government services and programs while managing cost. Government websites that host consistent up to date information can result in reduced telephone inquiries, optimizing staff resources.
- **Self-service tools:** allows access to government services online. Typically results in lower processing cost per transaction. Self-service tools can be provided over the municipal website or with mobile apps.
- **Online recruiting:** online recruiting applications are frequently used by municipal governments and can be linked to external recruitment sites such as Ontario Municipal Jobs, Glassdoor or Workopolis, specific trades recruiting sites, and to social media (most commonly LinkedIn).
- **Electronic tendering:** E-tendering is frequently contracted out to suppliers such as eSolutions, Bravo Solutions, Bidingo or others. As proposal documents may be received in electronic form, appropriate connectivity is important.
- **Electronic invoicing and payment:** these services require reliable Internet connections to ensure that interruptions do not occur while a transaction is in process. Providing electronic invoicing and payment reduces administrative costs per transaction.
- **Internet voting:** municipalities normally partner with voting service providers for Internet voting. Residents must have Internet access to cast a vote. Normally public voting locations are also established. Either paper or electronic voting systems can be deployed at these locations. Electronic voting sites will need a reliable Internet connection.
- **Open data:** open data provides access to specified municipal data. The information accessed through municipal open data portals includes mapping, traffic and transit information, and land use and planning data. Mapping and GIS data files can be quite large. Adequate bandwidth is required to support open data. The Region, as well as certain area municipalities, are currently providing open data programs.
- **Video recording and live streaming of Council meetings:** these practices enhance transparency and accessibility of Council proceedings. Adequate upload capacity is required at municipal site and adequate download capacity at the location of the citizen accessing the video.
- **Remote participation at Council meetings:** this is two-way video activity, allowing participation to be conducted remotely. Adequate capacity must be available to support good quality video transmission. As of January 1, 2018, the Modernizing Ontario's Municipal Legislation Act, 2017 will allow municipal Councils and certain local boards to provide for electronic participation by members at council, local board and committee meetings that are open to the

[7] EORN E-Government Toolkit

public, provided that electronic participants are not counted for quorum purposes.[8]

- **Public Wi-Fi at municipal sites:** many municipalities provide Wi-Fi at all municipal sites (administration buildings, recreation facilities, works facilities, health facilities, and others). Some also provide public Wi-Fi in outdoor public spaces. With the proliferation of devices and increasing use of video, the amount of traffic to be supported on public Wi-Fi is growing rapidly. It is important to ensure sufficient backhaul capacity to support high quality service. Public Wi-Fi was recently launched at Regional Headquarters.
- **Libraries:** libraries provide pubic Internet access (fixed and Wi-Fi) and Internet connectivity for their own operations as well as web services (account management, library catalog, eBooks, etc.). Libraries are very large data users.

E-government has the potential to help build better relationships between government and the public by making interaction with citizens smoother, easier, and more efficient. Mass adoption of social media has facilitated promotion of citizen engagement and participation through e-government. Access to information, legislation and open data requires that government facilities have adequate broadband capacity to transfer data in a reasonable time frame. The provision of e-government services is also dependent on residents and businesses having suitable broadband Internet capabilities to access the services.

4.2.3: Additional Considerations for Regional Government

Consultation was conducted with the Region of Durham's various departments including representatives from Corporate Services, Finance, Health, Planning and Economic Development, Social Services, Works and the Office of the CAO. Consultation included discussions about current and future service needs and expectations.

Indications are that most of the Regional facilities (see Appendix #2), particularly those in the urban area, have good connectivity. Currently, 75 of the Region's facilities are served by a wide area network (WAN) service from Bell with another 65 locations served by wireless infrastructure. There are some rural locations that do not have access to the same high capacity services as urban facilities. Currently, this does not appear to be creating significant issues in service delivery or systems implementations. However, in future, consistent low bandwidth at rural facilities may inhibit full deployment of some business services that the Region may want to implement.

It was suggested that a comprehensive assessment of the Region's facilities, broadband assets, needs, and current Internet service agreements would beneficial. A thorough inventory of each department's needs is necessary, given that the Region's

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[8] http://www.ontla.on.ca/web/bills/bills_detail.do?locale=en&BillID=4374 http://www.noma.on.ca/upload/documents/6-2017-nworc.pdf, https://www.eorn.ca/en/resources/e-Government-Toolkit/EORN_eGovernmentToolKit2017_3.pdf

requirements for high capacity connectivity at most locations are expected to increase. Emerging projects such as implementing Office 365, video court proceedings, the deployment of police body-worn cameras, and the increase in Regional government e-services (including the move towards open data) will increase broadband service needs. As part of this assessment, the Region should consider opportunities where strategic investments in infrastructure may also help support the needs of area municipalities as well as increasing the availability of broadband infrastructure for businesses and residents.

The Region of Durham owns and operates a fibre optic network along major arterial roads with plans for further deployment (Appendix #3). This fibre infrastructure is used for traffic management purposes (including transit and traffic signals and cameras) and communication to the central traffic management centre. In new fibre installations and certain road projects, the Region has also installed a spare conduit, in anticipation of future needs. The current network does not currently provide connections or services to other Regional facilities.

Through consultation, there was a desire expressed by some representatives of the area municipalities for the Region to share its existing fibre and conduit infrastructure. Area municipal staff felt that this infrastructure should be leveraged to support municipal connectivity needs and economic development. Discussions with Regional staff indicated that this infrastructure was designed and constructed for traffic management purposes, with planned capacity to accommodate future Regional needs. As part of a comprehensive review of the Region's broadband assets and needs, an assessment should be undertaken to determine whether or not there is sufficient capacity to accommodate all anticipated future Regional needs, and consider the potential of sharing the infrastructure with other parties. The evaluation should also address the legal, technical, financial and administrative considerations for establishing such an arrangement.

4.3: Libraries

Libraries have evolved from book lenders to multimedia resource centers. In addition to traditional book lending and program offerings, they are a place where people can access and learn about technology that they may not have at home. Many libraries offer digital literacy training for seniors, coding programs for children and other programs that use information technology. Internet access is available on library computers and/or devices as well as client's devices accessing library supplied Wi-Fi. Some libraries also lend communications equipment such as Wi-Fi routers or tablets.

A growing trend in libraries is to provide "Maker Spaces", a workspace where people gather to make, learn, tinker and explore. These spaces can be very basic, or can offer tools and technologies like 3D printers/scanners, sewing machines, robotics, sound

rooms or laser cutters.[9] Other services dependent on the Internet such as Qello (streamed concerts) or Skype interviews with authors are sometimes provided.

Libraries play a key role in enabling municipalities to help bridge the digital divide - they provide Internet access and communications tools to residents who may not have Internet services at home for reasons of cost or availability and for residents who want to meet and use the Internet together (students, friends, book clubs or business start-ups in their initial stages). Library users may access the Internet on multiple devices, often for data intensive activities such as video or gaming. As a result, modern library use is very bandwidth intensive. To provide the level of service that their clients need, libraries generally require high-speed, high capacity broadband service.

Within Durham Region, libraries are operated by the area municipalities. Representatives of six municipal libraries participated in the stakeholder consultation process. Broadband demand at libraries has been growing significantly year-over-year and it is expected to increase rapidly. Several libraries indicated broadband Internet use is increasing by roughly 30% per year. Representatives from rural libraries noted that the lack of suitable broadband services can limit the applications and programming that they are able to provide to customers. It was suggested that services to rural libraries should be improved in order to enable similar programming to what is available in Durham's southern urban areas.

4.4: Healthcare Organizations

Primary care physicians, specialists, community care access centres, long-term care facilities and pharmacies require broadband Internet access to fulfil their service delivery requirements. Hospitals have heavy data connectivity requirements, which are expected to continue to grow rapidly. Management and the communication of electronic medical records is data intensive. In particular, medical images are large data files that must be transmitted to various parties. Broadband is also used for research, voice over Internet protocol (VoIP)[10], and in-hospital Wi-Fi for staff, patient and visitor access.

Picture Archive and Communication Systems (PACS) are used for management of medical images and require high capacity bandwidth connections. Dark fibre is the preferred connectivity option for connecting PACS to a hospital network. Ontario hospitals typically use fibre broadband connections through provincial facilities such as the e-health Ontario ONE Network but may also buy connections from commercial providers. As they are large purchasers of bandwidth and predictable customers, commercial providers are typically willing to provide service to the health care sector.

Medical providers are increasingly interested in the potential of providing medical services remotely, allowing health care to be provided from a distance through the use

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[9] https://blog.learningbird.com/future-public-libraries-emerging-trends/

[10] VoIP is technology that enables telephone calls over the Internet. It can provide cost savings over other telephone systems.

of telecommunication and information technology. Internet based health care services are data intensive and require broadband connectivity, both at the health care facility as well as at the residence of practitioners working from home. In addition, patients require access to broadband in order to access health care e-services from their home.

Representatives from Lakeridge Hospital and the Regional Health Department participated in stakeholder consultation. Many of the broadband trends in medical care across Ontario are present in Durham Region. All five Lakeridge hospital sites are currently connected through the e-Health Ontario ONE Network at sufficient connectivity levels. Practitioners are interested in working from home, but connectivity to residential locations varies significantly, and may present challenges. It was also noted that residential connectivity, particularly in northern Durham, may be a hindrance to the deployment of Internet assisted health care services.

4.5: Emergency Services

Emergency service providers have a strong demand for broadband especially with new applications and services to support their operations. Call volumes are large and growing. Communication with hospitals and emergency medical service (EMS) stations will become more data intensive as the use of video on service calls grows. Video is also being used in stations for training.

Secondary research indicates that emergency services are evolving toward applications that include real time medical file access, intense video and imaging to hospitals and specialists for incidents in the field. Emergency services are a bit of unique situation as they need high capacity services to buildings, but they will also require mobile services. The Federal government has allocated a specific spectrum of frequencies to serve emergency service providers, with the Provincial government being tasked with building the network infrastructure for Ontario. A dedicated fixed radio channel will ensure that first responders have a network to meet their mobility needs while in the field.

In Durham Region, police and paramedic services are provided by the Region of Durham, with fire service provided by the area municipalities. Representatives of the Region of Durham Paramedic Services, Police, and Emergency Management Office, as well as representatives from the fire departments of two area municipalities, participated in consultations. The following input was gathered:

- Paramedic call volume is 130,000 per year. Each form has to be electronically pushed to the recipient hospital. The speed of data transfer affects patient care.
- Fire halls and paramedic services use video for training. There can be many simultaneous users viewing high-resolution video, requiring high bandwidth.
- Larger facilities require fibre services to deliver reliable high bandwidth connection. The new EMS station in Sunderland was specifically referenced as lacking adequate fibre services.
- There is a desire for staff to be able to bring their own devices to work, but there is generally not enough capacity to provide Wi-Fi.

- Expectation that EMS wired/land facilities and mobile facilities can complete a transfer of service (from mobile terminals to terminals at stations / buildings). The Federal Public Safety Broadband Network Task Team is working on a potential solution for Canada[11].
- In vehicle cameras are on the horizon and will be required to transfer video.

4.6: Post-Secondary Institutions

Universities and colleges are extremely heavy Internet users and require high capacity, high speed Internet connections. Research activities, many involving big data analytics and other data intense methods, the proliferation of devices on campus (many students use 3 or 4 devices at a time), video viewing (the largest component of traffic on most university and residential networks) and gaming all contribute to data usage. There is also extensive use of cloud services by post-secondary institutions for staff and students.

In Ontario, universities have access to the ORION[12] and CANARIE[13] research networks. They also use commercial networks for some applications. Based on consultation, Post-secondary institutions in Durham appear to be able to meet their broadband requirements through their existing providers and service agreements.

Representatives from the University of Ontario Institute of Technology (UOIT), Durham College and Trent University Durham Campus participated in the stakeholder consultations. As places of research, higher learning and with large numbers of users, educational institutions have high bandwidth needs and are currently having those needs satisfied by providers and they expect that ISPs will be able to continue to meet their needs. It was noted, however, that students require adequate connectivity from their home in order to complete their work (access to material for in-person courses and online courses). Students understand the need for connectivity and do not typically register without adequate connectivity or find solutions such as moving to the urban area or utilizing on-campus services.

4.7: Public Utility Corporations

Local Distribution Companies and Ontario Hydro provide electricity distribution to users in Durham Region. Local Distribution Companies operate hydro networks that use substations to control the distribution of power, and may also build fibre networks to support their operations. For example, fibre networks are often used to monitor substations. In some jurisdictions, Local Distribution Companies have built fibre optic

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[11] https://www.publicsafety.gc.ca/cnt/mrgnc-mngmnt/psbn-en.aspx

[12] ORION is a non-profit high-speed, fibre-optic network dedicated to supporting research, education and innovation in Ontario. https://www.orion.on.ca/about-us/

[13] CANARIE along with twelve provincial and territorial network partners form Canada's National Research and Education Network (NREN). This digital infrastructure connects Canadians to national and global data, tools, colleagues, and classrooms that fuel the engine of innovation in today's digital economy. https://www.canarie.ca/network/

networks that provide broadband/telecommunication services beyond their own needs and are providing services to other users.

Representatives from Veridian Connections (which serves Ajax, Pickering, and the urban areas of Clarington, Uxbridge, Brock and Scugog), Oshawa PUC and Whitby Hydro participated in consultations. Veridian owns fibre infrastructure, but does not sell or lease fibre services to other users. Veridian uses cellular-based monitoring for their smart metres, but will require additional fibre services for a planned substation in Seaton in 2019 and would be interested in partnering with others. Oshawa PUC owns a fibre network consisting of 95km of fibre with a dark fibre backbone. This backbone extends into portions of Whitby's employment areas, serving the PUC's needs and supporting municipal services. Whitby Hydro does not operate fibre, instead relying on cellular-based smart metres.

The general direction indicated by the consulted public utilities corporations is that there will be a requirement for them to have connectivity to support their substation controls and other operating activities. In addition, the utilities recognize an imminent impact from the Internet of Things and the move to connect more assets and utility functions. Utilities are already using sensors to monitor some assets in their networks and this practice is expected to grow significantly.

Utility staff indicated there may be a need to be working more co-operatively with municipalities and ISPs. As owners of poles and underground infrastructure, utilities can play an important role in many different scenarios for broadband deployment. Opportunities for partnerships and collaboration with public utility corporations should be given further consideration as well as opportunities for coordination between electrical, gas, and water services.

4.8: Businesses

There are few businesses that do not use the Internet in some manner to support their activities. In the 21st century, the most basic tasks are being driven online. Many businesses are pressured by customers and suppliers to use certain systems or software for inter-operability[14] and to process transactions online. Everything from messaging, advertising, ordering, fulfillment, banking, funds transfers, training, customer management (as well as other functions) can now be done online. Video use is also increasing for businesses through teleconferencing, security, customer support for operations and creative activities.

Broadband requirements correspond with the industry sector and business size, however, most businesses are requiring higher speed and higher capacity Internet services as time goes on. Businesses of all sizes and types are establishing and expanding their online presence as well as incorporating new technologies and

[14] For example, to work with a vendor that only processes online orders, a buyer needs Internet access and needs to use software that works with the vendor's software.

applications into their operations. Interruptions caused by a slow connection or lack of connection is costly, and can be measured in lost productivity, lost revenue, inefficiencies and an external perception of lack of professionalism.

There are multiple factors that drive the need for increased broadband capacity for businesses. A report from Spectrum Enterprise, a large American Internet service provider, indicates "more than three out of four midsize companies describe their business as being "network dependent,"[15] which is a strong indication of the reliance businesses place on connectivity and associated services/applications. The report goes on to list the following ten areas as the drivers of additional bandwidth for businesses:

1. Cloud computing: Storage, customer relations management, collaboration, email, sales force automation, etc.
2. Bring your own device (BYOD): employees bring their personal devices to work which use workplace Wi-Fi for Internet connectivity.
3. Remote workers: workers in the field, working from home or offsite.
4. Unified communications: integration of phone, voicemail, email, text messaging and fax.
5. Video: conferencing and streaming.
6. Social Media: platform for engaging customers and influences decision making
7. Big data: marketing and operating data.
8. Backup and Recovery: offsite storage and alternate backups.
9. Security: including denial of service attacks which consume large bandwidth
10. Desktop Virtualization: enabling access to employee desktop from any device, anywhere.

For small businesses[16], bandwidth needs depend on the number of employees, the types of applications they use, and the connectivity needs of equipment and devices that the business implements. The more data transmitted by each employee/device, the higher bandwidth connection the business will require. Typically, small business usage will be slightly higher than residential usage, but in most cases, the need for a reliable Internet connection with limited interruptions and downtime will be greater than residential users.

Broadband requirements typically increase as businesses grow. The broadband requirements for medium to large businesses are usually much higher than residential requirements, given that each employee may require Internet access. While there can be differences between industry sectors, the lines are becoming blurred and in most cases, any business that has multiple employees with computers has increasing capacity needs.

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[15] Planning for the New Network, Spectrum Enterprise, https://enterprise.spectrum.com

[16] Industry Canada defines micro-enterprises as 1 to 4 employees; small business as 5 to 100 employees; medium business as 101 to 499 employees and Large business as 500-plus employees.

Two consultation sessions were held with the business community. Representatives from economic development organizations, business improvement areas (BIA's), chambers of commerce and individual business owners and operators participated in consultation. The following input and general themes emerged from the consultation process:

- Broadband services including fibre based services for businesses are available in parts of the Region's urban areas.
- There are service gaps in or near urban areas where infrastructure is old and has not been upgraded by ISPs.
- Poor connectivity can result in lost business, additional cost, and an unprofessional image to clients / consumers.
- Consistent, high capacity broadband service is required to attract investment to the Region. Potential business investments have been lost because of the inability to obtain the required broadband connectivity at an acceptable cost.
- Businesses would like access to a source of data on where broadband service is available. Currently, finding this information can require considerable research.
- Some businesses have high-speed services but believe that the monthly service price is too high.
- Many micro-enterprises (1-4 employees) and small/medium businesses find the price and practice of having to pay for the initial connection of fibre to their building (the capital cost) excessive and unfair.
- Pricing appears to be reasonably consistent across ISPs in a given area.
- Business broadband can be expensive. As broadband is essential to operating a business, the cost of not subscribing can be even higher.
- Businesses felt that including fibre as part of new development would result in the reduction in future cost and the time required for retrofits to install services at a later date.

4.8.1: Rural Businesses

Durham Region includes a prosperous rural and agricultural economic base, sustained by a substantial amount of prime agricultural lands. Durham's rural areas house a number of businesses, which includes:

- Agricultural and agri-businesses such as farm operations, farm equipment sales, farm produce direct market, crop inputs and processing facilities;
- Home-based businesses;
- Businesses operating in rural employment areas, such light manufacturing, prestige industry, product warehousing and distribution;
- Businesses operating in hamlets, which typically includes retail, commercial and serviced based industries.

Rural businesses appear to have unique broadband connectivity challenges. Generally speaking, rural areas have limited service provider choices as well as lower service speeds that are often at higher prices. This is largely the result of an insufficient

business case for ISPs to extend or upgrade broadband infrastructure to these areas, due to lower customer densities and thus less revenue potential.

Rural businesses are also predominately small businesses, with 10 employees or less[17]. In many cases, this makes the cost for the business to extend broadband services prohibitive. The following additional themes emerged through consultation with rural businesses, including the Durham Agricultural Advisory Committee:

- Rural businesses including farms and agri-businesses need access to high speed, reliable service. Some rural businesses and telecommuters cannot access adequate broadband services.
- Agriculture is becoming increasingly high-tech and farmers in Durham need better broadband and mobile service.
- High capacity services are generally not available in rural areas.
- Prices are often higher in rural areas than in urban areas.

4.9: Residential

Residential data usage has been rapidly increasing over the last decade. Video, social media, smart home requirements and the increasing number of devices that utilize an Internet connection all contribute to this growth in traffic. Broadband connectivity has become central to many Canadian's lives and for many people is important to economic activity, education, healthcare and social interaction. Figure 1 below illustrates the primary drivers of Internet use within the residential market.

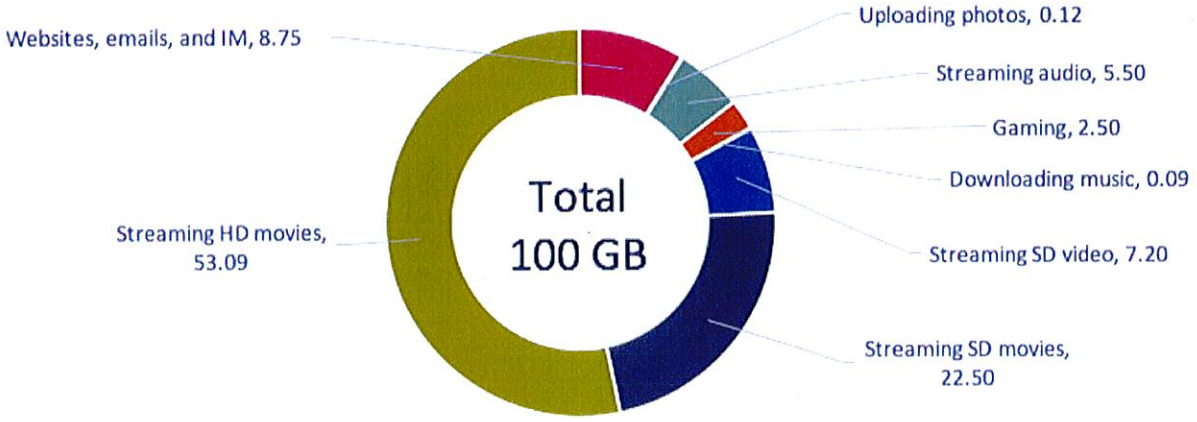

Figure 1: GB used per service per month (Source: CRTC Communications Monitoring Report, 2017)

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[17] Vibrant North Durham Economic Development Plan 2013-2018, from: https://www.durham.ca/en/doing-business/resources/Documents/EconomicDevelopment/VibrantNorthDurhamPlan.pdf.

According to Canada's Internet Factbook 2017, 46% of Canadians had 5 or more Internet connected devices in their homes, as shown in Figure 2 below. As the number of devices accessing the Internet continues to increase, there is a corresponding requirement for higher household network capacity and speed.

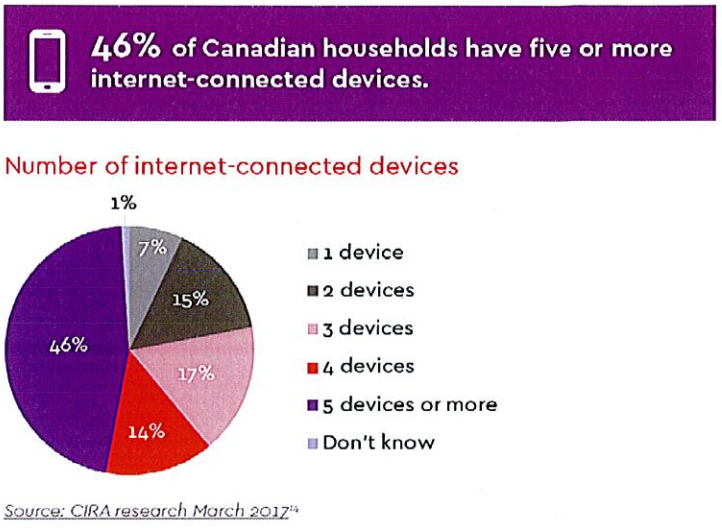

Figure 2: Number of Internet connected devices in Canadian households (2017)

As of December 2016, 84% of Canadian households had access to Internet service that meets the CRTC's target speed of 50Mbps download and 10 Mbps upload, including the availability of unlimited monthly data usage[18]. The availability of service at the target service speed is highly divided between urban and rural locations. Within urban areas, 96% of Canadian households are able to access service that meets the targeted service level. Conversely, only 39% of rural households have access to such services.

Despite the availability of high speed Internet service to the majority of Canadian households, relatively few subscribe at the CRTC's target service level. According to the CRTC Communications Monitoring Report (2017), only 11% of Canadian households subscribe to this level of service. Although it is the CRTC's objective to have 50/10 Mbps service available, many individuals choose to subscribe to a lower service level.

Across Canada, households located in rural areas generally have fewer options related to service levels and service providers. On a national average, rural subscribers have a choice of 3.1 providers, while urban subscribers may choose form 5.3 providers.[19] It is

[18] https://crtc.gc.ca/eng/publications/reports/policymonitoring/2017/cmr5.htm#f5512
[19] http://www.crtc.gc.ca/eng/publications/reports/policymonitoring/2016/cmr5.htm#a53ix

evident that rural areas are in some ways disadvantaged as they have less competition, slower speeds (and in some cases older networks) and often higher prices.

4.10: Internet Service Providers (ISPs)

Four Internet Service Providers (ISPs) participated in consultation, however, the two dominant providers did not agree to participate and have not expressed a willingness to share information on their network infrastructure. Communications with service providers was confidential; however, general conclusions about how ISPs deploy broadband infrastructure emerged from these discussions. ISPs have difficulty ensuring consistency across large geographic areas. Further, networks are not constructed around municipal boundaries and it is therefore complicated and costly for a provider to upgrade service to an entire municipality.

Providers who own, invest and operate broadband infrastructure have to make decisions every year related to their constrained capital budgets. Often the locations that receive the newest technology are those that have sufficient demand and customer densities to warrant investment. This is generally not coordinated and the provider makes an assessment based on the information they have (calls from customers, anchor tenant requests such as government facilities and sometimes from road reconstruction or new build areas).

When the potential revenue is limited to a single customer or even a small handful of customers the decision to install upgraded services may not be justifiable from a business case perspective. When extending new fibre to a customer does not promise to provide sufficient revenue to justify the cost of installing the infrastructure, the customer is sometimes asked to pay for some or all of the cost. These costs can be high (tens of thousands of dollars is not uncommon) and often out of reach for an individual residence or business. This is particularly challenging in rural areas, where customer densities are low.

New providers are looking at areas of Durham and assessing their opportunities and how they may be able to deliver competitive services at lower prices. Some of the providers indicated they are willing to continue discussions with the Region and municipalities on future collaborative opportunities.

5.0: Preliminary Connectivity Targets for Durham Region

It is recommended that the Region of Durham adopt the CRTC established baseline service level target of 50/10 Mbps with an unlimited data cap for residential users. As documented in the needs assessment, business, educational and institutional users have broadband requirements that exceed the residential baseline targets. For these users, higher broadband connectivity targets are recommended.

Realizing that user needs are anticipated to increase rapidly, modelling based on industry standards was applied to project future needs over the next five and ten year

periods. Actionable Intelligence is recommending the following connectivity targets be considered:

Timeframe	Residential	Micro & Small Business	Medium & Large Business, Institutional[20], Government and Post-Secondary Institutions
Current - 2022	50/10 Mbps	Up to 100/100 Mbps	Up to 1 /1 Gbps[21]
2023-2028	100/25 Mbps	Up to 500/500 Mbps	Up to 10 /10 Gbps
2029- 2034	150/50 Mbps	Up to 1 / 1 Gbps	Up to 50/50 Gbps

Table 1: Preliminary Connectivity Targets

The needs of businesses and institutional users can be difficult to predict and are often dependent on the number of employees and industry sector. The proposed targets have been selected based on what is considered reasonable industry expectations and what users expressed as their needs through consultation. Consideration was also given for the evolution of technology and the length of time newer technologies take to be widely deployed within the Canadian market.

As part of Phase Two and the development of the Broadband Strategy, the Phase One Report will be circulated to stakeholders for feedback in order to ensure that the recommended targets are adequate to meet the current and growing needs of users. Consideration will also be given for whether or not the targets should be established by geographic area in order align with the Region's land use structure (rural areas, urban residential, centres, corridors, employment areas, etc.).

6.0: Gap Analysis

The Region of Durham has a diverse geography and terrain which creates unique areas and broadband servicing challenges. In addition, the population and housing density varies across the Region, with the availability and capacity of broadband services being directly correlated with population densities. Generally speaking, the higher the population density, the better the service levels and availability of the latest broadband technologies.

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[20] Institutional users includes Libraries, Post-Secondary Campuses, Health Care Facilities

[21] A common measurement for download and upload speed is megabits per second (Mbps). Higher speeds may be expressed as gigabits per second (Gbps). 1 gigabits is equal to 1,000 megabits.

A Gap Analysis was conducted in order to determine where user needs are not currently being met and to predict areas where future needs are not likely to be met. During the Gap Analysis, it was revealed that ISPs were unwilling to share information on the location and capacity of their broadband infrastructure specifically their fibre infrastructure, which they consider confidential and proprietary. This has created a challenge for determining the service levels available across a jurisdiction as large as the Region of Durham.

The Gap Analysis conducted as part of Phase One primarily relies on information collected during stakeholder consultations and the results of data analysis. The data analysis consisted of submitting inquiries to ISPs requesting the highest service availability (speed, capacity and cost) at various addresses across the Region. By obtaining information about the highest service level available at a particular address, an inference can be made about the type of network technology that exists to the property and the surrounding area.

Mobility services were not evaluated as part of this gap analysis. Mobility service availability can vary depending on number of users on an antenna and the technology being used. Both major carriers (Bell and Rogers) indicate that they use mobile broadband technology in Durham Region that can provide higher speeds, but this service tends to be a considerably more expensive broadband option when compared to the other broadband technologies.

6.1: Gaps Identified through Stakeholder Consultation

As part of the stakeholder consultation sessions and submitted comment sheets, participants were asked to identify situations where their broadband needs were being met, as well as situations where there are gaps and their needs were not being fulfilled in an acceptable manner. The following summarizes the key points from stakeholder consultation:

Strengths	Gaps / Weaknesses
• Municipal and Regional Governments are generally able to meet their Corporate service needs. (Some facilities were reported as reaching service capacity and experiencing lagging/slow Internet speeds). • Urban residential areas and City Centres, particularly in south Durham have good Internet service levels. • ISPs are deploying services in areas where customer densities support a business case for the	• Rural government facilities (works depots, libraries, paramedic stations, etc.) have needs that are not being met. • Service discrepancies exist in rural and northern communities. • Stakeholders felt services should be comparable for areas in both north and south Durham. • Rural Internet is generally slower and lower quality, with fewer ISP options to choose from. • Rural networks dependent on wireless services can have

service upgrades. • High quality services are typically being provided to new residential construction.	significant line of sight issues and service quality degradation. • Extending broadband services to rural areas can be expensive for any user group. • Telecommuters require connectivity. Home office workers and small businesses face difficulties establishing home occupations in rural areas due to poor broadband availability. • Farmers are increasingly requiring broadband connectivity as part of their operation/business. • Service gaps exist in urban or near urban areas with low customer densities. • Service gaps exist in employment and commercial areas. Areas along the 401 were specifically referenced. • Small businesses find the extension of broadband services to their premises cost prohibitive (the average cost can be $30,000 per kilometer). • Several examples were provided where businesses chose not to locate within particular employment areas due to limited broadband connectivity. • Many felt monthly service costs are too high. • Service affordability is an issue for low income households. Service may be available, but some cannot afford it. Those without connectivity cannot access e-services from home. Children may be at a disadvantage academically.

6.2: Gap Analysis –Data Analysis of Service Levels

A data testing analysis of broadband service level availability was conducted for over 600 residential properties across Durham Region. The analysis sampled various addresses which were then checked for service level availability from two Internet

service providers using ISP online tools, or by placing telephone calls to ISPs. Where possible, the analysis included properties within Employment Areas. However, checking broadband availability within Employment Areas is not straightforward, often requiring a detailed discussion with the service provider. This has limited the ability of the analysis to assess Employment Area broadband connectivity.

The purpose of this analysis was to determine the highest service level available at multiple locations in order to draw generalized conclusions about broadband connectivity. The majority of test sites were within the Urban Areas, however, 85 Rural and Hamlet locations were also tested. The results of the data testing are provided in Table 2 below.

Municipality	Comments on Tested Service Levels	Potential Service Gaps based on consultation / testing results
Ajax	Analysis focused on Urban Residential Areas. High service level availability was reported (including 1000 Mbps).	Employment Areas and areas with lower customer densities on the periphery.
Brock	Analysis included test sites in Beaverton, Sunderland, Cannington as well as Rural and Hamlet locations. Overall, Brock Township has poor service availability, with no test sites reporting service availability above 25 Mbps.	Rural Areas, Hamlets
Clarington	Analysis included Urban Residential Areas as well as some Rural, Hamlet and Employment Areas. High service level availability was reported in Urban Residential Areas in Courtice and Bowmanville (including 1000 Mbps). Lower service levels were report in Rural areas and Employment Areas, below the CRTC target.	Employment Areas, Hamlets, and Rural Areas.
Oshawa	Analysis focused on Urban Residential Areas. High service level availability was reported (including 1000	Employment Areas, Rural Areas, Downtown Oshawa

	Mbps)	
Pickering	Analysis focused on Urban Residential Areas and also included some Rural and Hamlet locations. High service level availability was reported for most areas (including 1000 Mbps at most locations), with lower services at the urban fringe.	Employment Areas, Rural Areas, Downtown Pickering
Scugog	Analysis included test sites in the Port Perry Urban Area as well as some Rural and Hamlet locations. High service levels were reported in the Port Perry Urban Area and Utica (500 Mbps) and Scugog Island (250 Mbps). Other Areas did not meet CRTC target.	Employment Areas, Hamlets, and Rural Areas.
Uxbridge	Analysis included test sites in the Uxbridge Urban Area as well as some Rural and Hamlet locations. High services level availability was reported in the Uxrbidge Urban Area (500 Mbps). Other areas did not meet CRTC target	Hamlets, Rural Areas.
Whitby	Analysis focused on Urban Residential Areas. High service level availability was reported (including 1000 Mbps at most locations).	Employment Areas, Rural Areas

Table 2: Data Testing Analysis Results

Overall, Durham's urban residential areas reported high broadband service level availability, meeting or exceeding the CRTCs target of 50/10 mbps. However, the general trends that exist across Ontario are also present in Durham, with lower and slower service availability within rural areas. This is largely the result of different technology solutions for rural areas (fixed wireless) reflecting the reality that fibre services are not financially feasible in areas with low customer densities. This trend is discussed in more detail in section 7.0 of the report.

6.3: Gap Analysis – Focusing Priorities

The following themes emerged from the Gap Analysis:

- The testing analysis indicates that urban residential areas in Durham have substantial broadband service availability that meets or exceeds the CRTC target.
- Service levels fall as customer densities dissipate. Northern Durham and most rural areas have lower service levels which are generally below the CRTC Service Target. The Township of Brock has the lowest service availability within Durham Region.
- Consultation indicates that service gaps exist within Employment Areas. This was substantiated in some areas where service availability could be checked with ISPs.

7.0: Broadband Technologies – Evolution and Future Solutions

There is a growing need for broadband capacity and speed across all sectors. To keep pace with increasing demand, telecommunication infrastructure and technologies have continued to evolve. There are multiple ways to provide broadband Internet services. Among the various options, the following four technologies are the most common:

- Telephone networks (copper wire/DSL)
- Cable networks (coax cable)
- Fibre network; and,
- Wireless technologies (fixed and mobile).

7.1: Telephone Networks

Telephone based networks utilize the existing cables, typically copper, that were constructed to provide phone line connections to households and businesses over the past 65 years. Through the use of digital subscriber loop (DSL) technology, these existing lines can be used for Internet services.

Over time, technological advances allowed existing telephone based networks to achieve increasing Internet speeds and capacities. The latest technologies can offer speeds of up to 150 Mbps under ideal circumstances. It is noted, however, that data transmission decreases rapidly due to factors such as the travel distance, condition and gauge of the wire. This may lead to situations where one side of a residential street has a significant difference in service speeds than the other side.

In most new construction projects, service providers are moving away from installing telephone based networks, and are instead placing fibre optic networks. Notwithstanding this recent change in practice, there are still millions of households and businesses across Canada that are serviced by existing telephone based networks.

7.2: Cable Networks

Cable networks consist of coaxial cable and were traditionally used to deliver TV services. Cable networks required new electronics (while different components from DSL, the concept is similar) to alter their networks to be capable of delivering broadband services.

Coax cable is a shared medium, meaning that multiple homes share the same capacity. As a result, the Internet speed available at any given time can be highly dependent on the number of other simultaneous users located on the same line. Generally speaking, coax cable networks can achieve Internet speeds of up to 1000 mbps. Similar to phone based broadband services, IPS are moving away from cable/coax based networks.

7.3: Fibre Networks

Fibre networks are the latest and fastest technology available for the delivery of high speed broadband Internet service. Fibre networks consist of fibre optic cables (strands of glass fibres) that transmit data through the use of light.

Fibre cable itself does not determine the capacity or speed of services that are delivered to a building. The actual speed is determined by the electronics attached to the fibre cable. Fibre cable has an almost infinite capacity, and newer electronics are constantly under development to increase the capacity that any specific fibre can provide.

Fibre to the home is considered to be the only cable required for future developments. However, to place fibre to all existing homes presents a significant financial challenge. The cost of trenching new wire (or pole attaching) to existing homes is not always viable.

There is fibre running along many routes today and while in some cases it is active (which means there are electronics attached to it and it is carrying signals), it generally runs from point to point. That means it runs from one major hub location to another – between network locations for a carrier. The impact is that individual homes and businesses may not (and usually cannot) access the fibre for services to their location.

In some cases, a business may require the bandwidth that a fibre connection provides and they will pay a provider to extend a fibre from the closest hub to their location. The standard process in Ontario is for the end user/business to pay for the cost to install the cable infrastructure from the main line to the building. The provider may offer a discount if a longer service contract is selected. However, the ultimate cost determining factor is the distance from main line to the building.

7.4: Wireless Technologies

Wireless technologies use antennas to transmit signals through the air to households and businesses. Fixed networks use antennas mounted to buildings to receive Internet

signals from the base transmission tower. Similarly, mobile networks use portable devices (cell phones or USB[22] based sticks/boxes) to receive Internet signals. The typical model for wireless networks is to run a fibre optic network to a hub (referred to as a backbone), which is then transmitted to households and businesses from a tower.

All wireless based networks suffer from limitations due to signal interference (or signal blocking). This is the result of wireless networks reliance on line of sight between the base station and the subscriber. In cases where the terrain or natural features obstruct the line of sight, there will be a loss of signal strength and a resulting decrease in connectivity. In addition, signal strength will become weaker as the distance between the subscriber and the base station increases.

The cost to deploy towers can be substantial, requiring a customer density threshold in order to justify the investment. In addition, area residents may be opposed to tower construction within their area. Despite these limitations, fixed wireless broadband will continue to be a viable solution for rural areas, where the cost to deploy fibre optic networks is cost prohibitive.

Cellular wireless networks (mobile networks) use similar concepts and infrastructure as fixed wireless. The key difference is the ability of mobile networks to "handoff" the connection to different towers as the user moves from one transmission zone to another. This makes the network implementation and technology more complicated than fixed wireless but the same concepts exist – signals through the air are dependent upon weather conditions and degrade over a distance. The amount of degradation (or quality of signal) per km is dependent on the frequency of the transmission. Currently, cell phone technology uses different spectrums – as an example 3G is different than LTE radio frequency. Each frequency transmits over a different range and this creates differences in reception and loading of customers on antennas.

The newest/next generation (5G) of cellular wireless networks uses smaller sized antennae. This results in more antennas being required in order to achieve similar geographic coverage. Also, similar to coax cable, cellular wireless networks are a shared medium. The number of users accessing a single antenna at any given time will impact the overall capacity and speed of the service, as well as the transmission distance of the signal. As the number of simultaneous users increases, signal transmission will degrade.

A potential limiting factor mobile broadband services is that they tend to be substantially more expensive than other broadband services. Mobile broadband services tend to charge higher rates with subscription services based on lower data limits.

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[22] USB: Universal Serial Bus. These are portable memory sticks.

7.5: Technology Options Comparison

Table 3 below summarizes the key attributes of the various broadband technology options.

Technology Network Option	Highest Service Speed	Advantages	Disadvantages	Required Customer density (per square km)
Telephone	150Mbps	Utilizes a component of existing infrastructure combined with new broadband infrastructure.	Service degrades rapidly with distance.	35-50 homes
Cable	1000Mbps	Utilizes a component of existing infrastructure combined with new broadband infrastructure.	Shared medium, speed is dependent/can vary on number of users.	25-50 homes
Fibre	Can transmit data at the speed of light. Limited by the electronics that connect at either end of the fibre cable.	The newest, highest speed technology.	Requires deployment of new fibre optic infrastructure, resulting in high capital costs.	1000 homes
Fixed Mobile	25Mbps	Able to service rural areas at an effective cost.	Line of sight issues.	10 homes
[23]Cellular Mobile	3G = 21 Mbps 4G = 42 Mbps 5G = 100 Mbps	Able to service rural areas at CRTC target service level.	Line of sight issues. Cellular Mobile tends to be a relatively expensive service.	Not as dependent on customer density. However, service levels are highest in urban settings.

[23] The Internet speeds shown for cellular mobile networks are based on actual and/or likely future speeds. Theoretical speeds under ideal circumstances may be higher.

Telephone and cable based networks will continue to be used as long as they can meet customer demand. However, these are older technologies that have met or are nearing the upper limits of their capabilities. Going forward, there is little question that fibre and fixed / cellular wireless networks will be the future solutions for broadband connectivity in Durham Region.

It is likely that advances in electronics and the overall decreasing cost of fibre optic technologies will result in the increased deployment of fibre networks over the next 10 years. This, however, is a long time horizon and leaves users struggling for services in the interim. In addition, it is likely that fibre will not be a viable solution for rural areas where customer densities are too low to justify the capital investment to deploy new fibre optic infrastructure. For rural areas, fixed or mobile wireless networks are likely to remain the only feasible solution over the next 10 years.

In Durham Region, both fibre and mobile solutions are already in varying degrees of deployment and will continue to evolve and proliferate. Where possible, upgrades to existing infrastructure or expansion are implemented by providers where they can justify moving to newer technologies in their business case. Consultation found that ISPs tend to provide infrastructure upgrades to urban/suburban residential areas, but the business case doesn't appear to be as strong for extending services to other areas such as business parks, commercial areas, or rural areas where there are lower customer densities.

8.0: Region's Role in Enabling Broadband Deployment

As part of stakeholder consultations, participants were asked what would be the most appropriate role for the Region and area municipalities to address broadband user needs and service gaps. Secondary research was also conducted to identify and understand projects and programs being undertaken to enhance broadband connectivity in other jurisdictions within Ontario. The following overarching themes about government roles were identified during consultation:

- Organizations such as government, hospitals and post-secondary education may be able to meet their own broadband needs; but access to these essential e-services from home by residents is an issue that will become increasingly apparent as societal and industry trends toward digital services.
- There is a perspective that broadband connectivity is a collective responsibility – ISPs, local, regional, provincial and federal levels of government all play have a role in ensuring adequate connectivity.
- There needs to be creative solutions at all levels of government to support industry in providing broadband service to rural areas where the private sector is not meeting customer needs (due to insufficient business cases to extend / enhance services). Specifically, there should be support for telecommuters, small business operators and farmers.

- The Region should facilitate improved connectivity as a means to support economic development in areas where insufficient broadband has been identified as an issue.
- Government does not need to reinvent the wheel and should instead adopt existing models that are working elsewhere.
- Government should assist to fill gaps that the private market will not address.

8.1: Identifying Potential Roles, Programs and Projects

Through consultation, stakeholders identified specific roles, project and programs that could be undertaken. Opinions on the appropriate role of government ranged from "government should have no role" to "government should build networks and provide Internet service". Many different options were identified which can be categorized by the level of involvement and financial implication, as summarized below:

Limited Roles	Supportive Roles	Direct Roles
• The Region should not have a role in deploying broadband infrastructure. • Government money should not be spent to support private enterprise. • Decisions on how and where to expand broadband services should be made by the ISPs.	• Municipal governments (and potentially other partners) should coordinate and cooperate to negotiate better broadband pricing with ISPs based on their combined service volume. • Municipal governments should support and expedite the deployment of broadband by ISPs through policy (including Dig Once), streamlined permitting (consistent municipal right of way access agreements), and access to planning information on where new development is likely to occur. • Municipal governments should play a role in lobbying and advocating for ISPs to spur broadband deployment in Durham Region • Municipal governments	• Municipal governments should make a financial commitment to support rural ISPs. • Municipal government should provide funding support to ISPs to close gaps. • The Region should deploy and operate a network to primarily serve municipal needs (regional and/or area municipal) with potential for access by ISPs in order to enable broader connectivity and subsidize connectivity. • Regional government should run fibre to all homes and businesses in order to ensure affordable connectivity. • The Region should make its existing broadband infrastructure available for shared use by other levels of government and private sector ISPs.

	should support applications by ISPs for provincial or federal grant applications to help private industry meet broadband needs. • Municipal governments should lobby the provincial and federal government to assist in the provision of broadband. • Municipal governments should play a coordinating role, including the facilitation of communications and discussion between ISPs and the broader community on broadband needs and gaps. • The Region should create a dedicated staff position to oversee and work with municipal economic development offices for the coordination and support of broadband projects.	• Municipal government should act as an anchor tenant, purchasing service in strategic locations. By spurring the deployment of infrastructure to strategic locations, surrounding businesses and residents will also benefit and be able to connect to the service upgrade.

The following subsections identify the potential roles, programs and projects for Regional and municipal governments. Through Phase Two of the project, further analysis of these roles, including identifying the appropriate body to implement the project/program and associate timeframes, will be provided.

8.2: Limited Role (Do Nothing Scenario)

Some stakeholders felt that Internet services and the deployment of broadband infrastructure should be left to the private sector ISPs. These stakeholders also felt that subsidizing the provision of broadband should not be at any added cost to taxpayers. Instead, private market factors should determine where and how quickly broadband infrastructure upgrades are deployed.

Discussions also arose regarding how to equitably assist rural and remote areas that may be expensive and difficult. Some stakeholders felt that the provision of broadband services to these areas should not become the responsibility of tax payers.

8.3: Supportive Role

Most stakeholders felt that the appropriate role for Regional and municipal governments was to provide support to ISPs to ensure adequate and equitable broadband connectivity. Many of these options have the potential to advance and promote broadband deployment at relatively low capital and/or operational costs. As part of the Phase Two strategy development, the following roles, projects and programs will be further investigated and detailed:

Create a Supportive and Collaborative Environment

- Reconvene and formalize a Broadband Working Group where participants can discuss issues, share successes, and work towards common goals.
- Recognize that the area municipalities are pursuing broadband initiatives at varying scales with differing priorities. The Region should support these initiatives where requested.
- Provide a venue for the sharing of information and establishing and strengthening partnerships where priorities and interests align.

Streamline government processes and permitting in order to expedite service delivery by ISPs

- Complete standardized Municipal right-of-way access agreement (MAA) templates for use across the Region, reducing the administrative burden for ISPs when deploying broadband infrastructure.
- Explore the development of conduit guidelines that meets the requirements of government and ISPs in order to enable the future sharing of infrastructure, where it is desired.

Create and maintain broadband information databases

- Develop and maintain regional mapping of Internet coverage. Engage with ISPs to identify priority areas where service is lacking.
- Investigate the potential of adding a survey question to the annual business count that collects information on broadband service levels to more accurately determine connectivity conditions within business and employment areas.
- Expand and build upon the results of the Data Testing Analysis, creating an inventory of broadband service levels across the Region.

Promote communication and coordination among Regional and Area Municipal levels of government, the business community and ISPs and Public Utility Corporations.

- Investigate the feasibility of aggregating Internet service requirements of the Region and area municipalities in order to negotiate better service contracts and prices from a single ISP.
- Hold regular meetings with ISPs to communicate growth areas, capital infrastructure planning, and service needs. Increase the awareness of utility projects, allowing for the efficient placement of broadband conduit while the trench is open and accessible.
- Investigate the creation of a Regional broadband co-ordinator position to:
    - Assist with the coordination of cost sharing among property owners for the extension of broadband services to underserved areas, particularly for employment / business locations.
    - Coordinate future funding applications.
    - Maintain ongoing communication with ISPs and businesses/economic development offices/chambers of commerce to understand broadband needs and requirements.
    - Build and maintain a broadband database.
    - Research and build a business case for other creative broadband initiatives.
    - Assist rural residents/businesses when negotiating private arrangements for broadband services.
    - Advocate to other levels of government to ensure Regional broadband needs are conveyed and solutions are being investigated.
    - Formalize and coordinate the Regional Smart/Intelligent Cities Committee.

Develop Policies that support broadband deployment

- Provide direction for the development of policies as appropriate for the Regional Official Plan, Strategic Plan, Economic Development Strategy and Action Plan and/or other corporate policy to support connectivity and ongoing deployment of broadband infrastructure.
- Investigate the feasibility of policies that require broadband infrastructure to be incorporated as part of new developments.
- Investigate the feasibility of a "Dig Once" policy that provides opportunity for the Region, area municipalities and ISPs to place infrastructure (conduit, fibre) when roads are dug up for other purposes. Identify potential barriers or areas where a "Dig Once" approach may be impractical, such as already crowded rights-of-ways, the resistance from ISPs to share conduit due to potential liabilities such as cross damage and maintenance conflicts as well as the difficulty with aligning timelines and budgets.

8.4: Direct Roles / Municipal Broadband Network Models

Some stakeholders felt that municipal governments should be playing a substantial role in enhancing and deploying broadband Internet services, including the financing and building of a broadband network as well as sharing the Region's existing broadband infrastructure. These options may require substantial capital and ongoing financial investments, as well as the appropriate legal and administrative assessments and considerations.

Anchor Tenant

Municipal governments, as a large customer buying services, can often be a stimulus for ISP investment that can then be used to service other customers (business, schools, residents, etc.) in the area. If the Region/municipalities were to purchase / prompt the extension of services in underserved areas, then an ISP can justify deploying infrastructure to other nearby users to further their revenue. Typically, governments sign longer-term contracts making them predictable anchor tenants from which ISPs can expand their networks and services.

Under this approach, municipal governments would strategically locate new municipal facilities or connect existing facilities in areas that would benefit from broadband service upgrades. This approach could require considerable capital investment, but may achieve multiple objectives by providing service upgrades to municipal facilities as well as adjacent users.

Providing Municipal Funding

Through consultation, some stakeholders suggested that municipal government should fund providers in some manner in order to assist with broadband deployment. Such approaches have been used in other jurisdictions at varying scales. For example, member municipalities made financial contributions towards the creation of the Eastern Ontario Regional Network. At a more granular scale, a collaborative funding arrangement between the City of London, the London Economic Development Corporation and MainStreet London offered a pilot project grant for businesses attempting to construct last mile connections to fibre optic services.

Deploying a Municipal Network – Models used in other Jurisdictions

There are several successful models of municipal broadband networks in Ontario, several of which were examined through Phase One of the project. In many of these examples, the municipal broadband network began as a utility to serve municipal government's own connectivity needs and grew over time to include service provision to other organizations such as other municipal governments, universities, schools and health care (often referred to as the MUSH sector). In some cases, access to the networks have been opened to additional users, including ISPs, industrial, commercial

and residential customers. A profile of various municipal network options is provided below:

Peel Public Section Network (PSN)

The PSN is a shared municipal fibre network. Its role is to enhance the ability of the public sector to meet the needs of residents of the Peel Region by providing municipal government access to the fibre network in support of other municipal programs.[24]

Network Description	Established in 1996, the PSN is an integrated fibre optic network providing municipalities, hospitals and educational institutions in the Peel Region with access to high speed telecommunications service. PSN consists of 801 kilometers of primarily 96 - strand fibre and 684 connected facilities, with the majority of the network being aerial construction (i.e. fibre strung on hydro poles).
Network Ownership	4 Partners: Region of Peel, City of Brampton, City of Mississauga, Town of Caledon[25]
Network Cost and Financing	Each partner makes the capital investment in their geography of the network and retains ownership of that segment. A business case showed a 6-year payback period, with savings in telecom costs and avoidance of future infrastructure investment, offsetting initial capital cost.
Governance	Partner responsibilities: • Own and maintain what they build • Contribute staff resources • Pay share of common costs • Comply with common design, construction, operation and maintenance standards • Grant access to all other partners and subscribers
Customers	Partners and subscribers (Credit Valley Hospital, William Osler Health Centre, Trillium Health Centre, Sheridan College, University of Toronto, Mississauga Campus). Customers are all public-sector organizations.
Data Services	PSN provides dark fibre and does not offer data services.

[24] KPMG, Sharing Municipal Services in Ontario, 2013, http://ryersontownship.ca/wp-content/uploads/2016/09/Shared_service_case_studies.pdfa

[25] Region of Peel, Public Sector Network update and budget, April 17, 2017, http://www.peelregion.ca/council/agendas/2017/2017-04-27-rc-agenda.pdf

Niagara Region Broadband Network (NRBN)

The NRBN is a municipally owned network that provides service to both public sector and private sector customers.

Network Description	The NRBN fibre optic network serves more than 600 customers with 750 kilometers of fibre in the Niagara Region. NRBN is a full-service provider, offering data services, voice, managed services and professional services. At deployment, NRBN placed as much fibre as possible. This has paid off, as spare fibre is valuable for swapping and meeting future demand. NRBN is licensed by the CRTC as a non-dominant carrier.
Network Ownership	NRBN is a private for-profit company, municipally owned by Niagara Falls and Niagara on the Lake.
Network Cost and Financing	The network was built for $13M in 2004. Partners contributed $1.5M each and the balance was financed through an $11.5M bank loan, paid off in 2014. MUSH sector customers signed a 10-year service contract. This was a factor in securing the loan. Municipalities backed the loan (6.5% interest). The corporation pays dividends when they have excess cash and most shareholders have seen a full return on their investment.
Initial Business Model	MUSH customers were not sufficient to support the network so the partners brought on Cygnal Technologies to serve private sector customers on the network, with 30% of revenue this revenue being directed to NRBN. Points of interest in this model include: • Cygnal provides network management, sales, etc. • There was now requirement for NRBN staff for up to 7 years. • NRBN bought their network– 1.3 million to purchase. • NRBN swapped fibre in order to build out the network – 50 and 60 km with Cogeco.
Governance	NRBN is a private sector for-profit company owned by two shareholders who oversee the management of the company.
Customers	The Niagara Region MUSH sector, including schools, the majority of government sites, financial institutions and large enterprise within The Region. NRBN offers commercial services, including services for small and medium business.

	Residential Broadband to select residential communities in the Niagara Region is also provided.
Data Services	• Dedicated Internet Service, 10Mbps to 10Gbps • Direct connections to top tier ISPs in Canada and US • Ethernet, MPLS, Optical Wavelength Solutions • VOIP (white boxed) • Custom Network Solutions • NRBN does not sell dark fibre.

Eastern Ontario Regional Network (EORN)

EORN is the result of a P3 agreement between the public sector and private sector that was established by the Eastern Ontario Warden's Caucus (EOWC), which represents 13 County and Single Tier governments in Eastern Ontario. The role of the EORN is to facilitate delivery of broadband service to residents of Eastern Ontario, by providing financial incentives to the private sector. The network serves an area where low population density is a hindrance to a positive business case for the network.

Through a municipal procurement process, EORN contracted with Bell and Bell Aliant to build the 10 Gigabit Ethernet backbone network. The capital costs were shared by the partners. Bell/Bell Aliant are the service vendors and revenue collectors. EORN also received some in-kind contributions from Bell, some of which extend to 2024.

For the access networks, initial cost is shared between the ISPs and EORN. EORN owns 51% of the new assets until 2017. During that period and afterwards for 7 years, there are contractual obligations that the providers must meet related to scaling and growing components of the network and renewing capital.

The objective of the EORN is to provide high speed service to 95% of homes and businesses in Eastern Ontario.

Network Description	EORN is a network made up of a Gigabit Ethernet backbone supporting private ISP connectivity for residential, institutional and business subscribers in rural eastern Ontario communities.
Network Ownership	The network assets were shared (49% by the carriers/51% by EORN) until 2017. In 2017, the assets were transferred to the ISPs. There are contractual obligations that the ISPs must meet related to scaling and growing components of the network and renewing capital. The service providers assume a level of financial, technical and operational risk.
Network Cost and Financing	The network cost an estimated $240M to deploy. Funding was provided by the Federal and Ontario governments ($110M), the Eastern Ontario Warden's Caucus ($10M) and private sector carriers ($120M), including in-kind contributions.
Governance	The EOWC has responsibility for strategic goals of the network

	and accountability for the use of public funds. The EORN has responsibility for network construction and operations in accordance with specified requirements, and must ensure that specified economic and social outcomes are achieved.
Customers	EORN customers are the individual carriers, institutional, business and residential customers.
Data Services	EORN carriers provide Internet connectivity of 10 Mbps or more to their customers. They may offer lower bandwidth options, but must be able to provide a minimum of 10 Mbps per subscriber.
Service Pricing	Service pricing must be competitive with the rates available in urban areas.

York Telecom Network (YTN)

York Region started building their fibre network in 2002 as a means to link two municipal buildings. Today the network has grown to over 200 km of fibre infrastructure. Over this time, the network has grown to connect other municipal assets (such as traffic lights) as well as facilities. The network also offers connectivity to its MUSH partners.

In 2017, after a thorough review, Council approved the creation of a separate corporation to operate and maintain the network. Part of the mandate is to allow leasing of excess dark fibre capacity to MUSH and ISPs who may want access.

Network Description	A 200 Km fibre network connecting municipal infrastructure such as traffic signals and municipal facilities.
Network Cost	$16 M
Network Ownership	The Region owns the network, which will be transferred to the new corporation.
Governance	As a corporation, the new entity has a Board of Directors that is made up of Council members. The Board reports to Council, given that the Region is the sole shareholder.
Customers	MUSH and Private sector ISPs.
Data Services	Dark Fibre only. No data services are provided.

Stratford Rhyzome Network

The Rhyzome Network is a municipal network that serves Stratford, Ontario. It has enabled extensive high-quality broadband service throughout the city as well as free public Wi-Fi.

The network was launched in 1992 by the city-owned electric utility, Festival Hydro, as a backhaul for Stratford's utility data and to service large commercial operations in the with fibre connections. In 2010, Stratford established an ISP, Rhyzome Networks, with the primary focus of providing business connectivity. The network was expanded to 70 km of optical fibre. At the same time the City deployed a wireless Wi-Fi network that offered free public service and home-based Internet for a fee. The fee services are offered by partner ISPs, who use the infrastructure, but manage the service delivery function themselves.

Stratford has 100% broadband coverage via Wi-Fi. Furthermore, between Rhyzome's fibre and that of the other telecomm carriers, an estimated 90-95% of businesses and homes are "passed" by fibre.

Network Description	Fibre Optic and Wi-Fi networks serving Stratford and six rural communities in southwest Ontario: St. Marys, Brussels, Dashwood, Hensall, Seaforth and Zurich. The fibre network consists of 50 km grid of optical fibre. The Wi-Fi network consists of nodes mounted on utility poles throughout the city and backhauled over the fibre network.
Network Cost	Festival Hydro invested $1.2M to deploy the first 40 km of fibre.
Network Ownership	After the initial $1.2M investment in the network by Festival Hydro, the network was established as a separate entity, owned by Rhyzome. Rhyzome Networks is fully owned by the City of Stratford.
Governance	Rhyzome Networks owns and operates fibre optic and WiFi data networks. Building the wireless network was a joint effort between Rhyzome and Festival Hydro
Customers	• Festival Hydro uses the WiFi network to collect hourly time-of-use data from 18,000 residential and commercial electricity meters. • Municipal mobile workforce • Healthcare • Education • Industrial/ Commercial • ISP (Rhyzome wholesales connectivity)
Data Services	Dark Fibre, wholesale fibre connectivity, Rhyzome is exploring future opportunities related to data storage and cloud

	computing services.

As outlined above, there are varying options and models for owning and operating a public sector broadband network. Networks may be deployed to serve municipal needs, or expanded to serve partner organizations in the MUSH sector. There are also networks that partner with ISPs to share infrastructure and to provide services to residential and business consumers.

Durham's Current Broadband Infrastructure

Durham Region currently owns fibre optic network infrastructure, as illustrated in Appendix #3. Currently, this fibre optic network is used solely for traffic management purposes. A preliminary analysis indicates that there are a number of Regional facilities located along the existing and future deployment areas of the network, as shown on Appendix #4. It is possible that the Region could move towards connecting its own facilities and investigate the option of providing service to other MUSH facilities.

Developing and operating a municipal network is a significant undertaking. There may be a business case that shows a net benefit for providing connectivity to Regional facilities, as opposed to leasing services from an ISP. However, there are likely to be considerable capital and operating costs associated with establishing a municipal network that must be taken into consideration. A thorough inventory of facility needs, existing service costs, operating expenses, and an assessment of the current and future capacity of the Region's network would be required. In addition, partner MUSH sector facilities should be consulted to determine if there is an opportunity for the Region to lease any excess services to these users to offset operating costs.

Phase Two of the broadband strategy will outline the various steps and sub assessments that should be undertaken should the Region decide to pursue establishing a municipal network.

8.5: Smart City / Intelligent Community Designations

Intelligent Community and Smart City designations are public indications that a community is embracing digital technologies and capabilities to support their citizens and businesses. Smart/Intelligent communities understand the challenges and opportunities of the broadband economy, and have taken conscious steps to ensure that their community can prosper in it. They focus on improving quality of life of their citizens and encouraging or enabling additional value to be derived from a given infrastructure investment.

Smart Cities apply the information, communications and technology tools available in an Intelligent Community to municipal operations. They monitor, measure and control city processes, including the water supply, traffic management and city vehicles. They use technology to make their processes more efficient, to provide better service and to reduce cost.

There are programs that honour, support and benchmark communities against Smart City/Intelligent Community criteria. These designations help communicate that the regional or area municipality embraces broadband connectivity and the progressive capabilities it enables. The Intelligent Community Forum (ICF), the most prominent organization providing Intelligent Community designations, has well defined criteria for their awards. Since 1999, this global, non-profit organization has recognized four Canadian cities as Intelligent Community of the Year, and many cities among their Top7 and Smart21.

Intelligent Community Forum (ICF)

The Intelligent Community Forum (ICF) is a global organization that presents annual awards to Smart Cities and Intelligent Communities. Intelligent Community projects aim to improve how cities function and operate. They apply information, communications and technology to improve city operations and allow citizens and employers to benefit from the broadband economy.[26] The ICF awards have two goals: to recognize accomplishments in developing inclusive prosperity through the use of information and technology and to gather data for ICF research programs.

Data gathered through ICF is shared with other Intelligent Community applicants, allowing for benchmarking and comparison among communities. This exercise can provide access and insight to what others are doing, identifying best practices and effective approaches.

Communities apply for an award by filling out a nomination form[27]. The twenty-one semi-finalists for the Intelligent Community of the year are acknowledged as the Smart21 Communities of that Year. The Smart21 can then complete a more detailed questionnaire describing their opportunities, challenges, and results in order to qualify and compete for the Top7 Intelligent Communities of the Year, who can also further compete for Intelligent Community of the Year. All award recipients receive local and international media coverage.

In 2002, Calgary won Intelligent Community of the Year. Since then, many Canadian cities and regions have qualified as Smart21, Top7 or Intelligent Community of the Year. Within Durham Region, Pickering, and Oshawa have won ICF awards, while other municipalities are currently considering applications. York Region, which is geographically and structurally similar to Durham Region has also won ICF awards. The City of Stratford has received three awards. Publicity resulting from the ICF designation promotes the infrastructure and capacity that the municipalities have implemented and assists with promoting the communities as innovative ecosystems to attract local and

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[26] http://www.intelligentcommunity.org/from_smart_cities_to_intelligent_communities

[27] Intelligent Communities Forum Nomination Form, http://www.intelligentcommunity.org/nominations_form

foreign direct investment and talent. These awards have preceded corporate investments and economic development that depend on this type of capacity.

During the award process, applicant communities are evaluated against six criteria: broadband, knowledge workforce, innovation, digital equity, sustainability and advocacy.[28] Consideration is given to communities that undertake programs to strengthen their performance against these indicators if they have not been strong in the past. Broadband is an essential component of Intelligent Communities, given that it plays a central role in supporting communities across all other indicators.

Figure 3: The Indicators of an Intelligent Community

The cost of applying for Intelligent Community Forum awards generally relate to developing capacity and strength in the six Intelligent Community indicators. As awards are normally based on established projects with clear metrics of success, this could involve multi-year undertakings, depending on a community's current measurement within these indicators. For a community that is already very strong in the various indicators, there will be less work required in order to qualify for an award.

There is no fee associated with submitting an application, however, the ICF evaluation process is very thorough and requires applicant resources. A visit from ICF for stakeholder interviews must be arranged, managed and paid for. Travel to the award ceremony for community / political representatives are another expense. There is a fee of about $1000 for the benchmarking report and a fee for attending the award ceremonies. Funding must be approved and available for the cost associated with the program.

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[28] The indicators of an Intelligent Community are from the Intelligent Community Forum Application Form. IC-S21

The main benefits of the ICF program are the economic activity attracted through ICF advertising and branding and from adopting ideology and processes that help ensure that technology is used to improve quality of life. The ICF provides award winners the right to identify as an ICF-recognized Smart21, Top7 or Intelligent Community of the Year and to use the ICF logo for municipal publicity. Award winners also benefit from publicity through ICF media channels. Intelligent Community Award winners are invited to join the Intelligent Community Forum Foundation, the association of smart and intelligent communities, with the benefits of networking, building city-to-city connections, being part of visiting smart city tours and promotion as unique ecosystems to attract and retain talent.

Smart Cities Challenge (Infrastructure Canada)

In November of 2017, Infrastructure Canada announced the Smart Cities Challenge. The challenge encourages communities to adopt smart city approaches to improve the lives of residents through innovation, data and connected technology. Three rounds are planned, with applications for the first-round due in April 2018. Municipal and Regional governments and Indigenous groups are eligible to apply.[29]

Applicant communities must establish a goal for themselves and express it clearly through a challenge statement. Examples of challenge statements provided by Infrastructure Canada include "Feel safe and secure" and "Earn a good living".

A set of 20 questions about the Challenge must be answered. These questions explore the problem definition, community involvement and details of the proposal to solve the problem. In addition, extensive community engagement is a required activity and must be demonstrated in the application. The goals must relate to issues the community describes. Prizes range from up to $5 million to up to $50 million, as follows:

- One prize of up to $50 million open to all communities, regardless of population;
- Two prizes of up to $10 million open to all communities with populations under 500,000 people; and
- One prize of up to $5 million open to all communities with populations under 30,000 people.

Under the Smart Cities Challenge, individual municipalities or the Region (representing all municipalities) may submit an application, but not both. The Region is currently supporting the City of Oshawa in its Smart Cities Challenge application and as a result is not permitted to submit an application of its own. Through a subsequent round of the competition, the Region intends to pursue an application, and has struck an internal working group to work towards this goal.

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[29] Infrastructure Canada, http://www.infrastructure.gc.ca/plan/cities-villes-eng.html

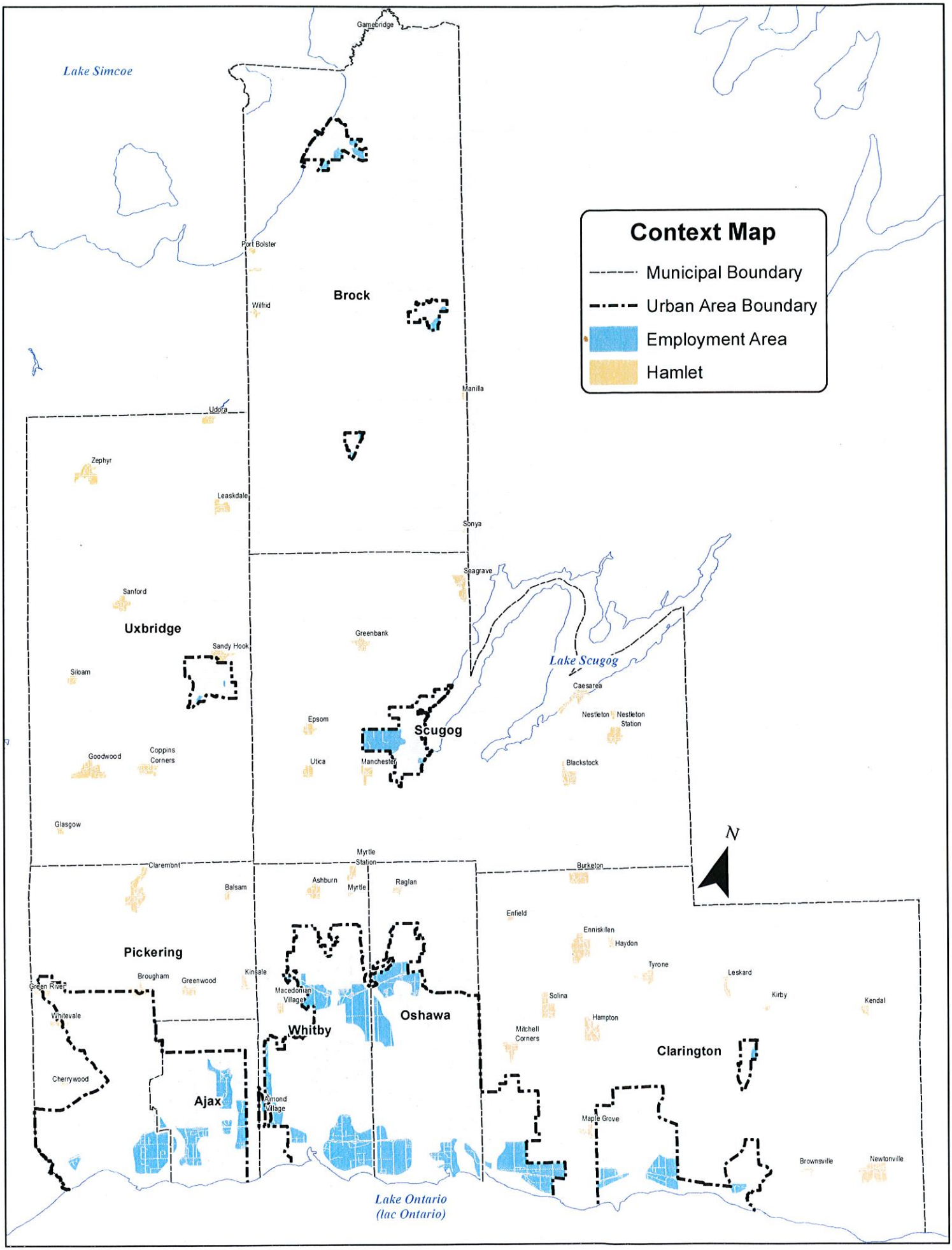
9.0: Conclusions and Next Steps in Developing the Broadband Strategy (Phase Two)

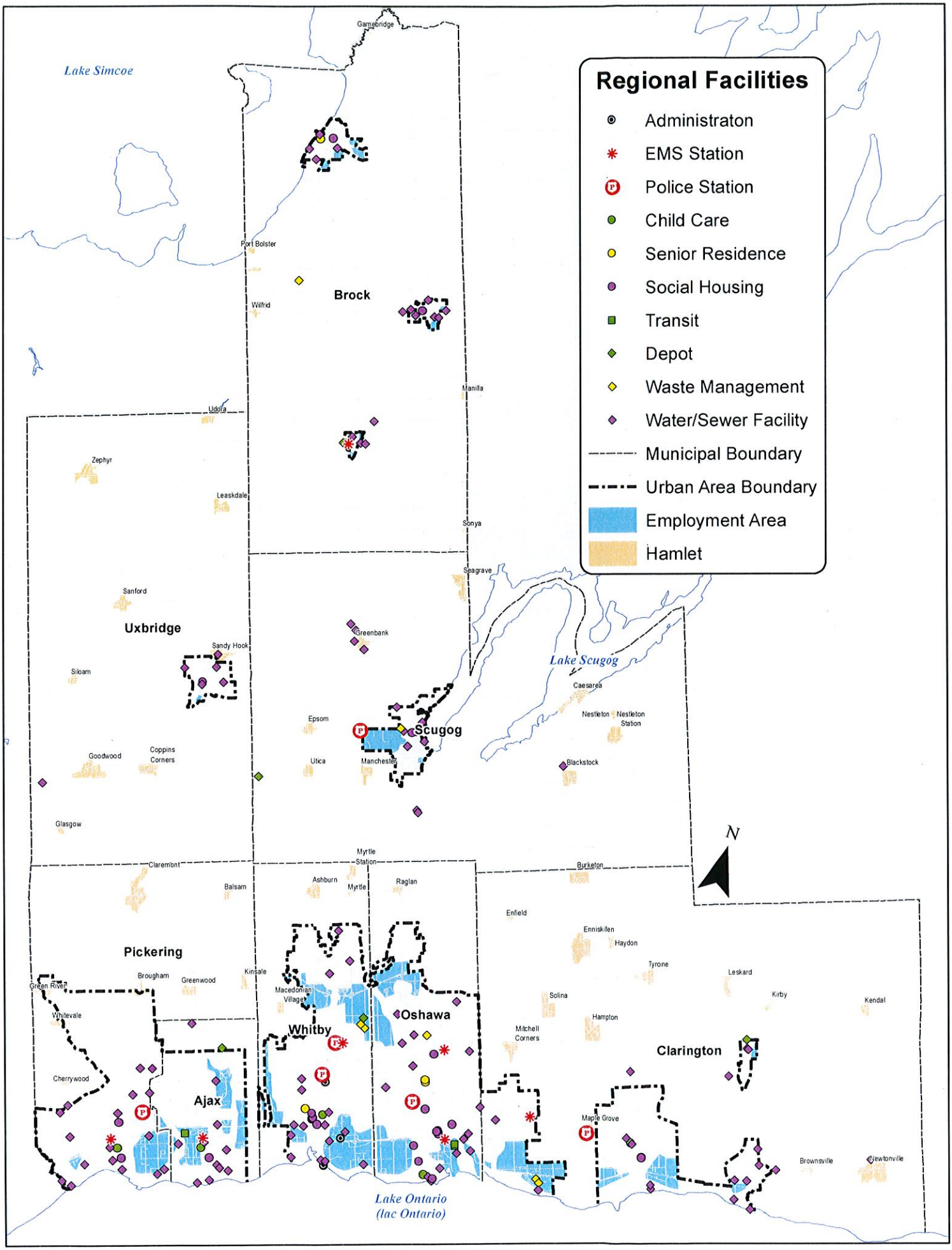
This report documents the findings from Phase One of the Durham Region Broadband Strategy. Consultation and secondary research indicates that deployment of broadband infrastructure is occurring within Durham's urban residential areas, with service gaps existing within certain employment areas and rural areas. As part of Phase One, preliminary connectivity targets have been established and various roles and projects that the Region and area municipalities may undertake to support broadband deployment have been identified.

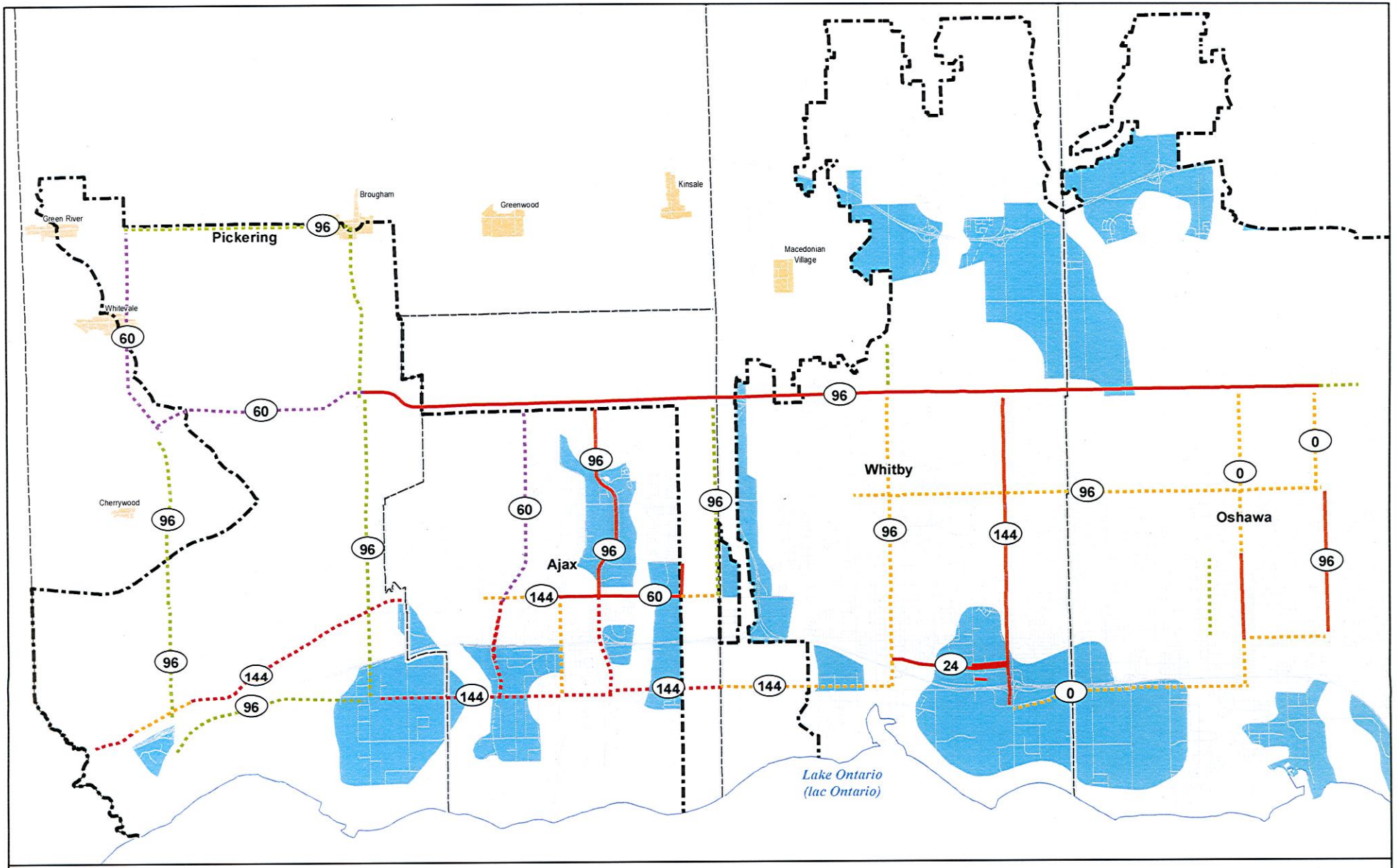
Phase Two of the project will focus on the preparation of the Final Broadband Strategy. As part of this process, the following key components will be completed:

- Confirming the connectivity goals and targets;
- Determining the appropriate implementing body and timelines for the final recommended roles, project and programs to support broadband deployment;
- Developing an Implementation Plan that provides Durham and the area municipal partners with the necessary actions to move forward to obtaining the connectivity goals and targets; and,
- An outline of necessary steps, assessments, business models and phasing options in support the preferred option.

Further input will be sought from stakeholders on the proposed target service levels as well as the roles, project and programs that the Region and area municipalities may undertake to support broadband connectivity and to confirm the findings contained in the Phase One analysis.


Context Map
Municipal Boundary
Urban Area Boundary
Employment Area
Hamlet
N
Lake Simcoe
Gamebridge
Port Bolster
Wilfrid
Brock
Manilla
Udora
Zephyr
Leaskdale
Sonya
Seagrave
Sanford
Uxbridge
Sandy Hook
Greenbank
Siloam
Lake Scugog
Caesarea
Epsom
Scugog
Nestleton
Nestleton Station
Goodwood
Coppins Corners
Utica
Manchester
Blackstock
Glasgow
Myrtle Station
Claremont
Burketon
Balsam
Ashburn
Myrtle
Raglan
Enfield
Enniskillen
Haydon
Pickering
Tyrone
Brougham
Greenwood
Kinsale
Leskard
Green River
Macedonian Village
Solina
Kirby
Kendal
Whitevale
Oshawa
Hampton
Whitby
Mitchell Corners
Clarington
Cherrywood
Ajax
Almond Village
Maple Grove
Brownsville
Newtonville
Lake Ontario
(lac Ontario)


Regional Facilities
Administraton
EMS Station
Police Station
Child Care
Senior Residence
Social Housing
Transit
Depot
Waste Management
Water/Sewer Facility
Municipal Boundary
Urban Area Boundary
Employment Area
Hamlet
Lake Simcoe
Gamebridge
Port Bolster
Brock
Wilfrid
Manilla
Udora
Zephyr
Leaskdale
Sonya
Seagrave
Sanford
Uxbridge
Greenbank
Sandy Hook
Siloam
Lake Scugog
Caesarea
Epsom
Scugog
Nestleton
Nestleton Station
Goodwood
Coppins Corners
Utica
Manchester
Blackstock
Glasgow
N
Myrtle
Myrtle Station
Claremont
Balsam
Ashburn
Raglan
Burketon
Enfield
Enniskillen
Haydon
Pickering
Brougham
Greenwood
Kinsale
Green River
Macedonian Village
Tyrone
Leskard
Solina
Kirby
Kendal
Whitevale
Oshawa
Hampton
Whitby
Mitchell Corners
Clarington
Cherrywood
Ajax
Maple Grove
Brownsville
Newtonville
Lake Ontario
(lac Ontario)



Planned Regional Fibre Deployment (2017-2020)

0 Number of Strands Not Yet Determined

96 Number of Strands

Existing

2017

2018

2019

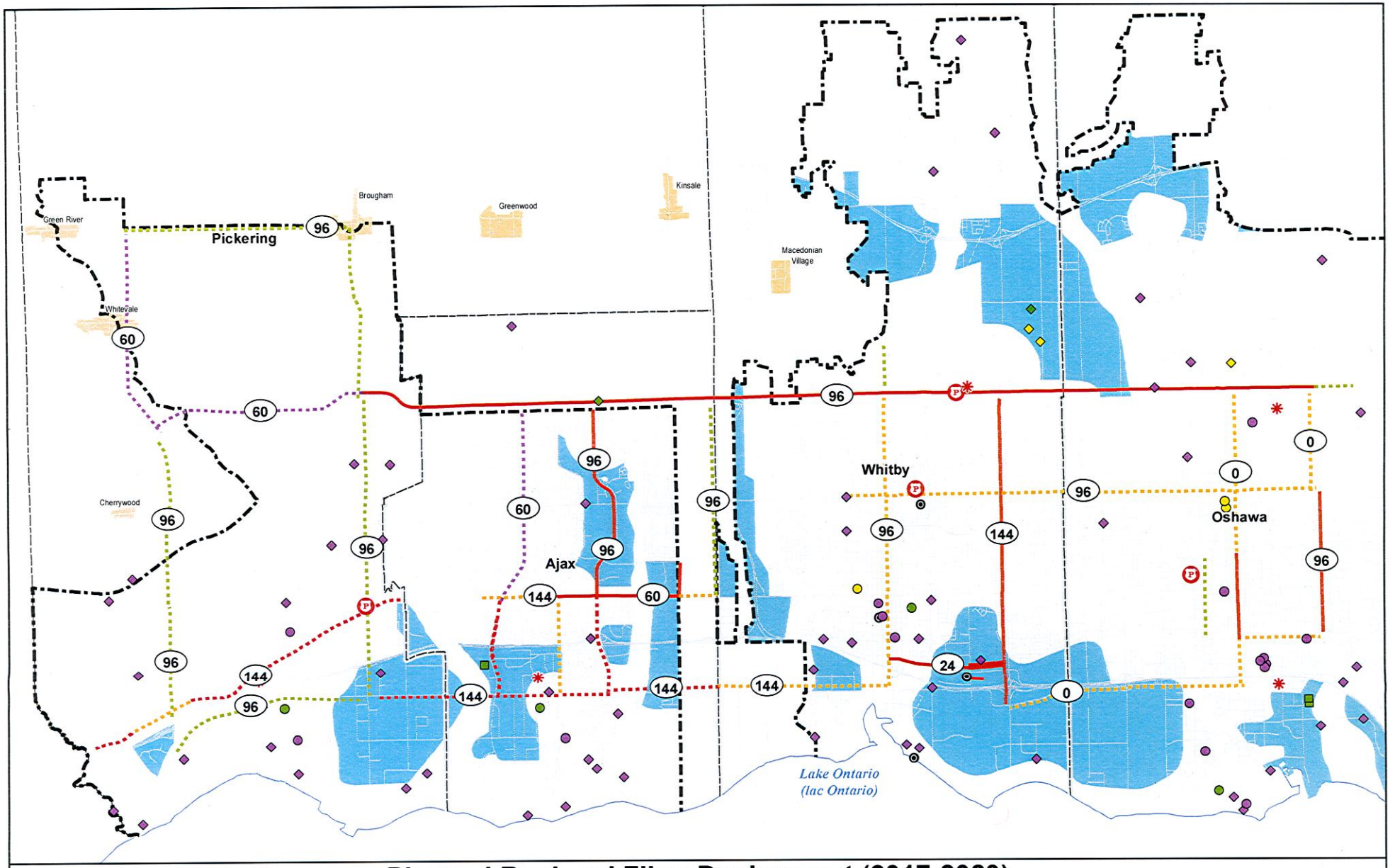
2020

Municipal Boundary

Urban Area Boundary

Employment Area

Hamlet


Pickering
Brougham
Greenwood
Kinsale
Macedonian Village
Green River
Whitevale
Cherrywood
Ajax
Whitby
Oshawa
Lake Ontario
(lac Ontario)
96
60
144
24
0
Planned Regional Fibre Deployment (2017-2020)
Number of Strands Not Yet Determined
Number of Strands
Existing
2017
2018
2019
2020
Administraton
Police Station
Senior Residence
Transit
Waste Management
EMS Station
Child Care
Social Housing
Depot
Water/Sewer Facility
Municipal Boundary
Urban Area Boundary
Employment Area
Hamlet
N

Memorandum

To: **Regional Municipality of Durham**
c/o Brad Anderson
Principal Planner
brad.anderson@durham.ca

From: **Reza Rajabiun, LLM, PhD**
Ted Rogers School of Information Technology Management, Ryerson University
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416 833 4864
reza.rajabiun@gmail.com

Date: **March 19, 2018**

Subject: **Preliminary Analysis of the State of Broadband Internet Connectivity in the Durham Region**

Preliminary Analysis of the State of Broadband Internet Connectivity in the Durham Region

By Reza Rajabiun, LLM, PhD

Executive Summary

The Regional Municipality of Durham is in the process of evaluating the state of broadband Internet connectivity available to its residents, businesses, and public-sector organizations, with the objective of using this knowledge to develop a broadband strategy. Based on measurements from a large-scale standards-based network testing platform, this report provides a high-level overview of the state of Internet connectivity and quality of broadband services service providers deliver in the Durham Region. We also benchmark the state of the network in the Durham Region relative to other parts of the Greater Toronto and Hamilton Area (GTHA).

The analysis documents that connection speeds and user quality of experience indicators in some of the urban parts of the Durham Region are among the highest in the GTHA. There are however areas with particularly low service quality both in rural and some urban parts of the Region. Gaps are particularly pronounced in northern and eastern parts of Durham, where average measured connection speeds users experience are about half of those users experience in some of the newer urban areas in the southeast of the Region.

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Acknowledgement: This research has been supported, in part, by the Ontario Ministry of Infrastructure (MOI) and the Social Sciences and Humanities Research Council of Canada (SSHRC). The author is grateful to Fenwick McKelvey and Trevor James Smith for their contribution to data collection and mapping. The views expressed herein are the author's alone and should not be interpreted to reflect those of any affiliated organizations. All rights reserved.

Preliminary Analysis of the State of Broadband Internet Connectivity in the Durham Region

I. Context, Methodology, and Data:

1. **Motivation:** While Ontario and Canada were recognized as early international leaders in expanding access to high-speed Internet connectivity, over the past decade it has become increasingly clear that Canada is falling behind many other advanced economies in terms of measured broadband speeds, private sector incentives to deploy next generation fiber-to-the-premises (FTTP) technologies, and affordability of high-speed data services.[1] Recognizing these trends, municipal and business stakeholder in the Greater Toronto and Hamilton Area (GTHA) have identified broadband Internet connectivity as a major concern and called on the province to ensure the region develops broadband infrastructure that is at least equal to other globally competitive jurisdictions.[2] At the same time, some communities and regional governments around the GTHA are studying the state of connectivity in their communities to identify and validate gaps with the aim of developing effective strategies for encouraging investments in ultra-high speed next generation fiber-to-the-premises (FTTP) broadband technologies to businesses and residents. Durham Region is currently engaged in a broadband infrastructure mapping and strategy development process.

2. **Scope:** This report provides a high-level overview of the state of broadband connectivity in the Durham Region using data from the large-scale standards-based Internet measurement testing platform developed by Measurement Lab (M-Lab)/Google.[3] Building on previous research conducted by this author on the state of Internet connectivity in Ontario and the GTHA,[4] the analysis of measured/actual connection speeds and service quality levels in Durham complements ongoing efforts by the Region to research and map advertised speeds that Internet service providers claim are available to residents and businesses in particular areas. While likely to be correlated, effective bandwidth and service quality levels that users experience on congestion prone infrastructure tends to vary substantially from advertised maximum speeds that might be theoretically available in a particular area (e.g. due various factors including capacity under-provisioning, distance from the node, availability of legacy copper and fixed wireless/satellite v. faster cable or FTTP "last mile" technologies, etc.). In this report we document measured connection speeds and service quality levels based on user-initiated tests,

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[1] Rajabiun, R., & Middleton, C. (2017). Regulatory Federalism and Broadband Divergence: Implications of Invoking Europe in the Making of Canadian Telecom Policy. *Intereconomics*, *52*(4), 217-225. https://www.ceps.eu/system/files/IEForum42017_5.pdf

[2] See e.g. http://www.occ.ca/wp-content/uploads/OCC-Broadband-Letter-07-18-161.pdf ; http://www.newmarket.ca/TownGovernment/Documents/Mayor%27s%20Speeches%20and%20Presentations/Newmarket%20Chamber%20-%20Mayor%27s%20speech%20-%20April%2022%202016%20-%20Website.pdf

[3] https://www.measurementlab.net/

[4] Rajabiun, R. (2017) State of Broadband Internet Infrastructure and Strategies for Improving Connectivity In The Greater Toronto and Hamilton Area (GTHA). Government of Ontario, Ministry of Infrastructure.

which allows us to benchmark and map the state of connectivity as experienced by Durham residents.

3. **Limitations:** Ideally, to develop an empirically driven approach to broadband infrastructure development policy a combination of indicators capturing inputs (e.g. capital expenditures, distribution and capacity of physical assets) and market outcomes (e.g. quality and affordability) would be required. These indicators can then be mapped in a fine-grained manner in order to identify and address existing and emerging concerns about outcomes, either by operators themselves or through some form of public sector initiative when market forces appear inadequate for delivering the socially desirable outcomes (e.g. targeted supply or demand side subsidies, direct public investment in essential transport and access facilities, structural measures, etc.). In practice, however, disaggregated information about investment inputs, physical assets, and service pricing and quality of service is extremely valuable to operators and considered confidential. This creates an information asymmetry that limits the scope for empirically driven policy decisions, particularly by lower levels of government with limited legal capacity to compel disclosure of material information from private entities regulated under central government jurisdiction.

4. One way of addressing this problem with respect to physical infrastructure is for local authorities to conduct surveys around their communities to be able to benchmark what they have, identify gaps, and plan for the future. While necessary in the design and implementation of broadband initiatives, such surveys are resource intensive and only what can be seen can be mapped independently in the absence of cooperation by operators. As in the case of capital expenditures, maps of physical assets would at best offer an indicator of inputs into the determinants of connectivity and not a reliable measure of market outcomes experienced by users.

5. **"Big data" Internet measurements**: Development of tools and large scale broadband network performance testbeds increasingly allow users, technology companies, and policymakers to overcome this information asymmetry. There is a wide range of such tools available with distinct methodologies, capabilities, and uses. In contrast to financial or technical indicators of inputs that are hard to construct at a disaggregated level due to confidentiality considerations, Internet measurements tests allow those who do not control networks to gain a window into their operations. Users can employ these tools to evaluate speeds their operator is delivering and to compare their options in the market. For telecom investors, network performance indicators offer a method for identifying under-served markets, undervalued/overvalued assets, and to optimize their entry/exit strategies accordingly. This type of information is also highly valuable to technology companies that require high-quality connectivity in order to be able to deliver Internet applications and services from the so-called "cloud" to their customers. For economic policymakers trying to ensure broadband infrastructure of sufficient quality and affordability is available to support the digital economy and information technology intensification, "big data" on the operations of the infrastructure offers a unique window into the evolution of connectivity.

6. Different testing methodologies tend to generate substantially different results in terms of speed measurements across jurisdictions and operators.[5] From an analytical perspective, this is valuable because it suggests they offer distinctive and potentially complementary information about a multilayered and fast evolving world of broadband connectivity. In terms of measured speeds, results from Speedtest/Ookla tend to be substantially higher than those generated by two other commonly cited sources of global speed measurements, Akamai Technologies State of the Internet Report and the Measurement Lab (M-Lab) Network Diagnostic Test (NDT), which is sponsored by Google and various independent research institutions.[6] There are a number of well-known methodological reasons for these differences, which are beyond the scope of this report to discuss in detail.[7]

7. **Open data and multilevel coordination:** In this report, we use data from the M-Lab/NDT test to benchmark and map the state of connectivity in the Durham Region. There are a number of reasons for this, including its standards-based open data approach to the problem of Internet measurements, its widespread use in research and policy debates, and its relatively large sample size for Canada (e.g. approximately 400,000 tests in the GTHA in 2016). The Canadian Internet Registration Authority (CIRA) has adopted the M-Lab testing platform and operates servers that run the NDT tests, data from which is then compiled in the open data repository maintained by M-Lab.[8] Consequently, the open and standardized approach to M-Lab data collection makes it particularly relevant as a basis for policy development that requires mapping and coordination across multiple levels of government.

8. **Potential sources of error:** In terms of absolute measures of average and median speeds, results from M-Lab/NDT tend to be broadly consistent with those from Akamai, a large content and application delivery (CDN) company with a global system of servers. Since Akamai's business is to optimize and accelerate connectivity between its clients and their customers, this suggest the NDT test might be somewhat overestimating speeds. One reason for this might be that crowdsourced measurements such as M-Lab NDT have the potential for a sampling bias as people likely to test their connections tend to be those that care more about the quality of their connections than average users. This sub-group is likely to purchase relatively higher speed packages than the general population. On the other hand, both Akamai and M-Lab approaches represent "off net" measurements that capture connection from users to servers outside of the providers' networks. Consequently, they might be underestimating connection quality for accessing content and applications from within these networks or those the operators are prioritizing. Sample sizes of tests from less densely populated areas can be relatively small, which may create material errors in estimates for these areas. Geolocation of tests is also challenging and adds another source of potential error to the estimates. Combining the data

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[5] Bauer, S. (2016). Improving the Measurement and Analysis of Gigabit Broadband Networks. Research Conference on Communications, Information and Internet Policy 2016 (TPRC 44).

[6] See: https://www.akamai.com/ ; https://www.measurementlab.net/

[7] Bauer, S., Clark, D. D., & Lehr, W. (2010, August). Understanding broadband speed measurements. TPRC. http://people.csail.mit.edu/wlehr/Lehr-Papers_files/bauer_clark_lehr_2010.pdf

[8] https://www.measurementlab.net/data/

provided in this analysis with those the Region is collecting from service providers may offer valuable insights and assist in developing a richer picture of the state of the network and its potential development paths within Durham.

9. **Aggregation and local variation**: In this report we look at connection quality at a relatively high-level of aggregation, which may hide significant local differences in what users actually experience (i.e. we only look at municipal and Industry Canada hexagons, which have an approximately 5 km diameter). For example, service quality/speeds tend to degrade significantly due to distance on legacy copper networks, which means users that are further away from the local fiber node in their area may have a much poorer experience than those residing close to that fiber node. This is one of the key reason why indicators based on maximum theoretical speeds (i.e. up to xMbps) that are available in a particular area are not necessarily very informative as users that are far away from fiber nodes in that area or have to rely on wireless/satellite may be experiencing service quality levels that are far below the theoretical maximum speed that might be "available" to some users in that area. While the level of analysis here should be sufficient for informing the Durham stakeholders as the Region develops a broadband strategy, more fine-grained mapping using network measurements would help pinpoint areas where connectivity is particularly poor, as well that those in which private service providers are investing more to keep up with growing demand for network resources and deploying advanced fiber technologies closer to end user/customer premises.

10. **Aggregation and service provider variation:** Unless otherwise stated, in the analysis that follows we estimate connection quality in aggregating all M-Lab/NDT tests taken by users in Durham Region in 2016. As documented in Figure 1 however, it is important to note that are significant differences in effective speeds large operators deliver, which depends on various factors including their technological endowments, financial, and service provisioning strategies.[9] In Ontario for example, Figure 1 documents a growing gap between median speeds delivered by the two largest fixed infrastructure operators that dominate retail residential markets, with Rogers scaling its network infrastructure capacity to deliver higher speed services compared to its main rival Bell over the past few years. In neighbourhoods where users can access higher capacity/speed cable or FTTP networks, service quality/speed levels that are available to users with demand for higher speed connections are likely to be higher than the average rates analyzed in this report. Where there is limited access upgraded cable networks and FTTP "last mile", residents and businesses may have little option but to rely on long loop DSL services on old copper networks, fixed wireless, or high-latency/low speed satellite services (e.g. those offered by Xplornet). Speed/service quality levels available to users living in relatively remote locations within municipal and hexagonal areas analyzed here are likely be substantially lower than average speeds/latency rates documented in the subsequent section. We abstract away from firm level differences in service/infrastructure quality in Durham in the discussion that follows to focus on geographic variations within the Region and compared to the rest of GTHA.

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[9] Rajabiun, R., & Middleton, C. (2018). Strategic choice and broadband divergence in the transition to next generation networks: Evidence from Canada and the US. *Telecommunications Policy*, 42, 1, 37-50. https://www.sciencedirect.com/science/article/pii/S0308596117301143

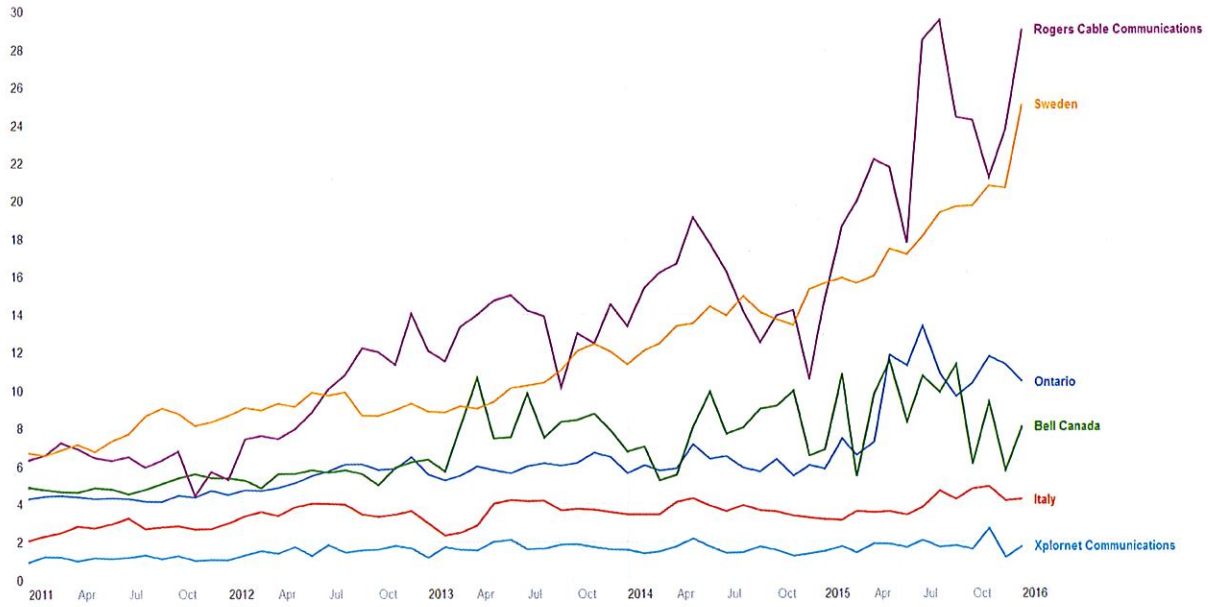
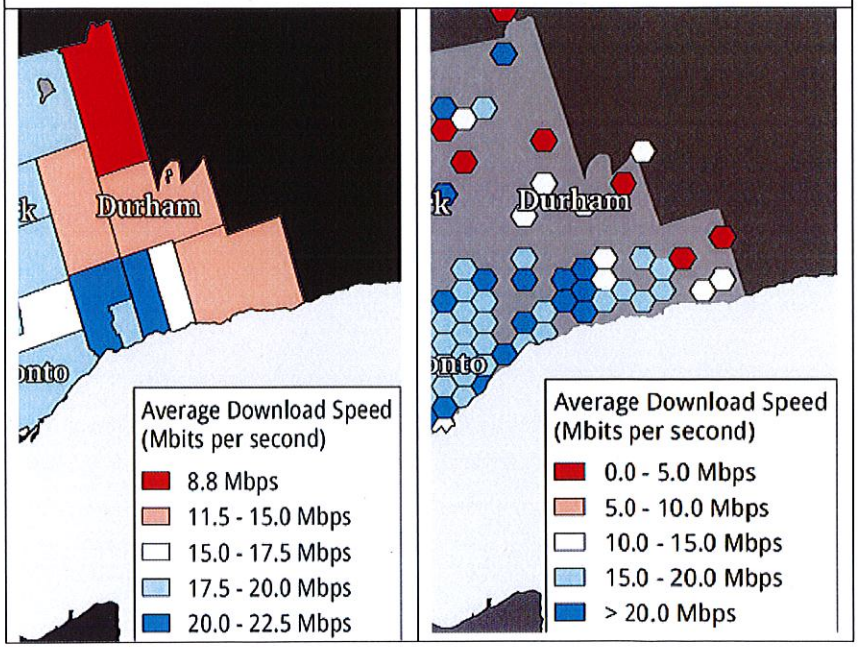


Figure 1: Measured Broadband Speeds in Ontario, differences among dominant service providers, and global benchmarks: Median download speeds 2011-2016 (Mbps); Source Google/M-Lab

II. State of Network Infrastructure in Durham: 2016

11. **Download speeds:** Figure 2 documents the range of average download speeds within Durham Region municipalities and lower level hexagons in 2016. Some of the urban parts in the southwest of the Region had average downstream speeds that lead GTHA, while measured speeds in some of the rural communities in the north and east of Durham Region are relatively poor (below 5 Mbps). However, it is also evident that download speeds in some rural communities in Durham tend to be higher than in some of the more urban hexagons in the southwest of the Region (as well as in the GTA and York Regions). This suggests broadband infrastructure quality concerns tend to cross the urban-rural digital divide as incentives of private sector providers to scale their network capacity in response to demand growth can vary across communities and neighbourhoods. More fine-grained mapping of network infrastructure quality would be needed to identify exactly which areas are falling behind, and where private sector incentives to keep up with demand for high-speed connectivity appear adequate.

Figure 2. Effective Download Speeds in Durham (2016)



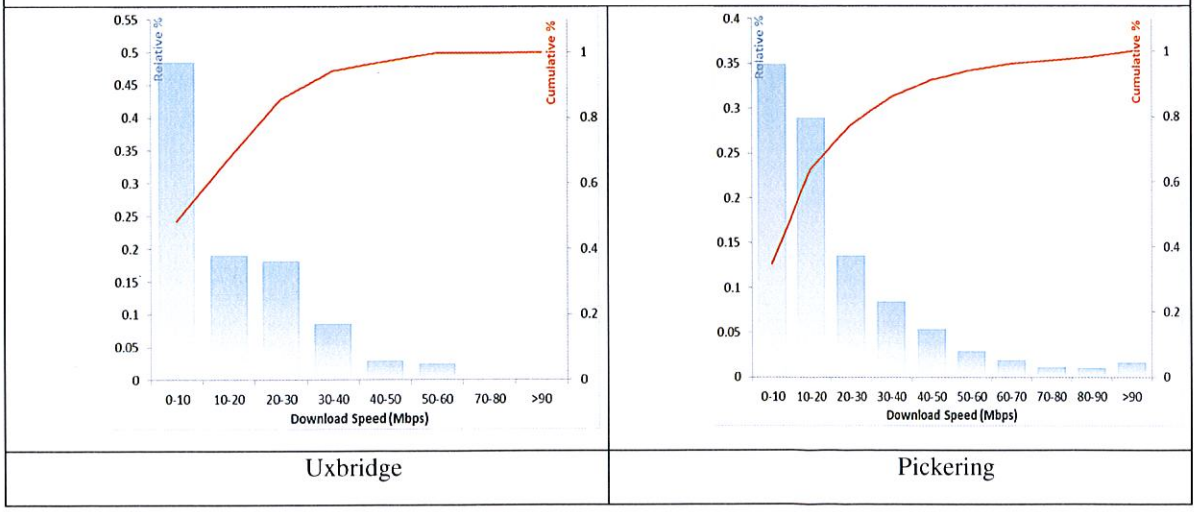
12. **Note on CRTC basic service standards:** In 2016, the federal telecom regulator reclassified high-speed access as a basic telecommunications service and established:

"the following criterion to assess whether the broadband portion of the universal service objective is achieved: Canadian residential and business fixed broadband Internet access service subscribers can access speeds of at least 50 Mbps download and 10 Mbps upload. These speeds

are to be the actual speeds delivered, not merely those advertised. That stated, the Commission recognizes that the broadband Internet access service speeds actually experienced by users are affected by a wide range of factors, some of which are outside the control of the network provider."[10]

13. The CRTC further estimated that "*82% of Canadians currently **have access to** fixed broadband Internet access services at speeds of at least 50 Mbps download and 10 Mbps upload.*"[11] This estimate is based on data from service providers on maximum advertised speeds they claim are available in particular areas of the country (i.e. the hexagons). For various reasons, some of which were noted above, actual measured speeds can vary substantially from these maximum advertised rates that might be theoretically be available sometimes (e.g. low traffic periods late at night/early morning) and to only some users in a particular area (e.g. those close to local fiber nodes/central offices). To help explain the difference between CRTC's approach based on advertised rates that are theoretically "available" and the one used here based on measurements of actual speed/service quality levels service providers deliver, Figure 2 documents the distribution of measured connection speeds in two municipalities representative of urban and rural parts of Durham. Despite significant differences in average service quality, services with speeds higher than CRTC's 50 Mbps basic service standard are theoretically available in certain areas in both communities (e.g. close to the fiber node/central office, in buildings where FTTP last mile networks have been deployed). While effective downstream bandwidth that is available to the large majority of users is below 20 Mbps, in newer/more urban Pickering the proportion of users that can achieve speeds higher than 10 Mbps is substantially higher than in the less densely populated Uxbridge.

Figure 3. Urban/Rural Broadband Divide in Durham
Distribution of effective download speeds



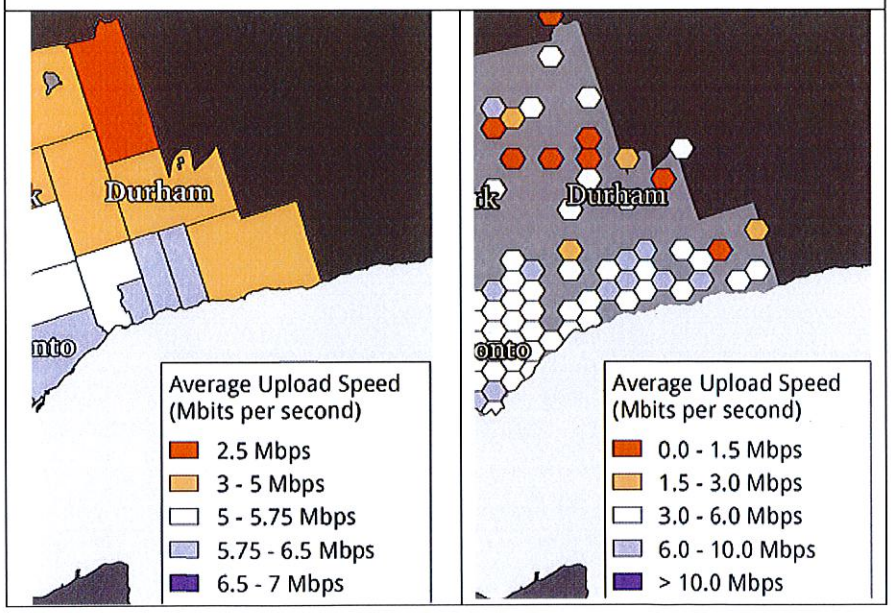
Uxbridge | Pickering

[10] Paragraphs 80 & 81. Telecom Regulatory Policy CRTC 2016-496. https://crtc.gc.ca/eng/archive/2016/2016-496.htm

[11] Ibid. Para 79. Emphasis added.

14. **Upload speeds:** Although effective/measured download speeds are important as an indicator of broadband infrastructure quality, various advanced Internet applications require reliable symmetric connectivity (e.g. voice/video communications, multimedia, applications requiring processing and backup in the "cloud", etc.).[12] Effective bandwidth service providers allocate to upstream capacity can be critical to the ability of users to deploy applications that require more symmetric connections than is needed for media applications that push downstream to end users (e.g. video content, advertising). Figure 3 maps the distribution of average measured upload speeds in Durham in 2016. In terms of the geographic gaps in Durham, this measure broadly confirms insights noted above bases on measured download speeds. The geographic extent of the gaps between the northeast and southwest of the Region in terms of upload speeds appear to be wider than in terms of download speeds noted above. This likely reflects higher access to cable (and potentially some FTTP) access networks in the southwestern parts of the Region which can offer more symmetric connections compared to relatively more rural areas in the north and the east. Notably however, average upload speeds in some rural parts of Durham are on par with the some of urban parts of the Region.

Figure 4. Effective Upload Speeds in Durham (2016)



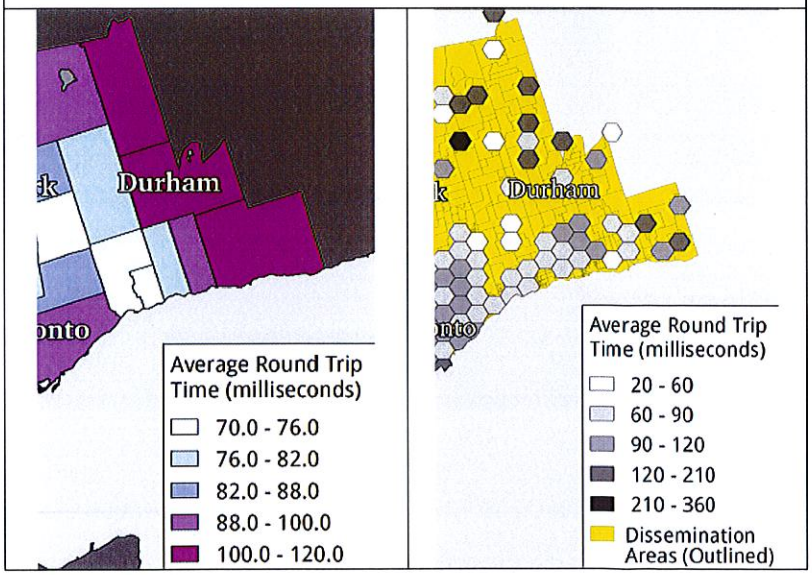
15. **Latency:** In addition to connection speeds and their symmetry, a key measure of broadband infrastructure quality from the perspective of both user experience and network management is the latency/delay in the transmission of data packages. For the usability of some applications latency doesn't really matter (e.g. email), but it can be critical for other basic Internet services

[12] For examples see eBusiness Toolkit for Small and Medium Size Enterprises (SMEs). Eastern Ontario Wardens' Caucus/Eastern Ontario Regional Network; by eFilters Inc. & RDM Management Group (2016). Available at: https://www.edco.on.ca/resources/Documents/EORN_eBusinessToolKit2016_Web%20FINAL.pdf

such as web browsing, voice/video communications, and various latency sensitive applications in the "cloud". As a relevant basic service benchmark, previous research documents that with latency (commonly measured as round-trip-time, RTT) rates over 80-100 milliseconds, delays in simple web browsing become increasingly challenging to the majority of users.[13] Even in areas with relatively high effective measured speeds, when network demand is outpacing supply latency rates can increase exponentially as bandwidth reaches capacity during high-traffic periods, which can substantially degrade service quality (i.e. "congestive collapse" making high speed connections "feel slow"). In terms of network management, latency is usually viewed as a key indicator of emergent congestion on shared links and routers due to growing demand that outpaces capacity supply (i.e. trigger for provisioning more network resources/capacity).

16. Figure 4 presents estimated latency rates in Durham based on 2016 M-Lab data at the two levels of aggregated as above with speeds. While we see some correlation between speeds and latency (which we discuss further below), latency rates appear to offer a richer picture of the complexity of network development across the urban-rural digital divide. Although latency is unacceptably high in some rural parts of the Region, there are rural communities with relatively low latency rates. At the same time, measured average latency rates in some urban parts of Durham (and GTHA more broadly) tend to be higher that most users might find acceptable when engaging in basic Internet applications such as web browsing (i.e. "off-net" websites outside of their service providers network).

Figure 5. Effective Upload Speeds in Durham (2016)



[13] Rajabiun, Reza and McKelvey, Fenwick (2017). Complementary Realities: Public Domain Internet Measurements in the Development of Canada's Universal Access Policies. TPRC 45. Available at SSRN: https://ssrn.com/abstract=2943054

17. **Local variation:** Aggregation of individual network diagnostic tests as above provides an intuitive picture of the state of broadband connectivity, but also may hide substantive diversity at the local level. For example, higher performing municipalities in the southwest of Durham may have newer neighbourhoods and buildings with upgraded networks, but they also contain older and low-income communities where private sector incentives to invest in network resources can be weak (i.e. lower expected return on capacity upgrades). A large number of tests from the newer and more affluent neighbourhoods in the sample is likely obfuscating such local differences. Lower level analysis is therefore required in design and evaluation of particular broadband infrastructure improvement initiatives.

18. **Summary and benchmarking:** To summarize and provide a basis for benchmarking the state of connectivity in Durham, Figures 6 plots the empirical relationship between effective download speeds and latency among GTHA municipalities. Figure 7 plots the same variables, but at the lower Industry Canada hexagonal level of aggregation. Some of the municipalities in the southwest of Durham Region (Pickering and Whitby) are among the leaders in the GTHA in terms of broadband infrastructure quality, but speed/service quality levels in Oshawa and Ajax are substantially below their counterparts in the southwest of Durham. Connection speeds in rural Brock and Scugog were about half of those in the leading municipalities. Somewhat surprisingly, measured network speeds in relatively urban Oshawa where about the same as in rural Uxbridge. This observation documents that some urban areas are also prone to underinvestment and have poor broadband infrastructure quality. As documented in Figure 7 using lower level data, the magnitude of the gaps between leading and lagging areas tend to be substantially higher that is suggested by aggregating the data at the municipal level. An effective broadband infrastructure strategy would recognize that barriers to access and use of the Internet associated with less than adequate service quality levels can be extensive and crosses the urban-rural divide.[14]

[14] Ontario's 2017 Long Term Infrastructure Plan (LTIP) has incorporated this empirical insight to some extent, stating that "The Province is committed to expanding broadband infrastructure and improving connectivity in **both rural and urban communities**, including First Nations….". Page 39; emphasis added.
https://www.ontario.ca/document/building-better-lives-ontarios-long-term-infrastructure-plan-2017

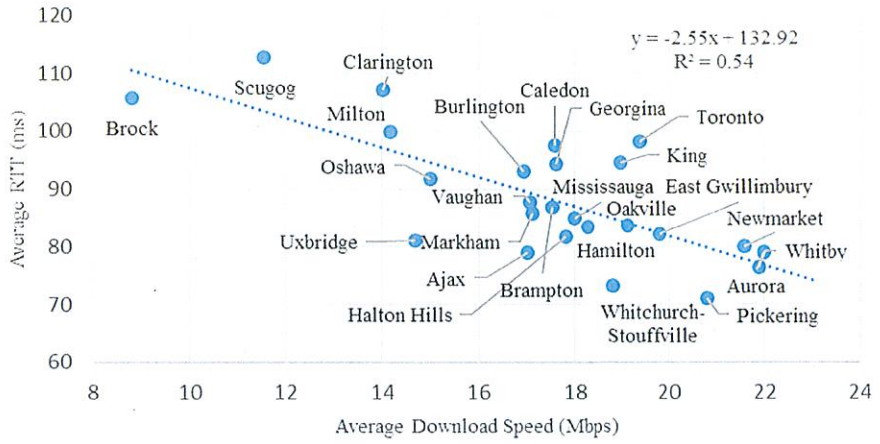


Figure 6: Effective Bandwidth and Connection Quality in GTHA Municipalities (2016)

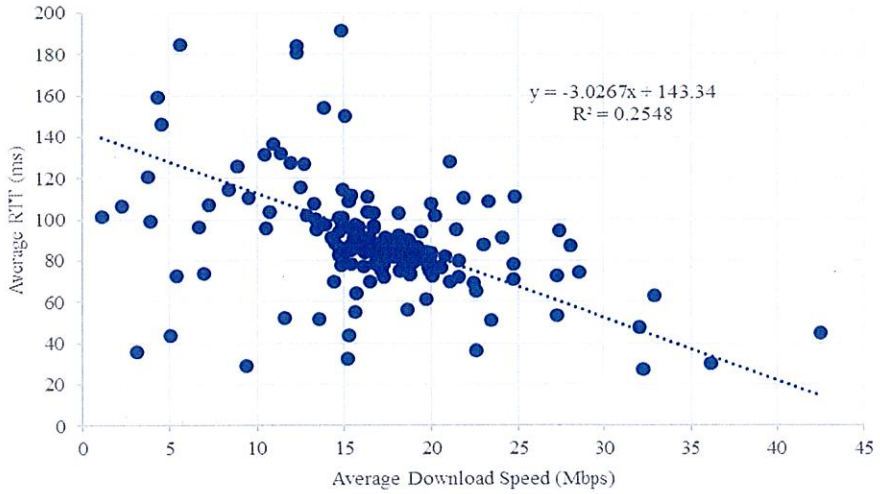


Figure 7: Effective Bandwidth and Connection Quality in GTHA Hexagons (2016)

End of Document

Glossary of Terms

Backbone: a major high-speed transmission network between large transmission aggregation points.

Backhaul: portion of an Internet network that comprises of intermediate links between the backbone network and smaller subnetworks.

Bandwidth: in computer networks, bandwidth is used to describe the rate of data that can be carried from one point to another in a given period of time.

Broadband: generally refers to internet service that is always on and available at higher speeds than traditional dial up internet services. There are several forms of broadband internet service including Digital Subscriber Line, Cable, Satellite and Fiber-Optic.

Dark Fibre: refers to fibre optic infrastructure (cable) that has been installed but that is not currently in use.

Download and Upload Speed: download speed is the rate at which data is transferred from the Internet to the user's device. Upload speed is the rate at which data is transferred from the user's device to the Internet. Download speeds are typically higher than upload speeds, as most users download more data than they upload. A common measurement of download and upload speeds is megabits per second (Mbps).

Fibre: A flexible hair-thin glass or plastic strand that is capable of transmitting large amounts of data at high transfer rates as pulses or waves of light.

Gigabits per second (Gbps): a measurement of Internet speed. 1 Gbps is equivalent to 1,000 mbps or 1 billion bits per second (bits are the smallest unit of digital information.

Internet Service Provider (ISP): a company that provides users (individuals or businesses) with access (a connection) to the Internet and related services

Last Mile: refers to the technology and process of connecting the end customers (home or business) to the first network interface point.

Lit Fibre: refers to active fibre optic cable with attached electronics that is capable of transmitting data.

Megabits per second (Mbps): a common measurement of Internet speed. 1 Mbps is equivalent to the transfer of 1 million bits of data per second (bits are the smallest unit of digital information

If this information is required in an accessible format, please contact 1-800-372-1102 ext. 2564

The Regional Municipality of Durham
Information Report

From:	Commissioner of Planning and Economic Development
Report:	#2018-INFO-56
Date:	April 13, 2018

Subject:

Monitoring of Land Division Committee Decisions of the March 19, 2018 Meeting

Recommendation:

Receive for information

Report:

1. Purpose

1.1 This report summarizes decisions made by the Land Division Committee[1] at its meeting of March 19, 2018 (see Attachment 1). The approved applications conform to the Durham Regional Official Plan. No appeals are recommended.

2. Distribution

2.1 A copy of this report will be forwarded to the Land Division Committee for its information.

3. Attachments

Attachment #1: Monitoring Chart for the March 19, 2018 Meeting

1. The Regional Land Division Committee (LDC) was created by Regional Council on December 19, 1973 to make independent decisions on the disposition of consent applications (e.g. severance, right-of-way, lot line adjustment) that have been submitted to the Region for approval under the Planning Act. The Committee consists of eight lay-citizen members (one representing each area municipality), that are appointed by Council for a four year term. The Chair of the LDC is selected from among the appointed members. The current Chair is Jane Hurst, the City of Oshawa's representative. The LDC meets monthly and considers approximately 150 consent applications per year.

Respectfully submitted,

Original signed by

B.E. Bridgeman, MCIP, RPP
Commissioner of Planning and
Economic Development

Attachment 1: Monitoring of Land Division Committee Decisions for the Meeting Date of Monday, March 19, 2018

Appeal Deadline: Tuesday, April 17, 2018

LD File Number	Owner	Location	Nature of Application	Regional Official Plan	LDC Decision
LD 009/2018	Karakolis, Tasse Karakolis, Georgia	Part lot 6, Conc. Range 3 Town of Ajax	Consent to sever a vacant 557.9 m2 residential parcel of land, retaining a 1,301.3 m2 residential parcel of land with an existing dwelling.	Conforms	Approved unanimously
LD 022/2018	Favit, Silvano Favit, Lucy	Part lot 24, Conc. 1 Town of Whitby	Consent to add a vacant 870.8 m2 residential parcel of land to the residential lot to the west, retaining a 5,735.04 m2 residential parcel of the land with an existing residential dwelling.	Conforms	Approved unanimously
LD 025/2018	Sherk, Gerald Kenneth Cahill-Pendrigh, Deborah	Part lot 33, Conc. 2 Municipality of Clarington	Consent to sever a 896.7 m2 residential parcel of land, retaining a 921.6 m2 residential parcel of land with an existing dwelling to remain.	Conforms	Approved unanimously
LD 026/2018	821017 Ontario Limited Tonno, William 825901 Ontario Limited	Part lot 5, Conc. 4 City of Oshawa	Consent to sever a 1.78 ha vacant agricultural parcel of land, retaining a 10.52 ha vacant agricultural parcel of land for future development.	Conforms	Approved unanimously
LD 027/2018	821017 Ontario Limited Tonno, William 825901 Ontario Limited	Part lot 5, Conc. 4 City of Oshawa	Consent to sever a 2.90 ha vacant agricultural parcel of land, retaining a 7.62 ha vacant agricultural parcel of land for future development.	Conforms	Approved unanimously

LD File Number	Owner	Location	Nature of Application	Regional Official Plan	LDC Decision
LD 028/2018	821017 Ontario Limited Tonno, William 825901 Ontario Limited	Part lot 5, Conc. 4 City of Oshawa	Consent to sever a 4.20 ha vacant agricultural parcel of land, retaining a 3.42 ha vacant agricultural parcel of land for future development.	Conforms	Approved unanimously
LD 029/2018	Sidhu, Gurdhian Singh	Part lot 11, Conc. 1 Municipality of Clarington	Consent to sever a 303.9 m2 residential parcel of land with an existing dwelling to be demolished, retaining a 303.7m2 residential parcel of land with an existing dwelling to be demolished.	Conforms	Approved unanimously
LD 030/2018	Abbott, Jamie	Part lot 9, Conc. 1 City of Oshawa	Consent to sever a 353.2 m2 residential parcel of land, retaining a 352.8 m2 residential parcel of land with an existing dwelling to remain.	Conforms	Approved unanimously
LD 034/2018	Lauzon, Kevin	Part lot 25, Conc. 2 Town of Whitby	Consent to sever a vacant 3,354.4 m2 residential parcel of land, retaining a 1.463 ha residential parcel of land with an existing dwelling.	Conforms	Approved unanimously
LD 035/2018	Lauzon, Kevin	Part lot 25, Conc. 2 Town of Whitby	Consent to sever a vacant 651.7 m2 residential parcel of land, retaining a 2,702.7 m2 residential parcel of land with an existing dwelling.	Conforms	Approved unanimously
LD 036/2018	Lauzon, Kevin	Part lot 25, Conc. 2 Town of Whitby	Consent to sever a vacant 651 m2 residential parcel of land, retaining a 2,051.5 m2 residential parcel of land with an existing dwelling.	Conforms	Approved unanimously
LD 037/2018	Lauzon, Kevin	Part lot 25, Conc. 2 Town of Whitby	Consent to sever a vacant 650.8 m2 residential parcel of land, retaining a 1,400.7 m2 residential parcel of land with an existing dwelling.	Conforms	Approved unanimously

LD File Number	Owner	Location	Nature of Application	Regional Official Plan	LDC Decision
LD 038/2018	Lauzon, Kevin	Part lot 25, Conc. 2 Town of Whitby	Consent to sever a vacant 650.3 m2 residential parcel of land, retaining a 750.4 m2 residential parcel of land with an existing dwelling.	Conforms	Approved unanimously

If this information is required in an accessible format, please contact 1-800-372-1102 ext. 2564

The Regional Municipality of Durham Report

From:	Commissioner of Planning and Economic Development
Report:	#2018-INFO-57
Date:	April 13, 2018

Subject:

Provincial Decisions on the Regional Natural Heritage System and Agricultural System for the Growth Plan for the Greater Golden Horseshoe, File: L35-03

Recommendation:

Receive for information

Report:

1. Purpose

1.1 On February 9, 2018, the Ministry of Natural Resources and Forestry (MNRF) and Ministry of Agriculture, Food and Rural Affairs (OMAFRA) released the final Regional Natural Heritage System for the Growth Plan for the Greater Golden Horseshoe (NHS for the GGH) and Agricultural System mapping and Implementation procedures. The Region reported on the draft materials on September 6, 2017 (Commissioner's Report #2017-COW-201) and Council-endorsed comments were submitted to the Province on September 15, 2017. This report provides an overview of the final NHS for the GGH and Agricultural System.

2. Final Natural Heritage System for the Greater Golden Horseshoe

2.1 The purpose of the NHS for the GGH is to maintain biological and geological diversity, natural functions and viable populations of indigenous species and ecosystems. It also seeks to reverse the trend of habitat loss and fragmentation across the GGH over time.

2.2 For upper- and single-tier municipalities such as Durham, the NHS for the GGH only applies to limited areas between the Urban Area Boundary and the Greenbelt Plan boundary (i.e. lands outside the Greenbelt). In total, 228 hectares of land in Pickering (144.95 ha) and Clarington (83.06 ha) were included in the final NHS for GGH mapping (refer to Attachment 1). An online map viewer of the final NHS for the GGH can be accessed here: https://www.ontario.ca/page/make-natural-heritage-area-map

2.3 Through the Region's upcoming municipal comprehensive review (MCR) process, the NHS for the GGH mapping may be refined with "greater precision" in a manner that is consistent with the Growth Plan 2017, based on the NHS for the GGH criteria and methods (copies may be downloaded here: https://apps.mnr.gov.on.ca/ebr/docs/growth-plan-natural-heritage-system-summary-report.pdf). While it is expected that comprehensive implementation of the new NHS for the GGH will occur through the upcoming MCR, any land use planning decision as of February 9, 2018 is required to be consistent with the Provincial mapping.

3. Final Agricultural System for the Greater Golden Horseshoe

3.1 The Province has developed the Agricultural System for the Greater Golden Horseshoe to provide municipalities with a tool when making decisions regarding agricultural land, local food and economic development. The final Agricultural System released by OMAFRA is comprised of:

- The Agricultural System Portal mapping of the agri-food network;
- The agricultural land base mapping; and
- Implementation procedures.

These procedures and mapping take effect immediately.

Agricultural System Portal

3.2 To support the implementation of the Agricultural System, OMAFRA created a web-based Agricultural System Portal containing mapping layers that can be used to identify existing agri-food assets and clusters for economic development purposes. The Agricultural System Portal can be accessed here: http://www.omafra.gov.on.ca/english/landuse/gis/WCAG_AGOL/index.html?appid=3cbd2393a1e548949450e21d90646353

3.3 Mapping elements of the agri-food network in the portal will also be used to analyze potential adverse impacts on the Agricultural System from non-agricultural uses. Provincial policy requires that Agricultural Impact Assessments (AIA) be conducted

for settlement area expansions, infrastructure projects and mineral aggregate operations in Prime Agricultural Areas to avoid, or if avoidance is not possible, to minimize and mitigate adverse impacts on the Agricultural System. On March 15, 2018, the Province released the draft AIA guidance document for review and comment by July 13, 2018. A Regional response to the draft AIA document will be the subject of a future report to Committee.

Agricultural Land Base Mapping

3.4 OMAFRA's final agricultural land base mapping identifies Prime Agricultural Areas, Specialty Crop Areas (not applicable in Durham) and Candidate Areas (i.e. rural lands) that together create a continuous productive land base for agriculture across the GGH (refer to Attachment 2).

3.5 The EBR posting states that, while there was support for consistent protection of prime agricultural areas, municipalities expressed concerns that the draft map included some non-agricultural uses and other lands that were not in agricultural production. As a result, OMAFRA amended the final agricultural land base map by:

- Addressing any large inaccuracies in settlement area boundaries and areas already designated by municipalities as Prime Agricultural Areas;
- Recognizing large provincially significant wetlands and life science areas of natural and scientific interest (ANSI), as well as Niagara Escarpment natural areas. These areas were removed because they do not qualify as Prime Agricultural Areas, even though agriculture may continue in these areas;
- Identifying and removing "Employment Areas" from the agricultural land base map. While it is recognized that these areas often accommodate agri-food businesses that are part of the agri-food network and Agricultural System, they do not qualify as Prime Agricultural Areas;
- Adjusting the Land Evaluation and Area Review (LEAR) threshold score to better align with existing designated Prime Agricultural Areas; and
- Addressing mapping inaccuracies identified through municipal change requests that met OMAFRA's criteria.

3.6 In Durham, the final Provincial Agricultural System will result in a potential redesignation of approximately 19,080 hectares of designated Major Open Space Areas, and 890 hectares of Waterfront Areas, to Prime Agricultural Areas (refer to Attachment 2). In addition, approximately 8,930 hectares of Major Open Space Areas, and 410 hectares of Waterfront Areas, have been identified as "Candidate Areas" for the agricultural land base. Candidate Areas are either in active agriculture

or have agricultural potential. Through the upcoming MCR, the Region will have flexibility through the MCR to either maintain these areas as rural lands (i.e. potentially continue as Major Open Space Areas) or to include these candidate areas as Prime Agriculture.

3.7 The Agricultural System also identified additional Prime Agricultural Areas (approximately 15,240 ha) and Candidate Areas (approximately 6,200 ha) within Durham's Oak Ridges Moraine Areas (refer to Attachment 2). The Oak Ridges Moraine Conservation Plan 2017 (ORMCP) recognizes the Agricultural System and acknowledges that Prime Agricultural Areas may be found in Natural Core Areas, Natural Linkage Areas and Countryside Area designations.

3.8 The 2017 Growth Plan and Greenbelt Plan require municipalities to incorporate the agricultural land base into their official plans, but allow minor refinements to the mapping through MCRs provided the refinements are consistent with the Provincial Plans. Through the MCR process, the Region will work with OMAFRA to ensure consistent identification, mapping and protection based on Provincial policy and implementation procedures. **In the meantime, OMAFRA's final Agricultural System implementation procedures and agricultural land base map are required to be applied to land use planning decisions as of February 9, 2018.**

Implementation Procedures

3.9 The implementation procedures are intended to guide municipalities and others on how to implement Agricultural System policies in their communities. The implementation procedures are also intended to provide implementing actions to support the growth of the agri-food sector. As noted in Report #2017-COW-201, Durham is recognized within the document for having an agri-food sector strategic plan (Durham Region Agriculture Strategy 2013-2018), community facing education and promotion (Durham Farm Connections), dedicated agricultural-focused economic development staff, and an active Agricultural Advisory Committee (DAAC). Copies of the final Agricultural System implementation procedures can be downloaded here: http://www.omafra.gov.on.ca/english/landuse/agsys-ggh-final.htm.

3.10 Through the consultations, stakeholders commented on the need for the Province to be engaged during municipal implementation to ensure consistency across the GGH. As a result, the final implementation procedures include a new section on "Performance Monitoring" where the Province states that it intends to monitor the use of the Agricultural System Portal and assess the overall effectiveness of the Agricultural System policies.

3.11 Since the draft Agricultural System materials were posted, OMAFRA developed an additional resource entitled “Agricultural Economic Development: A Resource Guide for Communities”. The final implementation procedures summarize this resource guide, and refer readers to the extended version available upon request from OMAFRA (a digital version is not currently available).

4. Conclusion and Next Steps

4.1 The Region will incorporate the final NHS for the GGH and Agricultural System into the Regional Official Plan as part of the MCR process. This will be the subject of future reports to Committee.

4.2 **In the meantime, land use planning decisions throughout the GGH must conform with the final NHS for the GGH and Agricultural System.**

4.3 A copy of this report will be forwarded to the area municipalities for their information.

5. Attachments

Attachment #1: Final Regional Natural Heritage System for the Growth Plan for the Greater Golden Horseshoe (Maps of Durham Region and the entire GGH System)

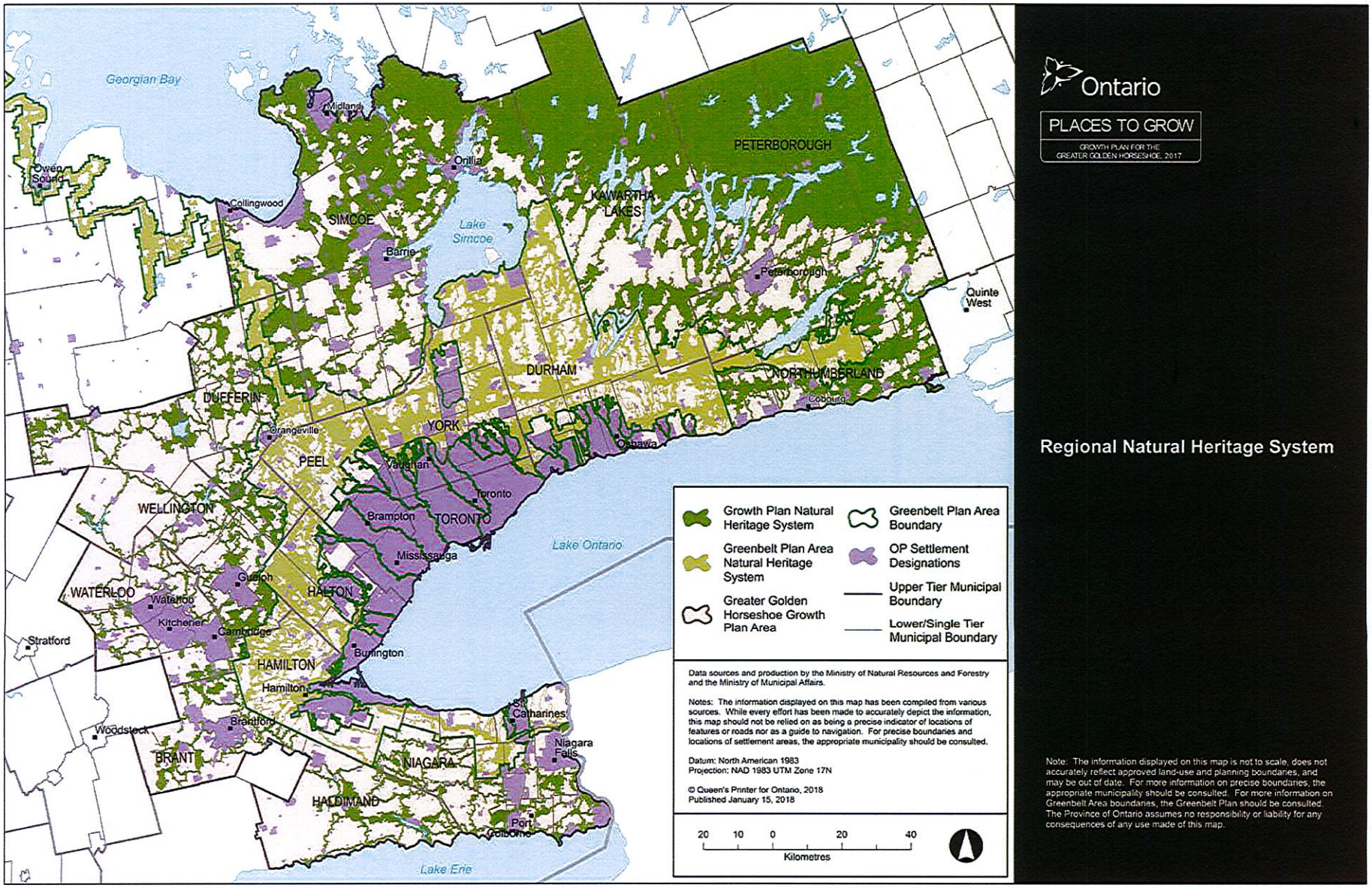
Attachment #2: Final Agricultural System – Land Base Mapping for the Greater Golden Horseshoe (Maps of Durham Region and the entire GGH System)

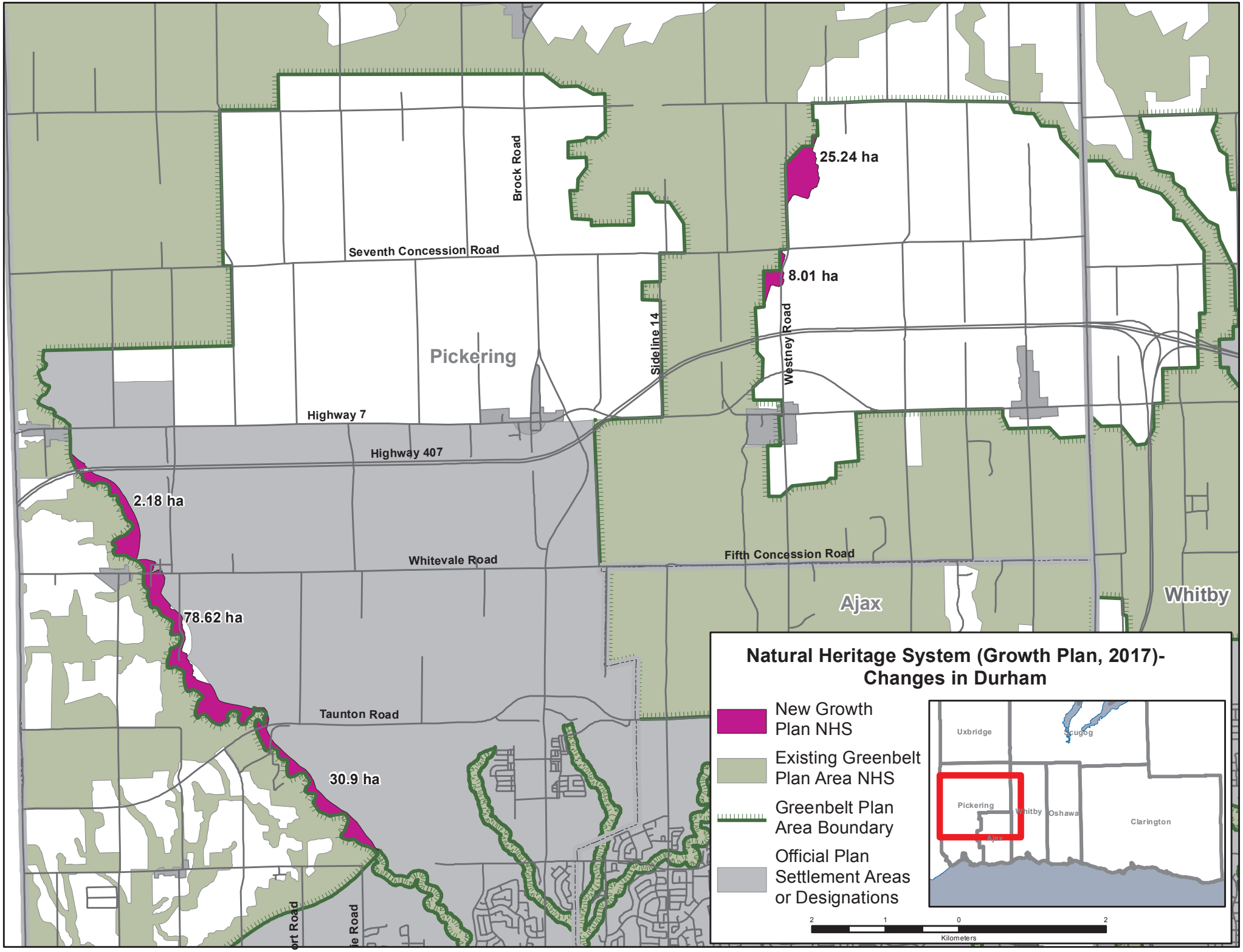
Respectfully submitted,

Original signed by

B.E. Bridgeman, MCIP, RPP
Commissioner of Planning and
Economic Development

Figure 4. Regional Natural Heritage System for the Growth Plan for the Greater Golden Horseshoe.

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8.01 ha
2.18 ha
78.62 ha
30.9 ha
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Sideline 14
Westney Road
Pickering
Highway 7
Highway 407
Whitevale Road
Fifth Concession Road
Ajax
Whitby
Taunton Road
Natural Heritage System (Growth Plan, 2017)-
Changes in Durham
New Growth Plan NHS
Existing Greenbelt Plan Area NHS
Greenbelt Plan Area Boundary
Official Plan Settlement Areas or Designations
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Scugog
Pickering
Whitby
Oshawa
Clarington
Ajax
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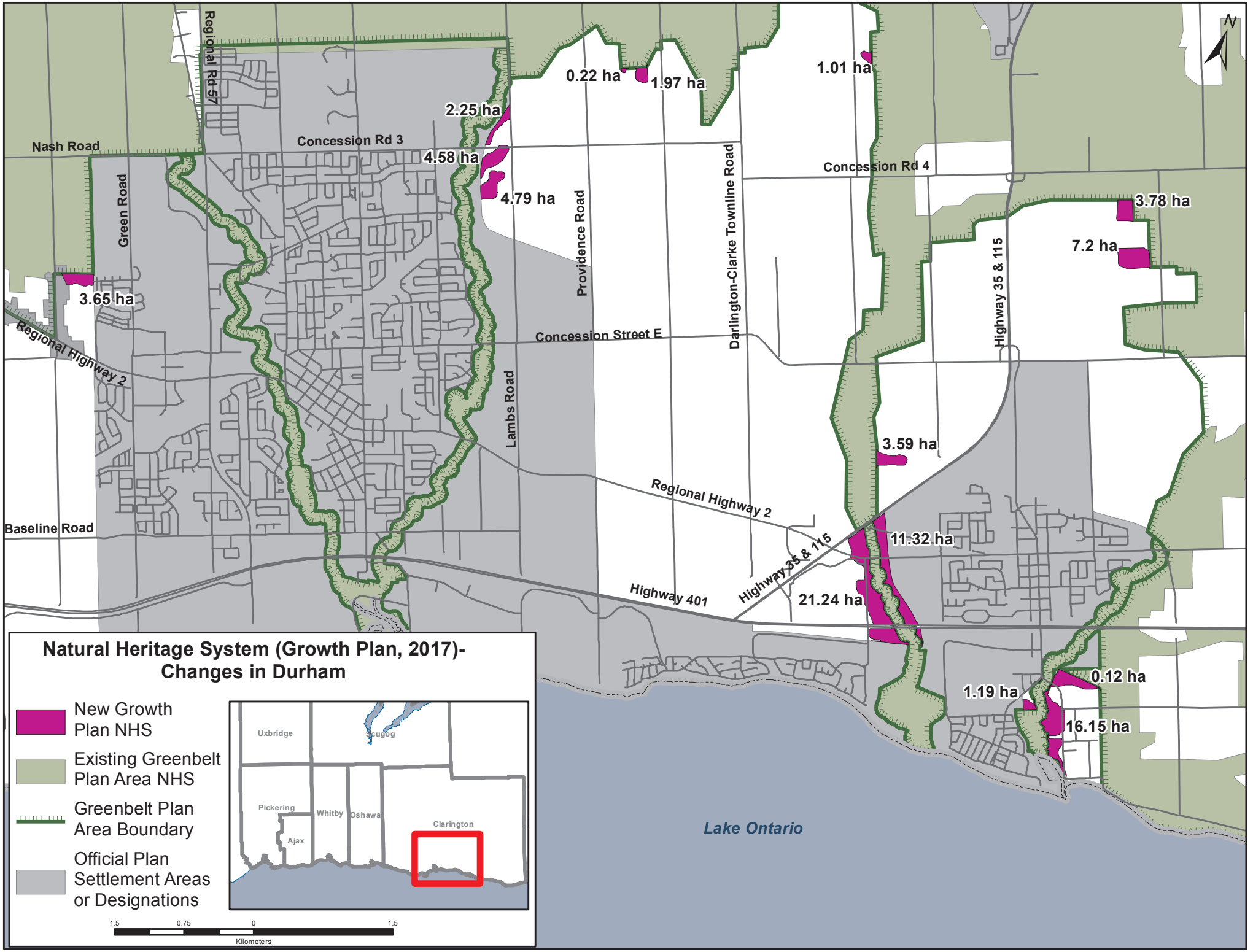
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Nash Road
Concession Rd 3
Green Road
Providence Road
Darlington-Clarke Townline Road
Concession Rd 4
Highway 35 & 115
Concession Street E
Regional Highway 2
Lambs Road
Baseline Road
Highway 401
Lake Ontario
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1.97 ha
1.01 ha
2.25 ha
4.58 ha
4.79 ha
3.78 ha
7.2 ha
3.65 ha
3.59 ha
11.32 ha
21.24 ha
0.12 ha
1.19 ha
16.15 ha
N
Natural Heritage System (Growth Plan, 2017)- Changes in Durham
New Growth Plan NHS
Existing Greenbelt Plan Area NHS
Greenbelt Plan Area Boundary
Official Plan Settlement Areas or Designations
Uxbridge
Scugog
Pickering
Whitby
Oshawa
Ajax
Clarington
1.5
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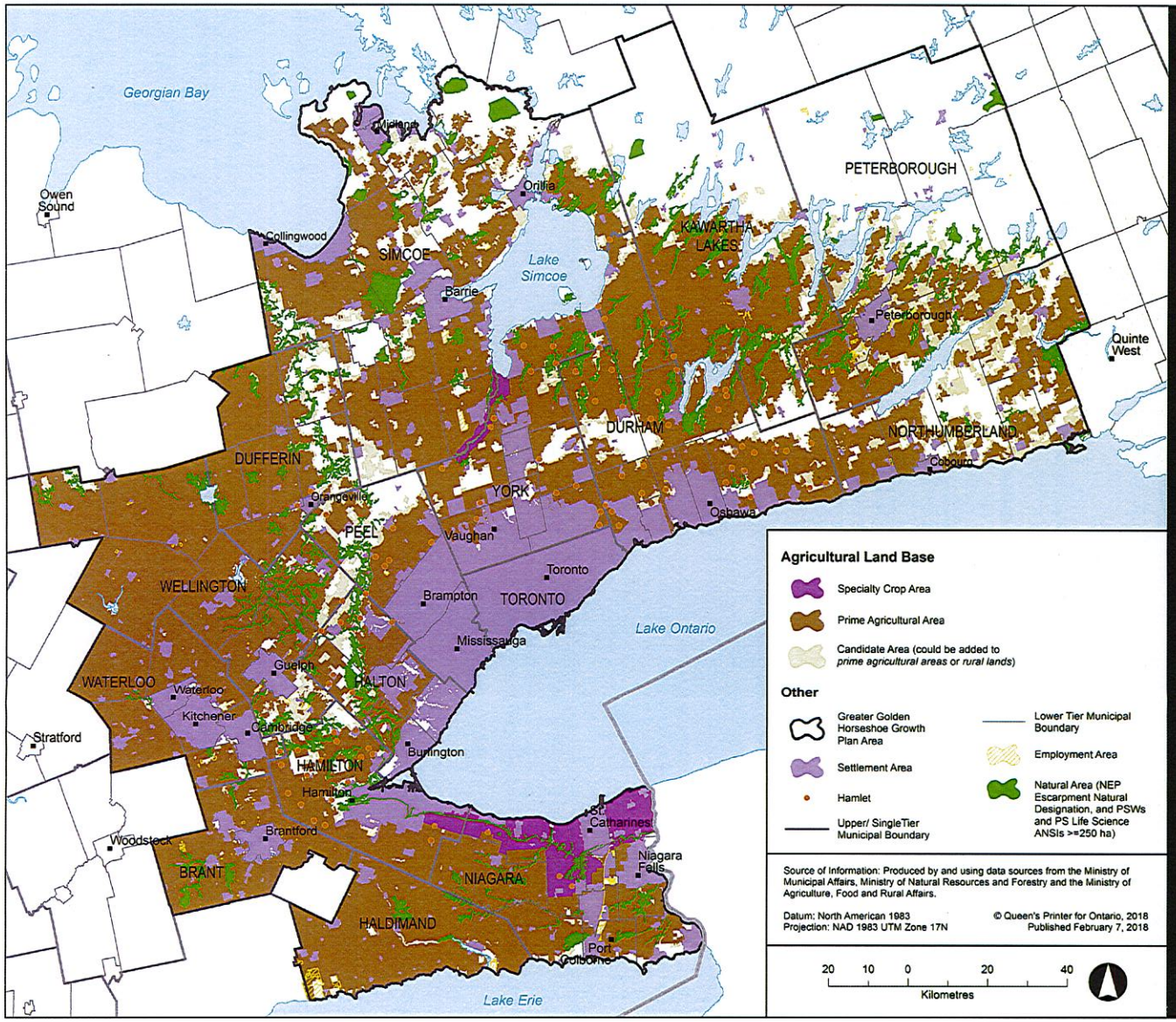

Ontario

PLACES TO GROW

GROWTH PLAN FOR THE GREATER GOLDEN HORSESHOE, 2017

Agricultural Land Base

Note: During a municipal comprehensive review, municipalities may refine the provincial agricultural land base map based on the Implementation Procedures for the Agricultural System in Ontario's Greater Golden Horseshoe. Specialty crop area boundaries are not subject to refinement.

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations of features or roads nor as a guide to navigation.

Settlement and employment area boundaries generally reflect information provided by the relevant municipality. For precise boundaries and locations of settlement and employment area boundaries the appropriate municipalities and provincial plans should be consulted. For more information on Greenbelt Area boundaries, the Greenbelt Plan should be consulted.

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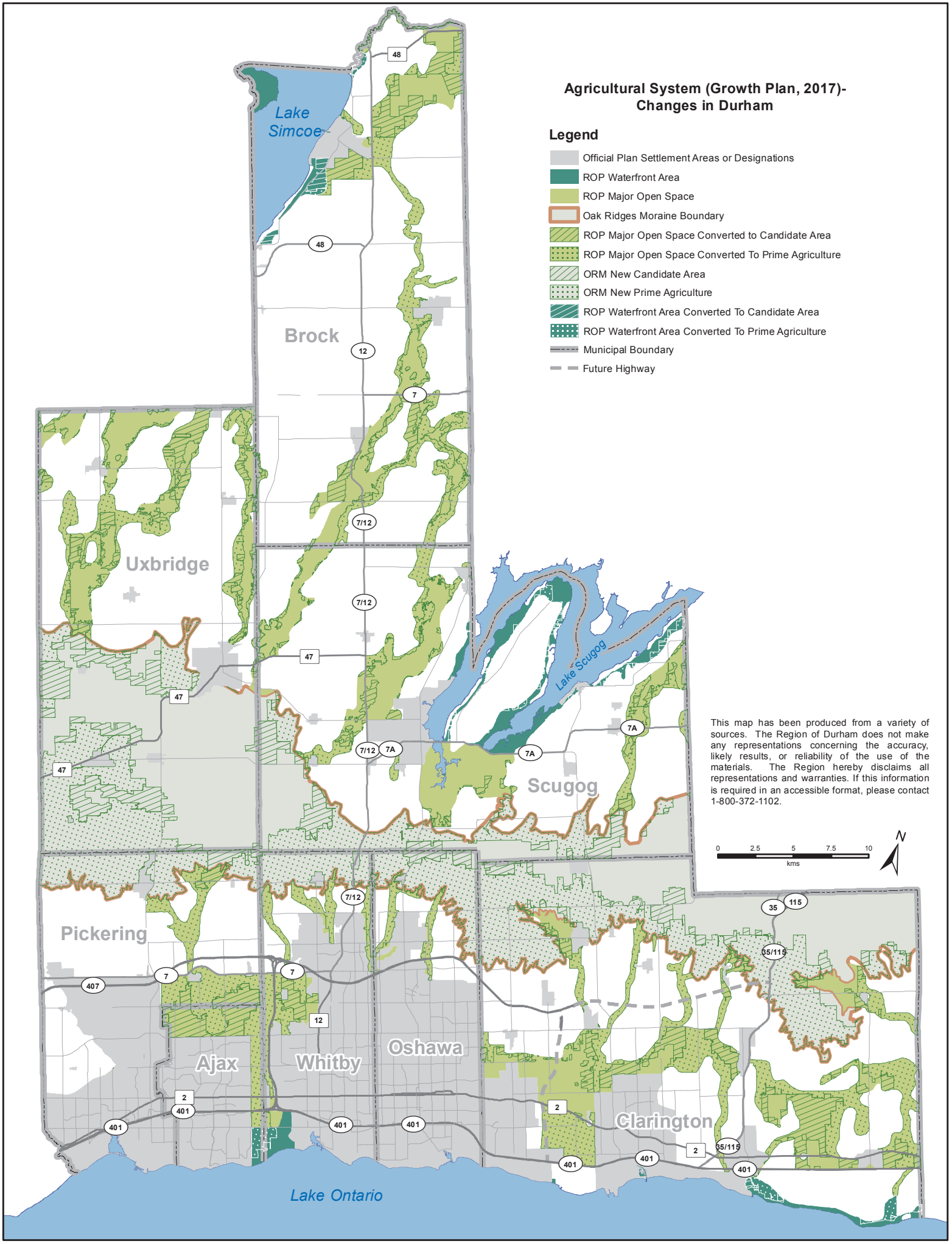
Attachment 2


Agricultural System (Growth Plan, 2017)-
Changes in Durham
Legend
Official Plan Settlement Areas or Designations
ROP Waterfront Area
ROP Major Open Space
Oak Ridges Moraine Boundary
ROP Major Open Space Converted to Candidate Area
ROP Major Open Space Converted To Prime Agriculture
ORM New Candidate Area
ORM New Prime Agriculture
ROP Waterfront Area Converted To Candidate Area
ROP Waterfront Area Converted To Prime Agriculture
Municipal Boundary
Future Highway
Lake Simcoe
Brock
Uxbridge
Scugog
Lake Scugog
Pickering
Ajax
Whitby
Oshawa
Clarington
Lake Ontario
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The Regional Municipality of Durham
Information Report

From:	Commissioner and Medical Officer of Health
Report:	#2018-INFO-58
Date:	April 13, 2018

Subject:

2017 Performance Report

Recommendation:

Receive for information

Report:

1. Purpose

1.1 To provide an update on the performance of Durham Region Health Department's (DRHD's) programs and services.

1.2 The 2017 Performance Report has been posted on durham.ca at: https://www.durham.ca/en/health-and-wellness/resources/Documents/HealthInformationServices/2017PerformanceReport.pdf

2. Background

2.1 DRHD's Performance Report includes performance of its Chronic Diseases & Injuries Programs, Environmental Health & Emergency Preparedness Programs, Family Health Programs, Infectious Diseases Programs, Paramedic Services and Professional & Administrative Services.

2.2 The Performance Report is a key component of the Health Department's 'Accountability Framework' that also includes: the Health Plan; Program Reports; Health Information updates; Quality Enhancement Plans; Durham Health Check-Ups; business plans and budgets; provincial performance indicators and targets, monitoring, compliance audits and assessments; RDPS certification; and accreditation by Accreditation Canada.

3. Highlights

3.1 The first section measures the implementation of the 2017 Health Plan priorities. In summary, of the 102 priorities: 91 were completed (89%); 7 are in progress (7%); and 4 (4%) are incomplete. This section also lists the statutory or policy requirements for each program, and the estimated compliance with these requirements, where relevant. In 2017, all applicable requirements were addressed and compliance is estimated at 100%.

3.2 The second section lists DRHD's key accomplishments and quantifies the first section.

3.3 The third section of the Performance Report lists the major research & evaluation projects and student teaching activities by Division. In many instances, activities were carried out in collaboration with local and/or provincial partners. This section complements the periodic reports on ethics reviewed research & evaluation conducted by Health staff and their partners that are noted in the regular Program Reports.

3.4 The Appendix lists the *Ontario Public Health Organizational Standards* requirements and summarizes DRHD's corresponding level of compliance.

Respectfully submitted,

Original signed by

R.J. Kyle, BSc, MD, MHSc, CCFP, FRCPC, FACPM
Commissioner & Medical Officer of Health

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The Regional Municipality of Durham
Information Report

From:	Commissioner and Medical Officer of Health
Report:	#2018-INFO-59
Date:	April 13, 2018

Subject:

2018 Health Plan

Recommendation:

Receive for information

Report:

1. Purpose

1.1 To provide an update on Durham Region Health Department's (DRHD's) priorities for 2018.

1.2 The 2018 Health Plan has been posted on durham.ca at: https://www.durham.ca/en/health-and-wellness/resources/Documents/HealthInformationServices/2018HealthPlan.pdf

2. Background

2.1 The aim of the Health Plan is to report DRHD's annual priorities, according to its families of programs and services. Priorities are based on DRHD's vision, mission, mandate and programs.

2.2 In an effort to streamline reporting and align with the modernized *Ontario Public Health Standards: Requirements for Programs, Services, and Accountability*, priorities are reported under the following program categories: Administration; Health Analytics, Research & Policy; Health Protection; Healthy Families; Healthy Living; Infectious Diseases; and Paramedic Services.

2.3 The Health Plan is a key component of the Health Department's 'Accountability Framework' that also includes: the Performance Report; Program Reports; Health Information updates; Quality Enhancement Plans; Durham Health Check-Ups; business plans and budgets; provincial performance indicators and targets, monitoring, compliance audits and assessments; RDPS certification; and

accreditation by Accreditation Canada.

3. Highlights

3.1 The first section of the 2018 Health Plan articulates program goals and 68 priorities which reflect rigorous program and evaluation plans and reviews.

3.2 The second section lists program managers and standing coordination committee leads.

Respectfully submitted,

Original signed by

R.J. Kyle, BSc, MD, MHSc, CCFP, FRCPC, FACPM
Commissioner & Medical Officer of Health

If this information is required in an accessible format, please contact 1-800-372-1102 ext. 2564

The Regional Municipality of Durham
Information Report

From:	Commissioner of Planning and Economic Development
Report:	#2018-INFO-60
Date:	April 13, 2018

Subject:

Annual Subdivision/Condominium Activity Report for 2017, File: A14-05

Recommendation:

Receive for information

Report:

1. Purpose

1.1 This report provides the annual overview of subdivision and condominium activity in the Region from January 1 to December 31, 2017. This overview focuses on those applications which achieved major milestones in 2017 in terms of: new applications received; applications draft approved; and plans that were registered. This report also compares the 2017 results with 2016.

2. Summary

2.1 This report includes tables and maps which show the extent and location of subdivision and condominium activity by area municipality in 2017. A brief summary of the 2017 information is as follows:

- **Applications Received in 2017**: 58 (35 subdivision and 23 condominium); representing 5,159 residential units (see Table 1);

- **Plans Draft Approved in 2017:** 37 (22 subdivision and 15 condominium) representing 2,509 residential units (see Table 2);

- **Plans Registered in 2017:** 38 (29 subdivision, 8 condominium and 1 industrial), representing 3,108 residential units and 8 industrial units (see Table 3);

- **Total number of Active Subdivision and Condominium Applications in Durham Region in 2017:** 375 applications (276 plans of subdivision, 99 plans of condominium) representing 34,329 draft approved residential units and 24,159 residential units in-process (i.e. not yet draft approved) (see Table 4).

3. Subdivision and Condominium Applications Received

3.1 In 2017, 58 subdivision and condominium applications were received Region-wide compared to 57 applications in 2016. Of these 58 applications, there were 35 residential plans of subdivision, 9 standard residential plans of condominium, and 14 common element plans of condominium.[1]

3.2 The total number of residential units within the subdivision and standard condominium plans was 5,159 compared to 8,816 in 2016. Approximately 45 per cent of the proposed residential units in applications received in 2017 were located in the City of Oshawa, with about half of these proposed units within one development proposal situated in the Kedron area. The Municipality of Clarington and the Town of Whitby accounted for about 19 per cent and 17 per cent of the proposed residential units respectively, while approximately 14 per cent of the proposed residential units in applications received in 2017 were located in the City of Pickering. The Townships of Brock and Uxbridge each accounted for about 2 per cent of the residential units within proposed draft plans of subdivision and condominium. A small number of residential units were also within proposed draft plans of subdivision and condominium within the Town of Ajax and the Township of Scugog.

4. Draft Approved Plans

4.1 In 2017, 37 plans were draft approved, compared to 35 in 2016. Of the 37 plans draft approved, 12 were in the form of common element plans of condominium.

1. A common element plan of condominium is typically comprised of private roadways, parking, and other common areas, and do not include any residential units.

4.2 The number of residential units within draft approved plans was 2,509 units in 2017, compared to 5,774 units in 2016.

4.3 In 2017, almost 38 per cent (945) of the residential units within draft approved plans were in the Town of Whitby. Approximately 27 per cent (667) were in the Municipality of Clarington and 22 per cent (559) were in the City of Pickering. The remaining residential units in draft approved plans were found in the Town of Ajax (112 units), the Township of Scugog (99 units), and the City of Oshawa (76 units).

5. Registered Plans

5.1 The number of registrations of plans of subdivision and condominium increased from 32 in 2016 to 38 in 2017, representing an increase in residential units from 3,091 (2016) to 3,108 (2017) within these forms of development.

5.2 The Municipality of Clarington and the Town of Whitby combined for approximately 59 per cent of the total number of residential units within plans that were registered in 2017, with 1,040 units and 803 units respectively. The City of Oshawa (531 units) and the Town of Ajax (439 units) had approximately 17 per cent and 14 per cent respectively and the City of Pickering had approximately 6 per cent of the residential units within registered plans, with the remainder in the Townships of Brock and Uxbridge.

6. Residential Units by Type

6.1 The proportion of single detached units in **subdivision and condominium applications received** decreased from 35 per cent in 2016 to 30 per cent in 2017. The proportion of apartments also decreased from 38 per cent in 2016 to 25 per cent in 2017. However, the proportion of townhouse units within these application types increased significantly from 21 per cent in 2016 to 43 per cent in 2017.

6.2 Single and semi-detached units together represented almost 34 per cent (1,091) of the total 2,509 residential units within **draft approved plans** in 2017, considerably lower than the 52 per cent proportion of the total 5,774 units within draft approved plans experienced in 2016. The proportion of multiple or townhouse units in draft approved plans increased from 40 per cent (2,314) in 2016 to about 45 per cent (1,120) in 2017. The proportion of apartment units in draft approved plans increased from 8 per cent (460) in 2016 to 12 per cent (298) in 2017.

6.3 The proportion of single detached units in **registered plans** increased considerably from 33 per cent (1,017) of the total 3,091 units in 2016 to 47 per cent (1,456) of the

total 3,108 units in 2017. There was a corresponding significant decrease in the proportion of townhouse units in registered plans from 47 per cent (1,444) in 2016 to 27 per cent (842) in 2017. Overall, there was a significant shift towards lower density dwellings in plans that were registered in 2017.

7. Active Applications

7.1 Active applications are comprised of “In Process” applications (i.e. not yet draft approved) and “Draft Approved” plans, which includes plans where the registration extends over more than one phase. At the end of 2017, there were 375 active applications (163 In Process, 212 Draft Approved) (see Table 4). The “In Process” applications propose a total of 24,159 potential residential units. Approximately 71 per cent (17,106) of the In Process units are within the City of Oshawa (10,748) and the City of Pickering (6,358). There were 212 Draft Approved plans at the end of 2017, comprising 34,329 residential units. Approximately 44 per cent (14,998) of the Draft Approved units are within the City of Pickering.

7.2 Active applications also include industrial plans of subdivision/condominium. There are currently 32 plans which are either wholly or partially industrial (26 subdivision, 6 condominium) totalling 579 hectares.

8. Current Activity

8.1 During the first quarter of 2018, 6 new subdivision and 3 new condominium applications were received by the Region, representing 1,553 “In Process” residential units. In addition, 4 plans (2 subdivision and 2 condominium), representing an additional 130 units, were draft approved in the first quarter of 2018. There were 2 subdivision plans, representing 347 units, registered in the first quarter of 2018.

9. Conclusion

9.1 2017 saw increases in the number of subdivision and condominium applications received; applications draft approved; and applications registered, compared to the previous year.

9.2 The proportion of townhouse units increased while the proportion of single-detached dwellings decreased relative to the total applications received. Among applications draft approved, the proportion of townhouses and apartment units increased significantly, while the proportion of single and semi-detached units decreased. These trends are in line with Regional and Provincial policies that

support intensification and more compact urban form.

9.3 The number of potential residential units that are “In Process” and “Draft Approved” are sufficient to satisfy Regional Official Plan Policy 4.2.6, which requires that a minimum 3 year supply of residential units be available through intensification and redevelopment, and land in draft approved and registered plans of subdivision/condominium to accommodate residential growth.

9.4 A copy of this report will be forwarded to the Area Municipalities for their information.

10. Attachments

Table #1: Subdivision and Condominium Applications Received in 2017

Table #2: Subdivision and Condominium Plans Draft Approved in 2017

Table #3: Subdivision and Condominium Plans Registered in 2017

Table #4: Active Applications by Municipality as of Year End 2017

Table #5: Subdivision Condominium Activity Maps by Area Municipality

Respectfully submitted,

Original signed by

B.E. Bridgeman, MCIP, RPP
Commissioner of Planning and
Economic Development

TABLE 1 – SUBDIVISION AND CONDOMINIUM APPLICATIONS RECEIVED IN 2017

MUNICIPALITY	RESIDENTIAL SUBDIVISION APPLICATIONS	RESIDENTIAL CONDOMINIUM APPLICATIONS	INDUSTRIAL APPLICATIONS	COMMON ELEMENT CONDOMINIUM APPLICATIONS	SINGLE DETACHED UNITS	SEMI DETACHED UNITS	MULTIPLE ATTACHED UNITS	APARTMENTS	TOTAL
AJAX	0	0	0	2	0	0	16	0	16
BROCK	1	0	0	0	103	0	0	0	103
CLARINGTON	11	0	0	2	456	0	344	172	972
OSHAWA	7	4	0	4	681	0	784	859	2,324
PICKERING	4	1	0	1	16	0	726	0	742
SCUGOG	1	0	0	0	11	0	0	0	11
UXBRIDGE	3	0	0	3	0	0	95	12	107
WHITBY	8	4	0	2	299	54	261	270	884
DURHAM	35	9	0	14	1,566	54	2,226	1,313	5,159

TABLE 2 – SUBDIVISION AND CONDOMINIUM PLANS DRAFT APPROVED IN 2017

MUNICIPALITY	RESIDENTIAL SUBDIVISION APPLICATIONS	RESIDENTIAL CONDOMINIUM APPLICATIONS	INDUSTRIAL APPLICATIONS	NUMBER OF COMMON ELEMENT CONDOMINIUM APPLICATIONS	SINGLE DETACHED UNITS	SEMI DETACHED UNITS	MULTI FAMILY UNITS	APARTMENT UNITS	TOTAL
AJAX	3	0	0	2	112	0	0	0	112
BROCK	0	0	0	0	0	0	0	0	0
CLARINGTON	5	1	0	0	183	0	355	129	667
OSHAWA	3	0	0	2	76	0	0	0	76
PICKERING	3	2	0	1	40	0	350	169	559
SCUGOG	1	0	0	0	99	0	0	0	99
UXBRIDGE	1	0	0	1	0	0	51	0	51
WHITBY	6	0	0	6	429	152	364	0	945
DURHAM	22	3	0	12	939	152	1,120	298	2,509

TABLE 3 – SUBDIVISION AND CONDOMINIUM PLANS REGISTERED IN 2017

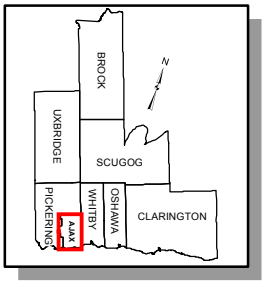
MUNICIPALITY	RESIDENTIAL SUBDIVISION REGISTRATIONS	RESIDENTIAL CONDOMINIUM REGISTRATIONS	INDUSTRIAL REGISTRATIONS	COMMON ELEMENT CONDOMINIUM REGISTRATIONS	SINGLE DETACHED UNITS	SEMI DETACHED UNITS	MULTI FAMILY UNITS	APARTMENTS	TOTAL
AJAX	5	0	1*	1	261	72	106	0	439
BROCK	1	0	0	0	42	48	0	0	90
CLARINGTON	9	1	0	0	475	0	430	135	1040
OSHAWA	7	0	0	0	507	24	0	0	531
PICKERING	1	1	0	2	1	6	0	169	176
SCUGOG	0	0	0	0	0	0	0	0	0
UXBRIDGE	1	0	0	1	29	0	0	0	29
WHITBY	5	2	0	0	141	58	306	298	803
DURHAM	29	4	1	4	1456	208	842	602	3,108

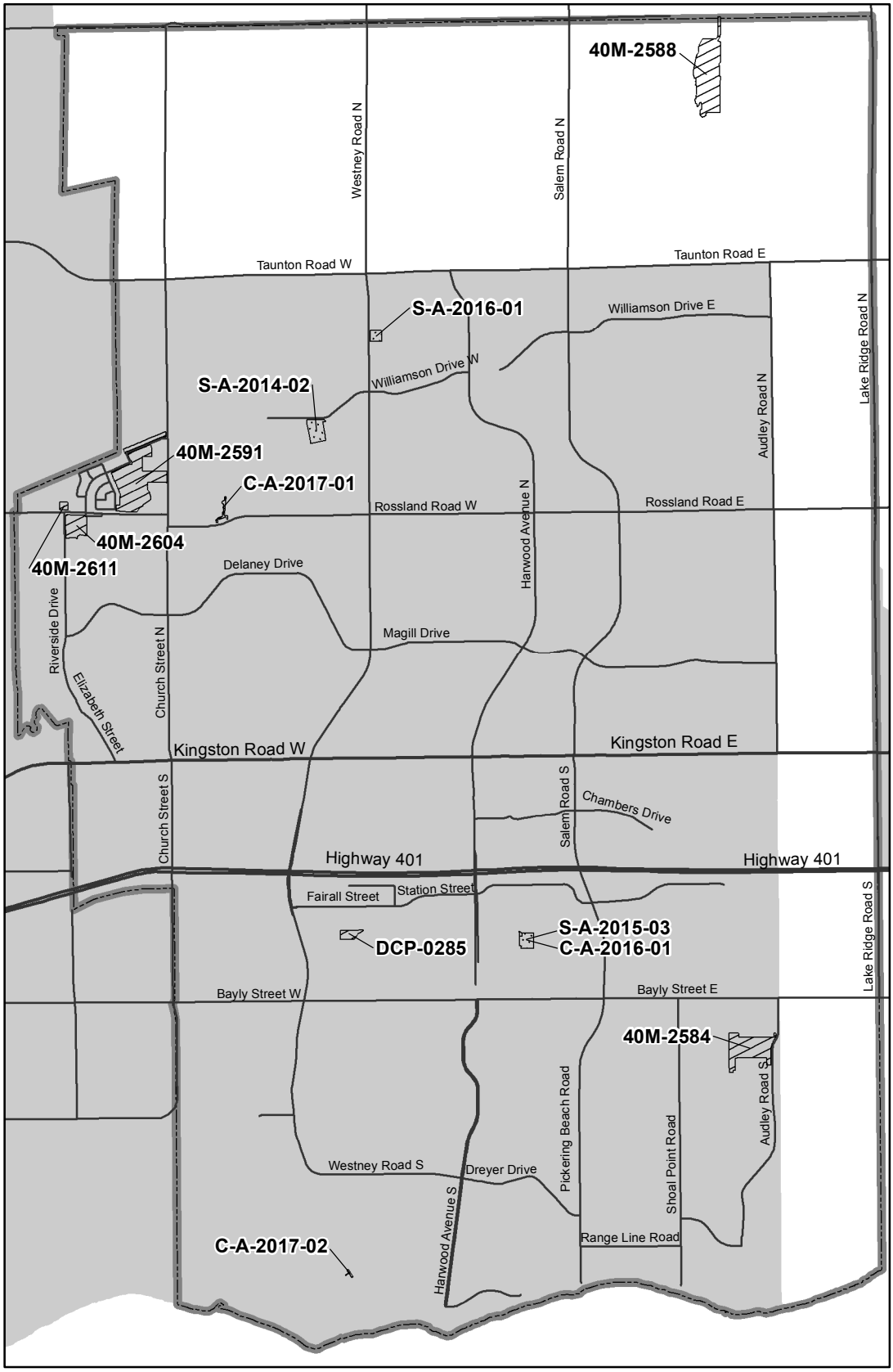
* The above registration of an industrial Plan of Condominium involves the creation of eight (8) units within an existing industrial building.

TABLE 4 – ACTIVE SUBDIVISION AND CONDOMINIUM APPLICATIONS BY MUNICIPALITY AS OF YEAR END 2017

MUNICIPALITY	IN PROCESS RESIDENTIAL SUBDIVISION APPLICATIONS	IN PROCESS RESIDENTIAL CONDOMINIUM APPLICATIONS	DRAFT APPROVED RESIDENTIAL SUBDIVISION APPLICATIONS	DRAFT APPROVED RESIDENTIAL CONDOMINIUM APPLICATIONS	TOTAL	IN PROCESS RESIDENTIAL UNITS	DRAFT APPROVED RESIDENTIAL UNITS	TOTAL UNITS
AJAX	10	3	25	10	48	1,693	1,657	3,350
BROCK	5	2	7	1	15	704	983	1,687
CLARINGTON	18	6	38	7	69	2,022	6,153	8,175
OSHAWA	24	16	18	10	68	10,748	3,478	14,226
PICKERING	28	12	32	6	78	6,358	14,998	21,356
SCUGOG	8	0	11	2	21	215	545	760
UXBRIDGE	4	3	6	2	15	166	181	347
WHITBY	17	7	25	12	61	2,253	6,334	8,587
DURHAM	114	49	162	50	375	24,159	34,329	58,488

2017 SUBDIVISION/CONDOMINIUM ACTIVITY
AJAX URBAN AREA





- 2017 Received
- 2017 Draft Approved
- 2017 Registered
- Roads
- Municipal Boundary
- Urban Area

Received:

C-A-2017-01	Haber Homes (The Forest) Ltd.
C-A-2017-02	Your Home Developments (Finley) Inc.

Draft Approved:

C-A-2016-01	King's Crescent Developments Inc.
C-A-2017-01	Haber Homes (The Forest) Ltd.
S-A-2014-02	John Boddy Developments Inc.
S-A-2015-03	King's Crescent Developments Inc.
S-A-2016-01	Quantum Falls Development Inc. (Westglen House)

Registered:

DCP-0285	Ajax Estate Holdings-Cory Silver
40M-2584	John Boddy Homes
40M-2588	Cougs Investments Ltd.
40M-2591	Cougs (Ajax) Ltd. & 1441449 Ont. Inc.
40M-2604	2399478 Ontario Inc.-Dugald Wells
40M-2611	Richpark Homes Ltd., In Trust

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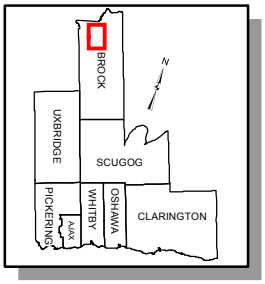
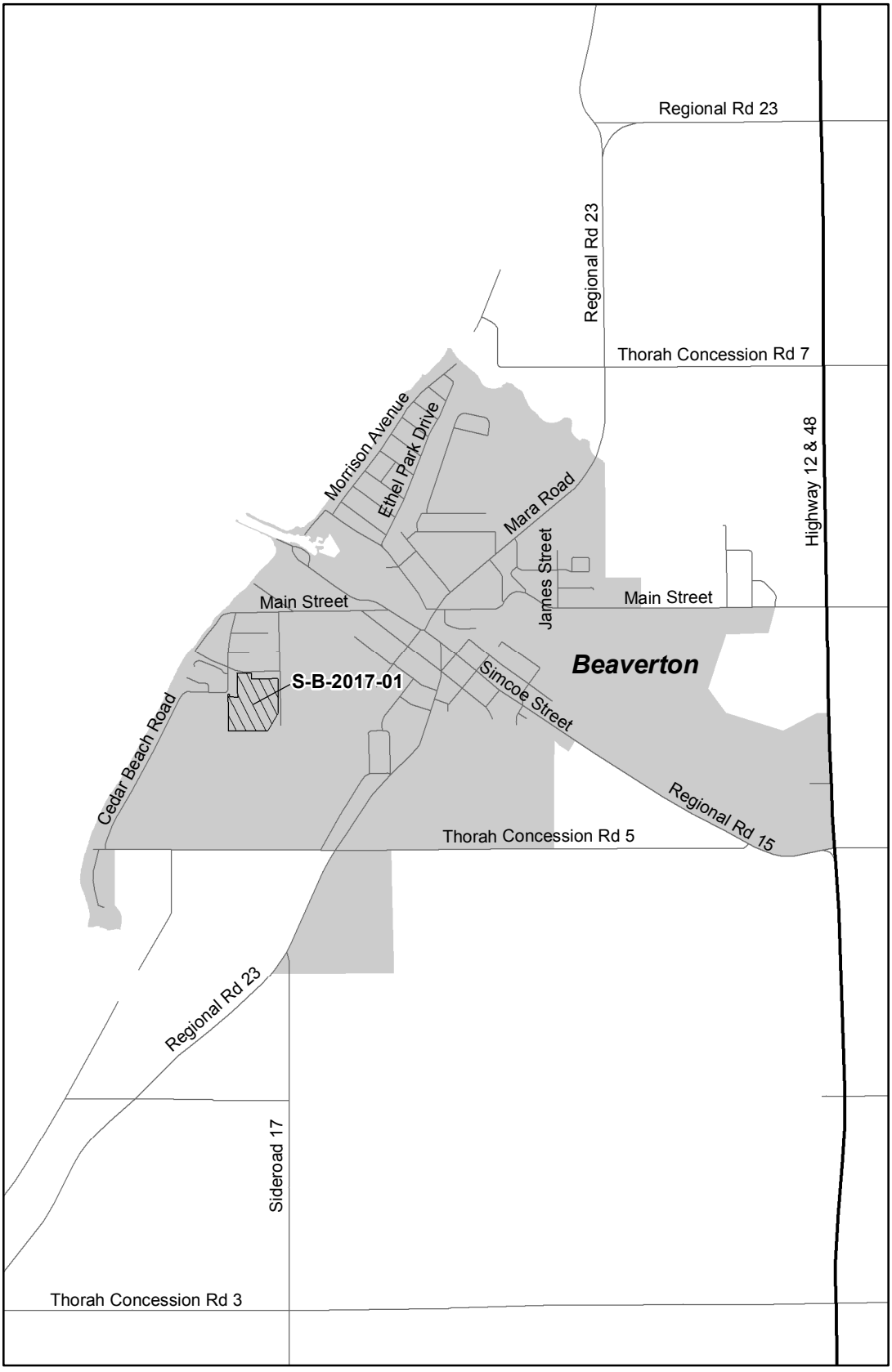
2017 SUBDIVISION/CONDOMINIUM ACTIVITY
BEAVERTON URBAN AREA, BROCK TOWNSHIP





- 2017 Received
- 2017 Draft Approved
- 2017 Registered
- Highway
- Major Road
- Municipal Boundary
- Urban Area

Received:

S-B-2017-01 333568 Ontario Limited
(Maplewood Ave - Beaverton]

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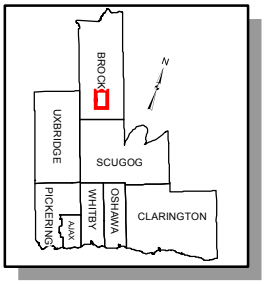
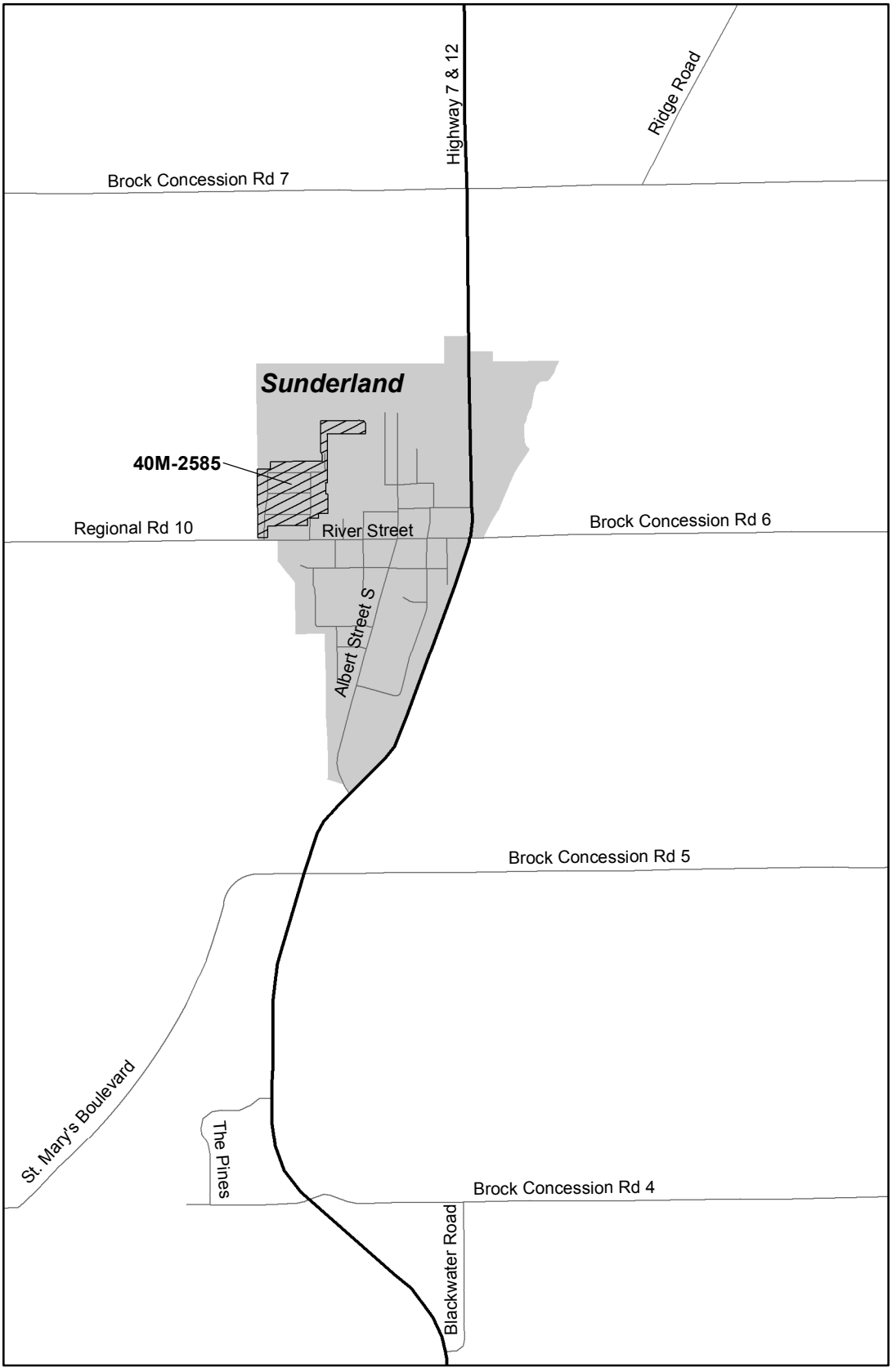
2017 SUBDIVISION/CONDOMINIUM ACTIVITY
SUNDERLAND URBAN AREA, BROCK TOWNSHIP





- 2017 Received
- 2017 Draft Approved
- 2017 Registered
- Highway
- Major Road
- Municipal Boundary
- Urban Area

Registered:

40M-2585 The Kaitlin Group Limited

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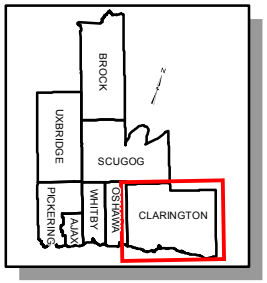
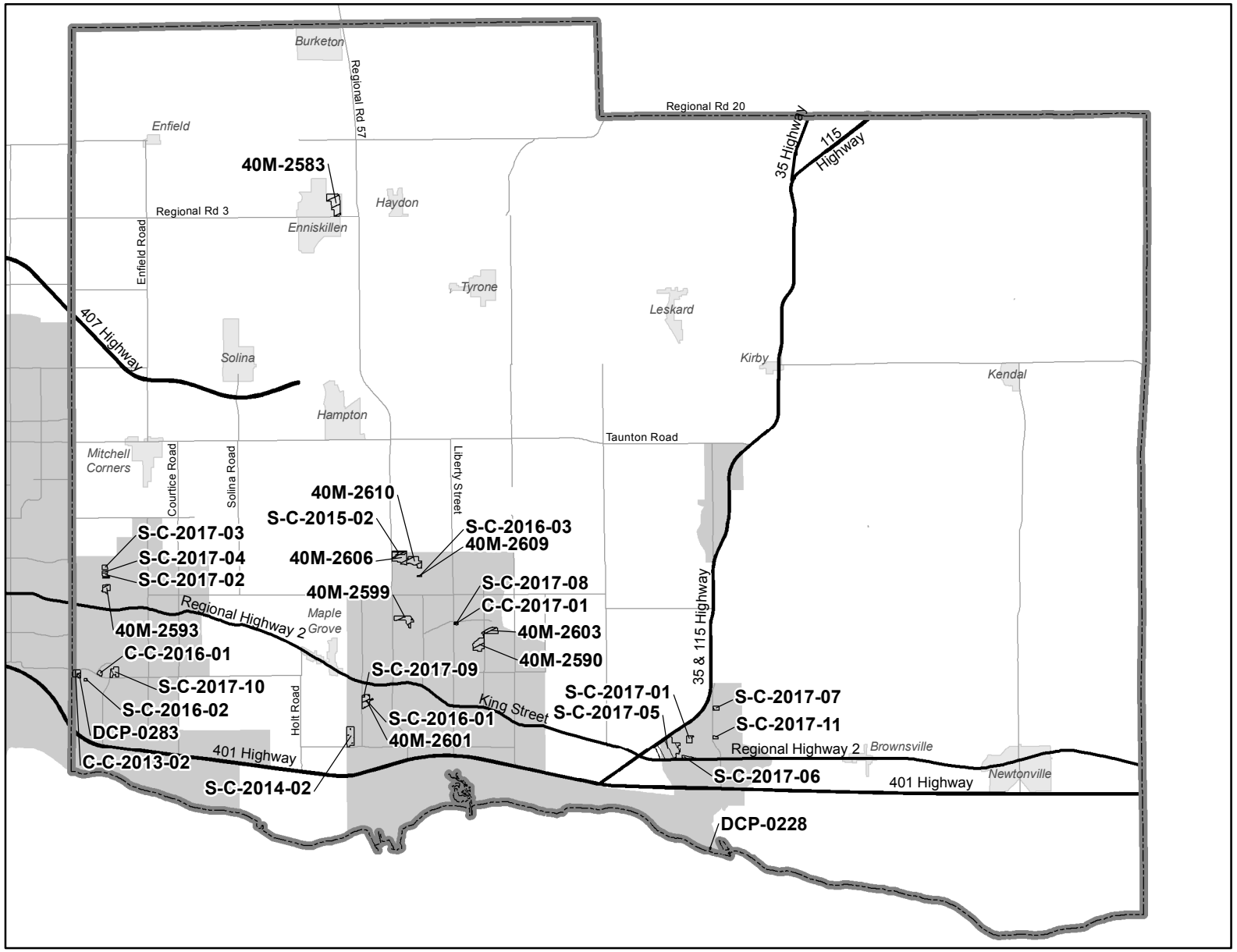
2017 SUBDIVISION/CONDOMINIUM ACTIVITY
CLARINGTON URBAN AREA





2017 Received
2017 Draft Approved
2017 Registered
Roads
Hamlet
Municipal Boundary
Urban Area

Received:

C-C-2016-01	Prestonvale Heights Limited
C-C-2017-01	2510267 Ontario Ltd. c/o Rosella Canonaco
S-C-2017-01	Lindvest Properties (Clarington) Limited
S-C-2017-02	Michael Zygocki Limited
S-C-2017-03	Boothia Developments Limited/Schleiss Development Company
S-C-2017-04	Clifford Curtis & Baseline Properties Limited
S-C-2017-05	2103386 Ontario Limited / Louisville Homes Ltd
S-C-2017-06	Tornat Newcastle Limited
S-C-2017-07	Brookfield Homes (Ontario) Limited
S-C-2017-08	2510267 Ontario Ltd. c/o Rosella Canonaco
S-C-2017-09	Wed Investments Ltd. (Modo Bowmanville Towns Ltd.)
S-C-2017-10	National Homes (Prestonvale) Inc.
S-C-2017-11	Tomba Enterprises Ltd.

Draft Approved:

C-C-2013-02	H & H Properties Inc.
S-C-2014-02	Bowmanville Village Inc.
S-C-2015-02	2265179 Ontario Inc.
S-C-2016-01	Modo Bowmanville Towns Limited
S-C-2016-02	2399263 Ontario Limited
S-C-2016-03	Akero Developments Inc.

Registered:

DCP-0228	Port of Newcastle
DCP-0283	H & H Properties Inc.
40M-2583	Carruthers Subdivision
40M-2590	Averton Homes Inc.
40M-2593	H. & H. Properties Inc.
40M-2599	South Bowmanville Limited
40M-2601	Modo Bowmanville Towns Limited
40M-2603	Zemer Holdings Ltd.
40M-2606	Baysong Development Inc. / 2084165 Ontario Ltd., Kemp / 2265719 Ontario Inc.
40M-2609	Akero Developments Inc.
40M-2610	Baysong Development Inc. / 2084165 Ontario Ltd., Kemp

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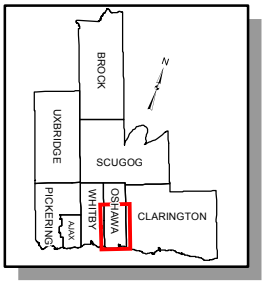
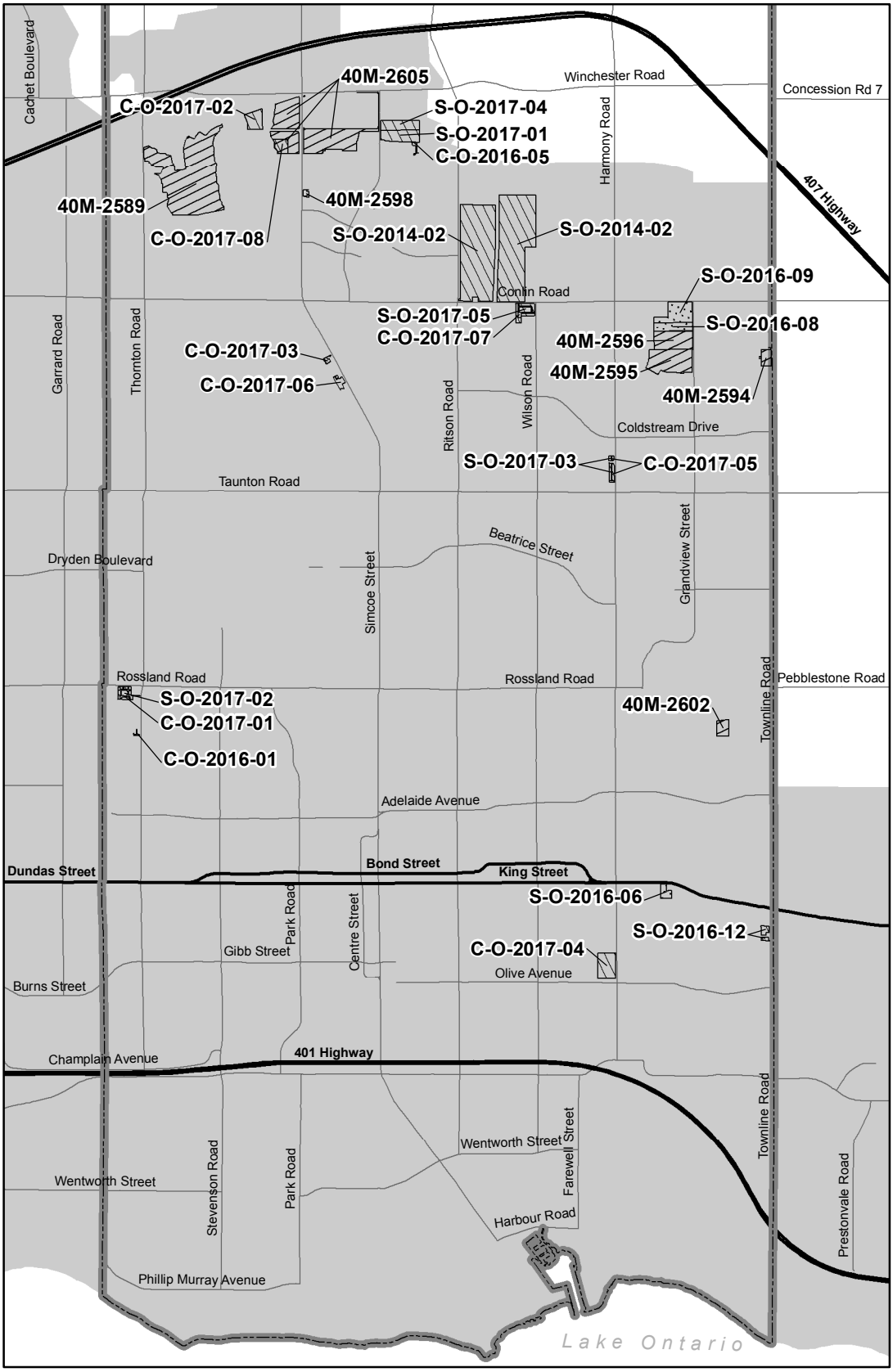
2017 SUBDIVISION/CONDOMINIUM ACTIVITY
OSHAWA URBAN AREA





2017 Received
2017 Draft Approved
2017 Registered
Roads
Municipal Boundary
Urban Area

Received:

C-O-2017-01	Delpark Homes (Rossland) Inc.
C-O-2017-02	2285136 Ontario Limited
C-O-2017-03	Podium Developments (1900 Simcoe Street North Ltd.)
C-O-2017-04	Harmony Taylor Developments Limited
C-O-2017-05	Initialcorp (Harmony Road) Inc.
C-O-2017-06	Podium Developments (1800 Simcoe Street North Ltd.)
C-O-2017-07	Stafford Homes Ltd.
C-O-2017-08	Tribute (Simcoe Street) Limited
S-O-2014-02	1608824 Ontario Limited / 1662857 Ontario Limited / Nideva Properties
S-O-2016-12	1494339 Ontario Limited
S-O-2017-01	Weston Consulting
S-O-2017-02	Delpark Homes (Rossland) Inc.
S-O-2017-03	Initialcorp (Harmony Road) Inc.
S-O-2017-04	Weston Consulting
S-O-2017-05	Stafford Homes Ltd.

Draft Approved:

C-O-2016-01	Gul Jacobi
C-O-2016-05	Lindenbrook Properties / 2380409 Ontario Inc.
S-O-2016-06	1015 King Inv. Ltd.
S-O-2016-08	North Grandview Inc. (Delpark Homes - Oshawa)
S-O-2016-09	Upperview Homes (Oshawa) Inc.

Registered:

40M-2589	Dantonbury c/o Tribute Communities
40M-2594	1494339 Ontario Limited
40M-2595	Silwell Berma Ventures
40M-2596	North Grandview Inc. / Delpark Homes (Oshawa)
40M-2598	Minto Communities (Toronto) Inc. c/o Michael Olin
40M-2602	Beechnut Development Corp. Inc.
40M-2605	RioCan Property Services Trust

DATA MAPPING & GRAPHICS · PLANNING DIVISION

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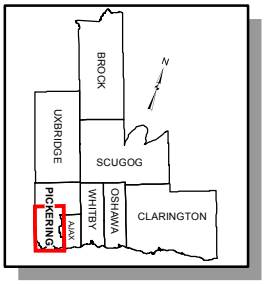
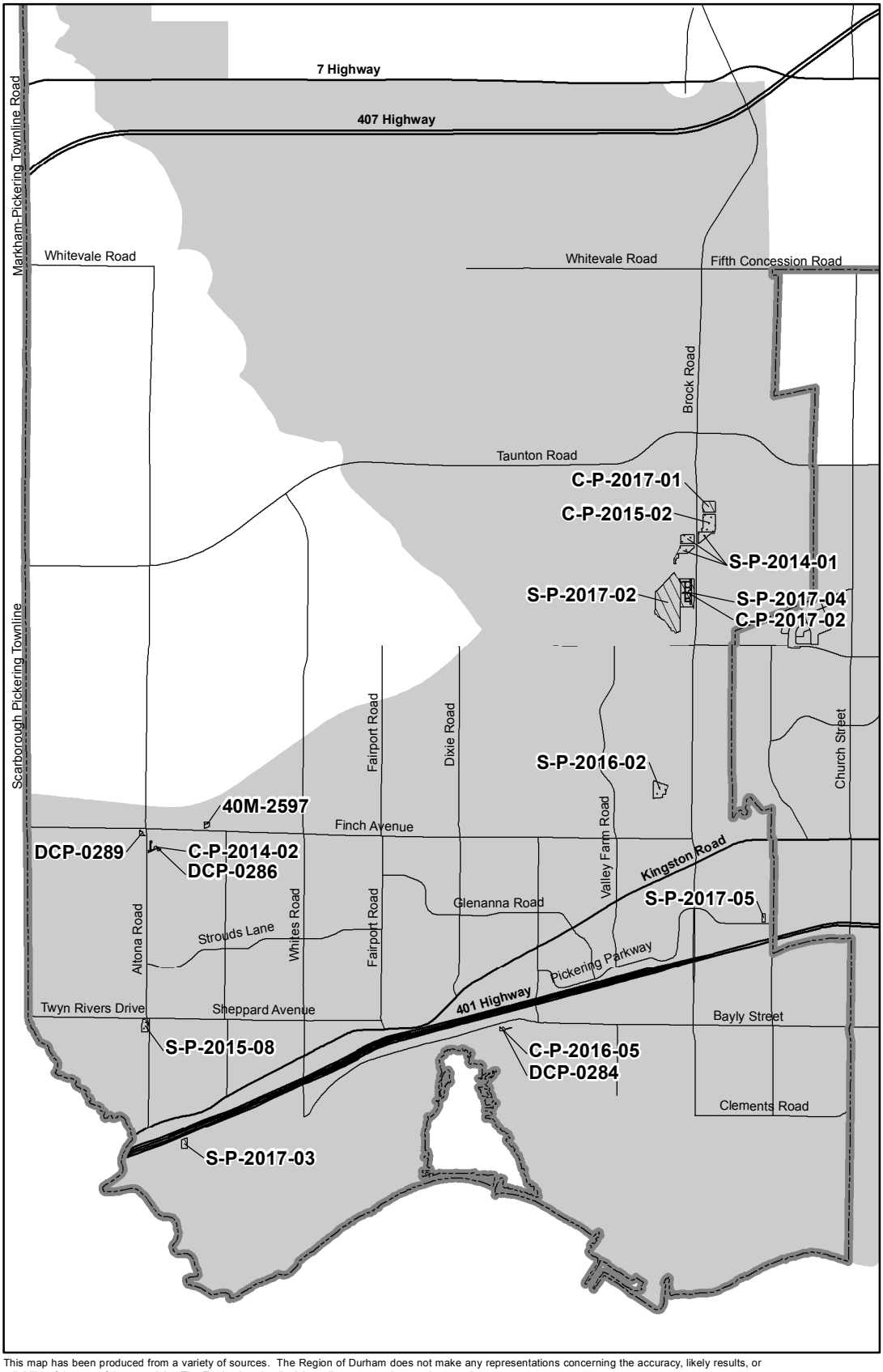
2017 SUBDIVISION/CONDOMINIUM ACTIVITY
PICKERING URBAN AREA





2017 Received
2017 Draft Approved
2017 Registered
Roads
Municipal Boundary
Urban Area

Received:

C-P-2017-01	Averton (Brock) Limited
C-P-2017-02	Madison Brock Limited
S-P-2017-02	9004807 Canada Inc. (Stonepay)
S-P-2017-03	2554569 Ontario Inc.
S-P-2017-04	Madison Brock Limited
S-P-2017-05	CPC II Management Inc.

Draft Approved:

C-P-2014-02	E. Ovide Holdings (Altona) Inc.
C-P-2015-02	Averton (Brock) Limited
C-P-2016-05	SR & R Bay Ridges (Two) Ltd.
S-P-2014-01	Lebovic Enterprises Ltd. / 1320991 Ontario Ltd.
S-P-2015-08	Altona Home Construction Inc.
S-P-2016-02	Frontdoor Developments Inc.

Registered:

DCP-0284	SR & R Bay Ridges (Two) Ltd.
DCP-0286	E. Ovide Holdings (Altona) Inc.
DCP-0289	Nanak Creations Inc.
40M-2597	Lazaridis & Louisville Homes Ltd.

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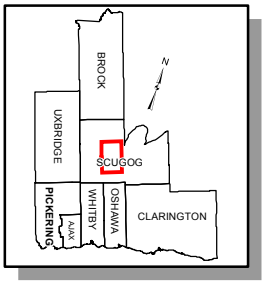
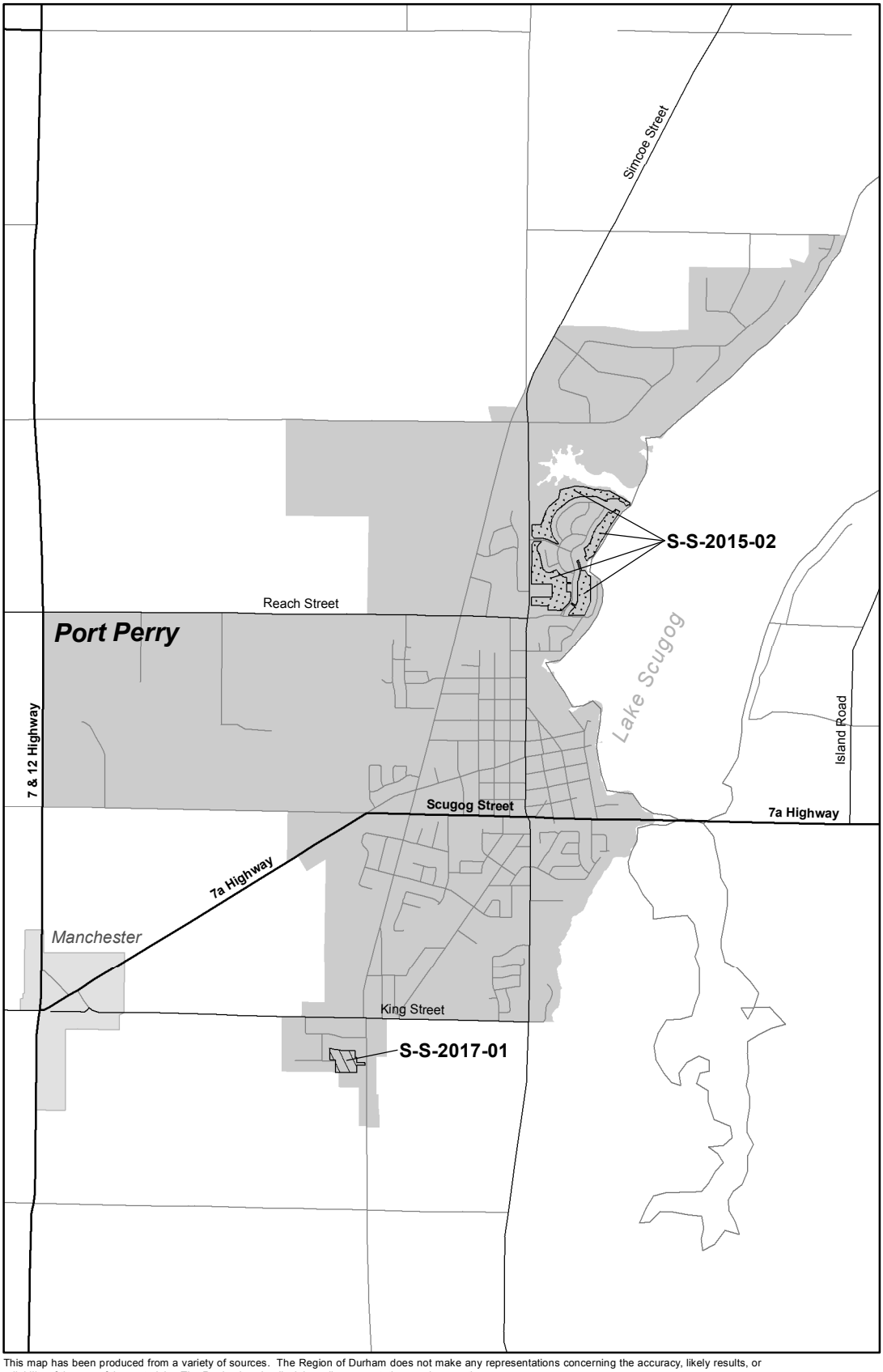
2017 SUBDIVISION/CONDOMINIUM ACTIVITY
PORT PERRY URBAN AREA, TOWNSHIP OF SCUGOG





- 2017 Received
- 2017 Draft Approved
- 2017 Registered
- Roads
- Hamlet
- Municipal Boundary
- Urban Area

Received:

S-S-2017-01 2380884 Ontario Limited
c/o Michael Brown

Draft Approved:

S-S-2015-02 Canterbury Land
Development Corporation

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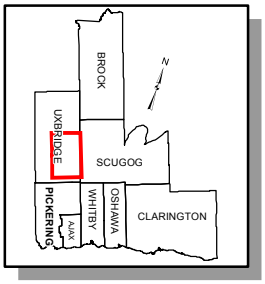
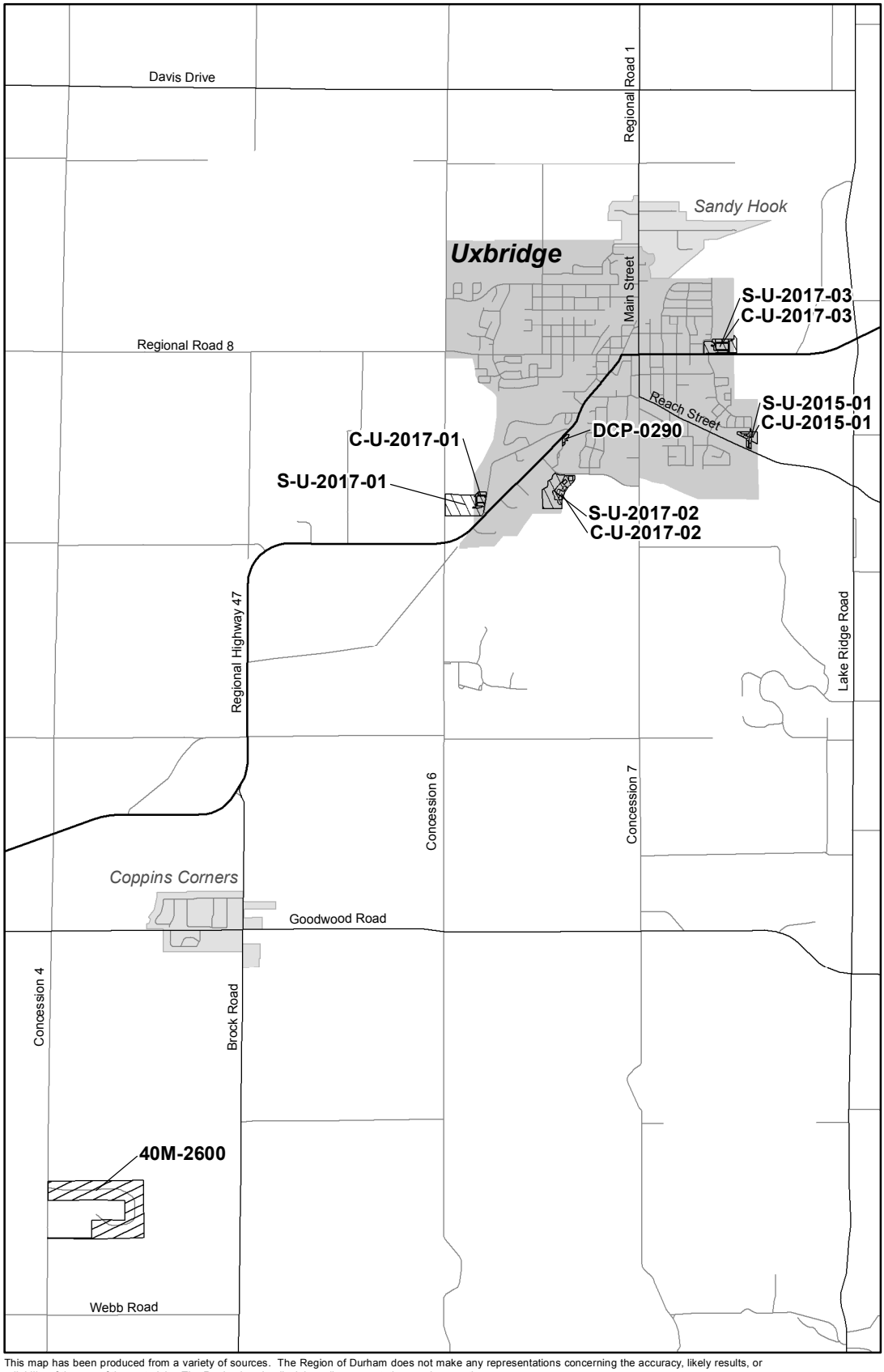
2017 SUBDIVISION/CONDOMINIUM ACTIVITY
UXBRIDGE URBAN AREA





- 2017 Received
- 2017 Draft Approved
- 2017 Registered
- Roads
- Hamlet
- Municipal Boundary
- Urban Area

Received:

C-U-2017-01	Moorefield Properties Ltd.
C-U-2017-02	Saleville Developments (IV) Ltd.
C-U-2017-03	Evendale Developments Limited
S-U-2017-01	Moorefield Properties Ltd.
S-U-2017-02	Saleville Developments (IV) Ltd.
S-U-2017-03	Evendale Developments Limited

Draft Approved:

C-U-2015-01	Robert & Donna Kennedy
S-U-2015-01	Robert & Donna Kennedy

Registered:

DCP-0290	Orpheus Investment Company Limited
40M-2600	Oxford Developments / 711371 Ontario Corp.

DATA MAPPING & GRAPHICS · PLANNING DIVISION

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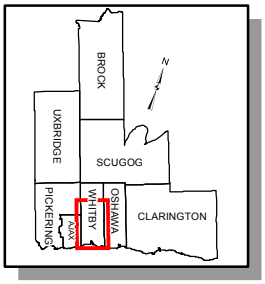
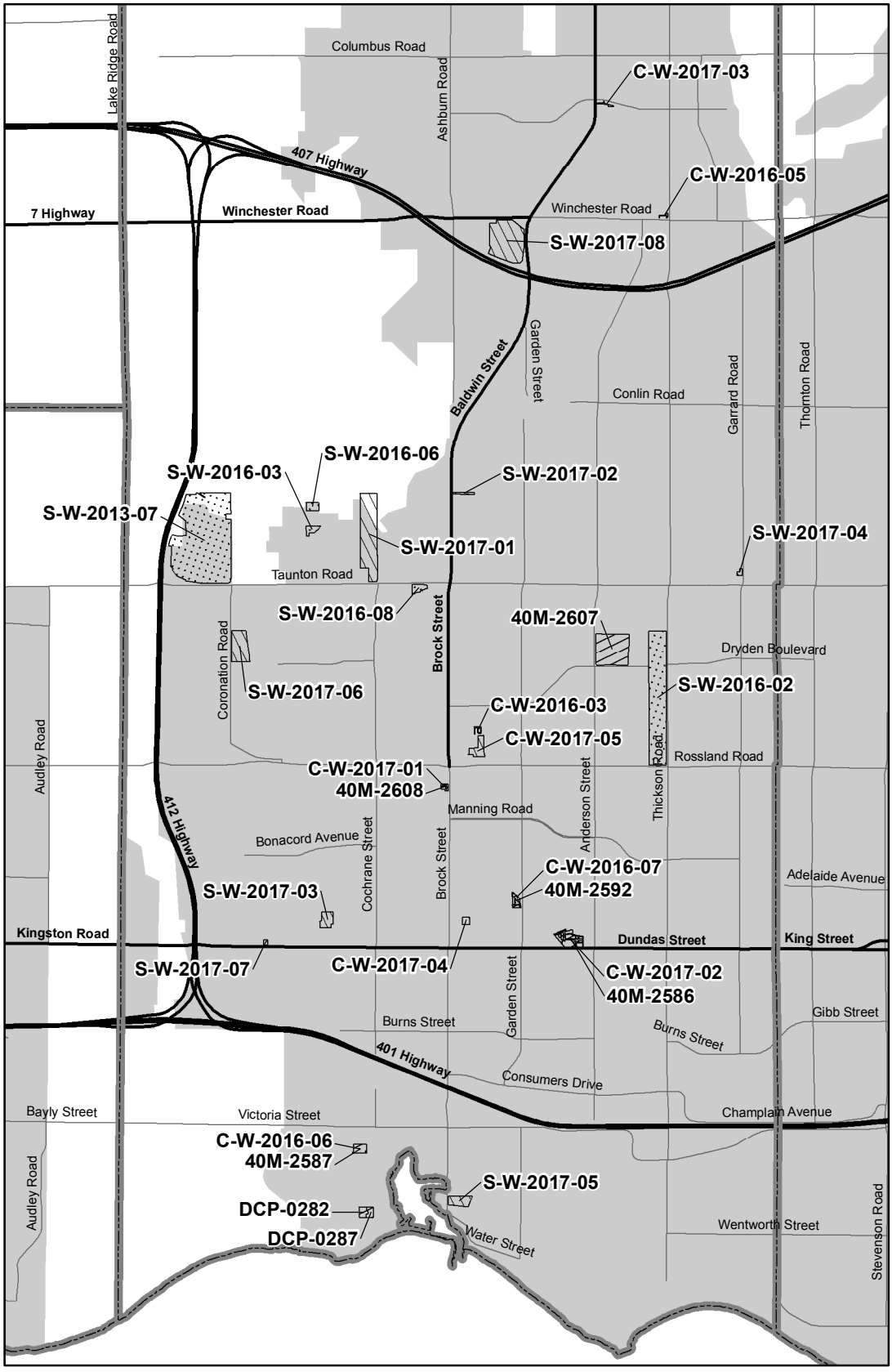
2017 SUBDIVISION/CONDOMINIUM ACTIVITY
WHITBY URBAN AREA





2017 Received
2017 Draft Approved
2017 Registered
Roads
Municipal Boundary
Urban Area

Received:

C-W-2016-07	2370527 Ontario Inc. o/a Garden Street Village
C-W-2017-01	Matanda Homes Limited
C-W-2017-02	1010 Dundas East Developments Inc.
C-W-2017-03	Brooklin Meadows Limited
C-W-2017-04	1816634 Ontario Ltd./Jamie MacInnis
C-W-2017-05	Whitby (Brock and Rossland) Developments
S-W-2017-01	Cedar City TFP Whitby Developments Inc.
S-W-2017-02	Mill Tree Developments Inc.
S-W-2017-03	The Inverlynn Estate Ltd.
S-W-2017-04	2500564 Ontario Limited
S-W-2017-05	Brookfield Homes (Ontario) Whitby Limited
S-W-2017-06	3425 Coronation Developments Limited
S-W-2017-07	Manorgate Homes (Whitby) Inc.
S-W-2017-08	Winash Developments Limited

Draft Approved:

C-W-2016-03	Whitby (Brock and Rossland) Developments
C-W-2016-05	Brooklin Meadows Limited
C-W-2016-06	Courtice North Inc.
C-W-2016-07	2370527 Ontario Inc. o/a Garden Street Village
C-W-2017-01	Matanda Homes Limited
C-W-2017-02	1010 Dundas East Developments Inc.
S-W-2013-07	Whitby Taunton Holdings Ltd. / 880 Taunton Dev.Ltd.
S-W-2016-02	Minto (Rossland) Inc.
S-W-2016-03	Country Lane Estates Inc.
S-W-2016-06	Phil Lack (Lack Realty Appraisers & Consultants Inc.)
S-W-2016-08	Greyrock Commercial Construction Limited
S-W-2017-02	Mill Tree Developments Inc.

Registered:

DCP-0282	Whitby by the Lake Inc.
DCP-0287	Whitby by the Lake Inc.
40M-2586	Kantiium Development & Construction
40M-2587	Courtice North Inc.
40M-2592	2368378 Ontario Inc. c/o Golden Falcon Homes
40M-2607	Medallion Developments (Dryden) Limited
40M-2608	Matanda Homes Limited

DATA MAPPING & GRAPHICS · PLANNING DIVISION

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Interoffice Memorandum

Date: **April 13, 2018**

To: **Committee of the Whole**

From: **Dr. Robert Kyle**

Health Department

Subject: **Health Information Update – April 6, 2018**

Please find attached the latest links to health information from the Health Department and other key sources that you may find of interest. Links may need to be copied and pasted directly in your web browser to open, including the link below.

You may also wish to browse the online Health Department Reference Manual available at Board of Health Manual, which is continually updated.

Boards of health are required to "superintend, provide or ensure the provision of the health programs and services required by the [Health Protection and Promotion] Act and the regulations to the persons who reside in the health unit served by the board" (section 4, clause a, HPPA). In addition, medical officers of health are required to "[report] directly to the board of health on issues relating to public health concerns and to public health programs and services under this or any other Act" (sub-section 67.(1), HPPA).

Accordingly, the Health Information Update is a component of the Health Department's 'Accountability Framework', which also may include program and other reports, Health Plans, Quality Enhancement Plans, Durham Health Check-Ups, Performance Reports, business plans and budgets; provincial performance indicators and targets, monitoring, compliance audits and assessments; RDPS certification; and accreditation by Accreditation Canada.

Respectfully submitted,

Original signed by

R.J. Kyle, BSc, MD, MHSc, CCFP, FRCPC, FACPM
Commissioner & Medical Officer of Health

"Service Excellence for our Communities

UPDATES FOR COMMITTEE OF THE WHOLE
April 6, 2018

Health Department Media Releases/Publications

https://goo.gl/6wbsYK

- Vector-Borne Diseases Annual Report 2017 (Mar 21)

https://goo.gl/pDqH2y

- It's that time of year; Child care centre immunization notices are here! (Mar 26)

https://goo.gl/36zEhJ

- Listeriosis outbreak linked to Druxy's Famous Deli, Princess Margaret Cancer Centre (Mar 26)

https://goo.gl/ZqXAmd

- Health Department's "Brush Up on the Facts" campaign urges parents to keep their kids' teeth healthy during Oral Health Month (Apr 3)

GOVERNMENT OF CANADA

Canada Mortgage and Housing Corporation

https://goo.gl/1oPQjj

- Governments of Canada and Ontario celebrate affordable housing in Durham Region (Mar 23)

Canadian Food Inspection Agency

https://goo.gl/3Ac7ZC

- The Government of Canada is working with the poultry industry to reduce the risk of Salmonella illness from frozen raw breaded chicken products (Mar 13)

https://goo.gl/MXzHjb

- Food Recall Warning – Druxy's Fresh Deli Revolution brand Seasoned Cooked Roast Beef recalled due to Listeria monocytogenes (Mar 27)

Environment and Climate Change Canada

https://goo.gl/RBxR4k

- Low Carbon Economy Challenge will leverage Canadian ingenuity to reduce carbon pollution and drive clean growth (Mar 14)

https://goo.gl/DtxS6v

- New report confirms Canada's air continues to get cleaner (Mar 20)

https://goo.gl/zdS81v

- The Governments of Canada and Ontario announce funding to help people in Ontario save energy and money in their homes and businesses (Apr 4)

https://goo.gl/cy8vgp

- The Government of Canada is helping Canadians understand and adapt to our changing climate (Apr 4)

Health Canada

https://goo.gl/3wUVBv

- Health Canada releases summary of comments from cannabis regulatory consultations (May 19)

https://goo.gl/cS5UkC

- Health Canada proposes to restrict the alcohol content of single-serve highly sweetened alcoholic beverages (Mar 19)

https://goo.gl/XbRXe1

- The Honourable Ginette Petitpas Taylor, Minister of Health announces new measures to reduce barriers to treatment and $231 M to address the opioid crisis (Mar 26)

https://goo.gl/ycAZqv

- Health Canada releases report from external review of pan-Canadian health organizations (Mar 27)

Infrastructure Canada

https://goo.gl/tQiSk4

- New public transit funding available for transformative infrastructure projects in Durham Region (Mar 16)

Public Health Agency of Canada

https://goo.gl/fGMAsG

- Statement from the CPHO – The time is now – joining forces to eliminate tuberculosis in Canada (Mar 22)

https://goo.gl/izWhQe

- Statement from the Co-Chairs of the Special Advisory Committee on the Epidemic of Opioid Overdoses on Updates to Opioid-Related Mortality Data (Mar 27)

https://goo.gl/mfHgWo

- Public Health Agency of Canada Releases First-Ever National Autism Spectrum Disorder (ASD) Statistics (Mar 29)

Public Safety Canada

https://goo.gl/JiaXuY

- Statement on the First National Impaired Driving Prevention Week (Mar 19)

https://goo.gl/z51fE2

- Firearms Legislation to Make Communities Safer (Mar 20)

https://goo.gl/A28rri

- Government supports launch of emergency alerting capability on smartphones (Apr 6)

Transport Canada
https://goo.gl/dkBPoy

- New safety powers granted to protect Canadians from vehicle defects (Mar 12)

https://goo.gl/nfLtQo

- Transport Canada goes ghostbusting, targets 'phantom vehicles' (Mar 21)

GOVERNMENT OF ONTARIO

Office of the Premier
https://goo.gl/fi74kU

- Making Life More Affordable in Ontario (Mar 12)

https://goo.gl/pfsuyj

- Climate Change Action Plan Helping Families and Businesses Save Money While Lowering Emissions (Mar 14)

https://goo.gl/95o9SH

- Making Transit More Affordable (Apr 5)

https://goo.gl/83tR8p

- Ontario Commits Over $11 Billion to Build First Phase of High Speed Rail (Apr 6)

Ontario Ministry of Agriculture, Food and Rural Affairs
https://goo.gl/2QjZZc

- Ontario Growing More Opportunities for Local Food in Public Sector Organizations (Mar 19)

Ontario Ministry of Finance
https://goo.gl/FrHjJZ

- Ontario Supporting Horse Racing, Strengthening Local Economies (Mar 23)

https://goo.gl/qfjm56

- Delivering a Plan for Care and Opportunity (Mar 28)

Ontario Ministry of Labour
https://goo.gl/6gfMV9

- Ontario Expanding Job-Protected Leave for Survivors of Domestic or Sexual Violence (Mar 13)

https://goo.gl/Q1j4UX

- New Rules Mandating Equal Pay for Equal Work to Come Into Effect April 1 (Mar 15)

Ontario Ministry of Tourism, Culture and Sport
https://goo.gl/tphzvx
- Ontario Athletes Contribute to a Record-Breaking Performance at 2018 Winter Paralympics (Mar 20)

Ontario Ministry of Transportation
https://goo.gl/U7YadP
- Ontario Adding More Service on GO Transit and UP Express (Mar 16)

https://goo.gl/ZaaPKo
- All-Day, Two-Way GO Train Service Coming to Communities Across GTHA (Mar 26)

Treasury Board Secretariat
https://goo.gl/7TESsd
- 2017 Ontario Public Sector Salaries Disclosed (Mar 23)

OTHER ORGANIZATIONS

Alzheimer Society of Canada
https://goo.gl/DXX4W9
- Too many Canadians face lack of understanding, support from others when caring for a family member with dementia (Apr 3)

Canada Health Infoway
https://goo.gl/R5J41e
- Connected Health Information Delivers Significant Value and the Health System (Apr 4)

Canada's Ecofiscal Commission
https://goo.gl/hgMSkT
- Ecofiscal Commission Urges Governments to Clearly Communicate how their Carbon Pricing Policies are Working (Apr 4)

Canada's Research Chairs
https://goo.gl/vfapKL
- Canada's Brain Gain. Round 2. (Mar 29)

Canadian Institute of Health Information
https://goo.gl/TDUrmo
- Measuring access to mental health and addiction services and to home and community health care (Mar 22)

Canadian Institutes of Health Research
https://goo.gl/A515Q2
- Government of Canada continues to invest in research to address global health threat of antimicrobial resistance (Mar 16)

Canadian Partnership Against Cancer
https://goo.gl/v5sQN9
- Canada's largest health research platform teams up with University of Toronto to accelerate cancer and chronic disease research (Mar 29)

Canadian Water Network
https://goo.gl/9EghrZ
- Canadians will need to spend more on water to maintain high quality systems (Mar 22)

Cancer Care Ontario
https://goo.gl/sXeHqZ
- Health inequities put many Ontarians at higher risk of certain cancers (Apr 4)

Central East LHIN
http://www.centraleastlhin.on.ca/
- Opioid Strategy Presented to Central East LHIN Board (Mar 28)

Conference Board of Canada
https://goo.gl/ibc7Ew
- Canadian Employers Preparing for Increases in Employee Medical Leaves (Mar 22)

Conservation Ontario
https://goo.gl/1frq5B
- New Conservation Authority Watershed Report Cards Reveal Stressed Conditions in Our Watersheds (Mar 22)

Financial Accountability Office of Ontario
https://goo.gl/zzcdP1
- Ontario continues to face health funding pressure (Mar 14)

Institute for Clinical Evaluative Sciences
https://goo.gl/Gei8Jk
- Study finds more people relying on government catastrophic drug plans and big increase in government spending (Mar 26)

Kidney Foundation of Canada
https://goo.gl/V7GUiW
- Kidney failure comes at a high financial cost for many Canadians (Mar 28)

Mental Health Commission of Canada
https://goo.gl/FLCHeo
- Caregivers are a critical part of a mental health care team (Apr 3)

https://goo.gl/AcXRro
- Access to publicly-funded psychotherapy is an essential step toward true universal health care (Apr 6)

National Research Council of Canada
https://goo.gl/kUNqMP
- Bright minds work together to develop new strategies for treating brain diseases (Mar 14)

https://goo.gl/EUKTmY
- National Research Council contribution plays key role in newly approved Ebola vaccine (Mar 20)

Office of the Auditor General of Canada
https://goo.gl/uUj1ZC
- Commissioner of the Environment and Sustainable Development releases Collaborative Climate Change Report (Mar 27)

Office of the French Language Services Commissioner
https://goo.gl/3U2guZ
- The Ontario College of Teachers and the Office of the French Language Services Commissioner of Ontario sign a memorandum of understanding on French language services (Mar 13)

Office of the Privacy Commissioner of Canada
https://goo.gl/udqJaP
- Privacy Commissioner opens investigation into Loblaw's (Mar 15)

https://goo.gl/6xPnVm
- Privacy Commissioner launches Facebook investigation (Mar 20)

Ontario Chamber of Commerce
https://goo.gl/MTgghA
- Pickering 2024 will support Ontario's economy and reduce energy costs: CANCEA analysis (Apr 3)

Ontario Power Generation
https://goo.gl/vsGch2
- Hearing Begins for OPG's Pickering Nuclear Station (Apr 4)

Public Health Ontario
https://goo.gl/BgxYQg
- PHO Connections (Mar 19)

Trillium Gift of Life Network
https://goo.gl/b8iwbX
- This April Take Two Minutes to Help Save Lives (Apr 3)

The Regional Municipality of Durham

Office of the Chief Administrative Officer

605 Rossland Road East
PO Box 623
Whitby, Ontario
L1N 6A3
Canada

Phone:

905-668-7711
1-800-372-1102

www.durham.ca

April 10, 2018

To Regional Chair and Members of Regional Council

RE: Nuclear Public Alerting System (Sirens and Mass Notification) Spring Testing

The Region of Durham Emergency Management Office will be carrying out the annual spring testing of the Nuclear Public Alerting System as part of the regular maintenance program and to raise public awareness.

The public alerting testing will include the mass telephone dialing system for indoor notification, and the siren system for outdoor notification. This will only be a test and no action is required by anyone who may hear the sirens sounding at these times.

The Region's Corporate Communications Office's media campaign will begin on April 11 through Facebook and Twitter. Leading up to the testing, more information will be posted on the Region's website and social media accounts. A Public Service Announcement will be distributed to councillors and local media outlets and will be posted on the Region's website prior to the testing dates. Stakeholders are encouraged to monitor these accounts and repost information to your own sites as needed.

Please feel free to distribute this information as appropriate.

Thank you for your support.

Yours truly,

Warren Leonard

Warren Leonard
Director, Emergency Management

c: Garry Cubitt, C.A.O.

If this information is required in an accessible format, please contact the Accessibility Co-ordinator at 1-800-372-1102 extension 2009.

Township of Selwyn

Original To:	CIP
Copy To:	S Sinclair
	B Brotherton
C.C. S.C.C. File	
Take Appr. Action	

APR 11'18 PM3:08 CIP 5.1

www.selwyntownship.ca

April 4, 2018

Kathleen Wynne, Premier
Legislative Building
Queen's Park
Toronto ON M7A 1A1

Dear Premier Wynne:

Please be advised that at its meeting held the 27th day of March 2018, the Council of the Township of Selwyn passed the following resolution:

Resolution No. 2018 - 063 – Agricultural Systems and Natural Heritage System Mapping – Transition Policies
Deputy Mayor Sherry Senis – Councillor Anita Locke –
Whereas the Agricultural Systems (AS) and the Natural Heritage System (NHS) mapping was released by the Province of Ontario on February 9, 2018; and

Whereas the implementation procedures for the Agricultural System (AS) and the Natural Heritage System (NHS) mapping in Ontario's Greater Golden Horseshoe (GGH) was also issued by the Province on February 9, 2018 and the Province indicated that the implementation procedures for AS take effect immediately as stated by *"OMAFRA's agricultural land base mapping, issued on February 9, 2018, applies to all GGH land use planning decisions."* and for NHS as stated by *"Ontario has mapped a provincially-led Natural Heritage System for the Growth Plan for the Greater Golden Horseshoe (hereafter referred to as the Natural Heritage System for the Growth Plan), including criteria, methods and a regional Natural Heritage System map"*; and

Whereas this implementation procedure means that all planning decisions must be consistent with the Provincial February 9, 2018 statement where agricultural systems and natural heritage systems have been identified by the Province regardless of when pre-consultation took place or when the planning application was made; and

Whereas planning staff for the County of Peterborough and Township of Selwyn have attempted to contact applicants that were expected to be impacted by the AS and NHS prior to the release of the mapping and the implementation procedures to advise them if their planning application

Mailing Address
PO Box 270
Bridgenorth
Ontario K0L 1H0

Tel: 705 292 9507
Fax: 705 292 8964

was not considered and approved as of the implementation date (February 9, 2018) that their application must be consistent with the Provincial mapping resulting in applications being denied due to non-conformity with the new mapping; and

Whereas traditionally when new legislation is implemented, the Province includes transition policies that would permit applications in the 'queue' to be considered under the former legislation;

Now therefore be it resolved that the Township of Selwyn strongly urge the Province of Ontario to reconsider the implementation procedure and include transition policies to provide greater flexibility for those applications that were made prior to February 9, 2018 and are impacted by the AS or NHS mapping and that a copy of this Resolution be sent to the Ministry of Municipal Affairs and Housing, Minister of Agriculture, Food and Rural Affairs and local M.P.P. Jeff Leal, the County of Peterborough, the City of Kawartha Lakes and upper and single tier municipalities within the GGH.

Mayor Mary Smith – yes
Councillor Donna Ballantyne – yes
Councillor Gerry Herron – yes
Councillor Anita Locke – yes
Deputy Mayor Sherry Senis – yes

Carried.

Should you have any questions regarding the above-noted matter, please do not hesitate to contact the office directly.

Regards,

Tania Goncalves

Tania Goncalves
Deputy Clerk

cc: Ministry of Municipal Affairs and Housing
Minister of Agriculture, Food and Rural Affairs
Jeff Leal, M.P.P.
County of Peterborough
City of Kawartha Lakes
Regional Municipality of Durham
Regional Municipality of York
City of Toronto
Regional Municipality of Peel
Regional Municipality of Halton

City of Hamilton
County of Northumberland
City of Peterborough
County of Simcoe
City of Barrie
City of Orillia
County of Dufferin
County of Wellington
City of Guelph
Regional Municipality of Waterloo
County of Brant
City of Brantford
County of Haldimand
Regional Municipality of Niagara

Afreen Raza

From: Trish Barnett <T.Barnett@lsrca.on.ca>
Sent: April-06-18 2:31 PM
To: Aurora Clerks Department; Christopher Raynor (York Region); Cindy Maher (New Tecumseth); Debbie Leroux (Uxbridge); Fernando Lamanna; Gillian Angus-Traill; Janet Nyhof; Janette Teeter (Oro-Medonte); Jennifer Connor (Ramara); John Daly (Simcoe); John Espinosa; JP Newman (jnewman@scugog.ca); Judy Currins (Kawartha Lakes); Karen Shea (kshea@innisfil.ca); Kathryn Smyth (King); Kiran Saini (Newmarket); Lisa Lyons (Newmarket); Mike Derond (Aurora); Clerks; Patty Thoma; Rebecca Murphy (Clerk, Bradford/West Gwillimbury); Thomas Gettinby; Wendy Cooke (Barrie)
Subject: LSRCA's 2017 Lake Simcoe Subwatershed Plans Implementation Report
Attachments: LSRCA - 2017 Lake Simcoe Subwatershed Plans Implementation Report.pdf

Good afternoon Regional and Municipal Clerks:

Attached is LSRCA's 2017 Lake Simcoe Subwatershed Plans Implementation Report, which we ask that you please share with your Members of Council.

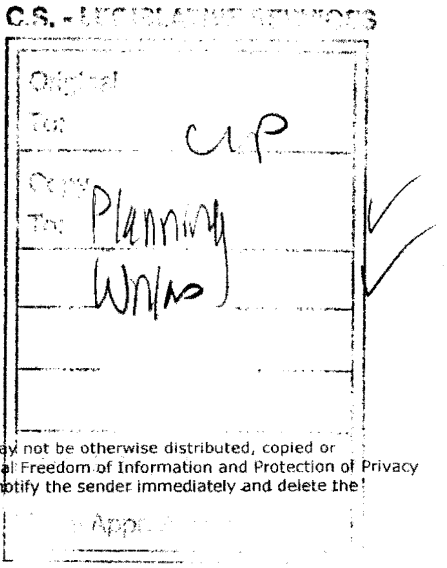
If you or your Council members have any questions or would like additional information, please do not hesitate to ask.

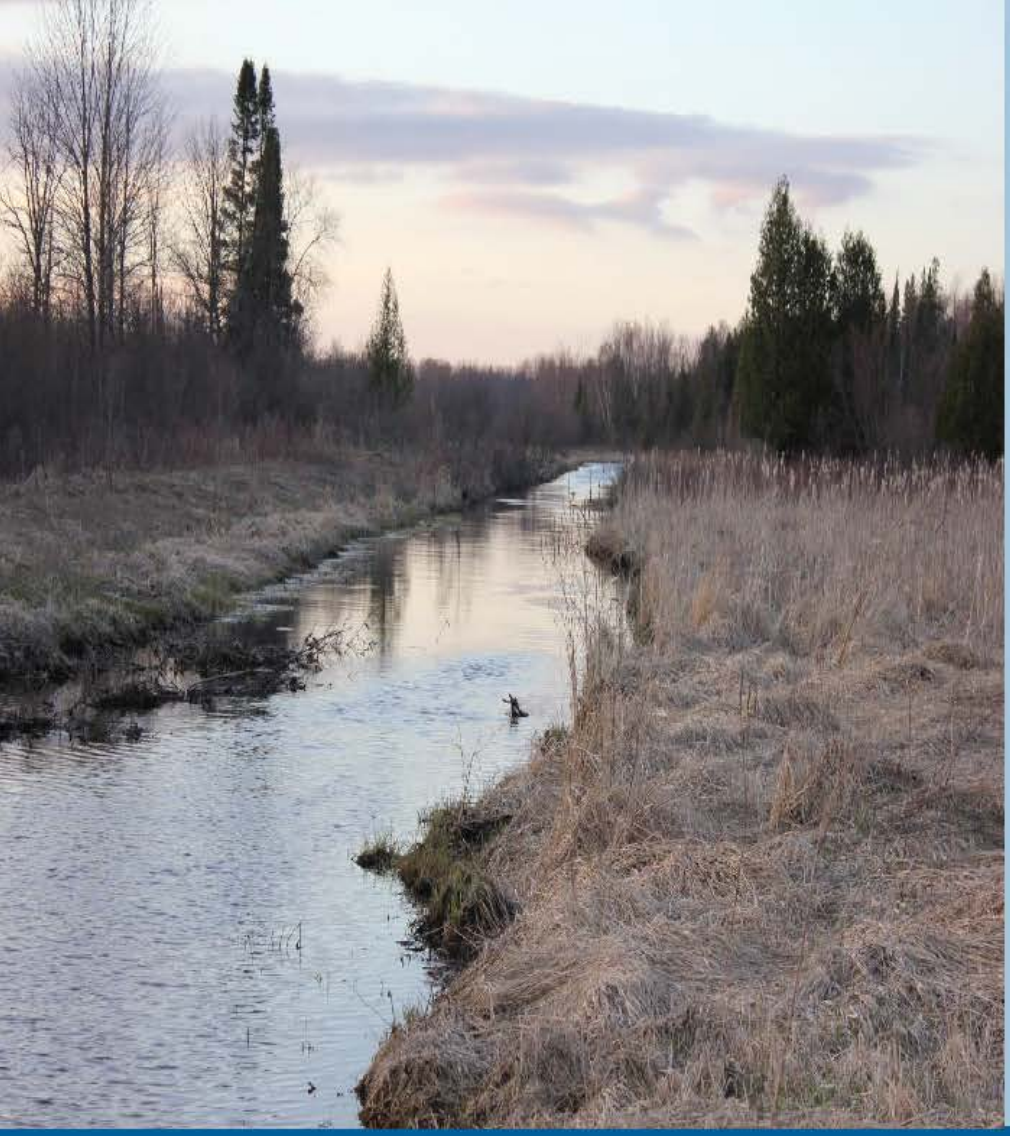
Thank you and regards,
Trish

Trish Barnett
Coordinator, BOD/CAO, Projects and Services
Lake Simcoe Region Conservation Authority
120 Bayview Parkway,
Newmarket, Ontario L3Y 3W3
905-895-1281, ext. 223 | 1-800-465-0437 |
t.barnett@LSRCA.on.ca | www.LSRCA.on.ca

Twitter: @LSRCA
Facebook: LakeSimcoeConservation

The information in this message (including attachments) is directed in confidence solely to the person(s) named above and may not be otherwise distributed, copied or disclosed. The message may contain information that is privileged, confidential and exempt from disclosure under the Municipal Freedom of Information and Protection of Privacy Act and by the Personal Information Protection Electronic Documents Act. If you have received this message in error, please notify the sender immediately and delete the message without making a copy. Thank you.



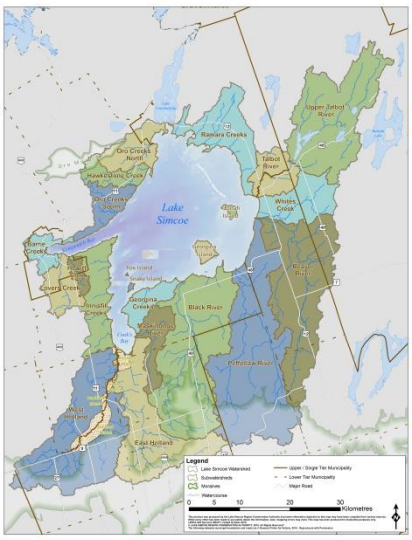


2017

Lake Simcoe Subwatershed Plans
Implementation Report

Lake Simcoe Region
conservation authority

The Lake Simcoe Watershed



Occupying 3,400 square kilometres, from the Oak Ridges Moraine in the south to the Oro Moraine in the north, the Lake Simcoe watershed contains 20 municipalities and is home to over 400,000 residents. It has 18 major river systems draining 4,225 kilometres of creek into the lake. To protect the health of the watershed, the LSRCA and its partners have been working since 2010 to develop subwatershed plans for the tributaries flowing into Lake Simcoe. This report highlights the important efforts of LSRCA and its provincial and municipal partners to undertake the recommendations developed through the subwatershed planning process.

Subwatershed Plans

Subwatershed plans have now been completed for nearly all of the tributaries flowing into the lake, as well as the islands of the Chippewas of Georgina Island First Nation. As part of the subwatershed planning process, implementation plans have been developed which identify a schedule of priority projects to be completed, as well as which agencies will be responsible for their completion.

In order to ensure this work remains on track, LSRCA and its partners develop annual reports as a mechanism to track and report on progress, and identify any areas where progress has been delayed. 2017 was the fifth year of the implementation phase of these subwatershed plans and represents a year of continued efforts by all of our partnering agencies to implement the plan recommendations.

This report showcases some of the activities that LSRCA and our partners have undertaken that contribute to the successful implementation of the subwatershed plan recommendations.

As the subwatershed planning cycle has now gone through five years of implementation, the first completed subwatershed plans will now be reviewed and updated with current data and in light of changes in policy and regulations. Updated implementation plans for each subwatershed will also be developed to reflect the changing state of the watershed.

SHOWCASED ACTIVITIES

Parking lot design guidelines for salt reduction

In recent decades, the concentration of chloride in Lake Simcoe as well as its tributaries has steadily increased, mainly due to salt application for winter management of snow and ice. To address this, subwatershed plan recommendations have been developed to improve salt management in the watershed. One area which has been highlighted as a large contributor to salt runoff is parking lots. By monitoring these sites, it was determined that the amount of salt required to achieve maintenance standards and protect human safety could be reduced by simply designing parking lots differently.

Because this is a shift from conventional thinking, the LSRCA and its partner agencies identified a need for further support and direction. The result was a guideline document that could be used by designers, regulatory agencies, owners, contractors, and others to consider elements in the design of parking lots and related infrastructure that can help reduce the need for salt application. This document, entitled *Parking Lot Design Guidelines to Promote Salt Reduction*, was completed by GHD in early 2017.

Design guidelines were developed for four primary design features that can be used in parking lots to minimize the need for salt. The features are:

1. Effective Grading and Stormwater Collection;
2. Snow Pile Storage Location;
3. Sidewalk Design and Pedestrian Flow; and,
4. Landscaping Features.

On the left is example of poor grading, leading to ponding and freezing of runoff which requires ongoing salt application. On the right is a design solution, where dedicated snow pile locations are situated away from the building, downgradient of parking areas and with signage to ensure the area is used appropriately.

Detailed drawings and factsheets, including design recommendations, operation/maintenance considerations and costing, have been developed for the design features. Also, four site plan scenarios have been developed for various property types, demonstrating how these features can work together.

In 2018, the LSRCA will be completing a factsheet to aid municipalities in implementing the guidelines. It will include an overview of the features and template policies which can be integrated into municipal planning documents such as engineering design standards and site plan agreements. This factsheet will assist regulatory agencies in giving consideration to salt reduction through their review process.

Assessing Stormwater Management Pond Vulnerability to Climate Change

The LSRCA has completed a 2-year study to intensively monitor stormwater management (SWM) ponds to evaluate the current impact of climate stressors in order to better anticipate how climate change may impact their function. The stressors that are anticipated to most directly impact pond performance are:

1) Increased temperature, resulting in stronger and longer thermal stratification of the water column;
2) An increase in the number of zero-degree days in winter, resulting in greater winter salt application and therefore more prolonged chemical stratification in ponds; and
3) An increase in intense precipitation events, affecting sediment retention and pond maintenance requirements.

To monitor these effects, the LSRCA has completed surveys of 10 SWM ponds to assess the state of maintenance as well as changes to the pond bed (scour or deposition) that indicate the stability and retention capabilities of the pond. Intensive monitoring will be undertaken at two ponds, one in a residential catchment and the other in an institutional catchment. Monitoring included dissolved oxygen, conductivity and temperature probes installed in the top and bottom of the fore and aft bays,

sediment sampling, as well as water and phosphorus balance for approximately 5 storm events.

Over the two year period of this project, 17 storm events were captured (10 at the residential pond; 7 at the institutional) for water and phosphorus balance. Conductivity and temperature probes were installed over the winter months at the institutional pond to characterize the impacts of winter salt application and its effects on chemical stratification within the pond. Storm event analysis and reporting on the findings of the project is currently underway and is expected to be completed in 2018.

Conductivity and temperature probes installed in the top and bottom of a pond

LSRCA staff measuring conductivity and temperature in a SWM pond

Stormwater Management Pond Retrofits Demonstration Project

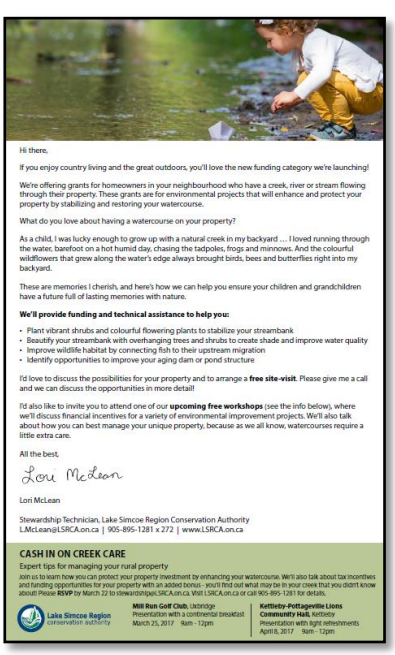
In 2017, York Region and LSRCA established a demonstration project on how stormwater management ponds could be retrofitted to promote phosphorus reduction. Two ponds have been selected for the project from across the Region, and monitoring and maintenance plans will be developed to track how effective the retrofits will be.

The design of the retrofits is expected to be complete in 2018, with construction and monitoring to follow in future years. This project will better inform municipalities on the benefits of different pond retrofits at reducing phosphorous loads.

Upstream view of the outlet structure of an on-line quantity-control stormwater management pond

Targeted Rural Stewardship Outreach Projects

In 2017, LSRCA Communications and Rural Restoration staff developed an outreach strategy to target landowners that have the potential for an aquatic restoration project within brook trout habitat streams, identified through the Stewardship Priorities and Opportunities Tool (SPOT). Targeted letters were sent to property owners in priority areas in the Town of Uxbridge and King Township. Of over 560 letters mailed out with invitations to two workshops, more than 40 residents attended the workshops. So far, over 40 site visits have been completed to explore the range of restoration work that could be undertaken. To date, 10 restoration projects have been completed and 12 are in progress.



Hi there,

If you enjoy country living and the great outdoors, you'll love the new funding category we're launching!

We're offering grants for homeowners in your neighbourhood who have a creek, river or stream flowing through their property. These grants are for environmental projects that will enhance and protect your property by stabilizing and restoring your watercourse.

What do you love about having a watercourse on your property?

As a child, I was lucky enough to grow up with a natural creek in my backyard … I loved running through the water, barefoot on a hot humid day, chasing the tadpoles, frogs and minnows. And the colourful wildflowers that grew along the water's edge always brought birds, bees and butterflies right into my backyard.

These are memories I cherish, and here's how we can help you ensure your children and grandchildren have a future full of lasting memories with nature.

We'll provide funding and technical assistance to help you:

- Plant vibrant shrubs and colourful flowering plants to stabilize your streambank
- Beautify your streambank with overhanging trees and shrubs to create shade and improve water quality
- Improve wildlife habitat by connecting fish to their upstream migration
- Identify opportunities to improve your aging dam or pond structure

I'd love to discuss the possibilities for your property and to arrange a **free site-visit**. Please give me a call and we can discuss the opportunities in more detail!

I'd also like to invite you to attend one of our **upcoming free workshops** (see the info below), where we'll discuss financial incentives for a variety of environmental improvement projects. We'll also talk about how you can best manage your unique property, because as we all know, watercourses require a little extra care.

All the best,

Lori McLean

Lori McLean

Stewardship Technician, Lake Simcoe Region Conservation Authority
L.McLean@LSRCA.on.ca | 905-895-1281 x 272 | www.LSRCA.on.ca

CASH IN ON CREEK CARE

Expert tips for managing your rural property

Join us to learn how you can protect your property investment by enhancing your watercourse. We'll also talk about tax incentives and funding opportunities for your property with an added bonus - you'll find out what may be in your creek that you didn't know about! Please **RSVP** by March 22 to stewardshipe.LSRCA.on.ca. Visit LSRCA.on.ca or call 905-895-1281 for details.

Lake Simcoe Region conservation authority

Mill Run Golf Club, Uxbridge
Presentation with a continental breakfast
March 25, 2017 9am - 12pm

Kettleby-Pottageville Lions Community Hall, Kettleby
Presentation with light refreshments
April 8, 2017 9am - 12pm

A copy of the targeted letters sent to landowners (left); residents attending a workshop (top right); a stream with potential for restoration, identified as a result of the workshops (bottom right)

Updated Rural Stewardship Grant Categories

The LSRCA Rural Stewardship Department has updated the grant categories and funding limits for landowner restoration projects in the Lake Simcoe watershed. The grants provide landowners with funding and technical assistance for environmental projects on their land. More information is available at http://www.lsrca.on.ca/funding/eligible-projects.

Summary of Progress

The details are included in the tables below.

		Number of activities which are …			
	2017 Subwatershed Plan Theme Areas	**Complete**	**On target for completion**	**Not on target for completion**	**Past due**
1	Governance of implementation plans		2		
2	Increasing use of Low Impact Development Solutions (LID)	6	4		
3	Improving construction and road development practices	1	5		
4	Natural channel design			5	
5	Planning, development and enforcement processes	3	2	2	
6	Improving property management		3		
7	Reducing salt use		6	3	
8	Aquatic and terrestrial ecosystem restoration		6	1	
9	Urban stormwater retrofits		1		
10	Protecting and restoring natural heritage features through stewardship	1	4	1	
11	Prioritizing stewardship projects	1	1		
12	Preserving water quantity		4	1	
13	Dealing with dust and atmospheric deposition			2	
14	Promoting stewardship to increase uptake	1	6		
15	Improving the reporting of monitoring data		2	3	
16	Improving data collection		2		
17	Assessing stewardship effectiveness	2			
	Overall Progress – 2017	**15**	**48**	**18**	**0**

Activity	Lead	Year 5 2017	Comments
1. Governance of Implementation Plans			
Host periodic meetings of the implementation working group*	LSRCA		
Share annual reports with partners*	LSRCA		
2. Increasing use of Low Impact Development Solutions (LID)			
Develop LID funding strategy	LSRCA		
Develop stewardship funding categories for LID projects	LSRCA		
Review current funds to assess what might be available to support LID	Municipalities		
Pursue LID through redevelopment*	Municipalities		
Incorporate LID in stormwater master plans	Municipalities		
Continue to hold design charrettes to engage developers in including LID in plans of subdivision	LSRCA		
Adopt model site alteration by-law developed by LSRCA Stormwater Management Policy Working Group	LSRCA and Municipalities		
Undertake pilot LID projects to showcase innovations, monitor and document efficacy, and for educational purposes	LSRCA and Municipalities		
Developing training courses and/or workshops on the design and construction of LID approaches	LSRCA		
Promote education and funding available for private landowners to implement LID projects*	LSRCA and Municipalities		
3. Improving construction and road development practices			
Develop funding model to support appropriate erosion and sediment control practices	LSRCA		
Provide training for sediment and erosion control inspectors*	LSRCA		
Review findings from the 2016 LSRCA Erosion and Sediment Control Research Study to identify barriers and drivers to uptake of E&SC measures for construction practices	LSRCA		
Implement initiatives to increase uptake of E&SC measures in the study area subwatersheds (eg. Educational materials, workshops, training, policy development, etc.)	LSRCA		

Activity	Lead	Year 5 2017	Comments
Monitor and report on implementation of sediment and erosion control best practices on an annual basis	Municipalities		
Include assessment of providing barrier-free connectivity for wildlife in municipal infrastructure EAs*	Municipalities		
4. Natural channel design			
Establish a pilot project to focus efforts on modifying a municipal drain to promote ecological function.	LSRCA		On hold to focus on other priorities
Promote use of features such as grassed buffers, two stage channels, or weirs on headwater wetlands to manage drains, while minimizing impacts on agricultural drainage	LSRCA		On hold to focus on other priorities
Update LSRCA watercourse layer to identify which watercourses are free-flowing and which are enclosed	LSRCA		On hold to explore in 2018
Review drainage reports and notes from initial land surveys to estimate which drains are natural watercourses and which have either been extended or created	LSRCA		On hold to explore in 2018
Host workshop for conservation authority staff, farm community, drainage superintendents, and drainage contractors on managing ecosystem function in municipal drains	LSRCA		On hold to focus on other priorities
5. Planning, development and enforcement processes			
Develop a natural heritage mitigation policy	LSRCA		
Develop approvals for the Lake Simcoe Phosphorus Offsetting Program pilot project	MOECC and LSRCA		
Develop a process for reviewing aggregate applications and associated PTTWs with the support of the Tier 2 integrated water model (or other model as deemed appropriate), in order to look at cumulative impacts that may result from water takings. This process may include the development of a screening tool to determine when the model is necessary.	MOECC, MNRF, and LSRCA		On hold for further discussion
Provide and/or participate in training session to staff from MNRF, MOECC, and proponents on the review process, and data required from proponents	LSRCA, MNRF, and MOECC		On hold for further discussion
Revise ECA process for stormwater ponds in ESGRAs	MOECC and LSRCA		
Develop draft policies for consideration in municipal Official Plan updates, Secondary Plans, and Community Improvement Plans to ensure consistency with subwatershed plan recommendations	Municipalities		Ongoing as official plans are updated.

Activity	Lead	Year 5 2017	Comments
Amend terms of reference for Environmental Impact Study requirements to address habitat quality characteristics, as necessary	Municipalities		
6. Improving property management			
Continue to collect natural heritage data on public lands*	MNRF		
Pending results of pilot study, expand use of invasive species monitoring protocol to other public lands in Durham Region	LSRCA		
Review public lands for opportunities to contribute to subwatershed health	All public agencies		
7. Reducing salt use			
Host Salt Management Working Group meetings*	LSRCA		
Encourage municipalities to participate in the salt working group to exchange ideas and new research*	LSRCA		
Provide Smart about Salt training	LSRCA		
LSRCA and Municipalities	LSRCA and Municipalities		
Develop map of priority areas for windbreak establishment, to manage blowing snow and dust	LSRCA and Municipalities		On hold to focus on other priorities
Promote the adoption of farm windbreaks and living snow fences*	LSRCA and Municipalities		On hold to focus on other priorities
Draft tree cutting bylaws	LSRCA and Municipalities		On hold to focus on other priorities
Continue to monitor chloride*	MOECC		
Update salt management plans, as needed	Municipalities		
8. Aquatic and terrestrial ecosystem restoration			
Share stewardship targets with Stewardship Network	LSRCA		Targets to be shared once they have been tested
Continue to implement stewardship projects	All public agencies		
Implement activities identified in Invasive Species Response Plans	MNRF		Ongoing for water solider; on hold for other species
Continue to provide information on invasive species to nurseries in the Lake Simcoe watershed	MNRF		Ongoing through partnerships of OFAH

Activity	Lead	Year 5 2017	Comments
Host workshop of staff from TSW, MNRF, Kawartha Conservation, LSRCA, DFO, and members of the Lake Simcoe Science Committee to discuss the role of the Trent Severn Waterway as a vector of invasive species, and methods to limit their spread	LSRCA		
Continue to deliver invasive species awareness program	MNRF		Ongoing through partnerships of OFAH
Refine recommended planting list and share with stakeholders	LSRCA		
9. Urban stormwater retrofits			
Review operations to reduce phosphorus loading in uncontrolled areas	Municipalities		
10. Protecting and restoring natural heritage features			
Develop and/or compile information on reducing impacts of human activities on urban natural areas	LSRCA		Was delayed to focus on other priorities. Anticipated to start in 2018.
Strike policy development working group for municipal official plans that would provide mitigation and restoration for development and site alteration within natural heritage features that are not defined as “key” by the Lake Simcoe Protection Plan or as “significant” under municipal official plans	LSRCA and Municipalities		
Develop draft policies for municipal official plans that would provide mitigation and restoration for development and site alteration within natural heritage features that are not defined as “key” by the Lake Simcoe Protection Plan or as “significant” under municipal official plans	LSRCA and Municipalities		Ongoing protection through ecological offsetting
Define characteristics of habitat quality, and range of those characteristics found in benchmark examples of ecosystem types in the Lake Simcoe watershed	MNRF		
Develop index incorporating factors related to habitat amount and habitat quality to assist in monitoring and reporting	MNRF		
Modify “composition” criteria of Key Natural Heritage Feature definition to include characteristics of high quality habitats, as necessary	MNRF		
11. Prioritizing stewardship projects			
Review existing funding programs, to ensure that stewardship funds are provided in locations, and for project types, where maximum benefit can be achieved	All public agencies		

Activity	Lead	Year 5 2017	Comments
Create working group to develop an adaptive stewardship strategy to identify, implement and track stewardship projects in the Talbot River and Whites Creek subwatersheds	Kawartha Conservation		
12. Preserving water quantity			
Provide ESGRA maps and guidance to municipalities	LSRCA		Complete in exception of Beaver and Pefferlaw. Modelling expected to begin in 2018.
Enhance and down-scale existing regional-scale integrated water models, using modelling framework developed by MNR, to develop subwatershed-scale model	LSRCA		
After subwatershed-scale integrated water model is developed, use it in e-flow assessment	MOECC and LSRCA		
Develop strategy to achieve in-stream flow targets	MOECC and LSRCA		Strategy will be developed once three representative in-stream flow projects are completed
After pilot in-stream flow assessment and strategy completed, apply to other stressed tributaries in the Lake Simcoe watershed	MOECC and LSRCA		
13. Dealing with dust and atmospheric deposition			
Develop an 'action plan' to reduce atmospheric deposition associated with municipal, aggregate, and agricultural operations	MOECC		Action plan will be developed following completion of 2-year research project
Implement action plan to reduce atmospheric deposition associated with municipal, aggregate, and agricultural operations	MOECC		See above
14. Promoting stewardship to increase uptake			
Continue to release watershed newsletters*	LSRCA		
Maintain website, to ensure information remains current*	LSRCA		
Expand LSRCA website to provide information on range of stewardship funding programs available in the Lake Simcoe watershed, with contact information	LSRCA		
Continue to showcase stewardship projects*	LSRCA and Municipalities		
Engage community groups active in local subwatersheds*	LSRCA		

Activity	Lead	Year 5 2017	
Revise communication tools to address identified barriers to stewardship participation*	LSRCA		
Submit notices and articles to newsletters of local residents associations, on issues related to subwatershed management, and opportunities to participate in stewardship programs*	LSRCA		
Establish and maintain an on-line library of reports and scientific studies on Lake Simcoe and its watershed	LSRCA		
Develop web portal for KPI reporting	LSRCA		
Analyse and report on Key Performance Indicators of watershed health*	LSRCA		
Implement enhanced monitoring program, as necessary to report on Key Performance Indicators	LSRCA		
Host meetings with the agricultural community as necessary to share information and coordinate efforts on issue such as BMPs for phosphorous reduction, achieving in-stream flow targets, implementation of stewardship programs and methods of increasing public awareness	LSRCA		
Review monitoring data and monitoring program to enable further assessment of emerging trends in watershed health*	MOECC and LSRCA		
Create a working group to develop an environmental monitoring strategy for Canal Lake, Mitchell Lake and the Talbot River subwatershed	LSRCA		
Conduct literature review of factors related to stewardship behaviour of private land owners	LSRCA		Refocused to salt management in parking lots as a pilot
Monitor and determine barriers to uptake of stewardship programs, and successful examples	LSRCA		Refocused to salt management in parking lots as a pilot

*** Annual ongoing works**

alPHa

Association of Local
PUBLIC HEALTH
Agencies

2018 ALPHA FITNESS CHALLENGE FOR BOARD OF HEALTH MEMBERS

New for this year! alPHa is inviting all Boards of Health to participate in the Fitness Challenge!

The challenge to our Board of Health members is to involve the entire Board in a 30-minute walk, wheel, whatever.....just be active for half an hour!

HERE'S HOW TO PARTICIPATE

READY - Designate someone to co-ordinate and keep count of your participants.
SET – Participate in a minimum of 30 minutes of walking or wheeling during the month of May as part of a Board of Health activity. Can't get together? You can still participate and head out on your own! As long as everyone on the Board participates, you are a winner!
GO - Have your designated co-ordinator complete the results form and email it back to us at info@alphaweb.org.

EASY TIPS TO GET ACTIVE!

Before or After Your Board of Health Meeting - Go out for a 30-minute walk before or after your Board meeting in May.

At Lunch - Many of us have sedentary jobs, why not brainstorm project ideas with fellow Board members during a lunchtime walk or wheel?

After work or on the Weekend – Not enough time before or after your Board meeting and lunch time is too busy? Set up another date and time to meet in May and go for a walk or wheel!

Completed forms must be received by 12:00 noon on Friday June 1, 2017; send them to info@alphaweb.org

30-minute walk...wheel...whatever!

HERE ARE THE RULES

Boards of Health must complete the attached aIPHa Fitness Challenge Form. All Board of Health with 100% group participation will be considered winners

CONTEST RULES AND GUIDELINES

1 - Only members of Boards of Health are eligible.
2 - The 30-minute walk or wheel can be completed anytime during May and it is encouraged that this takes place before or after the May meeting. If no meeting is scheduled then the Board members are encouraged to get together and walk or wheel at another time.
3- Board members can complete their 30-minute walk or wheel individually, however, it is encouraged that this to be a group activity.
4 - Any 30-minute walk or wheel will be considered as an eligible activity.
6 - The winning Board of Health(s) will be recognized at the Conference in June.

AND THE WINNER IS ..

The results will be broadcast on the allhealthunits listserv in June and via aIPHa's Twitter account: @PHAgencies. The winning Board of Health(s) will also receive an award at the 2018 aIPHa Annual General Membership meeting in June.

2018 BOARD OF HEALTH alPHa FITNESS CHALLENGE

Deadline to submit: Friday, June 1, 2018
Email completed form to: info@alphaweb.org

Please fill in the fields below:

BOARD OF HEALTH: _____

COORDINATOR(S): _____

COORDINATOR'S EMAIL: _____

Number of Members on the Board of Health (incl. Chair): _____

Number of BOH members participating in at least 30 minutes of physical activity: _____

BOH member participation rate: 0.00%

If BOH members participated in a **group activity**, please include a short description of the activity:

If BOH members participated as individuals, please list the activities they participated in:

Suggestions for next year's BOH Fitness Challenge (other than better weather):

APR 11 '18 PM3:08 CIP 6.3

REGION OF DURHAM

APR 11 2018

REGIONAL CHAIR & CEO

Ontario
LEGISLATIVE ASSEMBLY

ERNIE HARDEMAN, M.P.P.
Oxford

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M7A 1A8
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Woodstock, Ontario
N4S 3C2
Tel (519) 537-5222
Fax (519) 537-3577

March 26, 2018

Roger Anderson
Regional Municipality of Durham
605 Rossland Rd E, Box 623
Whitby, ON L1N 6A3

Dear Chair Anderson,

I am writing to let you know that I recently introduced a private members' bill which would give municipalities the authority to decide whether or not they would be willing to receive a landfill. I have enclosed a copy for your information and comments. I believe municipalities should have a say in the location of something that would have such a lasting impact on their community.

As you know, today municipal governments can decide where a Tim Hortons should go, but they can't decide where something as significant as a landfill should go. That doesn't make sense.

Currently, only the Ministry of the Environment approves a new landfill, but Bill 16, *Respecting Municipal Authority Over Landfilling Sites*, would ensure that waste companies are required to have approval from the municipality as well before they can move forward with the landfill placement.

I know that this authority has been requested by a number of municipalities. The Mayor of Ingersoll requested this legislative change during a committee hearing on Bill 139 last fall at Queen's Park. Since then, nearly 30 municipalities have passed resolutions of support and another 150 municipal leaders have signed petitions to demand this right.

I would appreciate hearing your comments on the bill and any support you can offer. For your convenience I have enclosed a sample resolution of support.

Thank you for your consideration. As always please feel free to contact me if I can be of assistance.

Sincerely,

Ernie Hardeman, MPP
Oxford

Original To: CIP
Copy To: S.Siopis
C.C. S.C.C. File

Draft resolution

MUNICIPALITIES CALL ON PROVINCE FOR "RIGHT TO APPROVE" LANDFILL DEVELOPMENTS

WHEREAS municipal governments in Ontario do not have the right to approve landfill projects in their communities, but have authority for making decisions on all other types of development;

AND WHEREAS this out-dated policy allows private landfill operators to consult with local residents and municipal Councils, but essentially ignore them;

AND WHEREAS municipalities already have exclusive rights for approving casinos and nuclear waste facilities within their communities, AND FURTHER that the province has recognized the value of municipal approval for the siting of power generation facilities;

AND WHEREAS the recent report from Ontario's Environmental Commissioner has found that Ontario has a garbage problem, particularly from Industrial, Commercial and Institutional (ICI) waste generated within the City of Toronto, where diversion rates are as low as 15%;

AND WHEREAS municipalities across Ontario are quietly being identified and targeted as potential landfill sites;

AND WHEREAS municipalities should be considered experts in waste management, as they are responsible for this within their own communities, and often have decades' worth of in-house expertise in managing waste, recycling, and diversion programs;

AND WHEREAS municipalities should have the right to approve or reject these projects, and assess whether the potential economic benefits are of sufficient value to offset any negative impacts and environmental concerns;

THEREFORE BE IT RESOLVED THAT the **[INSERT NAME OF MUNICIPALITY]** supports *Bill 16, Respecting Municipal Authority Over Landfilling Sites Act* introduced by MPP Ernie Hardeman and calls upon the Government of Ontario, and all political parties, to formally grant municipalities the authority to approve landfill projects in or adjacent to their communities

AND FURTHER THAT the **[INSERT NAME OF MUNICIPALITY]** send copies of this resolution to MPP Ernie Hardeman and all municipalities.