



OPERATIONS DEPARTMENT  
MEMORANDUM

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**TO: ACTIVE TRANSPORTATION AND SUSTAINABILITY COMMITTEE**

**FROM: K. RANKIN, RPF, SUPERVISOR OF URBAN FORESTRY AND NATURAL AREAS STEWARDSHIP, EXT 4754**

**NOTED: D. FRIARY, DIRECTOR OF OPERATIONS**

**A. MILLER, RPP, GENERAL MANAGER OF INFRASTRUCTURE, AND GROWTH MANAGEMENT**

**RE: URBAN FORESTRY MOTIONS PROPOSED FOR DISCUSSION AT ACTIVE TRANSPORTATION AND SUSTAINABILITY COMMITTEE OCTOBER 27, 2020**

**DATE: NOVEMBER 24, 2020**

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The purpose of this Memorandum is to provide members of the Active Transportation and Sustainability (ATS) Committee with supplemental information requested from staff concerning the individual items proposed in the urban forestry motion that was deferred at the October 27, 2020 ATS committee meeting. Specifically, the proposed motion read as follows:

**URBAN TREE CANOPY**

*WHEREAS trees provide shade in the urban landscape, contribute to human well-being and play a significant role in the fight against climate change;*

*AND WHEREAS a healthy City requires a healthy tree canopy;*

*AND WHEREAS the City of Barrie has some 35,000 street trees and 15,000 park trees;*

*AND WHEREAS the City spends some \$100,000 per year on tree pruning, thinning, etc. each tree at best is pruned once every ten years;*

*AND WHEREAS a significant proportion of street trees in the City fail to thrive after a few years of being planted;*

*AND WHEREAS the City of Barrie has no private tree by-law.*

*NOW THEREFORE be it resolved as follows:*

1. *That staff in the Operations Department be directed to develop the following:*
  - a) *A standard tree planting protocol to ensure a long-term survival and vigorous growth for all trees planted on City property;*
  - b) *A tree management protocol to provide direction to the maintenance of City trees with respect to pruning, thinning, watering, and fertilizing; and*
  - c) *That a plan to remove all non-native tree species and replace them with a variety of native species.*
2. *That staff in the Operations Department seek out opportunities to partner with public and non-profit citizen groups to implement the program and that a progress report be provided to General Committee within six months.*

3. *That staff in the Operations Department be directed to introduce a Private Tree By-law in order to protect and preserve our urban forest and environment in the City of Barrie.*

Staff agree on the importance and benefits of a healthy urban forest and the associated tree canopy and believe that these motions are not required as we are already completing or addressing these items through existing policies and procedures. In addition, several significant recommendations were included in the Council approved Urban Forest Strategy (2014) and the Climate Change Adaption Strategy (2017) and their implementation plans to enhance the urban forest and its long-term management (Appendix 'A'). The following information is provided on the proposed motions.

In addition to the 35,000 street and 15,000 park trees, the city owns approximately 800 hectares of forest (including holdings in Springwater Township surrounding Little Lake).

### **City Annual Tree Planting Program**

Currently, the contracted annual city planting program results in an average of 800 large caliper street trees being planted annually. Over the past (17) years of monitoring street tree planting success, urban forestry staff have experienced mortality rates in the range of 2% to 10% during the first-year warranty period. An additional 5 to 15% of newly planted street trees are placed on extended warranties, typically one additional year, which is comparable to other similar municipalities. On average, 5% of the trees do not survive the first year, and 10% are stressed or have other issues that places them on an extended warranty.

The warranty with the tree planting contractor is not released by staff until the tree has been deemed healthy and actively growing. In extreme cases, this has resulted in street trees being kept on warranty for five years, this is most often in areas with poor soil conditions and situated on priority winter salt routes. As a result, staff adjust the plant selection in these areas to avoid salt sensitive species and to best match species and soil conditions (soil type, depth, quality and compaction).

Once established, street trees thrive and grow to maturity in the majority of conditions. However, there are situations where trees struggle to become established. These include:

- Street trees on priority salt routes - Staff have attributed the struggle to higher speed roads that have salt brine applied which creates salt spray desiccating tree buds during the winter.
- Areas of the city with poor soil conditions - Subdivision development construction practices can also cause highly compacted subsoils over shallow topsoil. In these cases, hardier tree (rooting) species are selected. The quality of topsoil in boulevards limits the health and longevity of street trees. Improving the quality of boulevard topsoil as well as the depth and area would have significant tree health benefits.
- Tree planting procedures - When the city's planting procedure (Barrie Standard Details BSD-1310 to 1321, Appendix A) is not strictly followed and poor planting practice has resulted in higher numbers of warranty replacements. Staff reject trees that are not planted within tolerances set in the planting protocols (developed from the Landscape Ontario Horticulture Trades Association).

Comparatively, trees planted in city parks and open spaces are more successful and result in a very low replacement percentage (typically 2-5%), and are more likely to have died from transplant shock or desiccation from digging, transport, storage and planting.

The city's tree planting protocol is based on the most current Landscape Ontario planting specifications. Follow-up maintenance is limited by current city resource levels and is largely dependent on homeowners following the recommended maintenance practices (water & fertilizer). Tree care information is provided with each newly planted tree to each address at the time of planting (Appendix 'A'). A new pilot watering program was scheduled to commence in 2020 but was delayed until 2021 due to impacts of the global

pandemic. Initial interest from residents wishing to partner in this program has been excellent and we anticipate in its first year having more than (100) community partners in 2021.

### **City Tree Maintenance Program**

In addition to street trees pruned by urban forestry staff (approximately 500-1000 per year), 3,000 street trees are pruned under an annual tree maintenance contract at a cost of \$110,000 annually. This results in an average pruning cycle of city trees of once every (8) to (10) years. Best management practices recommended by the International Society of Arboriculture are to prune street trees on a (5) to (7) year cycle.

Recognizing that well maintained urban trees provide increased ecological, social and economic benefits, staff recommended increasing the maintenance levels of street and park trees within the Climate Change Adaption Strategy. Action item 6.7 of the approved strategy details the resources required to implement an enhanced tree maintenance program with the goal of increasing the health and longevity of city trees. The cost to implement the action item was estimated at \$258,000 per year (net contracted services increase of \$148,000) plus an additional 1,190 hours of staff time (approximately \$36,000 salary) to increase the annual proactive maintenance and inspections from current level of 3,500 trees per year to 7,000 street plus 3,000 park trees annually. This maintenance level would achieve the International Society of Arboriculture Best Management Practices targets. Action items 5.2, 5.3 and 5.5 of the Climate Change Adaption Strategy also reflected the need to add resources to increase and manage a healthier urban forest. Additional resources for implementing these actions included staff time and costs (totaling \$205,000 in direct start-up expenses plus ongoing annual expenses of \$50,000 and 1,140 staff hours to maintain).

Urban Forestry staff have implemented an annual watering and fertilizing program for trees in high use areas (downtown and waterfront) as well as newly planted park trees. Appendix A provides a summary of the basic program. Each residential address where a new street tree is planted receives a watering and maintenance brochure to assist the city in establishing trees (Appendix 'A').

### **Native vs. Non-native Tree Species**

The climate zone in Barrie is not conducive to a diverse range of native tree species that would grow vigorously on road a right-of-way. Currently, 27% of our street tree inventory are true native species (non-cultivars). Winter low temperatures, salt from road maintenance, compacted soils and general road pollution creates an environment that is not ideal for growing native tree species in many locations. It is more important to have a diverse and healthy tree inventory and it would be impractical to eliminate all non-native species. The Urban Forest Strategy (2014) commits the city to diversifying the city's tree inventory while phasing out non-native invasive species (e.g. Norway Maple) - current planting programs are projected to achieve this target by 2064.

The street tree planting program continues to plant non-native species that are proven to be successful and widely recognized not to be invasive and do not pose a risk to our natural areas and native plant communities. This is consistent with other municipal planting programs considering many native tree species are not the best choice for street trees for reasons such as tolerance to compacted soil, salt tolerance and/or structural strength (e.g. all conifer species, beech, basswood, willow, silver maple, red maple). The ongoing impact of the Emerald Ash Borer is a resounding example of the importance to diversify our tree species. In 2004, fourteen percent of our inventory was Green or White ash. From 2014 to 2024 the city will lose 98% of our ash trees due to one invasive pest.

Action 5.5 of the Climate Change Strategy reflects this objective and the resourcing required to address a holistic strategy to invasive species management, involving staff from several departments, as well as partnerships with public interest groups and the private landowners.

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## Planting Partnerships

The Urban Forestry Section actively seeks and develops tree planting and ecological restoration partnerships with members of the public and local organizations. Such organizations include:

- the Lake Simcoe Region Conservation Authority (LSRCA),
- the Nottawasaga Valley Conservation Authority (NVCA),
- Tree Canada,
- Local Rotary Clubs,
- Living Green Barrie,
- Simcoe County District School Board,
- and local businesses such as BMO.

Most recently, staff have been developing a pilot tree watering bag partnership program with local residents to assist with the maintenance of newly planted street trees, as well as planning to develop a citizen science program for the purpose of inventory and monitoring the health of publicly owned trees. These are identified in the Climate Change Adaption Strategy Action Item 6.7.

Staff are currently working with Living Green Barrie and the LSRCA on a proposal discussed at the Active Transportation and Sustainability Committee to implement a community planting program with the goal of increasing tree planting on private lands. The motion is as follows:

**19-G-373 INVESTIGATION – TREE PLANTING PROGRAM**

*That staff in the Roads, Parks and Fleet Department investigate the feasibility of partnering with community organizations such as Living Green Barrie, Nature Barrie and other service clubs for a Tree Planting Program on private and public lands in the City of Barrie and report back to the Active Transportation and Sustainability Committee.*

Areas of focus would include the possibility of obtaining funding through grant applications and through Council as part of the Climate Change Adaption Strategy noted within Action Items:

- 5.3 - \$25,000 per year to increase tree planting in areas of low canopy.
- 6.7 - \$25,000 per year to increase tree planting in strategic areas (e.g. parkland).

Representatives from Living Green Barrie, Nature Barrie, LSRCA and city staff held one remote meeting in the summer and will be setting another virtual meeting shortly to discuss a draft business plan being prepared by Living Green Barrie.

## Private Tree By-law

The city Tree Preservation By-law 2014-115 protects trees growing on private land that are part of an ecological woodlot that is defined as being 0.2 ha and larger. However, the by-law does not regulate the removal of individual (landscape) trees on private residential properties unless they are part of an ecological woodlot. The City first established a private tree by-law in 1990 and has revised the By-law three times since its inception. In 2000 a private consulting firm, McNair & Marshall recommended against the implementation of an individual tree By-law to regulate single tree removals on private properties in favour of the current by-law. The report cites the benefits of focusing on community education and planting programs in-lieu of a new permitting system that was estimated in 2000 to cost \$200,000 per year to administer and enforce. The result of this recommendation guided content of the current by-law and provided justification for the increase in city tree annual planting budgets from \$50,000 per year to \$200,000 per year.



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The Forest Protection Branch at the Town of Oakville administers their single tree by-law with (5) staff and an annual budget of approximately \$400,000. They estimate that 15% of their time is spent on enforcement and court services for infractions, however court costs are not included in the annual program budget.

Since 1990, approximately (30) infractions of the By-law have been investigated resulting in penalties including restoration agreements, court ordered restoration, probation orders, and large fines. In all but one case, the cost to the city for the investigation and court proceedings far outweighed the fine revenue.

The ATS Committee requested an update on Urban Forest Strategy Action Item #3.1.1, Forest Canopy Assessment. Based on 2007 aerial photography, staff had estimated the total tree canopy cover at approximately 24 to 25%. A recent analysis of 2018 satellite photography measured the current canopy to be approximately 30.5%. The detailed canopy areas by Ward and other relevant land use type is included in Appendix 'A'.



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### APPENDIX "A"

#### SUBMITTED DOCUMENTS

Barrie Standard Details: <https://www.barrie.ca/City%20Hall/Planning-and-Development/Engineering-Resources/Pages/Engineering-Standards-Policies-Guidelines.aspx>

Tree Planting and Care Brochure (attached)

Watering Bag Partnership Program Brochure (attached)

Climate Change Adaption Strategy:  
<https://www.barrie.ca/Living/Environment/Conservation/Pages/Climate-Change.aspx>

Urban Forest Strategy: <https://www.barrie.ca/Living/Environment/Urban-Forestry/Documents/Urban-Forest-Strategy.pdf#search=urban%20forest%20strategy>

Private Tree By-law: <https://www.barrie.ca/City%20Hall/ByLaws/BylawDocs/By-law%202014-115%20Private%20Tree%20By-law.pdf>

Tree Protection Manual: <https://www.barrie.ca/Living/Environment/Urban-Forestry/Documents/Tree-Protection-Manual.pdf#search=tree%20by%20law>

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## NOTICE OF MUNICIPAL TREE PLANTING PROGRAM

The City of Barrie is planting the boulevard adjacent to your residence as a result of a tree or tree(s) previously removed or a request to plant a tree at this location. The City is granted authority to do so on the City owned right-of-way via By-law 2014-116.

Every effort is made to plant as many trees as possible following Municipal policies and by-laws for appropriate tree species and spacing (distance between trees). Setbacks from above and below ground utilities (e.g. hydro, gas, water, telecommunications) and other safety requirements (e.g. sight lines at intersections, streetlights, driveways, traffic signals, stop signs) must also be maintained. Unfortunately, there is no opportunity for residents to alter the species or location of these trees at the time of planting.

Why is the City of Barrie planting street trees? Trees:

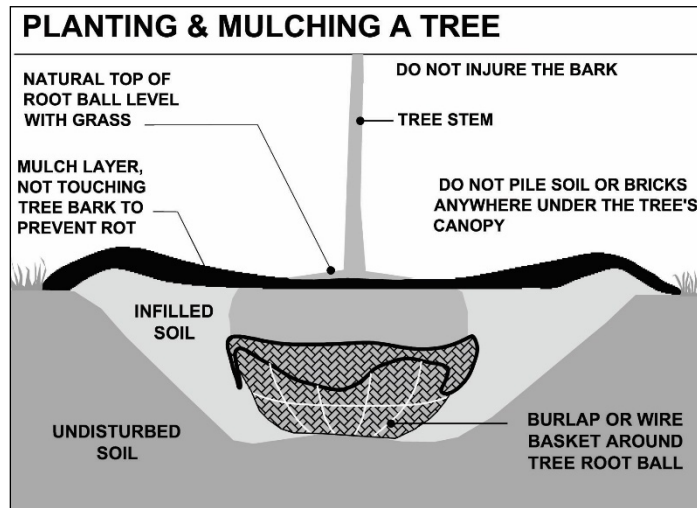
- increase the value and curb appeal of residential homes;
- create oxygen and consume carbon dioxide;
- filter dust, pollution and other airborne particles;
- provide insulation from winter winds and summer sun;
- reduce stress;
- reduce noise;
- purify water; and
- provide food and habitat for essential wildlife.

The tree(s) are under warranty by the planting contractor for a minimum of one year, however, it will require some help from you to remain healthy. Please refer to the reverse for tree care tips. The new tree may experience some shock and appear under stress for the first few months. If it appears to be declining, (in spite of following the tree care tips) contact the City of Barrie at 705-726-4242

## TREE CARE TIPS

### DO:

- Water the tree thoroughly once every 3-5 days during the summer dry spells.
- Hand pull any grass or weeds growing up through the mulch layer around the tree.
- Maintain the organic mulch "ring" (wood chips/mulch) in a layer 7-10cm (2-3") deep around trees. See picture below for mulching best practices.



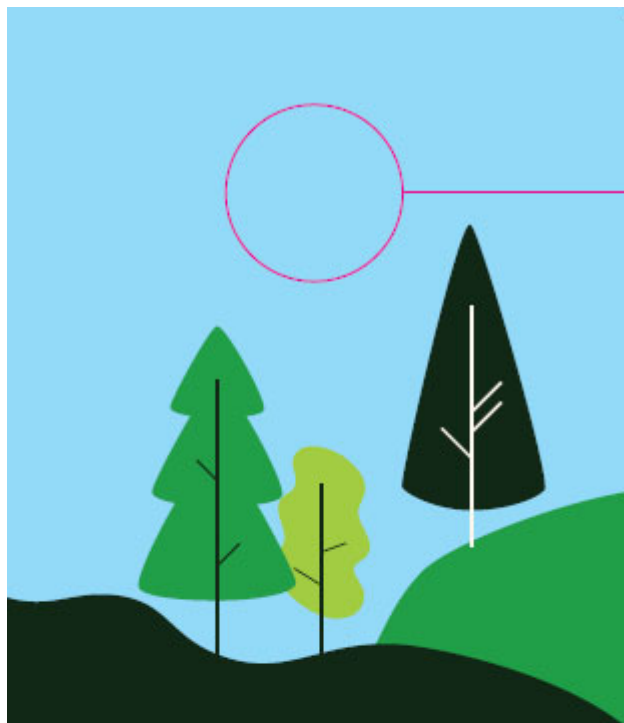
### DO NOT:

- Mound soil and/or mulch around the base of the tree – it causes excessive stress on the root system.
- Prune or remove trees.
- Use a power trimmer around the stem, striking the bark will girdle and kill the tree.
- Cut surface roots, dig around the tree, or tie anything to the tree.
- Build any planters (stone, concrete, wood) around the tree, they restrict root growth and cause tree stress.
- Plant flowers, shrubs, *etc.* at the base of the tree. They will compete for necessary soil space and nutrients.

If you wish to plant a boulevard garden, please keep it 1 metre (3 feet) from the base of the tree. Information on the Boulevard Garden Policy can be found in the Leisure Guide or on the City of Barrie's website (address below).

For more detailed tree care information, please visit the City of Barrie's Urban Forest page online at [www.barrie.ca](http://www.barrie.ca) under Living > Environment > Urban Forestry.






**Dear Resident,**

A tree was planted on your boulevard today and we need your help to keep it healthy. To ensure the tree succeeds and grows in its new home, it needs to be watered once a week, from May until October.

We will provide Tree Watering bags (while quantities last) to any homeowner who is willing to help water their newly planted tree. This pilot program will help the tree establish a good root system and survive the establishment period. The City's goal is to have boulevard trees grow into a sustainable urban forest. If we ensure trees are healthy during the establishment period, the survival rate is much higher.




**How it works**

- 1 Sign up to receive your watering bag (see instructions below). By doing so, you agree to participate in the watering program for three years.
- 2 Fill up the bag with water **ONCE** a week from May to October for the next three years.
- 3 Leave the bag on the tree and it will be picked up at the end of October each year. Forestry staff will deliver a new bag each spring.

**How to sign up**

- 1 Call Service Barrie at 705-726-4242 or email your home address information to [ServiceBarrie@barrie.ca](mailto:ServiceBarrie@barrie.ca)
- 2 Forestry staff will deliver a watering bag and attach it to your tree. There will be detailed instructions on how to properly fill the watering bag included with the bag when it's delivered.



**Thank you for helping keep Barrie green and growing!**



[barrie.ca/UrbanForestry](http://barrie.ca/UrbanForestry)



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2018 Tree Canopy Area:

	Area (ha)	Canopy Area (ha)	Canopy %
City Owned	1,491.0	714.0	47.9%
Road Right of Way	1,467.0	170.1	11.6%
Private Land	7,109.0	2,181.9	30.7%
Total	10,067.0	3,066.0	30.5%

City Ownership by Land Type	Area (ha)	Canopy Area (ha)	Canopy %
FACILITY	56.2	9.3	16.6%
FRONTAGE	13.1	4.8	36.5%
GORE	2.6	0.5	20.3%
MUNICIPAL LOT	2.9	0.2	7.4%
NATURAL AREA	1,010.7	585.3	57.9%
PARK	331.0	93.3	28.2%
SWMF	70.9	19.6	27.6%
OTHER	3.6	0.9	26.0%
	1,491	714.0	47.9%

Ward #	Ward Area (ha)	Canopy Area (ha)	Canopy %
1	570	151	26.4%
2	739	168	22.7%
3	498	114	22.8%
4	512	156	30.4%
5	724	238	32.8%
6	1,109	539	48.6%
7	1,978	585	29.6%
8	2,014	600	29.8%
9	805	202	25.1%
10	1,119	316	28.2%
	10,067	3,066	30.5%

2018 Tree Canopy Area by Land Use Types:

CA	Area (ha)	Canopy Area (ha)	Canopy %
NVCA Watershed	2,970	1,006	33.9%
Regulated Area	1,019	640	62.8%
LSRCA Watershed	7,098	2,059	29.0%
Regulated Area	1,499	754	50.3%

Natural Heritage System		Area	Canopy	Canopy
Classification		(ha)	Area (ha)	%
Level 1		1,418.3	819.5	57.8%
Level 1 with Existing Development Designation		575.0	239.8	41.7%
Level 2		88.7	55.6	62.7%
Level 3		343.8	138.6	40.3%
Level 3 (removed)		0.4	0.0	1.0%
Natural Heritage System - Salem and Hewitt's Secondary Plan Areas		698.9	513.4	73.5%
		3,125.1	1,767.1	56.5%

Zoning	Area (ha)	Canopy Area (ha)	Canopy %
Agriculture	26.7	15.7	58.7%
Commercial	689.6	84.0	12.2%
Environmental Protection Area	1129.5	900.9	79.8%
Open Space	427.6	149.1	34.9%
Municipal Services and Utilities	51.0	4.0	7.9%
Industrial	1193.5	213.2	17.9%
Institutional	320.4	45.9	14.3%
Mixed Use	39.7	2.8	7.1%
Residential	2972.8	784.0	26.4%
Annexed Lands: Refer to Zoning By-law 054-04 Innisfil	1786.8	716.5	40.1%



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Zoning	Zoning Description	Area (ha)	Canopy Area (ha)	Canopy %
A	A - Agriculture	26.7	15.7	58.7%
BP	Business Park	58.7	4.1	6.9%
C1	Central Area Commercial	0.1	0.0	66.4%
C1-1	Central Area Commercial	20.1	1.3	6.2%
C1-2	Central Area Commercial	12.3	0.7	5.5%
C2	Transition Centre Commercial	6.4	1.0	15.1%
C2-1	Transition Centre Commercial	18.0	3.6	20.2%
C2-2	Transition Centre Commercial	9.7	0.6	6.4%
C3	Shopping Centre Commercial	85.5	2.7	3.1%
C4	General Commercial	448.5	54.1	12.1%
C5	Convenience Commercial	3.7	0.3	7.4%
	<b>Commercial Subtotal</b>	<b>689.6</b>	<b>84.0</b>	<b>12.2%</b>
EP	Environmental Protection Area	1,129.5	900.9	79.8%
OS	Open Space	427.6	149.1	34.9%
MSU	Municipal Services and Utilities	51.0	4.0	7.9%
GI	General Industrial	556.6	92.1	16.5%
HI	Highway Industrial	169.3	18.9	11.2%
LI	Light Industrial	441.3	100.0	22.7%
RI	Restrictive Industrial	26.4	2.2	8.4%
	<b>Industrial Subtotal</b>	<b>1,193.5</b>	<b>213.2</b>	<b>17.9%</b>
I	Institutional	44.7	6.6	14.8%
I-E	Educational Institutional	179.3	21.0	11.7%
I-E-1	Educational Institutional	0.7	0.1	17.0%
I-M	Major Institutional	93.1	18.1	19.4%
I-M-1	Major Institutional	2.6	0.1	3.8%
	<b>Institutional Subtotal</b>	<b>320.4</b>	<b>45.9</b>	<b>14.3%</b>
MU1	Mixed Use Node	6.8	0.6	9.5%
MU2	Mixed Use Corridor	9.0	1.1	12.4%
NMU	Neighbourhood Mixed Use	23.9	1.0	4.4%
	<b>Mixed Use Subtotal</b>	<b>39.7</b>	<b>2.8</b>	<b>7.1%</b>
R1	Residential Single Detached Dwelling First Density	211.0	99.3	47.1%
R2	Residential Single Detached Dwelling Second Density	1,111.4	361.4	32.5%
R2-WS	Residential Single Detached Dwelling Second Density wide shallow	7.1	0.5	6.7%
R3	Residential Single Detached Dwelling Third Density	535.3	79.1	14.8%
R3-WS	Residential Single Detached Dwelling Third Density - wide shallow	17.2	1.1	6.3%
R4	Residential Single Detached Dwelling Fourth Density	71.7	7.6	10.6%
R4-WS	Residential Single Detached Dwelling Fourth Density- wide shallow	2.5	0.2	6.2%
R5	Neighbourhood Residential	337.5	28.9	8.6%
RA1	Residential Apartment Dwelling First Density	19.4	4.6	24.0%
RA1-1	Residential Apartment Dwelling First Density - 1	1.1	0.3	28.9%
RA1-2	Residential Apartment Dwelling First Density - 2	2.9	0.9	31.1%
RA1-3	Residential Apartment Dwelling First Density - 3	3.5	0.7	20.7%
RA2	Residential Apartment Dwelling Second Density	3.4	0.4	11.7%
RA2-1	Residential Apartment Dwelling Second Density - 1	8.4	5.0	60.1%
RA2-2	Residential Apartment Dwelling Second Density - 2	10.6	3.1	29.4%
RH	Residential Hold	27.8	16.8	60.4%
RM1	Residential Multiple Dwelling First Density	195.7	61.2	31.3%
RM1-SS	Residential Multiple Dwelling First Density - Second Suite	3.4	1.1	33.5%
RM1-WS	Residential Multiple Dwelling First Density - Wide Shallow	1.2	0.2	14.2%
RM2	Residential Multiple Dwelling Second Density	299.9	101.2	33.7%
RM2-TH	Residential Multiple Dwelling Second Density - Townhouse	78.4	8.5	10.9%
RM2-TH WS	Residential Multiple Dwelling Second Density - Townhouse Wide Shallow	5.6	0.6	9.8%
RM3	Neighbourhood Multiple Residential	17.9	1.4	7.7%
	<b>Residential Subtotal</b>	<b>2,972.8</b>	<b>784.0</b>	<b>26.4%</b>
	<b>Annexed Lands: Refer to Zoning By-law 054-04 Innisfil</b>	<b>1,786.8</b>	<b>716.5</b>	<b>40.1%</b>