# Tree Assessment 536-542 Windermere Rd. (Update)

To: Tony Mara  April 10, 2019
127 Orkney Cres.
London, On

From: Patrick Masterson
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This is a follow-up in response to the City Planner's comments concerning methodology used to prepare the Tree Preservation Report for the development project at 536-542 Windermere Rd.

I have been asked to compare suitability for use of DBH vs drip line measurements, as it pertains to determining appropriate Tree Protection Barrier sizing. I have been asked to comment on whether or not the previous DBH Critical Root Zone analysis prepared by ConservaTree Staff member Alex Morrison should be deemed warranted by the City Planner.

# Analysis

The following is an excerpt from the City of London Tree Protection ByLaw: Schedule C

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***Critical Root Zone***
*The trunk diameter shall be measured at a point of 1.4m above Natural Ground Level. It shall be rounded up or down to the nearest centimetre, with measurements having a decimal nominal of 0.5 or greater rounded up.*
*The Critical Root Zone is measured horizontally and radially in all directions from the outside bark at the base of the trunk or its root flare, if present, where the Tree emerges above Natural Ground Level. The drip line is where intercepted rain may fall off the outermost branches and leaves of a Tree canopy (Tree crown).*
*For the purpose of this By-law, where an asymmetric Tree canopy occurs, the drip line shall be the greatest of the drip line distances measured horizontally from the base of the trunk at the points corresponding to North, South, East and West.*
*If any drip line cannot be measured, the alternate dimension shown in the Table below shall be used. The City Planner, solely at their discretion, may make an alternative interpretation of the Critical Root Zone that they deem to be reasonable and warranted.*

*Trunk diameter measured at 1.4m above Natural Ground Level Critical Root Zone shall be:*

*Less than 10cm = 1.2 m*
*10 -29 cm = 3.6 m*
*30 - 40 cm = 4.8 m*
*41 - 50 cm = 6.0 m*
*51 - 60 cm = 7.2 m*
*61 - 70 cm = 8.4 m*
*71-80 cm = 9.6 m*
*81-90 cm = 10.8 m*
*91-100 cm = 12.0 m*
*>100 cm = 12 cm for each 1cm of diameter*

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Drip line has been used historically for determining critical root zone of decurrent trees. Decurrent trees (aka hardwoods such as maples, walnuts, etc.) exhibit a growth habit that is generally spready and asymmetric. Excurrent trees (aka softwoods/conifers such as spruce, fir, etc.) exhibit a growth habit that is generally pyramidal, having an inverted conical structure that spreads the most at the bottom of the tree. Typical maintenance on these trees in urban settings includes pruning lower limbs to provide access for lawn maintenance or mulch application. This quickly modifies the size of the drip line. All of the trees #22-#29 are coniferous (excurrent).

It is my strongly held belief that DBH is a much better, more consistent, and more scientific means of determining appropriate tree protection requirements, as compared to using the drip line. The International Society of Arboriculture (ISA) also recommends using DBH for determining tree protection requirements[1]. They recommend 12cm for every 1cm DBH, as in schedule C above. Many other Canadian municipalities, such as Vancouver, use DBH exclusively, and disregard drip line[2].

The basis for ConservaTree’s argument in this case is that a drip line is easily modified, by simply cutting off branches, while DBH is nearly impossible to modify. There are in fact a number of strong evidence points in the current Tree Preservation Report revised March 2019 to support DBH as a better standard. The most illustrative is tree #22, this tree is noted as having been limbed up to 20’, effectively reducing the drip line as seen on the Tree Preservation Drawing. Right beside is tree #23 with an obviously larger illustrated drip line on the drawing, yet when compared by DBH in the tree analysis portion of the report they only differ by 1 cm. This should give an idea of how DBH is a much better measure for standardized analysis. There is a second example present in Hedge #3, there has been recent trimming to the lower canopy of the cedar hedge. Thus reducing drip line yet having no effect on dbh.

Reasoning, stated by city staff at the previous PEC meeting, to allow for special zoning ammendments for this development were that City Zoning specifications are currently 'antiquated'. If this is the case for height and set back specifications, I would suggest that Tree Protection is also antiquated. My colleague, Alex Morrison, is currently a representative of TFAC and has informed me that in fact the Advisory Committee has been presented to about "ReThink Zoning", and that they will be participating as a committee to help update requirements. I intend to continue to support Alex and his participation as the only Tree Care Industry representative on the Advisory Committee. The outlined above is an excellent example of an improvement that could be considered.

It should also be noted that the previous critical root zone protection was suggested to be placed at 10cm for every 1cm in dbh. In Schedule C of the Tree Protection Bylaw noted above, 12cm for every 1cm in DBH is the minimum standard used. This was an oversite by our staff, yet using Schedule C, with DBH for trees # 22-29 in the Tree Preservation Report, larger critical root zones will be required.

However, as nearly a year has passed since these measurements have been made, updated measurements should be required to determine proper sizing. We took some updated measurements on trees #29, #27, #22 and Hedge #3. These have the largest DBH's as well as largest drip lines, please see the summary on the following page.

Tree #29 – Drip line of 355cm
South edge of drip line from North fence is 490cm
DBH is 40.6cm resulting in a protection of 487 cm

490cm – 355cm = 135cm
135cm + 487cm = **622cm (South edge of protection from North fence based on dbh.)**

Tree #27 – Drip line of 473cm
South edge of drip line from North fence is 618cm
Dbh is 45.8cm resulting in a protection of 550cm

618cm – 473cm = 145cm
145cm + 550cm = **695cm (South edge of protection from North fence based on dbh.)**

Tree #22 – dbh is 41.4cm resulting in 468cm protection.

This tree is 200 cm from fence line, **resulting in a protection at 668cm**

Hedge #3 – Max drip line is 200cm
Max dbh 14cm resulting in 168 cm of protection

Most of the measurements taken by Conservatree Inc. suggest the initial measurements in the Tree Protection Plan are currently inaccurate. A further revision should be completed by RKLA to update current measurements on this plan. This will allow for accurate identification of appropriate Tree Protections.

# Conclusion

As stated above, it is my strongly held belief that DBH is a much better, more consistent, and more scientific means of determining appropriate tree protection requirements, as compared to using the drip line, especially in the case of excurrent trees such as those in question. Because of this, I would argue strongly that it is the DBH standard which should be applied in the case of this development project. Thank you for your time.

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# Footnote

1. International Society of Arboriculture, pamphlet “Avoiding Tree Damage During Construction”.

2. City of Vancouver, Protection of Tree Bylaw 9958, Schedule A, “Protection barrier distance from tree”