Hello everyone,

Refs: <u>http://www.greenspace-alliance.ca/files/2013%20Rockcliffe%20Arborist%20Report_0.pdf</u> <u>http://ottawa.ca/en/residents/water-and-environment/trees-and-community-forests/protecting-trees</u>

Since I last posted an update on the development plans for the former Rockcliffe Airbase (17 May 2013 -- [GA List] Rockcliffe Airbase Community Design Plan Alternatives), there has been a workshop at the Hampton Court Inn held on May 25th and two further Public Advisory Group (PAG) meetings where I represent our Alliance.

At the Public Advisory Group (PAG) meeting of April 30th, 2013 I tabled a 3 minute video on the health effects of greenspace on a community. The link to this video is here: <u>http://www.ecehh.org/research-projects/urban-green-space/</u>

At the most recent PAG meeting on November 7th, I raised the issue of lasting preservation of significant trees, post-construction. I illustrated the problem with a case study using a series of pictures which ended with the sad demise of a large maple tree which was considered of high value and worthy of preservation in the middle of a parking lot.



June 14 2008



June 11 2010



19 Aug 2013



9 Oct 2013

To its credit, the Canada Lands Corporation asked three arborists (A, B & C) to comment on the case, as well as ask their tree consultant (D) to provide specific references to what is planned at the Rockcliffe Airbase.

The responses (A, B, C and D) are below which contain very useful information on tree preservation and protection. GA members who are fighting to save trees and greenspace may find this information useful. The key point is to identify high value, mature trees for protection and preservation and then ensure they survive in the post-construction phase of the development by requesting better standards and protocols to be followed by the contractors. Obviously, in the case study described above, something went wrong.

Response A.

The cause of the death of that maple tree is fairly unlikely to be water diversion, as a tree of that age would have a significant and deep root system. Physical impact or damage to the roots (if that occurred) is a more likely cause, or perhaps the tree was already diseased? While I doubt that diversion of water through the storm sewer would kill a tree of that size, a professional arborist assessment could tell you for sure what the cause was (e.g. maybe it was already diseased?).

Strong tree preservation can be written into any project specifications and usually forms a part of the eventually Environmental Impact Statement (EIS) or other studies submitted when things move towards development. The first step in that process for most sites is to complete the Tree Conservation Report (TCR) which is prepared by a professional arborist. Most of the recent EIS submittals we've done for the City have integrated the results/recommendations of the TCR (they are presented as a single report) and identify which trees are of high value and need to be protected. Once we know the high value trees, we can implement strong protection measures including root zone buffers based on diameter at breast height, we can fence around them (if needed), can include a blasting buffer to prevent root damage, etc. Once the priority trees are known, it usually isn't an issue to protect them unless they are directly within a development area. Things get complicated if you are digging close to the tree but still want to retain it (for example).

Response B.

My experience with post-construction tree death is that they can die due to multiple preventable causes, sometimes in combination with unexpected natural events, such as drought or disease.

Some reasons trees die after construction:

1. Loss of roots due to excavation within rooting zone – the root system cannot support the subsequent crown growth.

2. Compaction of soil above the rooting zone. This alters infiltration rates, affecting soil moisture available for tree roots to take up.

3. Damage to the tree itself – bark removal being most common.

4. Changes in drainage patterns resulting in an increase in the moisture level in the tree rooting zone that exceeds the tolerance of that species of tree.

Add to these possibilities a drought or period of high rainfall, or a disease (acting more slowly), and death can occur.

There are several best practices to avoid these problems, well known to arborists.

Response C.

There is a lot of information that we don't know about the tree in question. There is the possibility that the tree was diseased or in fair condition to begin with. It's possible that this tree was selected to be saved by the parking lot designers because it's location was more conducive to a successful parking lot design more so than the health of the tree. If this was the case, the situation could have been worsened by some of the common problems with trees in post-construction areas that were already addressed. Simply put, while some tree species are deep rooters and really tough, not all of them are. Generally speaking it takes more to save a tree than just designing in a parking lot island around the base of the tree, which is the only element visible to the eye in these photographs and doesn't tell us the whole story about this tree. Luckily, as also mentioned previously, there are ways to protect trees in development areas with proper planning, arborist care, construction and post-construction protocols.

What this situation does point out well is the seriousness of the issue of strong tree protection guidelines and the importance of having a framework set up upfront that fosters the protection of trees-at-risk, which is something we have spoken about often in the course of this project. Sometimes we have gone beyond the 'master plan' thinking in this regard because we feel that good guidelines for tree protection established out-of-the gate along with careful design consideration in the Community Design Plan (CDP) will help to ensure the practicality and feasibility of doing so down the line when it comes time for the individual parcels to be developed and their subsequent arborist reviews and tree conservation reports. We still want to do this and believe that it will help to set things off on the right foot and help to gain resident support for the project. This is particularly important for the trees at the edges of forest groupings, particularly if they fall adjacent to development areas, and significant specimen trees which also fall in development areas.

Response D

We have specified a large number of tree groupings and significant trees for retention on site as important natural resources for the new mixed-use community proposed in the CDP. The following document outlines our rationale for the retention and protection of these trees and ways to mitigate conflicts between the design plan and the trees outlined for tree protection on site. Appendices to the document provide detailed information regarding the tree groupings and significant trees to be retained. Established trees provide many aesthetic, ecological and economic benefits to a community. They are a hallmark of neighbourhood wellbeing for its residents, workers, students and visitors. People and business gravitate to live and locate in tree occupied environments that increase the quality of life, environmental quality, and beauty and real estate values of the landscapes where they are found. They also bring scale and a sense of history to a community, which is an invaluable asset where there is a low or absent presence of historical buildings that could otherwise provide this sense of cultural landscape and continuity. Some cutting-edge research being performed on urban trees in North America indicates that trees provide many environmental benefits including pollution removal, carbon storage and sequestration, building energy and carbon emission reductions*1.

(*1 - "Assessing Urban Forest Effects and Values: Toronto's Urban Forest" prepared by United States Department

of Agriculture, Forest Service, Northern Research Station)

Urban trees also substantially reduce local temperatures, which makes environments more comfortable in the hot summer months. Both larger groupings of trees and long-lived, large-growing tree species are important components of a healthy, diverse urban forest that provides these benefits*1. While scientific studies have not been performed on the quantified benefits of the existing trees at Rockcliffe, the goal nonetheless is to maintain this understood existing natural resource, which will provide immediate benefits to the new community and make it uniquely attractive as a healthy and vibrant place to be and live. These objectives are complementary to parks and open space planning for the community, where the network of parks and open spaces will be enhanced by the existing vegetation and protected natural areas forming a layered and dynamic network of green spaces for the community that will become the backbone of the recreational, ecological and socio-cultural infrastructure aspects of the holistic, walkable and healthy-living lifestyle at Rockcliffe.

Various criteria were used in the decision-making process regarding what trees should be retained for the new community. An important tool in this process was the Arborist Report, originally prepared for CLC in Summer/Fall 2004 by Jim McCready and revised in January 2013 by Dan Baker. The arborist report, along with our own site visits, additional report review, inventory and analysis of high landscape value areas and view sheds, community input, as well as our ongoing involvement with the iterative design process of the alternatives and preferred plan and its evolving requirements, have all contributed to the final selection of trees for preservation on site.

Key criteria for the selection of trees to be preserved are as follows:

1. Tree groupings with a low Ash species component due to the presence of the Emerald Ash Borer.

2. Tree groupings in Good to Fair condition with some natural regeneration of native species in the

understory that are competing with the invasive Buckthorn that is establishing itself throughout the site.

3. Tree groupings that function to stabilize and provide aesthetic benefit to steep slopes.

4. Trees with a high landscape value that are in good condition and possess a DBH of 40cm or greater. Predominant focus on long lived hardwood trees for their immense overall retention value.

5. Trees located along edges of property lines that function in continuation with forest patches in adjacent communities and protected forests around the site, most notably the NCC and Montfort Woods.

6. Larger groupings of specimen trees located in areas adjacent to forest groupings where grades will already be maintained and buffer areas will incorporate the trees into the site's open natural green spaces.

7. Trees in good condition located in areas to be designated as non-recreationally focused parkland, lower density residential housing blocks and mixed use areas where changes to the existing grades and drainage patterns can be minimized.

8. Tree groupings that are adjacent to surface water features.

9. Rare species and plant communities, including all Butternut trees (Juglans cinerea) to be retained as required by the Ministry of the Environment, due to their status as an endangered native tree species in Ontario.

10. Tree #1 - Burr Oak (Quercus macrocarpa), to be recognized as a tree with special preservation status with additional provisions to enhance the protection, view shed, groundwater, grades and surface compaction around this tree.

The vast majority of the tree groupings and significant trees specified for protection fall within areas of the preferred plan that would reasonably allow for the protection of those trees throughout the ongoing subdivision, site planning and construction in subsequent phases of the site's development. There are a small number of significant trees however that fall into areas of the plan designated for the public right-of-way and the proposed stormwater management bioswales adjacent to the public right-of-way. Figure 1 (Trees in Conflict with Public Right of Way) & Figure 2 (Trees in conflict with Proposed Stormwater Management Bioswales) provide detailed information about these trees and how the conflicts could potentially be mitigated in the design and development of the street sections and detail design of the streetscape and streetscape utility servicing planning.

Figure 1 - Trees in conflict in Public Row

Tree #	Species	Crown Radius In metres (Dripline)	Location	Mitigation Opportunities
3	White Elm	5.0	North of stacked townhome item 12 Major Road A2	Tree is located in the southern half of the right-of-way either in the vehicular lane or parallel parking lane allowance or at the edge of the vegetation zone along the sidewalk. Protection of the tree could be examined in detail once the street section is finalized and it is understood what the location of the tree is. Elm trees are very resilient to urban environments and can withstand a great deal of cover with unit pavers, so potentially could be worked into a variety of hard or soft landscape designs. Major above and below ground utilities would also have to be located around the critical root zone of the tree for its protection to be considered.
103	Silver Maple	8.5	North of stacked townhome item 23 on Major Road A2	Large tree with trunk located near the south edge of the right-of-way, in a location that most certainly would be part of the pedestrian boulevard and right-of-way landscaping. Tree protection is possible if major above and below ground utilities can be installed outside of the drip line of the tree and some permeable groundcover is also maintained within this drip line.
110	Silver Maple Tree Row	N/A	1 tree at North end of tree grouping is 2.75m away from right-of-way	Potentially not a conflict item depending on size of tree at the end of the row, which is not known as identified in the arborist report. Some pruning and hydro-vac excavation at the roots may be required from development occurring adjacent to tree. Protection from soil compaction in the critical root zone should be implemented using tree protection fencing.

Figure 2 - Trees in conflict in Proposed Stormwater Management Bioswales

Tree #	Species	Crown Radius In metres (Dripline)	Location	Mitigation Opportunities
6	White Pine	6.0	North of school item 6	Pipe water from one bioswale segment to the next downstream segment along the extent of the dripline of the tree. Above and below ground major utilities would also need to be located outside of the dripline area.
99	Sugar Maple	4.0	North of park item 15	Pipe water from one bioswale segment to the next downstream segment along the extent of the dripline of the tree. Above and below ground major utilities would also need to be located outside of the dripline area.

These responses provide insight for protecting trees and greenspace in future developments. For example, request the Tree Conservation Report and the Landscape Plan so you have a means of identifying which trees, which stand of trees or which woodlot is of high value and significant to your community. Clearly request those that are worthy of protection and preservation. Trees should be specifically numbered and have their current condition described by the arborist. There are 10 criteria for the preservation of trees mentioned above that may be useful as a guideline.

Also note that you may find tree protection in the Environmental Assessment (EA) Report which should also contain the Tree Conservation and Landscape Plan. The EA Report tends to be a boilerplate document with perfunctory sentences that are often vague and very general.

Here is an actual example of what you might see in an EA and it is quite vague. If anyone has seen the Field Practices and Regulatory Codes for Construction Activities around Trees, please let me know. "A landscaping plan has been developed for the xyz project (Fig 123). Trees to be retained will be protected in accordance with the City's Field Practices and Regulatory Codes for Construction Activities around Trees. Existing candidate trees will be relocated to new areas of the site and areas of reforestation will be incorporated along the edge of the site as identified on the Tree Inventory Drawing (ABC dated 01 Jan XX). Much of the vegetation lost will be replaced by areas of reforestation and the planting of large coniferous and deciduous trees along the edge of the site."

CLC and other developers have actually engage arborists to identify the significant trees for preservation in a Tree Inventory List. Trees can also be identified by a specific number in a Landscape Drawing. The Landscape Drawing for the Rockcliffe Airbase is on page 23 of the referenced Arborist's report.

<u>http://www.greenspace-alliance.ca/files/2013%20Rockcliffe%20Arborist%20Report_0.pdf</u> The drawing identifies the condition of each tree as good, fair or poor <u>before</u> the development and construction begins.

These studies, reports and plans may miss a significant tree that needs protection. During the initial phases of development therefore it is very important for a community to point out the significant trees or greenspace so that it is added to the list for preservation and that proper measures are taken during planning and the construction to prevent removal, damage or eventual destruction.

For example, there was tall, healthy 75' Blue Spruce planted in 1976 near the doomed Maple tree in the case I provided. It was cut down during this same construction project. It was located at the outer edge of the site and it did not interfere with anything that was being constructed. Sadly, I did not know enough about this process at the time to have it added to the list of Existing Trees that should be preserved. I hope this information may be useful in the future for others.

Al Crosby