# Staff Report

**Report To**: Community Services Committee

**Report From**: Richard Goetz, Tree Inventory Specialist

**Meeting Date**: December 13, 2023

**Report Code**: CS-23-132

**Subject**: City of Owen Sound Tree Inventory Update 2023

## Recommendations:

THAT in consideration of Staff Report CS-23-132 respecting Tree Inventory Update, the Community Services Committee recommends that City Council receive the report for information purposes.

## Highlights:

- The City's first tree inventory was completed in 2014 and 2015 and captured approximately 10,000 trees.
- The City commenced an update to the previous Tree Inventory on June 26, 2023, hiring a Tree Inventory Specialist on contract.
- The City purchased a new Global Navigation Satellite System (GNSS) Receiver and Tablet to add inventoried trees to ArcGIS Field Maps, an all-in-one mobile application for field data collection.

## Climate and Environmental Implications:

This supports the objectives of the City's Corporate Climate Change Adaptation Plan by considering climate adaptation in the development of the City's strategies, plans, and policies.

## Previous Report/Authority:

CS-22-105 – Emerald Ash Borer Management Plan and Next Steps

## Strategic Plan Alignment:

Green City - KR1 - Offset 100 tonnes of CO2 per year by annually planting one hundred hardwood tree species

### Official Plan Policy:

6.1.3 Urban Forest To develop and protect the Urban Forest, the City shall where possible.

6.1.3.1 Preserve and enhance a healthy urban forest through naturalization and tree planting programs.

6.1.3.2 Implement a tree-planting program and budget to ensure trees are continuously planted to improve streetscapes throughout the City.

6.1.3.3 Develop a City Tree By-law that regulates the destruction, injuring or removal of trees in hazardous lands, rights of way, public lands, and significant woodlots in accordance with the County of Grey Forest Management By-law.

6.1.3.4 The City will complete the necessary study for public works to determine the extent of tree removals with the objective that no trees shall be unnecessarily removed. Consideration must be given to the replacement of trees that must be removed as a result of any public work. The City will incorporate a tree-planting component within street reconstruction projects.

6.1.3.5 Where new development is proposed, consideration shall be given to the locations of existing trees in the preparation of the site plan and to the retention of as many existing trees as possible, subject to other appropriate design considerations.

6.1.3.6 The City will establish a baseline and monitor the tree cover on private and public lands using GIS.

## Background:

In 2014 and 2015 the City undertook its first inventory of street trees and trees located in more public areas of parks and open spaces. The initial survey was done over two years using both consultant services and contract staff. This initial survey data has been a helpful tool for staff in managing the urban forest.  A GIS layer with all these trees is available internally.

In September 2022, the City received Staff Report CS-22-105, Emerald Ash Borer Management Plan, and Next Steps. As part of the Analysis section of this report, the importance of updating the Tree Inventory was identified. Following, as part of the 2023 capital budget, Council approved Project 23D.13, Tree Inventory Renewal.

Like any other asset, an up-to-date and accurate inventory is an important tool in managing assets. An updated tree inventory will:

- Facilitate improved resource planning and allocation of maintenance action, including pruning and planting;
- Prioritize tree care and removals based on risks to public safety and property;
- Provide data for managing the urban forest;
- Provide a foundation for evidence-based, data-driven decision-making;
- Identify the density of ash trees and other species in hazard, ravine, and escarpment lands within a 20m buffer zone between City lands and private properties that may be impacted. (Trees in these lands under 10cm Diameter at Breast Height (DBH) were not to be inventoried.); and
- Update previously inventoried trees (removed, increased in size, updated hazard rating, etc.).

## Analysis:

Using the capital funds, a job description was developed for a 9-month contract position to undertake this work under the direction and supervision of the Parks and Cemetery Supervisor. The contract will be completed in late March of 2024. The position has worked from an office in the Greenwood Cemetery Administration building; however, most time is spent outside conducting the tree inventory.

### Inventory:

Using a GNSS receiver, tablet and ArcGIS Field Maps, the Tree Inventory Staff person commenced field collection of tree data. The digital tools eliminated manual data input to spreadsheets and allowed real-time data entry and GPS data point integration, streamlining the inventory process.

Staff divided the City into four quadrants. The dividing features are 10th Street and the Sydenham River, simplifying inventory procedures ensures all compartments of the quadrants are covered. Exceptions are given for the 20m buffer zone abutting private and conservation lands. Outstanding trees greater than 20m tall and trees on hillsides that have a greater falling distance (in the event of a downhill trajectory) were counted. Allowances are also given to newly planted or young, open-grown specimens in parks, cemeteries or streetside, that were less than 10cm DBH.

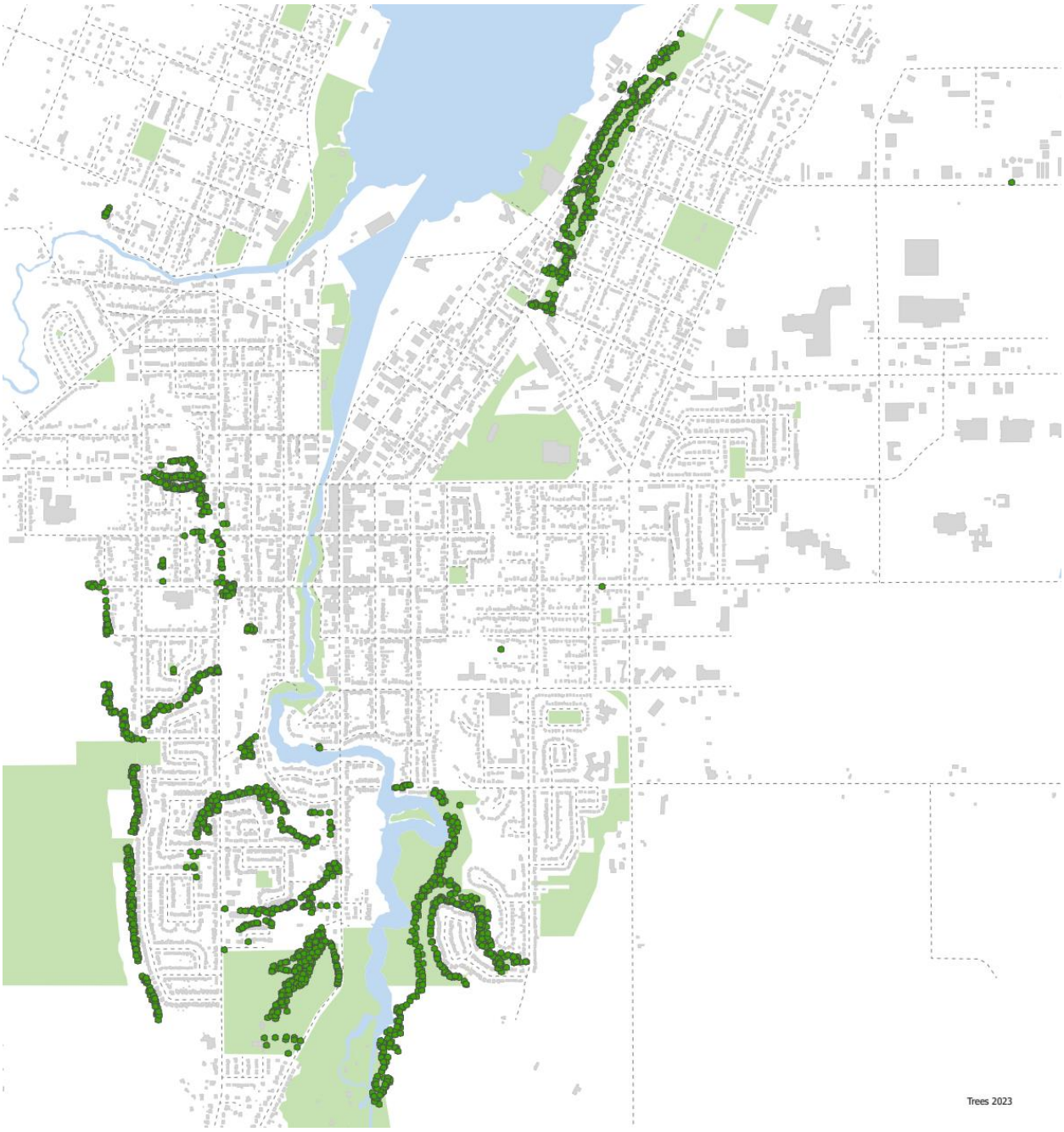
The southwest quadrant was the first area of focus. This area was selected due to the volume of calls and Report a Tree Concern forms submitted by the public. A few areas (some quite large) outside the southwest quadrant were visited due to noticeable ash decline, high frequency of public use or increasing public concern.

Within the parameters listed above, the following attributes were collected for each tree. Staff can quantify trees deemed high priority for removal/pruning, species representation and available planting sites based on the collected data.

Below are the specific attributes collected:

- Species (Common Name)
- Asset (individual code for work orders and payroll)
- Diameter (DBH, collected at 1.3 meters)
- Crown Radius (estimated)
- Height (estimated)
- Hazard Rating (1-5, very low to very high)
- Notes (specific items worth noting, such as a canker)
- Comments (reoccurring traits prefilled for selection, such as significant lean)
- Action (monitor, remove or prune)
- Condition (dead to excellent)

This map provides a visual representation of all trees inventoried to the date of November 20, 2023.


Trees 2023

Below, is an example of an area where trees have been inventoried:


**Statistical Information:**

The following information represents data collected from June 26th until November 20th, 2023, excluding the grand total.

| | |
|---|---|
| Ash Species | 2,383 |
| Pruning Required | 485 |
| Removal Required | 1,916 |
| Available Planting Sites | 131 |
| TOTAL Trees Inventoried 2023 | 7,931 |
| GRAND TOTAL - All Trees Inventoried 2014, 2015, 2023 | 17,841 |

Most of the data collected has been in woodlot environments. Small portions of streets and a few smaller parks have been inventoried.

Approximately 30% of trees inventoried are Ash. The trees identified for pruning or removal are largely made up of Ash. Proactive removals are necessary due to the 99% mortality rate of EAB.

Pruning requirements vary based on the individual tree and location (e.g., structural issues or low-hanging branches impeding pedestrian traffic on a

sidewalk, walkway, or dwelling). Most trees listed for removal represent a high risk to their surroundings, usually exhibiting decline or significant structural defects. In suitable open spaces, planting sites for replacement trees have been recorded as part of the inventory. Notes are also made concerning hydro lines, ensuring species with an appropriate maximum growth height are planted (e.g., Serviceberry, Tatarian Maple, Red Bud etc.) that would not interfere with the infrastructure.

General urban forest species composition of trees inventoried in 2023 (ravines, escarpment etc.)

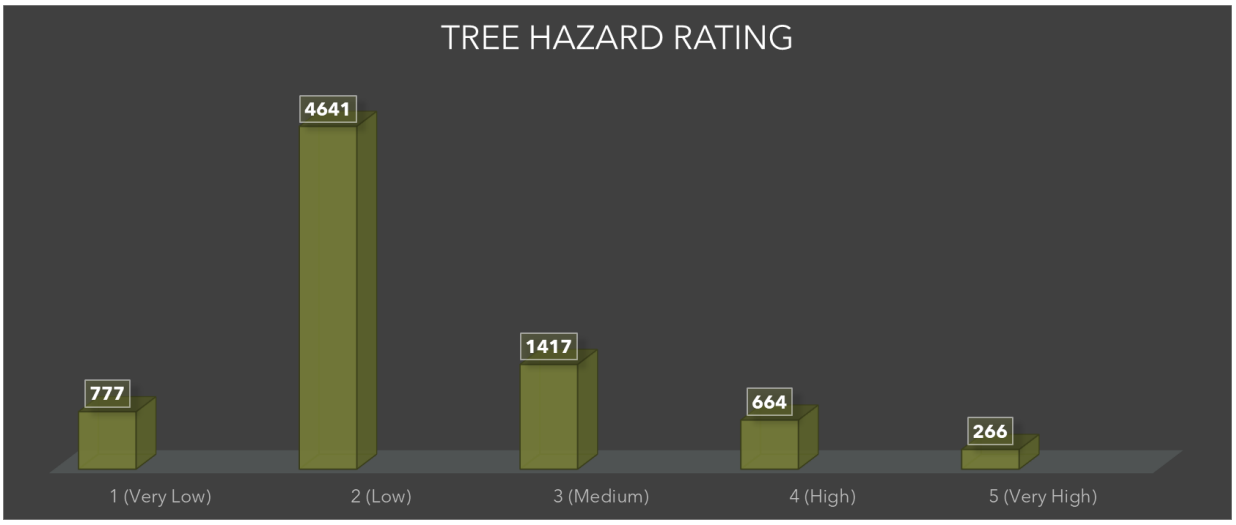
| **Species** | **Approximate Percentage of Urban Forest to Date** |
|---|---|
| Ash (all species) | 30 |
| Maple (all species) | 30 |
| Other Hardwoods<br>(Black Walnut, Beech, Elm, etc.) | 30 |
| Other Conifers<br>(Cedar, White Pine, Spruce, etc.) | 10 |

**Hazard Ratings:**

While hazard assessment is subjective, several core parameters were considered through the inventory to determine the rating.

Considerations include:

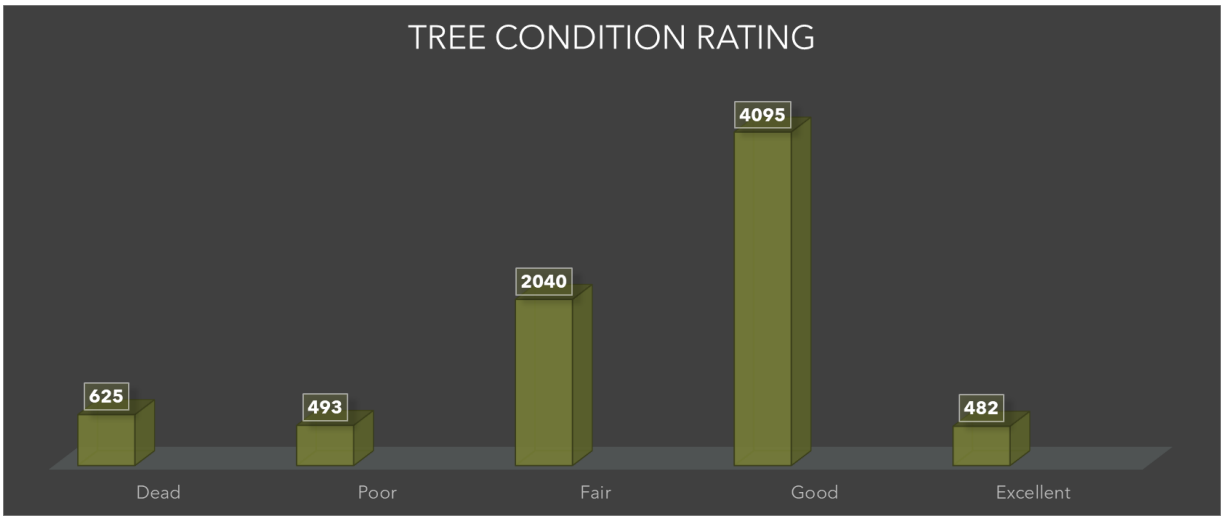
- structural integrity,
- significant defects,
- species and potential to cause damage. Weak branch attachment, significant lean, decay, minimal foliage, or root instability are some factors.




**Tree Condition:**

Based on the assessment, each tree is also assigned a condition rating using the following considerations:

- Excellent – Represents all expected characteristics of the species with little to no deformities or defects.
- Good – Very limited or no risk, acceptable abnormalities.
- Fair – Noticeable decline, potentially posing structural failure.
- Poor – Removal recommended.
- Dead – Greater than 8m in height, 10cm DBH and within striking distance of a target, no exceptions given to open grown specimens in parks, cemeteries or streetside.



Together, the preceding bar graphs outline the correlation between trees that are in good condition and trees with a low hazard rating.

At this time, approximately one thousand trees have been identified that could pose a threat to the urban environment, and do not have a favourable condition rating.

**Considerations from the Inventory for Future Management of the Urban Forest:**

Until the tree inventory is completed, the full scale of tree work, urban forest health, and species diversity will not be captured; however, the condition and hazard rating are extremely helpful in directing resources and minimizing risk.

There is valuable data that can be utilized to predict the potential structure and health of the urban forest. The number and state of ash trees inventoried will be used to predict the extent of removal work. The current staff complement will not be able to keep up with the influx of work orders, let alone planting and proactive pruning requirements. Like 2023, additional resources to support the removal of high-hazard trees will be required (Contractors, Cranes, etc.).

The current inventory has focused on areas not previously included, and work should be continued to reassess trees captured as part of the 2014/15 survey. Industry best practice is recognized that tree inventory be current to 5 years or less. Time remaining in the contract will be used to ensure the River District area is captured in the updated inventory.

The updated inventory will be a valuable tool accessible to the City's two Arborists, who will have access to Field Maps and a tablet to update information in real time (e.g., arborists remove a tree and then delete it from the inventory). Additionally, the arborists will be able to update the inventory as they undertake pruning, planting, or removal activities.

## Financial Implications:

As identified in Staff Report CS-22-105, it was estimated that the removal of 855-1020 Ash trees would cost between $1.28 million and $1.53 million spread out over a 10-year period.

Compared to abiotic infrastructure, trees, as living entities, may not be a favourable budget item to spread out over an extended period of time, as dead or dying trees become increasingly hazardous. Structures and people will be a costly alternative to a reactive versus proactive approach. Additional costs from the above will be determined through the completion of the Tree Inventory.

## Communication Strategy:

This report.

Working with the City GIS specialist, it is anticipated that certain information from the inventory will be part of the City's Public GIS layer.

## Attachments:

1. Capital budget 23D.13

**Recommended by:**
Richard Goetz, Tree Inventory Specialist
Matthew Scheifele, Parks, and Cemetery Supervisor
Pam Coulter, Director of Community Services

**Submission approved by:**
Tim Simmonds, City Manager

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