City of Abbotsford Tree Protection Bylaw Review: Recommendations for Revisions



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Submitted to:

City of Abbotsford

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Executive Summary

This report presents findings from the City of Abbotsford's Tree Protection Bylaw (Bylaw) background review and proposes recommendations for Council's consideration. The recommendations build on the consulting team's research and engagement findings which are summarized in the report.

This Executive Summary provides an overview of the report's recommendations. More details about the anticipated impacts on the urban forest, City implementation resources, and property owners are provided in the report.

Major Influence Changes

Major influence recommendations fundamentally change how the Bylaw regulates the retention, removal, protection, and replacement/re-establishment of trees.

What trees are regulated

Topic	Current bylaw	Recommended update
Tree definition	• All trees ≥20 cm in diameter at breast height (DBH) or greater • All trees within retention areas, i.e. within: ○ Stream Protection and Enhancement Area ○ Tree protection covenant ○ Identified as a retention area on development drawings	**Recommendation 1.** Expand the "tree retention area" definition to include steep slope areas >20% designated in the OCP as development permit area. **Recommendation 2.** Expand the "tree" definition to also include: • Trees ≥10 cm in DBH in tree retention areas • Replacement trees of any size as required in a permit • City trees of any size • Yard trees required for subdivision • Row of at least five or more closely planted trees, in hedge-like form, where at least one stem ≥20 cm DBH •
Significant trees	Significant trees can be nominated to Schedule "D" "due to their age, condition, size, occurrence, cultural or historical importance within the landscape or that is rare or unusual for its species" and cannot be pruned or removed without a permit or City approval. No trees are currently listed.	**Recommendation 3.** Compile a list of City-owned trees that meet one or more of the criteria listed in the bylaw to present to Council for nomination to the schedule and use the same criteria to start to identify and protect trees on private lands through the review and approval of subdivision or rezoning applications.

Tree protection during construction

Topic	Current bylaw	Recommended update
Protection securities	• No security deposit is collected when trees are being retained on a construction site to ensure tree protection barriers are installed and maintained adequately.	**Recommendation 4.** Require a security deposit for trees retained on construction sites where site disturbance of any kind, including soil disturbance, will take place within 5 metres of the tree protection zone: • $5,000 per tree for trees ≥60 cm DBH • $2,000 per tree for protected trees ≥60 cm DBH • Up to a maximum of $100,000 per site application This deposit would be refunded upon final acceptance of the construction and confirmation has been provided in writing by the project arborist to the satisfaction of the applicable General Manager that all tree protection requirements such as the installation and maintenance of tree protection barriers have been met throughout all stages of construction. **Recommendation 5.** Establish clear enforcement and mitigation mechanisms in cases where tree protection requirements were not upheld during construction including: • The ability to require an Arborist Impact Assessment to assess the health of the tree • If the tree can survive with mitigation, as assessed by an arborist to the satisfaction of the General Manager, the City may retain 50% of the deposit to be transferred in the same reserve fund as tree replacement cash-in-lieu and require necessary mitigation work to ensure the tree's health • If the tree is not expected to survive, as assessed by an arborist to the satisfaction of the General Manager, the City may retain 100% of the security deposit to be transferred in the same reserve fund as tree replacement cash-in-lieu.

Tree retention and replacement

<table>
<tr><th>Topic</th><th>Current bylaw</th><th>Recommended update</th></tr>
<tr><td>Refusing tree removal</td><td>The City may refuse to issue a tree cutting permit for significant tree or trees within retention areas where it deems removals are not necessary:
For the health of the tree or other trees nearby
For safety
To avoid nuisance or obstruction
To allow permitted use or development to the permitted density</td><td>Recommendation 6. Enable the City to refuse the removal of trees with a diameter ≥ 60 cm unless necessary to the health of the tree or nearby trees, for safety, to prevent immediate damage to infrastructure, or allow for permitted use and density.

Recommendation 7. Remove ‘nuisance and obstruction’ as a reason to allow the removal of significant trees, very large diameter trees, or trees in retention areas. Replace with a clause that allows removals to prevent significant immediate damages to infrastructure, structures, or other valuable property only when other mitigation options other than tree removal are not viable.

Recommendation 8. Require permit applicants to submit reports from a certified arborist or registered professional forester when requesting removal of significant trees, very large diameter trees, or trees in retention areas for tree health or safety reasons.</td></tr>
<tr><td>City-owned tree replacement</td><td>The current bylaw does not specify different replacement requirements for City-owned trees, treating them similarly to other trees, without considering their distinct value as City assets</td><td>Recommendation 9. Require property owners that request the removal of a City tree to pay the City the following amount if the removal is approved at the sole discretion of the City:
The cost of purchasing, planting and maintaining a replacement tree for one year, and
The amenity value of the City tree calculated using an industry standard tree appraisal method to the satisfaction of the applicable General Manager
For wooded natural areas or where there is a substantial number of trees to be removed, allow the applicable General Manager to consider applying a different valuation method.</td></tr>
<tr><td>Replacements</td><td>The number of replacement trees is based on the size of the tree removed<table><tr><th>Size of tree removed</th><th># of replacement trees</th></tr><tr><td>>30 cm diameter</td><td>3</td></tr><tr><td>20-30 cm diameter</td><td>2</td></tr><tr><td>< 20 cm diameter or hazardous</td><td>None</td></tr></table></td><td>Recommendation 10. Update the replacement ratios to:
Increase the number of replacement trees for trees ≥60 cm DBH to 4:1
Require only 1:1 replacement for protected trees ≥10 - <20 cm DBH
Allow a protected row of closely planted trees to be replaced with the same length of closely planted trees, including hedging type trees, where they are planted no more than 1.75m apart on center and are a minimum of 1.5m in height at time of planting, or 1 replacement tree for every 4 meters of protected row of closely planted trees.</td></tr>
</table>

Topic	Current bylaw	Recommended update
		• Count replacement tree of a species that is small at maturity (mature crown <5 m spread) as 0.5 replacement trees and that is large at maturity (mature crown spread ≥10m) as 2 replacement trees **Recommendation 11.** Reduce the size of replacement trees at the time of planting to 5 cm caliper for deciduous trees, 2 m in height for coniferous trees, or 1.5 m in height for hedging species. Within streamside protection and enhancement areas and steep slope development permit areas and allow the planting of two 5-gallon pots with a minimum stem diameter of 2 cm in lieu of every regular caliper tree. **Recommendation 12.** Use a tree density target of 60 trees per hectare of net developable area to place a cap (maximum) on replacement requirements once a property has achieved the targeted tree density. **Recommendation 13.** For the purposes of incentivizing tree retention, we will count whether a property reaches the tree density target within its net developable area: • For trees retained on site that are assessed by a certified arborist as having a high or better retention value and that are unlikely to cause infrastructure damage given their proximity to existing infrastructure and their anticipated size at maturity: • Four trees for every very large tree (≥60 cm DBH) retained • Three trees for every tree ≥30 - <60 cm DBH retained • Two trees for every tree ≥20 - <30 cm DBH retained • One tree for every tree ≥10 - <20 cm DBH retained • For replacement trees: • Two trees for every replacement tree of a species that is large at maturity (mature crown spread ≥10m) • One tree for every replacement tree of a species that is medium at maturity (mature crown spread 5 - <10m)

Topic	Current bylaw	Recommended update
		• 0.5 tree for replacement tree of a species that is small at maturity (mature crown spread <5 m) • Except 0 tree for trees not in good health or hazardous
Cash-in-lieu and replacement security	$300 per replacement tree	**Recommendation 14.** To account for the increase in planting and maintenance costs, increase cash-in-lieu to $500 per required replacement tree or $750 for sites also subject to a rezoning, subdivision, development permit, development variance permit or building permit application, and require the same amount per tree as a security deposit to be refunded after replacement planting is completed.
New tree planting	No tree planting is required when no trees were removed. The city's Development Bylaw regulations for subdivisions requires one new yard tree to be planted on every new lot	**Recommendation 15.** Use a tree density target of 60 trees per hectare of net developable area to require developing properties to achieve a minimum density of trees regardless of how many trees are being removed.
Rural properties	The bylaw: • Does not apply to forested lands managed under provincial forestry acts or in the Agriculture Land Reserve • Exempts requirements for a tree cutting permit within farming areas as part of a designated farm use	**Recommendation 16.** For uses other than farming on rural properties outside the Urban Development Boundary shown on the Urban Land Use Map (OCP Map 1) and not within the ALR: • Allow owners to remove up to 5 trees annually (excluding trees ≥60 cm DBH and trees within retention areas) without tree removal permit fees or replacement requirements as long as they maintain at least 60 trees per hectare on their property. • Apply replacement requirements and tree removal permit fees where owners want to remove more than 5 trees per year, remove trees ≥ 60 cm DBH or remove trees within retention areas, or if the removal would result in the property falling below 60 trees per hectares.

Administrative and best practice changes

Administrative and best practice recommendations do not fundamentally change the bylaw intent or regulatory approach; they are focused on bringing clarity, consistency and conformity to the bylaw and responding to current best arboricultural practices. They focus on:

- **Bylaw name change to Tree Management Bylaw:** changing the name to be more representative of the scope of the bylaw.

- **Permit information requirements**: standardizing the information when required from arborists or foresters to implement bylaw requirements more efficiently.
- **Definitions**: clarify what activities constitute damage, how to measure the diameter of multi-stemmed trees to improve transparency and efficiency, and align the hazardous tree definition with industry standards. Create new definitions required to implement the tree density target and differentiate requirements that apply only with development.
- **Protection of tree roots**: improve definitions and information requirements to adequately protect trees being retained on an active construction site.
- **Replacement tree planting**: update the species list to get replacement trees that are well adapted to our changing climate and require native tree planting in natural areas.
- **Fees**: recover some administrative costs through non-refundable application fees and secondary site inspection reviews.

At a minimum, we anticipate the proposed updates to require additional staffing to support urban forestry staff who review and process tree cutting permits. The need for further resources could then be reviewed in the year following adoption.

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1.0 Introduction and Rationale

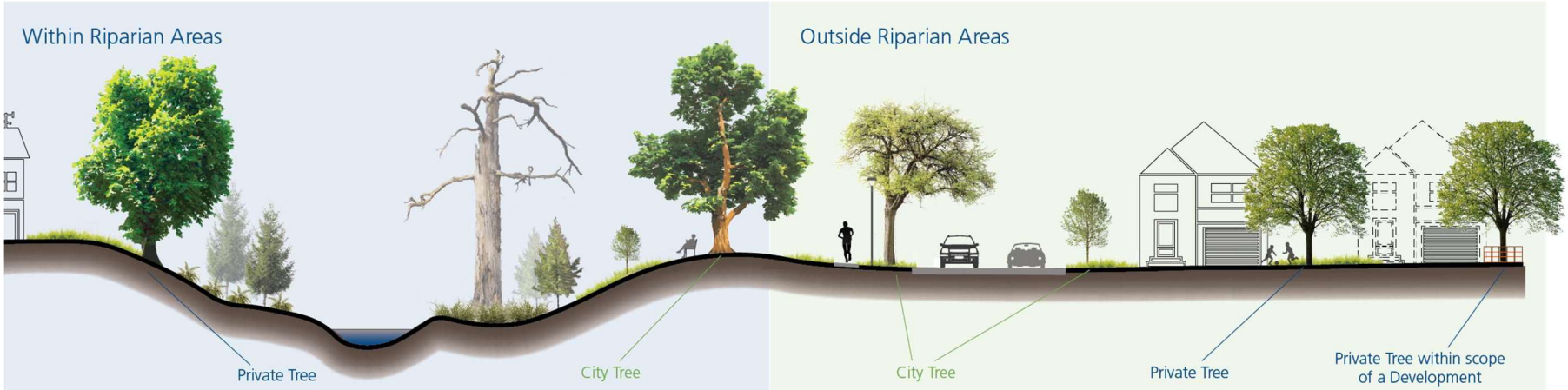
Abbotsford's Tree Protection Bylaw was adopted in 2010 to regulate the cutting, removal, and replacement of trees in the city (except in the ALR). Since then, the City adopted a new Official Community Plan and its first Urban Forest Strategy. The Urban Forest Strategy, adopted in 2022, recommended updating the Tree Protection Bylaw to align with the strategy's targets and to strengthen tree protection and replacement. Specifically, the Urban Forest Strategy identifies the following Goals and associated Strategies which relate to the current work of reviewing the Tree Protection Bylaw:

- **Goal 1 (PLAN) – Strategy: Establish canopy cover targets**
    - Action 1: Adopt 2045 canopy cover targets to maintain city-wide canopy cover at 40%, with sub-targets for urban development boundary canopy cover exceeding 25% with no neighbourhood less than 20% and public land cover exceeding 30%.
- **Goal 1 (PLAN) – strategy: Develop a City tree policy**
    - Action 4: Update and create new recommended tree species lists for streets, landscaped parks and streamside restoration areas that incorporate future climate suitability.
- **Goal 2 (PRESERVE) – Strategy: Strengthen tree protection and replacement on all private land**
    - Action 10: Update the tree bylaw to align with the UFS targets and strengthen tree protection and replacement for trees on private land including development permit areas.
    - Action 14: Create a significant tree nomination process to populate Schedule "D" of the Tree Bylaw.
- **Goal 4 (GROW) – Strategy: Increase tree planting in areas of low canopy cover**
    - Action 37: Prioritize tree planting in neighbourhoods within the Urban Development Boundary with less than 20% canopy cover.
- **Goal 4 (GROW) – Strategy: Require more tree retention or replacement across all types of development**
    - Action 45: Establish a stocking level target of 60 trees per hectare (or an equivalent canopy area target) for all new development

Recommendations in this report respond to policy guidance from the Official Community Plan and Urban Forest Strategy, as well as balancing best practices and community values.

2.0 Current tree regulations

Abbotsford's Tree Protection Bylaw is only one of the regulations in place for the urban forest. The graphic from the Urban Forest Strategy shown on the following page provides an overview of some of the regulations that play a central role in tree protection, planting, and replacement in the city.



	Within Riparian Areas		Outside Riparian Areas		
	Private Tree	City Tree	City Tree	Private Tree	Private Tree within scope of a Development
Preserving or Creating Space for Trees	The **Official Community Plan Bylaw and Streamside Protection Bylaw** restrict development in Streamside Protection Environmental Area (SPEA) and sensitive ecosystems.	Public works are exempt from the **Streamside Protection Bylaw** but must comply with Provincial and Federal standards and requirements including the Riparian Areas Protection Regulation.	The **Development Bylaw** currently defines tree strip width, top soil area and structural soil requirements for non-hard and hard surface areas.	The **Zoning Bylaw** determines building setbacks, lot coverage and off-street parking requirements. The **Development Bylaw** defines driveway widths. The space that remains may be available for hard or soft landscaping.	The **Zoning Bylaw** determines building setbacks, lot coverage and off-street parking requirements. The **Development Bylaw** defines driveway widths. The space that remains may be available for hard or soft landscaping.
Tree Planting	Restoration planting in a SPEA or natural environment areas development permit area (DPAs) designated by the **Official Community Plan Bylaw** may be required under a **development permit** on the advice of an **assessment report**. Species must be native to the Coastal Western Hemlock biogeoclimatic zone.	The Parks department carries out restoration plantings within streamside areas, using the native species recommended by the Natural Environment DPA guidelines in the **Official Community Plan Bylaw**.	City trees may be planted by the City or by a developer as required during subdivision. The **Development Bylaw** includes requirements for siting, spacing, stock and species. The City reviews landscape drawings to determine the required number of trees and may charge a developer fee for each accepted tree, using the money to purchase, install, and maintain the stock.	The **Tree Protection Bylaw** defined the ratio and size of replacement trees for every removed tree. Owners can request to pay cash-in-lieu where suitable planting locations cannot be found on their property.	The **Development Bylaw** requires the planting of a defined number of trees for each single-family lot newly created in a subdivision. Planting stock must meet requirements within Schedule F of the bylaw. Schedule I contains the **Recommended Tree Species** list.
Tree Retention or Removal	Tree removal is typically not permitted within a defined area of a stream or in areas containing a sensitive ecosystem without a **development permit or a tree permit**. An **Assessment Report** must contain measures to preserve trees in the SPEA. The **Official Community Plan Bylaw** promotes tree retention, including protection of wildlife trees, on the developable portion of the lot.	City trees are subject to the **Tree Protection Bylaw** when a tree cutting application is made for private purposes. Within the development permit area, additional protections may apply to on-site trees in order to ensure the continuing function of the protected riparian area. City works are exempt from the Tree Protection Bylaw, but must comply with Provincial and Federal standards and requirements. The **Parks Bylaw** prohibits damage to park vegetation.	City trees are subject to the **Tree Protection Bylaw** when a tree cutting application is made by a private citizen or company, with no special provisions. City works are exempt from the Tree Protection Bylaw. The **Good Neighbour Bylaw** prohibits damage to boulevard trees.	The **Tree Protection Bylaw** regulates cutting trees, at a set diameter, except for farm use, and all trees growing in tree retention areas. The General Manager may refuse to issue a tree cutting permit for significant trees (none defined) and for trees in tree retention areas where the cutting is not necessary. Protection barriers may be required for retained trees.	The **Tree Protection Bylaw** regulates cutting trees, at a set diameter, for farm use, and all trees growing in tree retention areas. The **Tree Permit**, **Development Permit**, or **Preliminary Layout Approval Letter** will specify requirements for protection of retained trees. Tree removals may be authorized by either a Tree Permit or a Development Permit.
Tree Maintenance	In general, pruning of trees inside a SPEA or a tree retention area defined in a development related permit is not allowed except with a **tree permit.** For trees outside of the SPEA or a defined tree retention area, owners may prune trees without a permit.	No formally adopted policy guides the maintenance of City Trees except that any trees planted by a contractor under a development permit are subject to maintenance requirements pending final acceptance.	No formally adopted policy guides the maintenance of City Trees except that any trees planted by a contractor under a development permit are subject to maintenance requirements pending final acceptance.	The **Tree Protection Bylaw** regulates pruning of significant trees (none defined) and trees growing in tree retention areas. The **Good Neighbour Bylaw** requires people to keep landscaping from encroaching over roads and obstructing sight-distances.	The **Development Bylaw** requires the [planting] Contractor maintain all plantings for one year from the date of issuance of the Certificate of Substantial Completion (Landscape). This includes watering, pruning, and other activities as may be required to ensure a healthy growing condition.

2.1 Tree Protection Bylaw

Abbotsford's Tree Protection Bylaw currently applies to all lands within the city, except those in the Agricultural Land Reserve or subject to the Private Managed Forests Land Act and Forest Act. The following table provides an overview of the types of trees the bylaw regulates, and what type of protection measures and replacement requirements apply. The table shows the differences between regulations applied to trees over 20 cm DBH versus trees in retention areas and significant trees.

Current Tree Protection Bylaw		
Trees that are regulated		
Types of trees	**Trees >20 cm DBH**	• **Trees in retention areas:** ○ Within the Stream Protection and Enhancement Area ○ Tree covenant ○ Identified on development drawings • **Significant trees** listed in Schedule *(none listed)*
Tree retention and replacement		
Restrictions on **pruning**	None	Yes: Only when necessary + done by arborist
Restrictions on **removal**	None	Permit may be refused for if not necessary for: • Health of tree(s) • Safety • Avoiding nuisance • Allowing permitted use/development to permitted use
Replacements	**Size of tree removed = # of replacements** • >30 cm DBH = 3 replacement trees • 20-30 cm = 2 replacement trees • Hazardous or < 20 cm = None Or cash-in-lieu ($300 per tree based on current rates)	

2.2 Bylaw implementation resources

The City of Abbotsford processes two types of tree cutting permit applications:

1. Tree cutting permits that are reviewed by urban forestry staff within the Operations Department and are issued by administrative staff in the Parks, Recreation & Culture Department; and
2. Development permits that are reviewed by planners and environmental coordinators in the Planning and Development Services Department and by urban forestry staff from the Operations Department. Development permits integrate the relevant tree cutting conditions and are approved by the Director of Development Services.

The volume of work and staff involved with issuing both permit types are summarized in Table 1. Additional enforcement support is provided by Bylaw Enforcement officers, Public Works Inspectors and Building Officials when required.

Table 1. Tree permit staffing

Department	Development Services	Urban Forestry, Parks, Recreation & Culture
Type of permit	Development permits addressing tree removal	Tree cutting permits
Staff involved in permits processing (full-time equivalent, FTE)	• 2 environmental coordinators at 0.3 FTE each (0.6 FTE total) • 12 planners at 0.15 FTE each (1.8 FTE total)	• 1 FTE urban forest technician II • 0.5 FTE administration clerk • 0.15 FTE urban forest and trails manager

** The recommended bylaw updates may result in changes to permit volumes and the time required to review applications and enforce protection provisions that are discussed in this report.*

3.0 Tree bylaw best practices

Research on tree bylaws and ordinances in North America proposes seven criteria for developing and implementing effective tree bylaws (Bernhardt & Swiecki, 1991; Nichols, 2007). They include:

- **Community support:** Regulation is designed to reflect the values and priorities of the community, gaining willing compliance and support.
- **Comprehensive management strategy:** A comprehensive management strategy informs the goals and strengthens the rationale for the bylaw and how it is implemented.
- **Clearly stated goals:** Specific goals of the regulation are relevant to broader policies and targets in the OCP and other municipal strategies.
- **Basic performance standards:** Performance standards, grounded in best practice, must be met by permit applicants.
- **Designated responsibility:** Administrative authority is assigned to a staff position or committee responsible for the bylaw implementation.
- **Flexibility:** Staff can use their discretion in a fair, reasonable and transparent manner to respond to site specific conditions and the variety of circumstances that may arise. An appeal process is recommended to ensure decision making is based on technical merit.
- **Enforcement:** Adequate staffing to administer the bylaw and provide enforcement, and effective penalties to deter violations.

The criteria have helped inform recommendations made for the Abbotsford's Tree Protection Bylaw update. Several industry standards and best practices summarized in Table 2 below have also informed the recommendations.

Table 2. Industry standards and best practices.

Publisher	Standard	Detail
International Society of Arboriculture (ISA)	Best Management Practices	The ISA publishes best management practices on many subjects in tree care, maintenance, and urban forestry applications. Certified arborists are encouraged by the ISA to follow all applicable best management practices.
International Society of Arboriculture (ISA)	Credentials	The ISA provides industry recognized professional credentials for the practice of arboriculture. The ISA Certified Arborist program is the most common credential held by arborists and is accredited by the American National Standards Institute, meeting and exceeding ISO 17024. The Tree Risk Assessment Qualification is an additional qualification that demonstrates that a professional has achieved a standardized knowledge of tree risk assessing according to the ISA.

Publisher	Standard	Detail
American National Standards Institute (ANSI)	A300	The American National Standards Institute releases and updates the accepted industry standards for safety in arboriculture operations (Z133) and tree care (A300). A300 contains ten parts addressing the major aspects of arboriculture planning and practice, including pruning, soil management, tree planting and establishment, protection during construction, tree risk assessment, and integrated pest management.
Council of Tree and Landscape Appraisers	The Guide for Plant Appraisal	The Guide, now in its 10th edition, presents a widely accepted protocol for tree appraisal.
Canadian Nursery Landscape Association	Canadian Landscape Standard, Canadian Nursery Stock Standard	The Association publishes standards in common use for landscape construction and nursery stock.

The recommendations presented in this report also took into account guidance from Metro Vancouver's Tree Regulations Toolkit.

4.0 Community preferences

This section provides an overview of community input received regarding the tree bylaw in recent years, including through a 2019-2020 survey about Abbotsford's Urban Forest Strategy, and 2023 targeted technical engagement on the tree bylaw.

4.1 Urban Forest Strategy

In the winter of 2020, the City of Abbotsford hosted an online survey for the development of the Urban Forest Strategy on Let's Talk Abbotsford. A total of 477 people responded to the survey, which included a few questions about preferences for tree protection on private property. Respondents were asked several questions related to the City's Tree Protection Bylaw, including:

• Where the Bylaw should be applied to (percent of respondents who selected each answer; check all that apply):

- All public land in the city: 94%
- All private land: 65%
- Private land in the urban development boundary: 52%
- Private land in the agricultural land reserve: 54%
- Private rural land not in the agricultural land reserve: 47%

• Protection during development:

- 83% agreed the City should require a minimum number of trees to be retained or replaced on each lot.
- 67% agreed that the City should take cash-in-lieu to plant replacement trees on public property when replacements cannot fit on the same lot.

• Protection at all times:

- 80% agreed that the City should restrict the removal of heritage trees.
- 77% agreed the City should restrict the removal of healthy mature trees not causing property damage.
- 72% agreed the City should restrict the removal of very large (> 60 cm diameter at breast height) trees.
- When asked whether the City should allow the removal of healthy mature trees but require replacement trees, 46% of agreed while 38% disagreed.

4.2 Tree Bylaw Engagement – Technical Advisory Stage

In fall of 2023, the project team presented opportunities for bylaw updates at the Community, Culture & Environment Advisory Committee (CCEAC), the Development, Transportation & Infrastructure Advisory Committee (DTIAC). Technical advisory workshops were also held with key staff and with interested parties invited from the development and real estate sector, environmental groups, nurseries, arborists, and landscape architects. A summary of consultation dates for this engagement stage are outlined in Table 3.

Table 3. Summary of 2023 consultation

Engagement Type	Date
Community, Culture & Environment Advisory Committee (CCEAC)	November 2, 2023
External Key Industry Party Workshop	November 6, 2023
Development, Transportation & Infrastructure Advisory Committee (DTIAC)	November 23, 2023
Internal Key Staff Workshop	December 18, 2023

4.2.1 Feedback on major influence options

- **Tree definition:** Participants, mainly from External Key Industry Party Workshop, discussed the appropriate sizes for tree protection in concert with appropriate replacement criteria. There were suggestions to increase the protected tree size from 20 to 30 cm in diameter and support was voiced for the protection of smaller trees planted as part of development plans or as replacement trees, and of smaller diameter trees in environmental and steep slope areas. Staff raised the importance of clarifying how the bylaw applies to hedges with stems that reach 20 cm DBH. Overall, there was support to strengthen the City's ability to refuse removals and require modifications to new buildings to accommodate trees in light of the climate crisis.
- **Significant Trees:** Feedback varied amongst participants from the DTIAC committee and External Key Industry Party workshop on managing significant trees. While some saw value in a significant tree program to better highlight and preserve significant trees on public land, others questioned how the program would be administered on private lands, specifically the administrative process (time and cost) around nominating and removing trees to and from the Schedule. There was a general consensus to start the program on public land and then assess further for private lands.
- **Tree protection securities:** Workshop attendees from the External Key Industry Parties workshop discussed the importance of monitoring and enforcement in tree protection during construction or building permit stages. Support was voiced for protection securities and more stringent requirements (e.g., detailed tree protection plans, protection barrier signage, arborist tree health assessments, and regular tree protection reporting). Some participants highlighted the importance of more robust monitoring, awareness and enforcement. Concerns were raised about the duration of warranty periods (i.e., longer time required to confirm health of trees after development) and the practicality of securities for tree protection.

- **City-owned tree replacement:** Workshop attendees from the External Key Industry Parties workshop suggested that the destruction of city-owned trees should carry significant costs to serve as a deterrent, reflecting their value as community assets.
- **Replacement ratios:** Various participants, including DTIAC members and workshop attendees from the External Key Industry Parties workshop, discussed the challenges of tree replacement in development projects where the majority of the site coverage is taken up by underground parkades or surface parking. There was a focus on the practicality of replacement sizes and species, and the possibility of offsetting tree loss in other locations.
- **Tree density:** The feedback from workshop attendees from the External Key Industry Parties workshop focused on setting appropriate tree density targets for different types of land use, considering the impact on species and habitat. During the presentation and subsequent discussion at the CCEAC meeting, concern about compliance to bylaw requirements in rural areas was raised, with a suggestion to focus on education about how compliance brings value to properties and tree removals can lead to unintended consequences on neighbouring properties. During various points in the 2023 technical engagement stage, staff highlighted the importance of defining whether the tree density calculation applied to development permit areas or not and suggested considering broadening the use of cash-in-lieu of replacement trees for the acquisition of forested lands. There was a general interest in strengthening the City's ability to refuse removals where there is a reasonable and feasible option to retain.
- **Incentives and education:** Participants, mainly workshop attendees from the External Key Industry Parties workshop, proposed various incentives for private tree planting and management, such as exemptions and credits, to encourage tree retention and planting on private properties. Overall, the idea of incentivizing the planting of large trees to achieve tree canopy cover target more quickly and of incentivizing tree retention where possible was well received.

4.2.2 Feedback on administrative and best practices options

- **Permit application information:** Workshop attendees from the External Key Industry Parties workshop expressed concerns about the requirements for professional expertise in windthrow assessments, suggesting the need for more training courses or broader professional involvement. There was also a desire for distinct regulations based on different types of development projects and mandatory bird nesting reviews.

- **Tree protection zone + protection measures:** Participants, including DTIAC members and workshop attendees from the External Key Industry Parties and staff workshops, discussed the efficiency and environmental impact of tree protection measures. Suggestions included using less wasteful materials for the barriers, clarifying protection standards, and implementing better enforcement to ensure compliance. Staff noted the importance of enforcement when protection barriers are removed without authorization or proper arborist supervision. Staff have already begun implementing some of the measures discussed such as reducing waste resulting from tree protection barriers.

- **Replacement species list:** Workshop attendees from the External Key Industry Parties workshop and CCEAC members advocated for a more climate-adaptive tree species list and a tree planting plan as part of development projects. The emphasis was on making species selection easier for developers and ensuring new trees' survival. Staff and workshop attendees suggested reducing

the caliper size or height to improve survival, increase ease of transporting and managing stock onsite and reflect the availability of certain species in local nurseries.

Overall, there was general support for, and no significant concerns were raised during the technical advisory stage of the engagement process, on the proposed bylaw revisions. Many ideas were shared on how to improve aspects of the bylaw revisions, such as decreasing the stock size for replacement trees.

5.0 Recommended bylaw updates: major influence

Major influence recommendations fundamentally change how the bylaw regulates the retention, removal, protection, and replacement/re-establishment of trees. The major influence updates recommended for Abbotsford's Tree Protection Bylaw are informed by the Urban Forest Strategy and associated community feedback from 2019-2020 Urban Forest Strategy public engagement, recent engagement on the bylaw, and best practices in arboriculture and bylaw enforcement, and community values. These updates aim to improve the bylaw's effectiveness and implementation, aligning it with the City's strategic goals and public preferences for urban forest management.

5.1 What trees are regulated

This section provides recommendations regarding the types of trees that are regulated under Abbotsford's bylaw.

5.1.1 Tree definition

The "tree retention area" and "tree" definitions designate what trees are regulated under Abbotsford's Tree Protection Bylaw. The Urban Forest Strategy recommended:

- **Goal 2 (PRESERVE) – Strategy: Strengthen tree protection and replacement on all private land**
    - Action 10: Update the tree bylaw to align with the UFS targets and strengthen tree protection and replacement for trees on private land including development permit areas.

Current bylaw: Abbotsford's Tree Protection Bylaw currently regulates:

- All trees ≥20 cm in diameter at breast height (DBH) or greater
- All trees within retention areas, i.e. within:
    - Stream Protection and Enhancement Area as defined in the Streamside Protection Bylaw
    - Tree protection covenant
    - Identified as a retention area on development drawings

Recommended change

Recommendation 1. Expand the "tree retention area" definition to include steep slope areas >20% designated in the OCP as development permit area

Recommendation 2. Expand the "tree" definition to also include:

- Trees ≥10 cm in diameter in tree retention areas
- Replacement trees of any size required in a permit
- City trees of any size
- Yard trees required for subdivision
- Row of at least five or more closely planted trees, in a hedge-like form, where at least one stem ≥20 cm DBH

Rationale and impact

The proposed updates to the "tree retention area" and "tree" definitions are intended to align the tree bylaw with other City policies. The update to the tree retention area will align with the OCP guideline that states the protection of steep slopes is meant to "avoid tree removal on steep slopes and retain trees as much as possible elsewhere". Similarly, reducing the tree diameter to ≥10 cm DBH within retention areas will provide clarity on the size of tree the bylaw applies to in those areas; the current bylaw does not specify a threshold. Finally, including City-owned trees, replacement trees, and yard trees required at subdivision to the trees regulated in Abbotsford's bylaw will clarify the protection of City assets and those newly planted trees that would otherwise not be protected until they reach a larger caliper. This approach of protecting smaller tree assets in a limited context is an established practice consistent with other tree bylaws within the lower mainland and some Island communities (see Table 4).

The current bylaw does not adequately explain how closely planted rows of trees (i.e. hedge-like plantings) that contain trees ≥20 cm in diameter should be regulated. The result might be that only part of row where stems reach that diameter are regulated under the bylaw, yet their structure wouldn't make them good candidates for retention as individual trees. Clearly defining when a closely planted row of trees will be regulated under the bylaw will make implementation more transparent and achieve better results for canopy retention and replacement, as closely planted rows of trees, even in a hedge like form, contribute to the urban forest canopy.

Anticipated impacts:

- **Urban forest protection:** existing requirements will be better defined and the bylaw will now regulate trees on steep slopes
- **Implementation resources:** the implementation of requirements will be more straightforward and easily understood, and will align with already existing policies and requirements
- **Private land regulations:** requirements will consolidate or better define already existing regulations, policies, and requirements; the bylaw will now apply to trees on steep slopes development permit areas

What other communities are doing:

Table 4. Example of types of trees regulated in other communities (excluding significant/specimen trees)

Municipality	Protected Tree Size	Retained Trees	Replacement Trees	Steep Slope DPA	City Tree of any size	Nesting tree	Within streamside DPA	Subdivision tree	Hedges
Abbotsford (proposed)	≥20 cm DBH	✓	✓	✓	✓		✓	✓	*indirectly*
Coquitlam	≥20 cm DBH	✓	✓	✓				✓	

Municipality	Protected Tree Size	Retained Trees	Replacement Trees	Steep Slope DPA	City Tree of any size	Nesting tree	Within streamside DPA	Subdivision tree	Hedges
Maple Ridge	≥20 cm DBH		✓		✓				
New Westminster	≥20cm DBH	✓	✓		✓	✓			✓
Saanich	≥60 cm		✓		✓	✓	✓	✓	
Surrey	≥30cm DBH	✓	✓		✓	✓			
Township of Langley	≥30 cm		✓		✓	✓			✓
Victoria	≥30cm DBH	✓	✓	✓			✓		✓
White Rock	≥20cm DBH		✓		✓	✓			

5.1.2 Significant trees

This report recommends updating the approach for 'significant tree' protection to make use of the bylaw's significant tree schedule. The Urban Forest Strategy recommended:

- **Goal 2 (PRESERVE) – Strategy: Strengthen tree protection and replacement on all private land**
  - **Action 14:** Create a significant tree nomination process to populate Schedule "D" of the Tree Bylaw.

Current bylaw: Significant trees can be nominated to Schedule "D" "due to their age, condition, size, occurrence, cultural or historical importance within the landscape or that is rare or unusual for its species". They cannot be pruned or removed without a permit or City approval.

**Although the bylaw definition and schedule have been in place since the bylaw's adoption in 2010 to enable Council to nominate significant trees, no significant trees are currently listed in the schedule.*

Recommended change:

Recommendation 3. Compile a list of City-owned trees that meet one or more of the criteria listed in the bylaw to present to Council for nomination to the schedule and use the same criteria to start to identify and protect trees on private lands through the review and approval of subdivision or rezoning applications.

Rationale and impact

The significant tree schedule provides the highest level of tree protection in the bylaw because every tree listed would require Council approval to be removed from the bylaw and allowed for removal. However, the schedule has not been used to nominate any trees since the adoption of the bylaw. This report recommend that the City compiles a list of City-owned trees meeting the criteria to nominate to the schedule of the new Tree Management bylaw. The same criteria can also be used to identify trees during the review of subdivision or rezoning applications. Significant trees can be secured through the development approval process and nominated to the schedule as mutually agreed upon by the City and the developer.

Anticipated impact:

- **Urban forest protection:** the few City-owned trees nominated and private trees negotiated during subdivision or rezoning for addition to the schedule will require individual Council approval before being removed.
- **Implementation resources:** the City will need to identify trees individually and bring them forward to Council for nomination and, when required, for removal.
- **Private land regulations:** As proposed, the only private trees that may be designated as significant would be negotiated on properties undergoing subdivision or rezoning where trees meet the criteria for significance defined in the bylaw.

What other communities are doing:

Table 5. Example of types of significant or specimen trees definitions schedules

Municipality	Definition	Nomination to schedule*	Description
Abbotsford (proposed)	✓	✓	**Schedule: significant tree** due to their age, condition, size, occurrence, cultural or historical importance within the landscape or that is rare or unusual for its species Definition: trees ≥60 cm DBH. Removal restricted to meeting conditions listed in the bylaw (see Recommendation 6).
Coquitlam			-
Maple Ridge	✓		**Definition: significant Tree** means a tree outside of Conservation Areas that is greater than 50cm DBH in the urban and suburban area, and 70 cm DBH for trees in the rural area; not including Cottonwood or Alder species. Removal restricted to meeting conditions listed in the bylaw.
Nanaimo	✓	✓	**Definition: Landmark tree** – list of native species at a specific DBH that Council considers "important for community landmark". Removal restricted to meeting conditions listed in the bylaw. **Schedule*: Heritage tree** – list of specific trees that council "considers important to the community for heritage value" **Schedule*: Wildlife tree** – list of known occupied eagle or heron nests
New Westminster	✓		**Definition: Specimen tree** means a large and mature deciduous or coniferous tree with a DBH greater than 60 centimetres
Saanich	✓	✓	**Definition: Species** >2.0 m in height or 4 cm DBH when measured 15 cm above natural grade (Arbutus; Garry Oak; Pacific Dogwood; Pacific Yew), or when >30 cm (Douglas-fir; Grand Fir; Big Leaf Maple; Western Red Cedar). Removal restricted to meeting conditions listed in the bylaw. **Schedule*: Significant Trees** – Trees on Private Property Designatd as such
Surrey	✓	✓	**Definition:** Specimen quality tree, i.e., of any size which an arborist, a landscape architect, or the General Manager deems to be of exceptional value because of its species, condition, form, age or size but which has not been designated by Council to be a significant tree. Removal restricted to meeting conditions listed in the bylaw. **Schedule*: Significant tree** (list of specific heritage trees with location)
Victoria	✓		**Definition: Specimen tree** means >60 cm DBH except English Holly, Tree of Heaven, Lombardy Poplar, or invasive species. Removal restricted to meeting conditions listed in the bylaw.

*Trees individually nominated to a schedule always require individual Council approval to be removed from the schedule to permit their removal.

5.2 Tree protection during construction

This section provides recommendations to improve the protection of trees during construction, whether at a building permit stage for demolition or new building and for major civil works such as mass grading and servicing. Other administrative and best practices recommendations about tree protection during construction are included in section 6.4.

5.2.1 Protection securities

Tree protection security deposits are used by many municipalities to require monitoring and supervision of retained trees and their associated protection barriers on construction sites by an arborist. Tree protection securities are intended to improve the preservation and care of trees retained on construction sites, thus promoting the health and longevity of these valuable urban assets post construction. The Urban Forest Strategy recommends:

- **Goal 2 (PRESERVE) – Strategy: Strengthen tree protection and replacement on all private land**
  - **Action 10:** Update the tree bylaw to align with the UFS targets and strengthen tree protection and replacement for trees on private land including development permit areas.

Current bylaw: No security deposit is collected when trees are being retained on a construction site for either the trees or the associated protection barriers.

Recommended change:

Recommendation 4. Require a security deposit for trees retained on construction sites where site disturbance of any kind, including soil disturbance, will take place within 5 metres of the tree protection zone:

- $5,000 per tree for trees ≥60 cm DBH
- $2,000 per tree for protected trees <60 cm DBH
- Up to a maximum of $100,000 per site application

This deposit would be refunded upon final acceptance of the construction and confirmation has been provided in writing by the project arborist to the satisfaction of the applicable General Manager that all tree protection requirements such as the installation and maintenance of tree protection barriers have been met throughout all stages of construction.

Recommendation 5. Establish clear enforcement and mitigation mechanisms in cases where tree protection requirements were not upheld during construction, including:

- The ability to require an arborist impact assessment to assess the health of the tree
- If the tree can survive with mitigation, as assessed by an arborist to the satisfaction of the General Manager, the City may retain 50% of the deposit to be transferred in the same reserve fund as tree replacement cash-in-lieu and require necessary mitigation work to ensure the tree's health
- If the tree is not expected to survive, as assessed by an arborist to the satisfaction of the General Manager, the City may retain 100% of the security deposit to be transferred in the same reserve fund as tree replacement cash-in-lieu.

Rationale and impact

By requiring a security deposit, property owners will have an incentive to comply with tree protection requirements, ensuring the proper care and preservation of trees during construction. The tree bylaw's tree protection securities refunding process will also clearly define the process for seeking mitigation work and compensation for tree damage. The recommendations are intended to reduce tree damage during construction and improve accountability to permit conditions, leading to a healthier urban forest and more robust enforcement mechanisms when needed. Other administrative and best practices recommendations about tree protection during construction are included in recommendations associated with the Definitions found in section 6.4.

Anticipated impact:

- **Urban forest protection:** tree protection securities will provide an incentive to adequately protect retained trees on construction sites to maximize their health and survival.
- **Implementation resources:** staff will need to collect securities and refund them expeditiously upon receiving confirmation that protection requirements were adequately implemented.
- **Private land regulations:** permit holders will need to provide a refundable deposit held until completion of construction.

What other communities are doing

Table 6. Example of tree protection securities and monitoring in other communities (✓ = yes; - = no)

Municipality	Tree Protection Security	Arborist Monitoring & Reports	Description
Abbotsford (proposed)	✓	✓	$5,000 per tree for trees ≥60 cm DBH $2,000 per tree for protected trees <60 cm DBH Up to a maximum of $100,000 per site application
Coquitlam	-	-	-
Maple Ridge	-	-	-
New Westminster	✓	✓	Retained tree = $2,500 Specimen retained tree = $10,000 Max: $10,000 for resident applicants
Saanich	-	-	-
Surrey	✓	✓	Significant tree = $10,000 Specimen quality tree = $5,000 Other protected trees = $3,000 Max: $15,000 per single detached lot or $150,00 per permit application
Township of Langley	-	-	-

Municipality	Tree Protection Security	Arborist Monitoring & Reports	Description
Victoria	✓	✓	DBH ≥60 cm = $10,000 Other protected trees or per 4m of protected hedge = $2,500
White Rock	✓	✓	<50cm DBH = $2,500 51-65cm DBH = $4,500 >65cm DBH = $10,000 OR $2,500 for 'lower value tree' of any size

5.3 Tree retention and replacement

This section provides recommendations for the retention and replacement of trees.

5.3.1 Refusing tree removal

Many tree bylaws in British Columbia specify the circumstances under which they will issue a cutting permit, meaning the permit applicant must demonstrate tree(s) meet one of those conditions to get their removal permit. The Urban Forest Strategy recommends:

- **Goal 2 (PRESERVE) – Strategy: Strengthen tree protection and replacement on all private land**
  - **Action 10:** Update the tree bylaw to align with the UFS targets and strengthen tree protection and replacement for trees on private land including development permit areas.

Current bylaw: Unlike many other bylaws in British Columbia that specify what justifications are acceptable to issue a tree removal permit, the City's bylaw specifies when the city *may refuse* to issue a tree permit to cut a significant tree or trees within retention areas where it deems removals are not necessary:

- For the health of the tree or other trees nearby
- For safety
- To avoid nuisance or obstruction
- To allow permitted use or development to the permitted density

Recommended change:

Recommendation 6. Enable the City to refuse the removal of trees ≥60 cm DBH unless necessary to the health of the tree or nearby trees, for safety, to prevent immediate damage to infrastructure, or allow for permitted use and density.

Recommendation 7. Remove 'nuisance and obstruction' as a reason to allow the removal of significant trees, trees ≥60 cm DBH, or trees in retention areas. Replace with a clause that allows removals to prevent significant immediate damages to infrastructure, structures, or other valuable property only when other mitigation options other than tree removal are not viable.

Recommendation 8. Require permit applicants to submit reports from a certified arborist or registered professional forester when requesting removal of significant trees, trees ≥60 cm DBH, or trees in retention areas for tree health or safety reasons.

Rationale and impact

The recommended change would expand the City's ability to reject removal permit for trees with a diameter ≥60 cm. The change responds to feedback received during the technical advisory engagement process that there is a desire to achieve greater tree retention and protection where possible and would provide the City with the ability to require retention of trees ≥60 cm DBH where feasible. The nuisance and obstruction justification for tree removal is not required because the City would retain the authority to issue a tree cutting permit when they deem it appropriate.

Anticipated impact:

- **Urban forest protection:** improved protection of existing canopy. Trees ≥60 cm DBH provide significant canopy. After their removal it can take decades for young trees to grow large enough to replace the lost canopy.
- **Implementation resources:** The City will have more authority to refuse unnecessary removal of trees ≥60 cm DBH.
- **Private land regulations:** owners will be asked to justify the removal of trees ≥60 cm DBH with the reasons listed in the bylaw.

5.3.2 City-owned tree replacement

City-owned trees are a valuable part of the urban landscape, contributing to the well-being and aesthetic appeal of the community. Currently, the existing bylaw does not specify different replacement requirements for City-owned trees, which may not account for their unique value and contribution to the urban environment.

Current bylaw: The current bylaw does not specify different replacement requirements for City-owned trees, treating them similarly to other trees, without considering their distinct value as community assets.

Recommended change:

Recommendation 9. Require property owners that request the removal of a City tree to pay the City the following amount if the removal is approved at the sole discretion of the City:

- The cost of purchasing, planting and maintaining a replacement tree for one year, and
- The amenity value of the City tree calculated using an industry standard tree appraisal method to the satisfaction of the applicable General Manager

For wooded natural areas or where there is a substantial number of trees to be removed, allow the applicable General Manager to consider applying a different valuation method.

Rationale and impact

The current bylaw does not differentiate between City trees and private trees with regard to replacement requirements. The recommended update is intended to compensate the City for the cost of tree replacement and for the loss of the tree's amenity value. The standard tree appraisal method is an arboricultural industry standard to calculate the compensatory value for tree loss or damage. It accounts for tree size, condition, and location. Accounting for both the cost of replacement and the lost amenity value of City trees can help to incentivize retention of City trees or ensure adequate compensation for the loss.

Anticipated impact:

- **Urban forest protection:** the City will receive appropriate compensation when removal of City trees is necessary, which will in turn incentivize tree retention whenever possible.
- **Implementation resources:** staff will need to calculate or revise the amenity value.
- **Private land regulations:** owners will pay a higher compensation for the removal of City trees.

5.3.3 Integrating a tree density target

The recommendations made in this section introduce the concept of a tree density target to the tree bylaw. Tree density targets can be used to connect their tree bylaw to a canopy cover target by estimating how much canopy is provided by trees at maturity. The tree density target recommended in this section is 60 trees per hectare which aligns with guidance from the Urban Forest Strategy, as explained below.

The recommendations that make use of the tree density target in this section focus on:

- Capping replacement requirements
- Establishing a minimum planting or retention standard for developing properties
- Creating a flexible tree removal allowance for rural properties that prevents clearcutting

Tables Table 7, Table 8, and Table 9 provide an overview of how other communities implement tree replacement ratios, tree density targets, and tree retention incentives associated with a tree density target.

What tree density is needed to achieve 40% canopy cover?

A tree species that is medium sized at maturity (mature crown spread 5 - <10 m) will provide approximately 65 m^2 in canopy area. When a property reaches a density of 60 trees per hectare, that would represent approximately 40% canopy cover.

The following two examples show city blocks that achieved 40% canopy cover either with a consolidated retention area or distributed trees across properties and along streets. The examples are from Abbotsford (left) and Vancouver (right):



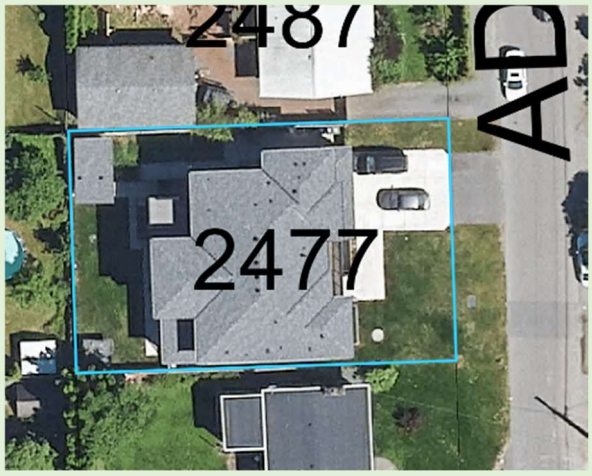
What does 60 trees per hectare mean for typical size lots in Abbotsford?

Here are some typical lot sizes for different land uses in Abbotsford and their respective tree density target for 60 trees per hectares, based on planting trees that are medium sized at maturity:

Infill: ≈400m^2 = 2 trees



Single detached or four-plex: ≈700 m^2 = 4 trees



Apartment: ≈1,450 m^2 = 9 trees



Townhouse: ≈4,500 m^2 = 27 trees



Industrial site: ≈12,500 m^2 = 75 trees



What other communities are doing:

Table 7. Example of replacement ratios in other communities

Municipality	Replacement Ratio	Description	Cash-in-lieu per replacement tree
Abbotsford (proposed)	Dependent on size of replacement at maturity up to tree density target	2:1 except 1:1 for trees ≥10 - <20 cm DBH and 4:1 for trees ≥60 cm DBH, up to tree density target Replace closely planted rows of trees with same, or 1 tree per every 4m of tree row Count replacement tree of a species that is small at maturity (mature crown <5 m spread) as 0.5 replacement trees and that is large at maturity (mature crown spread ≥10m) as 2 replacement trees	$500 except $750 for sites subject to development-related applications
Coquitlam	Dependant on size of remaining trees after removal	Based on the tree density remaining on site after removal. Total number of replacement trees also depends on the size of the species at maturity (more replacements required the smaller the species)	$500 security retained if planting does not occur
Courtenay	3:1 for trees below tree density target	Greenfield: 3:1 for each tree below the tree density target (up to half may include naturally growing trees <20 cm (except invasive, red alder or cottonwood) Infill: up to density target	$300
Maple Ridge	1:1 or tree density target	1:1 in conservation area Replacements to achieve 40 trees/ha elsewhere 0 replacements for dead trees or parcels with >40 trees per ha	$600; max. $24,000 per ha to a max. of $100,000 per application
New Westminster	1:1 or 2:1	1:1 if removing hazard, diseased or declining tree 2:1 for all other removals	Non-development: $250 except $5,000 for non-hazardous specimen (>60 cm DBH); max $10,000 Development related: $500 except $10,000 for specimen

Municipality	Replacement Ratio	Description	Cash-in-lieu per replacement tree
Saanich	1:1, 2:1 or 3:1, dependent on reason for removal	1:1 for hazard, infrastructure or foundation conflict, inappropriate location, rural 2:1 for development within building footprint or driveway/utilities 3:1 for development within road or access/services	$300 except $700 if associated with construction
Surrey	2:1, or based on lot size for subdivision	2:1 except 1:1 for alder and cottonwood Number of replacements on single family subdivisions based on size of lot (e.g., 2 for lots 341-460 m^2 or 5 for lots 701-820 m^2)	$550 Max. $41,250 per acre of land
Township of Langley	1:1 or 2:1 , dependent on size of protected tree removed	Protected trees with DBH between 20 and 30 = 1:1 Protected trees with DBH > 31 = 2:1 Hedge may be less than 1	120% of cost (incl. labour + installation)
Victoria	Dependant on size of replacement tree at maturity	1:1 for large replacement species at maturity 2:1 for small replacement species at maturity	$2,000
White Rock	2:1, dependant on size and type of protected tree removed	Type 1 (dead/hazardous protected tree): none Type 2 (unwanted protected tree) & 3 (under application for demolition or building permit): <50 cm DBH protected tree = 2 replacements 51-65 cm DBH protected tree = 3 66-75 cm DBH protected tree = 4 76-85 cm DBH protected tree = 5 >85 cm DBH protected tree = 6	$1,500

Table 8. Example of the use of tree density mechanisms in other communities

Municipality	Tree density (trees/ha)	Tree density used as:		
		Cap on Replacement	Minimum Number of Trees For Planting	Allowance Cap on Rural Properties
Abbotsford (proposed)	60	Yes, except outside of net developable area	Yes	Yes (5/year provided tree density target is maintained (excluding

Municipality	Tree density (trees/ha)	Tree density used as:		
		Cap on Replacement	Minimum Number of Trees For Planting	Allowance Cap on Rural Properties
				trees ≥60 DBH and trees in retention areas
Courtenay	50	Yes on infill properties No on greenfield properties (3:1 for every tree removed below tree density)	No	No
Maple Ridge	40	Yes, except for replacements in conservation areas	No	Yes (10/year provided tree density target is maintained and trees cut are ≤70 cm DBH)
Saanich	N/A	No	No	Allow one removal per acre per year
Victoria	50	No	Yes, number of trees dependent on size of lot.	No

Table 9. Example of tree retention incentives in other communities

Municipality	Retained Trees that Credit Replacement Trees	Retained Trees that Credit Replacement Trees
Abbotsford (proposed)	✓	- 1 credit replacement tree = tree ≥10 - <20 cm DBH retained - 2 credit replacement tree = tree ≥20 - <30 cm DBH - 3 credit replacement tree = tree ≥30 - <60 cm DBH - 4 credit replacement tree = tree ≥60 cm DBH
Maple Ridge	✓	- 1 credit replacement tree = 20 cm to 50 cm retained tree - 3 credit replacement tree = 50 cm to 70 cm retained tree - 6 credit replacement tree = > 60 cm retained tree
Surrey	✓	- 1 credit replacement tree = retained tree not protected under bylaw provided no conflict with building, utilities etc. - Transfer of credits between lots if the number of retained trees on one lot exceeds the number of replacement trees required for that lot (limited to 1

Municipality	Retained Trees that Credit Replacement Trees	Retained Trees that Credit Replacement Trees
		credit per lot, provided both lots plant 1 tree in the front yard of each new lot)
Victoria	✓	- 3 credit replacement tree = large retained tree (specimen) retained - Where no space is available for replacements: 1 credit replacement tree = retained undersized tree (i.e., not protected under bylaw) provided in good health, part of Schedule list of species, and will reach > 10 m at maturity

5.3.3.1 Replacements and cash-in-lieu

Replacement ratios are common in tree bylaws to make sure every tree removed is replaced. Many communities choose to require more than one replacement tree for every tree removed, usually in relation to the size of the tree removed, as a way to achieve a faster recovery of lost tree canopy and to account for occasional loss of new plantings. However, replacement ratios can be perceived as punitive towards owners that maintain treed properties. The Urban Forest Strategy recommends:

- **Goal 1 (PLAN) – Strategy: Establish canopy cover targets**
  - Action 1: Adopt 2045 canopy cover targets to maintain city-wide canopy cover at 40%, with sub-targets for urban development boundary canopy cover exceeding 25% with no neighbourhood less than 20% and public land cover exceeding 30%.
- **Goal 2 (PRESERVE) – Strategy: Strengthen tree protection and replacement on all private land**
  - Action 10: Update the tree bylaw to align with the UFS targets and strengthen tree protection and replacement for trees on private land including development permit areas.

Current bylaw: The number of replacement trees is based on the size of the tree removed:

Size of tree removed	# of replacement trees
>30 cm diameter	3
20-30 cm diameter	2
< 20 cm diameter or hazardous	None

Replacement trees must be of a minimum caliper of at least 6 cm, or 3 m height for coniferous trees.

When trees cannot be replaced on site, permit holders can provide $300 in cash-in-lieu to the City for the replacement tree to be planted elsewhere on city property. The bylaw enables the City to take a security deposit to be returned after planting of the replacement trees with an option to retain 20% of the deposit for 1 year after planting to monitor its survival.

Recommended change:

Recommendation 10. Update the replacement ratios to:

- Increase the number of replacement trees for trees ≥60 cm DBH to 4:1
- Require only 1:1 replacement for trees ≥10 - <20 cm DBH
- Allow a protected row of closely planted trees to be replaced with the same length of closely planted trees, including hedging type trees, where they are planted no more than 1.75m apart on center and are a minimum of 1.5m in height at time of planting, or 1 replacement tree for every 4 meters of protected row of closely planted trees.

- Count replacement tree of a species that is small at maturity (mature crown spread <5 m) as 0.5 replacement trees and that is large at maturity (mature crown spread ≥10m) as 2 replacement trees

Recommendation 11. Reduce the size of replacement trees at the time of planting to 5 cm caliper for deciduous trees, 2 m in height for coniferous trees, or 1.5 m in height for hedging species. Within streamside protection and enhancement areas and steep slope development permit areas and allow the planting of two 5-gallon pots with a minimum stem diameter of 2 cm in lieu of every regular caliper tree.

Recommendation 12. Use a tree density target of 60 trees per hectare of net developable area to place a cap (maximum) on replacement requirements once a property has achieved the targeted tree density.

Recommendation 13. For the purposes of incentivizing tree retention, we will count whether a property reaches the tree density target within its net developable area:

- For trees retained on site that are assessed by a certified arborist as having a high or better retention value and that are unlikely to cause infrastructure damage given their proximity to existing infrastructure and their anticipated size at maturity:
  - Four trees for every tree ≥60 cm DBH retained
  - Three trees for every tree ≥30 - <60 cm DBH retained
  - Two trees for every tree ≥20 - <30 cm DBH retained
  - One tree for every tree ≥10 - <20 cm DBH retained
- For replacement trees:
  - Two trees for every replacement tree of a species that is large at maturity (mature crown spread ≥10m)
  - One tree for every replacement tree of a species that is medium at maturity (mature crown spread 5 - <10m)
  - 0.5 tree for replacement tree of a species that is small at maturity (mature crown spread <5 m) or for a 5-gallon pot size replacement tree at the time of planting
- Except 0 tree for trees not in good health or hazardous

Recommendation 14. To account for the increase in planting and maintenance costs, increase cash-in-lieu to $500 per required replacement tree or $750 for sites also subject to a rezoning, subdivision, development permit, development variance permit or building permit application, and require the same amount per tree as a security deposit to be refunded after replacement planting is completed.

Rationale and impact

Updates proposed for replacement ratios are meant to integrate new categories of protected trees like the smaller diameter trees within development permit areas and to provide higher replacements for trees ≥60 cm DBH. Capping the replacement requirements once a property reaches 60 trees per hectare will help adjust the replacement requirements to the context of that property with the following result:

- On sparsely treed properties, trees would be replaced in accordance with replacement ratios

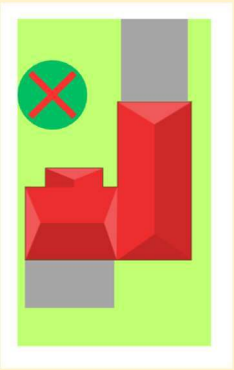
- On heavily treed properties, trees would be replaced once a property falls below 60 trees per hectare and only up to the number needed to achieve 60 trees per hectare based on the net developable area of a site

The example of demonstrates the steps to determine how many replacements trees are required on a property based on the replacement ratio and tree density target cap. The following replacement tree numbers are based on planting trees that are medium sized at maturity (mature crown spread 5 - <10m).

Example of calculating replacement requirements:

- **Step 1: Property information**
  - Property size = 570 m^2
  - Tree density target cap = 3 trees
- **Step 2: Tree removal and replacement ratio**
  - Tree removed = 1 tree (25cm diameter)
  - Replacements ratio = 2 replacement trees
- **Step 3: Applying the tree density target cap on replacements** – *this step depends on the number of trees retained on the property:*

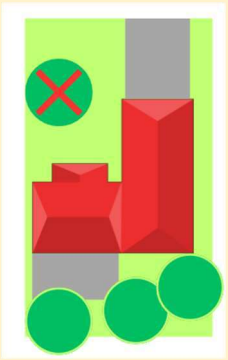
Property A



Trees retained = 0

Final replacement requirement = 2

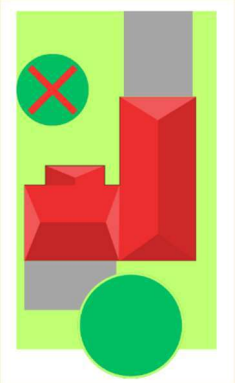
Property B



Trees retained = 3 trees ≥20 - <30 cm DBH

Final replacement requirement = 0

Property C



Trees retained = 1 tree ≥60 cm DBH

Final replacement requirement = 0

As a result of applying the replacement ratio with a cap once the tree density target has been achieved, property A must plant replacement trees in accordance with the replacement ratio, while property B does not need to plant any replacements due to the number of trees it is retaining. Property C is also exempt from replacement requirements because, although it is only retaining one tree, that tree has a larger diameter (≥60 cm DBH).

Overall, this will reduce the number of replacements required on already treed properties. However, when combined with a minimum planting requirement for developing properties with few or no trees (see section 5.3.3.2 New tree planting), we expect it to gradually balance tree canopy distribution. Properties with dense forests could reduce their canopy to a level that also becomes a minimum requirement for developing properties lacking the same tree density. This approach aims to standardize tree coverage across different areas, ensuring both treed and developing properties meet the same tree density standards over time. Calculating the tree density using the net developable area will mean that we focus on retaining or planting trees outside of riparian or steep slope development permit areas, public land, and public street and utility corridors.

This caliper size in the current bylaw is costly to acquire, can require machinery to transport and install the tree due to its large size, and not all species are available at that size. The reduced caliper size will make replacement plantings more affordable and the larger pot size for planting in riparian areas and on steep slopes will support planting of native species with minimal impacts on the ecosystem.

Finally, updates to the cash-in-lieu value aim to cover the cost of purchasing, installing, and maintaining for one year a replacement tree of equivalent size to what the bylaw requires private landowners to plant. The cost should cover most of the City's costs associated with planting the replacement tree on public land while providing an incentive for applicants to plant replacement trees on their property. Finally, the cost of cash-in-lieu and securities is differentiated based on whether applications are associated or not with a rezoning, subdivision, development permit, development variance permit or building permit application. Differentiating cash-in-lieu and securities is a common approach in many tree bylaws to reduce impacts on property owners not undergoing development.

Anticipated impact:

- **Urban forest protection:** fewer replacement trees would be required on forested properties, while less forested properties would continue to replace trees based on the size of the tree they are removing.
- **Implementation resources:** staff will need to evaluate whether a property meets the tree density target when implementing the bylaw requirements. Their planting costs will be better covered by cash-in-lieu.
- **Private land regulations:** owners of treed properties will have fewer tree replacement requirements than under the current bylaw. As a result, cash-in-lieu should be required less often but will be more costly than previously.

5.3.3.2 New tree planting

A tree density target can be used by communities to connect their tree bylaw to a canopy cover target because we can estimate how much canopy is provided by trees at maturity. The Urban Forest Strategy recommends:

- **Goal 1 (PLAN) – Strategy: Establish canopy cover targets**
  - **Action 1:** Adopt 2045 canopy cover targets to maintain city-wide canopy cover at 40%, with sub-targets for urban development boundary canopy cover exceeding 25% with no neighbourhood less than 20% and public land cover exceeding 30%.
- **Goal 4 (GROW) – Strategy: Increase tree planting in areas of low canopy cover**
  - **Action 37:** Prioritize tree planting in neighbourhoods within the Urban Development Boundary with less than 20% canopy cover.
  - **Action 45:** Establish a stocking level target of 60 trees per hectare (or an equivalent canopy area target) for all new development.

Current bylaw: No tree planting is required when no trees were removed. The city's Development Bylaw regulations for subdivisions requires one new yard tree to be planted on every new lot.

Recommended change:

Recommendation 15. Use a tree density target of 60 trees per hectare of net developable area to require developing properties to achieve a minimum density of trees regardless of how many trees are being removed.

Rationale and impact

This is an important component related to the use of a tree density target to cap replacement requirements (Recommendation 12). Introducing a new requirement for all developing properties to reach the tree density target regardless of how many trees they remove will mean:

- **On sparsely treed properties,** trees would need to be **planted to reach 60** trees per hectare, regardless of whether or not any trees were removed from the site
- **On heavily treed properties**, 60 trees per hectare could be achieved with tree retention and/or replacements

Overall, this will introduce a new requirement for all developing properties to plant trees if their properties do not meet the density target, a requirement that currently only applies to new lots created at subdivision. When combined with a tree replacement cap for already treed properties (see section 5.3.3.1 Replacements and cash-in-lieu), these two recommendations are expected to gradually balance tree canopy distribution throughout the community. Properties with dense forests could reduce their canopy to a level that also becomes a minimum requirement for developing properties lacking the same tree density. This approach aims to standardize tree coverage across different areas, ensuring both treed and developing properties meet the same tree density standards over time. Calculating the tree density using the net developable area will mean that the focus is on retaining or planting trees outside of riparian or steep slope development permit areas, public land, and public streets and utility corridors.

Anticipated impact:

- **Urban forest protection:** all developing properties will be required to contribute equally to the city's canopy cover. On heavily treed properties, fewer replacement trees will be required than currently, while on non-treed properties, more tree planting will be required than currently.
- **Implementation resources:** more time may be needed for permit review to calculate tree density
- **Private land regulations:** developing properties with few trees will have higher tree planting requirements compared to today, while heavily treed properties will have lower replacement requirements compared to today. Rural properties will retain the flexibility to manage their forest as long as they maintain a minimum density of trees on their property.

5.3.3.3 Rural properties

Abbotsford includes many rural properties within and outside of the Agricultural Land Reserve that have a different context from the land within the urban core. Yet, Abbotsford's current tree bylaw does not currently distinguish its application to rural properties outside of a few specific exemptions related to forestry or farming.

Current bylaw:

- Does not apply to forested lands managed under provincial forestry acts or in the Agriculture Land Reserve
- Exempts requirements for a tree cutting permit within farming areas as part of a designated farm use

Recommended change:

Recommendation 16. For uses other than farming on rural properties outside the Urban Development Boundary shown on the Urban Land Use Map (OCP Map 1) and not in the ALR:

- Allow owners to remove up to 5 trees annually (excluding trees ≥60 cm DBH and trees within retention areas) without tree removal permit fees or replacement requirements as long as they maintain at least 60 trees per hectare on their property.
- Apply replacement requirements and tree removal permit fees where owners want to remove more than 5 trees per year, remove trees ≥ 60 cm DBH or trees within retention areas, or if the removal would result in the property falling below 60 trees per hectares.

Rationale and impact

Rural properties outside the Urban Development Boundary shown on the Land Use Map (defined by OCP Map 1) would be able to remove a certain number of trees without needing a permit under an annual tree removal allowance of 5 trees annually provided they maintain 60 trees per hectares on their properties. The mechanism would allow property owners to manage their forests but prevent progressive clearcutting. The requirement to submit an application to the City for tree removals that do not require issuance of a tree cutting permit would allow staff to monitor tree removals on rural properties with a simple form and without removal costs to owners.

Anticipated impact:

- **Urban forest protection:** a tree cutting permit and tree removal permit fees would now be required when an owner either wants to remove trees larger than 60 cm DBH, trees within riparian and steep slope development permit areas, a larger number of trees or fall below 60 trees per hectare. Replacements would apply for properties that fall below 60 trees per hectare.
- **Implementation resources:** the City would need to review applications and issue tree cutting permits for rural properties wishing to remove trees.
- **Private land regulations:** rural property owners would continue to be able to remove trees without a permit for agricultural reasons or provided they remove only up to 5 trees per year and without their property falling below 60 trees per hectares.

6.0 Recommended bylaw updates: Administrative and best practice

Administrative and best practice recommendations do not fundamentally change the bylaw intent or regulatory approach; they are focused on bringing clarity, consistency and conformity to the bylaw and responding to current best arboricultural practices. The administrative and best practice updates recommended in this report are based on guidance from best arboricultural practices and staff and consulting team advice to improve bylaw implementation.

Purpose: The proposed updates are intended to accomplish the following:

- Clarify definitions and requirements to align with current industry standards
- Improve the bylaw implementation process
- Maintain sufficient penalties to deter bylaw infractions

6.1 Bylaw name change to Tree Management Bylaw

Abbotsford's current bylaw is called a 'Tree Protection Bylaw'. Changing its name to a 'Tree Management Bylaw' better describes the purpose and extent of its application, which focuses not only on protecting trees but also managing their removal and replacement.

6.2 Permit information requirements

Requiring adequate information with permit applications can improve the efficiency of staff reviews and assess potential tree hazards in accordance with best practices but can also add costs for applicants when they are required to provide professional reports. To balance those needs and ensure effective application review and safety outcomes, the following requirements for applications is recommended:

- **Arborist report requirements:** Arborist reports are already required to assess development applications. We recommend clearly defining the content requirements of arborist reports, such as provision of assurance letters, to improve the quality and consistency of submissions and to require greater consultant oversight and reporting.
- **Hazardous tree report requirements:** A revised definition recommended in section 6.3 will align Abbotsford's bylaw with the current industry standard, which is the International Society of Arboriculture's Tree Risk Assessment Qualification (ISA TRAQ). The updated bylaw will build on this new definition to outline the expectations for arborists in documenting their assessments in accordance with the TRAQ standard.
- **Registered Professional Foresters and windthrow risk assessments:** The current bylaw does not allow Registered Professional Foresters (RFPs) to provide a qualified professional opinion, despite the fact that they are qualified to make recommendations on forest management related to wildfire risk management and windthrow. Updating the bylaw to allow RPFs to establish windfirm boundaries around Streamside Protection Areas or provide expertise on windfirm boundaries or wildfire risk at the edge of new developments will allow for important information to be provided with relevant permit applications. This update will expand the additional information that the General Manager may request in reports by qualified professionals to address risks that may arise from proposed cutting that create a new forest edge.

6.3 Definitions

Clearly defining damage and prohibited activities is crucial to prevent adverse effects on tree health. We recommend the following update to align with current best practices:

- **Clarify that tree topping and lift pruning are damaging activities:** Topping and lift pruning are not listed as damage despite commonly being the cause of tree damaging. Adding the practices to the damage definition means they can more often be prevented through bylaw enforcement through greater clarity in the damage definition.
- **Restrict City tree pruning:** Under the current bylaw language, City trees could be pruned by residents. The City should have control over pruning of its own tree assets; by adding a restriction to the bylaw, City trees will not be pruned without City permission.

In addition, updating the diameter at breast height (DBH) definition to clarify its implementation for multi-stemmed trees is recommended. Specifically:

- **Clarify DBH measurement for multi-stemmed trees:** The updated definition should specify that, for multi-stemmed trees, DBH is measured by taking the square root of the sum of squares of all stems ≥10 cm DBH. Without this detail, arborist may be required to measure all stems to determine if it meets the 20 cm DBH threshold. Essentially, the proposed approach includes a numerical modifier, which will result in a more representative overall diameter measurement and more equitable tree replacement.

Finally, the following new definitions to align with current industry best practices and clarify the implementation of the tree density target is recommended:

- **Hazardous tree definition:** The current bylaw uses a definition for hazard tree that does not reflect the industry standard, which is the International Society of Arboriculture's Tree Risk Assessment Qualification (ISA TRAQ). Updating the definition will allow the bylaw to be consistent with the industry standard and the recommendation in Metro Vancouver's Tree Regulation Toolkit (2021), while removing the need for interpretation from the current language about trees damaged by 'natural causes'. The updated definition will enhance clarity in the bylaw, specifying the risk assessment standard required for permit issuance and conditions.
- **Developing property definition:** The new bylaw will need to differentiate application related to development from other applications to apply different cash-in-lieu and replacement tree security amounts proposed under Recommendation 14. The definition will apply to sites also subject to a rezoning, subdivision, development permit, development variance permit or building permit application.
- **Net developable area definition**: Recommendations in section 5.3.3 will apply a tree density target within the net developable area to cap replacement requirements and require tree planting for developing properties. The new definition will clarify that the tree density target applies to land available for development excluding public streets, utility corridors, and steep slope development permit areas. The purpose is to apply the tree density requirements to the developing portions of a property. It will ensure that the bylaw supports retaining and planting

trees near buildings and streets to provide access to the benefits of trees to residents and visitors throughout the city.

6.4 Protection of tree roots

To achieve effective tree protection for retained trees on construction sites, tree bylaws must adequately protect the area immediately adjacent to the trunk where roots essential for tree health and stability are located. the following update to align with current best practices is recommended:

- **Updating the tree protection zone:** The current bylaw uses the drip line to define the area around a tree that must be protected. The drip line is not always a reliable indicator of where the bulk of the critical root system is located. Protection fencing at dripline will not provide adequate tree protection in all cases. Defining the "tree protection zone" in accordance with recommendations from Metro Vancouver's Tree Regulations Toolkit (2021) provides flexibility for the Certified Arborist to recommend the extent of tree protection required (within a plan approved by the City) and, in the absence of such a plan or otherwise sets a standard tree protection zone at 12 times the diameter or drip line plus 1 metre. As a result of this update, the City should see reduced damage to retained trees and improved retention success (tree survival) post-construction.
- **Clarify the requirement for signage:** The current bylaw shows a sign installed on tree protection barriers to indicate its purpose but does not explicitly require it. Updating requirements to include signage explaining the purpose of the barrier and what activities are prohibited within the barrier will help educate the public about the bylaw requirements.
- **Updating the tree protection barrier standards:** The current bylaw requires fencing built with 2" x 4" lumber and plastic snow mesh as is common in other BC bylaws. However, staff and workshop participants noted that it can result in a significant amount of waste. Updating the requirements to allow alternative fencing materials such as the use of aircraft cables and wood stakes will allow installations that require less material and more easily reusable material.
- **Arborist monitoring:** The current bylaw does not enable staff to require project arborists to monitor the installation of tree protection barriers or monitor site work and supervise any work within the tree protection zone. The updated bylaw should enable staff to require a letter of assurance and a final memo confirming tree protection requirements on a construction site. These requirements will support the implementation of the tree protection security recommended in section 5.2.1.



Examples of tree protection fencing that uses aircraft cables and wood stakes.

6.5 Replacement tree planting

The tree bylaw offers an opportunity for the City to require the planting of a diversity of species well adapted to the current and future climate. The following update is recommended:

- **Update to the replacement tree species list:** The trees planted in the City lack diversity. The tree list has not been updated to reflect climate adaptation. The Urban Forest Strategy's implementation requires the urban forest to be comprised of a diversity of climate adapted species. Updating the species list in Schedule C will support tree planting on private land that is diverse and climate adapted. Require the use of native species for replacement plantings taking place in steep slope development permit areas and streamside protection and enhancement areas.

6.6 Fees

Permit fees are one of the ways that the City can recover administrative costs. While it is important to keep permit costs reasonable to avoid undue hardship, the following updates are recommended:

- **Add a non-refundable permit application fee:** Adding a flat permit application fee of $25 will help cover the cost for staff review and reduce spurious permit applications that applicants do not follow up on. An additional fee per tree removed will continue being charged at the time of issuing the tree permit. Residents who are unsure about whether they need a permit or who require more information could still inquire about the bylaw prior to submitting their application.
- **Fee for additional site visits and inspections:** The City does not currently charge inspection fees for tree permit site visits. This would allow the City to charge a permit holder for any additional site visits required as a result of their lack of compliance with permit or bylaw conditions. The fees would be based on a standardized actual cost recovery model to allow for some cost recovery and provide an incentive to meet requirements prior to requesting an inspection.

Table 10. Comparison of tree permit fees across different municipalities

Municipality	Permit fees	Fee for additional site visits/inspections?
Abbotsford (proposed)	Application fee: $25 Per tree removed: • 1 tree: $65 • 2-5 trees: $97/tree • >5 trees: $131/tree Renewal, extension, or modification: $59	Site re-inspection fee based on actual cost recovery calibrated to a standardized amount.
District of North Vancouver	Per tree removed: • <5 trees: $100/tree • >5 trees: $500/tree • Development involving ≥10 trees or parcels ≥1 ha: $2,500 Except $500 per large diameter tree removed:	No
Coquitlam	Tree cutting permit: • $62 with no plan checking • $310 with plan checking	Yes (Initial inspection: $136, Re-inspection: $271)
Maple Ridge	Urban Area, Urban Reserve and Rural<0.5 ha: $50 1st tree + $25/additional tree Rural Area >0.5 ha: $50 for 11th tree + $25/additional tree Developments and clearing: $200 base fee + $25/tree Active farm use: $0 per tree	No
Saanich	Rural property or tree that is hazardous or causing damage: $0 Tree removal (non-development): $50 + $30/tree Tree removal (DP or rezoning): $100 + $30/tree Amendments: $40	Yes ($100)
Squamish	Permit fee: $150 + $5/tree removed Except: • $5,000 if trees were removed prior to permit issuance • $150 for non-profit habitat restoration (with qualified professional report)	No

7.0 Updates to other bylaws

The following updates will be required to align with the updated Tree Management Bylaw, including:

- **Fees and Charges Bylaw**: Updates will be required to implement changes to the permit fee structure and add new inspection fees as recommended in section 6.6.
- **Official Community Plan, Natural Environment Development Permit Areas** guidelines: The guidelines currently refer to the dripline as the tree protection zone. It should be updated to conform with the tree bylaw's new tree protection zone definition.

Abbotsford's Tree Protection Bylaw is only one of the tools available to the City to improve tree protection, retention and planting. Bylaws that regulate land use and development specifications can be particularly impactful because they dictate the space available to grow trees. The following updates could further improve regulatory support for Abbotsford's urban forest:

- **Development Bylaw:** the bylaw dictates planting standards for street trees. Updates could consider:
    - Increasing soil volume and spacing requirements (Urban Forest Strategy action 16)
    - Supporting the use of modular suspended pavement systems, requiring irrigation, increasing the minimum boulevard planting strip width, encouraging retention or stockpiling of topsoil and establishing a hierarchy of preferred and alternative standards for streetscape elements (Urban Forest Strategy action 17)
- **Zoning Bylaw:** the bylaw guides site coverage within the city's various zones. Updates could consider:
    - Establishing a permeability target that could support sufficient soil volume for a medium or large size tree (Urban Forest Strategy action 40) sufficient to meet 60 tree per hectare targets
- **Development Application Procedures Bylaw:** the bylaw provides details about the process and information required with development related permits. Updates could consider:
    - Enabling delegated variances to adjust building height, setbacks, or parking requirement to retain trees on development sites

8.0 Conclusion and anticipated resourcing impacts

The recommendations contained in this report are intended to support achieving the Urban Forest Strategy targets while creating requirements that treat property owners on a more equal footing whether they have trees growing on their property or not.

While many of the recommended updates included in this report are intended to achieve efficiencies in the bylaw's implementation, some of the recommendations are anticipated to increase workloads for staff processing permits in the Planning and Operations, Parks, and Urban Forestry departments and additional support staff in other departments such as bylaw enforcement officers and works inspectors. Changes are expected to:

- **Require more time for the review of applications and issuance of permits** to calculate the amenity value of City trees approved for removal (recommendation 9), the replacement ratio and the cap using the tree density target (recommendations 10, 12 and 13), and planting requirements for developing properties (recommendation 15).
- **Require more time to administer securities** for tree protection and replacement (recommendations 4 and 14).
- **Increase the volume of inquiries and permit applications** related to the rural areas where tree cutting permits were previously not being issued (recommendation 16).
- **Simplify permit application reviews** due to clearer definitions and report standards (administrative and best practices recommendations).