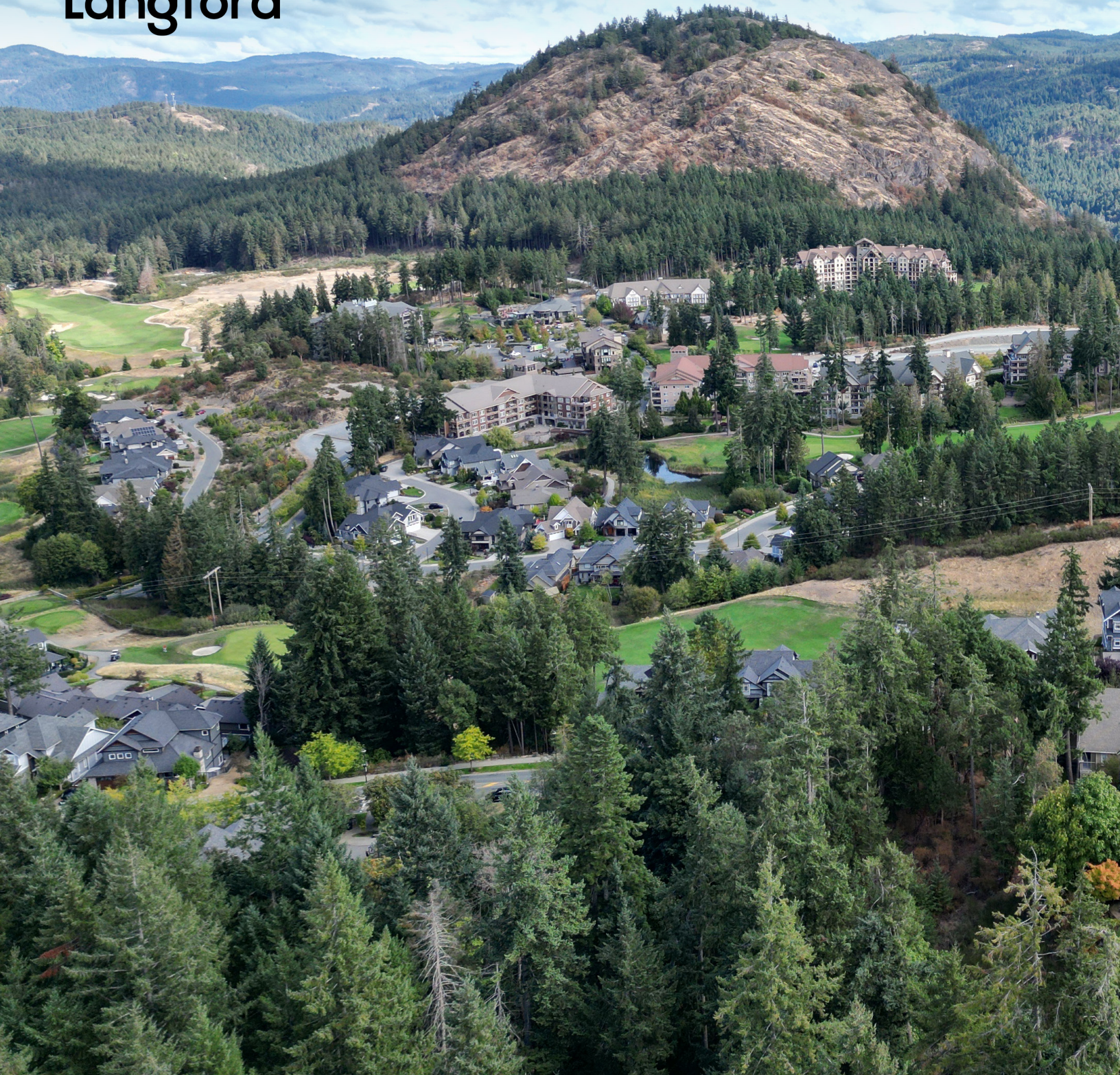


State of the Urban Forest Report

March 2024

CITY OF
Langford



Land acknowledgment

The City of Langford acknowledges and honours the traditional territories of the Coast Salish, specifically Xwsepsum (Esquimalt), Lekwungen (Songhees), Sc'ianew (Beecher Bay), and the WSÁNEĆ Peoples represented by the Tsartlip, Pauquachin, Tsawout, Tseycum, and Malahat Nations

Project team acknowledgment

Diamond Head Consulting Ltd. (DHC) prepared this State of the Urban Forest Report for the City of Langford. DHC acknowledges the participation and support of City of Langford departments and staff in preparing this document.

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Date:

March 2024

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Credit: BC Big Tree Registry

Part 1 introduction

The City of Langford is a fast-growing city of 52,000 people on southeast Vancouver Island, in Greater Victoria’s West Shore subregion. Langford borders the City of Colwood, the Town of View Royal, the District of Highlands, the Juan de Fuca Electoral Area of the CRD, and the District of Metchosin. Spanning 4,120 hectares, Langford features a diverse landscape that includes urban, suburban, rural, and naturalized areas. The city’s urban forest canopy, covering 1,983 hectares, supports rich recreational opportunities and contributes to the city’s unique identity. Trees, valued by the community, play a crucial role in defining Langford’s character and enhancing quality of life in urban areas.

Relationship between the State of the Urban Forest Report and the Urban Forest Management Plan

The City of Langford is developing an Urban Forest Management Plan (UFMP) to provide a clear direction for urban forest management over the coming 25 years. This State of the Urban Forest Report provides a snapshot of Langford’s urban forest, including a summary of its current extent, composition, and value. The insights derived from this Report will be a foundational reference for developing Langford’s first UFMP. These findings will inform the forthcoming recommendations in the UFMP and set benchmarks for measuring progress in the decades to come.

Structure of the State of the Urban Forest Report

- Part 1 introduction** – describes the purpose of the report.
- Part 2 state of the urban forest** – benchmarking of the current state of the urban forest in Langford.
- Part 3 community values: what we heard** – describes key community values gathered through engagement for this project.
- Part 4 report card** – assesses the City’s urban forest management program against a set of criteria developed for sustainable urban forests.



Natural

Rural

Single family

Urban Core

Industrial/ Commercial

Box 1. quick facts

Langford has a **city-wide canopy cover of 48%** (30% when excluding parks)

Parks contribute to 37% of the total canopy cover, with provincial parks accounting for 19%, regional parks 11%, and municipal parks 7%

The neighbourhoods with the **highest canopy cover** include **South Langford, Bear Mountain, and Westhills**

The **City Centre, Langford Lake and Glen Lake, and North Langford** feature the **lowest canopy cover** alongside the lowest Tree Equity Scores

Over half of Langford's canopy cover, 52%, is on private land, while 40% is found in parks, 5% is in road rights-of-way, and 3% is in schools/other lands

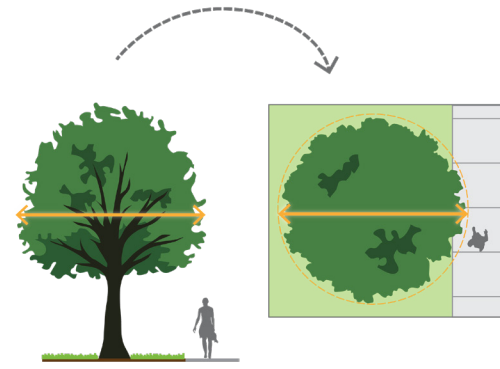
Of Langford's OCP land uses, **mixed use employment centres (15%), business or light industrial (19%), and City centre (20%) have lowest canopy cover**

The **tallest trees** in Langford, reaching over **80 meters**, are primarily found in Goldstream Provincial Park

Forested natural areas in parks and on private land constitute **1,739 hectares**, or **88%**, of the city's **overall urban forest canopy**

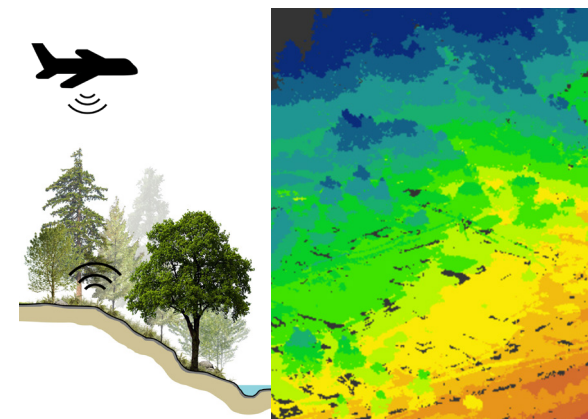
Most natural forests in Langford are mature (61%) with just 4% classified as old forests more than 250 years old

Maples (15%) and cherries (14%) are the most abundant trees in the municipal inventory



What is Tree 'Canopy'?

A tree's canopy refers to the leafed area sitting atop the trunk. Canopy area is often used to describe the area covered by a tree's canopy as viewed from above, and is a common metric used in strategic initiatives such as this, as it is a relatively accessible indicator which generally corresponds to the scale, standards, and level of resources available to a management program.



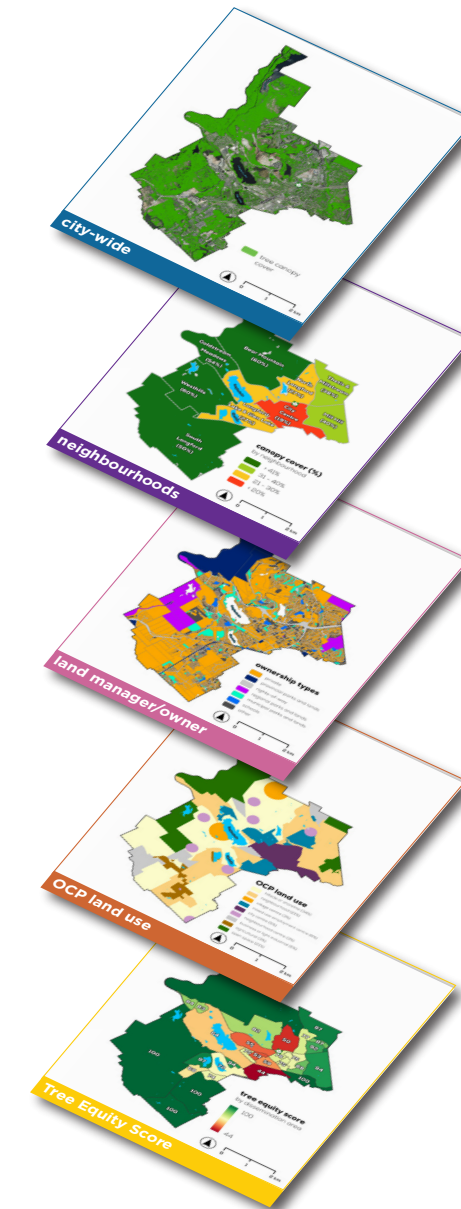
LiDAR is a 3D laser scanning technology used to create a digital surface model of the land below. LiDAR is the gold standard used worldwide for urban tree canopy assessments.

Part 2 state of the urban forest

This section provides a brief overview of Langford's urban forest canopy cover, how its various components are managed, and its value.

2.1 Langford's canopy cover

Canopy cover can be summarised based on different geographies.



City-wide canopy

Purpose: summarize city-wide canopy cover

Neighbourhoods

Purpose: summarize canopy cover by neighbourhood

Land manager/owner

Purpose: summarize canopy cover by manager

OCP land use

Purpose: summarize canopy cover by land use

Tree Equity Score

Purpose: prioritize tree planting

2.1.1 Citywide canopy cover

In 2023, tree canopy cover was estimated to cover 48%, or 1,983 hectares, of Langford's land area (Figure 2-1). Langford's canopy cover is relatively high compared to peer municipalities on Vancouver Island and in the Lower Mainland. Among neighbouring communities in the Capital Regional District, canopy cover varies, with Victoria at 29%, the District of Oak Bay at 33%, and the District of Saanich at 43%.

Langford's relatively high canopy cover is largely due to the area of second-growth native forests and parkland found within the city limits. **Of Langford's 1,983 ha of tree canopy, 737 ha is protected in parks, and the remaining 1,246 ha is on other land uses (Figure 2-2).** If the tree canopy in parks were excluded from a canopy coverage calculation, the City's canopy cover would be reduced to 30%.

Parks contain 737 ha (37%) of Langford's total canopy cover. Of this 737 ha of tree canopy, 19% is in provincial parks (Goldstream Provincial Park), 11% is in regional parks (Mount Wells Regional Park, Mill Hill Regional Park, and Thetis Lake Regional Park), and 7% is in municipal parks (Figure 2-3).

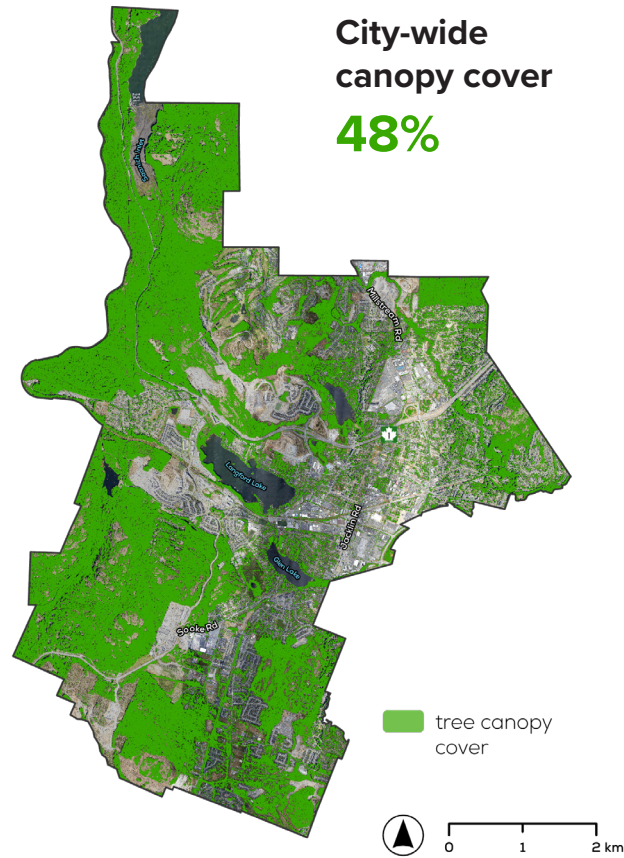


Figure 2-1. Canopy cover in Langford.



Figure 2-2. Canopy cover in Langford inside and outside of parks.

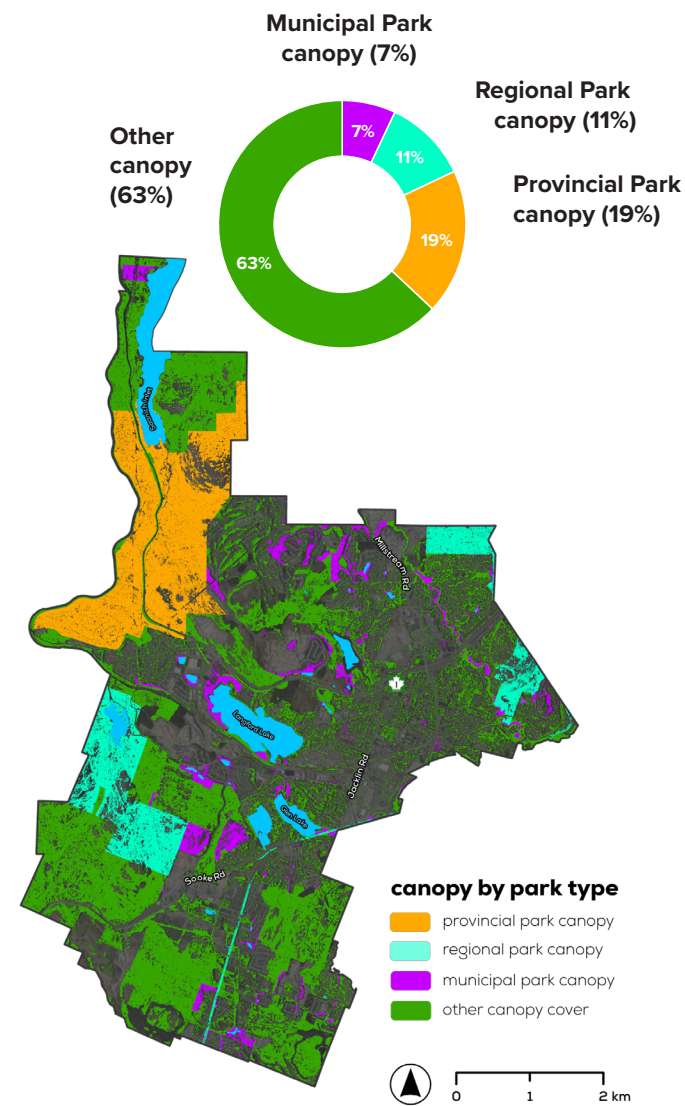


Figure 2-3. City-wide canopy cover by park type.

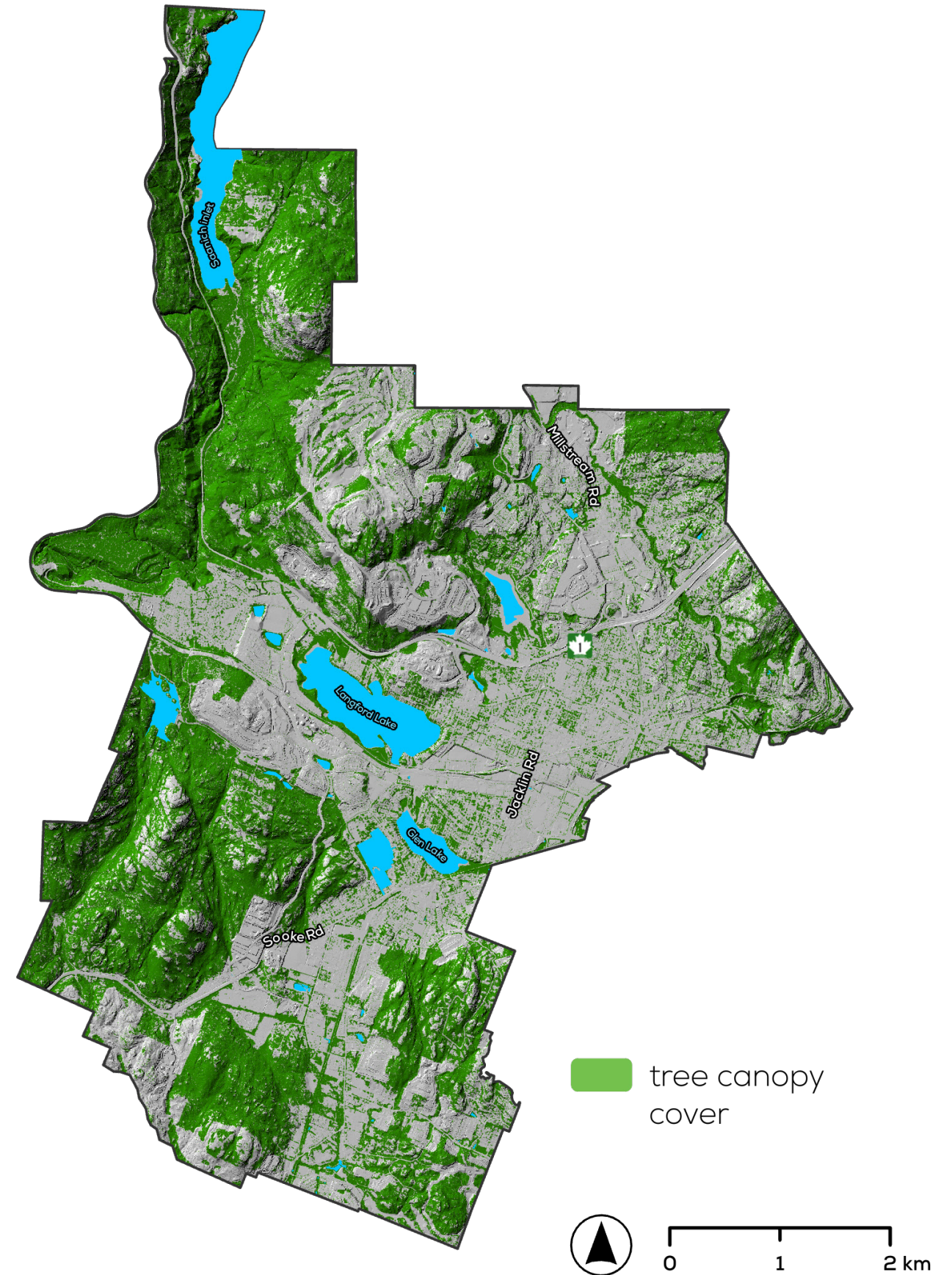


Figure 2-4. Langford's canopy cover draped over a hillshade model generated using 2023 LiDAR data.

2.1.2 canopy by neighbourhood

The distribution of canopy cover across Langford's neighbourhoods varies, ranging from 19% to 60% (Figure 2-6). The City Centre has the lowest canopy cover at 19%. In contrast, Westhills, Bear Mountain, and Goldstream Meadows have the highest canopy cover, at 60%, 60% and 54% respectively, largely due to a significant amount of parklands within these areas.

In neighbourhoods with high canopy cover, parks tend to contribute a significant proportion of canopy area (Figure 2-6). Canopy cover in Westhills, Bear Mountain, and Goldstream Meadows drops to 23%, 28% and 19% respectively when parks are excluded (Figure 2-6). The South Langford neighbourhood contains minimal parkland and is largely unchanged at a high canopy cover of 48%.

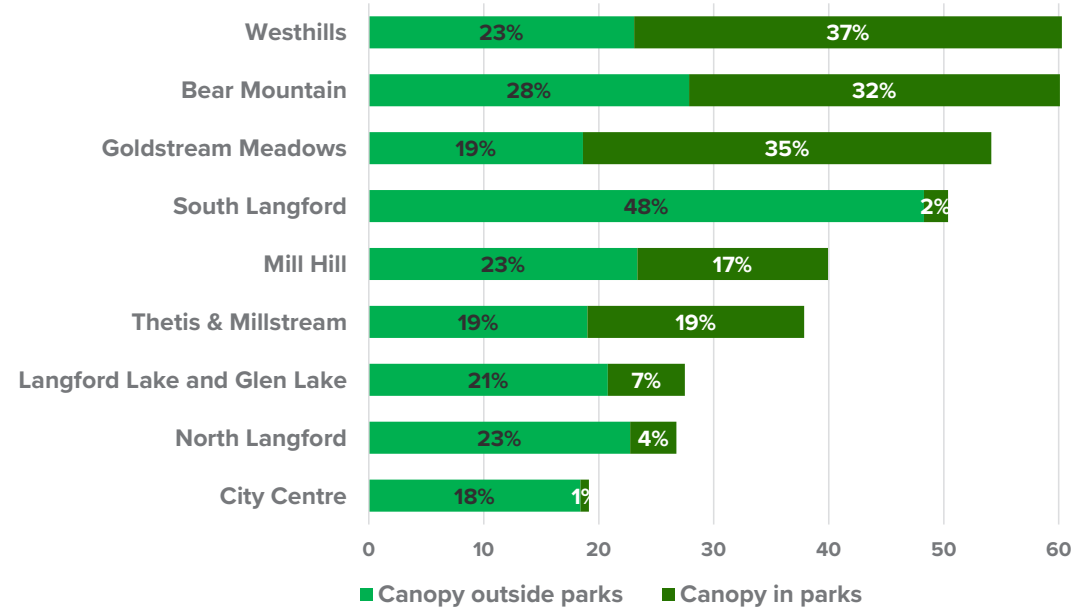


Figure 2-5. Langford's canopy cover by neighbourhood with percent canopy in parks in dark green.

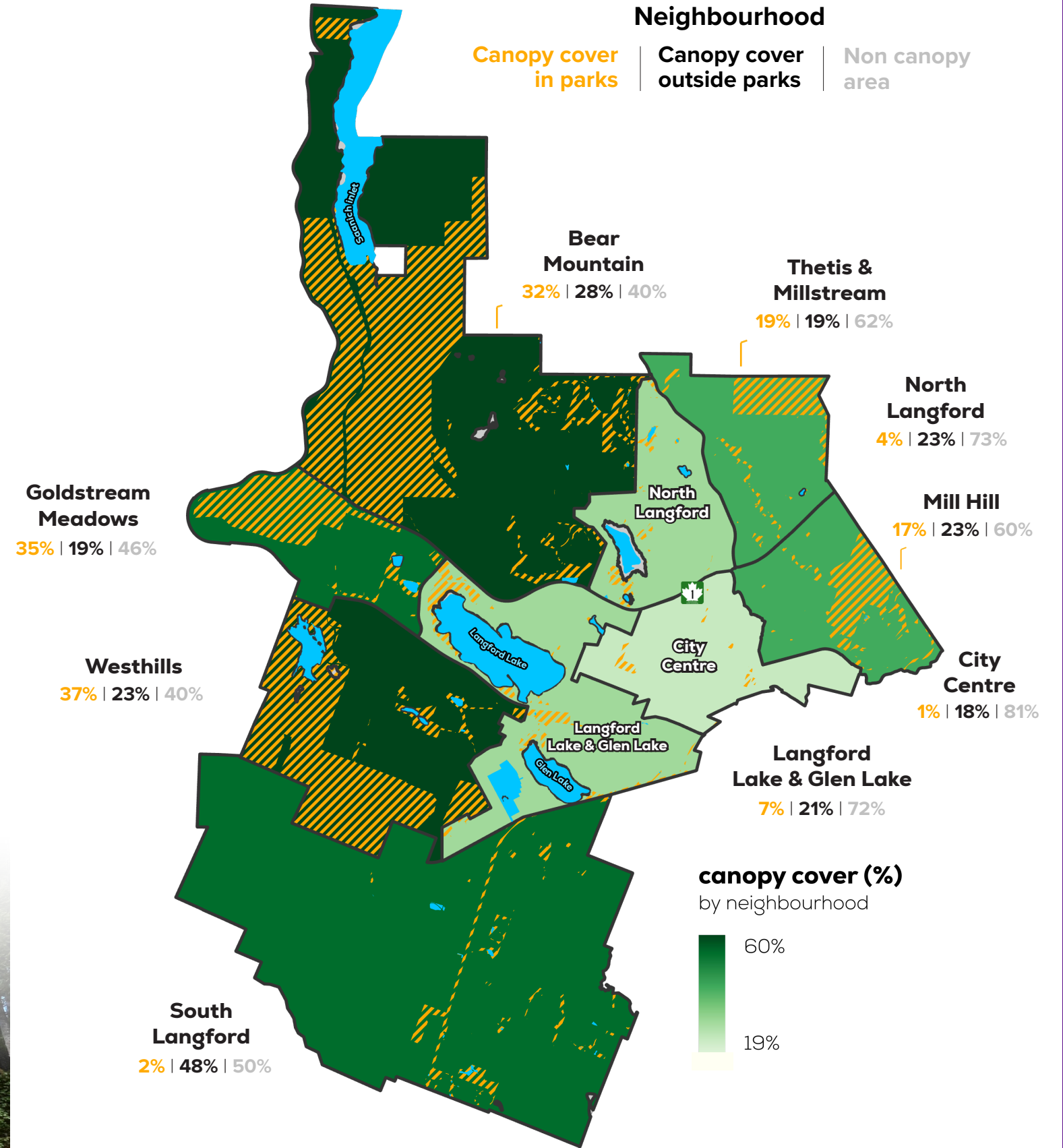


Figure 2-6. Langford's canopy cover by neighbourhood.



2.1.3 canopy by land manager/owner

To identify the relationship between the land manager and the tree canopy, a consolidated land management/ownership layer was created based on the City's parcel information (**Figure 2-8**).

Approximately 57% of Langford's land base is privately managed, with the remaining 43% made up of provincial parks (13%), rights-of-way (i.e., streets; 11%), regional parks (7%), municipal parks (5%), schools (1%) and other lands (6%) (**Figure 2-8**).

Over half of Langford's canopy cover is on private land (52%, 1,025 ha) (**Figure 2-7**). The remaining 949 ha of tree canopy lies within provincial parks (21%, 423 ha), regional parks (12%, 235 ha), municipal parks (7%, 132 ha), on rights-of-way (5%, 96 ha), and other public land (3%, 63 ha).

Canopy cover is highest on provincial parks and lands (82%), regional parks and lands (79%) and municipal parks and lands (61%). Private land averages 43% canopy cover, while rights-of-way and schools average the lowest canopy cover at 22% and 12% respectively.

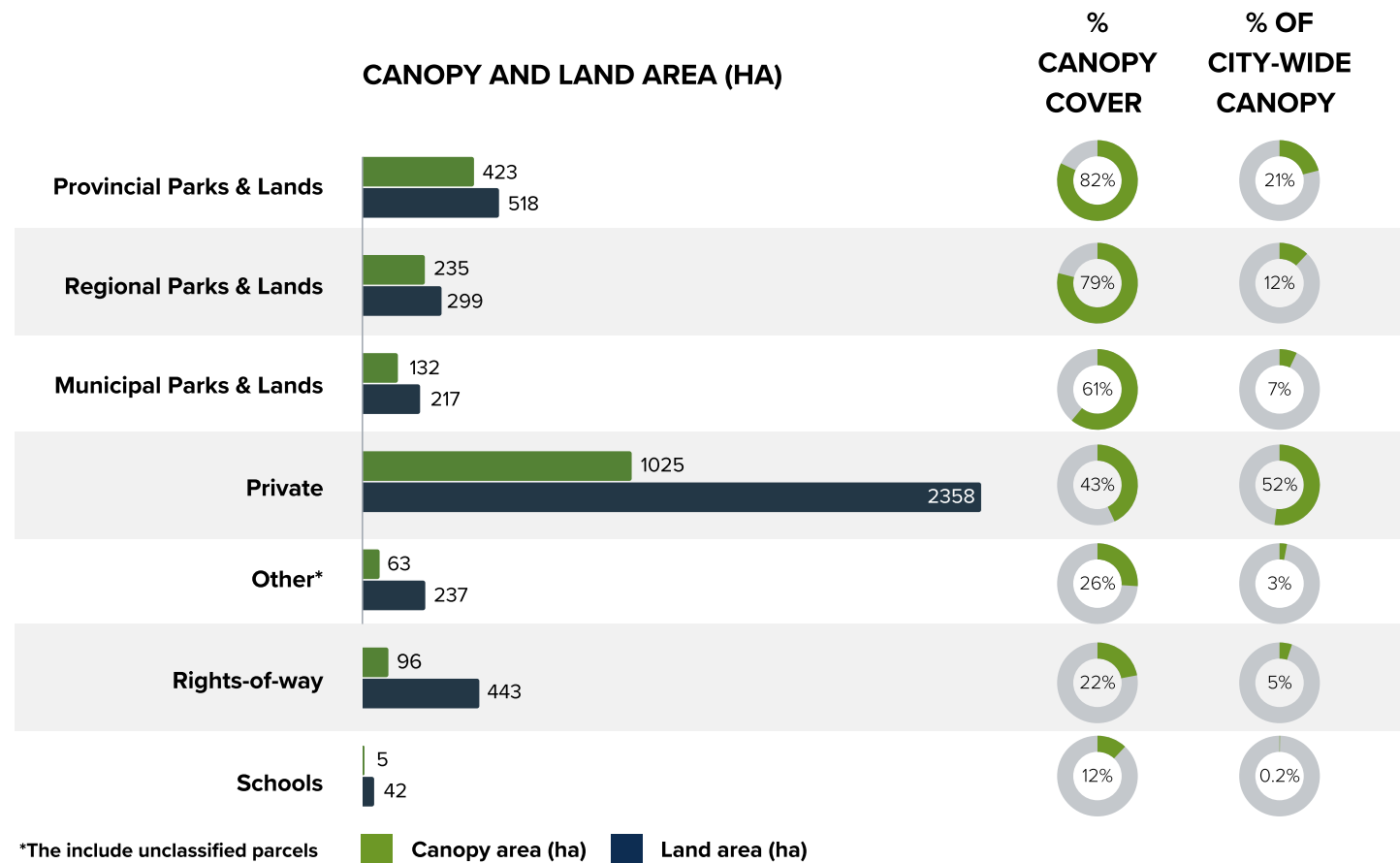


Figure 2-7. Langford's canopy cover by neighbourhood with percent canopy in parks in dark green.

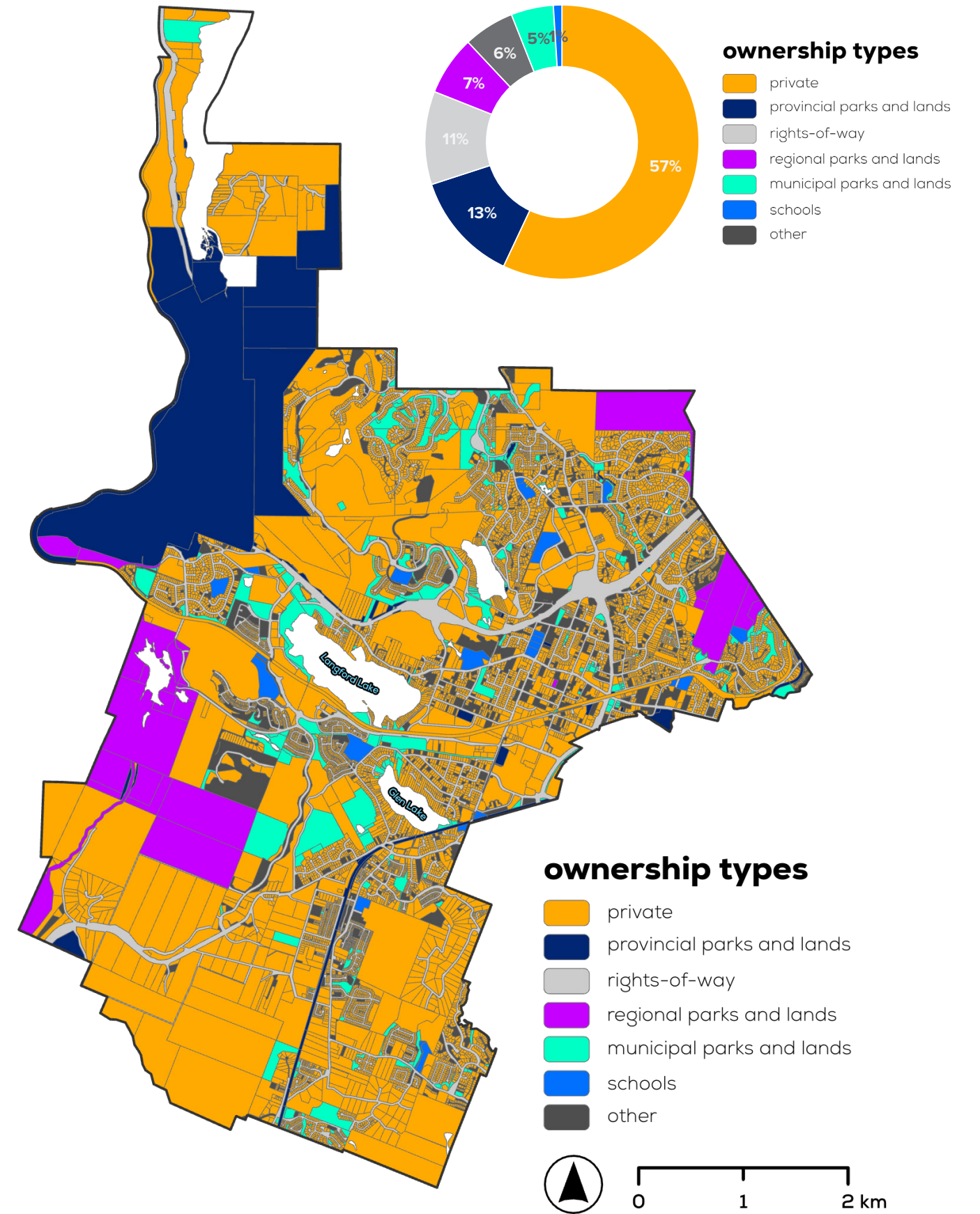


Figure 2-8. Consolidated land manager/ownership types in Langford (map) and proportion of land manager/ownership types in Langford (chart).

2.1.4 canopy by OCP land use

In Langford, the two largest land uses also feature the highest canopy cover: open spaces lead with 82% canopy cover, followed by hillside/shoreline land uses at 55% (Figure 2-10). Both neighbourhoods and agricultural lands have a canopy cover of 32%, while neighbourhood centres have 31% cover. **The more densely populated village centres and city centre have lower canopy covers of 21% and 20%, respectively.** The business/light industrial and mixed-use employment centre land uses have the lowest canopy cover in Langford, at 19% and 15%, respectively. This trend is consistent with many communities in BC, where more densely populated land uses or industrial and employment land uses typically have higher impervious surface cover and lower tree canopy cover.

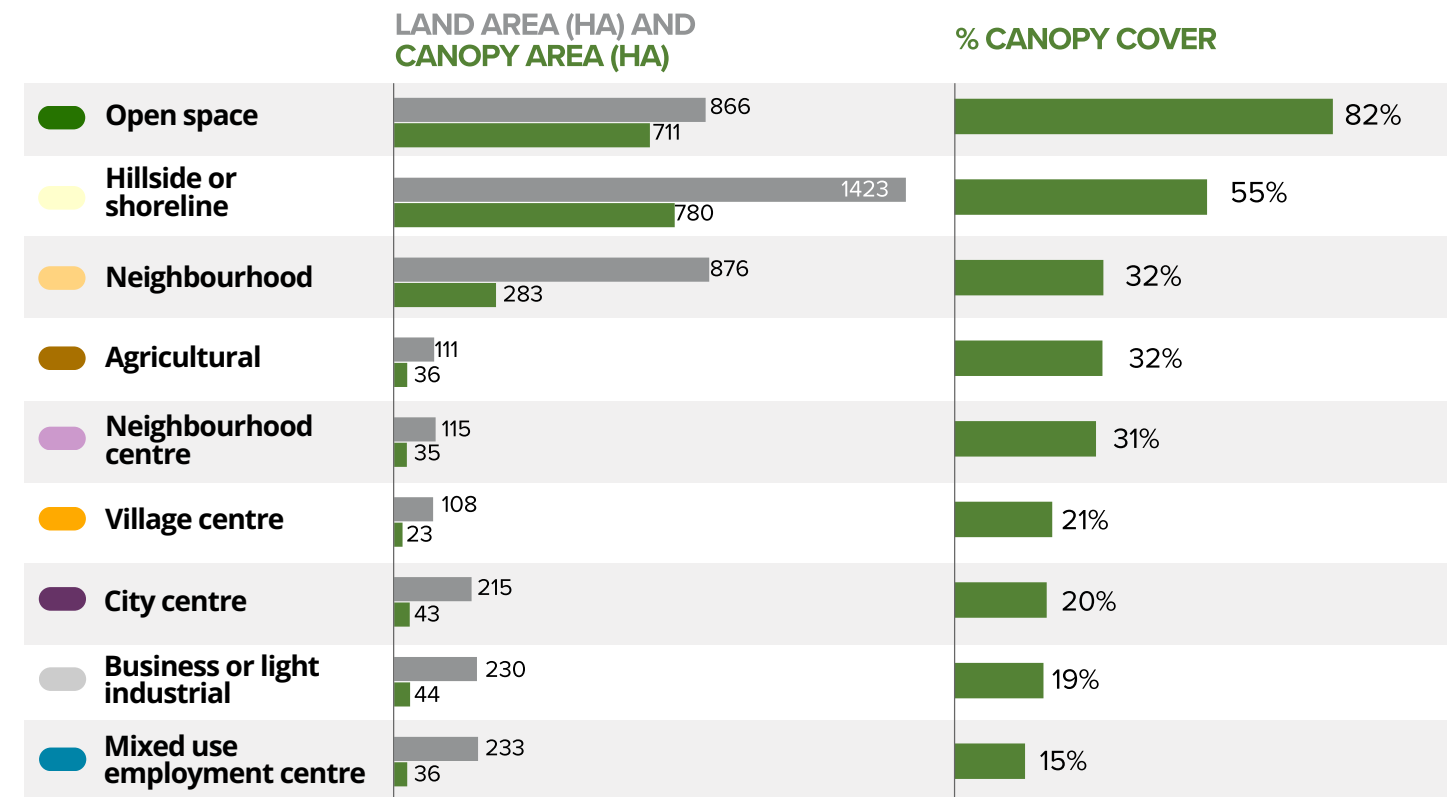


Figure 2-9. OCP land uses summarized by land area (ha), canopy area (ha), and canopy percentages (%).

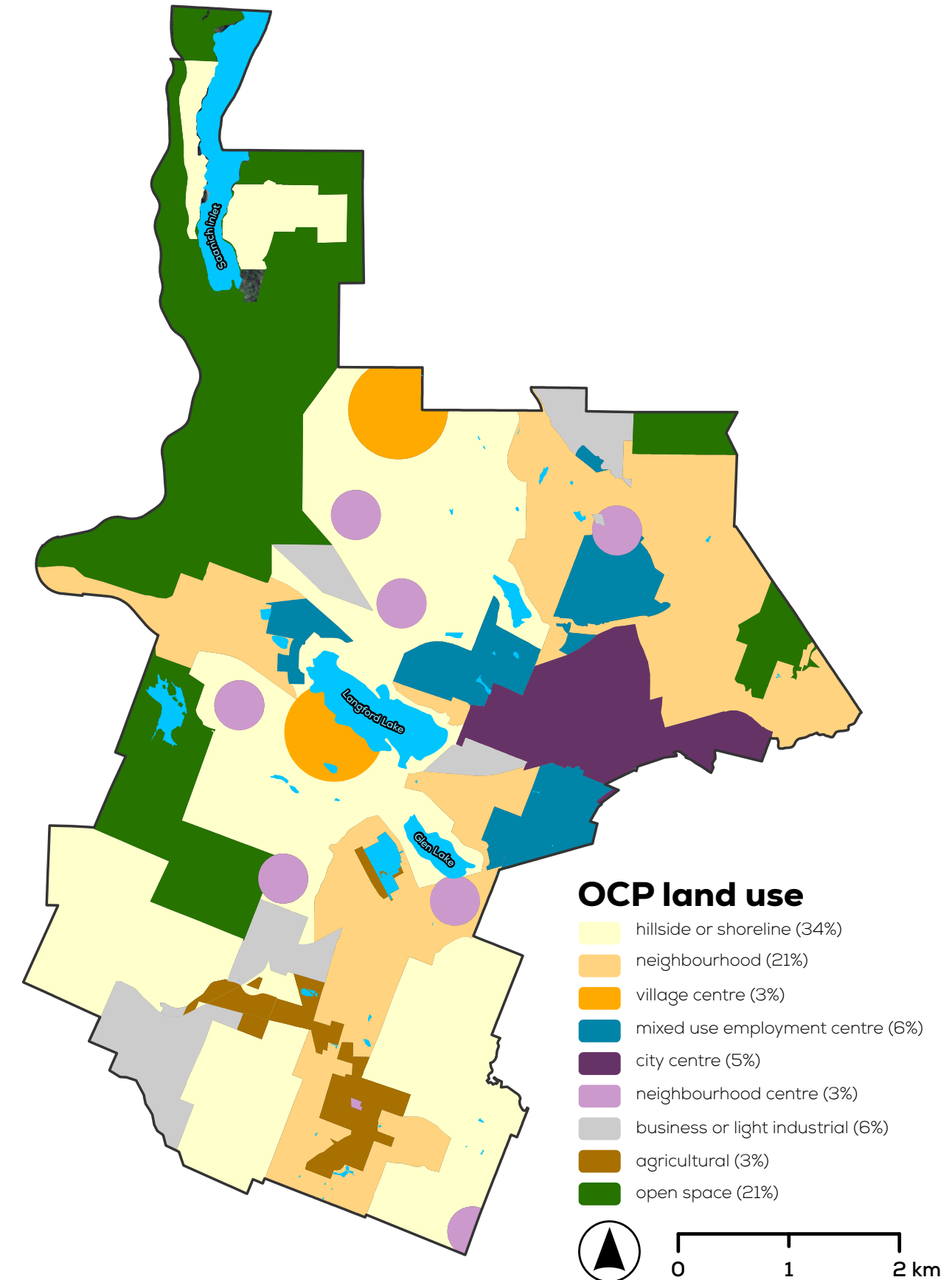


Figure 2-10. Langford OCP land uses.

Box 2. heat and canopy cover

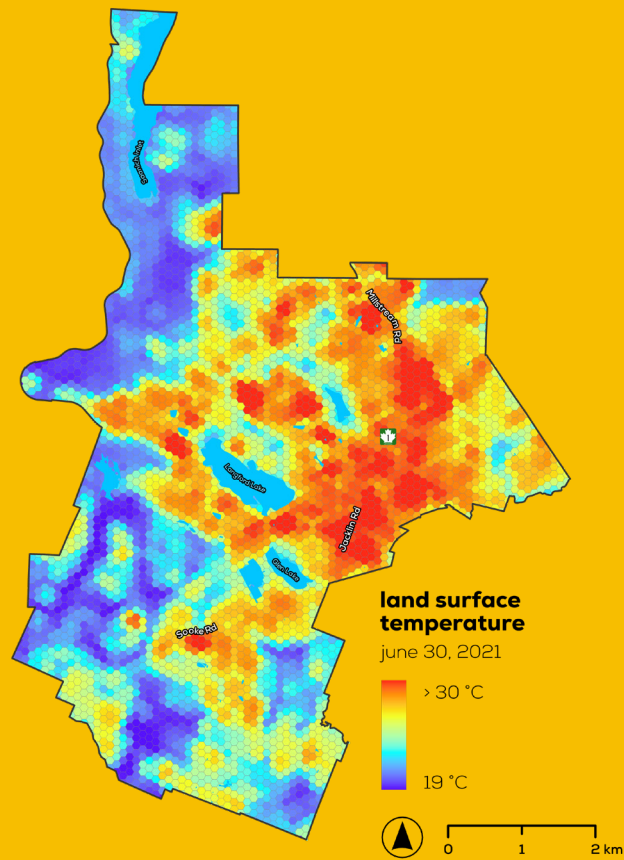


Figure 2-11. Land surface temperature in Langford by one hectare hexagonal grid.

The urban heat island effect, an extensively studied and explained phenomenon, highlights the relationship between impermeable surfaces like buildings and roads, and high temperatures. **Figure 2-11** shows the land surface temperature in Langford on June 30th, 2021, during the heat dome event.

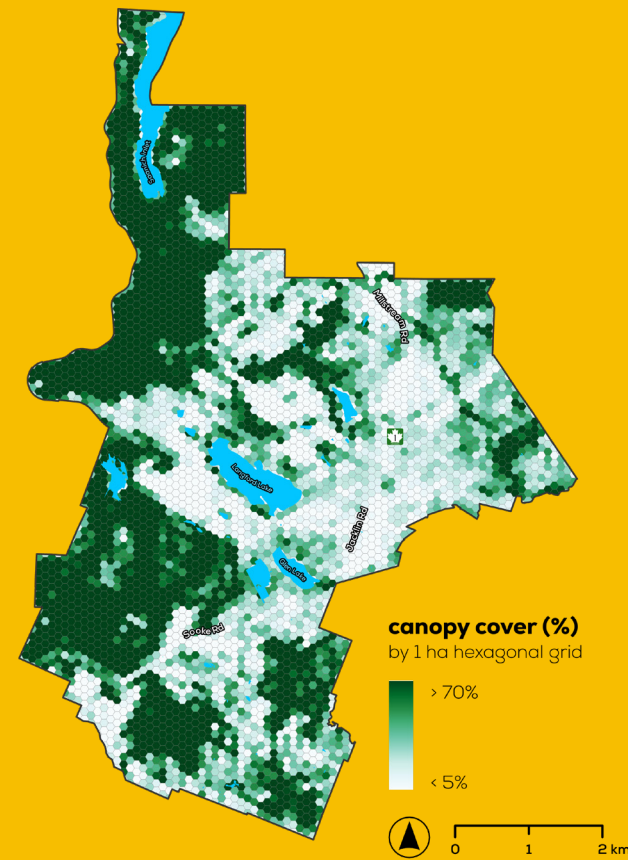


Figure 2-12. Canopy cover in Langford by one hectare hexagonal grid.

The map on the right (**Figure 2-12**) reveals that forested parks throughout the City were up to 12 °C cooler compared to the warmer built-up City Centre and surrounding neighbourhoods.

2.1.5 equity & access

The distribution of canopy cover across Langford is uneven. In some cases, this can mean that not all residents enjoy the same level of access to urban trees and their benefits (including improved air quality, reduced heat island effect, and enhanced mental health). These disparities, sometimes called canopy inequity, can be problematic because some societal issues, such as the impacts of climate change, are experienced differently across demographic, social, and economic profiles. Older adults, for example, are often more vulnerable to extreme heat, and lower income households may not be able to afford cooling systems. To quantify the extent of these disparities in a community, the nonprofit American Forests has previously developed a Tree Equity Score (TES).

The TES is an index value that considers both tree canopy cover and key socio-economic indicators that are generally associated with priority groups. The purpose of the index is to identify areas where the enhancement of tree canopy is needed to support the well-being of Langford's most vulnerable community members. **The TES combines a priority index made up of five socio-economic indicators and combines it with tree canopy gaps (Table 2-1).**

Table 2-1. The five socio-economic indicators used in the priority index.

| indicator | description |
|------------|---|
| climate | land surface temperature, as measured from remote sensing data. |
| income | percentage of people living on incomes below 200% of the federally designated poverty line (less than \$40,000 per annum). |
| age | seniors (age 65+) and children (0-14) as a proportion of working age adults (15-64). |
| ethnicity | percentage of people who belong to visible minority groups, as defined by the Employment Equity Act and, if so, the visible minority group to which the person belongs. |
| employment | percentage of the labour force. |

The application of the TES methodology to the 2022 Canada Census dissemination areas and the 2023 tree canopy data results in the creation of a priority index illustrated in **Figure 2-13**.

The TES in Langford averages 80, and ranges from 44 to 100 (**Figure 2-14**). The lowest scores, indicating the highest need for increased tree equity, are concentrated in the City Centre, North Langford, and the Langford Lake & Glen Lake neighbourhoods. This approach to TES mapping could be used to prioritize future tree planting efforts in the areas with the most significant needs in Langford.

The TES in this report is an interim product which may be refined through subsequent analyses. A final mapping of TES within the City of Langford will be presented through the forthcoming UFMP.

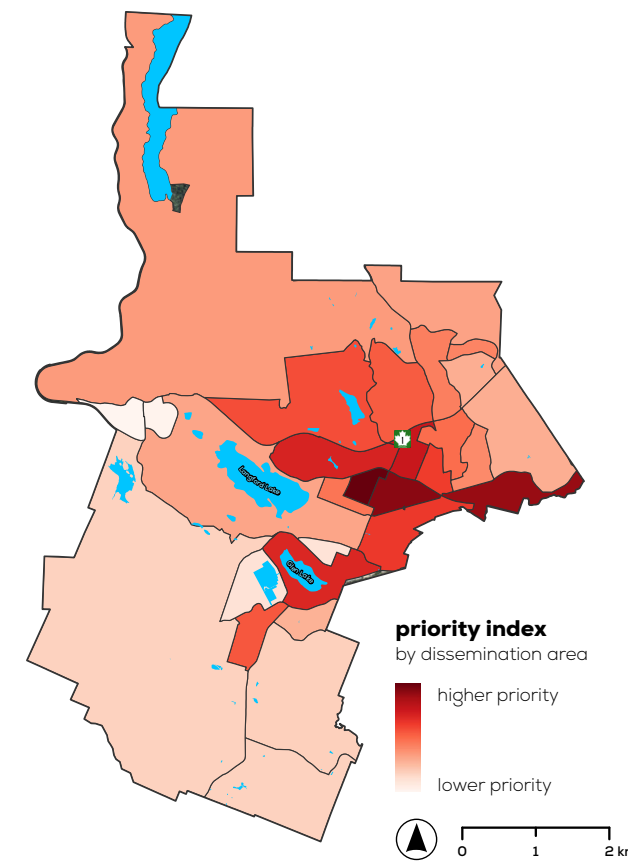


Figure 2-13. Priority index by dissemination areas. Higher priority areas (deep red) have the highest concentration of vulnerable members of the community.



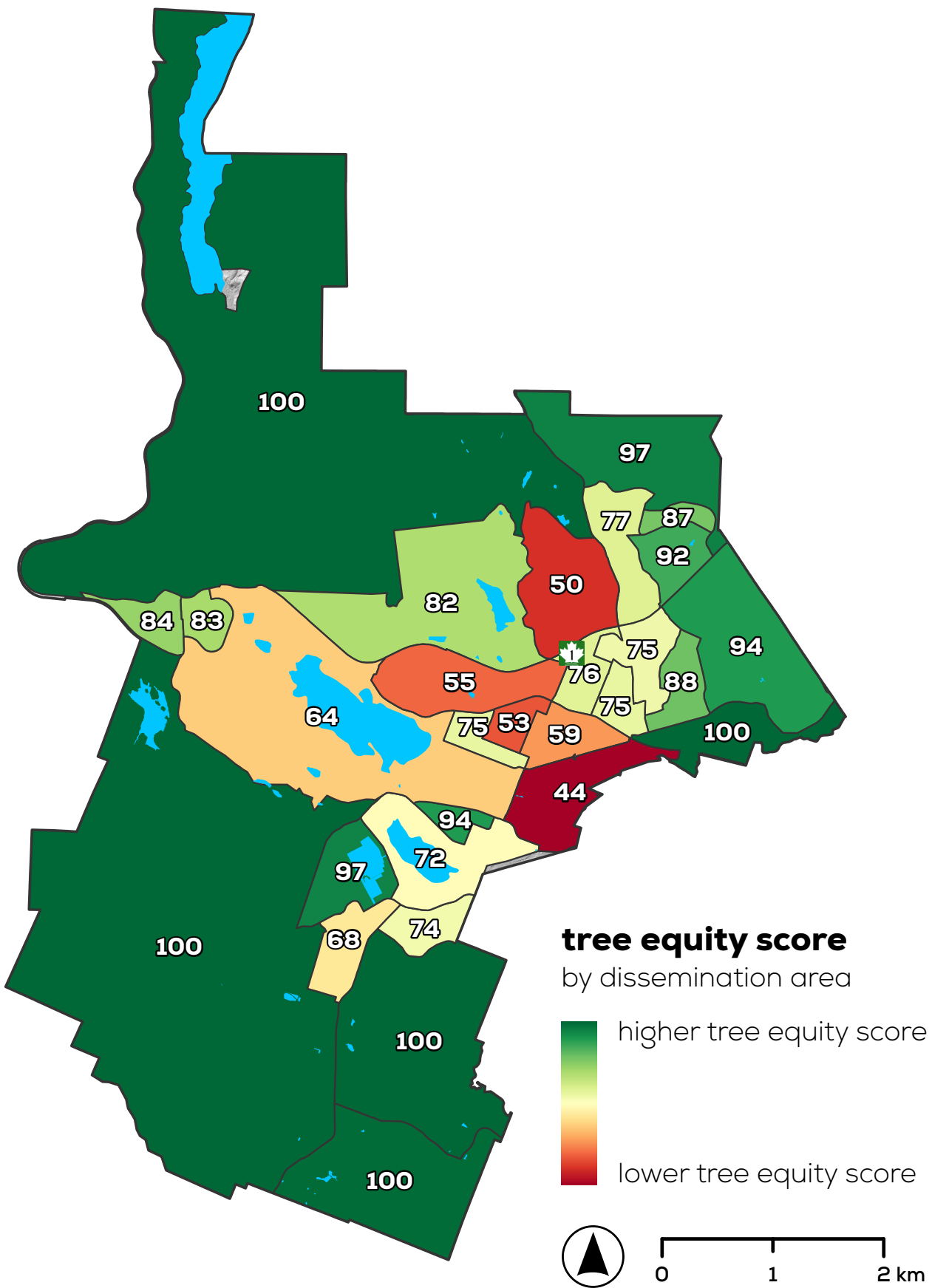


Figure 2-14. Tree Equity Score by dissemination areas.

2.2 canopy change

Since 2000, the University of Maryland has tracked global forest cover change¹. Although the satellite imagery used to generate the dataset cannot identify individual trees, it effectively captures large-scale changes in forest cover. In Langford, significant canopy cover loss has taken place over the past two decades, largely owed to the conversion of forested areas into subdivisions, as depicted in **Figure 2-15**.

Signs of clearing on Bear Mountain are visible in the early 2000s with subsequent clearing extending downslope towards Highway 1. Canopy loss from the Westhills development has been more gradual over the years progressing westward towards Mount Wells Regional Park. In South Langford, the conversion of land for new housing developments, as outlined in the South Langford Neighbourhood Plan, has led to canopy loss. Conversely, areas of canopy growth in Langford are notable on Bear Mountain and the northern tip of Humpback Reservoir where revegetation has occurred.

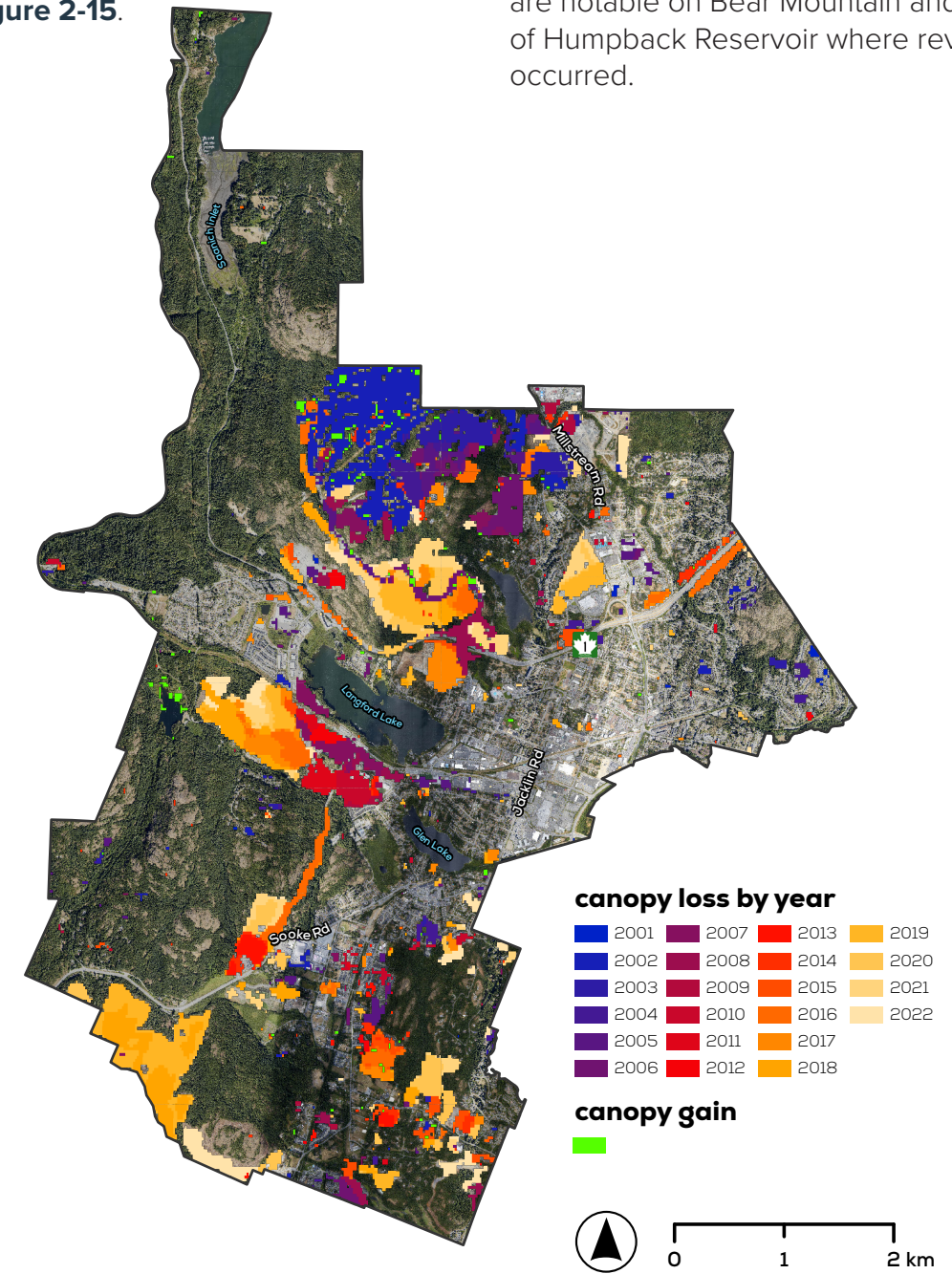


Figure 2-15. Canopy cover loss and gain in Langford between 2001 and 2022.

2.3 natural forests

Trees in natural or semi-natural forest areas make up a large proportion of Langford’s urban forest. **Forested areas make up 88% of Langford’s urban forest canopy (1,739 hectares, or 42% of Langford).** These natural forest areas are located both on private and public lands in Langford. They can range in size from an isolated forest patch of less than 1 hectare in size in an urban area to a 275-hectare intact forest in a park or rural area.

Forest types

The LiDAR analysis used to create the canopy cover dataset can also be used to classify trees into forests in various “successional stages” based on their height and approximate age distribution. In Langford, forests were classified into five classes listed in **Table 2-2. Mature forests and old forests make up two thirds of Langford’s total forests, making up 61% (1065 ha) and 4% (66 ha) of total forest types respectively.** There is also a significant proportion of young forest tall forests which make up 31% of forests (541 ha). Old forests are characterized by trees over 60 meters in height and are present exclusively in Goldstream Provincial Park and Mount Wells Regional Park (**Figure 2-16**).

The data used to map Langford’s canopy (Light Detection and Ranging data, or LiDAR) can also be used to distinguish coniferous from deciduous trees to identify where each type is more common in the city’s natural forests. Coniferous, deciduous, and mixed forests have different species compositions, lifecycles, habitat attributes, and

Table 2-2. Forest type distribution in Langford.

| successional stage | area (ha) | % of forested natural area | % of Langford |
|--------------------------------|--------------|----------------------------|---------------|
| old forest (>60 m)* | 65 | 4% | 1.6% |
| mature forest (30 – 60 m) | 1,065 | 61% | 25.8% |
| young forest tall (20 – 30 m) | 541 | 31% | 13.1% |
| young forest short (10 – 20 m) | 50 | 3% | 1.2% |
| sapling (1 – 10 m) | 18 | 1% | 0.4% |
| Total | 1,739 | 100% | 42.1% |

*the old forest class is biased towards coniferous stands since forest heights were used as a proxy for forest age. Old forests on low productivity sites may be less represented in this class.



other features. Only 75 hectares of Langford’s forested areas (4%) are predominantly deciduous. **The majority of forested natural areas are coniferous (90%) making up 1,559 hectares of forest, while 105 hectares are mixed forests (6%).**

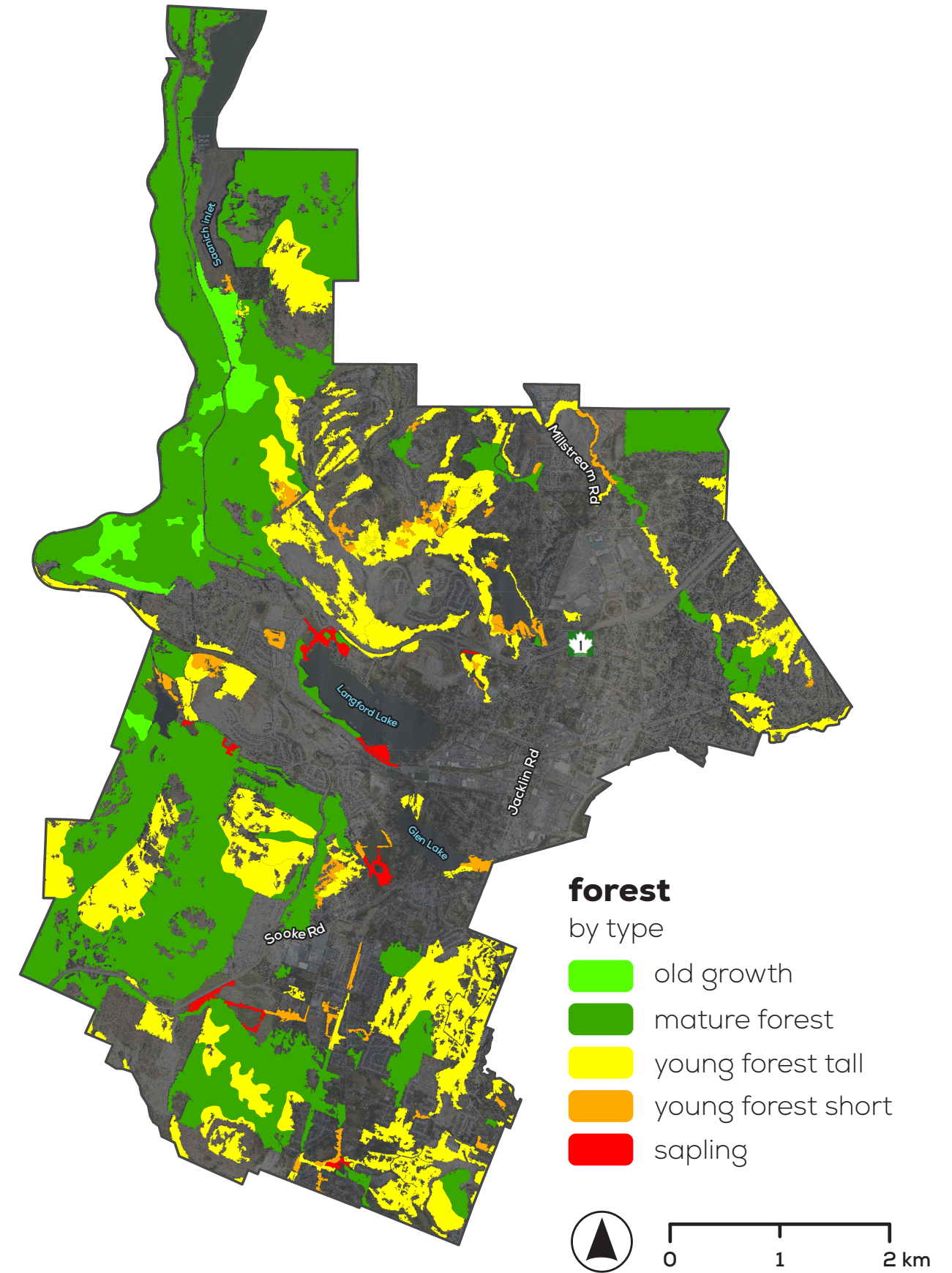


Figure 2-16. Forest structures distribution in Langford.

Box 3. Langford's tallest trees

The City of Langford has some exceptionally tall trees reaching upwards of 80 meters tall, an equivalent of a 19-storey building. Langford's tallest trees are confined to Goldstream Provincial Park (Figure 2-17). These tall trees play a crucial role in providing habitat for wildlife, contributing structural diversity to the forest, and preserving cultural values. These tall trees tend to indicate older forests with high habitat value and are highly valued and priorities to preserve.

The Forestry Department at the University of British Columbia maintains the BC Big Tree Registry with a mandate to “identify, describe, monitor, and conserve the largest trees of each species within British Columbia”. The registry includes a coastal Douglas-fir reaching a height of 80.6 m and a DBH of 2.36 meters last measured in June of 2023.

“Tree is located on a moderately steep slope just at the edge of a small gully. The bark is deeply furrowed with an incredible, almost geometric appearance. The crown, visible from across the road, is prominent and healthy.”

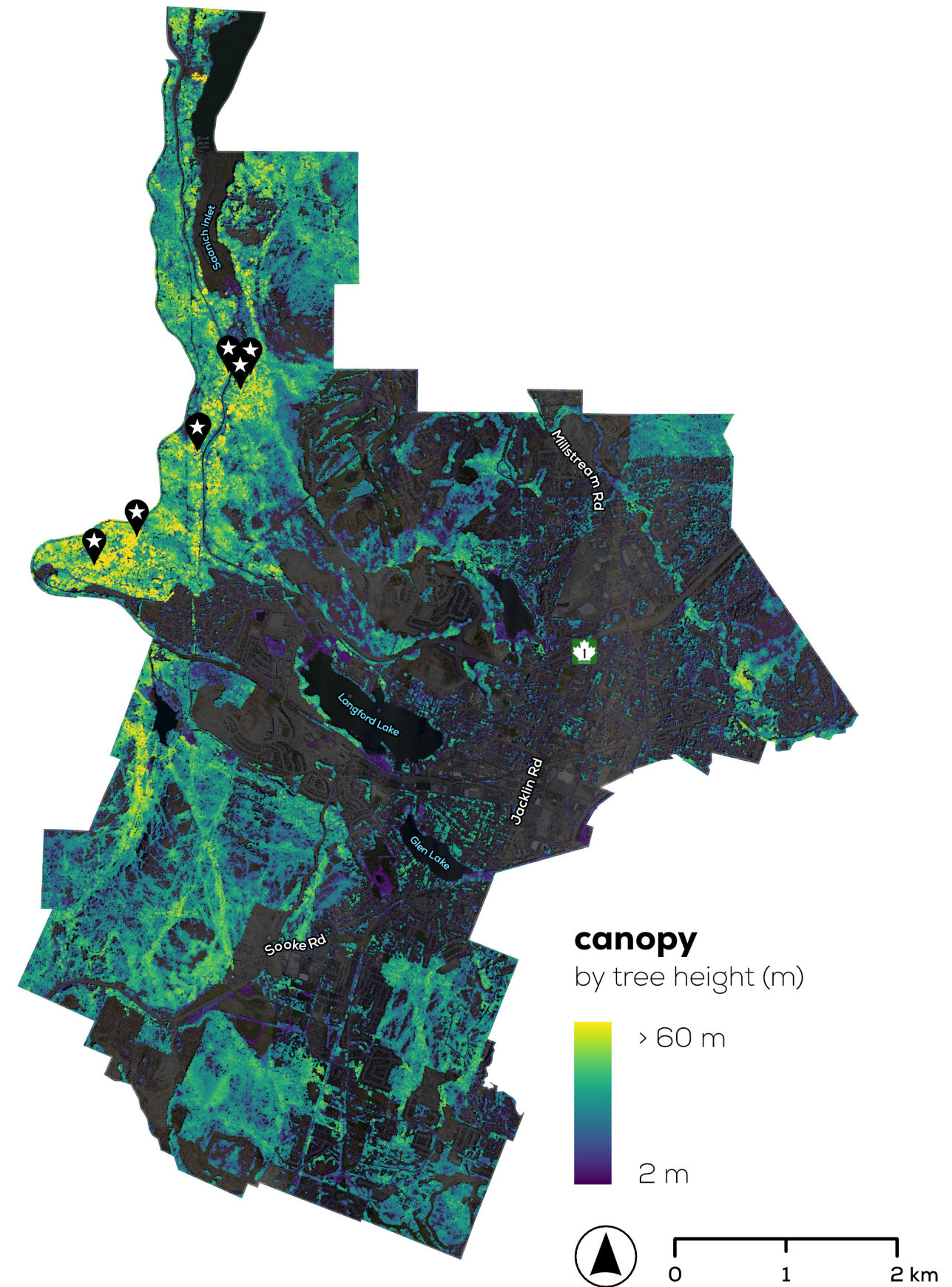
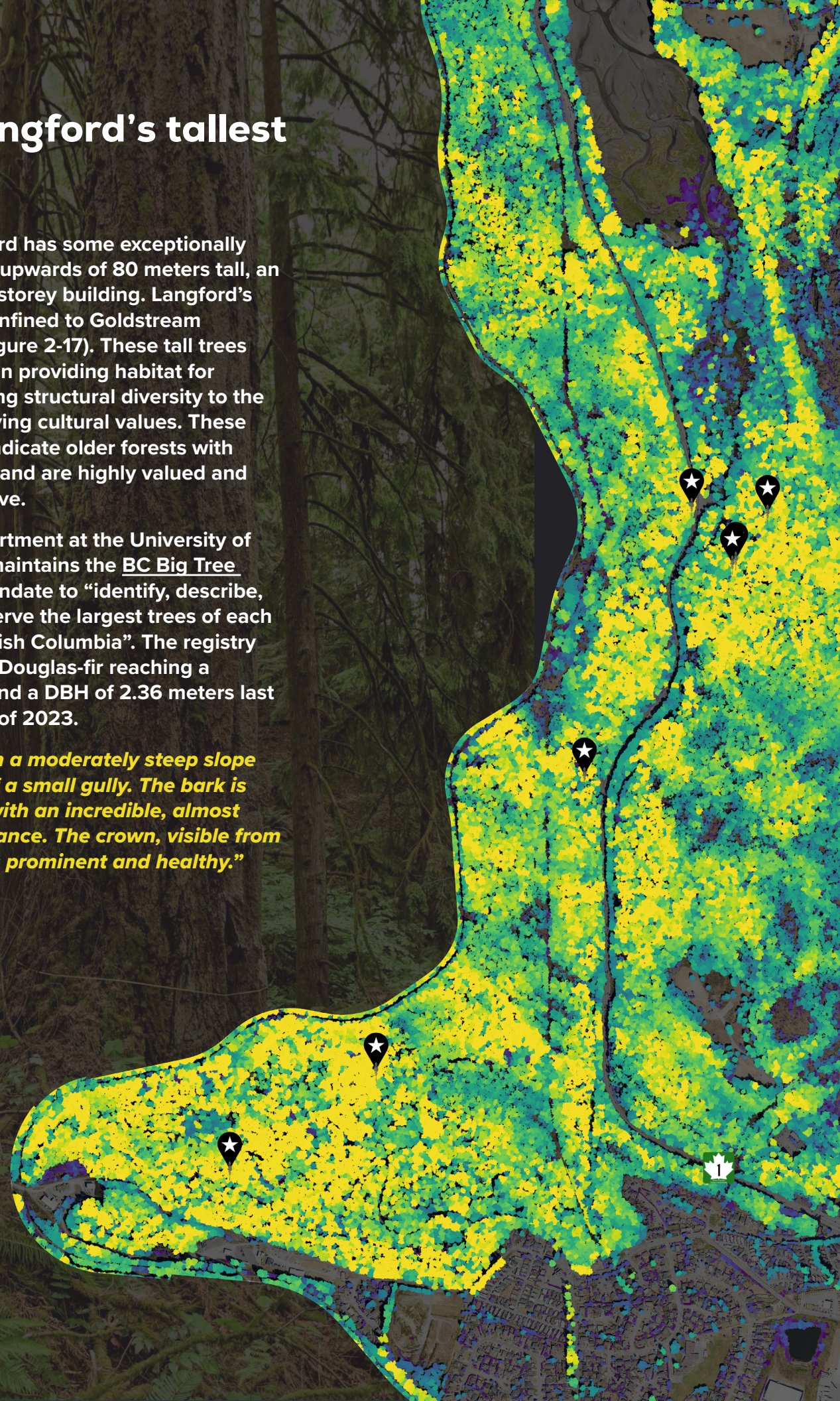


Figure 2-17. Tree height in Langford with tallest trees in black placemarks.

Tree in decline

Dead and declining trees reflect light differently compared to healthy trees. This difference can be exploited to identify and map unhealthy trees and trees in decline (Figure 2-18). In Langford, approximately 8,000 trees in poor health were detected, with three hotspots identified east of Highway 1 in Goldstream Provincial Park, in Mill Hill Regional Park, and in South Langford. These observations should be considered coarse estimates based on remotely sensed LiDAR and orthoimagery data, and have not been validated in the field.

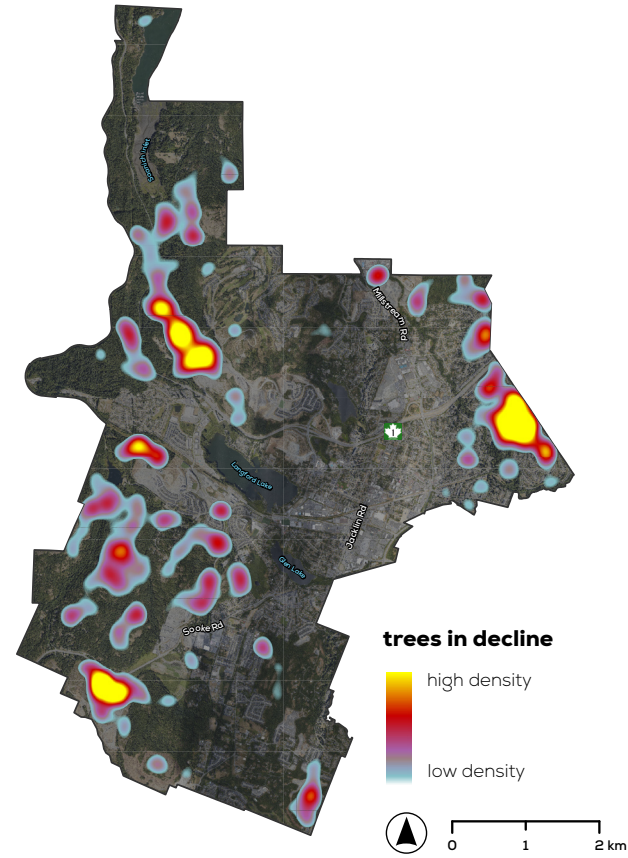


Figure 2-18. Trees showing signs of decline from remote sensing observations.

Box 4. western redcedar decline

Extended periods of drought and rising temperatures over several years are believed to contribute to the decline of western redcedar in regions extending from southern British Columbia to Oregon². Extreme heat can surpass tree tolerances impairing tree function and causing leaf damage. These challenging environmental conditions also pose obstacles for the successful development of root systems in young trees. In the absence of successful root establishment, the survival of these trees becomes challenging during the hot and dry summer months.



2.4 municipal tree inventory

The City of Langford manages an inventory of 6,730 street and planted park trees (Figure 2-19). The inventory includes information about each tree’s location, genus, irrigation type, and ownership. Of the 6,730 trees in Langford’s municipal tree inventory, 6,453 trees are City-owned property and the rest on private property. Of the City-owned trees, 116 trees are temporary greenery installed in decorative containers.

While the inventory offers valuable information regarding the urban trees under the City’s management, there are certain constraints and limitations associated with the data. The inventory lacks information about tree diameter at breast height (DBH), tree age, and tree condition ratings. There are also gaps in the species identification of the trees, as most trees in the inventory are only identified at the genus level with no species information.

The City’s current inventory consists of around 37 genera of trees. **Maples and cherries are the most abundant genera making up 15% and 14% of the inventory respectively (Figure 2-19).** Magnolias make up 5% of the inventory while oaks and tulip trees represent 4% of the inventory.

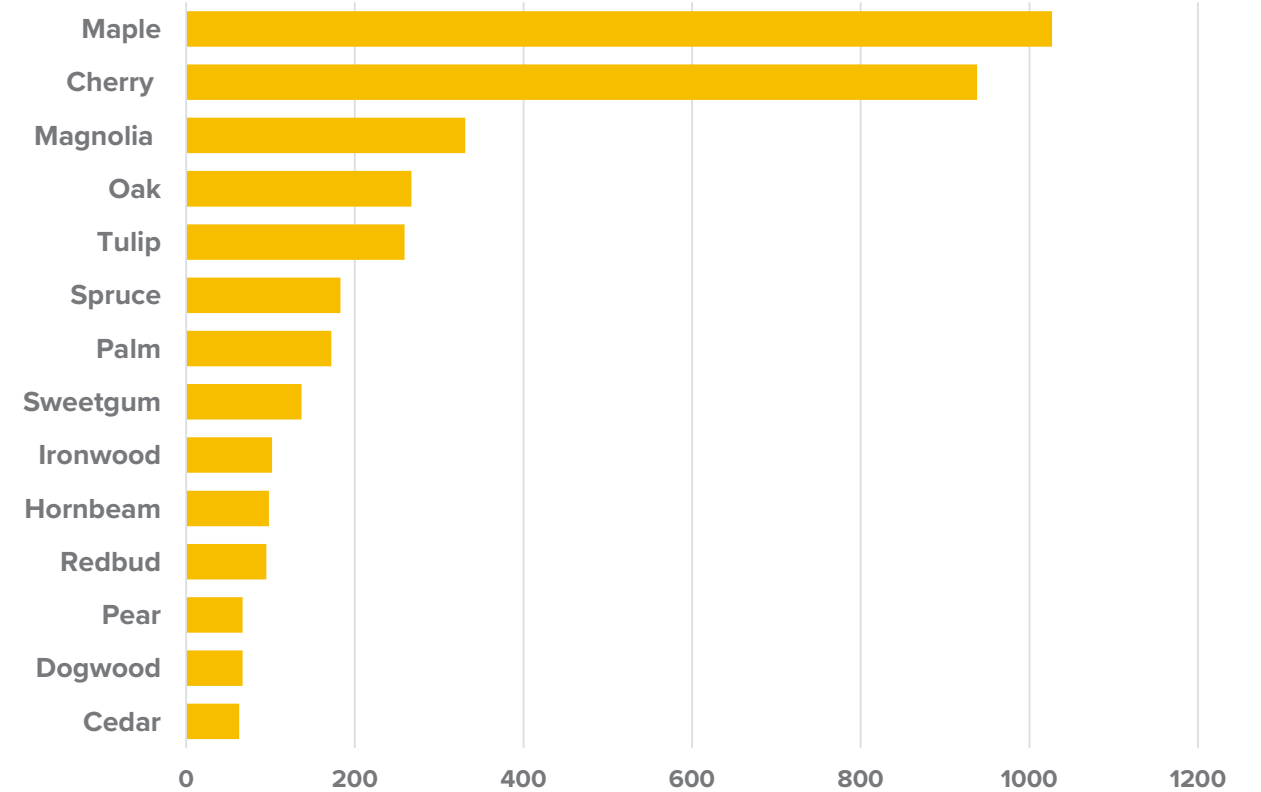
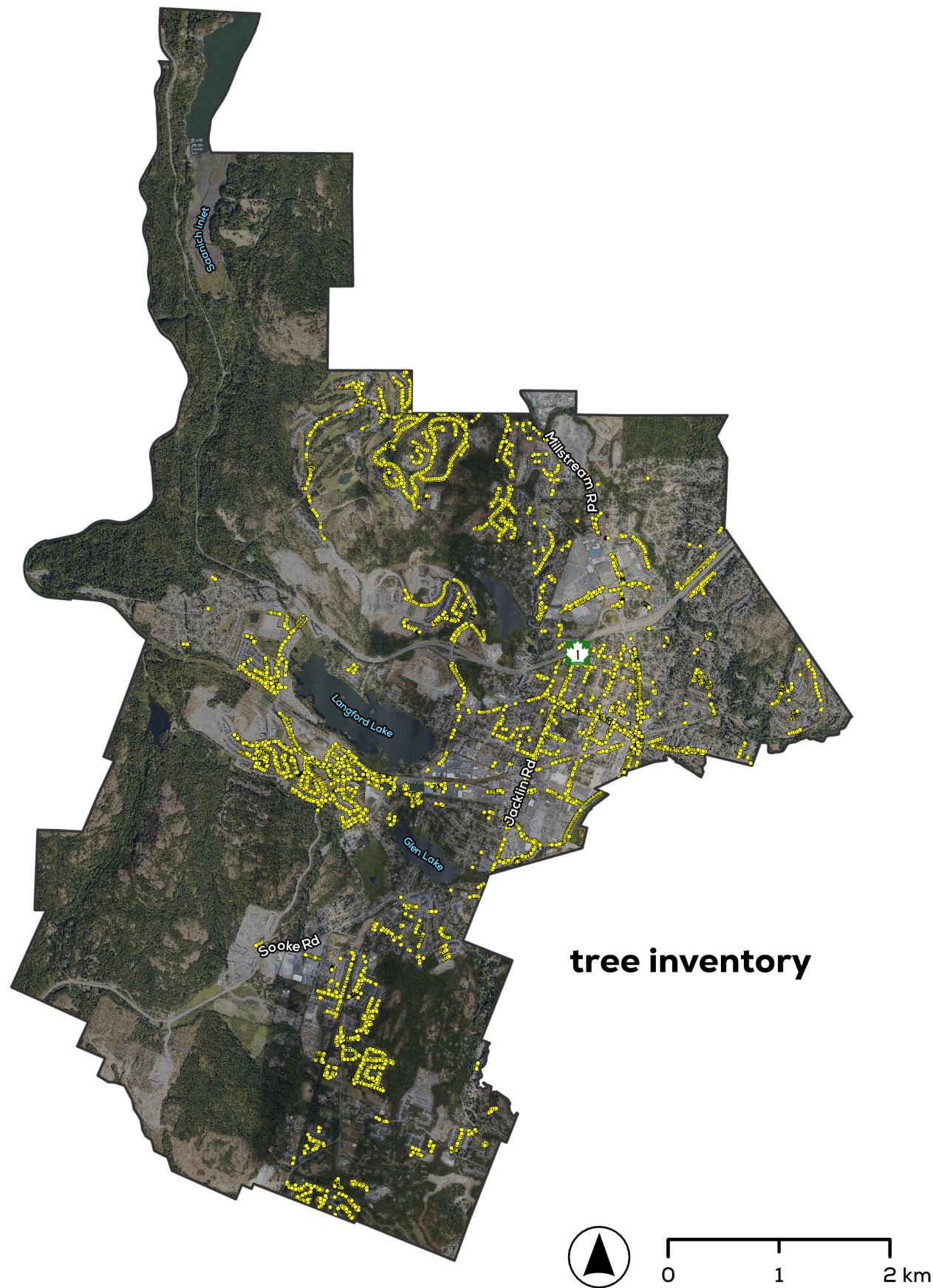


Figure 2-19. Most abundant genera in the Langford tree inventory.



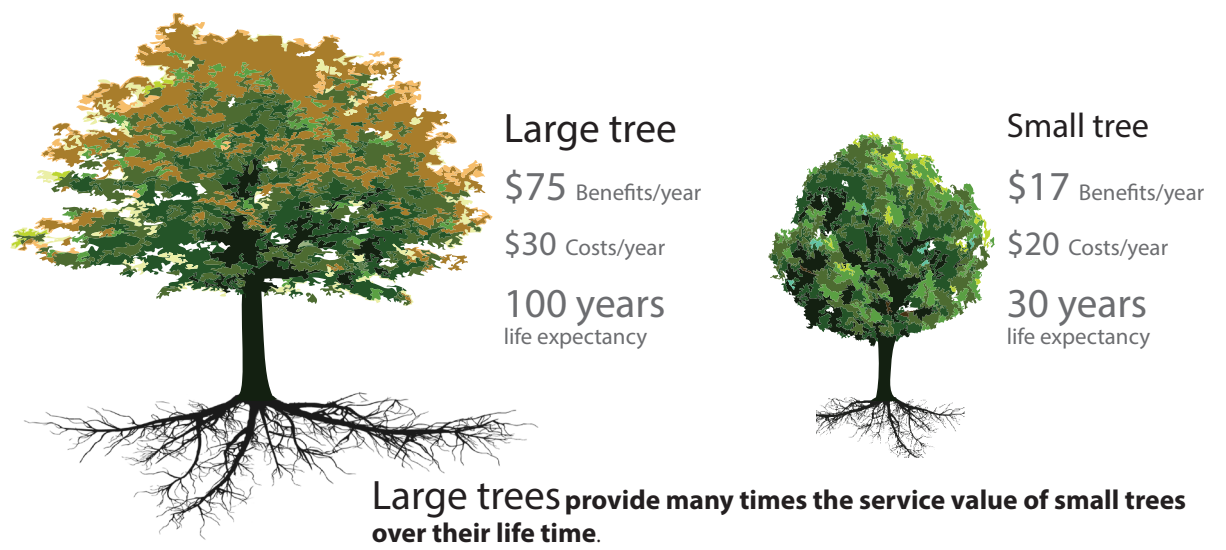
tree inventory

2.5 ecosystem services

Valuing the benefits provided by urban forests is one way to recognize the contribution of nature to the quality of urban environments. Valuations can capture a range of ecosystem services, such as carbon storage and air quality improvement, that can be quantified using tools such as the USDA Forest Service’s i-Tree Canopy (<https://canopy.itreetools.org/>) and i-Tree Eco tools (<https://www.itreetools.org/tools/i-treeeco>). i-Tree Canopy estimates the value of ecosystem services based on canopy coverage area, while i-Tree Eco utilizes detailed data from individual tree inventories to calculate benefits.

In Langford, the tree canopy stores an estimated 152,000 tons of carbon, valued at \$36 million, and captures an additional 5,100 tons of carbon annually, with a yearly value of \$1.2 million (Table 2-3). Langford’s urban forest also delivers over \$2.5 million worth of services related to air quality each year, in addition to its carbon storage and sequestration benefits.

Though smaller in scope, Langford’s street tree inventory still delivers considerable ecosystem services, storing around 1,000 tons of carbon (valued at \$117,000) and sequestering an extra 40 tons of carbon annually. According to i-Tree Eco estimates, the structural replacement value of Langford’s tree inventory is an estimated \$6.1 million. This structural value represents the hypothetical cost of replacing the entire inventory with trees of similar condition and size.



Note: the i-Tree Eco values for street trees are expected to be an underestimate because the inventory did not contain diameter measurements for trees. The ecosystem service benefit values used estimated diameters from an allometric equation based on tree height, yielding a maximum diameter of 90 cm. The structural replacement value is based on a replacement cost of \$750 per tree (planting and establishment costs), and i-Tree’s fitted values relating tree measures to the valuation procedures of the Council of Tree and Landscape Appraisers.

Figure 2-20. Langford’s public tree inventory.

Table 2-3. City of Langford ecosystem services generated by all canopy cover within Langford (i-Tree Canopy).

| i-Tree canopy | | |
|---------------------------------------|--|---------------------|
| ecosystem service | service estimates | dollar value |
| carbon & stormwater | | |
| C Sequestered annually in trees (t) | 5,115 | \$1,220,200 |
| C Stored in trees (t) | 152,361 | \$36,345,800 |
| avoided runoff (L) | 552,223,051 | \$1,678,800 |
| air quality | | |
| CO removed annually (kg) | 1,546 | \$2,900 |
| NO ₂ removed annually (kg) | 15,603 | \$6,100 |
| O ₃ removed annually (kg) | 110,433 | \$421,500 |
| PM10 (kg) | 32,614 | \$290,100 |
| PM2.5 (kg) | 8,525 | \$1,858,900 |
| SO ₂ (kg) | 5,988 | \$900 |
| total air pollution removed (kg) | 174,710 | \$2,580,400 |
| | total annual service value | \$5,479,400 |
| | total non-repeating service value | \$41,825,200 |



The runoff intercepted by Langford's urban forest could fill 220 Olympic swimming pools, every year.



The carbon sequestered by Langford's urban forest offsets the CO₂ emissions from more than 4,000 average passenger vehicles, every year.



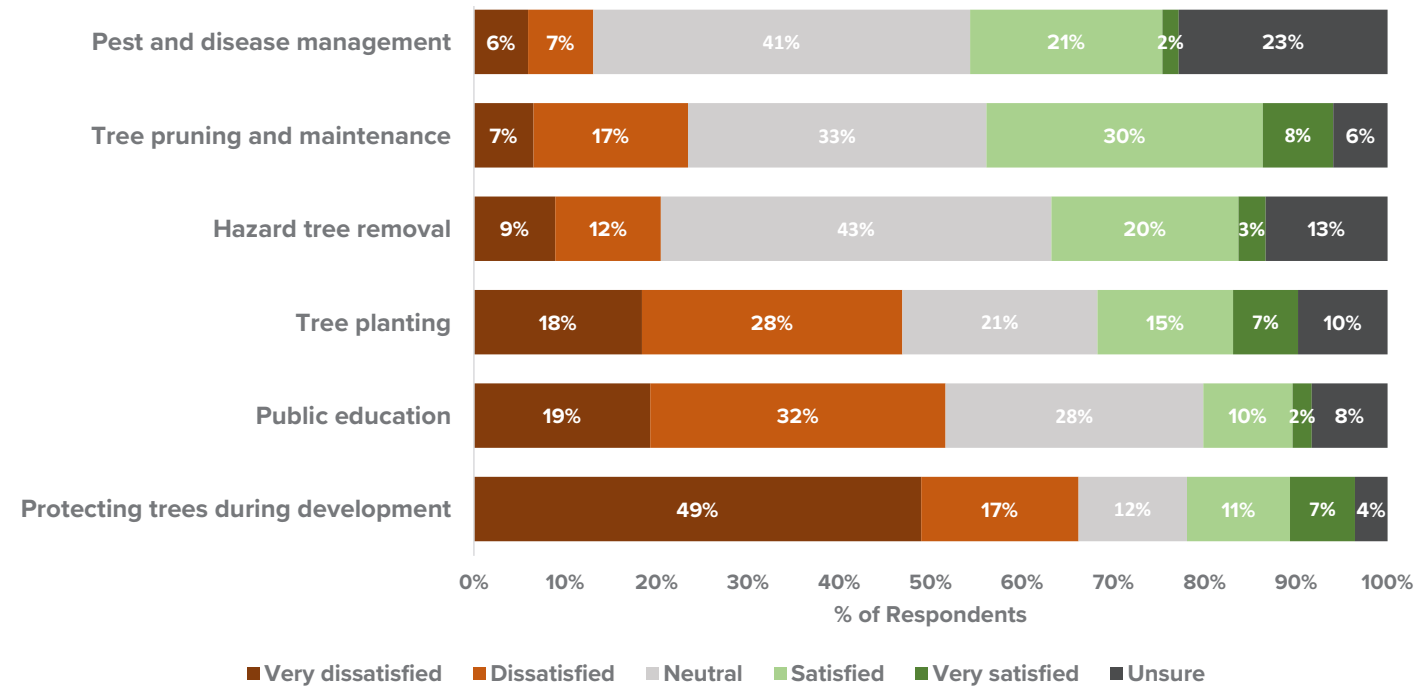


Figure 3-4. Satisfaction levels with current urban forest management service levels in Langford (total respondents = 337).

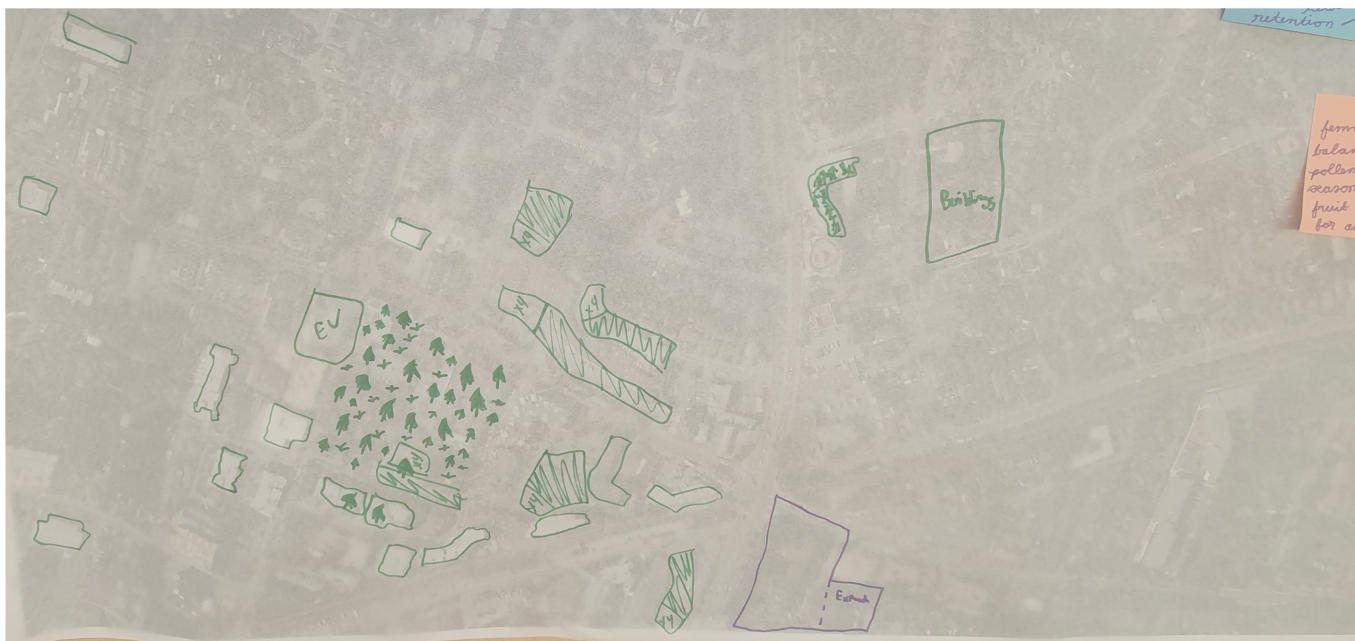
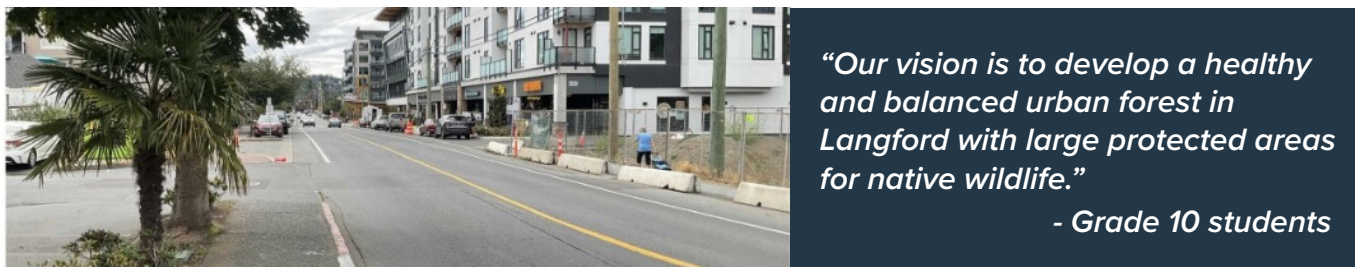


Figure 3-5. Secondary school student notes on improvements of the Langford downtown area.

Places tool

Places that are highly valued through the mapping tool were found throughout Langford, with concentrations in the downtown municipal parks and along Glen Lake Road for the mature trees and shading effects (**Figure 3-6**). Respondents also valued the stormwater management system at Glen Lake and the western extent of Langford Lake for its habitat value.

Places that need improvements were concentrated around highly impervious areas of Langford like the mixed-use employment centre as well as recently cleared forested areas in the Westhills neighbourhood and at the foot of Bear Mountain (**Figure 3-7**).

“The canopy in residential streets around Glen Lake provide excellent shade, cooling in summer, and habitat for so many birds including eagles, hawks, and owls. Please protect and where possible, enhance this canopy with native species.”
- Survey respondent

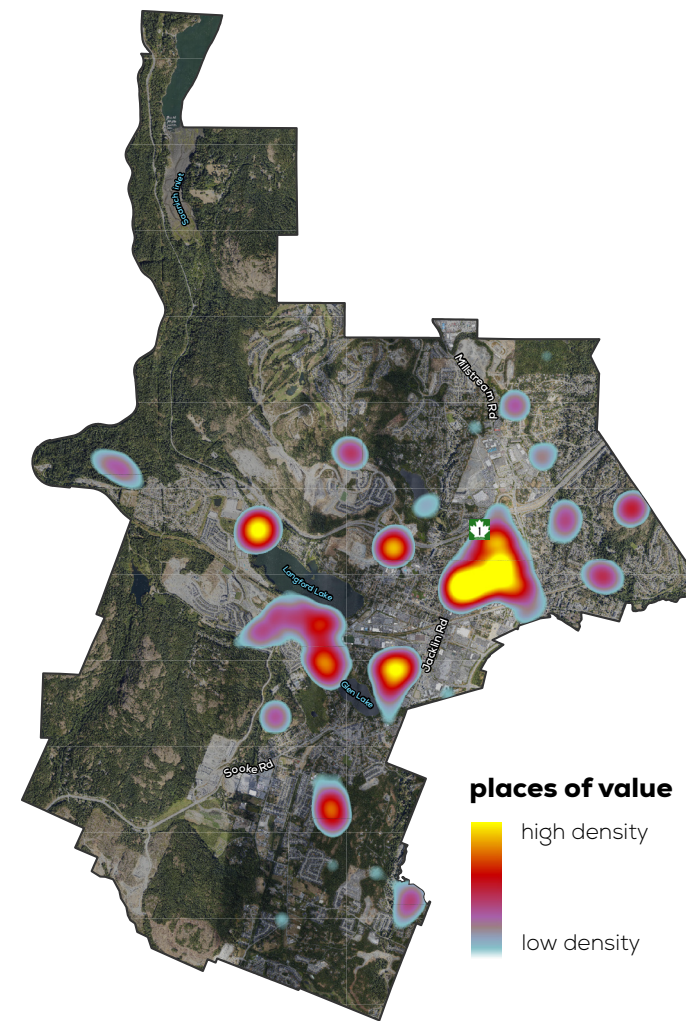


Figure 3-6. Urban forest places valued by respondents (points = 161).

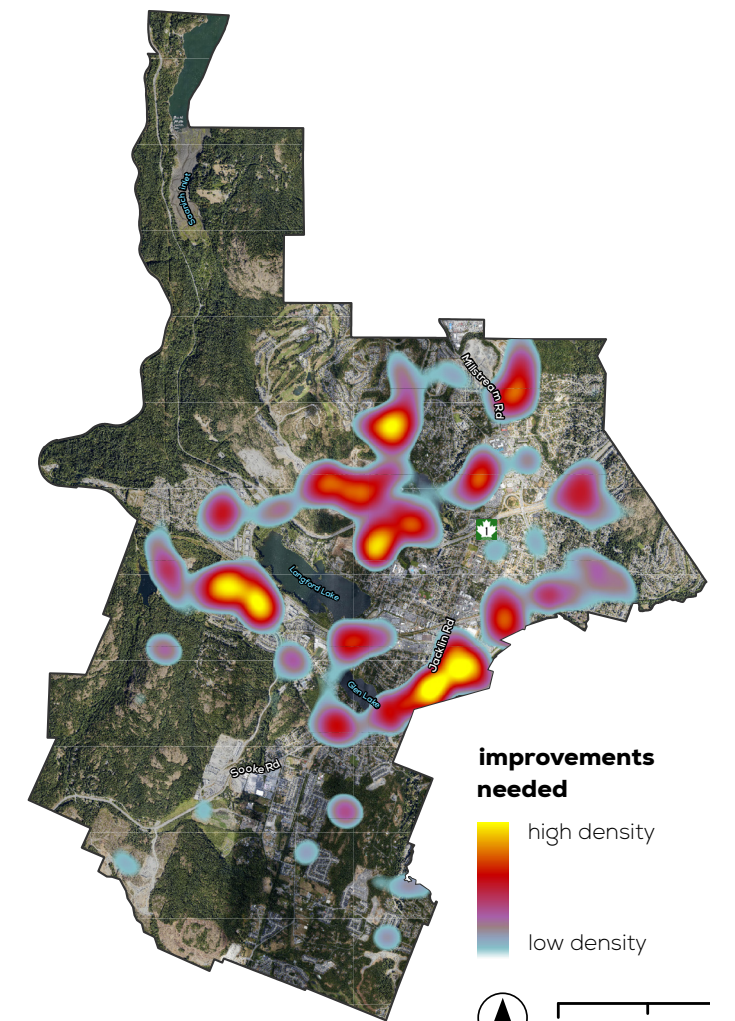


Figure 3-7. Urban forest places needing improvements (points = 279).

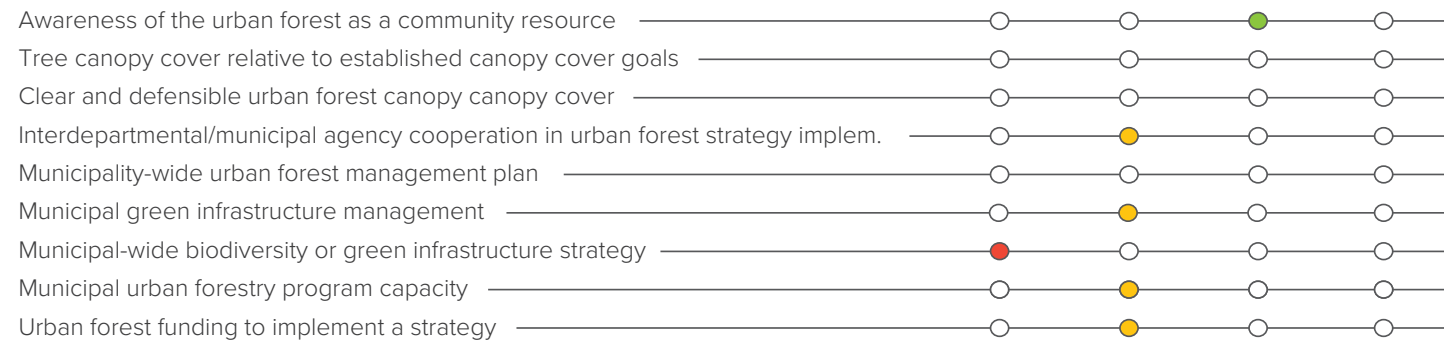
Part 4 report card



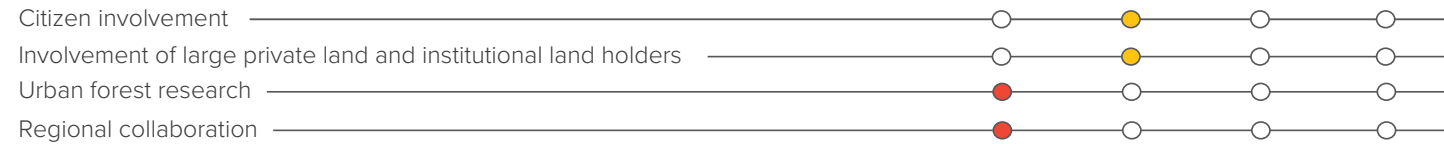
The urban forest report card uses a “criteria and indicators” approach to evaluate the City’s urban forest program. The approach used is based on the framework for sustainable urban forest management prepared by Leff³ and adapted to suit Langford’s context^{4,5,6,7}. Criteria are areas of performance (just like math, science, or language

arts on a school report card). The indicators are performance assessments that describe urban forest program components as “poor”, “fair”, “good”, or “optimal”. To review the detailed criteria and indicator statements, see **Appendix A**.

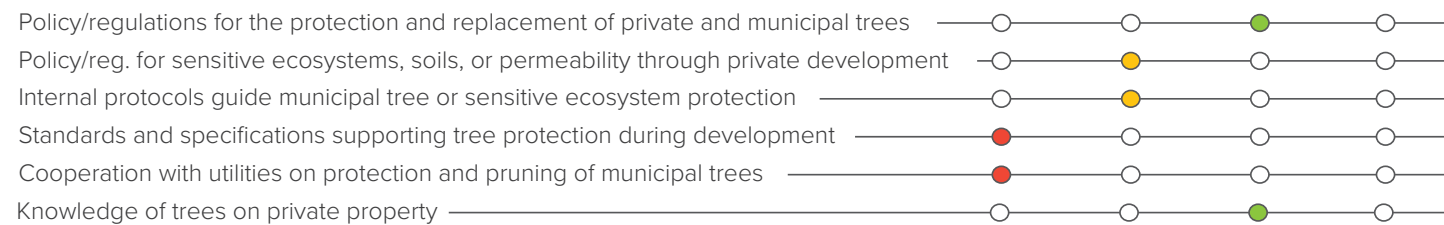
THEME: PLANNING & INTEGRATION



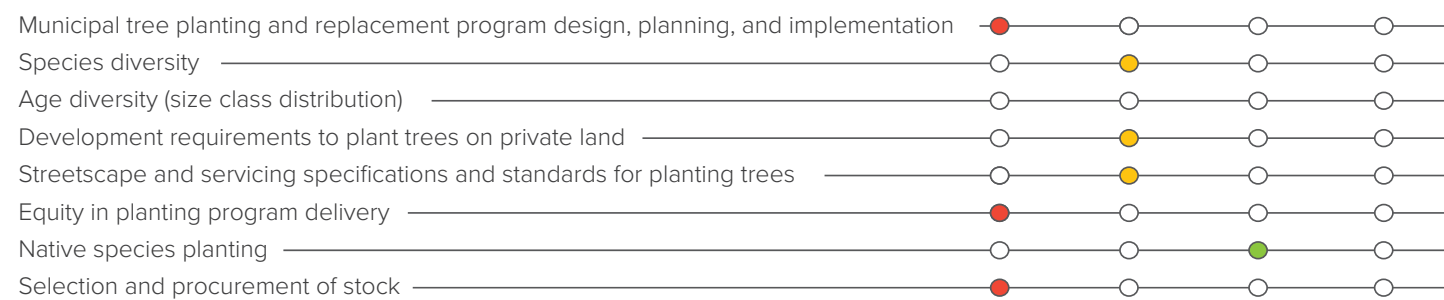
THEME: COMMUNITY ENGAGEMENT & STEWARDSHIP



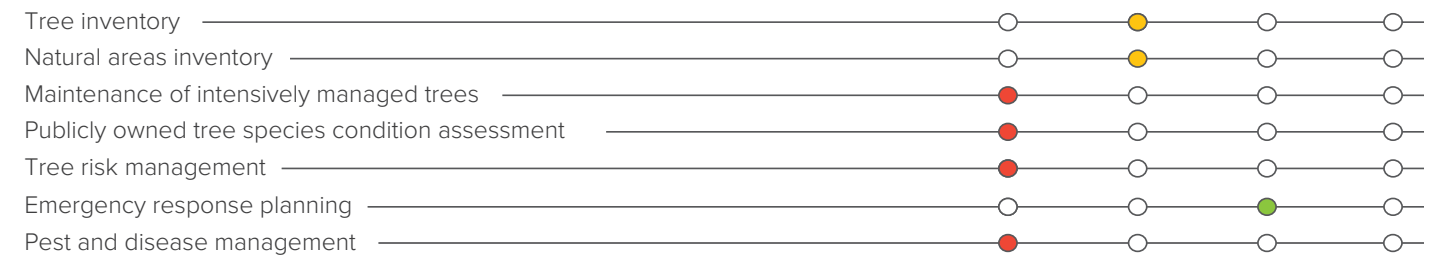
THEME: PROTECTING TREES



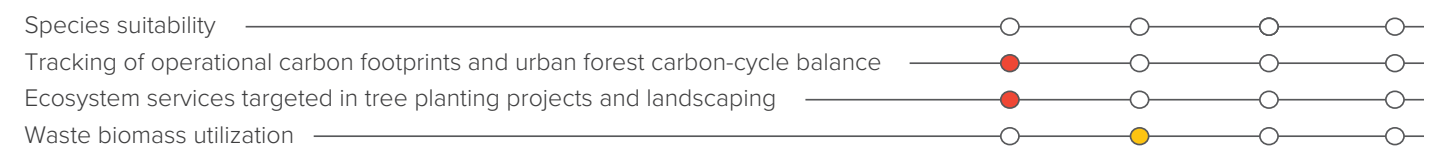
THEME: PLANTING TREES AND CREATING SPACE



THEME: TREE HEALTH & RISK MANAGEMENT



THEME: CLIMATE CHANGE ADAPTATION & MITIGATION



references

- 1 M. Hansen, P. Popapov, and Moore, “High-Resolution Global Maps of 21st-Century Forest Cover Change,” *science*, vol. 342, no. 6160, pp. 850–853, 2013.
- 2 J. Hulbert, M. Elliot, and G. Chastagner, “Forest Health Watch: community science to accelerate research about the dieback of western redcedar in the Pacific Northwest,” 2021.
- 3 M. Leff, “The sustainable urban forest: a step-by-step approach,” U.S. Department of Agriculture, Forest Service, Northern Research Station, Philadelphia Urban Field Station, Philadelphia, PA, Frwk, 2016. [Online]. Available: <https://urbanforestrysouth.org/resources/library/tresources/the-sustainable-urban-forest-guide-a-step-by-step-approach>
- 4 S. Barron, S. Sheppard, and P. Condon, “Urban Forest Indicators for Planning and Designing Future Forests,” *Forests*, vol. 7, no. 12, p. 208, Sep. 2016, doi: 10.3390/f7090208.
- 5 W. A. Kenney, P. van Wassenauer, and A. Satel, “Criteria and Indicators for Strategic Urban Forest Planning and Management,” *Arboric. Urban For.*, vol. 37, no. 3, pp. 108–117, May 2011, doi: 10.48044/jauf.2011.015.
- 6 J. Clark and N. Matheny, “A Model of Urban Forest Sustainability: Application to Cities in the United States,” *Arboric. Urban For.*, vol. 24, no. 2, pp. 112–120, Mar. 1998, doi: 10.48044/jauf.1998.014.
- 7 Sustainable Forestry Initiative, “SFI Urban and Community Forest Sustainability Standard.” May 16, 2023. [Online]. Available: <https://forests.org/wp-content/uploads/SFIUrbanCommunityForestStandard.pdf>

appendices

Appendix A: Urban Forestry ‘Report Card’

The criteria and indicators table is based on the following sources:

- Davey Institute / USDA Forest Service: The Sustainable Urban Forest a Step-by-Step Approach (2016). Available online at www.itreetools.org/resources/content/Sustainable_Urban_Forest_Guide_14Nov2016.pdf
- Barron, S., Sheppard, S.R.J. and P.M. Condon: Urban Forest Indicators for Planning and Designing Future Forests (2016). Available online at: www.mdpi.com/1999-4907/7/9/208/htm
- Kenney, W.A., van Wassenauer, P.J.E. and A.L. Satel: Criteria and Indicators for Strategic Urban Forest Planning and Management (2011). Available online at: https://joa.isa-arbor.com/article_detail.asp?JournalID=1&VolumeID=37&IssueID=3&ArticleID=3192
- Clark, J.R., Matheny, N.P., Cross, G. and V. Wake: A model of Urban Forest Sustainability (1997). Available online at: fufc.org/soap/clark_sustainability_model.pdf

The Sustainable Forestry Initiative has released a draft of its upcoming certification standard for urban forests. Once adopted, this standard is expected to become widely adopted in North America and may be useful for future comparison or progress reporting:

- Sustainable Forestry Initiative: SFI Urban and Community Forest Sustainability Standard (2021). Available online at: <https://www.forests.org/wp-content/uploads/SFI-Urban-and-Community-Forest-Sustainability-Standard-%E2%80%93-November-1-2021.pdf>

| Assessment criteria | Objective | Indicator for community forestry performance | | | |
|---|--|---|---|--|--|
| | | Langford's 2024 Rating: | | | |
| | | Poor | Fair | Good | Optimal |
| PLANNING AND INTEGRATION | | | | | |
| Awareness of the urban forest as a community resource. <i>Note: Langford's OCP contains policy supportive of the urban forest.</i> | The urban forest is recognized as vital to the community's environmental, social, and economic well-being. | General ambivalence or negative attitudes about trees, which are perceived as neutral at best or as the source of problems. Actions harmful to trees may be taken deliberately. | Trees are widely acknowledged as providing environmental, social, and economic services but are not widely integrated in corporate strategies and policies. | Trees are widely acknowledged as providing environmental, social, and economic services and urban forest objectives are integrated into other corporate strategies and policies. | Urban forest recognized as vital to the community's environmental, social, and economic well-being. Widespread public and political support and advocacy for trees, resulting in strong policies and plans that advance the viability and sustainability of the entire urban forest. |
| Relative tree canopy cover. <i>Note: desired canopy cover not yet identified.</i> | Achieve desired degree of tree cover, based on potential or according to goals set for entire municipality and for each neighbourhood or land use. | The existing canopy cover, as measured across the municipality, is <50% of desired. | The existing canopy cover, as measured across the municipality, is 50%-75% of desired. | The existing canopy cover, as measured across the municipality, is >75%-100% of desired. | The existing canopy cover, as measured both across the municipality and at the neighbourhood level, is >75%-100% of desired. |

| Assessment criteria | Objective | Indicator for community forestry performance | | | |
|---|--|--|--|---|--|
| | | Langford's 2024 Rating: | | | |
| | | Poor | Fair | Good | Optimal |
| Clear and defensible community forest canopy assessment and goal. <i>Note: development of program goals underway.</i> | Urban forest policy and practice is driven by comprehensive goals municipality-wide and at the neighbourhood or land use scale informed by accurate, high-resolution assessments of existing and potential canopy cover. | No assessment or goals. | Low-resolution and/or point-based sampling of canopy cover using aerial photographs or satellite imagery – and limited or no goal setting. | Complete, detailed, and spatially explicit, high-resolution Urban Tree Canopy (UTC) assessment based on enhanced data (such as LiDAR) – accompanied by comprehensive set of goals by land use and other parameters. | The Municipality has a complete, detailed, and spatially explicit high-resolution Urban Tree Canopy (UTC) assessment accompanied by a comprehensive set of goals, all utilized effectively to drive urban forest policy and practice municipality-wide and at neighbourhood or smaller management level. |
| Inter-departmental and inter-agency cooperation on community forest canopy Assessment. <i>Note: Internal referrals occurring but capacity issues and competition for off-site space resulting in mixed outcomes for trees.</i> | Ensure all relevant municipal departments and agencies cooperate to advance goals related to urban forest issues and opportunities. | Little cooperation and conflicting among departments and/or agencies often leading to poor outcomes for trees. | Common goals but limited cooperation among departments and/or agencies and mixed outcomes for trees. | Municipal departments, affected agencies and urban forest managers recognize potential conflicts and reach out to each other on an informal but regular basis. | Formal inter-departmental working agreements or protocols for all projects that could impact municipal trees. |

| Assessment criteria | Objective | Indicator for community forestry performance | | | |
|--|---|--|---|---|--|
| | | Langford's 2024 Rating: | | | |
| | | Poor | Fair | Good | Optimal |
| Municipality-wide urban forest management plan. <i>Note: development of the plan is underway.</i> | Develop and implement a comprehensive urban forest management plan for public and private property. | No plan. | Existing plan limited in scope and implementation. | Recent comprehensive plan developed and implemented for publicly owned forest resources, including trees managed intensively (or individually) and those managed extensively, as a population (e.g., trees in natural areas). | Strategic, multi-tiered plan with built-in adaptive management mechanisms developed and implemented for public and private resources. |
| Municipal green infrastructure management. | Integrate green infrastructure assets into the municipal asset management system to support accounting for them in the Municipality's financial planning to build climate resilient infrastructure. | No recognition of value of natural or human-made elements that provide ecological and hydrological functions (green infrastructure). | Local government recognizes the value of green infrastructure but does not yet have information to support their inclusion in an asset management system. | Green infrastructure assets have been partially or fully inventoried and some assets are included in an asset management system, with the intent to ultimately capture all assets in the consolidated financial statements of the municipality. | Green infrastructure assets are inventoried and included in an asset management system and on the consolidated financial statements of the municipality. |
| Municipal-wide biodiversity or green infrastructure strategy. <i>Note: OCP encourages interconnected network to support biodiversity but no plan supporting this outcome.</i> | Acquire and restore publicly-owned natural areas in pursuit of meeting municipal-wide biodiversity and connectivity goals. | No or very limited planning and stewardship of natural areas. | Area specific management plans focused on management, restoration, and protection of natural areas. | Natural areas management strategy guiding management, restoration, and protection of the existing natural areas network. | Biodiversity strategy or equivalent in effect to manage, restore and existing and acquire future natural areas network throughout the municipality. |

| Assessment criteria | Objective | Indicator for community forestry performance | | | |
|--|---|--|--|---|---|
| | | Langford's 2024 Rating: | | | |
| | | Poor | Fair | Good | Optimal |
| Municipal community forestry program capacity. <i>Note: Budget is dedicated and adjusted with new subdivisions but plan will require added budget.</i> | Maintain sufficient well-trained personnel and equipment – whether in-house or through contracted or volunteer services – to implement municipality-wide urban forest management plan. | Team severely limited by lack of personnel and/or access to adequate equipment. Unable to perform adequate maintenance, let alone implement new goals. | Team limited by lack of staff and/or access to adequate equipment to implement new goals. | Team able to implement many of the goals and objectives of the urban forest management plan. | Team able to implement all of the goals and objectives of the urban forest management plan. |
| Urban forest funding to implement a strategy. <i>Note: Budget is dedicated and adjusted with new subdivisions but plan will require added budget.</i> | Maintain adequate funding to implement the urban forest strategy. | Little or no dedicated funding. | Dedicated funding but insufficient to implement the urban forest strategy or maintain new assets as they are added to the inventory. | Dedicated funding sufficient to significantly implement the urban forest strategy and maintain new assets as they are added to the inventory. | Sustained funding to fully implement the urban forest strategy and maintain new assets as they are added to the inventory. |
| COMMUNITY ENGAGEMENT AND STEWARDSHIP | | | | | |
| Citizen involvement and neighbourhood action. <i>Note: Community or corporate volunteer planting and invasive removal does occur annually in general.</i> | Citizens and groups participate and collaborate at the neighbourhood level with the municipality and/or its partnering NGOs in urban forest management activities to advance municipality-wide plans. | Little or no citizen involvement or neighborhood action. | Community groups are active and willing to partner in urban forest management, but involvement and opportunities are ad hoc. | Several active neighborhood groups engaged across the community, with actions coordinated or led by municipality and/or its partnering NGOs. | Proactive outreach and coordination efforts by the Municipality and NGO partners result in widespread citizen involvement and collaboration among active neighbourhood groups engaged in urban forest management. |

| Assessment criteria | Objective | Indicator for community forestry performance | | | |
|---|--|--|---|---|--|
| | | Langford's 2024 Rating: | | | |
| | | Poor | Fair | Good | Optimal |
| Involvement of large private land and institutional land holders (e.g., schools). <i>Note: Variable involvement of large landholders in tree management on their properties.</i> | Large private landholders to embrace and advance municipality-wide urban forest goals and objectives by implementing specific resource management plans. | Large private landholders are generally uninformed about urban forest issues and opportunities. | Landholders manage their tree resource but are not engaged in meeting municipality-wide urban forest goals. | Landholders develop comprehensive tree management plans (including funding strategies) that advance municipality-wide urban forest goals. | As described in "Good" rating, plus active community engagement and access to the property's forest resource. |
| Urban forest research. | Research is active and ongoing towards improving our understanding of the urban forest resource, the benefits it produces, and the impacts of planning, policy, design and management initiatives. | No academic research occurs in the municipality's urban forest. | Isolated academic research occurs in the municipality's urban forest. | The municipality supports and has input on academic research occurring in its urban forest and knowledge transfer occurs. | The urban forest is a living laboratory - in collaboration with public, private, NGO and academic institutions - integrating research and innovation into managing urban forest health, distribution, and abundance. |
| Regional collaboration. <i>Note: Region and municipalities engaged in data collection, information sharing.</i> | There is cooperation and interaction on urban forest plans among neighbouring municipalities within the region, and/or within regional agencies. | Municipalities have no interaction with each other or the broader region for planning or coordination on urban forestry. | Some neighboring municipalities and regional agencies share similar policies and plans related to trees and urban forest. | Some urban forest planning and cooperation across municipalities and regional agencies. | Widespread regional cooperation resulting in development and implementation of regional urban forest strategy. |

| Assessment criteria | Objective | Indicator for community forestry performance | | | |
|---|--|--|---|--|--|
| | | Langford's 2024 Rating: | | | |
| | | Poor | Fair | Good | Optimal |
| PROTECTING TREES | | | | | |
| Policy or regulations regulating the protection and replacement of private and municipal trees. <i>Note: Current tree protection bylaw is temporary. development permit area guidelines have addressed tree retention historically but better integration is wanted.</i> | Secure the benefits derived from trees on public and private land by enforcement of municipality-wide policies and practices including tree protection. | No or very limited tree protection policy. | Policies in place to protect public trees or limited private trees but often lack integration with other municipal policy to enable effective tree retention. | Policies in place to protect public and private trees with enforcement but lack integration with other municipal policy to enable effective tree retention. | Urban forest strategy and integrated municipal-wide policies that guide the protection of trees on public and private land, and ensure they are consistently applied and enforced. |
| Policy or regulations for conservation of sensitive ecosystems, soils, or permeability on private property through development. <i>Note: Current tree protection bylaw is temporary. Development permit area guidelines have addressed tree retention historically but better integration is wanted.</i> | Secure the benefits derived from environmentally sensitive areas by enforcement of municipality-wide policies in pursuit of meeting biodiversity and connectivity goals. | No or very limited natural areas protection policy. | Permit requirements or policy in place to protect at least one of sensitive ecosystems, soils or permeability on private property with enforcement but lack integration with other municipal policy to enable effective tree retention. | Permit requirements or policy in place to protect sensitive ecosystems, soils and permeability on private property with enforcement but lack integration with other municipal policy to enable effective tree retention. | Permit requirements or policy in place to protect sensitive ecosystems, soils and permeability on private property with enforcement and integration with other municipal policy that is effectively enabling tree retention. |
| Internal protocols guide public tree or sensitive ecosystem protection. <i>Note: No formal processes but staff do consult on tree and ecosystem protection for capital projects.</i> | Ensure all relevant municipal departments follow consistent tree or ecosystem protection protocols for capital design and construction activities. | No protocols guiding public tree or ecosystem protection for capital design and construction activities. | Informal and inconsistent processes followed for public tree or ecosystem protection for capital design and construction activities. | Established protocols for public tree or ecosystem protection for capital design and construction activities but outcomes are inconsistent or sometimes unachievable. | Established protocols for public tree or ecosystem protection for capital design and construction activities are consistently followed and outcomes are successful. |

| Assessment criteria | Objective | Indicator for community forestry performance | | | |
|--|--|---|---|--|--|
| | | Langford's 2024 Rating: | | | |
| | | Poor | Fair | Good | Optimal |
| Standards and specifications supporting tree protection during development. | Consulting arborists and tree care companies understand municipality-wide urban forest goals and objectives and adhere to high professional standards. | Limited municipal oversight or support for tree protection requirements during development. | General understanding or support for tree protection requirements but large variation in the quality of information and services provided. | General understanding or support for tree protection requirements and generally consistent quality of information and services provided. | Advocacy for tree protection requirements, engagement with municipal staff on improving processes and standards, and generally consistent quality of information and services provided to high professional standards. |
| Cooperation with utilities on protection (and pruning) of public trees. <i>Note: Utilities not generally coordinated to ensure tree planting or protection is considered.</i> | All 3rd party utilities employ best management practices and cooperate with the municipality to advance goals and objectives related to urban forest issues and opportunities. | Utilities take actions impacting urban forest with no municipal coordination or consideration of the urban forest resource. | Utilities inconsistently employ best management practices, sometimes recognizing potential municipal conflicts or reaching out to urban forest managers and vice versa. | Utilities employ best management practices, recognize potential municipal conflicts, and reach out to urban forest managers on an ad hoc basis – and vice versa. | Utilities employ best management practices, recognize potential municipal conflicts, and consistently reach out to urban forest managers and vice versa. |
| Knowledge of trees on private property. <i>Note: Recent tree canopy study covers private land.</i> | Understand the extent, location, and general condition of privately-owned trees. | No information about privately owned trees. | Aerial, point-based or low-resolution assessment of tree canopy on private property, capturing broad extent. | Detailed Urban Tree Canopy analysis of the urban forest on private land, including extent and location, integrated into a municipality-wide GIS system. | The municipality has an i-Tree Eco analysis of private trees as well as detailed Urban Tree Canopy analysis of the entire urban forest integrated into a municipality-wide GIS system. |

| Assessment criteria | Objective | Indicator for community forestry performance | | | |
|---|---|--|---|---|---|
| | | Langford's 2024 Rating: | | | |
| | | Poor | Fair | Good | Optimal |
| PLANTING TREES AND CREATING SPACE | | | | | |
| Municipal tree planting and replacement program design, planning, and implementation. <i>Note: Most planting occurs through development rather than through a municipal program.</i> | Comprehensive and effective tree selection, planting and establishment program that is coordinated, and driven by canopy cover goals and other considerations according to the UFS. | Tree replacement and establishment can occur, but is ad hoc or not guided by a coordinated direction. | Some tree planting and replacement occurs, but with limited overall municipality-wide planning and insufficient to meet replacement requirements. | Tree replacement and establishment is directed by needs derived from an opportunities assessment and species selection is guided by site conditions, tree health and climate adaptation considerations. | Tree planting and replacement is guided by strategic priorities and is planned out to make progress towards targets set for canopy cover, diversity, tree health and climate adaptation within the timeframe of the strategy. |
| Species diversity. <i>Note: Only genus level inventoried.</i> | Establish a genetically diverse population of intensively managed trees across the municipality as well as at the neighbourhood scale. | Five or fewer species dominate the entire tree population across municipality. | No single species represents more than 10% of the total tree population; no genus more than 20%, and no family more than 30%. | No single species represents more than 5% of total tree population; no genus more than 10%; and no family more than 15%. | At least as diverse as “Good” rating (5/10/15) municipality-wide - and at least as diverse as “fair” (10/20/30) at the neighborhood level. |
| Age diversity (size class distribution). <i>Note: Inventory is insufficient to evaluate this criteria for urban trees at this time.</i> | Provide for ideal uneven age distribution of all “intensively” managed trees – municipality-wide as well as at neighbourhood level. | Even-age distribution, or highly skewed toward a single age class (maturity stage) across entire population. | Some uneven distribution, but most of the tree population falls into a single age class. | Total tree population across municipality approaches an ideal age distribution of 40% juvenile, 30% semi-mature, 20% mature, and 10% senescent. | Total population approaches that ideal distribution municipality-wide as well as at the neighborhood level. |

| Assessment criteria | Objective | Indicator for community forestry performance | | | |
|---|---|--|--|--|---|
| | | Langford's 2024 Rating: | | | |
| | | Poor | Fair | Good | Optimal |
| Development requirements to plant trees on private land. <i>Note: Bylaws require tree planting with development.</i> | Ensure that new trees are required in landscaping for new development or, where space is lacking, there is an equivalent contribution to tree planting in the public realm. | Landscaping requirements do not address trees on private land. | Developments are generally required to provide replacement but the outcomes are often in conflict with public trees and other infrastructure due to space limitations and are not connected to meeting canopy cover targets. | Developments are required to provide replacement trees or, where space is not adequate according to soil volume available, provide cash-in-lieu for equivalent tree planting on public land. The requirement is not connected to meeting canopy cover targets. | Developments are required to provide a minimum density of trees per unit measure or, where space is not adequate according to soil volume available, provide adequate cash-in-lieu for equivalent tree planting on public land. Planting density is determined based on meeting a municipal-wide canopy cover target. |
| Streetscape and servicing specifications and standards for planting trees. <i>Note: Bylaws require tree planting with development.</i> | Ensure all publicly owned trees are planted into conditions that meet requirements for survival and maximize current and future tree benefits. | No or very few specifications and standards for growing sites. | Specifications and standards exist but are inadequate to meet urban forest goals. | Specifications and standards exist and are adequate to meet urban forest goals but are not always achieved. | All trees planted are in sites with adequate soil quality and quantity, and with sufficient growing space to achieve their genetic potential and life expectancy, and thus provide maximum ecosystem services. |

| Assessment criteria | Objective | Indicator for community forestry performance | | | |
|--|--|---|---|---|--|
| | | Langford's 2024 Rating: | | | |
| | | Poor | Fair | Good | Optimal |
| Equity in planting program delivery. | Ensure that the benefits of urban forests are made available to all, especially to those in greatest need of tree benefits. | Tree planting and outreach are not determined equitably by canopy cover or need for benefits. No policy or direction exists to support focusing on equity in planting programs. | Planting and outreach includes attention to low canopy neighborhoods or areas. | Planting and outreach targets neighborhoods with low canopy and a high need for tree benefits. | Equitable planting and outreach at the neighbourhood level are guided by strong citizen engagement in identified low-canopy/high-need areas. |
| Native species planting. <i>Note: Native species required in Environmental Development Permit areas and encouraged in green development checklist</i> | Encourage the appreciation of climate suitable native vegetation by the community and ensure native species are planted where appropriate to enhance native biodiversity and connectivity. | Voluntary use of climate suitable native species on publicly and privately-owned lands. | The use of climate suitable native species is encouraged on a site-appropriate basis in public and private land development projects. | Policies require the use of climate suitable native species and management of invasive species on a site-appropriate basis in public and private land development projects but are not integrated across all policy or guided by a connectivity analysis. | Policies require the use of climate suitable native species and management of invasive species on a site-appropriate basis in public and private land development projects and through tree bylaw. |

| Assessment criteria | Objective | Indicator for community forestry performance | | | |
|--|--|---|---|---|--|
| | | Langford's 2024 Rating: | | | |
| | | Poor | Fair | Good | Optimal |
| Selection and procurement of stock. <i>Note: Species identified on landscape plans and approved by City.</i> | Diversity targets and climate adaptation/mitigation objectives guide tree species selection and nurseries proactively grow stock based on municipal requirements. | Species selection is not guided by diversity targets or climate adaptation/mitigation objectives. | Species selection is guided by diversity and climate adaptation/mitigation but required stock is rarely available from nurseries and acceptable substitutes reduce diversity. | Species selection is guided by diversity and climate adaptation/mitigation and required stock or acceptable substitutes are usually available from nurseries. | Species selection is guided by targets for diversity and climate adaptation/mitigation and required stock is secured ahead of the planned planting year from contract or in-house nurseries. |
| TREE HEALTH AND RISK MANAGEMENT | | | | | |
| Tree inventory. <i>Note: Inventory contains gaps in terms of having species, diameter, and condition information.</i> | A current and comprehensive inventory of intensively managed trees to guide management, including data such as age distribution, species mix, tree condition and risk assessment. | No inventory. | Partial inventory of publicly-owned trees in GIS. | Complete inventory of street trees and intensively managed park trees in GIS but inconsistently updated. | The municipal tree inventory is complete, is GIS-based, supported by mapping, and is continuously updated to record growth, work history and tree condition. |
| Natural areas inventory. <i>Note: OCP Map 15 includes areas with potential habitat and biodiversity value but few attributes.</i> | A current and comprehensive inventory of sensitive and modified natural ecosystems and their quality mapped to Provincial standards to provide standardized ecological information to support decision-making. | No inventory of natural areas. | Natural areas inventoried in GIS but not recently updated and attribute information not to a standard that can support decision-making. | Natural areas inventoried in GIS and with standard and complete attribute information to support decision-making but not updated in the last 5 years. | Natural areas inventoried in GIS and with standard and complete attribute information to support decision-making and updated in the last 5 years. |

| Assessment criteria | Objective | Indicator for community forestry performance | | | |
|---|--|--|---|--|---|
| | | Langford's 2024 Rating: | | | |
| | | Poor | Fair | Good | Optimal |
| Maintenance of intensively managed trees. <i>Note: Maintenance primarily reactive, though have initiated some proactive maintenance in a limited area.</i> | Maintain all publicly owned intensively managed trees for optimal health and condition in order to extend longevity and maximize current and future benefits. | Intensively managed trees are maintained on a request/reactive basis. | Intensively managed trees are maintained on a request/reactive basis or on a grid cycle but targets are not being met. Program includes immature tree structural pruning. | All intensively managed trees are systematically maintained on a cycle determined by workload and resource limitations. All immature trees are structurally pruned. | All mature intensively managed trees are maintained on an optimal pruning cycle. All immature trees are structurally pruned. |
| Publicly owned tree species condition assessment. | Current and detailed understanding of condition and risk potential of all publicly owned trees that are managed intensively (or individually). | Condition of urban forest is unknown. | Sample-based tree inventory indicating tree condition and risk level. | Complete tree inventory that includes detailed tree condition ratings. | Complete tree inventory that is GIS-based and includes detailed tree condition as well as risk ratings. |
| Tree risk management. | Comprehensive tree risk management program fully implemented, according to ANSI A300 (Part 9) "Tree Risk Assessment" standards, and supporting industry best management practices. | No coordinated tree risk assessment. Response is on a reactive basis only. | Some areas within the municipality are prioritized for risk assessment and management. Little annual budget is available to develop a more proactive inspection program. | Priority areas of the municipality are inspected on a regular schedule and operational standards and budgets are in place for responding to and managing tree risks within an appropriate timeframe. | A comprehensive risk management program is in place, with all public lands inspected on defined schedules and operational standards and budgets in place for responding to and managing tree risks within an appropriate timeframe. |

| Assessment criteria | Objective | Indicator for community forestry performance | | | |
|---|---|---|--|--|---|
| | | Langford's 2024 Rating: | | | |
| | | Poor | Fair | Good | Optimal |
| Emergency response planning. | A response plan guides call-out procedures, resources available and the clean-up response for extreme weather and earthquake. | Response plan not documented or not current. | Response plan is documented and includes call-out procedures, roles and responsibilities but lacks details to prioritize hazards and clean-up. | Response plan includes call-out procedure, roles and responsibilities, and criteria for prioritizing tree hazards and removing debris is in place. | A comprehensive response plan is in place and a response drill occurs annually. |
| Pest and Disease Management. | An Integrated Pest Management (IPM) plan guides treatment responses to existing and potential pest, disease and invasive species threats to the urban forest. | No integrated pest management plan and no pest management as part of the urban forest management program. | No integrated pest management plan and reactive pest management as part of the urban forest management program. | An integrated pest management plan is in place and implemented and applies to urban tree assets. | A comprehensive pest management program is in place, with detection, communication, rapid response and IPM practiced. |
| CLIMATE CHANGE ADAPTATION AND MITIGATION | | | | | |
| Species suitability. <i>Note: Not yet assessed, insufficient data. Suitability assessments depend on tree species data from inventory (not available at present) and a locally calibrated assessment of climate risk by species.</i> | Establish a tree population suited to the urban environment and adapted to the overall region. | Fewer than 50% of all trees are from species considered suitable for the area. | >50%-75% of trees are from species suitable for the area. | More than 75% of trees are suitable for the area. | Virtually all trees are suitable for the area. |

| Assessment criteria | Objective | Indicator for community forestry performance | | | |
|---|--|--|--|--|--|
| | | Langford's 2024 Rating: | | | |
| | | Poor | Fair | Good | Optimal |
| Tracking of operational carbon footprints and urban forest carbon-cycle balance. <i>Note: Climate action plan forthcoming - updates to the Development Permit Area process are being considered that would shift this towards good or optimal.</i> | Organization will actively track their operational carbon footprints and their community-wide urban forest carbon-cycle balance and work with community partners to minimize greenhouse gas emissions (GHG) emissions while maximizing carbon sequestration and avoided GHG emissions. | Carbon footprint not considered in program operations. | Basic CO ₂ /GHG accounting and carbon cycle assessment and climate action plan undertaken for urban forestry operations and for the entire community with specific goals and objectives for urban forestry. | Basic CO ₂ /GHG accounting and carbon cycle assessment and climate action plan undertaken for urban forestry operations and for the entire community with specific goals and objectives for urban forestry and formal policies in place to encourage use of trees and green infrastructure for carbon sequestration and energy conservation in buildings. | Basic CO ₂ /GHG accounting and carbon cycle assessment and climate action plan undertaken for urban forestry operations and for the entire community with specific goals and objectives for urban forestry and formal policies in place to encourage use of trees and green infrastructure for carbon sequestration and energy conservation in buildings, and to maximize urban wood and woody biomass utilization. |
| Ecosystem services targeted in tree planting projects and landscaping. | Incorporate ecosystem services objectives into public and private tree planting projects to improve urban tree health and resilience, carbon sequestration, stormwater management and cooling. | Ecosystem services not considered in planting projects or infrequently designed into vegetated landscapes. | Ecosystem services, such as stormwater interception, occasionally incorporated into public or private land planting projects and landscape designs with intention. | Guidelines in place for planting projects and landscape designs on public and private land to deliver specific ecosystem services. | Ecosystem services targets are defined for the urban forest and policy requires planting project and landscape designs on public and private land to contribute to meeting targets. |

| Assessment criteria | Objective | Indicator for community forestry performance | | | |
|---|---|---|---|---|--|
| | | Langford's 2024 Rating: | | | |
| | | Poor | Fair | Good | Optimal |
| Waste biomass utilization. <i>Note: Wood waste may be utilized by contractors.</i> | A closed system diverts all urban wood and green waste through reuse and recycling. | Wood waste from the urban forest is not utilized. | Wood waste from the urban forest is utilized as mulch, coarse woody debris in restoration areas or biofuel. | Wood waste from the urban forest is utilized as mulch, woody debris in restoration areas or biofuel and sometimes high value pieces are milled and stored for later use or sold on to local value-added industries. | Low value wood waste from the urban forest is utilized as mulch or biofuel and all high value pieces are milled and stored for later use or sold on to local value-added industries. |

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Next Steps

The Urban Forest Report Card is a performance baseline that can be re-assessed each time a new State of the Urban Forest Report is prepared. Recommendations considered for Langford's Urban Forest Management Plan will aim to shift the City's urban forest management program towards good and optimal ratings.

This Report comes at the end of the first round of engagement on the UFMP. A second round of engagement is set to take place in the Spring of 2024, and will provide for residents and the public an additional opportunity to engage on the UFMP.

Visit letschatlangford.ca/ufmp for the latest information.



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