CITY OF NANAIMO
THE HARBOUR CITY

Information Report

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SUBJECT **URBAN CANOPY ASSESSMENT UPDATE**

OVERVIEW

Purpose of Report:

To provide the Committee with an update on Staff's work on the Urban Canopy Assessment Project.

BACKGROUND

As part of the City Plan's "Green Nanaimo" goal, under City policy C1.3 – *Urban Tree Canopy, Natural Areas & Greenways* – Integrated Action 16 outlines key actions to be completed within the first five years. These include: "conduct a tree canopy assessment". This work aims to align urban tree management practices with the broader objectives of the City Plan.

In 2023 $52,700 was budgeted in the Parks and Natural Areas Capital Plan to complete an Urban Canopy Assessment in 2025.

The Parks and Natural Areas section has developed a comprehensive work-plan to guide the upcoming Urban Canopy Assessment which will be undertaken in partnership with a specialist environmental planning consultant and other City departments. This project aims to provide a detailed understanding of our urban forest assets to support planning, operations, and sustainability goals and to lead into future work including an update of the Urban Forest Management Strategy and the City of Nanaimo Management and Protection of Trees bylaw 2013.

DISCUSSION

The function of this assessment project is to quantify and qualify the Urban Forest asset in a number of different metrics, which can be used for planning and operational guidance. The City's Geographic Information System (GIS) and Sustainability teams have done some extensive tree canopy measurement and change analysis with a combination of high-resolution imagery and remote sensing information. The work-plan for the Urban Canopy Assessment builds upon this work and the Parks and Natural Areas team has worked with these sections in the development of the work-plan as the outputs will be valuable across the organization. This way of working maximizes efficiency and provides consistent results and data sets.

Key deliverables

The key deliverables of the assessment project include:

1. Urban tree canopy measurements and land cover data for Nanaimo:
   - Land cover class analysis
   - Canopy cover change analysis
   - Mapping and visualisation of data
   - Identification areas of tree planting prioritization based on suitability, socio-economic and environmental factors
   - Identification of the approximate number of trees that need to be planted in order to grow the total tree canopy by 1%
   - Consideration of how Nanaimo's tree canopy compares to similar municipalities

2. Tree canopy quantification analysis:
   - Quantification of ecosystem benefits including air quality, storm water, and water quality and carbon sequestration
   - Quantification of the total annual value of the environmental services our urban forest provides
   - An understanding of the degree to which our urban forest mitigates the urban heat island effect
   - Quantification of the value of a 1% tree canopy increase
   - Calculation of the total estimated value of our urban forest as a natural asset

3. Other outcomes:
   - A forest health analysis to identify areas impacted by drought and disease
   - Determination of city tree species distribution and composition
   - Location of our tallest groups of trees and individual trees
   - Estimation of the total tree numbers in Nanaimo's Urban Forest

NEXT STEPS

Updated Light Detection and Ranging (LIDAR) data is essential to achieving the level of accuracy and detail required for this assessment. LIDAR data will enable us to:

- Accurately measure canopy height and structure
- Conduct forest health and species composition analysis
- Identify priority planting areas and monitor changes over time

LIDAR data therefore must be collected prior to undertaking the Urban Canopy Assessment. LIDAR data is ideally collected by the GIS team every 8 years. City of Nanaimo LIDAR data was last collected in 2016 and was scheduled again for 2024 but was cancelled due to budgetary constraints. Staff from the GIS section will be contracting the collection of LIDAR data later this summer (it must be collected while trees are still in leaf), prior to Parks and Natural Areas staff undertaking the urban canopy assessment.

The LIDAR data has multiple uses; in addition to assisting with a high value canopy assessment, the LIDAR data will be used to:

- derive the shape of the ground surface and create 1 meter interval contour dataset covering the entire community (a GIS initiative)
- develop a city wide land use classification dataset for future years (a Sustainability and Parks initiative)
- Assist with future data collection and City Plan monitoring for indicators such as tree canopy coverage, permeable surface and biodiversity.

Following the collection of LIDAR data, work on the Urban Canopy Assessment can continue. During the interim period Parks and Natural Areas staff are working to secure an environmental planning consultancy to undertake the canopy assessment within the allotted budget.

Once completed, the Parks and Natural Areas section will use the information contained in the assessment to plan and prioritize departmental operations. This will ensure the most efficient resourcing and effective work, backed by intelligent research. It is anticipated that the Urban Canopy Assessment will be completed and ready to be implemented into departmental operations by Winter 2025/26.

SUMMARY POINTS

- A work-plan for the Urban Canopy Assessment project has been developed by the Parks and Natural Areas team with input from the GIS and Sustainability teams.
- In order to produce the most effective and detailed assessment, LIDAR data must first be collected, that work will be undertaken later this summer.
- Once complete, the Urban Canopy Assessment will be used to plan meaningful and impactful work and as a basis for updating key strategic documents including the Urban Forest Management Strategy and the City of Nanaimo Tree Management and Protection Bylaw.

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