

**To:** Warden and Members of County Council

**From:** Director of Public Works

## Managed Forest Plan Update: 2022 Review and Operational Activity Forecast

### RECOMMENDATION

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1. That County Council receive Report No. PW 2023-08 entitled “Managed Forest Plan Update: 2022 Review and Operational Activity Forecast” for information.

### REPORT HIGHLIGHTS

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- This report provides an update on 2022 Managed Forest Plan undertakings, including, but not limited to:
  - Commercial timber harvesting generating over \$56,000 in revenue, including harvests on 30.7 ha. across the Embro, Zenda, and Hall Tracts and at the Tavistock Lagoons;
  - Afforestation plantings of 14,400 trees across 6.5 ha. of fallow land;
  - Reforestation plantings of 3,200 trees across 1.5 ha. of existing woodland/wetland; and
  - Invasive species management across 45.4 ha.
- Details of the proposed upcoming operational activity forecast associated with the active management of both the Agreement Forests and forested sections of other County-owned rural properties are also highlighted.

### Implementation Points

Implementation of the recommended activities included within the 20 year Managed Forest Plan (MFP) began in 2018. County-managed forest properties consist of parcels of land acquired as Agreement Forests in accordance with the provisions of the *Forestry Act, 1990*, as well as parcels of land acquired for other purposes such as source water protection, wastewater lagoon operations and the monitoring of closed landfills.

In previous years, a primary focus of forest management has been the salvage/harvest of ash and beech trees on affected properties. Presently, the percentage and quality of ash trees is severely declining and subsequently so is the demand for logging this species.

In accordance with the MFP, secondary and tertiary thinning of conifer plantations in Agreement Forests, as well as tree planting, invasive species management and wetland rehabilitation initiatives are currently the driving forces behind active management. In future years, activities will be selected based on priorities listed within the Plan, funding availability and workload.

## **Financial Impact**

The revenue generated from the 2022 MFP harvesting activities totalled \$56,300 (2022 budget \$20,000), resulted from the following:

- Embro Tract generated \$12,100 from a second thinning in a white pine/Norway spruce parcel and a final thinning in a red pine parcel;
- Zenda Tract generated \$6,300 from a second thinning in a white pine parcel;
- Hall Tract generated \$32,400 from a lowland hardwood parcel and black walnut plantation thinning; and
- Tavistock Lagoons generated \$5,500 from a lowland hardwood parcel.

Harvesting was originally planned to be undertaken at the Embro Tract (North) and Lakeside Closed Landfill in 2021. The Embro Tract harvest was deferred to 2022 due to poor market conditions while the harvest at the Lakeside Closed Landfill was further postponed to 2023 because of contractors' time constraints and to align with the completion of invasive species management at the Lakeside Tract (Agreement Forest) which has been carried out in phases due to high density of European Buckthorn. As well, the MFP planned harvesting the Chesney Tract in 2022 was postponed until the future when adequate natural regeneration is present in the understory, which will help with forest succession following the harvest.

The Zenda Tract, originally scheduled for full harvest in 2021, was instead completed in 2022 to leverage more favourable market conditions. The planned harvest at the Hall Tract was scheduled for 2025 in the MFP but was accelerated to 2022 because of unusually dry and highly favorable harvesting conditions. The harvest at the Tavistock Lagoons, while not scheduled in the MFP, was started in 2022 because harvesting conditions were also highly favourable.







The Woodlands Conservation 2022 total operating budget was \$203,265. The 2022 net operating budget related to the management of County-owned forested properties and wetlands was \$103,173, which includes activities associated with landowner engagement / enforcement of the County's Woodlands Conservation By-law and enforcement of the County's Weed Control By-law.

## **Communications**

The County's forest management work is outlined for the public in the [Managed Forest Plan](#) as posted on the County's website. The MFP is planned to be updated in 2027. Closer to the 2027 update, Public Works will share the program's progress in the most recent 10-year period.

A copy of Report No. PW 2023-08 will be shared with Ontario Woodlot Association, Woodland Owners Association, Ducks Unlimited, Upper Thames River Conservation Authority, and the Ministry of Natural Resources and Forestry.

## Strategic Plan (2020-2022)

					
<b>WORKS WELL TOGETHER</b>	<b>WELL CONNECTED</b>	<b>SHAPES THE FUTURE</b>	<b>INFORMS &amp; ENGAGES</b>	<b>PERFORMS &amp; DELIVERS</b>	<b>POSITIVE IMPACT</b>
1.ii.		3.ii. 3.iii.	4.i.		

## DISCUSSION

### Background

In August 2017, County Council adopted Report No. [CAO 2017-11](#), “County Managed Forest Properties Review.” The Report recommended the continued public ownership and active management of the forest tracts owned by the County, in accordance with good forestry practices and for staff to consider partnership opportunities to advance the forest properties’ natural environment and public value.

As per Report No. [PW 2019-26](#), staff retained a forestry consulting services to develop a 20-year Managed Forest Plan (MFP). The MFP covers the period from 2018 to 2037 and concentrates resources on commercial harvesting, tree planning and invasive species management. The MFP included a detailed 10-year Operational Work Schedule for the first ten-year period (2018 to 2027) in which 14 parcels were identified as a priority for commercial harvest.

While the MFP identifies 14 parcels for management, it should be noted that harvesting activities are not strictly limited to these parcels. Several other parcels from both Agreement Forests and Source Water Protection forests are assessed for harvesting on a yearly basis based on ideal tree stocking, weather conditions, and contractor availability.

Tree planting and invasive species management, while included in the MFP, were not associated with any specific timeline. The MFP recognized that a tree planting and invasive species management program would be established gradually and increased year-over-year. Only a general framework and parcel management recommendations were given. Review and evaluation of the work related to these tasks in the first ten-year period will be used to inform the work schedule for the second ten-year period (2028 to 2037).

### Comments

#### Summary of 2022 Managed Forest Plan Undertakings

Consistent with the MFP, a number of projects and/or programs were undertaken in 2022 in support of the active management of the County’s forested properties. These activities are detailed below.

i) **Tree Harvesting**

Four parcels that were not initially included in the 2022 MFP commercial harvest schedule (Embro Tract, Zenda Tract, Hall Tract, and Tavistock Lagoons) were added to the 2022 undertakings.

The Embro Tract harvest was originally scheduled for 2021 in the MFP but was carried-over and undertaken in 2022. Access throughout the Embro Tract is often limited by small groundwater seeps but drought conditions over the 2022 summer allowed for broader access. The white pine and Norway spruce parcels were subjected to a typical “second thinning”. The red pine parcel has suffered from pocket mortality since the early 2000s. The decision was made to conduct a “final thinning” and cut all remaining red pine stems from the property as residual stems would not live long enough to reach another cut cycle.

The conifer plantation at the Zenda Tract was slated for a full-scale harvest in the fall of 2021 but the risk of a market freeze on material used to make pressure-treated products was looming. Rather than risk a price drop or market freeze during a large-scale machine-harvest, the planned harvesting was pushed to 2022. The white pine parcel at the Zenda Tract was subjected to a typical “second thinning”.

The lowland hardwood parcel at the Hall Tract was scheduled in the MFP for 2025. Historically, it is consistently wet through most of the year so the parcel was marked, tendered out, and given an extended contract to accommodate the poor operating conditions. This past summer, dry conditions provided an unexpected opportunity to access the parcel for harvest.

The lowland hardwood parcel at the Tavistock Lagoons was never scheduled for harvest in the MFP as it was slated for harvest the year the MFP was written. Conditions, access, and a suitable contractor are required to complete the operation and these three qualifiers did not align until 2022. This particular operation is considered an “improvement cut” which focuses on the removal of defect trees and poor quality growing stock. The trees marked for harvest were a mix of beech, poplar, silver maple and sugar maple.

In accordance with the MFP, the 2022 harvesting activities were focused primarily on conifer plantation thinning as well as stand improvement harvesting in hardwood parcels. Hardwood forests require stand improvement to remove trees with major defects, undesirable species and unacceptable growing stock in order to improve the overall quality of the stand. Conifer plantations, while primarily intended as a nurse crop for shade tolerant deciduous hardwoods, function as a valuable habitat type and source of quality timber. Periodic thinning is required to allow the diameter and timber quality of the conifers to increase as well as increase the amount of natural regeneration and the number of trees in the future forest. Trails and access points used by logging equipment in turn allow for greater access for the public to enjoy hiking and hunting. Wildlife habitat quality increases dramatically in the years following a timber harvest as new growth establishes.

A summary of 2022 tree harvesting activities by property is shown below in Table 1.

**Table 1: Tree Harvesting Projects/Programs Undertaken in 2022**

<b>Operation</b>	<b>Objective</b>	<b>Acreage</b>	<b>MFP Timeframe</b>	<b>Actual Timeframe Completed</b>
Embro Tract (agreement forest)	Second thinning of white pine and Norway spruce plantation; final thinning of red pine plantation	16.2 ha.	2021	August 2022
Zenda Tract (agreement forest)	Second thinning of white pine plantation	6.1 ha.	No timeframe given	July 2022
Hall Tract (agreement forest)	Single tree selection of lowland hardwoods; thinning of black walnut plantation	4.4 ha.	2025	September 2022
Tavistock Lagoons	Single tree selection of lowland hardwoods	4.0 ha.	No timeframe given	June 2022

## ii) Tree Reforestation and Afforestation

Afforestation is the planting of trees in an area not previously forested. Afforestation projects in 2022 included 14,400 trees across 6.5 ha. of fallow land. Reforestation plantings of 3,200 trees occurred across 1.5 ha. of previously-harvested woodland. Overall, a total of 17,600 seedlings were planted. The 2022 afforestation effort focused on the Holbrook Closed Landfill, Thames River Wetlands (Beachville Park: 'C') and Thornton Wellfield - Hodge's Pond 'P'.

- In the Holbrook Closed Landfill, 9,000 seedlings were planted to create a wildlife corridor and increase connectivity between two large tracts of forested land bordering the north and south of the property as well as aid in the sequestering of leachate from the adjacent landfill.
- In Thames River Wetland - Beachville Park: 'C', 3,700 seedlings were planted in order to improve the wildlife corridor along the bank of the Thames River to improve the diversity of tree species and increase forest cover along the Thames River.
- In Thornton Wellfield, Hodges Pond – 'P', 1,700 seedlings were planted between existing woodland and farm field along Old Stage Road and the snowmobile trail to further increase forest cover.

- Also in Thornton Wellfield, Hodges Pond – ‘P’, 3,200 seedlings were planted adjacent to 3 newly excavated wetland cells at the Hodge’s Pond property to help increase canopy cover along Cedar Creek.

The woodland parcels subject to commercial harvest in 2021 did not received any reforestation in 2022 as they had adequate natural regeneration present. The Thornton Wellfield, Hodge’s Pond: ‘P’, was part of a Ducks Unlimited wetland project in 2021 and has been devoid of any hardwood regeneration for many years as a result of grass competition. All 3,200 seedlings allocated for reforestation were planted in this parcel to aid in the canopy closure.

A summary of tree planting activities by property is shown below in Table 2.

**Table 2: Tree Afforestation and Reforestation Undertaken in 2022**

<b>Operation</b>	<b>Objective</b>	<b>Acreage</b>	<b>MFP Timeframe</b>	<b>Actual Timeframe Completed</b>
Holbrook Closed Landfill: afforestation (seedlings)	<b>Machine plant:</b> 3,000 red oak; 1,000 white pine; 800 silver maple; 3,000 hybrid poplar 500 shagbark hickory; 700 hackberry.	3.5 ha. Planted in two blocks between the landfill cap and property boundaries	No given timeframe	May 2022
Thames River Wetlands (Beachville Park: ‘C’): afforestation (seedlings)	<b>Hand plant:</b> 1,500 white pine; 1,200 hybrid poplar; 1,000 black cherry;	2 ha. Planted along the Thames River and its tributaries	No given timeframe	May 2022
Thornton Wellfield, Hodges Pond – ‘P’: afforestation (seedlings)	<b>Hand plant:</b> 1,100 swamp white oak; 200 red oak; 400 bur oak.	1 ha. Planted in continuous block between woodland edge and farmland	No given timeframe	May 2022
Thornton Wellfield, Hodges Pond – ‘P’: reforestation (seedlings)	<b>Hand plant:</b> 1,300 hybrid poplar; 250 speckled alder; 100 white oak; 300 yellow birch; 600 hackberry; 400 sycamore 250 Norway spruce	1.5 ha. Planted in clumps adjacent to wetland cells	No given timeframe	May 2022

### iii) Invasive Species Management

Management of invasive species in County woodlands is often guided by commercial logging activity. The rationale being that heavy equipment activity and the change of canopy density have the greatest influence on the spread of seed and the growth rate of established plants. Invasive species management is not strictly limited to non-native plants. Within woodlands, European buckthorn (invasive shrub) and American beech root clones (native plant displaying qualities of an invasive species) are of greatest concern. In woodland edges and open ground, Japanese knotweed and *Phragmites Australis* (phragmites) are of greatest concern.

Much of the phragmites present on rural County properties has been, or is in the process of being, eradicated. Therefore, the focus has started to move toward other non-native grasses that form monocultures. Reed canary grass presents many of the same concerns as phragmites as they both form dense monocultures that prevent the establishment of native species. Reed canary grass is often eradicated in anticipation of tree planting the following year.

The vast majority of the non-wooded areas along cedar creek in the Hodge's Pond property were recently completely taken over by phragmites. While much of the phragmites has been controlled, sections still persist along with reed canary grass. In an attempt to eradicate the residual phragmites and any reed canary grass in the 2 ha. section at the Thornton Wellfield, Hodge's Pond: 'P' parcel (where cedar creek meets the Sweaburg Drain) adjacent to the 3 newly excavated wetland cells, a foliar herbicide application was carried out in April 2022 with a follow-up spot-spray in August 2022.

European buckthorn, tatarian honeysuckle, beech root clones, and several less common understory species are actively being targeted for eradication within County managed woodlands. Heavy equipment use is a common vector for the spread of invasive species. Approximately 36 ha. across 2 properties were treated with a basal spray of Garlon RTU in order to control the population of invasive shrubs prior to harvest activity. This will allow native hardwood species to establish in the understory and a commercial harvest may be considered in future years.

A summary of invasive species management activities by property is shown below in Table 3.



**Table 3: Invasive Species Management Activities Undertaken in 2022**

<b>Operation</b>	<b>Objective</b>	<b>Acreage</b>	<b>MFP Timeframe</b>	<b>Actual Timeframe Completed</b>
Thornton Wellfield, (Hodge's Pond: 'P')	Glyphosate application on reed canary grass in preparation for tree planting	2 ha	No given timeframe	Spring 2022
Embro Tract (agreement forest)	Garlon RTU application on European buckthorn, glossy buckthorn, multi- flora rose, spindle bush and tatarian honeysuckle	22.8 ha.	No given timeframe	June 2022
Lakeside Tract (agreement forest): Section 1	Garlon RTU application on European buckthorn, multi-flora rose, spindle bush and tatarian honeysuckle	15 ha.	No given timeframe	October 2022
Thames River Wetlands (Beachville Park: 'C')	Glyphosate application on reed canary grass in preparation for tree planting in 2023	5.6 ha.	No given timeframe	November 2022

### **Planned 2023 Managed Forest Plan Undertakings**

Consistent with the MFP, the projects and/or programs planned to be initiated in 2023 are detailed below in Table 4. The Lakeside Closed Landfill was scheduled in the MFP for 2021 but market conditions and contractor constraints justified pushing it to 2023. The conifer plantation at the Lakeside Tract is not scheduled in the MFP and would, generally, be too small an area to justify a commercial harvest, but completion of invasive species control and proximity to the Lakeside Closed Landfill site create the possibility for a commercial harvest in 2023. The northern section of the Creditville tract is also not scheduled in the MFP but has adequate natural regeneration to justify a second thinning. All three parcels are well-stocked conifer plantations ready for the second of three periodic thinnings. The Drumbo Tract will be subject to a commercial harvest as part of a larger rehabilitation project.

Overall, as per the 2023 budget, approximately 21 ha. of woodland parcels are planned for commercial harvesting in 2023, along with the afforestation of 10,000 trees, reforestation of 1,500 trees and invasive species management across approximately 46 ha.



Table 4: Planned 2023 Undertakings

Operation	Objective	Acreage	MFP Timeframe	Anticipated Timeframe
<b>Tree Harvesting</b>				
Lakeside Closed Landfill (woodland)	Second thinning of white pine parcels	8.95 ha.	2021	March 2023
Lakeside Tract (agreement forest)	Second thinning of white pine parcel	6.17 ha.	No given timeframe	March 2023
Drumbo tract (agreement forest)	Second (and final) thinning of white pine parcel	3.1 ha.	No given timeframe	March 2023
Creditville Tract (agreement forest)	Second thinning of white pine parcel	3.6 ha.	No given timeframe	Summer 2023
<b>Tree Reforestation and Afforestation</b>				
Drumbo Tract: Rehabilitation project	Hand plant and install tube shelters: bur oak seedlings within patch clear cuts (1500 seedlings)	1-1.5 ha.	No given timeframe	Spring 2023
Thames River Wetlands (Beachville Park: 'C'): afforestation (seedlings)	Machine plant coniferous and deciduous seedlings: standard density (10,000 seedlings)	5 ha.	No given timeframe	Spring 2023

Operation	Objective	Acreage	MFP Timeframe	Anticipated Timeframe
<b>Invasive Species Management</b>				
Lakeside Tract (remaining area of agreement forest): invasive spp. management	Garlon RTU application on European buckthorn	1.5 ha.	No given timeframe	Spring 2023
Vance Tract (agreement forest): invasive spp. management	Garlon RTU application on European buckthorn	40 ha.	No given timeframe	Spring 2023
Drumbo Tract (agreement forest): competition management	Glyphosate/Simazine application on invasive herbaceous plants and grasses around planted seedlings	1.5 ha.	No given timeframe	Summer 2022
Hall Tract (agreement forest): competition management	Glyphosate foliar application on invasive smooth bedstraw and garlic mustard as preparation for 2024 tree planting	3.48 ha.	No given timeframe	Summer 2023

## Challenges

As no detailed inventory of County-owned forest tracts has been completed and historical management data is limited, many smaller-scale timber harvesting activities have not been given a specific timeframe for completion. Many woodland tracts are seasonally flooded restricting the window for harvest opportunity to persistent sub-zero winter temperatures or dry summer weather. Ideal winter conditions are becoming less common with the change in climate, adding additional challenges to harvesting on schedule. The window for offsetting the impacts of Emerald Ash Borer and Beech Scale through commercial harvesting is narrowing as a result of timber quality decline.

By breaking down large tracts into smaller parcels, actively monitoring each property, maintaining high level communication with logging contractors, mills and local forestry professionals, staff are able to operate under shorter timeframes. This allows for a larger percentage of forest stands to be actively managed under ideal conditions and presents the opportunity to eradicate invasive species and reforest cut-over areas with greater efficacy.

## Conclusions

The Managed Forest Plan serves as a framework to guide the activities associated with active management of County-owned forested lands. The ultimate goal is not restricted to maximizing the revenue generated over the short term, but rather the long-term sustainable supply of forestry products.

The operational activities identified will improve the overall health of the forest lands and has the potential to serve as a role model for sustainable environmental management practices through habitat enhancement and good forestry practices.

## SIGNATURES

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