













## ARBORETUM MASTER PLAN

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This section provides an introduction to the planning process and deals with campus history, context and assessment of principal Arboretum systems.



Section One PLANNING BASE

## INTRODUCTION



Figure 1: The 2002 campus master plan

In 2002, a new master plan for the University of Guelph was adopted by the Board of Governors (University of Guelph Campus Master Plan). The plan was initiated to respond to new strategic directions (Making Change: The Strategic Plan for the University of Guelph, 1995), recent and proposed physical changes to the campus and the need to accommodate growth. The 2002 plan focused on the core of the campus; the Arboretum was not included because it was felt that it warranted a dedicated study.

The Arboretum requires a new plan for three reasons. First, the existing plan is now 18 years old and requires updating. Second, it is important that the new plan be consistent with the *University of Guelph Campus Master Plan (2002)* planning principles and physical proposals. Finally, it presents an opportunity to provide a vision for the Arboretum's future development and operation.

The Board of Governors (B of G) requested an update of the Arboretum master plan in fall 2003. The plan considers physical infrastructure, Arboretum programs, access and movement, and the use and management of the land base. It takes a broad overview and is concerned with establishing a vision, planning principles, form, location for facilities and landscape elements. It provides a framework for future development within the context of needs and financial resources.

Following consideration and approval by B of G, the Arboretum master plan (AMP) becomes part of the University's long-term vision, along with the 2002 campus master plan. Once the AMP is adopted by B of G, it will form the template on which the Arboretum will develop an operational plan to implement the detailed objectives for education, research and outreach identified through the consultation process by the Arboretum Master Plan Steering Committee. The operational plan would also create a strategic and financial framework for its physical development and operations.

## **Campus Master Plan**

The Arboretum lands situated within the University of Guelph campus environment will respect the vision and intent of the campus master plan.



## **Arboretum Mission Statement**

The Arboretum, an integral part of the University of Guelph, has a mandate to promote education, research and outreach.

## Objectives

The Arboretum will serve as an "outdoor learning resource," a "living laboratory" and a "community resource" to:

- 1. provide information resources for teaching, learning, research and outreach;
- 2. promote and further develop the facilities and programs that are available;
- 3. promote the unique plant collections available for teaching, research and outreach;
- 4. participate in teaching, research and outreach, including course and program development both within and outside the University;
- 5. provide critical support for the University's strategic research directions;
- 6. assume a leadership role in the management of natural heritage lands as models of restoration and sustainability;
- 7. partner with other institutions and associations to expand the influence and reputation of the Arboretum; and
- 8. promote volunteer programs and community involvement in the Arboretum.

## **The Planning Process**

The planning process for the AMP development is illustrated in Figure 2. The process was guided by an Arboretum Master Plan Steering Committee (AMPSC) with broad representation from the University and from the wider community that uses and supports the Arboretum. The committee reported to B of G's Physical Resources and Property Committee (PRPC). A University planning team produced the plan with the support of Arboretum staff.



Section One PLANNING BASE



Figure 2: The planning process

The process included five major elements:

- 1. Assessment: A review and documentation of physical conditions with mapping to provide an updated base. The programs were reviewed in the categories of education, research, outreach and other.
- 2. Consultation: During the 2004 winter semester, extensive community consultation was carried out. This included special meetings with staff and AMPSC members to conduct a SWOT analysis and visioning exercise. The SWOT dealt with identifying "strengths," "weaknesses," "opportunities" and "threats" related to the Arboretum.

Five stakeholder groups were consulted with a focus on 1) research, 2) education, 3) physical resources, 4) urban context and integration, and 5) role for the community and outreach. The research group included a number of interested research faculty, a representative from the landscape industry and individuals from the AMPSC. The education stakeholder group included University representatives and an external representative of an area school board to discuss academic and community environmental education issues and opportunities.

Physical Resources and Arboretum staff met to review the physical assessment. A special meeting with representatives of key City of Guelph departments was set up through the city administrator to discuss development policy and planning related to the study areas. Finally, a stakeholder meeting was held with community representatives to consider the potential role for the Arboretum within Guelph and the region.



Figure 3: Robin-Lee Norris chairs a town hall.



Figure 4: The annual plant sale draws a crowd. More than half of the Arboretum budget comes from outside sources.



Information was posted on the University and Arboretum web pages for the benefit of both the University and Guelph communities. The AMPSC developed a communication plan to facilitate the process. Four public meetings were held to obtain input during the process.

- 3. Exploration: The Arboretum Planning Team developed alternative scenarios that addressed key issues arising from the assessment, stakeholder meetings and public meetings, as well as the broader vision established for the Arboretum. The explorations were reviewed with the AMPSC, and a preferred option was proposed for further review and consultation.
- 4. Plan: The AMP was developed in two phases. First, a draft plan was prepared that considered input from the assessment, the consultation process and three public meetings. After the plan was reviewed by the AMPSC, Arboretum staff and the University administration, it was made available for general review. Next, a final draft plan was prepared incorporating the feedback from this process. This document was submitted to the PRPC. A final plan was presented to and approved by B of G.
- 5. Operational Plan: Following B of G's acceptance of the AMP, a committee under the direction of the dean of OAC will develop an operational plan to address the objectives for education, research and outreach as developed by the AMPSC; consider the costs of fully implementing the objectives and the physical plan; develop strategies for sustainable funding; and to make recommendations for the future administrative position of the Arboretum within the University.

## Key Issues

A number of key issues were raised during the process, including:

- 1. concerns about the long-term protection of Arboretum lands and other assets for research, education and community use within the context of the University and the City of Guelph;
- 2. the nature and focus of the Arboretum's future role within the University and the city, including its stature in the international community;
- 3. the need for sustainable funding to develop, maintain and manage Arboretum assets and programs in the long range;



Figure 5: The Arboretum is valued by the University and local communities alike.



- 4. a lack of awareness of the resources available at the Arboretum to support research, education and other needs;
- 5. capacity limitations to provide for human and physical resources to meet both existing and future program needs;
- 6. the need for partnerships with academic units, researchers, industry, government, the community and others to achieve long-term objectives;
- 7. an aging infrastructure that requires immediate attention; and
- 8. concerns about impacts from surrounding land-use changes and the need for improved integration with existing and proposed natural and built urban systems.

## **Plan Horizons**

Like the campus master plan, the Arboretum master plan has two planning horizons, short range (five to 10 years) and long range (11 to 30 years). The short-range plan represents a vision for the foreseeable future. The long-range plan demonstrates future opportunities for development that address the planning principles, key issues, stated vision and operational objectives.

## Audiences

The AMP is targeted at two principal audiences. The first is the University of Guelph community, represented by B of G, Senate, the administration, faculty, students and staff. This audience is meant to use the AMP as a guide to enhance the Arboretum's role in teaching, research and other related uses.

The second audience consists of the various partners that help fund, support and/or co-operate with the University: the municipal, provincial and federal governments; corporations; alumni; and friends, including volunteers and donors. The AMP outlines the University's intentions and provides guidance for management and funding actions.

## Plan Governance and Implementation

The plan is approved as University policy by B of G. It is administered by the Arboretum and OAC in co-operation with Physical Resources. The AMP will be updated periodically to respond to changing opportunities, at the discretion of B of G.



## HISTORY

Since the establishment of the Ontario Agricultural College in 1873, there has been a need for a collection of woody plants for instructional purposes. The original planting of the campus in the 1880s was designed to support teaching and research.

The University of Guelph Arboretum Master Plan (1986) notes that "these first collections of woody plants fulfilled some of the functions of an arboretum. The first campus landscape plan, completed in 1882 by Miller and Yates, landscape architects of Philadelphia, also provided for specialized teaching and research needs of the college. This plan included 47 collections and features. Change and expansion of the University created a need for more arboretum space." In 1887, William Brown, the first professor of agriculture at OAC, created a tiny forest on campus to demonstrate landscape rehabilitation and provide a resource for environmental education. (It is now officially called Brown's Woods.)

The 1986 master plan document also notes that in 1939, "Prof. Leslie Hancock proposed a plan for a small arboretum near Watson Hall. There followed a series of proposals put forward by Dr. R.J. Hilton, Prof. V. Chanasyk and Prof. F.H. Montgomery concerning the need for an arboretum. These proposals led ultimately to the formation of the Arboretum Study Committee in April 1964. At this time, the University was on the threshold of a period of rapid expansion. There was clearly a need for a permanent arboretum site."

The document goes on to say that in 1966, "the Board of Governors approved in principle the concept of establishing an arboretum as a 'living laboratory' and allocated funding for preliminary investigations and research. An arboretum site at Guelph was considered particularly valuable for research because, in the region, it represents a climatic zone significantly different than that of arboreta at Ottawa and Hamilton (Royal Botanical Gardens). The present site was recommended because it had the potential to fulfil the function of a 'living laboratory' for a range of disciplines and uses."

Much of the site under consideration was part of an original 550acre (220-hectare) land parcel purchased for the Ontario Agricultural College in 1873. What is now the Arboretum was part of the "College Farm" and was used for test plot research and education. The balance of the land was purchased in 1965, including what is now the Nature Reserve south of Stone Road. Section One PLANNING BASE



Figure 6: Miller & Yates 1882 plan for the campus



Figure 7: Historical survey



Section One PLANNING BASE



Figure 8: Additions to the Arboretum



Figure 9: 1970 plan



Lands were added to the Arboretum over the years as illustrated in Figure 8.

## 1970 Plan

The original master plan for the University of Guelph Arboretum was developed with the assistance of landscape architecture professor William Coates and was completed and approved by B of G in 1970. The original master plan designated 25 separate collections, and the current Nature Reserve was designated as an unmanaged research area. The facility was developed largely during the 1970s, maturing as an established arboretum by the 1980s. It included several specialized research and study areas, including rehabilitation of a gravel pit, woodlots, water features, framework plantings and natural wooded areas.

"Development of facilities and collections commenced in 1970 and concentrated on the 'living laboratory' concept of the Arboretum. Nursery and service centre facilities were largely completed in 1972. In spring of 1974, the OAC Centennial Arboretum Centre was officially opened. The opening of the J.C. Taylor Nature Centre in 1978 provided a focal point for the growing interpretive program." (University of Guelph Arboretum Master Plan, 1986)

## 1986 Plan

In 1985, a Master Plan Review Committee was established. It determined that the original plan was out of date, that an improved development and operational focus was required and that the facility had not fully achieved its potential in the areas of research, education and amenity. A comprehensive master plan update was undertaken to address the needs and opportunities of the day.

The planning process developed a statement of "goals and objectives" for the Arboretum to guide planning and operations over a five-year period. The 1986 plan included assessments of user needs and physical resources, established design principles, provided a physical plan and an operational plan, and was used to guide management during the intervening period.

The plan was completed in 1986 but was not taken to B of G for approval. The Arboretum was subsequently transferred to the Office of Research in the late 1980s and administratively returned to OAC in 2003.



Figure 10: 1986 plan





## Study Area

The Arboretum master plan study area consists of the University lands immediately east of the core campus extending to Victoria Road. The Arboretum lands are crossed by two city arterial roads: College Avenue and Stone Road. There are approximately 165 hectares (408 acres) within the site area.

The study area (see Figure 11) bordered by Victoria Road on the east, the Cutten Club on the north and the core "academic lands" of the University on the west. The southern boundary extends beyond Stone Road to the Village by the Arboretum and future residential development areas.







- Residential
- Commercial Centre
- Major Institutional
- 🗱 🛛 Open Space
- Core Greenlands
- Special Study Area





Figure 11: Study context

## City of Guelph Official Plan

The City of Guelph Official Plan 2001, June 2002 Consolidation landuse designation for the study area is major institutional. Portions of the Arboretum contain significant woodlands, provincially significant wetlands and natural heritage features as mapped on Schedule 2, natural heritage features and development constraints within the official plan. The city has initiated a natural heritage strategy that may adjust these boundaries.

These natural heritage features and systems are important resources within the Arboretum for environmental education and research. The general area is also within the Arkell Springs Water Resource Protection Area, which has been established to protect the City of Guelph's water supply.

The official plan also indicates a zone following the Arboretum Creek as an area of "potential archeological resources."

The city plans to widen Stone Road to four lanes in the near future. It has also been proposed to make Victoria Road four lanes. In both cases, traffic and associated effects will increase over time.

The Arboretum falls within Schedule 7, the "linked open-space concept" of the official plan. It is in proximity to the Eramosa River corridor and the Hanlon Creek corridor.



CITY OF GUELPH OFFICIAL PLAN 2001 June 2002 Consolidation Figure 13: City of Guelph linked open-space concept



Figure 14: City of Guelph Official Plan: Natural heritage



## ASSESSMENT OF ARBORETUM SYSTEMS

## Land Use

Most of the Arboretum study area is devoted to education and research. The area south of Stone Road is designated as a nature reserve and is used only for research and conservation purposes. There are, however, a number of "out parcels" that are located within the study area but are not administered by the Arboretum. These are indicated on Figure 15 and include Physical Resources (nursery and other uses), Real Estate Division (rental management), academic (aviary and former seal ponds) and student housing uses.



Figure15: Arboretum out parcels



🗱 Academic

Real Estate

Physical Ressources

Student Housing

The major land uses for the Arboretum include collections and gardens, natural areas and developed areas or "centres." Collections and gardens make up the largest area. There are more than 40 collections of woody plants for academic and display purposes. Other landscaped areas include display gardens, memorial plantings and plantings that provide structure and form to the Arboretum. These areas were assessed and are discussed in greater detail in the landscape section that follows.



Figure 17: Japanese Garden



Figure 18: J.C. Taylor Nature Centre



Figure 16: Current Arboretum uses

The natural areas include the Nature Reserve located on Arboretum lands south of Stone Road and the more actively interpreted and managed areas of Wild Goose Woods and Victoria Woods.

The major developed areas include the OAC Centennial Arboretum Centre, which serves as the main facility for University and community users, and the R.J. Hilton Centre, which houses staff, research and propagation activities, and maintenance functions. The J.C. Taylor Nature Centre provides a base for environmental education activities





- City of Guelph Arterial
- Campus East Ring Road
- X Arboretum Access Road
- ••• Service Roads



Figure 20: Road condition

Figure 19: The road system

The Arboretum road system is generally as set out in the 1970 AMP. Included are the public Arboretum Road and the service roads. Arboretum Road was originally two-way and provided vehicular access to the site from East Ring Road to the Arboretum Centre. In 1999, Arboretum Road was made one-way accessing the Arboretum Centre from the campus and departing to Victoria Road (see Figure 19). The alignment now includes a designated bicycle route on the north side of the paved surface. A new exiting route has been approved by the University and the city that could allow for a future safer and direct connection of the main Arboretum parking lot to College Avenue.

The present condition of Arboretum Road is deteriorating due to age and poor construction. In addition, the main road is used extensively by pedestrians and joggers, resulting in conflicts with vehicular traffic.



## Transit

The City of Guelph provides good bus service to campus. Two buses travel along East Ring Road near the entrance to Arboretum Road: the EXP University Express and the 52 University/Kortright. A bus stop is located just south of Reynolds Walk and the Arboretum Road entrance.

Directing transit through the Arboretum would not be practical or environmentally desirable. The bus stop near the Arboretum Road entrance provides excellent access, especially with appropriate development of sidewalk routes in the future.

## Parking

The Arboretum currently has 118 parking spaces, which are wellintegrated into the landscape. The Arboretum lot has 82 spaces, and an additional 36 are located at five locations along Arboretum Road. This is adequate to satisfy user needs on most days, but there is no excess capacity to accommodate possible future expanded facility development or programming.

Two parking spaces are provided near the Arboretum Centre for barrier-free access to the building. Informal staff parking is available at the Hilton Centre.

As with the entry road, paved surfacing is deteriorating and will require attention.

In contrast to the core campus, there is no fee for parking in the Arboretum. The Arboretum pays a fee to the University parking fund to partially offset maintenance costs.



Figure 21: Existing public parking lots



• Trillium Trail (2 km)

lvey Trail (1.1 km)

•

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The 10 "named" trail systems are:

Victoria Woods Trail (1.5 km)

• Park in the Garden Walk (.4 km)

Native Trees of Ontario Trail (1 km)
Col. John McCrae Trail (.8 km)
Wild Goose Woods Trail (.5 km)
World of Trees Trail (.5 km)
East Walk Trail (.5 km)

Wall-Custance Memorial Forest Trail (1.4 km)



Figure 22: Arboretum trail systems

Trails



Figure 23: Victoria Woods Trail

The Arboretum has an extensive internal trail system. Nearly 10 kilometres of trail provide for interpretive, recreational and functional uses. The Arboretum's formal trails are currently limited to the section between College Avenue and Stone Road where public use is encouraged. Surfacing materials include stone dust, wood chips, turf and boardwalk. The Arboretum Centre access walk is asphalt paving.

In contrast to the internal system, the links to the University core campus and to external city pathway systems are not well-developed and require consideration under the new plan. Opportunities exist for links south toward the Village by the Arboretum across the campus and north to the Eramosa River trail system over a potential easement along Victoria Road on Cutten Club lands.



Arboretum Master Plan – December 16, 2004



Figure 24: OAC Centennial Arboretum Centre

The Arboretum has three major buildings or building complexes. They are the Arboretum Centre (with the Hales-McKay Memorial Shelter), the R.J. Hilton Centre (which consists of the main building with offices, a plant cold-storage facility and workspace; the propagation facilities, including two greenhouses with potting shed; two drive sheds; a shade house; a lath house; and three poly houses) and the J.C. Taylor Nature Centre. A range of architectural styles is represented by the modernist Arboretum Centre, the utilitarian Hilton Centre and the rustic Nature Centre.

The Arboretum Centre is an electrically heated building with singleglazed windows and has relatively high energy costs. The centre is built into a drumlin and has a unique form that would be difficult to expand or change internally. The building has internal steps and is not fully barrier-free. It does, however, have at-grade access to the auditorium, a washroom and the lower-level offices from the rear of the building. There is no air conditioning, and the main auditorium and the offices at the east end of the building become excessively hot during July and August. The centre has limited storage and support space for food-service operations.

The Hales-McKay Memorial Shelter adjacent to the Arboretum Centre needs a new roof and further development to serve a useful purpose.



Figure 25: Arboretum Centre auditorium



Figure 26: Arboretum Centre sunroom



Figure 27: Arboretum Centre boardroom



Section One PLANNING BASE



Figure 29: J.C. Taylor Nature Centre



Figure 30: Propagation facility



Figure 31: Entry kiosk

The R.J. Hilton Centre complex propagation facility is obsolete and requires replacement. This and other facility conditions present limitations for research at the Arboretum. The main building is heated with fuel oil (30-year-old system), and the structure needs a general upgrading.

The J.C. Taylor Nature Centre was completed in 1978 as an environmentally responsible building with passive solar heating and composting toilets. Variable use levels have eliminated the use of the composting toilets. The maple syrup program has been discontinued, and the section of the building devoted to processing syrup is not used. The centre has inadequate storage for environmental education materials, and access to the basement is poor. Although the building is actively used for environmental education, its size could present limitations to further program development.

The entry information kiosk has a phone line and is used as a check and information point on Arboretum Road near the west boundary. The kiosk is staffed periodically.



Figure 28: R.J. Hilton Centre



## Landscape



Figure 32: The Arboretum landscape

The various landscape types contained in the site include collections, display and demonstration gardens, framework or structural plantings, and natural areas and nature reserves. This diversity provides for education, research and passive or recreational use. The landscape has generally been developed as set out in the 1970 and 1986 plans. But with 18 years having passed since the last review, this planning exercise has examined the collections and gardens in terms of condition and future role.

#### Collections

A collection is a planted grouping of plants based on taxonomic relationships, form or function. The Arboretum has more than 40 collections of native and introduced species with some 1,700 species of trees and shrubs, as well as many herbaceous species. These collections have been classified as research collections and display collections. The Arboretum collections require ongoing assessment. Among the issues that need to be addressed are the upgrading of existing collection plans; clarification of collections; evolution, expansion, dismantling and relocation of collections; editing of collections; and integration of collections. The following is an assessment of current collection areas according to primary use.



## <u>Research</u>

<b>T</b> eaching as a secondary function		
NAME	ADDITIONAL FUNCTIONS	
Gene Bank	т	
Elm Recovery Project	Т	
Butternut Recovery	Т	
Robinia	Т	
Herbarium	Т	

ASSESSMENT
Many species well-established; improvements required to protect the trees; gaps of some populations still to be filled
Set-up of orchard to begin in 2004; some field collection still required
Located in fenced nursery for protection
Needs work; selective removals
Could be part of the OAC Herbarium, which will provide a link to the Biodiversity Institute; requires an evaluation





Figure 33: Oak Collection

Teaching as a seco	indary function		
Research as a tert	eary function		
NAME	NAME	FUNCTIONS	ASSESSMENT
Aceraceae	Maple Family Collection	Т	Expand and acquire important species and varieties
Betulaceae	Birch Family Collection	T R	Requires a replacement schedule for short-lived specimens; R: Bronze Birch Borer survival
Caprifoliaceae	Honeysuckle Family Collection	-	Decommission; salvage important specimens and move to other collections
Celastraceae	Staff-tree Collection	Т	Expand and acquire important species and varieties
Coniferous Tree Collection		T R	Expand and acquire important species and varieties
Dwarf Conifer Collection		Т	Well-developed; requires some replacements and addition
Cornaceae	Dogwood Family Collection	Т	Expand and acquire important species and varieties
Ericaceae	Hancock Rhododendron Collection	T R	Upgrading required; acquire important species; R: hardiness and drought tolerance of wild species for future breeding options
Fagaceae	Beech Family Collection	Т	Expand and acquire important species and varieties
Fraxinus	Ash Collection	T R	Expand and acquire important species and varieties; R: Seed source importance



Hippo- castanaceae	Horse Chestnut Family	т	Expand and acquire important species and varieties	Section One PLANNING BASE
Juglandaceae	Collection Walnut Family Collection	т	Expand and acquire important species and varieties	
Leguminosae	Bean Family Collection	Т	Focus on arborescent genera	
Oleaceae	Olive Family Collection	-	Decommission collection in present site; move selected plants to the Syringa site (same family)	
Rosaceae	Rose Family Collection	т	Additional species and selections; develop Crataegus	
Frances Ball Rose Collection		T R	Rewrite collection description to reflect focus on hardy, disease-resistant roses and non pesticide use; R: black spot and twig girdler tolerance	
Rutaceae	Rue Family Collection	-	Maintain as is	
Salicaceae	Willow Family Collection	T R	Pruning required; schedule replacements; refill the excavated hole; R: variability of species hybrids	
Syringa	Lilac Collection	-	Include Forsythia, Foresteria and Chionanthus from present site	
Tiliaceae	Linden Family Collection	T R	Thinning and pruning required; R: nectar and pollen value for beekeepers	
Ulmaceae	Elm Family Collection	-	Consider other uses for site	
Centre Forest		т	Gradually redefining area around the Arboretum Centre to reflect the changing shade density	
Fall Colour		-	Redefine site use priority	
Native Trees of Ontario		Т	Upgrade plan and write up	
Regional Plant Association		-	Define the site use	
World of Trees		Т	Well-developed; replacement schedule for short-lived species	



## Gardens

Both cultural or traditional gardens and environmental demonstration gardens have been developed at the University of Guelph Arboretum. The cultural gardens display classical garden forms. The environmental gardens demonstrate ecologically friendly methods and plant types for use in private home grounds or other landscapes.

#### Cultural

NAME	SECONDARY FUNCTION	ASSESSMENT
David G. Porter Memorial Japanese Garden	Т	Recently improved
Edna & Frank C. Miller English Garden	Т	Evaluation for replacement of some herbaceous plants
Italian Garden	Т	Needs guidance for sculpture acquisition
OAC '56 Park in the Garden	Т	Needs guidance for sculpture acquisition; well-developed; needs evaluation/replacement of some shrubs



ARY ON	ASSESSMENT
	Evolve and expand to link to proposed Gosling Project
	Requires evaluation; planted primarily with exotic species in the

mid-1970s; explore options to demonstrate restoration using indigenous species

### Commemoration

NAME	SECONDARY FUNCTION	ASSESSMENT
Wall-Custance Memorial Forest Dedication Grove & Shelter Belts	Т	Needs overall plan for 20 years; new dedication site required in short term
College Greys Tree Grove		Well-developed
Hospice Lilac Collection		Well-developed
Ontario Horticultural Association Oak Grove		Maintain clearance of adjacent vegetation
Roy Hammond Rotary Tree Grove	т	Needs a design that fills boundary; define public use; schedule tree replacements
Silver Anniversary Maples	т	Some losses from road use and continued use of salt



Figure 34: English Garden in the fall



Figure 35: A class in the garden



Figure 36: Wall-Custance Memorial Forest dedication



## Natural Areas

The natural areas of the Arboretum represent wetlands, wooded areas and other landscape types with natural values for education, research and conservation management.

NAME	FUNCTION	ASSESSMENT
Nature Reserve	R T	Need to develop management plan to respond to urban encroachment issues
Victoria Woods (natural area)	Т	Trail systems require adjustments to minimize pedestrian traffic
Wild Goose Woods (natural area)	т	Boardwalks recently added to protect the environment



Figure 37: Wetland area





Figure 39: University signage (requires repair)

## Information and Wayfinding

The Arboretum's signage system includes two types. The first is major facility identification, such as the main entry point and main building areas. This form of sign uses the University standard as established by the campus master plan.

The second type is Arboretum trail identification and wayfinding signage as illustrated in Figure 40. This signage is both directional and informational. Construction includes a flat metal sign attached to wooden posts.



Figure 40: Arboretum signage



Figure 38: Arboretum wayfinding elements



## Safety and Security

The Arboretum is perceived as a safe public space and has experienced little vandalism or other incidents related to safety and security. Two University standard emergency "blue phone" stations have been installed along Arboretum Road, and telephones are available at the outside entry to the Arboretum Centre on a 24-hour basis and at the entry kiosk when staffed.

With the exception of the Arboretum Centre, the grounds are posted as closed for use after dark and are signed accordingly. Minimal grounds lighting is provided at the Arboretum Centre and to the parking area.

During the workday, Arboretum staff provide "eyes" on the grounds to ensure a level of security, and campus police conduct random surveillance.



Waste Management

The Arboretum is served by the University waste-management system. Dumpsters are provided at the Arboretum Centre and the R.J. Hilton Centre. Wastebaskets are located along pathways and are serviced by Arboretum staff.

It has been proposed that Arboretum staff develop a multiple-stream garbage-separation program with composting and recycling that is consistent with the principle of "environmental responsibility" as developed in Section 2.

Figure 41: Exterior call box





Figure 43: The fuel oil storage tank was recently replaced.



Figure 44: Portable convenience station

$\odot$	Weeping tiles
*	Emergency phones
•	Wells
	City lines
*****	Gas lines
n n	Hydro cables
XXX	Telephone cable
****	Arboretum Creek

## Utilities

Much of the Arboretum is "off the grid" and not easily or economically serviced by city sanitary sewer, natural gas or water systems. The three centres are on septic tank and field systems. A small water line has been extended to the Arboretum Centre and the R.J. Hilton Centre to replace the original reliance on site wells. Energy for heating is electricity in the Arboretum Centre and fuel oil in the other two buildings. The original septic systems are about 30 years old and require observation, servicing and possible replacement. Fuel oil storage systems are being replaced to conform to new provincial regulations. Only the Arboretum Centre is on the campus telephone and data networks. The other two buildings rely on Bell for communication systems.

Servicing limitations place a constraint on capacity and further development of the existing built sites. The most serviceable area would be at the Arboretum entrance nearest the core campus, where services may be more economically extended.





# Section 2 PLANNING PRINCIPLES



The following principles are intended to guide the planning, design, development and management of physical facilities, landscapes and natural areas at the Arboretum. It is noted that, in general, the Arboretum master plan will embrace the planning principles as stated in the University of Guelph Campus Master Plan (2002). In the campus master plan, the major categories included "environmental quality," "spatial structure," "project design," "movement and associated systems," "land-use locations" and "implementation."



Section Two PLANNING PRINCIPLES ENVIRONMENTAL QUALITY

## ENVIRONMENTAL QUALITY

These principles deal with the quality of new campus development and the preservation of existing valued characteristics.

## 1. Quality, Permanence and Economy

### The University is committed to quality, permanence and life-cycle economy in building and landscape construction, maintenance, and renewal. Building committees will base design decisions on life-cycle as well as first capital costs.

Life-cycle costing — "The University of Guelph has adopted the philosophy that, within the constraints of fiscal reality, quantity should not compromise quality and that design cost decisions should be measured against the full life of a building or landscape rather than its construction alone. This implies a three-part commitment: first to high-quality design, construction and maintenance; second to eventual replacement of temporary facilities; and third to the planned renewal of aging and inadequate facilities." (*Campus Master Plan, 2002*)



Figure 45: The Arboretum Centre is a unique building that expresses the character of the place, but with its electric heat and single-pane glass, the building carries high life-cycle costs.



## 2. Environmental Responsibility

#### The Arboretum will build and renew buildings, infrastructure and landscapes in a manner that is land, energy, resource, and waste management efficient.

The Arboretum must be recognized as an example of leading-edge environmental stewardship. This should be reflected in best practices relative to land management, facilities operations, waste management and environmental conservation.

The campus master plan has stressed the **environmental focus** of the University's teaching and research activities and advocates "a wider use of native, biodiverse, low-maintenance planting and the use of environmentally friendly construction materials. Building design should consider 'green building' principles that address energy conservation and the efficient use of other resources."

With this in mind, the University will extend its building condition audit program to the Arboretum and identify potential energy and water conservation strategies.

The Arboretum master plan will provide for the long-term protection and environmental management of the resource base. A landscape management plan with clearly stated objectives will be developed for the Nature Reserve areas, the on-site natural areas and the research collections. Given this principle and the Arboretum's mandate, consideration could be given to transferring to the Arboretum the management of other University lands with environmental significance. Such lands include the Dairy Bush and Brown's Woods, which were identified in the campus master plan as lands with ecological value. Consideration should also be given to protecting a corridor for wildlife movement from the Eramosa River to the Arboretum through the Cutten Club.



Figure 46: Arboretum natural area



Figure 47: Opossum, an Arboretum resident



Figure 48: The Dairy Bush



Section Two PLANNING PRINCIPLES ENVIRONMENTAL QUALITY



Figure 50: The Arboretum provides places to study and reflect.

Figure 51: Aerial view of the Arboretum in fall

## 3. Celebrating Place

The design of new projects will reinforce the character-defining elements that reflect the historical development of the Arboretum and the campus. The Arboretum will balance development and protection of places of value so that the traditional roots of the campus and its setting are clearly apparent within the context of a vital and current Arboretum environment.

A research survey of alumni found that the Arboretum was one of the five most highly valued places on campus. The others were Johnston Green, War Memorial Hall, Johnston Hall and Winegard Walk. (Prof. Cecelia Paine, *Places of Value, 1995*)

The character-defining elements of the Arboretum will be identified and reinforced by preserving, adapting and integrating places of value, and by protecting and improving the landscape structure.



Figure 49: Major character-defining elements



## 4. A Beautiful Landscape

#### The landscape will be designed to unify the campus, stimulate social interaction, offer comfort and security, and reflect the environmental focus of the University.

The campus master plan has emphasized "the importance of the landscape to the University community and as an attraction for recruiting students, staff, and faculty." The Arboretum is a significant landscape component of the University of Guelph campus, and new projects should "aim to preserve the quality and amount of existing landscape spaces."

The Arboretum landscape also offers places for relaxation, contemplation and spiritual reflection which are important for the well being of the University community.

## Landscape Design

Individual landscape projects should be planned and designed to contribute to the overall quality of the Arboretum as well as to meet particular site and program requirements. A diversity of landscape settings is encouraged to reflect the broad Arboretum mandate.

#### Landscape Maintenance

Arboretum landscapes range from detailed cultural gardens such as the Italian and Japanese gardens, which require extensive maintenance, to the Nature Reserve lands, which require little conventional maintenance. The site will be managed as different maintenance zones that will reflect the needs and objectives of each landscape type.

Landscape types are:

- High-maintenance: the cultural gardens, the Arboretum west lawn
- Medium-maintenance: the collections and environmental display gardens (some of which could be low-maintenance)
- Low-maintenance: the naturalized and natural areas within the Arboretum
- Minimal-maintenance: the Nature Reserve areas.

Landscape maintenance at the Arboretum should adhere to "best practices."



Figure 52: View from Arboretum to city



Figure 53: Gosling Demonstration Garden



Figure 54: Winter at the Arboretum



#### Section Two PLANNING PRINCIPLES ENVIRONMENTAL QUALITY



Figure 55: Wall-Custance Memorial Forest dedication service



Figure 56: Garden dedication

## 5. Commemoration, Public Art, Display

#### The history, values and activities of the Arboretum will be revealed through artifacts and presentations located throughout the environment. Installations must be integrated with their settings to reinforce the spatial structure and character of the Arboretum.

The University has a policy to celebrate its rich and diverse cultural life "through the display of its activities, the commemoration of its notable members and benefactors, and public art. These expressions of University culture should be integrated with the organization structure of the campus in a mutually supportive relationship. Cultural artifacts, displays and public art acquire energy and relevance when they are associated with important public places. In return, they reinforce the identity and meaning of those places." (*Campus Master Plan, 2002*)

## Commemoration

Commemoration has taken various forms at the Arboretum. Major buildings have been named after figures important in the establishment of the Arboretum (R.J. Hilton Centre and J.C. Taylor Nature Centre) and donors (OAC Centennial Arboretum Centre and the Hales-MacKay Memorial Shelter).

Gardens, benches and selected trees have been dedicated through donor contributions. The gardens include the Gosling Wildlife Gardens, the David G. Porter Memorial Japanese Garden, the Edna and Frank C. Miller English Garden and the Frances Ball Rose Garden.

The Wall-Custance Memorial Forest offers a legacy of trees as a living memorial to lost loved ones.

Donations should support the installation and maintenance of commemorative elements and conform to the master plan. Naming opportunities for future facilities will be actively pursued within the context of the plan and Board of Governors policies for accepting donations, including gifts-in-kind, and providing donor recognition, including memorialization.


Section Two PLANNING PRINCIPLES ENVIRONMENTAL QUALITY

#### Public Art

The Arboretum has a history of integrating public art into the grounds. This has been done under the collaborative guidance of the University art curator and the Arboretum director. A more definitive policy regarding the ownership and maintenance responsibilities of art works located within the Arboretum is required.

Temporary installations have been part of the Arboretum landscape for a number of years. Student installations as part of academic requirements will conform to guidelines with respect to the location, installation, length of display period and dismantling. Such installations are to be encouraged.



Figure 57: Happy Cloud sculpture at the Arboretum Centre



Figure 58: Art installation by landscape architecture students



Section Two PLANNING PRINCIPLES ENVIRONMENTAL QUALITY



CITY OF GUELPH OFFICIAL PLAN 2001

Figure 60: City of Guelph linked open-space concept (Schedule 7, Guelph Official Plan)

#### 6. Urban Integration

#### The Arboretum, as a unit of the University, will seek to maintain positive relationships with the City of Guelph, being particularly sensitive to immediate neighborhoods.

"As a community within a community, the University (and the Arboretum) affects and is affected by neighbouring communities and land users." (*Campus Master Plan, 2002*)

A key issue identified during the consultation process was "urban integration." This included concerns about encroachment or impacts on the Arboretum from surrounding development and major roads, as well as an interest in encouraging links within the urban open space and trail systems.

The Arboretum, along with the Cutten Club, forms a major green space in the city's proposed linked open-space concept. As recommended under Principle 2 (environmental responsibility), there is an opportunity to protect a wildlife corridor via a potential easement through the Cutten Club along Victoria Road from the northern boundary of the Arboretum to the Eramosa River. This has the added benefit of providing a link to the proposed city trails system.



Figure 59: City of Guelph trails plan (draft)



Section Two PLANNING PRINCIPLES ENVIRONMENTAL QUALITY

The campus master plan recommends that "pedestrian and landscape connections to the Arboretum should be improved." The CMP also recommends a pathway that would link Village by the Arboretum with the campus and the Arboretum.

Improvements in city road systems (Stone and Victoria roads) should be done with a view toward minimizing impacts on the Arboretum landscape and general environment, including noise. Additional screening to create buffers in strategic locations will be beneficial.

Urban development is proposed for the University Heritage Trust lands and other privately held lands south of the Arboretum Nature Reserve along the linked natural heritage complex. These lands are zoned for development, border the Nature Reserve and fall on or along the city "natural heritage" lands that adjoin the Arboretum. It is also recommended that management plans be developed in co-operation with the city and local developers to assure the sustainability of the Nature Reserve and these sensitive areas that connect to the Arboretum.



Figure 61: Stone Road is to be widened to four lanes.



Figure 62: Guelph Official Plan zoning



Section Two PLANNING PRINCIPLES SPATIAL STRUCTURE & FIT

## SPATIAL STRUCTURE AND FIT

Figure 63: A 10-minute-diameter walking circle defines the core of the campus.

These principles deal with the composition of buildings and landscapes to form an organized, legible and convenient campus structure. They also involve the fit of development with the natural environment.

### 7. Consolidated Core

#### The first choice for locating primary academic, communal and support facilities will be within a 10-minute-diameter walking circle centred on the U of G Library.

During the consultation process, a perception was expressed that the Arboretum is too far from the core campus to be effectively used during the time limits imposed by an average class period. This perception is reinforced by the fact that once the entrance to the Arboretum is reached from Reynolds Walk, there's another 10minute walk to the Arboretum Centre.

This sets up a priority for locating new academic, communal or other potential support facilities near the head of Reynolds Walk at the Arboretum boundary. This is further supported by the utilities assessment that indicated new facilities on most interior Arboretum lands would not be easily serviced by gas, sewer, water and University communication systems.



Section Two PLANNING PRINCIPLES SPATIAL STRUCTURE & FIT

#### 8. Landscape Structure

The landscape will reinforce the spatial structure of the Arboretum, emphasizing the framework of roads, walkways and open spaces.



Figure 64: Arboretum landscape structure (1986 plan)

The 1970 and 1986 plans for the Arboretum established the landscape structure for the site and set out the major planting areas and tree massing. The landscape structure consists of tree masses that define the distinct landscape use areas, including circulation routes, open greens or fields, and buffer plantings. Within this structure, the collections, gardens and natural areas occur. The landscape structure provides separation, spatial definition and screening and gives form to the circulation routes.



Figure 65: Tree groupings form open spaces.



Figure 66: Maples line Arboretum Road.



Figure 67: The buffer provided by Victoria Woods requires an extension along Victoria Road.



Section Two PLANNING PRINCIPLES SPATIAL STRUCTURE & FIT

#### 9. Fit With the Natural Landscape

# The Arboretum will strive to achieve a balance between traditional arboretum monoculture and ecological naturalization.

The Arboretum will recognize the ecological value of its woodlots and areas of remnant native vegetation and will preserve and manage these resources for education and research.



Figure 68: Nature Reserve

The Arboretum can play a major role in the long-term protection and environmental management of significant natural heritage areas on University lands.



5

Figure 69: City natural heritage strategy (proposed)



#### 10. Focal Spaces

# Key focal spaces will be retained and further developed to provide identity and activity areas within the Arboretum.

A number of important "focal spaces" have been developed within the Arboretum and contribute to its quality and overall character. Included are the Arboretum Centre west lawn and entry courtyard, as well as special garden spaces throughout the grounds. Future spaces that could provide identity should be developed near the existing entry from East Ring Road and around a potential activity centre at heritage house located off College Avenue (see Section 3).



Figure 71: Japanese Garden





Figure 70: Key focal areas on the Arboretum grounds



Figure 72: Garden seating area



Figure 73: There is a lack of visual identity at the approach to Arboretum Road from East Ring Road.





Figure 75: Aerial view of collections



Figure 76: The Hales-MacKay Memorial Shelter requires refurbishment to better serve as an information centre.



Figure 77: The Arboretum Centre requires an audit to improve energy efficiency

# **PROJECT DESIGN**

These principles provide guidance for the design of projects as they arise.

# 11. Preserve the Best, Remove the Worst, Repair the Rest

# Project sites will be selected to preserve Arboretum assets, favour the repair of problem sites and avoid compromising good-quality buildings and landscapes.

The master plan has reassessed current collections to ensure that they are of scientific, public and ecological significance and that they support the Arboretum's mandate.

The propagation facility at the R.J. Hilton Centre does not warrant repair and requires total replacement. A number of options present themselves: 1) rebuilding in the current location, 2) relocating to a more strategic location (see principles 7, 23 and 28), 3) consolidating on a site with Physical Resources or 4) sharing campus greenhouse facilities. These options are to be further evaluated as part of the operational plan.



Figure 74: The propagation facility requires major reinvestment.



#### 12. Appropriate Relationships

Project sites will be selected to ensure the best functional and environmental relationships among related uses.



Figure 78: Precincts of use type and intensity

The Arboretum has three primary user groups: research; academic/teaching; and public/volunteers/recreational, which includes environmental education. The plan above suggests the distribution of these user groups to minimize conflicts and to make best use of the resources. Academic use is harder to specifically zone due to diverse needs (arts, social sciences, physical sciences and others).







Figure 79: Emergency telephone station near entry to the Arboretum

#### 13. Campus Safety

# Buildings, landscapes and lighting must be designed and managed to promote personal safety.

"Campus consolidation and the integration of its public areas will cause more people to use the campus and its public places. A clear spatial structure with a legible hierarchy of clearly defined routes and spaces provides the users with the orientation and clarity necessary to move through the campus with comfort." *(Campus Master Plan, 2002)* 

"The development of a campus that is both safe and perceived to be safe for all users, and especially for women, should be a high priority for all future projects on campus. Good environments are safe environments. Personal safety is not a single-dimension issue with a single-dimension solution, but one measure of a viable environment, along with clarity, legibility, convenience, economy, vitality and delight."

The Arboretum is a large treed landscape area that presents challenges for personal safety, especially at night. For this reason, all outdoor areas of the Arboretum are closed in the evening, with the exception of the core use areas designated on the master plan. This information is posted at the major entry point. In these designateduse areas, lighting and planting should promote visibility both day and night. Building design should promote casual surveillance of outdoor spaces and access ways. Visible emergency telephones and other means of alert should continue to be available in major public areas.



#### 14. Barrier-Free Environment

#### The University is committed to creating a barrier-free environment. Where this is not possible, the University will provide specific services to accommodate people with disabilities.

"The impact of the physical environment on people with mobility, visual, hearing and other types of disabilities is so great that the University places a high priority on accommodating those with disabilities. Effectively accommodating people with disabilities is a basic responsibility of the institution." (*Campus Master Plan, 2002*)



Figure 80: Stairs in the Arboretum Centre

The barrier-free characteristics of the Arboretum Centre building and grounds require further examination to develop a plan for improvement. The interior is on two levels and is served only with stairway connections. Exterior ramps are to meet acceptable minimum grades for safety. All trails, collections, gardens and special features need to be made accessible to persons with disabilities.

There are only two dedicated parking spaces for persons with disabilities near the lower-level back entry. More spaces are required to satisfy demand and minimum standards



Figure 81: Arboretum Centre entry ramped sidewalk





Figure 83: Harrison House on College Avenue



Figure 84: The J.C. Nature Centre was built as an energy-efficient rustic-style building

#### 15. Building Design

Building design must be of its time but take inspiration from the original older buildings. New buildings express their role as "University" buildings, make evident the activities occurring in them and support the larger structural patterns of the Arboretum.



Figure 82: The Arboretum Centre is built into the drumlin.

There are two 19th-century stone houses within the study area that are currently managed by other University departments and are used for student or rental housing. The actual Arboretum facilities have been built since the 1970s, thus reflecting a diversity of style.

As with the Arboretum Centre, it is important that future buildings have an appropriate relationship with the landscape. The style, siting and function of buildings should respond to the context of the specific location. The principles established by the campus master plan shall serve as a guide to future building.



## MOVEMENT AND ASSOCIATED SYSTEMS

Section Two PLANNING PRINCIPLES

These principles deal with access and movement, services and utilities.

#### 16. Entry, Orientation and Wayfinding

The University will seek ways to give the Arboretum a strong sense of identity, well-defined entrances and an easy sense of orientation.





The Arboretum shares a similar problem with the main campus when it comes to a clear sense of entry and identity for visitors. The 1964 campus master plan proposed that Neeve Street be extended from downtown Guelph through what is now the west side of the Arboretum. This idea was reflected in the 1970 Arboretum master plan and would have provided excellent visibility and access.



Figure 86: 1970 Arboretum master plan





Figure 88: Proposed entry to Arboretum Centre

As this was not implemented, it would appear that improved access points from East Ring Road and College Avenue would be most functional and could provide visibility from the campus and for the community.



Figure 87: Campus master plan proposal for Reynolds Walk

#### 17. Transportation Emphasis

# The Arboretum will accommodate automobile use but promote a range of alternatives, including public transit, cycling and walking.

The Arboretum master plan of 1970 proposed an automobileoriented plan and located the main centre well within the land area away from the core of the campus. This pattern was modified in 1999 when Arboretum Road was converted to one-way in and out to Victoria Road. This allowed for the incorporation of a bike lane and safer pedestrian use.

This plan suggests an even greater emphasis on public transit, cycling and walking by closing Arboretum Road to normal vehicular access and creating a "green" core. See principles 18 (pedestrian paths) and 19 (road system) for greater detail.



Arboretum Master Plan – December 16, 2004



Figure 89: Arboretum Road is dominated by pedestrian use.

#### 18. Pedestrian Paths

The pedestrian zone of the Arboretum will be expanded. The Arboretum will enhance the existing primary pedestrian system, and will improve and expand the secondary systems.



Figure 90: The proposed Arboretum pedestrian systems

This existing trail system will be retained with required adjustments and connections to a pedestrian- and cycle-only route along the existing Arboretum Road. A new link to the Eramosa River through the northeast sector of the Arboretum and the proposed Cutten Club easement would be planned and developed as part of the long-range development plan. To accommodate this, however, the city would have to make special provisions within the river corridor and Victoria Road Bridge area to assure a safe and convenient connection to the Eramosa trail system.

The Campus Master Plan included a trail (outside the Arboretum) that would connect the Arboretum to the Village by the Arboretum and the community to the south of campus.



Figure 91: A winter jogger in the Arboretum



Figure 92: The Flying Fish Bridge is a feature that provides unique character in the Arboretum.



#### 19. Road System

Arboretum roads will be reconfigured to enlarge the pedestrian zone and reduce pedestrian/vehicular conflicts.



Figure 93: The proposed public vehicular road system

Two-way entry/exit roads are proposed at two locations. An improved multi-purpose road from East Ring Road would serve the Child-Care and Learning Centre, East Residence, Alumni House, the existing parking lots, the proposed future residential development indicated on the campus master plan and a potential new Arboretum complex discussed in Section 3.

The other entrance/exit off College would serve the existing Arboretum Centre and parking lot and the J.C. Taylor Nature Centre.



Arboretum Master Plan – December 16, 2004

### 20. Service and Emergency Vehicles

Service and emergency vehicles will use the Arboretum road system where possible and will use mixed-mode pedestrian routes where road access is not available.



Figure 94: Service routes

The existing service road network seems appropriate to meet the needs of the Arboretum for maintenance and servicing purposes.

The major pedestrian pathways would be designed to carry service and emergency vehicles, as is the case throughout the central campus



21. Bicycles

# The use of bicycles to access and move around the Arboretum will be encouraged.

"Bicycle use should be encouraged because of its low environmental impact and because it somewhat reduces the need for parking. An on-street bicycle network should be established that ties into the City of Guelph bicycle routes." (*Campus Master Plan, 2002*)



Figure 95: Bicycle network

The Arboretum entry roads should provide for bicycle lanes where possible. The Arboretum cycle route will be linked to the city system.



#### 22. Parking

The University will provide parking within walking distance of the major facilities while favouring green space.



Figure 96: Proposed parking

The existing lots at the Arboretum Centre are to be retained in the current configuration. Additional barrier-free parking would be provided near the building. The existing lot off the proposed access road from College Avenue would be expanded. The small lots along Arboretum Road would be removed in the long-range plan (see Section 3), except at the west boundary. This lot could be enlarged to make up for the lost spaces and would be metered to assure appropriate use.

Joint use of the existing University lots off East Ring Road and the Arboretum access road is encouraged to meet future needs. In support of principles 18, 19 and 21, this shared existing parking facility would continue to have user charges consistent with those of other core campus parking facilities.



#### 23. Utilities

The utility system must be upgraded and rationalized to promoteeconomy and efficiency and to facilitate future development.



$\bigcirc$	Weeping tiles
*	Emergency phones
•	Wells
	City lines
	Gas lines
<del>11 11</del>	Hydro cables
XXX	Telephone cable
	Arboretum Creek

Figure 97: Utilities

Because much of the Arboretum is outside the normal service envelope, any future development will be encouraged at the entry to the Arboretum at the western boundary. Existing septic systems will be managed according to best practices.

The Arboretum Creek will continue to provide surface drainage for the sub-watershed. Water flowing through the Arboretum from the Village by the Arboretum's storm water management pond will be managed according to best practices and agreements already in place.



#### 24. Waste Management

#### Future renovations and new construction will be designed to facilitate economical, efficient and unobtrusive waste management.

Arboretum staff will develop composting and recycling programs to reduce the waste stream to the University system and demonstrate the principle of environmental responsibility. Other technologies for waste management will be consistent with University systems.

New facilities will conform to University standards set out in the campus master plan.

#### 25. Arboretum Lighting

# Exterior lighting will be designed to promote safety and comfort and to subtly reveal the character of the Arboretum at night.

Exterior lighting at the Arboretum will be at the major centres as outlined in Principle 13 (campus safety). Systems will conform to University standards.

Consideration may be given to illuminating the future pedestrianized Arboretum Road but is not recommended at this time because of negative environmental impacts and cost considerations.



Figure 98: University light standard at the Arboretum Centre parking lot





Figure 99: Arboretum bench

#### 26. Exterior Campus Furnishings

The Arboretum intends to develop economical and comprehensive systems of visually co-ordinated and comfortable outdoor furnishings. Durability in function and attractive appearance under low-maintenance conditions are essential.

The Arboretum will develop unique but co-ordinated outdoor furnishings such as benches and waste receptacles.



## LAND-USE LOCATIONS

These principles deal with the location of land uses on campus.

#### 26. Study/Learning and Communal Space

The University intends to improve and expand spaces for individual and group study and learning distributed throughout the campus.

Communal spaces will be provided to give students, staff and faculty opportunities for impromptu and casual contact and promote the exchange of ideas between different colleges and disciplines.

The Arboretum Centre lacks dedicated study or teaching spaces. Consistent with the campus master plan, a potential opportunity for communal, study and/or instructional space was identified to be part of a future residence/multi-use facility to service the east end of campus. This shared facility would provide for a current need for Arboretum academic/teaching space.

The "living laboratory" concept is supported by other University lands, including Brown's Woods and the Dairy Bush.



Figure 100: Potential outdoor "living laboratory" areas

Section Two PLANNING PRINCIPLES LAND USE LOCATIONS



Figure 101: Arboretum Centre sunroom



Figure 102: Potential location for study/learning and communal space (CMP 2002)

Potential Living Laboratory Areas



#### 28. Research

As a principal purpose of the University, research facilities will be located both to encourage intra- and interdisciplinary contacts and to be associated with their related academic units.



Figure 103: Options for propagation and/or research facilities



There may be potential for sharing a more serviceable and/or accessible location. For example, Location 2, as designated above, would be a more accessible site for shared use with the University research community in support of the principle stated above.



Figure 104: Existing propagation facility



#### 29. Outside Community Use

# Facilities that can be used by the general public will be distributed throughout the campus, usually in association with related academic units.

"The University is committed to reinforcing the interface with the larger community and will continue to provide facilities and initiate programs for cultural events as a central part of this principle." (Campus Master Plan, 2002)

The Arboretum serves as an important "public face" and provides opportunities for community use and support. Community use generally falls into three categories: 1) volunteer and supporting activities, 2) programmed environmental and 3) casual recreational use.



Figure 106: Arboretum Centre auditorium set up for a wedding reception



Figure 105: Proposed community use centres



Figure 107: Wall-Custance dedication day







Figure 108: Arriving for a Sunday environmental education program

#### Volunteer and supporting activities

This form of community use adds value to the Arboretum and provides sustaining support. The Arboretum Auxiliary and the Friends of the Arboretum perform a critical role. Public activities such as Theatre in the Trees offer financial support, as does the facility's rental program.

#### Environmental education

The J.C. Taylor Nature Centre and the surrounding natural areas and gardens provide an important environmental education resource. These programs must operate on a self-sustaining basis and are appreciated by both children and adults. Additional infrastructure to support self-guided trails and information stations should be investigated for potential donor support.

The operational plan will further explore opportunities with local school boards and other potential users.

#### Casual recreational use

University faculty, staff and students take advantage of the Arboretum for recreation and passive pleasure. The Arboretum has also become one of the more popular community open spaces in the city. Improved pedestrian connections to the central campus and to the city pathway systems will enhance this use.

#### 30. Maintenance Facilities

# Facilities will be consolidated to rationalize the use of valuable Arboretum space, to improve communication between services and to facilitate user access.

Arboretum maintenance operations will be centralized at the R.J. Hilton Centre. Further co-operation with Physical Resources will be investigated as part of the operational plan.



Figure 109: R.J. Hilton Centre





#### 31. Non-Arboretum Use Areas

The integrity of Arboretum use, esthetic quality and natural environment will be maintained and enhanced within the long-range master plan. Non-conforming uses should be phased out on a priority basis.



Figure 110: Priority out parcels to be transferred to Arboretum use

The four parcels indicated in the figure above include the heritage house on College Avenue, the decommissioned former seal ponds and aviary along Arboretum Road and the University nursery on Stone Road. The latter could be a shared operation. The other sites indicated in Figure 110 could be considered for Arboretum use on an opportunity basis, but have less utility to support Arboretum functions.



Section Two PLANNING PRINCIPLES IMPLEMENTATION

### IMPLEMENTATION

#### 32. Plan Continuity and Implementation

The Arboretum master plan (is) approved as University policy and maintained as an effective development directive through continuity of responsibility, consistent application and regular updating and review.

The following policies are consistent with the campus master plan:

- To ensure that the Arboretum master plan remains an effective basis for development, the University should establish administrative structures for its approval, application and updating.
- Physical Resources, in co-operation with the Arboretum director, will ensure that every project is measured against the plan at all stages of the project development process.
- The review, updating or amending of the plan will follow the procedures outlined for the campus master plan.

#### The Project Development Process

The project development process will be as outlined in the campus master plan for major projects.

Following the approval of the Arboretum master plan by the Board of Governors, the dean of OAC and the director of the Arboretum will initiate a strategic operational plan to establish a framework for the implementation of key findings from the Arboretum master planning process. This operational plan will be updated regularly.



# Section 3 DEMONSTRATION PLAN



This section presents illustrated site plans showing how the planning principles might be implemented in the development of the Arboretum. The "short-range plan" might be implemented within five to 10 years and deals with higher-priority projects or those that most effectively meet the planning objectives. The "long-range plan" might be implemented over the next 20 years or more.



Section Three DEMONSTRATION PLAN

## **PLANNING PRIORITIES**



Figure 111: Short-range plan

### Short-Range Plan

Projects in the short range must address issues of deferred maintenance and a redevelopment of the roadway system.



The exit route for vehicular traffic will be rerouted from Victoria Road to College Avenue. This project will be done in co-operation with the City of Guelph to ensure a safe entry condition at the College entry point. This section of Arboretum Road would be developed for two-way traffic movement, which would provide an opportunity for a new sign and identification feature at the new College Avenue entry point. The existing Arboretum Road to the Arboretum parking lot would remain one-way with a designated bikeway in the short range.

It is recommended that the former seal pond area and aviary site be decommissioned, undergo landscape restoration and revert to Arboretum use.

The three existing centres (sites 1, 2 and 3 on the plan) would be improved to the limits of current functional capacity. The Arboretum Centre would serve as the conference and public reception area and would be geared to vehicular access with minor modifications. The R.J. Hilton Centre will continue as a location for staff offices, maintenance and research (including propagation and record keeping for the collections). The operational plan will consider further options for the Hilton Centre location, including the greenhouse development and further co-operation or sharing of facilities with other University departments. The J.C. Taylor Nature Centre would undergo modifications to remove the maple syrup equipment and expand environmental education space.

The easement at the Cutten Club along Victoria Road would be secured in the short-range plan.



Section Three DEMONSTRATION PLAN

#### Long-Range Plan

The long-range plan takes a more visionary approach and strives to follow the master plan "planning principles" in a more comprehensive way. Specifically, principles 2 (environmental responsibility), 3 (celebration of place), 6 (urban integration), 7 (consolidated core), 11 (preserve the best, remove the worst, repair the rest), 12 (appropriate relationships), 13 (campus safety), 16 (entry, orientation and wayfinding), 17, 18 and 21 (transportation emphasis [pedestrian orientation along with alternative transportation modes, including bicycles]), 19 (reducing pedestrian/vehicular conflicts), 22 (parking within walking distance of major facilities while favouring green space), 23 (utilities), 26 (instructional/study/learning and communal space), 27 (research facilities to encourage intra- and interdisciplinary contacts), 28 (outside community use) and 29 (consolidation of maintenance facilities) all direct the physical form of the long-range plan.

The long-range demonstration plan recommends a significant reorganization of Arboretum movement systems and primary use areas associated with building infrastructure. Key components of this demonstration plan are illustrated in the following sections: "Primary Walkway Structure," "Road System," "Landscape Structure," "Collections," "Gardens" and "Natural Areas."



Figure 112: Long-range plan (site organization diagram)



### PRIMARY WALKWAY STRUCTURE



Figure 113: Demonstration plan: "The Arboretum promenade"

The plan proposes to pedestrianize the central core of the Arboretum. The removal of private vehicles would improve the quality of the Arboretum environment and provide a combination walkway and bikeway that extends the experience of Reynolds Walk into the site. The tree-lined "promenade" would become one of the major unifying features of the Arboretum and provide a visual link to the Arboretum from central campus as illustrated in Figure 113. Figure 114 demonstrates the concept of converting the existing Arboretum Road to a promenade with a bikeway on the left-hand side.

An entry plaza is envisioned at the beginning of the promenade that would make a direct connection to the Arboretum Centre and to Alumni House. The "alumni plaza" would serve as a fitting terminus to Reynolds Walk and as an entry to the Arboretum.

Service and emergency access would be possible on the promenade, which is consistent with the practice on the other two major University walks: Winegard and Reynolds.

The various existing secondary trails form the balance of the pedestrian walkway system and will be generally confined within the core Arboretum lands between College Avenue and Stone Road.

A trail link from the Arboretum to the Eramosa River Valley and Trail System will be explored through an easement agreement with the Cutten Club. The trail would provide a safe route for students and the public to enter the Arboretum from the northeast section of Guelph and would provide alternative access to the University.



Figure 114: The Arboretum promenade



Figure 115: Entry plaza concept



Figure 116: Link to Eramosa River



Section Three DEMONSTRATION PLAN



Figure 118: Public vehicular entry off College Avenue



Figure 119: Vehicular entry and shared parking at East Ring Road

## ROAD SYSTEM

Two two-way access roads would serve the Arboretum from East Ring Road and College Avenue.

The length of the public vehicular access road system would be reduced by approximately 60 per cent.



Figure 117: The proposed road system



Section Three DEMONSTRATION PLAN

### ARBORETUM BUILDING CENTRES



Figure 120: Major centres

The long-range plan envisions four major centres that function in context with the other elements of the plan. The figure above indicates the location of the centres. The primary functions would be as follows:

1. The Arboretum Centre and the J.C. Taylor Nature Centre. This complex would be the primary point of arrival for the general public and for users of the meeting rooms, auditorium and environmental education programs. The Arboretum Centre and the Nature Centre would be further equipped to more efficiently accommodate public use and revenue-producing activities. Most of the staff offices would be relocated to allow for increased space for rental and special-event use.



Section Three DEMONSTRATION PLAN

- 2. The R.J. Hilton Centre. The operational plan will consider the future role of the facility for administration, research and site maintenance. There are opportunities for upgrading the facilities and expanding nursery operations. The Harrison House could be included within this centre and provides a potential resource for future Arboretum administrative offices and meeting rooms.
- 3. The "new centre." Given the principles of the consolidated core; appropriate relationships; entry, orientation and wayfinding; pedestrian orientation to the campus; utility infrastructure; shared instructional/study/learning and communal space; and encouraging research collaboration, it is proposed that any new facility would be multiple-use, have a public face and link directly to the central campus. This location could also be developed to accommodate an expanded volunteer organization.

This "centre" would be part of a larger complex that is proposed in the campus master plan. The opportunities presented by this location are great and would serve as a terminus to the Reynolds Walk axis. The design would integrate and be complementary to Alumni House, East Residence, the Child-Care and Learning Centre, the potential new student residence site and the existing parking facilities.

4. Heritage house off College Avenue. This heritage house would serve as a base for allied organizations and special amenities. The funding, operation and management of this centre would be external or community-based. This selffinanced facility could be the site of offices, meeting rooms, a gift shop and a tea room, and provide financial support to the Arboretum.

The grounds could be developed for gardens that demonstrate the use of heritage plants. Another idea suggested during the planning process was to provide a spiritual or meditative garden. The building would provide a focus for horticulture and gardeners and serve as a regional cultural centre.


# LANDSCAPE STRUCTURE Image: Comparison of the stru

Figure 121: Proposed landscape structure

Tree plantings and plant massing would define major vehicular and pedestrian routes, create edges between changes in landscape uses, and form open spaces and buffers. The "working landscape" or the areas that will be devoted to research, education and public use are considered in the following sections dealing with collections, gardens and natural areas. It is important to note that most of the Arboretum serves multiple user needs. Therefore, the landscape areas are grouped into dominant-use categories, with references made to other acceptable uses.



# COLLECTIONS

The research collections have been established to meet the current and future needs of University researchers and for teaching. The list that follows is the recommended collections in the short-range plan. This list indicates primary use and is to be circulated to the research community to confirm needs and potential funding sources. See Figure 128 for locations.

### Research

- Gene Bank
- Elm Recovery Project
- The Robinia Collection
- The Herbarium (to be part of the OAC Herbarium, which is housed on campus)

### Display

Figure 122: A typical collection

- 1. Aceraceae
- 2. Betulaceae
- 3. Caprifoliaceae
- 4. Celastraceae
- 5. Coniferous Tree Collection 6. Dwarf Conifer Collection
- 7. Cornaceae
- 8. Ericaceae
- 9. Fagaceae
- 10. Fraxinus
- 11. Hippocastanaceae
- 12. Juglandaceae
- 13. Leguminosae
- 14. Oleaceae
- 15. Rosaceae
- 16. Frances Ball Rose
- Collection
- 17. Rutaceae
- 18. Salicaceae
- 19. Syringa 20. Tiliaceae
- 20. 111111111

Maple Family Collection Birch Family Collection Honeysuckle Family Collection Staff-tree Collection

Dogwood Family Collection Hancock Rhododendron Collection Beech Family Collection Ash Collection Horse Chestnut Family Collection Walnut Family Collection Bean Family Collection Olive Family Collection Rose Family Collection

Rue Family Collection Willow Family Collection Lilac Collection Linden Family Collection



21. Ulmaceae

Elm Family Collection

- 22. Centre Forest
- 23. Fall Colour
- 24. Native Trees of Ontario
- 25. Regional Plant Association26. World of Trees



Figure 123: Map of collections, gardens and natural areas



Figure 124: Edna and Frank Miller English Garden

# GARDENS

## Cultural

The Arboretum Garden is a series of demonstration gardens showcasing horticultural techniques, artistic expression and cultural diversity. These gardens are living examples of our understanding of the cultured landscape and show how garden design has evolved over time. The garden contains historical gardens; interesting vistas; a place for meditation, contemplation and relaxation; and a space for gatherings.

- C1 David G. Porter Memorial Japanese Garden
- C2 Edna and Frank C. Miller English Garden
- C3 Italian Garden
- C4 OAC '56 Park in the Garden

# Commemoration

- C5 Wall-Custance Memorial Forest Dedication Grove
- C6 College Greys Trees Grove
- C7 Hospice Lilac Collection
- C8 Ontario Horticultural Association Oak Grove
- C9 Roy Hammond Rotary Tree Grove
- C10 Silver Anniversary Maples





### **Environmental Demonstration**

The Gosling Wildlife Gardens are a collection of five gardens on the scale of urban and suburban backyards. Each one is planted with trees, shrubs and herbaceous plants that provide food, cover and nesting sites for wildlife. The collection is designed to motivate visitors to do similar plantings in their own backyards; to display woody plants and perennials that are attractive to wildlife; to promote positive people/wildlife interactions; to give examples of how to increase the diversity of habitats and wildlife species in backyards; and to complement Arboretum interpretive programs.

. E1 Gosling Wildlife Gardens

- Hummingbird, Butterfly and Moth Garden
- The Lawn
- Native Plants Garden
- Suburban Garden
- Small City Garden

E2 Gosling Residential Demonstration Gardens (proposed) E3 Gravel Pit Rehabilitation Site (30-year history)

Other potential off-Arboretum sites for rehabilitation demonstration include Brown's Woods (125-year history) and the Cutten Club/Eramosa gravel pit area.



Figure 127: Proposed residential display garden



Figure 126: Gosling Wildlife Gardens





Figure 129: Brown's Woods



Figure 130: Dairy Bush



Figure 131: Arboretum Nature Reserve

# NATURAL AREAS

- N1 The Nature Reserve N2 The Nature Reserve Extension N3 Victoria Woods N4 Wild Goose Woods N5 Dairy Bush N6 Eramosa River Access Easement
- Nature Reserve Nature Reserve Natural Area Natural Area Natural Area Environmental Easement

Proposed new additions to an Arboretum natural areas "network" include the Dairy Bush and the Cutten Club easement as an "environmental corridor". The best way to preserve the Dairy Bush and Brown's Woods is for these natural heritage lands to be considered as part of a larger study and within the context of other future land uses for west campus.

Management plans and supporting budgets are to be developed for all lands in this natural area category.



Figure 128: University natural areas



# LONG-RANGE DEMONSTRATION PLAN

The long-range demonstration plan on the following page is a composite of the plans on the previous pages that focused on specific parts of the Arboretum. It is an illustration of the Arboretum in 20 to 30 years if the planning principles are implemented and identified opportunities are developed.





