CHAPTER 2: PLANNING PRACTICE

According to the Royal Commission's publication number 12, *Planning for Sustainability* (Doering et al. 1991):

> As the work of the Royal Commission on the Future of the Toronto Waterfront has progressed, it has become abundantly clear — both from the evidence of deputants and from the Commission's own studies — that the present processes of land-use planning and environmental management do not offer even minimal environmental protection, let alone the "ecosystem approach to restoring and regenerating the Greater Toronto region" advocated in *Watershed* (RCFTW 1991).

The previous chapter describes some of the changes in decision-making processes that are needed to implement the ecosystem approach in the Greater Toronto region. Many involve some form of planning: for land uses in municipalities, for watershed management, for shoreline regeneration, for development, etc.

The ecosystem concept is so all-embracing, so multi-faceted, and so dependant on things only partially within any one politician's, planner's, designer's or developer's control, that there is a tendency to pay lip service and agree with the principle, but to avoid defining appropriate day-to-day practice. So, although the ecosystem approach to planning could and should be a revolution in planning practice, there is a real danger that it may become instead a descriptive veneer shallowly applied to doing things in the old way, just as such terms as "environmentally friendly" and "green" are sometimes used in advertising.

Because we want to focus on action rather than just on ideas or rhetoric, we offer in this chapter some thoughts on "ecosystem planning practice". For the sake of convenience, "ecosystem-based planning" has been shortened to "ecosystem planning", while "practice" is used to remind readers that performance is the ultimate test of our commitment to a healthy, sustained ecosystem. And it would be presumptuous to suggest that we can actually "plan" ecosystems: they are too complex, interconnected, dynamic, and often unpredictable. What we *can* do is undertake planning with an ecosystem perspective.

CONTEXT

Suggestions for practising ecosystem planning are offered in the context of a

> The structure of our metropolitan areas has long since been set by nature and man, by the rivers and the hills, and the railroads and the highways. Many options remain, and the great task of planning is not to come up with another structure but to work with the strengths of the structure we have — and to discern this structure as people experience it in their everyday life. . . . Grappling with these gritty realities, however, provides a far greater and more exciting challenge than the search for perfection somewhere else.
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> Whyte, W. H. 1968. *The last landscape.* Garden City: Doubleday & Company.

number of recent and ongoing initiatives in Ontario; these have been established in response to the need to change planning processes so that we can cope with increasing and conflicting pressures on land, water, and natural systems. They include:

- the Commission on Planning and Development Reform in Ontario, chaired by John Sewell;
- the Ministry of Municipal Affairs' work on greening the planning process, a green guide to planning practice, streamlining the planning process, and identifying ways to develop provincial policies and plans;
- preparation of, and revisions to, many regional and local municipal Official Plans in the Greater Toronto region;
- co-ordination by the Ministry of Natural Resources of the Oak Ridges Moraine interim guidelines and planning study;
- the work of the Office of the Greater Toronto Area, including its *Urban Structure Concepts Study* (Ontario 1990), and its vision statement for the Greater Toronto Area in 2021;
- former MPP Ron Kanter's (1990) study, *Space for All*, which describes options for a GTA Greenlands Strategy;
- the five-year review of the Niagara Escarpment Plan (Ontario 1985);
- investigations by the Ministry of Agriculture and Food regarding innovative ways to protect agricultural lands;
- the Ministry of the Environment's Environmental Assessment Program Improvement Project (EAPIP);
- work by the ministries of the Environment, Natural Resources, and Municipal Affairs on guidelines for integrating water resource management objectives into municipal plans;
- the Ministry of Natural Resources' review of the role, mandate, funding, and composition of conservation authorities; and
- the Metropolitan Toronto Remedial Action Plan.

For several reasons, these initiatives have tremendous potential to influence planning processes at a crucial time. First, as described earlier, the Greater Toronto bioregion is at a pivotal stage of growth. If future changes are not planned carefully, environmental quality will continue to be degraded and quality of life will suffer.

Second, many municipal Official Plans are currently being reviewed or prepared. Two regions, Peel and York, are still preparing their *first* Official Plans, while Halton and Durham are revising theirs and Metro Toronto is preparing its second Official Plan. At the same time, most local

municipalities are undertaking Official Plan reviews, and many waterfront municipalities are preparing waterfront plans.

Plans now being prepared will have significant effects on patterns of development, environmental health, community life, and the economic vitality of this region for a long time to come. There are encouraging signs that some municipalities are shifting to more ecosystem-based planning; the challenge is to encourage this approach everywhere, so that these opportunities are used to ensure a healthy and sustainable future for the region.

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In recognition of these needs, *Watershed* proposed a review of

> . . .the ways in which the philosophy and principles of the ecosystem approach could best be integrated into the Planning Act and other relevant provincial legislation, as it affects the greater Toronto bioregion.

The Royal Commission subsequently convened an interdisciplinary work group on environment and planning; it was asked to prepare a background paper on issues related to integration of environmental considerations into the land-use planning process and to suggest opportunities for better integration. The resulting report, *Planning for Sustainability* (Doering et al.), was published in June 1991, and is the basis for much of this chapter.

THE NATURE OF THE PROBLEM

Planning for Sustainability concluded that there is widespread agreement on the inadequacy of current provincial land-use planning processes to protect the environment, but there are many different views of the nature of the problem:

> Environmentalists are concerned about the deterioration of the natural environment: loss of valuable natural areas such as wetlands, woodlands, and river valleys; disappearance of prime farmlands and rural landscapes; pollution of rivers; depletion of aquifers; and so on. Provincial and municipal governments are subject to conflicting demands for the use and protection of land, air, and water, but lack adequate resources to respond. Developers are concerned that environmental requirements are not clearly specified and that the processes being used to seek environmental protection create delays, increased development costs, and reduced options.

Clearly, the problems are many and complex. Following are some that have been highlighted during the Royal Commission's work.

PLANNING OR REGULATION?

Ecosystem planning practice has deep roots but its form is still emerging. Its roots can be traced to Henry Thoreau, Aldo Leopold, and some of the naturalists who came before and after them. The first views of Earth from space, during the 1960s, supported an ecological vision of Earth: when our planet was seen in its entirety — not as some kind of huge mechanical ball or geographic globe, but as a living, moving

Cooksville Creek, Mississauga: damaged by development practices, this channel is now under restoration by the Credit Valley Conservation Authority and the City of Mississauga

orb, beautiful and fragile — people's perceptions changed. In 1969, one of the key works in bringing the ecosystem into land-use planning was published: Ian McHarg's *Design with Nature.* It showed how human needs could be met within the framework of natural systems, rather than being imposed over them, with beneficial results for both people and nature.

During this century, most responses to growing awareness of ecosystem stress have tended to be more narrow and regulatory, rather than the proactive, ecosystem-based planning advocated by McHarg and others. According to that way of thinking, parks and reserves are created in response to habitat losses, to protect fragments of green. Regulations are applied to control development in hazard lands, as a reaction to flooding and erosion. If air and water are polluted, regulations are developed to control emissions. Instead of developing a clear vision for communities, using the Official Plan process, growth proceeds on an incremental basis, with Official Plan amendments being made to accommodate individual development applications.

Consequently, a great deal of work and money have gone into devising appropriate regulatory structures, writing regulations, administering them, and responding to them — generally in an adversarial atmosphere, in which the *proponents* and *regulators* of development see themselves as being on opposite sides.

In such an atmosphere, developers, whether public or private, spend more time, energy, and money on manoeuvring a plan through the regulatory process than in designing it creatively. Similarly, environmental agencies spend more time on essentially negative regulations than on positive planning, and nonetheless feel they are protecting the public interest, because they are stopping others from doing harm. And many land-use planners — trained to conceive

and propose plans in response to functional, ecological, and human issues — find that, when they enter public service, their jobs involve negotiating and administering regulations.

It is clear that, while regulations are an essential part of any environmental management system, they should not be seen as an alternative to good, ecosystem-based planning. We need to redress the balance, to spend more energy on developing practical, integrated techniques of planning and design, and use regulations to ensure that things happen as planned.

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Provincial Role

In theory, the Planning Act provides opportunities for integrating environmental considerations into land-use planning and development control. In practice, however, its provisions are not being used effectively for this purpose.

The Province can comment on environmental matters when an Official Plan is being prepared, when it is being reviewed or amended, and when plans are being created for subdivisions and condominiums. However, the effectiveness of these review processes is hampered by limitations in the mandates of different provincial agencies, their general inability to reach consensus, the fact that they have inadequate resources, and the lack of enforceable and consistent standards.

These difficulties are exacerbated by the absence of clear provincial guidelines on environmental priorities and ecosystem approaches to planning. As a result, different municipalities take very different approaches to environmental matters, depending on political will, community priorities, resources, and expertise. Some municipalities only pay lip service to the environment, while others do what they can, with varying degrees of success. Such piecemeal and inconsistent approaches provide extremely patchy protection for ecosystems, and make it hard for developers to understand the rules of the game.

For example, Section 3 of the Planning Act allows the Province to issue policy statements to guide municipal planning on matters of provincial interest. So far, however, issuing policy statements has been a painfully slow, contentious process. The only ones currently in effect are for floodplains, aggregates, and housing. As *Planning for Sustainability* concluded:

> Inter-ministerial and inter-departmental turf wars over control and priorities make it difficult for governments to reach agreement on the substance of policy statements. Lack of political will, and the attitude that it is sometimes safer and easier to simply do nothing, impede provincial leadership. In the meantime, however, land-use decisions continue to be made without a clear statement of provincial priorities regarding the environment.

A case in point is the proposed provincial Wetlands Policy Statement. After ten years of discussions and paperwork, in September 1991 the ministers of Municipal Affairs and Natural Resources released yet another draft of the policy. The Province

I am convinced that these swamps, bogs and marshes were ordained from the beginning in the divine order of things to be left as natural reservoirs, and much heart-searching and thought should be exercised before they are discarded for some other use.

Attributed to a fictitious character named Samuel Woodstock who wrote for *Our Valley*, a conservation authorities newsletter, quoted in Richardson, A. H. 1974. *Conservation by the people: the history of the conservation movement in Ontario to 1970.* Toronto: University of Toronto Press.

classifies wetlands according to the degree of provincial significance — based on their biological, social and hydrological values — and has seven such categories. The Royal Commission is pleased to note that the latest draft policy includes classes I to III in its definition of provincially significant wetlands to which the policy applies.

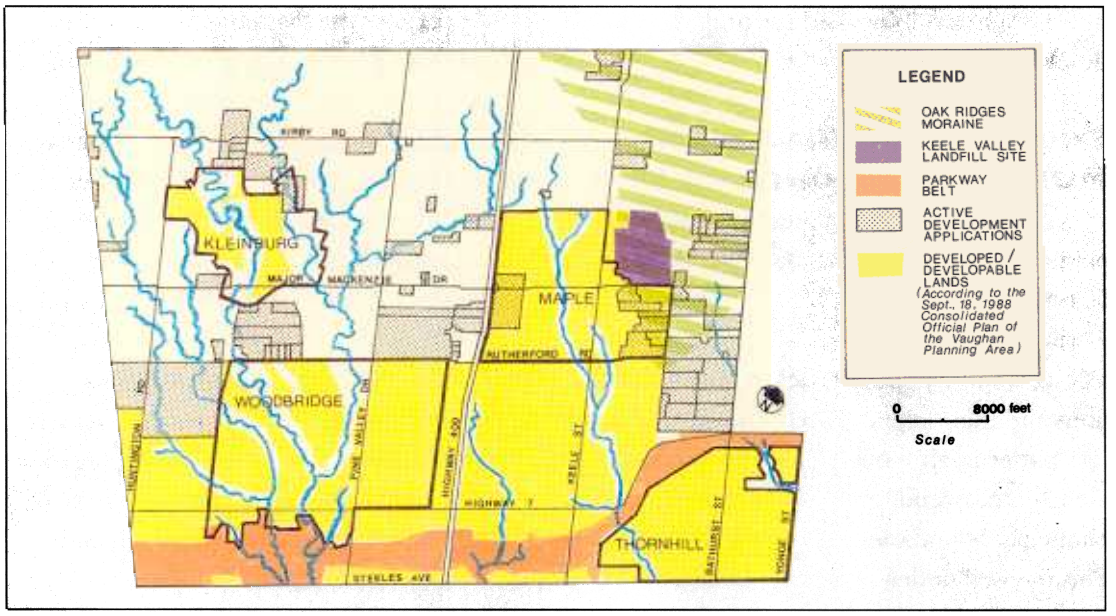
However, in many other respects the draft wetlands policy is disappointing. It does not have an ecosystem perspective and, if adopted in its present form, would provide very limited protection for wetlands in Ontario.

Like any policy statement under Section 3 of the Planning Act, the wetlands policy can only require municipalities to "have regard to" its provisions. This means that the policy statement must be seriously considered, and an explanation provided if it is disregarded — but it does not have to be used as the basis for decisions. Among other weaknesses of the draft policy statement, it:

- fails to emphasize the ecological relationships in wetland complexes, between wetlands and surrounding lands, or upstream influences;
- makes no provision for buffer zones around wetlands;
- has no clear definitions of compatible land uses, development, and wetland functions;

Carruther's Creek Marsh, Ajax

Map 2.1 Active development applications in the City of Vaughan



- does not prohibit public facilities and utilities from being placed in provincially significant wetlands;
- does not require planning documents (Official Plans, zoning by-laws, etc.) to be changed in a specified period to reflect the wetlands policy; and
- does not encourage municipalities to protect wetlands that are not classified as provincially significant (classes IV to VII), although these may be locally important.

Municipal Plans

Although most municipalities in southern Ontario have Official Plans, as a rule these have not provided a long-term framework for change. Instead, distribution and form of growth have been reactive: Official Plan amendments were made in response to individual development proposals. In many places, therefore, it is assumed that development can be permitted almost anywhere, regardless of Official Plan designations for agriculture or open space.

In some cases, absence of an up-to-date Official Plan to guide development has been attributed to the Province's position that development can be approved only if proven servicing capacity (water and sewer) is available. Thus, in York and Durham regions, Official Plan amendments have been made incrementally, as excess capacity in various parts of the trunk sewer system has been identified.

This method of operation tends to discourage local municipalities in the regions from long-term planning. The apparent disregard for existing land-use plans is quite prevalent and is illustrated by comparing Official Plan designations with the distribution of development applications. Map 2.1 shows a typical situation, in this case in the City of Vaughan. It is worth noting that in 1989, concern about the implications of incremental development in Vaughan

prompted a municipal policy review to examine future options and produce a policy framework for land use and development.

Ecosystems Transcend Municipal Boundaries

Another major limitation of municipal planning processes is that many ecosystem features and processes — rivers, groundwater, forests, wildlife populations and their migratory patterns, air movement — transcend municipal boundaries. This was well understood by the founders of conservation authorities in the 1940s. A. H. Richardson (1974), in *Conservation by the People,* quotes Professor A. F. Coventry's 1941 booklet, *Conservation and Post War Rehabilitation*:

> Natural resources form a delicate balanced system in which all parts are interdependent and they cannot be successfully handled piecemeal. The present situation requires the coordination of existing relevant knowledge and its application where necessary, and then the development of a comprehensive plan for treating the natural resources on a wide public basis.

This perspective is evident in Section 21 of the Conservation Authorities Act, which states that an authority has power "to study and investigate the watershed and to determine a program whereby the natural resources of the watershed may be conserved, restored, developed and managed".

However, Section 28 limits authorities' regulatory powers to the use of water, alterations to watercourses, and filling and constructing in floodplains.

Because the Planning Act does not provide for planning in areas larger than regions and counties, there is no legislative framework for land-use planning for areas defined on an ecosystem basis: watersheds, the Oak Ridges Moraine or the Greater Toronto bioregion, for example. Although this situation could be remedied by municipalities and conservation authorities planning together for areas defined on an ecosystem basis, there are currently no incentives for them to do so. Such incentives could be provided, for example, by provincial requirements tied to funding for specific programs or capital projects.

A major limitation of municipal planning processes is that many ecosystem features and processes — rivers, groundwater, forests, wildlife populations and their migratory patterns, air movement — transcend municipal boundaries.

There are a few exceptions to this general situation. The Niagara Escarpment Plan (Ontario 1985) is based on special legislation, the Niagara Escarpment Planning and Development Act of 1973, to protect the magnificent landform and nearby lands substantially as a continuous natural environment. The Province's recent guidelines and planning study for the Oak Ridges Moraine also represent significant recognition of the need for planning based on ecological systems.

On the whole, however, it appears difficult to implement ecosystem-based efforts such as watershed and remedial action planning. Despite the fact that all Ontario conservation authorities created plans in 1983, implementation has been hampered by lack of co-ordination and commitment among the jurisdictions involved, and because the Province does not require that watershed

plan recommendations and strategies be incorporated into municipal planning and development control processes. These issues were recognized by the Environmental Assessment Advisory Committee in its report, *The Adequacy of the Existing Environmental Planning and Approvals Process for the Ganaraska Watershed* (Byer, Gibson, and Lucyk 1989). The Committee found that:

> . . . the interjurisdictional character of the Watershed and the Moraine poses a considerable challenge for environmentally sensitive land-use planning, particularly because of the cumulative effects problem. Each municipality has its own set of priorities and objectives based on concerns within its jurisdiction. In the absence of special efforts, there is little likelihood that the separate municipal decisions will be consistent in their approach to environmental protection, or that they will reflect a comprehensive understanding of what is needed to protect the overall environmental quality.

The Committee went on to say that the Ganaraska Region Conservation Authority is restricted in its ability to address these issues because it has neither the mandate nor the authority to establish and implement planning policies for the watershed.

Design and Standards

There are many examples of situations in which standards intended to ensure public safety or engineering efficiency have the unfortunate result of constraining design opportunities.

For example, street widenings often occur at the expense of trees, which are needlessly cut down at the apparent whim of traffic engineers, who could have saved them with only minor inconvenience to the movement of cars and trucks. Unfortunately, this is not the result of whim but because engineers are hostage to standards of practice. No one — not those who commission street-widening projects or even the prime minister of Canada — can change the established parameters of design without subjecting the engineer to the penalties of professional misconduct. Because these standards are based, among other things, on concepts of public safety, the agency that commissions an engineer is also vulnerable if the design does not meet such standards. So the tree goes; it can stay only if standards are changed.

The form and pattern of urban growth are also influenced by standards: for lot sizes, setbacks, road widths, sidewalks, utilities, storm drains, and other elements. They affect the amount of land used to build a given number of homes, urban design, the extent of paved surfaces, types of drainage systems, and so on. It seems difficult, however, to change standards well entrenched in municipal planning and development approval processes. For example, many municipalities appear reluctant to respond to developers' requests for zoning that would permit smaller lot sizes — although these are an important aspect of establishing more compact communities, and of providing affordable homes. There is apparent concern that doing so would lead to "downgrading" of communities and a decline in nearby property values.

Development and infrastructure standards should be re-examined in view of current values and the demands of the environmental imperative. Although they represent the accrued wisdom of countless committees, ultimately they are based on human values, and can be revised if values change.

REVISITING SUBURBS

The growth of suburbs and the proliferation of automobiles evolved in tandem, enabling middle-class families to move away from the noise and activity of city commerce and industry to the country life promised in the suburbs. Ironically, but not surprisingly, as more people settled in the suburbs, the less country-like they became: the success of the settlement pattern led to its growing environmental, financial, and (for some) social inadequacies.

Moreover, as settlement continues to sprawl farther away from urban cores, more valuable farmland and natural areas are lost: each new low-density subdivision adds more congestion to the roads as more people drive longer distances to city centres for employment and recreation. Commuting, with its stalled traffic and idling engines, means increased air pollution and higher stress levels. And, sadly, this pattern of development is often socially isolating and inflexible, catering primarily to "typical family" households. Finally, low-density subdivisions engender high servicing costs and wasteful land use.

A recent housing proposal in Oakville by the River Oaks Group attempts to deal with many of these problems: it reflects new thinking on suburban planning, integrating overall quality of life with respect for the natural environment.

The plan envisions a community with densities comparable to those in traditional urban neighbourhoods, thus reducing the amount of land consumed. A range of housing types is proposed to meet current demographic trends — smaller households, an aging population, a rise in the number of single-parent families, and an increase in the number of households formed by people who are related or unrelated. Many of the units will be 'convertible' so that space can be expanded or reduced, depending on need, allowing residents to remain within the community despite changing personal or financial circumstances.

Low-density, single-use subdivisions are often socially isolating in two ways. First, in effect many are "bedroom communities" with limited opportunities for employment and entertainment. Second, the design of most suburbs emphasizes private (large closed-in yards, fences, etc.) rather than public spaces. River Oaks offers an alternative form of community in which street design emphasizes public values by carefully considering such elements as porches, balconies, sidewalks, street trees, lighting, and open spaces. The proximity to Oakville's new Uptown Business Core, as well as local corner stores, will provide commercial and other facilities within walking and biking distance.

Because of its smaller lots, lower servicing costs and "finish-later" options, River Oaks will offer more affordable housing than is available in the surrounding community; moreover, diversity and affordability will be further enhanced by the seamless integration of co-op and non-profit housing throughout the community, rather than in segregated housing blocks.

Another objective is to minimize the environmental impact of development and to connect the community to the natural environment. Instead of levelling the development site and removing all vegetation, as is commonly done during site preparation, natural topography and existing trees will be retained where possible.

This and other projects proposed by the River Oaks Group emphasizes stormwater management that encourages percolation of rain and snow through the soil, allowing

A recent housing proposal in Oakville takes a new approach to suburban development

slow recharge into groundwater and nearby creeks. This is in contrast to traditional stormwater management which forces large volumes of water into sewers connected to nearby streams, causing erosion and degraded water quality.

The proposal focuses on providing future residents with a high quality of life and a healthy natural environment. In order for such housing projects to proceed, land must be rezoned for mixed-use and convertible housing, and standards adjusted to accommodate proposed lot and street sizes, utility right-of-ways, and setbacks. If development standards evolve to support proposals like this one, and if other developments follow its lead, future suburban growth and development can be accommodated in a much more sustainable manner.

That has certainly been the case in the past — we did not always require that bedrooms have windows, for example — and they must continue to change if we are to retain or increase the health of our community.

Environmental Assessment

There is growing concern that the environmental consequences of land-use planning and development decisions are not being fully considered. This is reflected in the number of requests that have been made to designate planning matters — such as Official Plan amendments, zoning changes or subdivision approvals — under the Environmental Assessment Act. *Planning for Sustainability* (Doering et al.1991) lists possible reasons for this situation:

- public concern that the municipal planning process is not addressing environmental concerns adequately;

- mistrust of the abilities and motives of city politicians and/or staff;
- mistrust of the provincial government review process;
- a desire to obtain intervenor funding (available for Environmental Assessment Board hearings, but not for Ontario Municipal Board hearings);
- a desire to shift the burden of proof from the complainant (the public or a government agency) to the proponent;
- a need to ensure consideration of alternatives to a proposal and alternative ways of carrying it out (neither of these is required by the Planning Act); and
- inadequate environmental information and analysis.

Complications also arise when the requirements of the Planning Act and Environmental Assessment Act (EAA) overlap. This frequently happens when municipal government activities are being considered — primarily to provide or upgrade infrastructure.

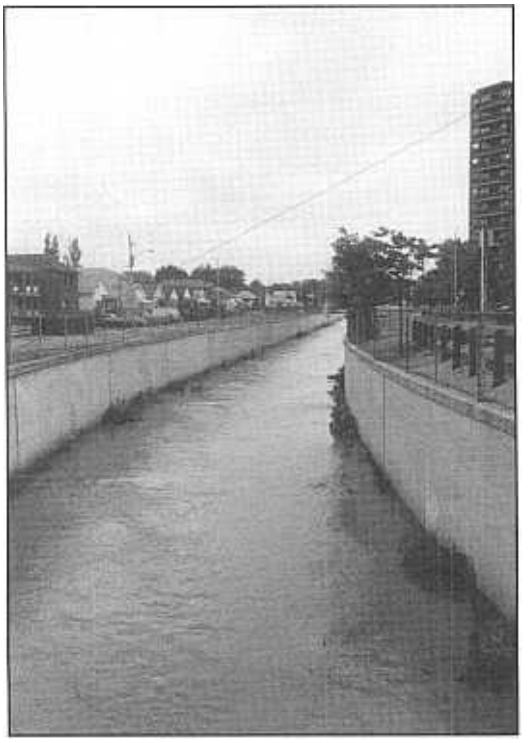
Building municipal infrastructure — roads, water supply, and sewage treatment — is subject to the EAA, through municipal class environmental assessment processes. In many cases, difficulties arise because class environmental assessment processes for infrastructure have not been co-ordinated with planning and approval processes for municipal development. For example, if Official Plan amendments have already been granted to permit development, it may be irrelevant to try to assess alternatives to providing infrastructure that supports the development, although this is required under the EAA. Developers waiting while the class environmental assessment process is undertaken face uncertainty and delays. Moreover, the processes for public involvement become complicated, requiring two streams of activity, each with its own reports, meetings, and administrative structures.

Another problem with environmental assessment on a project-by-project basis is that it becomes impossible to address cumulative effects: the combined effects of all activities in an area over time, plus the incremental impact of new stresses associated with individual projects. Accounting for them involves two basic components: a holistic understanding of all environmental conditions in the area, as well as an assessment of how these conditions are changing or are likely to change, given alternative scenarios.

A problem with environmental assessment on a project-by-project basis is that it becomes impossible to address cumulative effects.

Some examples of cumulative effects include:

- effects on waterfront water quality from many sources: sewage treatment plants, combined sewer overflows, storm sewers, rivers, and atmospheric deposition;
- fragmentation of wildlife habitats as a result of many land-use changes;
- indirect effects such as development in a river's headwaters causing sedimentation of a downstream wetland;
- the synergistic effects of different pollutants, such as the formation of ground-level ozone from nitrogen



A channelized portion of Black Creek

dioxides and volatile organic compounds in the presence of sunlight.

Incremental decision-making actually contributes to cumulative effects: it may be possible to build a bridge over a creek with minimal environmental impact, but there may be damage if a new trunk sewer is added, a well dug, part of a wetland filled, and a bend in the creek straightened. Under the Environmental Assessment Act, each of these projects is examined by a separate process and there is no mechanism to assess their combined effects. This raises critical questions:

- Can municipal planning and environmental assessment efforts be co-ordinated so that the former fulfil some of the requirements of the latter?
- Should the environmental assessment process be used to evaluate alternatives and assess individual projects in the absence of a comprehensive, ecosystem-based plan for land use and infrastructure?

Such considerations prompted Halton Region, working with the ministries of Municipal Affairs and the Environment, to propose a process that dovetails the Halton Urban Structure Review with environmental assessment requirements for infrastructure services (water, sewers, stormwater, and roads) for future growth in the region. If it is successful, this ground-breaking exercise may provide a useful example of integrating the municipal planning and environmental assessment processes.

Summary of Key Problems

Without doubt, it is urgent to adopt an ecosystem approach to planning. We can no longer afford the past luxury of taking for granted an expanding economy and seemingly limitless natural resources. The region, with some four million residents, is already under considerable environmental, social, and economic stress. Even if the population remained stable, these stresses would have to be dealt with if the ecosystem were to be restored to health and vitality. However, given projections that, by 2021, the population could increase by 50 per cent — to about six million people — there are serious questions about how to accommodate such growth without causing further deterioration of the bioregion.

Unfortunately, current practices are not equal to the tasks. They suffer because of an over-reliance on regulations to control land use and development, based on outdated policies and standards. Our ability to

> Adaptive and open-ended decisions are required to prepare us to live in future urban places with as many options available to our children and our grandchildren as those that were passed on to us by our parents and our grandparents. This implies a minimum commitment to manage the places where we dwell within a time horizon that spans five generations.
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> Jacobs, P. 1991. *Sustainable urban development.* Montreal: Third Summit of the World's Major Cities.

plan on an ecosystem basis is limited by municipal, politically defined boundaries, and by jurisdictional gridlock that frustrates attempts at co-operation. And while people plod through numerous planning studies, policy development exercises, and reviews of legislation, environmental damage and losses continue.

Towards Ecosystem Planning Practice

By contrast, improved processes for land-use and watershed planning could play a significant role in directing future development to environmentally appropriate places, and carrying it out in a manner that protects and enhances ecosystem values.

The Commission's own work explored some ecosystem planning practices. In *Watershed* it established nine principles and showed how they could be applied across the waterfront. The environmental audit of the East Bayfront/Port Industrial Area focused on ecosystem health and recommended ways to protect, restore, and enhance the area's ecosystem. In *Planning for Sustainability,* the Commission explored ways to integrate environmental protection into land-use planning. A Commission workshop on assessing cumulative effects culminated in a technical paper, *Towards Ecosystem-Based Planning: A Perspective on Cumulative Effects* (Davies 1991). Several practical planning exercises were commissioned and are summarized in this final report, in "Healing an Urban Watershed: The Story of the Don", "Garrison Common", and "Toronto Central Transportation Corridor".

Using that work, this chapter looks to the future and offers a broad outline of the practical aspects of ecosystem planning. As mentioned earlier, it is all too easy to put a "green spin" on the wording of traditional comprehensive plans. The task before the Toronto region's planning community is much greater and more exciting: to translate ecosystem theory into pragmatic methods of improving quality of life; establish land-use patterns; balance demand, capacity, and technology; accommodate economic development; and evaluate possible scenarios for the future. This must be done for natural and built environments at all planning scales, from region to individual site, for both public- and private-sector activities. We start by considering how ecosystem planning differs from most traditional approaches.

Ecosystem Health, Sustainability, and Quality of Life

One of the key differences between ecosystem and traditional land-use planning is that the former emphasizes the need to balance ecosystem health, quality of life, and economic vitality. Traditional planning, on the other hand, is more inclined to focus on distributing land uses in accordance with social and economic imperatives. In ecosystem planning, policies and proposals are

not judged solely on their economic merits, or on the way they contribute to housing, recreation or other social objectives. They are also judged on whether they add to regenerating and improving a region's ecological health.

In ecosystem planning, *interactions* in ecosystems — for example, between land-use practices and fisheries or among urban sprawl, automobile use, and air pollution — become a major focus of research, analysis, and decision-making. This means more effective and creative solutions can be found to issues that are the invariable result of complex relationships.

Ecosystem planning also involves a long-term view of change, rather than expedient short-term solutions. The longer view helps people and organizations develop sustainable strategies — stretching time horizons for planning, beyond the usual ten-year life span of Official Plans or the three to five years of a politician's term of office. We need to think in terms of what communities, and their environments, will be like in 50 years or more.

DIVERSITY

Ecosystem planning differs from many traditional methods by emphasizing, in various ways, the importance of natural and cultural diversity.

Natural ecological systems are usually complex assemblages of species and habitats. Similarly, cities that have evolved slowly and organically usually have a rich juxtaposition of places for work, play, and family life, as well as a blend of styles and structures from many decades and even centuries. Therefore, ecosystem planning is more likely to encourage a fine-grained pattern of mixed uses, rather than large, isolated districts for single-purpose uses.

It is also useful to think about the diversity within types of land use. While the Inuit have several words for snow, we have one, because snow is not as critical in urban life as it is in the Arctic. Similarly, a land-use

Cabbagetown, Toronto: residents enjoy a rich juxtaposition of nearby places for work, play, and family life

plan often has only one word — open space — for all the unbuilt lands in an area, but contains many words for settled areas: housing, commercial, industrial, transportation, institutional. As we pay greater attention to the needs of, and variations within, the natural system, we will devise new descriptive terms for land use in open areas.

Green Infrastructure

The organization of settlements — the pattern of movement, uses, built form, and landscape — affects their health, beauty, and function. Simply put, some streets and blocks, buildings, parks, tracks, and expressways have been laid out in ways that make them safer, healthier, more beautiful, and/or more functional than others.

The traditional way to organize a community is by the system of services (usually underground sewers) and streets — the infrastructure. In general, major natural features are accommodated by being obliterated or avoided. The result in the Greater Toronto region is that settlements simply cut across the natural system. This sometimes leads to interesting juxtapositions, but it is a hit-and-miss affair.

In many land-use plans, natural areas and other open spaces are often cynically described as SLOAP: Space Left Over After Planning.

In many land-use plans, natural areas and other open spaces are often cynically described as SLOAP: Space Left Over After Planning. Typically, the planning process begins by allocating spaces for residential, commercial, institutional, and industrial land use, with the road system as the primary link. Allocations are based on expected demand for these land uses, as well as suitability of location and infrastructure to support them.

But what if we were to start with the demand for natural systems? How much land should be allocated to nature? How much to other kinds of open spaces? What ecological, aesthetic, urban design, and recreational functions can they fulfil?

This would lead to a different way of structuring urban form, using a fully linked, continuous "green infrastructure", based on natural systems, and recognizing open space — not as an absence of buildings but as a land use in its own right. This will be as important and effective a part of the public realm as the street system, and will have as strong an effect on urban form. The "Greenways" chapter of this report points out that such greenways can also provide a host of ecological, recreational, and economic benefits. A green infrastructure may include natural habitat areas; landforms such as bluffs, valleys, tablelands, beaches, and cliffs; aquifers and recharge areas; rural lands; heritage landscapes; parks, trails, and other open spaces; and archaeological sites.

Heritage

As discussed in Chapter 1, an ecosystem approach to the bioregion requires an understanding of, and an ability to work sensitively with, its natural and cultural heritage. Conventional development often sweeps the past aside in favour of all that is new and modern. Instead (as "Healing an Urban Watershed" illustrates), the natural topography and countryside can be used to define urban form, ensuring a sense of continuity with the past and

maintaining valued elements of the landscape.

Similarly, in existing settlements, there are opportunities to adapt and reuse old buildings and to retain historic street, rail, and open-space patterns. In downtown Toronto, for example, many old industrial and commercial buildings along Front, King, Adelaide, and Richmond streets have been adapted for a variety of users, such as engineering or advertising companies. In contrast, the heritage of the Central Waterfront from Yonge to Bathurst streets has been virtually obliterated (notable exceptions being the Queen's Quay Terminal, Pier 4, and the Power Plant). Fortunately, there will be opportunities for more sensitive integration of built heritage on the waterfront when redevelopment begins in such places as Garrison Common, the East Bayfront, and the Port Industrial Area.

With care and imagination, the process of working with the existing world yields a more interesting and varied city in which to live and work, makes economic reuse of resources, offers a better understanding of collective history, and engenders a sense of personal attachment to the community. The landscape around us changes slowly and in a way that we can absorb and comprehend.

Capacity and Technology

While capacity is a commonly used planning concept, ecosystem planning gives it a new connotation, one that is different from that generally found in traditional planning. For example, traffic capacity is used as a measure of how "good" a road plan is: if it is inadequate, the road size is increased and designed for ease-of-flow. An ecosystem plan places more emphasis on

Pier 4 on Toronto's waterfront in 1947 (upper) and 1987 (lower): old buildings can be adapted and reused

Throughout the world, from Sydney's Power House Museum to Thameside warehouse/apartments and across Canada, from Granville Island's art school to Harbourfront's Pier 4 and Power Plant Gallery, essentially humble industrial structures have been given distinguished new careers through imaginative architectural design at the same time as their historic form and other essential traits have been maintained for posterity.

Stinson, J., and M. Moir. 1991. Built Heritage of East Bayfront. Toronto: Royal Commission on the Future of the Toronto Waterfront. Draft.

environmental capacity as a measure of the value of the plan.

The capacity of the ecosystem — the amount of a given human activity that it can tolerate — is not fixed, but exists on a sliding scale. It depends not only on the intensity of activity, but also on societal values, current technology, and management techniques. Carrying capacity can change over time, depending on the interaction of these factors.

A century ago, for example, Toronto Bay had reached its capacity to absorb the effluent created by what we now think of as a tiny settlement. Providing sewage treatment set capacity at a new threshold, which has been exceeded again, both because population has increased and because water quality standards are higher. Now the emphasis is on improving treatment efficiency and reducing pollution at source rather than relying on "end-of-pipe" solutions. This will probably set another capacity threshold.

An ecosystem plan should seek to define and stay within a place's various capacities to accommodate the density and impact of people, buildings, vehicles, and wastes. It should also enhance capacity by adopting new ways of operating: solar orientation of buildings, composting and recycling, stormwater ponds, better transit, chemical-free landscaping, and so on. Thus, the notion of capacity should be used to establish both creative and restrictive measures — strategies of *what to do*, as much as *what to stop doing* — in order to maintain and expand the economic and natural health of our growing community.

Flexible Boundaries

In ecosystem planning, the limits of areas being studied are decided on the basis of natural features and processes, rather than merely on political jurisdictions — which often means they are larger.

It may also mean that there are different boundaries for different ecological processes. For example, understanding water and rivers may require a watershed perspective, while soil contamination may be confined to a relatively small area, depending on the local migration of groundwater. The sources of soil contaminants may include historical land uses, recent landfill activities, and/or atmospheric deposition from long-range transport of air pollutants. In other words, establishing the parameters for ecosystem studies must be a flexible, open-minded process that fully explores all the known sources, interactions, and outputs.

Expanding the boundaries of research does not necessarily mean increasing planning beyond one's own jurisdiction. For example, in its waterfront planning process, the Regional Municipality of Metropolitan Toronto is using the concept of "geo-sheds" to encompass the links between watersheds, urban and natural drainage systems, coastal processes, and the shoreline. While this means studying ecological processes in jurisdictions beyond Metro's boundaries — to help understand key ecosystem relationships in planning for Metro's waterfront — it does not mean planning for those other jurisdictions.

There may be cases, of course, where looking beyond political boundaries to understand ecosystem processes shows that some interjurisdictional planning is essential. For example, the work of the City of Toronto's Task Force to Bring Back the Don has demonstrated that, without concerted effort throughout the Don watershed, actions to improve water quality in the lower Don will have limited success. The Metropolitan Toronto and Region

Conservation Authority is now working to establish a task force to address regeneration of the whole Don watershed.

In addition to boundaries based on natural processes, ecosystem planning may use boundaries defined by cultural features of places — neighbourhoods for example. Along the waterfront, some jurisdictions have a tendency to treat the area between the water's edge and the nearest major road as a planning unit. In many cases, this unit should be expanded to take in entire neighbourhoods — including parks, housing, shopping areas, etc. — and to encourage the sense of waterfront community.

Assessment of Likely Effects

Another fundamental aspect of ecosystem planning is that it includes assessment of the likely environmental, social, and economic effects of possible scenarios for the future, and enables planners, at an early stage, to consider the potential cumulative effects of many activities and projects.

The Environmental Assessment Act process focuses on finding the alternative *with the least unacceptable impact* — a laudable but essentially negative goal. Instead, assessing effects in the context of planning for a whole municipality or a watershed encourages evaluation of all effects, positive and neutral as well as negative. The goal is to find creative solutions that offer the greatest benefit, rather than simply trying to mitigate the consequences of harmful proposals. This makes it possible to take a proactive approach to improving ecosystem health, and to provide incentives that reward successful action. The goal of "net environmental gain" can be applied to ensure that future development makes a positive contribution to ecosystem health, by including measures to restore or re-create natural habitats.

Involvement

Finally, ecosystem planning involves all key stakeholders working together in an open, public, fair, and efficient process. Relationships have to be worked out among many interests — the public, different levels and agencies of government, the private sector, special-interest groups, and others. Processes should be designed to facilitate co-operation, encourage conflict resolution, and build consensus. This should result in more timely and efficient decision-making, with fewer antagonistic procedures than often occur in traditional planning and environmental assessment processes.

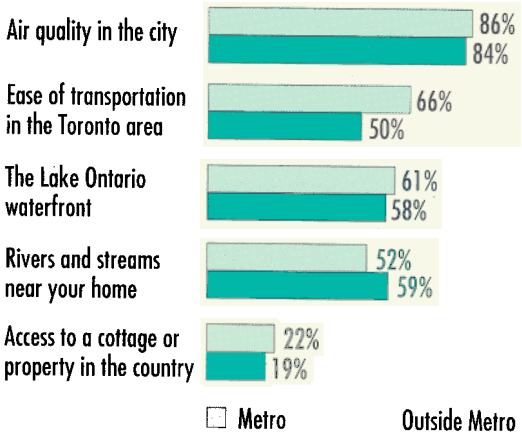
A Suggested Framework for Ecoystem-Based Planning

Given these basic elements — the goal of a healthy, sustainable ecosystem; a process involving communal efforts at reaching that

To arrest the degradation of natural resources and to restore in some measure their lost productivity involves replacing the unplanned individualistic exploitation of the past hundred years by planned management based on knowledge and recognizing public as well as private interest.

From Professor A. F. Coventry's brochure "Conservation and Postwar Rehabilitation" prepared for the 1941 Guelph Conference, quoted in Richardson, A. H. 1974. *Conservation by the people: the history of the conservation movement in Ontario to 1970.* Toronto: University of Toronto Press.

Importance to Family Life



More than four-fifths of the respondents consider local environmental quality and ease of transportation to be very important to their family's quality of life.

Source: Environics Poll. 1991.

goal; and an integrated system of planning, design, and regulation — it is possible to suggest a framework for ecosystem planning, one that can be applied at different scales and in different contexts. For example, it could be used for a special region like the Oak Ridges Moraine, for remedial action planning in an area of concern on the Great Lakes, for a watershed, a regional municipality, a local municipality or a waterfront area. Moreover, the principles embodied could be applied to either public or private development.

The suggested framework includes aspects of planning and environmental assessment that are normally part of specific legislation. The following is an attempt to integrate some of the most valuable ideas embodied in legislation. It does not imply specific recommendations for changing the laws, only creative ways of combining activities to achieve the overall goal of ecosystem planning. Perhaps the best method for testing the feasibility and practicality of this suggested framework would be to establish some demonstration projects, working closely with the agencies responsible for approving planning and environmental assessment processes.

Defining the Purpose and Scope of the Plan

This involves addressing such questions as the need for the plan, its geographic scope, who should be involved, how long it should take, and its key issues.

Defining Roles and Responsibilities of Participants

Considerations might include information management, how participants will work together, who will make decisions and how, research and monitoring, funding for planning and implementation, and accountability for action.

Establishing Goals

Although the overall goal of ecosystem-based planning is a healthy ecosystem, defining it and the best means of achieving it varies in different communities. Given such differences, the concept of sustainability requires, at a minimum, that goals be based on the community's long-term interests, its economy, and the environment that supports them. They should, therefore, take into account such concerns as a diverse economy, a safe environment, and the need for housing, jobs, recreation, etc.

At the same time, the ecological imperative of varied, high-quality, interconnected habitats for wildlife and for maintaining environmental processes should be addressed. Where possible, targets and indicators should be identified so that the current and future health of the ecosystem can be measured.

Gathering Information

Good decision-making requires good information, gathered in an organized process that addresses the identified needs of the planning process. Unfortunately, existing information is often patchy, scattered, and difficult to consolidate. As recommended in the chapter "Water", an integrated network for ecosystem science in the Greater Toronto bioregion should be established; it would be of immense value to municipalities and others undertaking land-use planning.

Synthesis of information about all aspects of the ecosystem reveals relationships within it, as well as between a study area and its surroundings. It also highlights gaps in the available information, which may be filled by further research.

At some point, it may be necessary to balance the need for sound information with the need for action: although a planning team should seek enough information to make sensible decisions, a point is reached in any process at which lack of information may become an excuse for inaction. Therefore, uncertainties associated with missing information must simply be recognized and taken into account, and the effects of any project carefully monitored and necessary adjustments made.

The concept of sustainability requires, at a minimum, that goals be based on the community's long-term interests, its economy, and the environment that supports them.

Assessing Ecosystem Health, Limits, and Values

Assessing ecosystem health can involve a set of criteria derived from the established goals; such criteria may include levels of toxic chemicals in the air, water, and soils; quality, variety, and quantity of wildlife habitat; species diversity; connections with natural and cultural heritage; economic vitality; social problems; availability of jobs, housing, recreation opportunities, community services, etc. This should lead to an understanding of:

- values to be restored, maintained or enhanced;
- opportunities;
- issues/problems to be addressed;
- constraints and hazards;
- needs/demands for facilities and services; and
- carrying capacity.

Designing and Assessing Alternative Scenarios

Any planning process involving many people and groups will create a range of possible future scenarios. Their probable cumulative effects — on social, economic, and biophysical conditions — should be predicted and assessed in relation to the criteria used to evaluate ecosystem health. This will identify the extent to which each scenario meets the specific goals, principles, and targets of the plan, as well as any unwanted effects on the ecosystem. Technology can be adapted to suit the capacity and suitability of the ecosystem for different activities and measures can be designed to prevent or mitigate unacceptable effects.

To date, there has been a tendency for the "savers" and "builders" in our communities to organize in separate camps and compete over change based on short-term issues instead of long-term planning objectives. Both camps must learn to work together so that their combined efforts can produce desired long-term development and protection results.

Lemire, R. A. N.d. *Keeping our garden state green: a local government guide for greenway and open space planning.* New Jersey: New Jersey Department of Environmental Protection.

Reaching Consensus on Fair and Useful Decisions

Deciding which scenario to adopt and how to implement it usually lies with an elected body, such as a regional or local municipal council, or the provincial Cabinet. One of the many advantages of ecosystem planning is that it enables the planning group to present a proposed plan to a decision-making body in a way that makes the process explicit, clearly identifies the likely effects of the alternative scenarios, acknowledges uncertainties, and recognizes any remaining conflicts. A decision usually involves trade-offs among different goals, but at least the ecosystem planning process provides a clear understanding of the expected short- and long-term consequences of action.

Review and Approvals

One of the sources of delay and frustration in current planning and environmental assessment processes is the slow and uncoordinated approach to review and approvals by provincial agencies. This could be alleviated by several measures. As recommended later in this chapter, provincial policies should be developed to bring more clarity and certainty to provincial requirements. Time limits on review periods could be established, with de facto approval if no review is undertaken during the specified time period. All agencies could be required to present their comments at the same time, in a public forum, and to make decisions concurrently (instead of the present step-by-step process).

Making Commitments for Implementation

Many good plans sit on the shelf because key stakeholders were not involved and/or because plans do not include an implementation process. Details of implementation will vary depending on the purpose and scope of the plan but, at a minimum, it is necessary to decide who will do what and when, and who will pay, perhaps through such arrangements as partnership agreements and cost-sharing programs.

Monitoring

Program monitoring should be established as early as possible, preferably before the plan is implemented, so that baseline conditions can be established. Monitoring should be designed to:

- assess changes in ecosystem health;
- evaluate compliance with the plan's goals and performance requirements; and
- provide information to assist those making decisions about individual projects.

Results should regularly be made available to the public so that implementation can be evaluated.

Ensuring That Projects Comply with Plans

A plan will include individual projects that have been identified during the planning process, which should justify the need for each project, examine alternatives to it, and assess its likely environmental, social, and economic effects. The remaining task is to design and assess each project to ensure that it meets the goals of the plan, that its effects are understood, and that it is carried out in the way that best protects and enhances the ecosystem.

To assist in this process of design and assessment, the plan could provide principles and performance requirements for individual projects; these might include requirements for energy and water conservation, stormwater management, recycling, health and social facilities, control of emissions to air and water, habitat protection, job creation, etc.

Projects will also be proposed that were not envisaged in the planning process. These should be assessed, in the context of the existing plan and its information base, to find out how they would affect the ecosystem. Proponents should be required to provide a statement describing likely social, environmental, and economic effects of the proposed development.

Evaluating and Revising the Plan

Evaluation should be undertaken on a predetermined schedule to assess progress in relation to goals and targets, as well as to any changes in community needs, economic conditions or the environment. If necessary, parts of the planning process should be revisited, and the plan modified.

Conclusions

It is often said that environmental considerations add yet another layer of complexity, inefficiency, and delay to decision-making processes. The proposed framework is intended to truly integrate environmental matters, provide a fair and consistent process, and ensure that information, evaluation, and decision-making are shared and accessible. This will lead to greater efficiency and may shorten the time required for studies and approvals.

The ecosystem approach makes it possible to achieve a better understanding of systems, including economic, social, and environmental factors, and the relationships among them. This allows trade-offs to be made openly on the basis of comprehensive, balanced information in the context of a shared vision.

Recommendations

Planning Act

The work group on *Planning for Sustainability* recommended that a provincial inquiry into land use and environmental protection be established and report back to the government within two years. In June 1991, the Province set up such a study, the Commission on Planning and Development in Ontario. It is charged with recommending changes that will entrench good planning into the land-use development process. While the scope of the Commission is not as broad as recommended in *Planning for Sustainability*, it will consider:

- meaningful public participation;
- integrating the Planning Act and the Environmental Assessment Act;
- the future of rural lands;

- urban sprawl; and
- environmental protection and cumulative effects.

The Planning Commission expects to submit a final report in 1993, which will be followed by legislative changes.

However, as *Planning for Sustainability* emphasized, it is not necessary or desirable to place all efforts at improving planning processes on hold while the Planning Commission is under way. There are a number of initiatives, many of which have already been started, that can be continued in the context of the existing Planning Act. In fact, they should be accelerated to ensure that significant environmental damage does not occur during the work of the Planning Commission. Accordingly, immediate action should be taken on the following.

Provincial Policies

The Province should set out clearly its expectations regarding land use, settlement patterns, and environmental protection. This means improving government processes to deal with turf wars, define common objectives and policies, provide better information services, and undertake co-ordinated reviews. Section 3 of the Planning Act, which gives the Province an opportunity to develop policies on matters of provincial interest, has been little used so far. At present, policy statements exist for floodplains, aggregates, and housing, and there are draft statements on wetlands and foodlands.

Clearly stated goals and targets should be developed by the Province in the context of a complete set of policies. In specific cases it is likely, however, that conflicts

Farmland is threatened by future development

will arise between different applicable policies; therefore, it may be helpful to develop criteria or principles to resolve potential conflicts and ensure environmental protection.

There should be built-in review mechanisms to deal with reactions to policy implementation and suggestions for improvement. Finally, policies should be mandatory, requiring municipalities to ensure that their planning, zoning, and development control processes comply.

The Province's endorsement of the nine principles and the ecosystem approach to planning, announced by the Honourable Ruth Grier on 17 December 1990, should be formalized and refined under Section 3 of the Planning Act.

RECOMMENDATIONS

1 The Royal Commission recommends that the Province prepare a comprehensive, integrated set of ecosystem-based policy statements under Section 3 of the Planning Act. These should include:

- waterfront planning and development, including shoreline regeneration, based on the Commission's nine principles;
- greenway concepts as described in Chapter 5;
- watershed management;
- natural heritage protection;
- integration and conservation of cultural heritage;
- rural lands and agriculture;
- compact forms of development and redevelopment;
- transportation and land use;
- resource conservation (water, energy, timber, soils, aggregates, and others);
- protection and rehabilitation of air, water, and soil quality; and
- land-use compatibility.

2. The Commission further recommends that, as soon as possible and while policy statements are being prepared, interim guidelines be made available to establish provincial expectations for planning and development decisions.

3. While the waterfront policy statement is being prepared, all planning jurisdictions should ensure that Official Plans, waterfront plans, Secondary Plans, and other planning documents for areas on the waterfront incorporate the ecosystem approach and the waterfront regeneration principles.

PROVINCIAL REQUIREMENTS FOR PLANNING PRACTICES

While the Planning Act provides processes for planning and controlling development, it offers little guidance for the form and content of Official Plans. To ensure that its commitment to the ecosystem approach can be reflected in municipal planning, the Province should provide guidance and set out its expectations for ecosystem-based planning and development approval practices.

RECOMMENDATIONS

4. The Royal Commission recommends that the Province, in consultation with

municipalities, other agencies, professional organizations, and interest groups, prepare guidelines for ecosystem planning practices to be used in the preparation of Official Plans, waterfront plans, Secondary Plans, watershed plans, and other planning instruments.

5 The Commission further recommends that the Province, in consultation with municipalities, other agencies, professional organizations, and interest groups, develop environmental performance requirements so that there is greater certainty and consistency in the development approval process. These requirements might include greenspace protection, setbacks/buffers between natural areas and other uses, habitat restoration, energy efficiency, ambient and indoor air quality, dust control, waste management, noise restrictions, microclimatic conditions, stormwater management, and integration of built heritage.

WETLANDS POLICY STATEMENT

The recently released draft Wetlands Policy Statement should be revised to provide effective protection for Ontario's remaining wetlands. Draft implementation guidelines have not been released for public review, making it difficult to evaluate the draft statement.

RECOMMENDATION

6. The Royal Commission recommends that the Province strengthen its proposed Wetlands Policy Statement and bring it into effect as quickly as possible. Implementation guidelines should be made available as soon as possible. Changes should include:

- full protection for all (classes I to III) provincially significant wetlands;
- refusal to permit loss or impairment of significant wetland functions;
- consideration of ecological relationships within entire wetland complexes when making decisions about protection requirements;
- inclusion of requirements for buffer zones;
- the same treatment of public utilities/facilities as private development;
- encouragement of municipalities to protect wetlands of local significance (classes IV to VII);
- clarifications of interpretations of compatible uses and development; and
- a requirement that revisions of planning documents be made within a specified period to reflect the wetlands policy.

SITE PREPARATION

Municipalities have little power to control activities undertaken by landowners during landscaping or renovations, or by developers preparing sites for building (which often occurs even before development approvals have been given). These activities may result in irreversible damage to soils, groundwater, watercourses, aesthetic qualities, and/or wildlife habitats.

Although the Trees Act enables municipalities to pass by-laws restricting the destruction of trees, most municipalities have not done so and the by-laws that have been passed are difficult to enforce. A recent review (1991) of this issue conducted by the Tree Bylaws Advisory Committee (including representatives from the Association of Municipalities of Ontario and the Ministry of Natural Resources) recommended a new Trees Act to provide more effective protection for trees and woodlots.

The Topsoil Preservation Act, administered by the Ministry of Agriculture and Food, enables, but does not require, municipalities to pass by-laws to regulate or prohibit the removal of topsoil.

RECOMMENDATION

7. The Royal Commission recommends that the Province, in consultation with municipalities and interest groups, amend the Trees Act, the Topsoil Preservation Act, and the Planning Act, as appropriate, to require municipalities to regulate such activities as removal of trees and other vegetation, grading, removal of topsoil, filling, and drainage. These regulations should apply to new development, redevelopment, and other activities. Interim control measures should be put in place while the legislative changes are being developed and enacted.

STANDARDS

Standards intended to ensure the safety and/or efficiency of buildings, roads, sidewalks, drainage systems, and associated facilities often constrain creative design. As a result, it is sometimes difficult to implement new ways of maintaining or enhancing environmental quality and creating more liveable places for people.

Careless site preparation damages soils, watercourses, and wildlife habitats

RECOMMENDATION

8. The Royal Commission recommends that the Province convene an interdisciplinary conference of engineers, designers, and non-government groups to explore new approaches to establishing standards of development that will accommodate emerging social and environmental objectives.

NIAGARA ESCARPMENT

The Niagara Escarpment forms the western side of the Greater Toronto bioregion. Natural landscapes associated with the shallow soils, slopes, and wetlands along this 450-million-year-old landform create a significant natural corridor across southern Ontario. The escarpment serves as a source for many of the streams and rivers feeding into the western and central parts of the Greater Toronto waterfront.

Land uses along the Niagara Escarpment are regulated by the Niagara Escarpment Planning and Development Act, which works through an ecosystem-based plan administered by the provincially appointed Niagara Escarpment Commission. In 1990, in recognition of the escarpment's unique character, as well as the protection afforded by the Act, UNESCO named the escarpment a World Biosphere Reserve.

While planning mechanisms for the Niagara Escarpment are not perfect (for example, they rely heavily on top-down, regulatory approaches) they do provide one of the most advanced models of ecosystem planning in Ontario. The Niagara Escarpment Plan (Ontario 1985) is currently undergoing its first five-year review, and changes are proposed that would provide stricter control over pits and quarries, land severances, and some types of recreational developments.

The review offers an opportunity to examine how adequately the plan incorporates the ecosystem approach, and the strengths and weaknesses of the escarpment planning process. Such an evaluation would be useful to others seeking insights into the effectiveness of different planning tools in implementing the ecosystem approach, whether in the context of planning for municipalities, watersheds, shoreline regeneration or the Oak Ridges Moraine.

There has been no comprehensive monitoring of environmental health along the escarpment, which makes it difficult to evaluate the effectiveness of the Niagara Escarpment Plan. Long-term environmental monitoring and socio-economic research would provide valuable benchmarks to determine how well protection measures are working, and to assess their effect on land values, development costs, and so on.

RECOMMENDATIONS

9. The Royal Commission recommends that, as part of the five-year review of the Niagara Escarpment Plan, the Niagara Escarpment Commission assess the degree to which proposed revisions embody the ecosystem approach, and strengthen the plan, where necessary, to ensure it becomes a model of ecosystem planning.

10. The Commission further recommends that the Province establish a long-term environmental monitoring system along the Niagara Escarpment, to

document the plan's effectiveness in protecting and rehabilitating the environment. This monitoring effort should become part of the research and information network for the Greater Toronto bioregion, proposed in the "Water" chapter.

11. The Province should examine how the ecosystem planning approach used by the Niagara Escarpment Commission could assist in development of more ecologically responsible planning in all jurisdictions, especially in interjurisdictional planning for such features as the Oak Ridges Moraine and the shoreline.

OAK RIDGES MORAINE

The Oak Ridges Moraine, spanning about 160 kilometres (100 miles) from the Niagara Escarpment to the headwaters of Cold Creek (a tributary of the Trent River) is a ridge formed of the silt and debris left by receding glaciers during the last Ice Age. Its rolling hills, basins, kettle lakes, and wetlands are among the most scenic landscapes in southern Ontario.

The moraine also has great ecological significance. Its porous layers of sand, silt, and gravel provide deep aquifers, sources of groundwater that feed springs and cold-water streams, many of which flow south, forming larger rivers that end in Lake Ontario. The aquifers also supply drinking water to many hamlets and towns on the moraine.

In *Watershed*, the Royal Commission recommended that the Province take immediate steps to preserve the values of the Oak Ridges Moraine and to undertake a planning study regarding conservation, groundwater protection, trail locations, cumulative effects, and future development.

In July 1990, the government expressed a Provincial Interest in the Oak Ridges Moraine. In June 1991, Implementation Guidelines for interim protection were published and a planning study was initiated to develop a long-term strategy for protecting and managing the moraine.

Unfortunately both the guidelines and the planning study are limited to the portion of the Oak Ridges Moraine that lies within the Greater Toronto Area — which excludes major parts east and northwest of the GTA boundaries.

Although the guidelines are comprehensive and well-intentioned, they may be vulnerable to misinterpretation and might not be strictly applied to protect the moraine. This concern was recently highlighted by the chair of the Ontario Municipal Board (OMB). In commenting on an application for a development on the Oak Ridges Moraine (Kirby Heights, a proposed 14-estate-lot subdivision in Durham Region), Morley Rosenberg said the guidelines are not applicable to OMB decisions because they have no legal status under the Planning Act.

In addition, some potentially harmful activities are "generally exempt" from the Oak Ridges Moraine Guidelines, including aggregate extraction, minor variances, building permits, and individual consents.

The terms of reference for the Oak Ridges Moraine planning study do not include examining possible implementation mechanisms. But this is a crucial element of ecosystem planning, needed to ensure that action is consistent among jurisdictions and that it addresses interjurisdictional concerns.

Albion Hills Conservation Area, Oak Ridges Moraine

RECOMMENDATIONS

12. The Royal Commission recommends that the Province extend the expression of Provincial Interest, Implementation Guidelines, and the planning study to include the entire Oak Ridges Moraine — not just the portions in the Greater Toronto Area (See Map 1.1).

13. The Commission further recommends that the Province, the Ontario Municipal Board, and the municipalities in the Oak Ridges Moraine ensure strict compliance with the guidelines, and that they carefully scrutinize proposals that could be exempted.

14. The Oak Ridges Moraine planning study should be expanded to include a description and evaluation of possible implementation mechanisms for the long-term strategy, taking into account the experience of the Niagara Escarpment Commission in conserving a similar landform feature and associated ecosystems.

WATERSHED PLANNING AND MANAGEMENT

Over the past four years, the Province has undertaken several reviews of conservation authority funding, organization, membership, and mandate.

In *Watershed*, the Royal Commission recommended that the Province review the mandate and functions of conservation authorities, in order to determine whether the current review should include more fundamental reforms. It also recommended

that conservation authorities assume a greater role in, and receive core funding for, managing watersheds and protecting natural habitats.

This role was recognized in a 1991 draft of "A Conservation Strategy for the Conservation Authorities of Ontario":

> The Conservation Authorities of Ontario have as their vision watersheds of ecological integrity where human needs are met in balance with the needs of the natural environment (Association of Conservation Authorities of Ontario).

However, current proposals by the Ministry of Natural Resources (MNR) focus primarily on identifying core and non-core activities for the authorities. This reflects a preoccupation with what MNR will fund, rather than the potential of conservation authorities to employ a watershed perspective in protecting and managing resources. In fact, the core/non-core list doesn't even mention watershed planning or strategies.

A number of other issues affect the ability of conservation authorities to work effectively in ecosystem conservation. Their limited regulatory powers — focused primarily on flood and erosion control — are among several factors that severely restrict the ability of conservation authorities to protect natural areas and systems, and to undertake comprehensive, proactive watershed planning and management. Other factors include the narrow range of activities funded by the Province and, especially in smaller authorities, insufficient staff, resources, and expertise.

The result is fragmentation of watershed management among different government agencies. Because of their watershed jurisdictions and wide-ranging activities, however, conservation authorities work in areas of interest to departments of many ministries, including Municipal Affairs, Natural Resources, the Environment, Agriculture and Food, Tourism and Recreation, and Education.

It might be more appropriate to consider partnerships between individual conservation authorities and other government agencies, so that each could build on existing strengths in different parts of the Province. In addition, interministerial co-ordination of funding and programs would help to meet conservation authorities' needs in an integrated way.

Another factor that restricts the effectiveness of conservation authorities as ecosystem stewards is the way authority members are chosen. When the government of the day formed a Conservation Authorities Branch in 1944, it was understood that conservation was a grass-roots matter. According to A. H. Richardson (1974), in *Conservation by the People,* Dana Porter, then-Minister of Planning and Development, speaking at the 1944 London Conference on River Development in Southern Ontario, said:

> The main necessity in a programme of this kind is that it must have, to be really effective, the fullest possible co-operation and the fullest understanding. . .on the part of the people who are living in the region. . . .Unless we can keep the public fully advised and fully aware of the nature of the problems and unless we can carry their continued support, any policy that may be attempted by any government will be sure to fail.

Most members of an authority are appointed by municipal councils, and are frequently municipal politicians and staff.

(In addition, a maximum of three members may be appointed by the Province.) Although this ensures accountability to municipal government, in most areas it means that few authority members have the appropriate training or commitment for ecosystem-based planning and natural resource management.

Watershed strategies initiated by conservation authorities (e.g., the Rouge River Watershed Management Strategy co-ordinated by the Metropolitan Toronto and Region Conservation Authority) and/or Remedial Action Plan processes (such as the Metro Toronto Remedial Action Plan) are not necessarily integrated with municipal land-use planning and development approval processes. As a result, ecosystem-based watershed management may be thwarted, resources may be haphazardly expended, and opportunities to protect, restore, and/or enhance ecosystems may be lost. Work under way by the ministries of the Environment and Natural Resources, in consultation with the Ministry of Municipal Affairs, conservation authorities, and municipalities, on the integration of water resource management objectives into municipal plans should help to address these issues.

RECOMMENDATIONS

15. The Royal Commission recommends that the Province, in consultation with conservation authorities, municipalities, and non-government organizations:

- recognize ecosystem-based watershed management and conservation as a primary role of conservation authorities and amend Section 28 of the Conservation Authorities Act to give them regulatory powers consistent with this role;
- examine ways to assist co-operative initiatives among conservation authorities and provincial government agencies; and
- revise the basis for appointing members to conservation authorities so that more representatives of local non-government environmental/conservation groups are included, while strong municipal representation is maintained.

16 The Commission further recommends that municipalities work with RAP teams and conservation authorities to integrate remedial action plans and watershed strategies into land-use planning and development approval processes.