# Nature on the Edge

## NATURAL CAPITAL AND ONTARIO'S GROWING GOLDEN HORSESHOE

David
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Foundation

## NATURE ON THE EDGE: NATURAL CAPITAL AND ONTARIO'S GROWING GOLDEN HORSESHOE

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# Introduction

SOUTHERN ONTARIO'S GREATER GOLDEN HORSESHOE (GGH), located on the western end of Lake Ontario, is the most densely populated area in Canada, with about 25 per cent of the country's population now living in the region. It is also one of the fastest growing regions in North America, where an additional 4.5 million people are expected to live by the year 2041.[1] The rapid increase in population and intensity of urban land use is placing unprecedented pressure on the natural capital assets of the region, such as forests, wetlands and prime agricultural soils. For example, the most recent analysis of land use change in the region found that between 1996 and 2001, 16 per cent of prime farmland in the region was lost to urbanization.[2]

To manage further urban growth and expansion more sustainably, the Ontario government launched several initiatives to control urban sprawl and to enhance the quality of life for people living in southern Ontario. In 2005, the Ontario government passed two major pieces of legislation that direct and impact land use planning in the Greater Toronto and Hamilton Area (GTHA) of the Golden Horseshoe region, the Places to Grow Act and the Greenbelt Act. Both were intended to change the path of explosive urban growth and expansion in the region.

The Places to Grow Act provided the legislative basis for the Greater Golden Horseshoe Growth Plan (the Growth Plan), which establishes policies for urban growth management in south-central Ontario. The Greenbelt Act provides the legislative basis for the Greenbelt Plan, which protects a large swath of land around Lake Ontario from urban development, called the Greenbelt.[3] The Greenbelt extends 325 kilometers from the eastern end of the Oak Ridges Moraine to the Niagara River in the west, covering 1.8 million acres (Figure 1 on page 6). Its area consists of protected green spaces, farmlands, communities, forests, wetlands, and watersheds.

*The rapid increase in population and intensity of urban land use in the Golden Horseshoe is placing unprecedented pressure on the natural capital assets of the region, such as forests, wetlands and prime agricultural soils.*
ANTOINE BELAIEF PHOTO

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1   Greater Golden Horseshoe Growth Forecasts to 2041. Hemson Consulting Ltd. 2012. http://tinyurl.com/bzndqvh
2   Ontario's wealth Canada's future: appreciating the value of the Greenbelt's eco-services. 2008. David Suzuki Foundation.
3   Tomalty, R., and Komorowski, B. 2011. Inside and Out: Sustaining Ontario's Greenbelt. Friends of the Greenbelt Foundation.

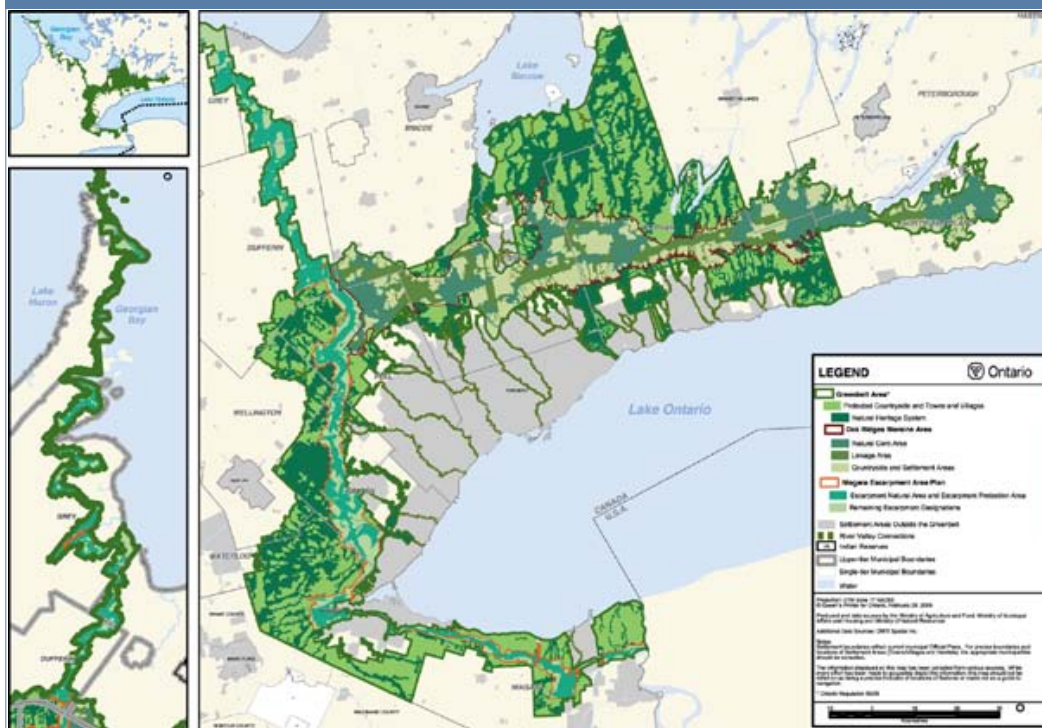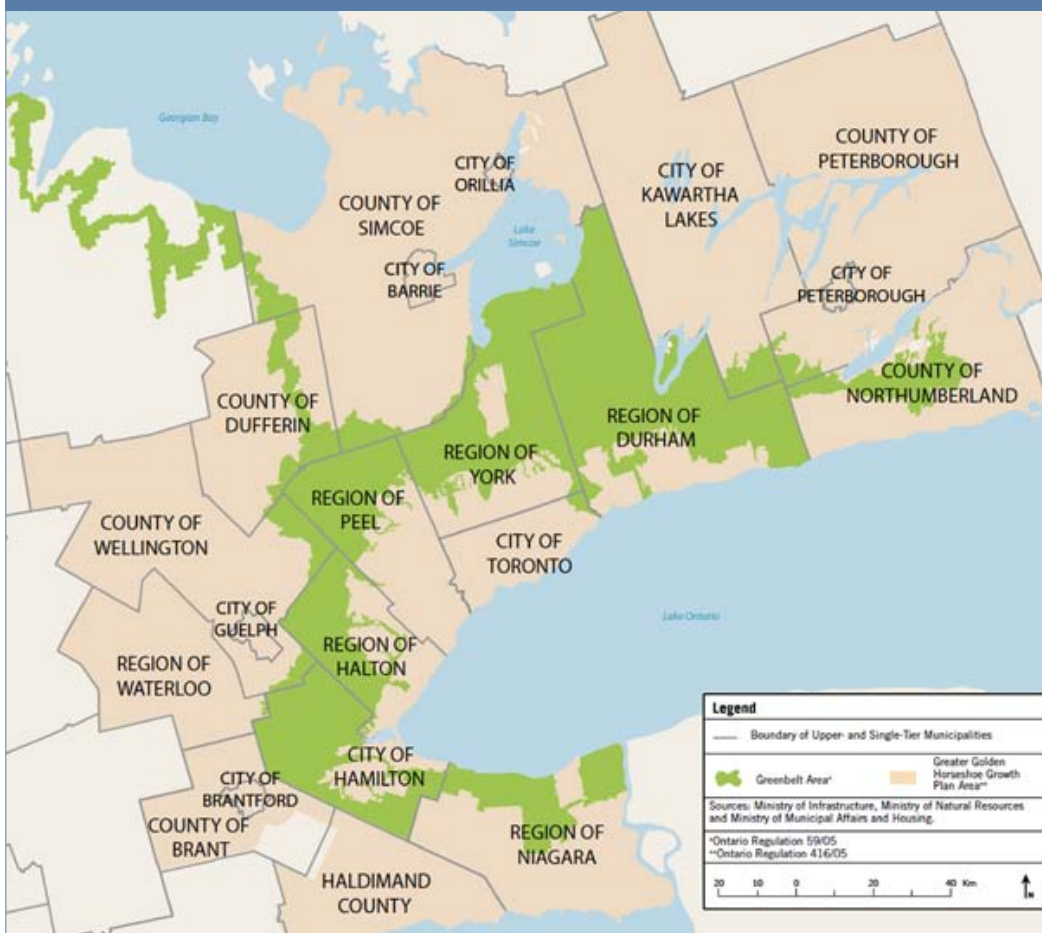## FIGURE 1: GREENBELT PLAN 2005 MAP



## FIGURE 2: GREATER GOLDEN HORSESHOE GROWTH PLAN AREA MAP



The purpose of this study is to quantify some of the natural capital values that could be degraded or lost if this area were to be completely built out as the Greater Golden Horseshoe grows and expands in the coming decades.

KRISTIN MALING PHOTO

**FIGURE 3: WHITEBELT STUDY AREA WITHIN THE GREATER TORONTO AND HAMILTON AREA**
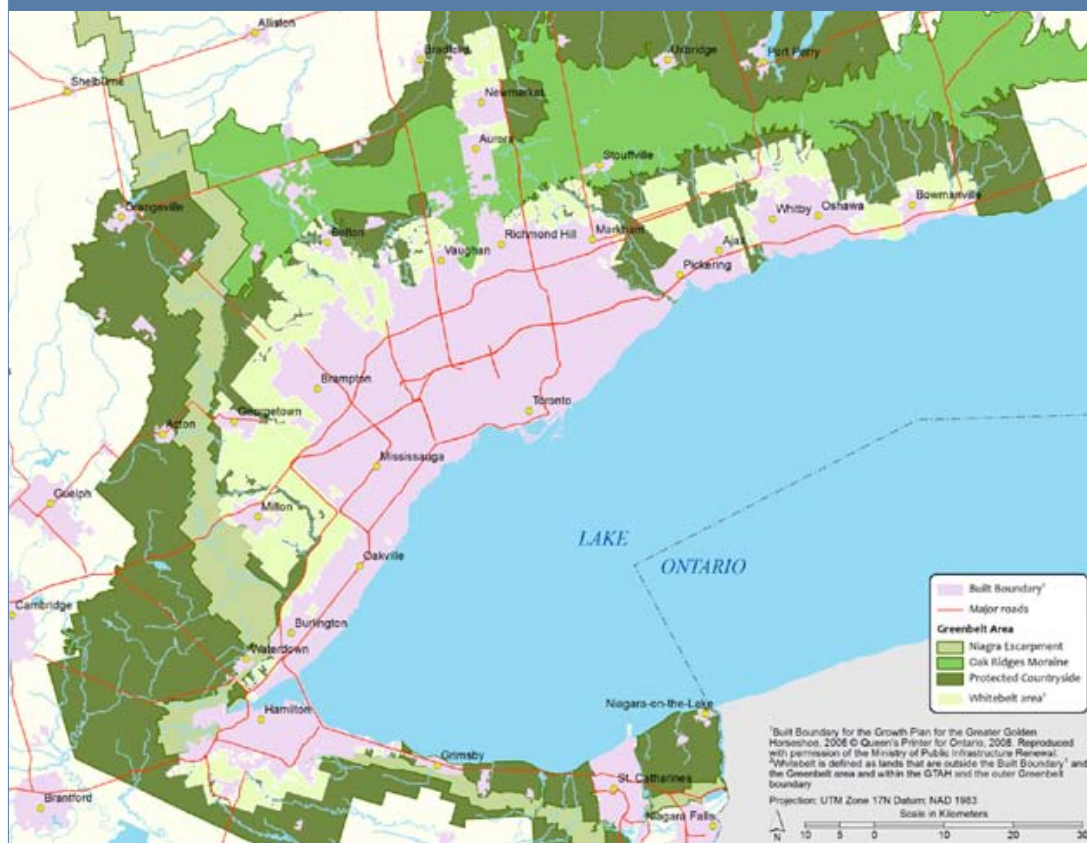
When the Growth Plan was passed, a buffer zone was left between the current urban built-up areas of the inner ring of municipalities circling Lake Ontario and the Greenbelt,[4] to accommodate further urban growth and expansion in the coming decades. This area is approximately 58,000 hectares in size and has become known, colloquially, as the *Whitebelt* (Figure 3).

The Whitebelt area primarily consists of rural and agricultural land, and although it has less land use restrictions than the adjacent Greenbelt,[5] it represents some of the best farmland (i.e. most productive Class 1 agricultural lands) left in Canada, as well as sensitive ecological areas, such as wetlands, that are exceedingly rare in southern Ontario. The rules governing the expansion of urban areas into the Whitebelt are laid down in the Greater Golden Horseshoe Growth Plan.

This study estimates the value of the ecosystem services provided by natural capital in the Whitebelt as well as within approved vacant greenfield lands already designated for urban expansion and available for development now among the inner ring municipalities of the GTHA. For the purposes of this study, we refer to this area as the Whitebelt study area; spanning approximately 94,000 ha across the GTHA. Much of natural capital (greenspace and agricultural land) within this large region has already been zoned for development in the GTHA, and may developed in the coming decades as the Greater Golden Horseshoe expands outwards with further urbanization.

The purpose of this study is to quantify some of the natural capital values that could be degraded or lost if this area were to be completely built out as the Greater Golden Horseshoe grows and expands in the coming decades. It is our hope that this study will raise awareness of the potential cost of urbanization on the natural

A buffer zone was left between the current urban built-up areas of the inner ring of municipalities circling Lake Ontario and the Greenbelt, to accommodate further urban growth and expansion in the coming decades. This area has become known, colloquially, as the *Whitebelt.*



FRIENDS OF THE GREENBELT PHOTO

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4    The inner-ring municipalities are comprised of the City of Hamilton and the Regions of Halton, Peel, York, and Durham
5    Farmland within the Whitebelt study area are designated as prime agricultural land in municipal Official Plans and are subject to agricultural and natural heritage policies under the Provincial Policy statement.

capital assets of the region, which are so important to sustaining community health and wellbeing, such as providing clean water, habitat for wildlife, and sustaining productive land to grow local food.

It should be stressed that our estimate of the natural capital values of the Whitebelt study area is a conservative estimate. This is due to: (1) the incomplete understanding of all the non-market benefits provided by nature and farmland; (2) the intrinsic value of nature itself; and (3) the likely increase in ecosystem service value over time, as services such as water supply become increasingly scarce due to global warming and population increase. It, does, however, provide an estimate of the current benefits of the Whitebelt study area's natural capital and the potential costs of further loss of greenspace and farmland to urbanization in the region.

## Greenbelt Plan and Growth Plan for the Greater Golden Horseshoe

The 2005 Greenbelt Plan defined and established permanently protected areas, including areas of agricultural and ecological value in the Greater Golden Horseshoe. The Greenbelt was designed to safeguard key environmentally sensitive land, watersheds, and farmlands that provide essential ecosystem services for quality of life in this densely populated area of Canada.[6] This protected region includes green space, farmland, communities, forests, wetlands, and watersheds, including habitat for more than one-third of Ontario's species at risk, such as the bald eagle, peregrine falcon and the common snapping turtle.[7]

The 2006 Growth Plan for the Greater Golden Horseshoe was prepared under the Places to Grow Act and works in concert with the Greenbelt Plan to ensure that communities can accommodate new settlement while still protecting the natural areas and farmland that provide critical ecosystem services for residents, such as clean air, water and local food. The Plan was designed to intensify existing built-up areas, especially urban growth centres, intensification corridors, major transit station areas, brownfield sites and greyfields. As a result, the plan requires better use of land and infrastructure by building more compact communities that are supported by public transit.

To achieve the Growth Plan's objectives, it requires that 40 per cent of the annual population growth is absorbed within the existing *built-up area* boundary within each municipality by the year 2015 and onward.[8] The Growth Plan also limits the amount of land that can be designated for urban development. It identifies certain intensive urban growth centres within built-up areas where a minimum density of 400 people plus jobs per hectare is required in the City of Toronto, and 150 to 200 residents and jobs per hectare in the smaller urban growth centres. The remaining growth can be directed beyond the existing *built up* boundaries but must have an average density of at least 50 people and/or jobs per hectare. This innovative effort to increase density and limit further loss of greenspace and farmland was recognized with a prestigious award by the American Planning Association.[9]



The Greenbelt was designed to safeguard key environmentally sensitive land, watersheds, and farmlands that provide essential ecosystem services for quality of life in this densely populated area of Canada.
BEV CURRIE PHOTO

6   The Greenbelt's primary purpose is to: protect against the loss and fragmentation of the agricultural land base and support agriculture predominant use; give permanent protection to natural heritage and water resource systems that sustain ecological human health and form the environmental framework around which major urbanization in south-central Ontario will be organized; and, provide a diverse range of economic and social activities associated with rural communities, agriculture, tourism, recreation and resources uses.

7   Biodiversity in Ontario's Greenbelt. 2011. Ontario Nature and David Suzuki Foundation.

8   Ontario Ministry of Public Infrastructure Renewal. 2006. *Places to Grow: Growth Plan for the Greater Golden Horseshoe*.

9   American Planning Association, *National Planning Awards 2007*, www.planning.org/awards/2007/

# Natural Capital and Ecosystem Services

## What is Natural Capital?

Natural capital refers to our natural assets (or "stocks"), and the ecosystem goods and services (or "flows") that those assets provide. Natural assets and ecosystem services are the foundation of life — including human life. The benefits provided by natural capital include the storage of floodwaters by wetlands, water capture and filtration by forested watersheds, air pollution absorption by trees, and climate regulation resulting from carbon storage in trees, plants and soils.

Forests, wetlands and rivers that make up watersheds are like giant utilities providing ecosystem services for local communities as well as regional and global processes that we all benefit from. Ecosystems provide many services including carbon storage and sequestration, water storage, rainfall generation, climate buffering, biodiversity, soil stabilization and more.[10] However, as we do not pay directly for these services, they are undervalued in our market economy. They are worth billions of dollars per year, but need to be valued more accurately because their loss has massive economic impacts, threatening health, food production, climate stability, and basic needs such as clean water.

## Valuing Ecosystems

Ecosystem goods and services are the benefits derived from ecosystems. These benefits are dependent on ecosystem functions, which are the processes (physical, chemical and biological) or attributes that maintain ecosystems and the species that live within them. Humans are reliant on the capacity of natural processes

The benefits provided by natural capital include the storage of floodwaters by wetlands, water capture and filtration by forested watersheds, air pollution absorption by trees, and climate regulation resulting from carbon storage in trees, plants and soils.
FRIENDS OF THE GREENBELT PHOTO

10  Global Canopy Programme. www.globalcanopy.org/main.php?m=3

Humans are reliant on the capacity of natural processes and systems to provide for human and wildlife needs.

TOP: JOCELYNSART PHOTO

BOTTOM: ERICA BLONDE PHOTO



and systems to provide for human and wildlife needs.[11] These include products received from ecosystems (e.g. food, fibre, clean air and water), benefits derived from processes (e.g. nutrient cycling, water purification, climate regulation) and non-material benefits (e.g. recreation and aesthetic benefits).[12] Table 1 on page 11 provides a list of ecosystem functions, processes and the corresponding ecosystem services.

There are several techniques that have been developed to determine economic values for non-market ecosystem services. These include: (1) assessing economic damages; (2) the willingness of individuals to pay for goods and services; and (3) the willingness to accept compensation for losses. Those that focus on economic damages measure losses in productivity, expenditures to offset or replace natural capital services, or potential environment damages if a service is lost. The willingness to pay or accept compensation is determined by surveys or by observing people's behaviour or choices. This report uses avoided cost and replacement cost for ecosystem service valuation, as well as contingent valuations or willingness-to-pay studies for cultural values. Some of the values were derived using direct analysis and some values were adapted from other studies (known as "benefit transfer"). All ecosystem service values are reported in 2012 Canadian dollars.[13]

11  De Groot, R.S. 2002. "A typology for the classification, description and valuation of ecosystem functions, goods and services." *Ecological Economics.* 41: 393-408.

12  Millennium Ecosystem Assessment. 2003. Ecosystems and Human Well-Being: A Framework for Assessment. World Resources Institute, Island Press. Washington, D.C.

13  The ecosystem typology and services presented in this report could be taken one step further by developing and adopting natural capital accounts. Natural capital accounts incorporate the ecosystem service values as well as the physical natural assets and the qualitative state or health of these assets. Improved measurement and monitoring of ecosystem and natural resource use and strong inter-governmental collaboration is required to make such accounts work, but there are several uses for them. The accounts provide an assessment of the current state of a designated area that can then be used to identify the benefits of maintaining natural areas and of restoring degraded lands to functioning landscapes. They can also provide information on the potential impacts of changing land use practices, which can facilitate making decisions that minimize human impacts on ecosystems. Once natural capital accounting is integrated at the policy and planning levels, it is possible to assess and report regularly on the changes in natural capital and ecosystem services by monitoring the amount of natural area that is converted using tools such as orthophoto imagery or municipal records of changes in zoning.

## TABLE 1: ECOSYSTEM FUNCTIONS, PROCESSES AND SERVICES

| Functions | Ecosystem processes | Ecosystem services |
|---|---|---|
| Gas regulation | Role of ecosystems in bio-geochemical cycles (e.g. $CO_2/O_2$ balance, ozone layer) | UVb protection by ozone maintenance of air quality |
| Climate regulation | Influence of land cover and biological mediated processes on climate | Maintenance of a favourable climate, carbon regulation, cloud formation |
| Disturbance prevention | Influence of ecosystem structure on environmental disturbances | Storm protection, flood control, drought recovery |
| Water regulation | Role of land cover in regulating runoff and river discharge | Drainage, natural irrigation, transportation |
| Water supply | Filtering, retention and storage of fresh water | Provision of water by watersheds, reservoirs and aquifers |
| Soil retention | Role of the vegetation root matrix and soil biota in soil retention | Prevention of soil loss/damage from erosion/siltation; storage of silt in lakes, and wetlands; maintenance of arable land |
| Soil formation | Weathering of rock, accumulation of organic matter | Maintenance of productivity on arable land; maintenance of natural productive soils |
| Nutrient cycling | Role of biota in storage and re-cycling of nutrients (e.g. nitrogen) | Maintenance of healthy soils and productive ecosystems; nitrogen fixation |
| Waste treatment | Role of vegetation and biota in removal or breakdown of xenic nutrients and compounds | Pollution control/detoxification, filtering of dust particles, abatement of noise pollution |
| Pollination | Role of biota in the movement of floral gametes | Pollination of wild plant species and crops |
| Biological control | Population and pest control | Control of pests and diseases, reduction of herbivory (crop damage) |
| Habitat | Role of biodiversity to provide suitable living and reproductive space | Biological and genetic diversity, nurseries, refugia, habitat for migratory species |
| Food production | Conversion of solar energy, and nutrient and water support for food | Provision of food (agriculture, range), harvest of wild species (e.g. berries, fish, mushrooms) |
| Raw materials | Conversion of solar energy, nutrient and water support for natural resources | Lumber, fuels, fodder, fertilizer, ornamental resources |
| Genetic resources | Genetic materials and evolution in wild plants and animals | Improve crop resistance to pathogens and crop pests, health care |
| Medicinal resources | Biochemical substances in and other medicinal uses of biota | Drugs and pharmaceuticals, chemical models and tools |
| Recreation | Variety in landscapes | Ecotourism, wildlife viewing, sport fishing, swimming, boating, etc. |
| Education, culture and spirituality | Variety in natural landscapes, natural features and nature | Provides opportunities for cognitive development: scenery, cultural motivation, environmental education, spiritual value, scientific knowledge, aboriginal sites |

Source: Adapted from: De Groot, R.S. 2002. "A typology for the classification, description and valuation of ecosystem functions, goods and services." *Ecological Economics.* 41: 393-408.



**Ecosystem goods and services are the benefits derived from ecosystems. These benefits are dependent on ecosystem functions, which are the processes or attributes that maintain ecosystems and the species that live within them.**

THE HINDRU PHOTO/FLICKR

# Land Cover in the Whitebelt Study Area

## Definition of the Whitebelt Study Area

Although not a formally defined area prescribed by law or policy, the lands found between the approved urban boundaries for the inner ring municipalities[14] of the GTHA and the Greenbelt boundary has commonly become known as the "Whitebelt."

Our Whitebelt study area includes both the "Whitebelt" as described above and shown in Figure 3 as well as "designated greenfield areas" which have already been approved for urban expansion (i.e., prior to the present land budgeting exercise) and are available for development among the inner ring municipalities of the GTHA. According to the Ontario Growth Secretariat's five-year update on the Growth Plan, this "designated greenfield area" amounts to approximately 52,000 hectares that is available for urban development across the GTHA.

We identified the Whitebelt study area by mapping the area between the boundaries of the 2006 built-up boundary for the GTHA and the Greenbelt's inner boundary.[15] The built boundary data was acquired from the Ontario Growth Secretariat and reflects built-up urban areas, on the ground, when the Growth Plan came into effect in 2006. Figure 3 illustrates the location of the Greenbelt, the built-up area boundaries and our Whitebelt study area.

According to our spatial analysis, the Whitebelt study area spans across a total of 94,472 hectares, including 23,241 hectares in Durham, 17,758 hectares in York region, 23,689 hectares in Halton, 8,629 hectares in Hamilton, and 21,154 hectares in Peel (Table 2). Land cover and land use were extracted as data from the 2000–2002 SOLRIS (Southern Ontario Land Resource Information System) spatial dataset. Our results show

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14  The inner-ring municipalities are comprised of the City of Hamilton and the Regions of Halton, Peel, York, and Durham.

15  Ontario Growth Secretariat. 2008. Built Boundary for the Growth Plan for the Greater Golden Horseshoe, 2006. https://www.placestogrow.ca/index.php?option=com_content&task=view&id=66&Itemid=15

| Land cover and sub-type | Durham | York | Halton | Hamilton | Peel | Total | % of total land cover |
|---|---|---|---|---|---|---|---|
| **FOREST/TREED** | | | | | | | |
| Coniferous Forest | 244 | 69 | 52 | 20 | 14 | 399 | 0.4% |
| Mixed Forest | 473 | 518 | 172 | 54 | 117 | 1,333 | 1.4% |
| Deciduous Forest | 1,039 | 563 | 1,085 | 265 | 532 | 3,484 | 3.7% |
| Other Forest | 1 | 1 | 14 | 24 | 20 | 60 | 0.1% |
| Plantation | 57 | 81 | 73 | 19 | 18 | 249 | 0.3% |
| Total | 1,813 | 1,232 | 1,396 | 382 | 702 | 5,525 | 5.8% |
| **AGRICULTURE** | | | | | | | |
| Annual Crop | 6,543 | 4,577 | 5,049 | 2,171 | 4,420 | 22,759 | 24.1% |
| Mixed Crop | 6,963 | 6,103 | 9,379 | 2,849 | 10,612 | 35,905 | 38.0% |
| Perennial Crop | 1,331 | 780 | 1,460 | 652 | 1,378 | 5,601 | 5.9% |
| Idle Land | 3,790 | 2,514 | 3,105 | 1,013 | 1,902 | 12,322 | 13.0% |
| Hedge rows | 336 | 275 | 309 | 111 | 138 | 1,169 | 1.2% |
| Orchards | 0 | 0 | 67 | 113 | 135 | 315 | 0.3% |
| Vineyards | 0 | 0 | 0 | 40 | 0 | 40 | 0.0% |
| Total | 18,963 | 14,248 | 19,367 | 6,948 | 18,584 | 78,111 | 82.7% |
| **WETLAND** | | | | | | | |
| Swamp | 775 | 359 | 397 | 168 | 335 | 2,034 | 2.2% |
| Marsh | 37 | 103 | 98 | 99 | 213 | 550 | 0.6% |
| Shallow Water | 0 | 8 | 17 | 16 | 18 | 60 | 0.1% |
| Total | 812 | 470 | 512 | 283 | 566 | 2,643 | 2.8% |
| **WATERBODY** | | | | | | | |
| Open Water | 11 | 31 | 10 | 20 | 89 | 0.1% | 16 |
| Shoreline | 3 | 0 | 0 | 0 | 0 | 3 | 0.0% |
| Total | 19 | 11 | 31 | 10 | 20 | 92 | 0.1% |
| **URBAN/BUILT-UP** | | | | | | | |
| Transportation | 847 | 565 | 886 | 308 | 597 | 3,204 | 3.4% |
| Extraction | 0 | 36 | 24 | 1 | 2 | 63 | 0.1% |
| Built up area: impervious | 218 | 540 | 489 | 242 | 219 | 1,707 | 1.8% |
| Built up area: pervious | 568 | 656 | 983 | 456 | 464 | 3,127 | 3.3% |
| Total | 1,634 | 1,797 | 2,383 | 1,007 | 1,282 | 8,102 | 8.6% |
| **TOTAL WHITEBELT STUDY AREA** | 23,241 | 17,758 | 23,689 | 8,629 | 21,154 | 94,472 | |

**TABLE 2: LAND COVER IN THE WHITEBELT STUDY AREA BY MUNICIPALITY (HECTARES)**
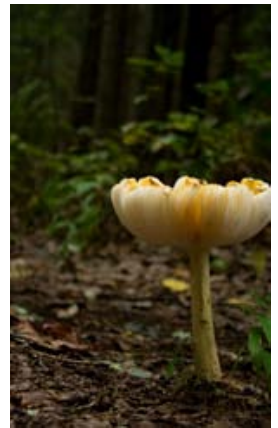


DAIDERDOO PHOTO/FLICKR

that the predominant land cover within the study area is agricultural land (83 per cent of total area), of which 75 per cent is cropland (annual and mixed crops), and the remaining 25 per cent is perennial crop, idle land, hedgerows, orchards and vineyards. Urban and built-up areas, including transportation and extraction areas cover 8.6 per cent of the study area; forestlands cover 5.8 per cent, wetlands cover 2.8 per cent, and water cover is 0.1 per cent of the Whitebelt study area.

The land cover classes from SOLRIS, as shown above in Table 2 on page 13, were re-classed into more general land cover types in order to map land cover at the scale of the study area.

Figure 4 shows the land cover types as water/shoreline, forest, cropland, woody plantation, transportation, extraction, built-up pervious, built up impervious, and wetlands.

## FIGURE 4: LAND COVER IN THE WHITEBELT STUDY AREA OF THE GTHA
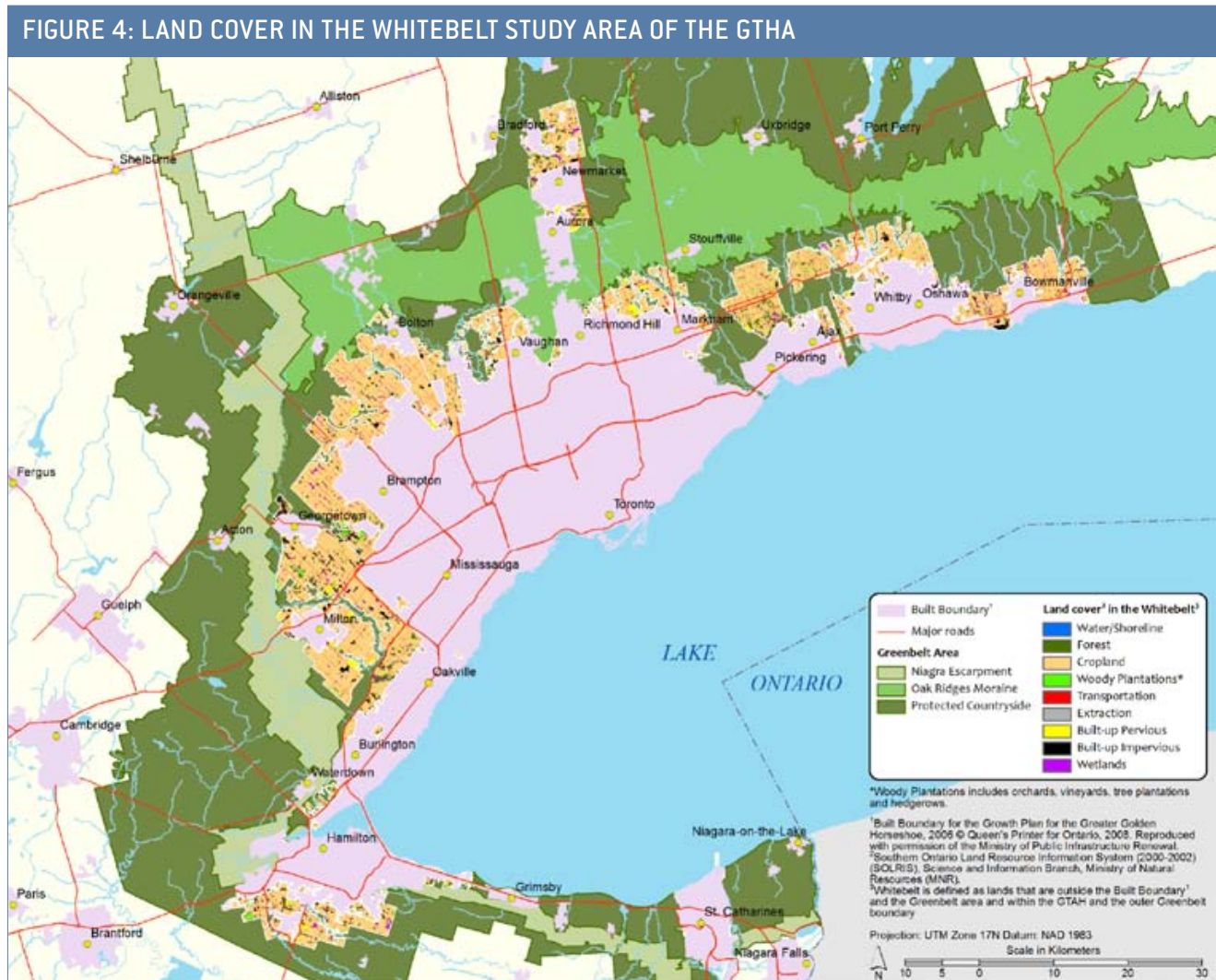
# Ecosystem Service Values of the Whitebelt Study Area

**THE ESTIMATED VALUE FOR EACH LAND COVER TYPE** in the Whitebelt study area was extrapolated from the ecosystem service values developed for the 2008 Greenbelt report *Ontario's Wealth, Canada's Future: Appreciating the Value of the Greenbelt's Eco-services*.[16] The Greenbelt study estimated the non-market values of the ecosystem services provided by the Greenbelt's natural capital based on land cover analysis using SOLRIS land cover data, and the social, economic and ecological information available at the time. It is important to note that the ecosystem service values are conservative estimates. They do not represent the full value of natural capital due to the incomplete understanding of *all* benefits provided by nature, the intrinsic value of nature itself, and the likely increase in ecosystem service values over time as natural capital, such as forests and farmland, becomes more scare with ongoing urban development. Furthermore, the ecosystem services evaluated in this report are only but one portion of the true value of nature and farmland in sustaining the health and wellbeing of citizens in the region. Many ecosystem services, like cultural and spiritual benefits (e.g. opportunities for cognitive development, scenery, environmental education, spiritual value) cannot be monetized, and indeed can be considered "priceless."

The 2008 Greenbelt study found that the average annual estimated value for natural capital across the greenbelt was $3,487 per hectare, with the highest average values per hectare attributed to wetlands and forests. Wetlands were estimated to be worth $14,153 per hectare annually because of their high value for water regulation, water filtration, flood control, waste treatment, recreation, and wildlife habitat. Forests were estimated to be worth on average $5,414 per hectare each year because of their importance for water filtration services, carbon storage services, pollinators, wildlife and recreation. The non-market annual value of the Greenbelt's agricultural lands were estimated to be worth $477 per hectare for cropland, $1,667 for idle land, $1,678 for hedgerows and $494 for orchards. Key agricultural values included the pollination value of idle land and hedgerows, the storage of carbon in soils, and the cultural value of agricultural lands.

> The ecosystem services evaluated in this report are only but one portion of the true value of nature and farmland in sustaining the health and wellbeing of citizens in the region.

16 Wilson, S.J. 2008. *Ontario's Wealth, Canada's Future: Appreciating the Value of the Greenbelt's Eco-services*. The Greenbelt Foundation and the David Suzuki Foundation. Toronto, Canada.

The values from the Greenbelt study were transferred to the Whitebelt study area by land cover class type. These derived values for the natural capital assets of the Whitebelt study area are provided in Table 3.

The total estimated value for the ecosystem services provided by the Whitebelt study area's natural capital is $122.3 million per year. The estimated average annual value per hectare for natural capital across the entire study area is $1,367 per year. This average value is calculated by dividing the total natural capital value for ecosystem services in the Whitebelt study area by the total natural land cover area ($122.3 million/89,498 hectares).[17]

Wetlands and forests combined provide the greatest estimated value in ecosystem services at $67.7 million per year ($39 million and $28 million per year, respectively). Agricultural lands provide ecosystem services worth an estimated $53.3 million per year, including $28 million by croplands, $20.5 million by idle lands, $2.7 million by perennial pasture lands, and $2 million by hedgerows.

Urban built-up areas, including transportation corridors and resource extraction sites, cover almost 9 per cent of the Whitebelt study area. 40 per cent is transportation land use areas (i.e. roads; 3,204 hectares), 39 per cent is pervious ground surface (i.e. unpaved ground surface; 3,217 hectares), 21 per cent is impervious urban surfaces (i.e. buildings, paved surfaces; 1,707 hectares), and 0.8 per cent (63 hectares) is resource extraction land use area. Urban pervious land cover is often used for urban recreational activities (e.g. playing fields), therefore it is classified as urban green cover, and it is estimated to provide a value of $1.2 million per year in ecosystem services.



Wetlands and forests combined provide the greatest estimated value in ecosystem services at $67.7 million per year ($39 million and $28 million per year, respectively).

DAIDERDOO PHOTO/FLICKR

### TABLE 3: SUMMARY OF ANNUAL ECOSYSTEM SERVICE VALUES BY LAND COVER TYPE FOR THE WHITEBELT STUDY AREA

| Land Cover Type | Area (hectares) | Value per hectare ($/hectare/yr) | Total value ($million/yr) |
|---|---|---|---|
| Wetlands | 2,643 | $14,153 | $39.09 |
| Forest | 5,525 | $5,414 | $28.56 |
| Grasslands | 0 | $1,618 | $0 |
| Rivers | 92 | $335 | $0.085 |
| Cropland | 58,664 | $477 | $27.97 |
| Perennial and pasture | 5,601 | $477 | $2.67 |
| Idle land | 12,322 | $1,667 | $20.54 |
| Hedgerows | 1,169 | $1,678 | $1.96 |
| Orchards | 315 | $494 | $0.16 |
| Urban/built-up (impervious) | 4,975 | $0 | $0 |
| Urban green space (pervious) | 3,127 | $376 | $1.18 |
| Total | | | $122.32 |

In this study, the average natural capital value per hectare in the Whitebelt study area was found to be less than in the adjacent Greenbelt, because the Whitebelt study area has far less high natural capital value land cover such as forests and wetlands. The average value across a study area is dependent on the extent of land cover types and their estimated values per hectare. In the case of the Whitebelt study area, the predominant land cover is agricultural land, which have lower values in terms of non-market natural capital values, than forested lands or wetland cover. However, it is important to note that agricultural lands in the Whitebelt study

17  The area excludes the urban/built up land classes except for urban green space.

area provide important market values (i.e. local food production), worth hundreds of millions of dollars in revenue annually, which have not been included in this economic assessment.[18]

Two other major studies of the value of natural capital have been undertaken within the southern Ontario region. One study assessed the value of the Credit River Watershed at an annual average value per hectare of $3,911 (a value comparable with the Greenbelt study's finding of $3,487 per hectare per year).[19] This study adopted some of the values established in the Greenbelt report as well as values based on local information. The second study assessed the ecosystem service values for the entire southern Ontario region at an annual average value per hectare of $6,780, based on transfer benefits from other studies[20] (including the 2008 Greenbelt study).[21] The higher value for the latter study is a result of the significantly greater values attributed to urban and suburban forests, wetlands, and rivers, as well as urban greenspace.[22] We have not adopted the higher range of values for the Whitebelt study.[23]

18 While no study has yet to be done on the economic importance of agricultural commodities grown in the Whitebelt study area, a 2009 analysis found that farmland in the adjacent Greenbelt produced over $1.5 billion in total revenue annually, representing 17% of gross farm receipts for the province as a whole (Greenbelt Grown. A profile of agriculture in Ontario's Greenbelt. 2009. Friends of the Greenbelt Foundation). Furthermore, a recent study in the Lower Mainland in BC, found that urban dwellers would be willing to pay a significant premium for locally grown food, such as corn, over imported produce (46% premium over corn from California). The annual value for access to locally grown food in the Fraser Valley was estimated to be $382 per ha (Natural Capital in BC's Lower Mainland: Valuing the Benefits From Nature. 2010. David Suzuki Foundation and Pacific Parklands Foundation).

19 Kennedy, M., and Wilson, J. 2009. *Natural Credit: Estimating the Value of Natural Capital in the Credit River Watershed*. The Pembina Institute and Credit Valley Conservation. Canada.

20 The values are average values taken from several studies undertaken in other locations and selected by literature review.

21 Troy, A., and Bagstad, K. 2009. *Estimation of Ecosystem Service Values for Southern Ontario*. Prepared for the Ontario Ministry of Natural Resources by Spatial Informatics Group. Pleasanton, California.

22 For example, their study valued non-urban forests at $4,443, similar to the Greenbelt study's value of $5,414, but valued suburban forests at $14,777 per hectare per year, and urban forests at $25,843 per hectare per year. The non-urban wetlands were valued at $14,761 to $15,171 per hectare per year, also a similar value to the Greenbelt study wetland values (range of $14,760 to $15,691/hectare/year depending on wetland type), whereas urban/suburban coastal fresh wetlands were valued at $73,840 (originally $161,420 per hectare per year but has since been corrected) — over five fold greater than the non-urban value. If these values were applied to the current Whitebelt study area, the estimated total value for ecosystem services provided each year would be $687.3 million. A value over five times more than the estimated values adapted from the Greenbelt study.

23 The authors attribute higher values for urban and suburban natural cover because of their proximity to larger populations. While it is true that natural areas in urban and suburban areas are in greater demand than in rural areas, it is also likely that these natural areas are small in size, have low connectivity with other natural areas, and contain low biological diversity. As a result, although they may have a greater demand for recreation, they likely have low ecological functionality and therefore the benefits in terms of providing many other types of ecosystem services may be lower in value. Until a greater number of studies and/or local information are provided that show that urban and suburban areas do provide higher values for their services, our valuation approach in this study will continue to use the values from our original 2008 Greenbelt study.

Agricultural lands in the Whitebelt study area provide ecosystem services worth an estimated $53.3 million per year, including $28 million by croplands, $20.5 million by idle lands, $2.7 million by perennial pasture lands, and $2 million by hedgerows.
DAIDERDOO PHOTO/FLICKR

## York Region

Land cover within the Whitebelt study area in York Region (10 per cent of total study area) is predominantly agricultural (80.2 per cent), with the remaining area being urban built-up area (including transportation and extraction; 10 per cent), wetlands (2.6 per cent), forest (0.5 per cent), and water/shoreline (0.1 per cent). In terms of the estimated value for the ecosystem services provided annually, forest lands are worth $6.2 million, agricultural lands $10.1 million, wetlands $7 million, water/shoreline $10,363, and green urban space $246,612. The total estimated value of natural capital in the Whitebelt study area within York Region is $23.6 million annually (19.3 per cent of the total $122.3 million; Table 4). The distribution of land cover is illustrated in Figure 5.

### FIGURE 5: LAND COVER FOR THE WHITEBELT STUDY AREA WITHIN YORK REGION
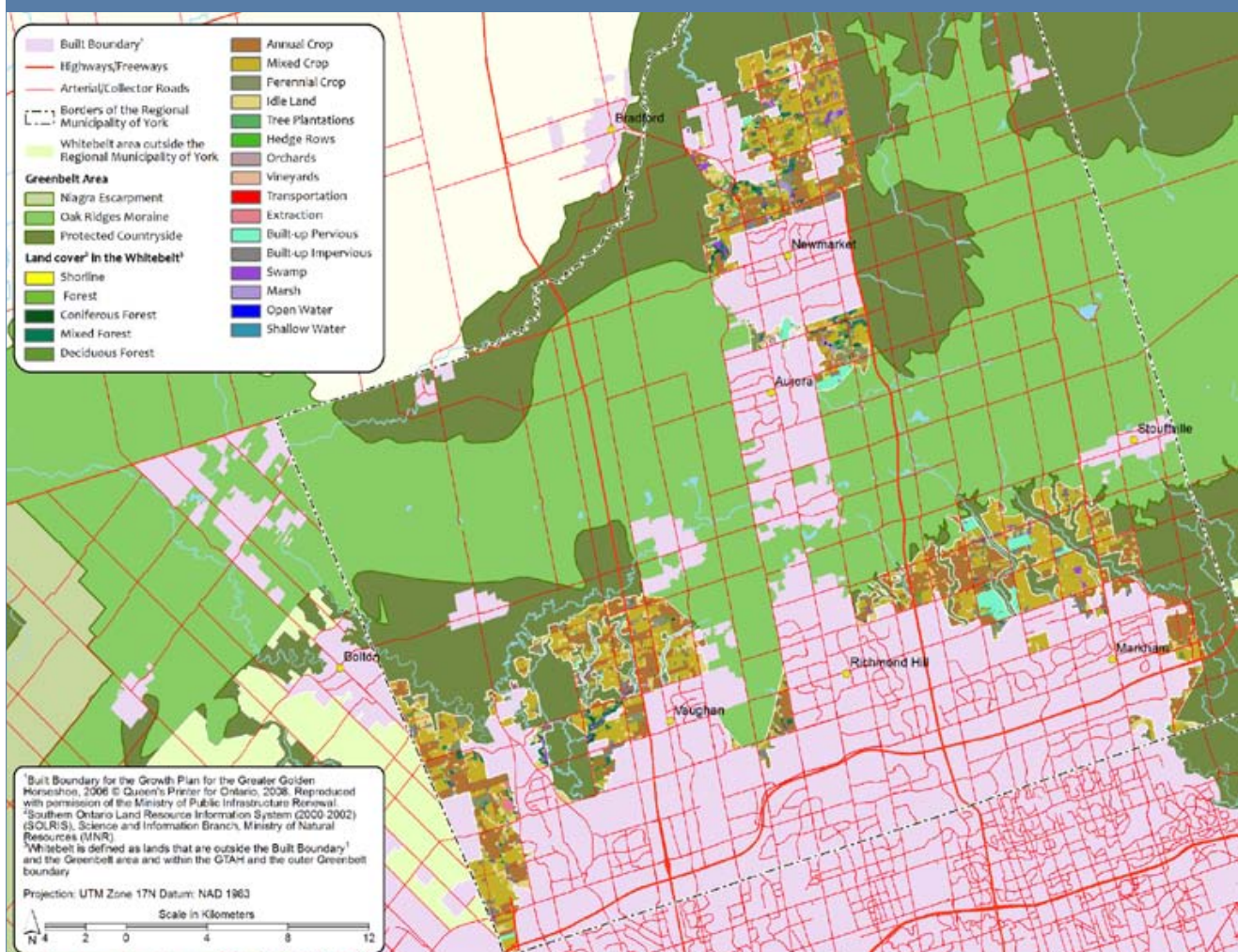
## TABLE 4: LAND COVER AND NATURAL CAPITAL VALUES FOR THE WHITEBELT STUDY AREA IN YORK REGION

| Land cover type and sub-type | Area (hectares) | Value (Cdn$) | % of land cover |
|---|---|---|---|
| **FOREST/TREED** | | | |
| Coniferous Forest | 69 | $372,894 | 0.4% |
| Mixed Forest | 518 | $2,804,072 | 2.9% |
| Deciduous Forest | 563 | $3,050,029 | 3.2% |
| Other Forest | 1 | $4,751 | 0.005% |
| Plantation | 81 | | 0.5% |
| Total | 1,232 | $6,231,746 | 6.9% |
| **AGRICULTURE** | | | |
| Annual Crop | 4,577 | $2,181,727 | 25.8% |
| Mixed Crop | 6,103 | $2,909,302 | 34.4% |
| Perennial Crop | 780 | $372,009 | 4.4% |
| Idle Land | 2,514 | $4,190,605 | 14.2% |
| Hedge rows | 275 | $460,735 | 1.5% |
| Orchards | 0 | $- | 0.0% |
| Vineyards | 0 | $- | 0.0% |
| Total | 14,248 | $10,114,378 | 80.2% |
| **WETLAND** | | | |
| Swamp | 359 | $5,303,119 | 2.0% |
| Marsh | 103 | $1,536,430 | 0.6% |
| Shallow Water | 8 | $118,522 | 0.04% |
| Total | 470 | $6,958,072 | 2.6% |
| **WATERBODY** | | | |
| Open Water | 11 | $10,363 | 0.1% |
| Shoreline | 0 | $- | 0.0% |
| Total | 11 | $10,363 | 0.1% |
| **URBAN/BUILT UP** | | | |
| Transportation | 565 | $- | 3.2% |
| Extraction | 36 | $- | 0.2% |
| Built up area: impervious | 540 | $- | 3.0% |
| Urban green space | 656 | $246,612 | 3.7% |
| Total | 1,797 | $246,612 | 10.1% |
| **TOTAL WHITEBELT STUDY AREA** | 17,758 | $23,561,171 | 100% |



Agricultural land ecosystem services within the York Region of the Whitebelt study area are valued at $10.1 million annually.

ANDREA WILLIAMS PHOTO

## Peel Region

Land cover in the Whitebelt study area within Peel Region is predominantly agricultural land (87.9 per cent), with the remaining area classified as urban built-up (including transportation and extraction; 6 per cent), wetlands (3 per cent), forest (3.3 per cent), and water/shoreline (0.1 per cent). In terms of the estimated value for the ecosystem services provided annually, forest lands are worth $3.7 million, agricultural lands $11.3 million, wetlands $8.4 million, water/shoreline $19,540, and green urban space $174,282. The total estimated value of natural capital in the Whitebelt study area within Peel Region is $23.6 million annually (19.3 per cent of the total $122.3 million; Table 5). The distribution of land cover is illustrated below in Figure 6.



**FIGURE 6: LAND COVER FOR THE WHITEBELT STUDY AREA WITHIN PEEL REGION**
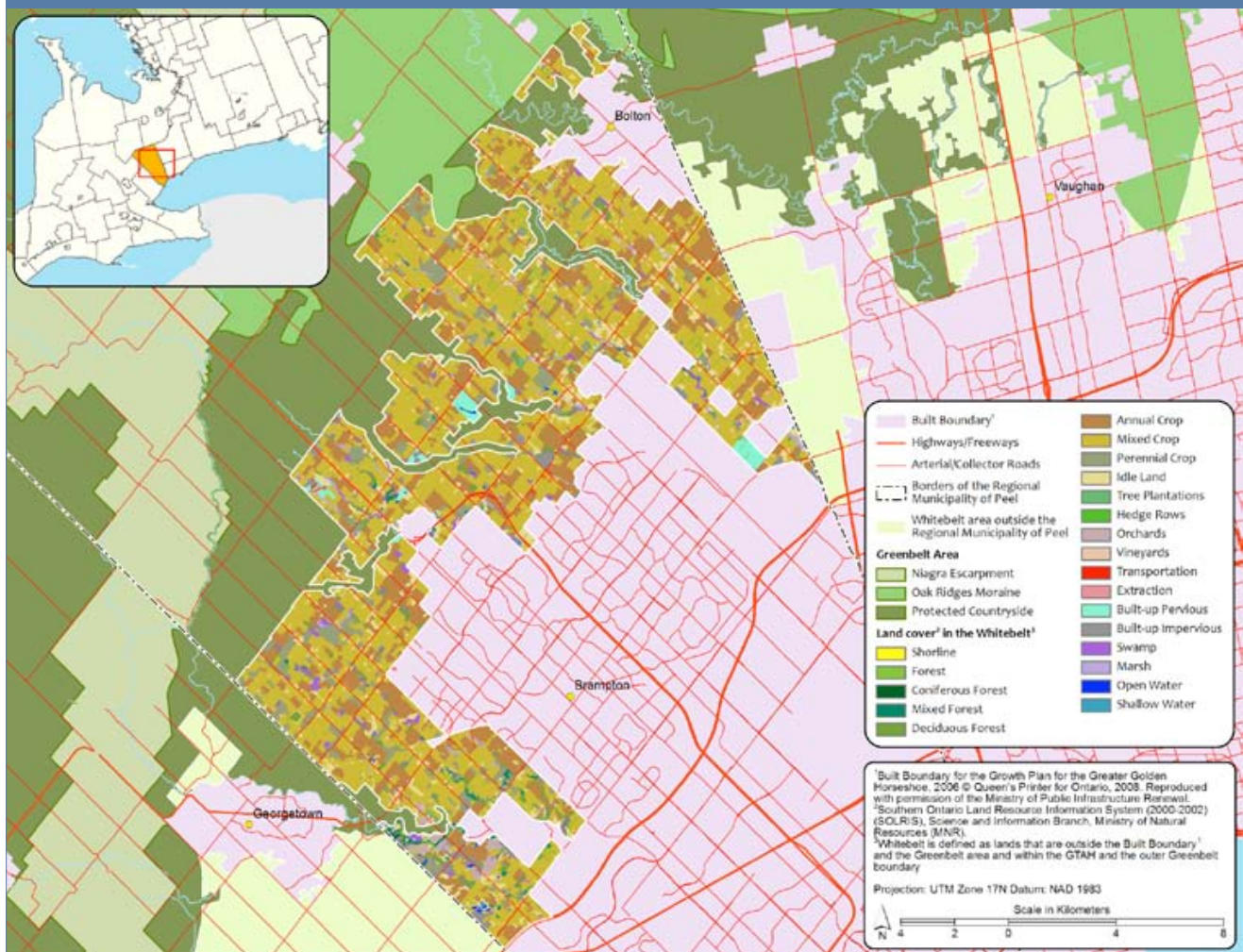
## TABLE 5: LAND COVER AND NATURAL CAPITAL VALUES FOR THE WHITEBELT STUDY AREA IN PEEL REGION

| Land cover type and sub-type | Area (hectares) | Value (Cdn$) | % of land cover |
|---|---|---|---|
| **FOREST/TREED** | | | |
| Coniferous Forest | 14 | $78,331 | 0.1% |
| Mixed Forest | 117 | $632,494 | 0.6% |
| Deciduous Forest | 532 | $2,881,185 | 2.5% |
| Other Forest | 20 | $109,395 | 0.1% |
| Plantation | 18 | | 0.1% |
| Total | 702 | $3,701,405 | 3.3% |
| **AGRICULTURE** | | | |
| Annual Crop | 4,420 | $2,106,914 | 20.9% |
| Mixed Crop | 10,612 | $5,058,637 | 50.2% |
| Perennial Crop | 1,378 | $656,923 | 6.5% |
| Idle Land | 1,902 | $3,170,167 | 9.0% |
| Hedge rows | 138 | $231,877 | 0.7% |
| Orchards | 135 | $66,712 | 0.6% |
| Vineyards | 0 | $- | 0.0% |
| Total | 18,584 | $11,291,230 | 87.9% |
| **WETLAND** | | | |
| Swamp | 335 | $4,941,784 | 1.6% |
| Marsh | 213 | $3,165,876 | 1.0% |
| Shallow Water | 18 | $276,552 | 0.1% |
| Total | 566 | $8,384,213 | 3% |
| **WATERBODY** | | | |
| Open Water | 20 | $19,540 | 0.1% |
| Shoreline | 0 | $- | 0.0% |
| Total | 20 | $19,540 | 0% |
| **URBAN/BUILT UP** | | | |
| Transportation | 597 | $- | 2.8% |
| Extraction | 2 | $- | 0.01% |
| Built up area: impervious | 219 | $- | 1.0% |
| Urban green space | 464 | $174,282 | 2.2% |
| Total | 1,282 | $174,282 | 6% |
| **TOTAL WHITEBELT STUDY AREA** | 21,154 | $23,570,670 | 100% |



The total estimated value of natural capital in the Whitebelt study area within Peel Region is $23.6 million annually.

BILL BARBER PHOTO

## Durham Region

The Whitebelt study area land within the Durham Region is approximately 23,241 hectares in size. The land cover for this area is 7.8 per cent forest, 81.6 per cent agricultural land, 3.5 per cent wetlands, 0.1 per cent water and 7 per cent urban, built-up, and extraction land use (Table 6). In terms of the estimated value for the ecosystem services provided annually, forest lands are worth $9.5 million, agricultural lands $14 million, wetlands $12 million, water/shoreline $16,059, and green urban space $213,508. In total, the Whitebelt study area in Durham Region is worth a minimum of $35.7 million in ecosystem services per year (29.2 per cent of the total $122.3 million). The distribution of land cover across the Whitebelt study area within Durham region is shown in Figure 7.



FIGURE 7: LAND COVER FOR THE WHITEBELT STUDY AREA WITHIN DURHAM REGION
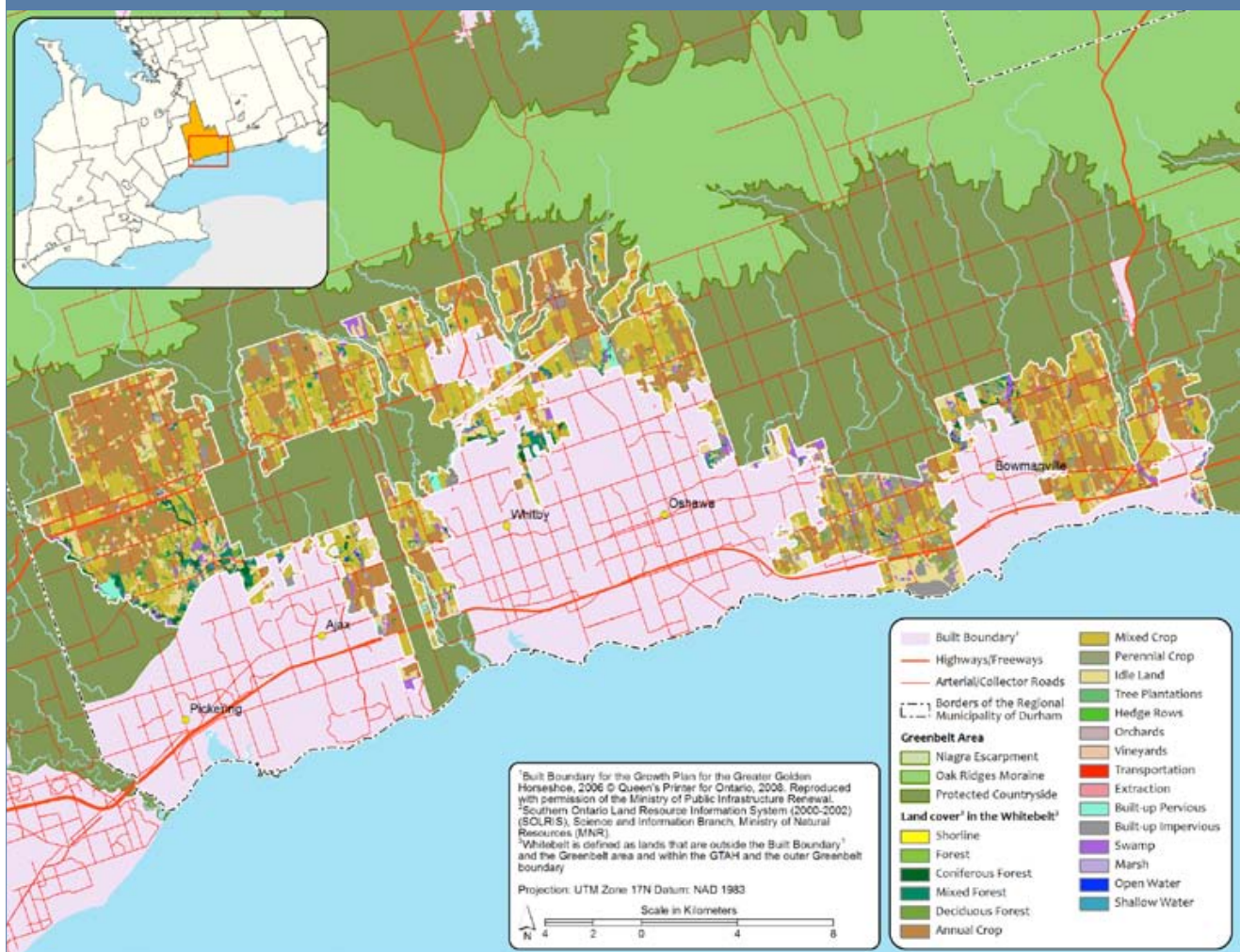
## TABLE 6: LAND COVER AND NATURAL CAPITAL VALUES FOR THE WHITEBELT STUDY AREA IN DURHAM REGION

| Land cover type and sub-type | Area (hectares) | Value (Cdn$) | % of land cover |
|---|---|---|---|
| **FOREST/TREED** | | | |
| Coniferous Forest | 244 | $1,320,660 | 1.0% |
| Mixed Forest | 473 | $2,559,578 | 2.0% |
| Deciduous Forest | 1,039 | $5,623,494 | 4.5% |
| Other Forest | 1 | $4,507 | 0.004% |
| Plantation | 57 | | 0.2% |
| Total | 1,813 | $9,508,239 | 7.8% |
| **AGRICULTURE** | | | |
| Annual Crop | 6,543 | $3,119,145 | 28.2% |
| Mixed Crop | 6,963 | $3,319,120 | 30.0% |
| Perennial Crop | 1,331 | $634,441 | 5.7% |
| Idle Land | 3,790 | $6,318,166 | 16.3% |
| Hedge rows | 336 | $564,366 | 1.4% |
| Orchards | 0 | $- | 0.0% |
| Vineyards | 0 | $- | 0.0% |
| Total | 18,963 | $13,955,238 | 81.6% |
| **WETLAND** | | | |
| Swamp | 775 | $11,438,504 | 3.3% |
| Marsh | 37 | $547,052 | 0.2% |
| Shallow Water | 0 | $- | 0.0% |
| Total | 812 | $11,985,556 | 3.5% |
| **WATERBODY** | | | |
| Open Water | 16 | $15,684 | 0.1% |
| Shoreline | 3 | $375 | 0.01% |
| Total | 19 | $16,059 | 0.1% |
| **URBAN/BUILT UP** | | | |
| Transportation | 847 | $- | 3.6% |
| Extraction | 0 | $- | 0.0% |
| Built up area: impervious | 218 | $- | 0.9% |
| Urban green space | 568 | $213,508 | 2.4% |
| Total | 1,634 | $213,508 | 7.0% |
| **TOTAL WHITEBELT STUDY AREA** | 23,241 | $35,678,601 | 100% |

Agricultural land ecosystem services within the Durham Region of the Whitebelt study area are valued at $14 million annually.
BEV CURRIE PHOTO
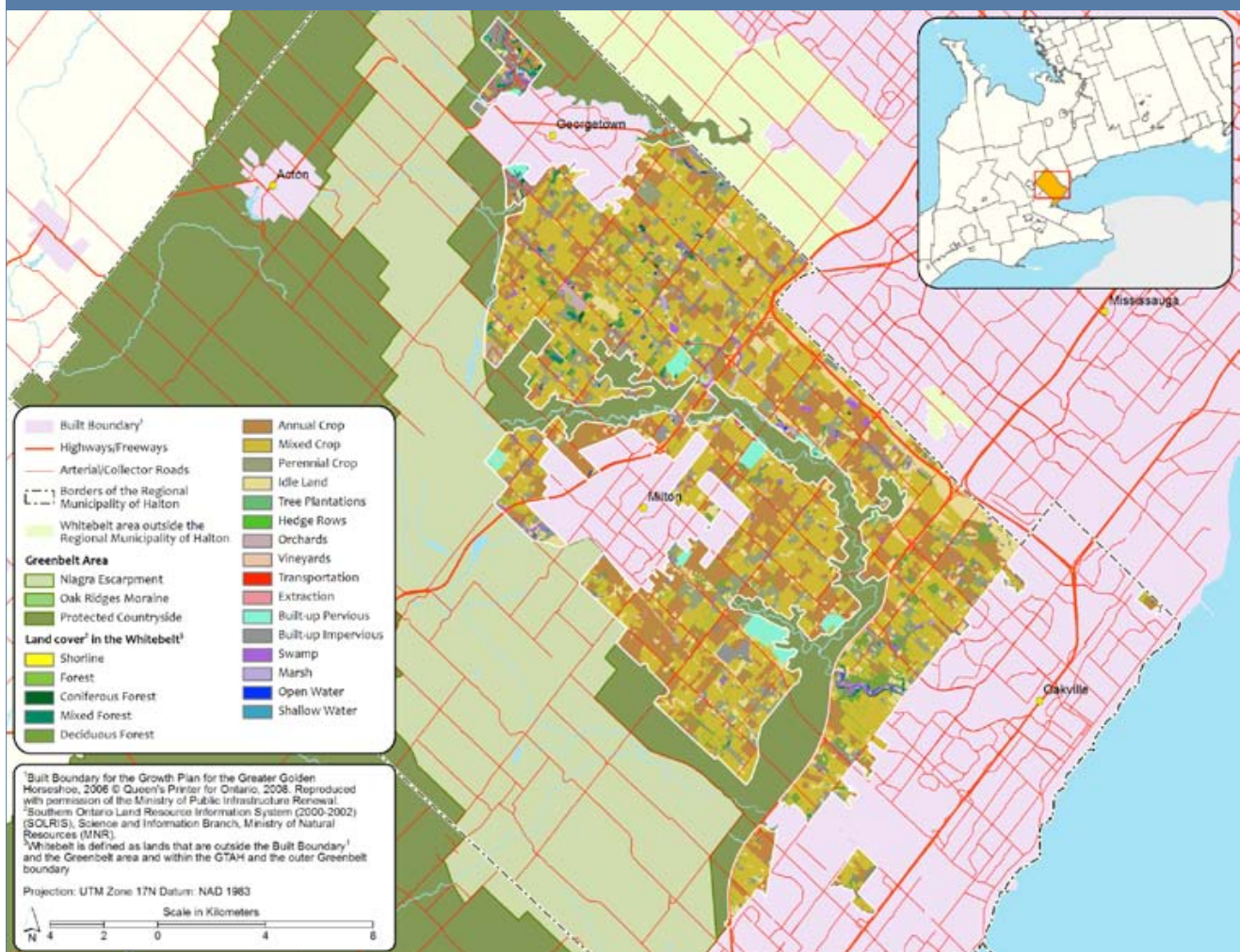
## Halton Region

The Whitebelt study area within the Halton Region is approximately 23,689 hectares in size. Eight-two percent of this area is agricultural, 10 per cent built-up area, 6 per cent forest, 2 per cent wetlands, and less than one per cent water/shoreline. In terms of the estimated value for the ecosystem services provided by the natural capital, forest lands are worth $7.2 million, agricultural lands $13.3 million, wetlands $7.6 million, water/shoreline $29,666, and green urban space $369,601 annually. The total estimated value for natural capital in Halton's portion of the Whitebelt study area is $28.4 million annually (23.2 per cent of the total $122.3 million; Table 7.) The land cover/land use for this area is shown in Figure 8.



**FIGURE 8: LAND COVER FOR THE WHITEBELT STUDY AREA WITHIN HALTON REGION**

## TABLE 7: LAND COVER AND NATURAL CAPITAL VALUES FOR THE WHITEBELT STUDY AREA IN HALTON REGION

| Land cover type and sub-type | Area (hectares) | Value (Cdn$) | % of land cover |
|---|---|---|---|
| **FOREST/TREED** | | | |
| Coniferous Forest | 52 | $280,432 | 0.2% |
| Mixed Forest | 172 | $930,346 | 0.7% |
| Deciduous Forest | 1,085 | $5,873,349 | 4.6% |
| Other Forest | 14 | $76,016 | 0.1% |
| Plantation | 73 | | 0.3% |
| Total | 1,396 | $7,160,142 | 5.9% |
| **AGRICULTURE** | | | |
| Annual Crop | 5,049 | $2,406,715 | 21.3% |
| Mixed Crop | 9,379 | $4,470,982 | 39.6% |
| Perennial Crop | 1,460 | $695,772 | 6.2% |
| Idle Land | 3,105 | $5,175,447 | 13.1% |
| Hedge rows | 309 | $519,025 | 1.3% |
| Orchards | 67 | $32,917 | 0.3% |
| Vineyards | 0 | $- | 0.0% |
| Total | 19,367 | $13,300,859 | 81.8% |
| **WETLAND** | | | |
| Swamp | 397 | $5,864,716 | 1.7% |
| Marsh | 98 | $1,452,783 | 0.4% |
| Shallow Water | 17 | $257,305 | 0.1% |
| Total | 512 | $7,574,804 | 2.2% |
| **WATERBODY** | | | |
| Open Water | 31 | $29,666 | 0.1% |
| Shoreline | 0 | $- | |
| Total | 31 | $29,666 | 0.1% |
| **URBAN/BUILT UP** | | | |
| Transportation | 886 | $- | 3.7% |
| Extraction | 24 | $- | 0.1% |
| Built up area: impervious | 489 | $- | 2.1% |
| Urban green space | 983 | $369,601 | 4.2% |
| Total | 2,383 | $369,601 | 10.1% |
| **TOTAL WHITEBELT STUDY AREA** | 23,689 | $28,435,073 | 100.0% |



The estimated value for forest land ecosystem services in the Halton Region's portion of the Whitebelt study area is $28.4 million annually.

MELINA STETHOPOULIS PHOTO

## City of Hamilton

The Whitebelt study area in the City of Hamilton is approximately 8,629 ha in size. The land cover in this area is 80.5 per cent agricultural, 11.7 per cent urban/built-up area, 4.4 per cent forest, 3.3 per cent wetlands, and less than one per cent water/shoreline. In terms of the estimated value for the ecosystem services provided annually, forest lands are worth $2 million, agricultural lands $4.7 million, wetlands $4.2 million, water/shoreline $9,630, and green urban space $171,204. The total estimated value for natural capital in the City of Hamilton's portion of the Whitebelt study area is $11 million annually (9 per cent of the total $122.3 million; Table 8). The land cover/land use for this area is shown in Figure 9.



**FIGURE 9: LAND COVER FOR THE WHITEBELT STUDY AREA WITHIN THE CITY OF HAMILTON**
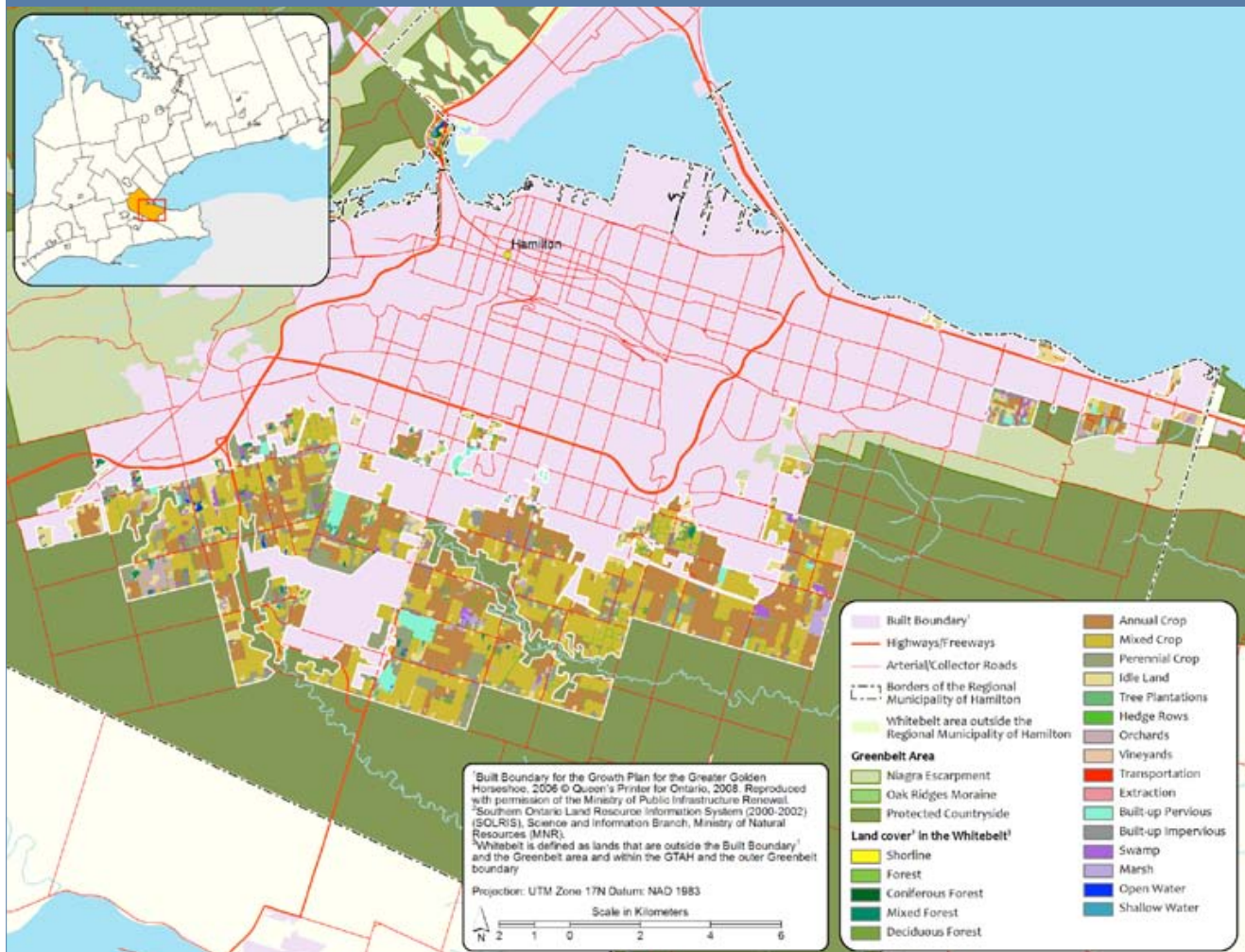
## TABLE 8: LAND COVER AND NATURAL CAPITAL VALUES FOR THE WHITEBELT STUDY AREA IN THE CITY OF HAMILTON

| Land cover type and sub-type | Area (hectares) | Value (Cdn$) | % of land cover |
|---|---|---|---|
| **FOREST/TREED** | | | |
| Coniferous Forest | 20 | $106,837 | 0.2% |
| Mixed Forest | 54 | $292,614 | 0.6% |
| Deciduous Forest | 265 | $1,434,562 | 3.1% |
| Other Forest | 24 | $129,008 | 0.3% |
| Plantation | 19 | | 0.2% |
| Total | 382 | $1,963,021 | 4.4% |
| **AGRICULTURE** | | | |
| Annual Crop | 2,171 | $1,034,702 | 25.2% |
| Mixed Crop | 2,849 | $1,358,348 | 33.0% |
| Perennial Crop | 652 | $310,710 | 7.6% |
| Idle Land | 1,013 | $1,688,027 | 11.7% |
| Hedge rows | 111 | $186,083 | 1.3% |
| Orchards | 113 | $55,910 | 1.3% |
| Vineyards | 40 | $19,537 | 0.5% |
| Total | 6,948 | $4,653,318 | 80.5% |
| **WETLAND** | | | |
| Swamp | 168 | $2,472,885 | 1.9% |
| Marsh | 99 | $1,473,528 | 1.1% |
| Shallow Water | 16 | $242,110 | 0.2% |
| Total | 283 | $4,188,522 | 3.3% |
| **WATERBODY** | | | |
| Open Water | 10 | $9,630 | 0.1% |
| Shoreline | 0 | $- | |
| Total | 10 | $9,630 | 0.1% |
| **URBAN/BUILT UP** | | | |
| Transportation | 308 | $- | 3.6% |
| Extraction | 1 | $- | 0.01% |
| Built up area: impervious | 242 | $- | 2.8% |
| Urban green space | 456 | $171,204 | 5.3% |
| Total | 1,007 | $171,204 | 11.7% |
| **TOTAL WHITEBELT STUDY AREA** | 8,629 | $10,985,696 | 100.0% |

**The total estimated value for natural capital in the City of Hamilton's portion of the Whitebelt study area is $11 million annually.**
PETER CRUIKSHANK PHOTO

# Urban Growth Planning in the GTHA

All of these municipal regions have proposed to further expand settlement areas into the Whitebelt for their current urban growth forecasts to 2031.

LAURA M. BAILEY PHOTO

THE FIVE MAJOR MUNICIPAL REGIONS with lands in the Whitebelt study area (City of Hamilton, Halton, York, Durham, and Peel Regions), have updated their Official Plans to show where urban development will occur between now and 2031 under the provincial Growth Plan. All of these municipal regions have proposed to further expand settlement areas into the Whitebelt for their current urban growth forecasts to 2031. For example, a recent study reported that 10,115 hectares, or 17.2 per cent, of the Whitebelt around these municipalities has been proposed for development from now to 2031 in the current round of draft Official Plan amendments.[24] The authors estimated, that if approved, this would consume between 11 per cent and 22.8 per cent of each municipality's portion of the Whitebelt. It's important to note, that this proposed additional greenfield development is over and above the approximately 52,000 hectares[25] of greenfield land that has already been designated for urban expansion (approved vacant greenfields) and is available for development in the Whitebelt study area already.[26,27]

24  Ibid.

25  According to the Ontario Growth Secretariat 5 year update on the Growth Plan, this "designated greenfield area" amounts to about 52,000 hectares within the Whitebelt study area.

26  These greenfield lands were approved for urban development prior to the current land budgeting process.

27  Other estimates have put the amount of vacant approved greenfield lands (i.e., approved prior to the present land budgeting exercise) available for development as less. Tomalty and Komorowski 2011 report that 27,000 ha of residential land have been designated along with more than 10,000 ha of employment land, for a total land bank of 37,000 ha within the Whitebelt study area.

# Expanding Protection for Natural Capital in the GTHA

**ALTHOUGH THOUSANDS OF HECTARES** of vacant greenfield lands (rare greenspace and prime agricultural land) has already been approved to be developed by municipalities in the GTHA, pressure on the Ontario Government to approve new additional settlement areas in Whitebelt is intense.[28] If this development is not carefully controlled and managed according to best practices of green planning and design, the degradation and loss of the Whitebelt to urbanization will undermine the province's goal of limiting further urban sprawl in southern Ontario, and will result in further fragmentation of natural areas, prime farmland and watersheds that provide critical ecosystem services for millions of residents in the region.

For this reason, the Ontario Greenbelt Alliance (OGA) has recommended expansion of the Greenbelt to protect additional agricultural lands, water resources, and natural heritage systems within the Whitebelt study area,[29] as well as lands that were left out of the original Greenbelt Plan and that may be experiencing problematic 'leap-frog' development, such as in Simcoe County. "Leap-frog" development refers to unsustainable urban expansion that jumps over protected areas, such as the Greenbelt, to locate into adjacent undeveloped areas, such as Simcoe County.

Pressure on the Ontario Government to approve new additional settlement areas in Whitebelt is intense.
JOCEYLNSART PHOTO/FLICKR

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28  Where are the places to grow? op-ed by Building, Industry and Land Development Association. October 26th 2012.
    Toronto Star, www.thestar.com/specialsections/shifthappens/article/1278065--where-are-all-the-places-to-grow
29  Ontario Greenbelt Alliance. Greenbelt 2.0 Backgrounder. http://greenbeltalliance.ca/?q=node/16

# Provincial Process for Expanding the Greenbelt

The Ontario government has established a process to expand the Greenbelt further to protect additional green space, farmland and water resources in the Greater Golden Horseshoe. In 2008, the Ministry of Municipal Affairs and Housing consulted on draft criteria to be used to consider potential municipal requests to expand the Greenbelt. Based on this advice, the Ontario government has put in place criteria to assess requests from regional, county single-tier and lower tier governments to expand the Greenbelt further. The following criteria must be met before new requests are considered for additions to the current Greenbelt:[30],[31]

1. The request is from a regional, county or single-tier municipal government and is supported by a council resolution.

2. In a region or county, the lower-tier host municipality (or municipalities) in the proposed expansion area supports the request through a council resolution.

3. The municipality documents how it has addressed the Ministry of Municipal Affairs and Housing's expectations for:

   • Engagement with the public, key stakeholders, and public bodies such as conservation authorities, including notification of affected landowners.

   • Engagement with Aboriginal communities.

4. The request identifies a proposed expansion area that is adjacent to the Greenbelt or demonstrates a clear functional relationship to the Greenbelt area and how the Greenbelt Plan policies will apply.

5. The request demonstrates how the proposed expansion area meets the intent of the vision and one or more of the goals of the Greenbelt Plan.

6. One or more of the Greenbelt systems (Natural Heritage System, Agricultural System and Water Resource System) is identified and included in the proposed expansion area and their functional relationship to the existing Greenbelt system is demonstrated.

7. A municipality's request to expand the Greenbelt may be considered by the Ministry of Municipal Affairs and Housing while the municipality is engaged in its associated Growth Plan conformity exercise. The proposed area for expansion cannot impede the implementation of the Growth Plan. The municipality must demonstrate how the expansion area supports the goals, objectives and targets of both the Greenbelt Plan and the Growth Plan.

8. Expansions to the Greenbelt will be considered for areas that are outside of existing urban settlement areas. An exception may be considered for major natural heritage systems that are located within existing urban settlement areas. The natural heritage system must be designated within the municipal official plan.



The Ontario government has established a process to expand the Greenbelt further to protect additional green space, farmland and water resources in the Greater Golden Horseshoe.

GRANT MCDONALD PHOTO

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30  Ministry of Municipal Affairs and Housing. Growing the Greenbelt Booklet. August 2008. www.mah.gov.on.ca/Page5895.aspx#Expansion%20Criteria

31  The Ontario Government has recently proposed to amend its policies for expansion of the Greenbelt with a new designation for the inclusion of urban river valleys. If successful, this move would allow municipalities, like Toronto, Mississauga, Oakville and Brampton, to add critical riparian corridors to the existing network of protected lands and waters within the Greenbelt. Adding these municipalities' major waterways, which includes the Don, Humber, Bronte, Sixteen Mile and Credit rivers, to the Greenbelt will help address issues of water quality, public access for local citizens to river systems in addition to local food and critical ecosystem services. The government announced in late 2012 that the first addition since 2005 under the new Greenbelt expansion policy would be the 255 ha Glenorchy Conservation Area in Oakville.

9. A municipality's request to expand the Greenbelt may be considered by the Ministry of Municipal Affairs and Housing while complementary provincial initiatives are being developed.

10. The request has to demonstrate that the proposed expansion area will not undermine provincial interests, or the planning or implementation of complementary provincial initiatives (e.g. Source Protection Plans under the Clean Water Act, 2006, Metrolinx's Regional Transportation Plan, proposed Lake Simcoe Protection Strategy.)

Six proposals to consider plans to expand the Ontario Greenbelt have received support from municipal councils or committees to date. As a result, Toronto, Mississauga, Brampton, Guelph, Hamilton and Oakville are undertaking assessments to expand the Greenbelt into their communities. If approved by the province, these municipal proposals would protect thousands of additional hectares of farmland and greenspace and their critical ecosystem services, and connect more than 4.5 million additional residents to the existing Greenbelt.[32]

There are also popular movements in several municipalities including the Town of Markham, the City of Vaughan (York Region), and the City of Ajax (Durham Region) to limit further urban expansion into the Whitebelt in order to protect prime agricultural lands.[33] If these proposals receive council approval, the municipalities may request to have lands added to the Greenbelt, or the municipalities could set up their own protection policies.[34]

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32  http://greenbeltalliance.ca/?q=mediacentre/readnews/866

33  Tomalty, R., and Komorowski, B. 2011. Inside and Out: Sustaining Ontario's Greenbelt. Friends of the Greenbelt Foundation.

34  Ibid.

# Conclusions and Recommendations

**Development of approved vacant greenfields should incorporate best practices for green planning and design in order to preserve, restore and enhance natural capital features.**
ERICA BLONDE PHOTO

1. The five major municipal regions within the Whitebelt study area (City of Hamilton, Halton, York, Durham, and Peel), have proposed to expand urban settlement areas into the Whitebelt as part of their current growth forecasts to 2031. 10,115 hectares, or 17.2 per cent, of the Whitebelt around these municipalities has been proposed for development from now to 2031 in the proposed Official Plan amendments. This proposed greenfield development is over and above the approximately 52,000 hectares of pre-existing approved greenfield lands (approved vacant greenfields) that have already been designated for urban expansion and are available for urban development in the GTHA now.

   - **RECOMMENDATION:** Development of approved vacant greenfields should incorporate best practices for green planning and design in order to preserve, restore and enhance natural capital features (e.g. greenspace) at the site and neighborhood scales. This includes the establishment of naturalized urban parks and playgrounds, ecological restoration of sensitive sites, and incorporation of green living technologies into the design of built infrastructure, such as bioswales, rain gardens, green roofs and other engineered vegetative features.[35]

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35  Health, Prosperity and Sustainability: the Case for Green Infrastructure in Ontario. 2012. Green Infrastructure Ontario Coalition and Ecojustice. http://greeninfrastructureontario.org/sites/greeninfrastructureontario.org/files/Health,%20 Prosperity%20and%20Sustainability_The%20Case%20for%20Green%20Infrastructure%20in%20Ontario.pdf

2. Due to the extent of urban expansion that is planned to happen in the inner ring of Ontario's Greenbelt in the coming decades, it will be important to evaluate how approved and proposed new urban development will impact the region's critical natural capital assets, especially key natural heritage and hydrological features. This is especially important for the Whitebelt study area where only 5.8 per cent of the region remains forested, only 2.8 per cent is wetland, and a mere 0.1 per cent is water/shoreline.

   - RECOMMENDATION: Remaining priority ecosystems in the Whitebelt study area, such as forests and wetlands should be identified and protected as part of existing municipal Natural Heritage Systems.

3. Southern Ontario has some of the best remaining agricultural lands in Canada in terms of soil fertility, crop productivity and economic value. While there is currently no effort to inventory or track the loss of agricultural land in Ontario, the most recent analysis found that between 1996 and 2001, 16 per cent of farmland in the GTHA was lost to urban encroachment.[36] Over 80 per cent of the Whitebelt study area remains agricultural, much of which is classified Class 1 prime agricultural land.

   - RECOMMENDATION: Further urban growth and development on prime agricultural lands in the Whitebelt study area should be avoided at all cost. Municipalities should explore the establishment of community-driven proposals to establish local food belts of protected agricultural land.

4. Six municipal proposals to expand the Ontario Greenbelt have received support from municipal councils or committees in the GTHA. If successful, such municipal action will protect thousands of additional hectares of farmland and greenspace in the Greater Golden Horseshoe.

   - RECOMMENDATION: Once the applications are completed, the province should move quickly to approve these municipal proposals under its criteria to grow the Greenbelt.

5. Additional provincial expansion of the Greenbelt should be considered for areas just upstream of existing communities in the GTHA in the Whitebelt.

   - RECOMMENDATION: Expansion of the Greenbelt should focus on improving connectivity of natural areas across the GTHA. This includes terrestrial and freshwater corridors, such as river systems, that connect areas outside of the Greenbelt, to the natural systems protected within the current Greenbelt, as well as those that link the Greenbelt, across the Whitebelt, to Lake Ontario.



Over 80 per cent of the Whitebelt study area remains agricultural, much of which is classified Class 1 prime agricultural land.
SOMEBODYAKA/FLICKR PHOTO

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36  Wilson, S.J. 2008. *Ontario's Wealth, Canada's Future: Appreciating the Value of the Greenbelt's Eco-services.* The Greenbelt Foundation and the David Suzuki Foundation. Toronto, Canada.

This report is the tenth in a series examining the value of natural capital to communities in Canada's major urban areas. It provides the first ever estimate of the non-market economic values of ecosystem services in the largely undeveloped 'Whitebelt' area between the Ontario Greenbelt and the current urban containment boundaries for municipalities in the Greater Golden Horseshoe region. The purpose of the study is to better understand the benefits provided by remaining natural capital assets, such as prime farmland and rare wetlands, and the potential cost of further urban development in the region.

For more information about the economic benefits of nature, please visit www.davidsuzuki.org/naturalcapital. You can contribute to the conversation yourself on Twitter at #FoodAndWaterFirst

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