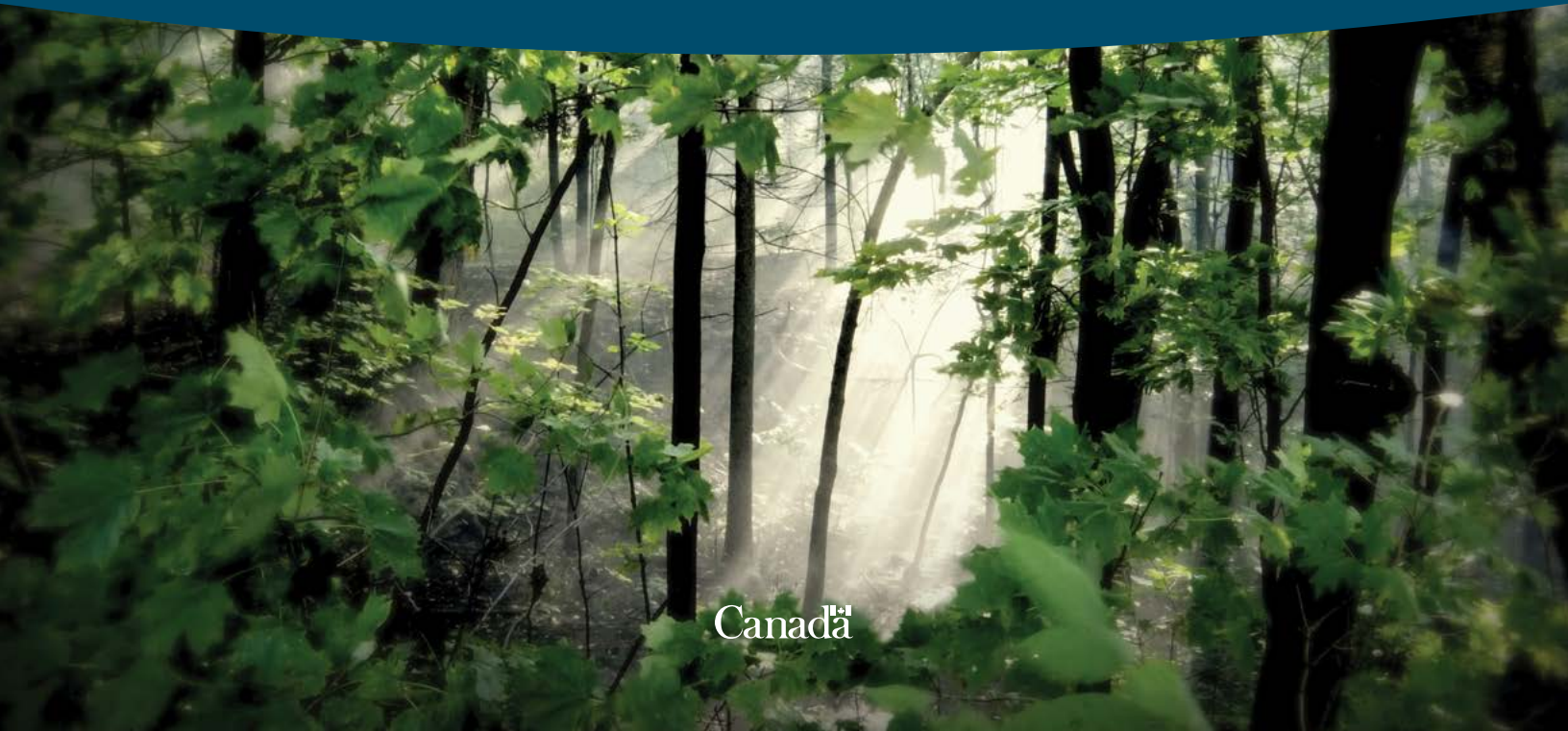


NATIONAL CAPITAL COMMISSION
COMMISSION DE LA CAPITALE NATIONALE

Building a Greener Capital

Annual Environment Report
2016–2017



Canada

National Capital Commission

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1. Message from the Chief Executive Officer

I am very pleased to present the National Capital Commission's (NCC) eighth annual environmental report. The release of these reports each year since 2009 demonstrates the commitment to transparency that is one of the guiding principles of the NCC's environmental strategy. That strategy, entitled *Building a Greener Capital*, will over the next year undergo a process of renewal—still guided by this principle, along with three others: collaboration, leadership and a commitment to continuous improvement.

This renewal is coupled with the renewal of the Gatineau Park Master Plan, and builds on the NCC's landmark natural capital report, released in late 2016. Together, along with other green initiatives, they position the NCC to begin realizing the vision of sustainability expressed in the Plan for Canada's Capital, 2017–2067.

As the steward of federal lands in Canada's Capital, the NCC is committed to protecting and preserving the Capital's legacy of natural beauty and, as the chief federal planner for the Capital, to incorporating an ethos of sustainability into its built environment as well. The NCC is committed to fostering a culture of environmental responsibility within the organization, while encouraging its partners and stakeholders to do the same.

The environmental strategy is a demonstration of this leadership in action. Since its implementation, it has had real and measurable effects. For example, the amount of waste generated at the Rideau Canal Skateway has seen a 93 percent reduction; all high-value ecosystems and habitats on NCC lands are accounted for in NCC planning, as per International Union for Conservation of Nature (IUCN) designations; the use of cosmetic pesticides has been eliminated on NCC lands; and a series of energy efficiency initiatives have contributed to a 5 percent reduction in the NCC's overall greenhouse gas emissions.

You will find more examples within the pages that follow, and the renewal of the environmental strategy in 2018 will include more measurable objectives for the NCC and its partners to realize.

I would like to extend my thanks to all NCC staff, partners and stakeholders for their dedication to creating a greener, more sustainable capital, one that will continue to be a source of pride and inspiration for the generations that follow.



Dr. Mark Kristmanson
Chief Executive Officer

2. Introduction

The National Capital Commission's (NCC) environmental strategy provides a focused agenda for environmental leadership in Canada's Capital Region. Covering a period of nine years, the strategy aligns with the NCC's tradition of environmental stewardship and its core mission of building a great capital for all Canadians.

The NCC has begun the process of renewing its environmental strategy, which expires on March 31, 2018. In fall 2016, a review of the current strategy was completed to identify its strengths and weaknesses. The results of this review will inform the development of the new strategy.

A series of consultations was undertaken first with NCC employees, regional partners and the general public, with the aim of defining the long-term objectives for the organization's new environmental strategy. These objectives will be presented to the NCC Board of Directors in September 2017. The new strategy will continue to contribute to the Federal Sustainable Development Strategy through targets that are inspiring, motivating and realistic. A second series of consultations, which will be starting in the fall of 2017, will be aimed at defining the targets and developing action plans.











This eighth annual report provides the NCC's Board of Directors and the public with a detailed account of the corporation's environmental performance for the 2016–2017 fiscal year. It is the second-last report before the launch of the NCC's new environmental strategy, planned for summer 2018.




For more information about the NCC's environmental stewardship, including previous annual reports and the strategy itself, please visit the NCC's website: ncc-ccn.gc.ca/our-plans/environmental-strategy.














3. Environmental strategy performance overview

Building a Greener Capital centres around five key action areas that are in accordance with the NCC's responsibilities, and represent areas in which the NCC can make an important difference to the quality of the environment. These action areas are as follows: reducing waste, protecting biodiversity, preventing pollution, leading in environmental practices and combatting climate change. Each action area has one priority objective and a focused set of secondary targets.

The following chart summarizes the NCC's progress toward meeting the objectives of its environmental strategy. It highlights accomplishments and provides information about obstacles or challenges that the NCC faces.

OBJECTIVES	HIGHLIGHTS OF ACCOMPLISHMENTS FOR 2016–2017	KEY CHALLENGES	CUMULATIVE STATUS
Reducing waste			
By 2013, the NCC will have achieved and will maintain a 50 percent reduction, in comparison with the 2009–2010 level, in waste sent to landfill sites from activities associated with the Rideau Canal Skateway.	A total of 1.5 tonnes of waste generated on the Rideau Canal Skateway in 2016–2017 was sent to landfill sites. This represents a 93 percent reduction compared with 2009–2010 levels, attributed to the sorting of Skateway waste.		 See page 6
The NCC will achieve 70 percent waste diversion (through reducing, reusing and recycling) from all NCC business areas by 2017.		Considering available financial resources, this objective will not be met.	
The NCC will challenge partners hosting events on NCC lands to achieve a 50 percent waste diversion target.	In 2016–2017, four events hosted by partners on NCC lands diverted 66 percent of waste from landfill sites.		 See page 7
The NCC will develop green procurement guidelines for implementation in 2010, which will include low waste as an important criterion.	Green procurement guidelines were adopted in 2010–2011.		
The NCC will implement green demolition practices by 2010, which place a strong emphasis on waste diversion and resource conservation.	Green demolition practices were undertaken for three of the four demolition projects on NCC lands during the 2016–2017 fiscal year. An average diversion rate of 67 percent was achieved as a result.		 See page 8
Protecting biodiversity			
The NCC will ensure that all 28 high-value ecosystems and habitats found within the Greenbelt and Gatineau Park and on urban lands in the region are designated as conservation lands by 2012.	Since 2014–2015, all high-value ecosystems and habitats in NCC plans have been designated in accordance with the applicable IUCN categories.		
The NCC will implement new recovery plans for federally and provincially listed species at risk on NCC lands, within one year of finalization.	The objectives of the recovery program for identified species at risk on NCC lands are taken into consideration during the environmental effects analysis for individual projects and within land management practices.		 See page 11
The NCC will protect all critical habitats identified on NCC lands under federal or provincial law for species at risk, within one year of designation.	All critical habitats for the species at risk identified on NCC lands are taken into consideration during the environmental effects analysis for individual projects and within land management practices.		
The NCC will develop a thorough understanding of biodiversity on NCC lands through its Natural Resources Research Program.	The NCC undertook several projects under its natural resource stewardship action plan.		 See page 9
The NCC will reduce the amount of NCC urban land infested by invasive plant species by 10 percent by 2017.	Guidelines for the management of invasive plant species have been developed. Specific measures for controlling invasive plant species are still enforced under regular urban lands maintenance contracts.	When the NCC launched its environmental strategy, the extent of invasive plant species on urban lands was unclear. The NCC is continuing to acquire knowledge about the extent of aggressive invasive plant species on NCC lands.	 See page 12

-  The objective is on track or achieved.
-  There is some delay in achieving the objective.
-  There are significant delays, and the objective may not be met.

OBJECTIVES	HIGHLIGHTS OF ACCOMPLISHMENTS FOR 2016–2017	KEY CHALLENGES	CUMULATIVE STATUS
Preventing pollution			
All contaminated sites on NCC lands will be secured by 2017.		The NCC is securing sites based on risk to the public, the environment at the site and organizational requirements. Considering available financial resources, this objective will not be met.	 See page 16
The NCC will identify and remove or repair all problem underground storage tanks on NCC property by 2011.	All storage tanks on NCC property are compliant.		
The NCC will adopt a policy to eliminate the use of pesticides for cosmetic purposes by 2010.	The NCC continues to uphold the policy governing pesticide use on its lands.		
Leading in environmental practices			
All new building construction on NCC lands, for buildings over 250 square metres, will be certified LEED® (Leadership in Energy and Environmental Design) Gold by 2013 and all major building renovations will meet LEED® certification standards.	In 2016–2017, the NCC, working in close cooperation with the local community, developed a design for the building at 7 Clarence Street that meets LEED® Gold standards and respects the heritage character of the ByWard Market.	The high cost of LEED® certification is the main obstacle to achieving this objective.	 See page 18
The NCC will use green building practices for the construction of all buildings under 250 square metres.	Green building practices are incorporated into NCC projects. Environmental criteria are used to prioritize projects.		
The NCC will integrate environmental education into all NCC activities, where appropriate.	The NCC offered various activities for the general public and school groups, in both Gatineau Park and the Greenbelt.		 See page 18
The NCC will strengthen environmentally sensitive practices in all maintenance contracts.	Environmental management guidelines have been integrated into maintenance contracts to provide contractors with operational information.		
The NCC will provide and promote environmentally sustainable transportation alternatives.	The NCC continues to improve its pathway network and, for a second consecutive year, has participated in the winter trail project along the Sir John A. Macdonald Parkway.		 See page 19
The NCC will implement best practices for water quality management in projects and activities taking place on NCC lands, and will encourage its partners and stakeholders to do the same.	The NCC implemented measures in support of responsible water quality management, particularly through shoreline restoration projects.		 See page 21
In carrying out its planning mandate, the NCC will place priority on sustainable development approaches.	The NCC Board of Directors approved the Plan for Canada's Capital. The NCC completed two strategic environmental assessments which will inform the development of its plans.		 See page 22
Combatting climate change			
The NCC will reduce its overall carbon footprint by 30 percent by 2017, based on a 2011–2012 baseline.	The NCC has reduced its greenhouse gas emissions by 5 percent in relation to its 2011–2012 baseline.	Considering available financial resources, and the NCC's operational control over its greenhouse gas emissions, the objective of a 30 percent reduction will not be met by March 31, 2018.	 See page 25
The NCC will seek renewable sources of energy. By 2013, 25 percent of all NCC electricity purchases will be from renewable sources.	The NCC does not need to alter its energy purchases, as 36 percent of the energy produced in Ontario and 99 percent of the energy produced in Quebec comes from renewable resources.		
The NCC will continue to broaden its knowledge of the effects of climate change on its operations.	In 2017–2018, the NCC will examine possible partnerships to conduct a study on appropriate measures needed to adapt to the effects of climate change on its operations.		

4. Progress and priorities: Summary by action area

4.1 Reducing waste

The NCC takes many steps to reduce the amount of waste generated by its activities. In addition to reducing waste produced in its offices, with the participation of its employees, and implementing green procurement guidelines, the NCC ensures that waste from Rideau Canal Skateway activities is sorted and discarded in an environmentally sound way. It also conducts green building demolition projects.

RIDEAU CANAL SKATEWAY

The NCC continues to improve the Rideau Canal Skateway waste management system. A waste management consulting firm was hired to collect, sort and transport the resulting waste, recyclables and compostable materials. In this way, 82 percent of waste, or 6.7 tonnes, was diverted from landfill sites. This amounts to a 93 percent reduction compared with the 2009–2010 level.

Table 1 shows the total amount of waste, as well as recyclable and compostable waste, collected during the skating season on the Rideau Canal Skateway from 2010 to 2017.

Table 1: Rideau Canal Skateway waste collection results, 2010–2017¹

	2010	2011	2012	2013	2014	2015	2016	2017
Total material collected	24.1	33.1	14.1	23.4	22.0	22.5	5.4	8.2
Total amount recycled	1.9	2.3	2.8	2.2	1.6	4.5	2.5	1.4
Total amount composted	0	0	1	1.7	– ²	3.7	1.3	5.3
Total sent to landfill	22.2	30.7	10.3	19.5	20.4	14.3	1.6	1.5

1. Figures in metric tonnes and rounded to one decimal place.

2. Compost collected on the Rideau Canal Skateway was sent to composting facilities. However, changes to the collection system by the City of Ottawa did not allow the total amount composted to be determined.

The amount of waste produced relates directly to the number of skating days. Comparatively, the amount of waste sent to landfill per day of skating dropped by 0.03 tonnes in 2016, for a fifth consecutive year (Table 2). When data from 2012 and 2017 are compared (i.e. two years with a similar skating season), it can be noted that waste sorting significantly reduced the environmental footprint of the waste generated during the 2017 Rideau Canal skating season.

Table 2: Amount of waste sent to landfill, by skating day

	2010	2011	2012	2013	2014	2015	2016	2017
Number of skating days	36	53	26	38	58	59	18	25
Total sent to landfill*	22.2	30.7	10.3	19.5	20.4	14.3	1.6	1.5
Amount of waste sent to landfill per skating day*	0.61	0.58	0.40	0.51	0.35	0.24	0.09	0.06

* Figures in metric tonnes.

MAJOR EVENTS ON NCC LANDS

The NCC encourages partners hosting events on its lands to divert 50 percent of the waste generated during the event from landfill sites. In 2016–2017, 66 percent of waste was diverted during the following events on NCC lands: the Ottawa Children’s Festival, Tamarack Ottawa Race Weekend, TD Ottawa Jazz Festival and the RBC Ottawa Bluesfest. The NCC congratulates its partners for their environmental efforts.

Every year, the NCC accommodates six major events on its lands, which host more than 480,000 visitors in all.

GREEN DEMOLITION PRACTICES

Green demolition consists of dismantling a building and diverting at least 90 percent of the waste material from landfill sites. Building demolition occurs primarily in cases where buildings have reached the end of their life cycle or when their maintenance is no longer economically feasible.

In the past year, four demolition projects were completed, three of which were in accordance with green demolition practices. In all, 11 tonnes of stone, 618 tonnes of concrete, 28 tonnes of metal, 131 tonnes of wood, 36 tonnes of cardboard and 19 tonnes of gypsum were diverted from landfill. The average diversion rate for the three green demolition projects was 90 percent, and the rate for the four demolition projects was 67 percent.

In the past eight years, over 60 green demolition projects diverted 90 percent of their waste from landfill sites. The sound environmental management principles followed by the NCC are helping protect the quality of the region's environment.

4.2 Protecting biodiversity

The NCC is responsible for many parks, farmlands and natural environments, such as the Greenbelt and Gatineau Park. As the steward of this natural heritage, it provides Canadians with an opportunity to get closer to nature, while maintaining a large number of ecosystem services. It continues to work with its regional, provincial and federal partners on an ongoing basis to make Canada's Capital a model of biodiversity protection.

LAND PURCHASES FOR CONSERVATION PURPOSES

In 2016–2017, the NCC purchased a 23-hectare property located in a high-value ecosystem in Gatineau Park. This acquisition will contribute to conservation and to protecting the Park's biodiversity.

Since 2009, 750 hectares of land adjacent to high-value ecosystems have been purchased in Gatineau Park and the Greenbelt.

NATURAL RESOURCE STEWARDSHIP ACTION PLAN

The 2016–2019 natural resource stewardship action plan implements projects focused on species at risk and invasive species, and on restoring natural environments and ecosystems. In the first year of the plan, the NCC monitored ecosystem health indicators on its lands, and restored several high-value natural habitats. It also completed the environmental assessment of the naturalized fields that form part of the Ontario urban lands portfolio, with the aim of improving maintenance practices.

Over the coming year, the NCC will continue to incorporate preventive practices regarding invasive species for all management, maintenance and construction projects. Plans are also in progress to assess shoreline erosion for various watercourses, and restore grassland habitats in the Greenbelt.

SPECIES AT RISK

The NCC continues to acquire and manage information about species at risk on its lands. This includes maintaining a continually updated database, and mapping the potential and critical habitat of these species. The NCC estimates that about 200 species at risk are present on its lands as a whole. Table 3 shows the number of species at risk present or potentially present in Gatineau Park, on urban lands in Quebec and Ontario, and in the Greenbelt.

Table 3: Number of species at risk found in various NCC land portfolios

Portfolios	Urban lands in Quebec	Gatineau Park	Urban lands in Ontario and the Greenbelt ²
Total number of species at risk ¹	58	154	62
Animals	36	64	55
Plants	22	90	7

1. The term “species at risk” refers to plant and animal species with special status designated by the federal or provincial government. This also includes species inventoried by the Committee on the Status of Endangered Wildlife in Canada and on provincial lists of species likely to be designated as threatened or vulnerable.

2. Urban properties in Ontario and the Greenbelt have been grouped together to estimate the number of species at risk present or potentially present.



Gatineau Park forest in the fall.

SPECIES AT RISK RECOVERY PROGRAMS, ACTION PLANS AND MANAGEMENT PLANS

As the manager of federal lands, the NCC continues to work in partnership with Environment and Climate Change Canada by providing input on proposals for recovery and conservation programs, and plans for managing species at risk on its lands. In 2016, federal recovery programs were made public for the following six species present on NCC lands: the golden-winged warbler, olive-sided flycatcher, common nighthawk, Canada warbler, wolverine and pale-bellied frost lichen.

The NCC protects the critical habitat of species at risk based on measures specified in federal and provincial recovery programs. In 2016–2017, it received layers of geographic data for critical habitat of the following species: the little brown bat, eastern whip-poor-will, western chorus frog, Blanding’s turtle, spotted turtle and eastern musk turtle (stinkpot). These data will help the NCC protect habitats, analyze the environmental impact of projects and apply natural resource management practices on its lands.

The following two projects were carried out in 2016–2017 to better protect the habitat of species at risk.

- The NCC continued to inventory butternut trees on its lands, in keeping with its obligation to protect this endangered species under Canada’s *Species at Risk Act* (SARA). Eighty-two specimens have been georeferenced in the Leamy Lake sector. To date, the NCC has inventoried from 1,365 to 1,445 butternut trees in Gatineau Park, and 180 others on urban lands.
- The assessment of potential monarch butterfly habitat on NCC lands continues with the support of a grant provided by the Interdepartmental Recovery Fund. This important research will lead to recommendations on management methods to improve and maintain habitat of importance to this species at risk.

BIODIVERSITY INDICATORS

The NCC is studying various biodiversity and ecosystem health indicators to assist in making informed natural resource management decisions. NCC biologists conduct wildlife and wild plant inventories, monitor the ecological integrity of habitats, and analyze human activities. To assess trends related to the health of ecosystems on NCC lands, the following 11 indicators are monitored: common loon, anurans, environmental fragmentation, invasive plants, surface water quality (lakes and streams), the riparian zone along recreational lakes, the impact of deer, breeding birds, soil fertility, infrastructure density and plants at risk.

Table 4 shows the indicators that were monitored on NCC lands in the summer of 2016. A report analyzing the results of this monitoring will be submitted in coming years.

Table 4: Biodiversity indicators used on NCC lands (2016–2017)

	Indicators
Gatineau Park	Anurans Common loon Plants at risk Invasive plants Surface water quality in lakes and streams
Urban lands in Quebec	Breeding birds Anurans Invasive plants Surface water quality in lakes and streams
Urban lands in Ontario	Breeding birds Anurans Water quality in Mud Lake
Greenbelt	Breeding birds

MANAGEMENT OF INVASIVE PLANTS

According to the Convention on Biological Diversity, invasive species are one of the major direct causes of declining biodiversity around the world. The NCC is concerned about the serious harmful effects of invasive alien species on natural areas, agriculture, human health and safety, economic activities, recreation, and scenic value. These effects are aggravated by climate change, pollution, the loss of habitat and human-caused disturbances.

Over 45 species of invasive plants are present in the NCC's natural high-value ecosystems and habitats, including common buckthorn and glossy buckthorn, honeysuckle, Japanese knotweed, Eurasian water milfoil, wild parsnip and dog-strangling vine. The NCC wants to limit the effects of invasive species on its lands; ensure the long-term preservation and protection of regional biodiversity, species at risk and associated habitat; restore high-value natural habitats; and minimize future incursions of new invasive species on its lands.

A few examples of awareness, research and control projects completed in the 2016–2017 fiscal year are outlined below.

- The NCC developed internal guidelines to establish best practices in the management of invasive alien plants on its lands. These guidelines will protect the biodiversity of aquatic and land-based ecosystems, safeguard public health and safety, and optimize operating costs.
- The Agence de Bassin versant des 7, in cooperation with the NCC and the Université du Québec à Trois-Rivières, continued working on the experimental Eurasian water milfoil control project. Different kinds of fabric equipped with mesh of varying sizes are being tested in Gatineau Park's Philippe Lake.
- Following the 2013 inventory related to the monitoring of 19 aggressive invasive plant species, a second inventory was completed in the summer of 2016 along 75 transects across all NCC natural habitats. The results obtained in 2013 and 2016 will be compared in an effort to discern trends in the species inventoried and population or colony size.
- In the past few years, wild parsnip has become a growing presence in the National Capital Region. Its stem, leaves and flowers contain a toxic sap that can increase the skin's sensitivity to sunlight and cause severe rashes. Growing to heights of up to 1.5 metres, it forms dense colonies that crowd out native plants, thus reducing biodiversity. Since the species cannot be eradicated, the NCC would like to remind users about the presence of wild parsnip, and recommend that members of the public stay on official trails, not touch the plants and keep their pets on a leash.

EMERALD ASH BORER

The emerald ash borer has been ravaging ash trees in Ontario and Quebec since 2008. This alien insect has few predators, and ash trees are defenceless against it. The entire National Capital Region is now affected by the emerald ash borer, and the loss of ash trees on NCC lands is having a major impact. A significant loss of forest cover is expected, since one in four trees in the Capital is an ash.

To protect public safety, over 10,000 ash trees were cut down in 2016–2017 under the emerald ash borer management program on NCC urban lands. In the Greenbelt, over 3,000 ash trees were cut down. To partly offset this loss, some 1,000 trees were planted in the spring of 2016.



SCIENTIFIC RESEARCH ON NCC LANDS

Rich and diverse ecosystems on NCC lands and their proximity to the urban environment make them an excellent site for research. Solid scientific knowledge provided by researchers helps NCC biologists and managers make informed decisions as they carry out their management mandate for Capital lands. In 2016, significant data were gathered under the NCC research incentive program. The following are three examples.

- The monitoring of changes in the distribution of wild leek and white trillium in Gatineau Park provided Park managers with vital information for protecting wild leek (a species at risk, vulnerable to over-harvesting) and its critical habitat.
- An environmental DNA analysis performed during wildlife biodiversity monitoring in aquatic ecosystems provided helpful biodiversity information on various lakes and ponds, and helped detect species at risk based on their genetic code.
- An analysis of best practices for maintaining urban grasslands led to a series of recommendations tailored to urban lands in Ontario and Quebec that will lay the groundwork for an action plan.

CONTROLLING INVASIVE PLANTS THROUGH VOLUNTEER SUPPORT

A number of invasive alien plant species are present in NCC natural habitats and ecosystems. They are crowding out native species, and altering the composition and functioning of ecosystems in the process. To combat this scourge, the NCC enlists the support of volunteers assigned to control these plants.

Since the fall of 2015, a vegetation management project has been active at Mud Lake. It involves controlling invasive plants, restoring plant cover and raising public awareness about conservation of the natural habitat at Mud Lake, a natural urban environment of great ecological importance. The project enlisted the help of students from the Regina Street Public School, managers of the Fletcher Wildlife Garden and many other volunteers. In all, 59 volunteers contributed over 200 hours of time to remove invasive plants by hand. Their dedicated work helped remove over 120 kilograms of garlic mustard and dog-strangling vine, and to control a 6,400-square-metre area invaded by buckthorn and honeysuckle.

Since 2011, the NCC has worked in cooperation with Biodiversity Conservancy International to restore the sand dunes in Pinhey Forest. This sand dune complex, over 10,000 years old, dates back to the last ice age. It is a unique habitat for a large number of wild plant and animal life. Over the past few years, Biodiversity Conservancy International has restored these dunes in cooperation with approximately 1,000 students from the region. The NCC is now commencing the third phase of the project, which involves controlling invasive plants in red pine forests to expand the Pinhey Forest dune area.

4.3 Preventing pollution

To prevent the pollution of lands, groundwater and surface water, the NCC applies strict environmental standards to operations and practices on its lands. It thereby contributes to safe and healthy communities.

CONTAMINATED SITES

Contaminated sites on NCC lands are a legacy of the region's industrial activities in the past century. The NCC continues to manage a significant decontamination program at its sites.

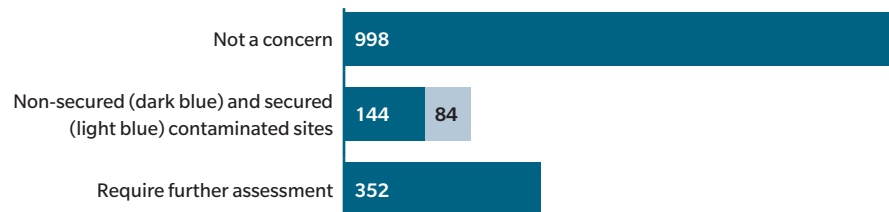
In 2016–2017, the NCC conducted 15 environmental assessments of sites under the contaminated sites management program. Buildings and lands at 210 Laurier Street in Gatineau underwent an environmental assessment to establish the NCC's responsibility under the purchase of the convent of the Congrégation des Servantes de Jésus-Marie.

In cooperation with the City of Ottawa, the NCC assessed trichloroethylene contamination levels in the Bayview area to develop a decontamination strategy for this area.

The NCC also continued its work at the former Ridge Road landfill site. Among other things, the artificial wetlands built by the NCC in 2009 are being monitored to assess their capacity to filter noxious substances released from the former landfill site. The NCC also completed decontamination work on a portion of the land where the National Holocaust Monument will be erected, in order to install foundations at the site, as specified in the design. It also launched four decontamination projects under the federal government infrastructure program.

The following chart shows the status of contaminated sites in 2016–2017.

Figure 1: Status of contaminated sites, 2016–2017



In 2016–2017, the NCC reported an audited liability cost associated with environmental liability of \$50.8 million. The NCC also reported a contingent liability cost of \$476.2 million in 2016–2017, compared with \$474.3 million in the 2015–2016 fiscal year.

DESIGNATED SUBSTANCES

The NCC owns 1,213 buildings in active use, and implements a program to identify and assess buildings where designated substances, such as asbestos and paint containing lead, may be present. This requirement is specified in the *Canada Labour Code*, Part II.

Two buildings considered of lower priority were assessed in 2016–2017 to determine if they contained any designated substances. Annual assessments to detect the presence of asbestos and lead were conducted in 42 buildings. Radon gas assessments were also performed in two buildings.

To date, the NCC has determined that 363 buildings are secure, according to the results of designated substance surveys. Seventy percent of the buildings owned by the NCC, or 850 buildings, contain at least one designated substance. A total of 114 contain friable asbestos, and they are regularly monitored to limit the risk to human health. Finally, radon gas levels exceed the applicable directive in four NCC buildings.

Table 5: Status of review of NCC buildings for designated substances, March 31, 2017

Building status	2009–2010	2010–2011	2011–2012	2012–2013	2013–2014	2014–2015	2015–2016	2016–2017
Buildings in active use	1,322	1,296	1,284	1,225	1,204	1,222	1,218	1,213
Buildings determined to be unlikely to pose a risk	727	714	618	600	564	321	369	363
Buildings with designated substances	248	289	558	578	626	858	856	850
Buildings remaining to be assessed	347	293	108	47	14	133*	116*	114*

Note: Prior to 2014–2015, only high-priority buildings were included in the data for this table. Since 2014–2015, all buildings requiring a study of designated substances have been included.

SPILLS AND EMERGENCY RESPONSE

Two small spills occurred on lands belonging to the NCC in 2016–2017, and were cleaned up in accordance with standards. These two spills were reported to the appropriate regulatory authorities.

4.4 Leading in environmental practices

Environmental management is a responsibility shared by various organizations in the Capital Region. As the major steward of federal lands in the Capital, the NCC applies best practices in visible areas of high environmental importance, including planning, landscaping, transportation, and land and building management.

BUILDINGS

The NCC completed construction of the new International Pavilion at 7 Clarence Street. This new building was designed in close cooperation with the local community and with respect for the heritage character of the ByWard Market. The building was constructed of stone recovered from the former building and new materials certified to meet LEED® standards, such as wooden posts and beams. Markings on the windows reduce the risk of bird collisions. For this new building, the NCC has requested LEED® Gold certification, which it expects to receive in 2017–2018.

In partnership with Algonquin College, the NCC developed a strategy for restoring barns in the Greenbelt. This strategy targets 84 agricultural buildings of historical significance, which date back to the 19th and 20th centuries, and proposes management and restoration measures for each to ensure its sustainability for modern agricultural use. The barn restorations include the application of green demolition practices and the use of wood, in order to preserve characteristic old-time architectural features.

ENVIRONMENTAL EDUCATION

In 2016–2017, the NCC and the Friends of Gatineau Park mounted a wide range of activities for the general public and school groups to raise awareness about the importance of protecting the Park's biodiversity. New activities included a guided hike on the Champlain Trail, featuring the Eardley Escarpment ecosystem; an interpretation session on the presence and vulnerability of the Park's amphibians at Blanchet Beach (Meech Lake); and two talks at the Philippe Lake campground amphitheatre, one on canids and the other on invasive species.

Approximately 3,000 people (school groups and the general public) took part in theme-based programs at the Gatineau Park Visitor Centre, with a special focus on the Park's conservation role and rich ecosystems.

In the fall of 2016, Fall Rhapsody offered visitors a chance to explore less-travelled areas of the Park during this peak period. In cooperation with the municipalities of Chelsea and Pontiac, activities were held in Meech Creek Valley, at Philippe Lake and at Luskville Falls.

ACTIVE AND ALTERNATIVE MODES OF TRANSPORTATION

The NCC is responsible for the Capital Pathway network, which includes over 250 kilometres of multi-use paths linking natural areas, parks, gardens and museums in Canada's Capital Region. This network, one of the most extensive recreational pathway networks in North America, helps promote active modes of transportation, such as cycling, walking, running and in-line skating. From April 1 to November 30, 2016, over 1.9 million bicycle trips were recorded at five locations within the network.

The NCC's accomplishments in this area in 2016–2017 include the following.

- Two segments of the De l'Île Pathway were redeveloped near the intersection of Maisonneuve Boulevard and Boulevard des Allumettières to ensure public safety. The De l'Île Pathway, which extends for two kilometres across Hull Island, is a multi-purpose pathway that is extremely popular among cyclists.
- As part of its ongoing efforts to improve pedestrian and cyclist safety, and in partnership with the City of Ottawa, the NCC made significant improvements to two pedestrian crossings on the Queen Elizabeth Driveway at Queen Elizabeth Place and Commissioners Park. These are the fourth and fifth crossing areas improved following the study on pedestrian crossings in the Rideau Canal corridor, completed in 2011 with the participation of community associations, local interest groups, and representatives of Carleton and Ottawa universities.
- The outcome of collaboration between the City of Ottawa, the NCC, the United States embassy and the Province of Ontario, construction of a two-way bicycle lane on Mackenzie Avenue began and will continue until 2017. The project will join several existing bike lanes on Confederation Boulevard.

The NCC promotes active modes of transportation in summer and winter. The Nokia Sunday Bikedays program gives outdoor enthusiasts a chance to enjoy roadways closed to traffic on Sundays in the summer. For a second consecutive year, a winter trail has been created along the Sir John A. Macdonald Parkway in cooperation with the Westboro Beach Community Association. Located along the shore of the Ottawa River, this trail attracts several hundred cross-country skiers, walkers, winter cyclists and snowshoers every day.

The NCC implemented the second phase of the Fall Rhapsody shuttle pilot project on the Gatineau Park parkway system. A total of 12,000 trips were made using this free shuttle, giving approximately 6,000 visitors easier access to Pink Lake, the Mackenzie King Estate and Gatineau Park lookouts. This year, departures from downtown Gatineau were offered for the first time.



Snowshoer at the Mackenzie King Estate.

EXPANSION OF BLACK RAPIDS CREEK WETLANDS

In September 2016, the NCC worked with the Rideau Valley Conservation Authority to restore wetlands upstream of Black Rapids Creek. The restoration work doubled the area of the wetlands from 3,444 to 7,000 square metres after diverting their tributaries. The anticipated impact of this expansion includes improved water quality in Black Rapids Creek and enhanced wetland biodiversity. It could also assist the amphibian reproduction and bird feeding areas, and serve as a fish habitat. Follow-up is planned in 2017, 2019 and 2021.

WATER QUALITY MANAGEMENT

Shoreline restoration not only enhances the landscape, but also contributes to good water quality. In the 2016–2017 fiscal year, the NCC began restoring the shores of the Ottawa River and Rideau River in Ontario. In addition to securing shoreline access and decontaminating a portion of the soil, the shorelines were replanted with native plant species.

The NCC is responsible for the quality of water for drinking and swimming in the various waterbodies situated on its lands. It manages six beaches in Gatineau Park and one at Leamy Lake Park. In 2016, no beaches were forced to close due to bacteriological contamination of the water.

SUSTAINABLE AGRICULTURE

The NCC fosters agricultural undertakings in the region, which contribute to the regional food supply. The NCC owns a total of 74 food-producing farms (market gardens, dairies, and crop and livestock farms), located primarily in the Greenbelt, but also on urban lands and in Gatineau Park. In the 2016–2017 fiscal year, the NCC leased 10 of these farms for local farming projects, thus enhancing the diversity of Greenbelt farms. The selected agricultural projects help diversify local agriculture, produce food for the National Capital Region and raise awareness among future generations about food sources.

The NCC also implements best practices to preserve and protect the integrity and productivity of farmland. Project proponents in the Greenbelt are required to comply with development and infrastructure construction guidelines at all times to mitigate the impact of the proposed projects on protected farmlands. The NCC continues to collaborate with the Greenbelt farming community and various conservation organizations to help improve water and soil quality.

CAPITAL PLANNING AND DEVELOPMENT

In April 2017, the NCC Board of Directors approved the Plan for Canada's Capital, 2017–2067. This signature planning framework, which shapes the vision for the nation's capital until Canada's bicentennial in 2067, will have positive effects on the environment of Canada's Capital Region. It acknowledges the importance of creating a thriving and connected, picturesque and natural, inclusive and meaningful capital for all Canadians.

CAPITAL URBANISM LAB

The Capital Urbanism Lab is a forum for innovation where the public, leaders and experts meet to envision the future of Canada's Capital Region. More than 60 events, including public consultations, meetings with the community, presentations on Indigenous culture and conferences, were organized in the 2016–2017 fiscal year. In all, 14,000 participants shared ideas and information on topics like urban agriculture, natural assets and the ecosystem services they provide, heritage and sustainability, youth engagement, and so on.

STRATEGIC ENVIRONMENTAL ASSESSMENT

In accordance with the Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals, the NCC conducts strategic environmental assessments of all of its plans to take account of economic, social and environmental factors and to make informed decisions that foster sustainable development. The purpose of strategic environmental assessment is to determine the environmental impact resulting from the implementation of a plan; information gathered over the course of the assessment is then used to increase positive impacts or mitigate and eliminate negative effects.

In 2016–2017, the NCC performed a strategic environmental assessment of the review process for potential sites of The Ottawa Hospital and the Plan for Canada's Capital, 2017–2067.

ENVIRONMENTAL IMPACT ANALYSIS

In accordance with section 67 of the *Canadian Environmental Assessment Act, 2012* (CEAA 2012), the NCC assessed the environmental impact of approximately 99 projects in 2016–2017, to determine if they might result in significant adverse environmental effects. The extent of the assessment varied according to project scope and level of environmental risk. No project evaluated under section 67 of CEAA 2012 was deemed likely to cause significant adverse environmental effects, once the proposed mitigation measures were implemented. Further, none of the projects proposed on NCC lands was considered to be a designated project under sections 13 and 14 of the Act.

In 2016–2017, the NCC began developing tools to simplify the evaluation, under section 67 of CEAA 2012, of projects conducted on federal lands managed by the NCC or requiring NCC approval under the *National Capital Act*. These tools will be available on the NCC website next year.



NATURAL CAPITAL: THE ECONOMIC VALUE OF NCC GREEN SPACES

A productive partnership between the NCC, the David Suzuki Foundation and the team of Jérôme Dupras, professor with the Department of Natural Science at the Université du Québec en Outaouais, led to the publication of a report in December 2016, entitled *Natural Capital: The Economic Value of NCC Green Spaces*.

Natural capital is defined as the set of natural resource reserves and ecosystems that provide a wide range of ecosystem services. In the National Capital Region, the NCC protects and conserves more than 55,000 hectares of federal land, most of which is green space. Green space provides the material goods and ecosystem services required for economic activity, environmental quality and community well-being. Ecosystem services can include supply services (agricultural and forestry products), regulation services (soil stabilization, water quality, filtration of air pollutants, climate regulation and so on) and cultural services (scenic beauty, recreation, spirituality and so on). Since we do not pay directly for access to most of these ecosystem services, their actual value is not included in the market economy or in land development processes.

The study is based on strict methods for estimating the total economic value of 13 ecosystem services provided by NCC green spaces and farmlands. The authors determined that NCC green spaces provide financial benefits worth an average \$332 million per year to communities in the National Capital Region. Wetlands represent the highest economic value (\$59,394/hectare/year) of NCC lands, given the diversity and importance of the ecosystem services they provide, and their relative scarcity.

The protection of natural assets on federal lands is therefore a long-term investment for the NCC. It contributes to the quality of life of the Canadian public and to building a greener capital.

4.5 Combatting climate change

The Federal Sustainable Development Strategy 2016–2019 makes combatting climate change a priority. Climate change is a serious global problem, and adapting to it is vital. The Government of Canada is leading by example, and reducing greenhouse gas emissions resulting from its operations.

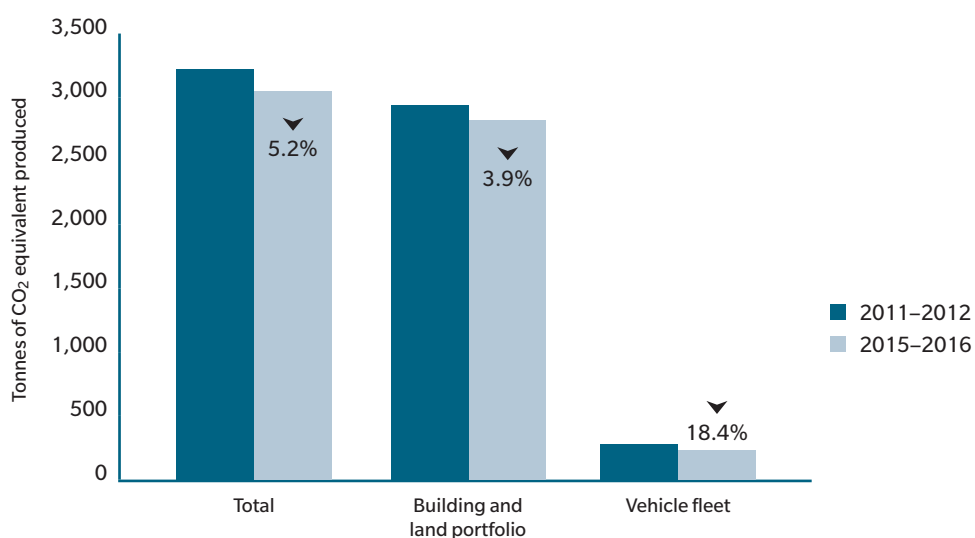
NCC GREENHOUSE GAS EMISSIONS INVENTORY

The NCC is committed to reducing its carbon footprint by 30 percent in 2017 compared with the 2011–2012 baseline. In accordance with the *Federal Greenhouse Gas Tracking Protocol: A Common Standard for Federal Operations*, the NCC adapted its 2011–2012 inventory to reflect its organizational structure. This ensures that comparisons of greenhouse gas emissions are consistent, and accurately represent the progress made to achieve the reduction target.

The NCC generated 3,050 tonnes of carbon dioxide (CO₂) equivalent in the 2015–2016 fiscal year. It reduced its greenhouse gas emissions by 5 percent (169 tonnes of CO₂ equivalent) compared with the baseline year. Figure 2 presents a breakdown of greenhouse gas emissions for 2015–2016.

The NCC is currently calculating greenhouse gas emissions for 2016–2017, and the results will be released during the 2017–2018 fiscal year.

Figure 2: Total greenhouse gas emissions produced in 2015–2016 in comparison with the 2011–2012 base year



Most greenhouse gas emissions derive from the use of electricity and natural gas by the various building and land portfolios, which are as follows:

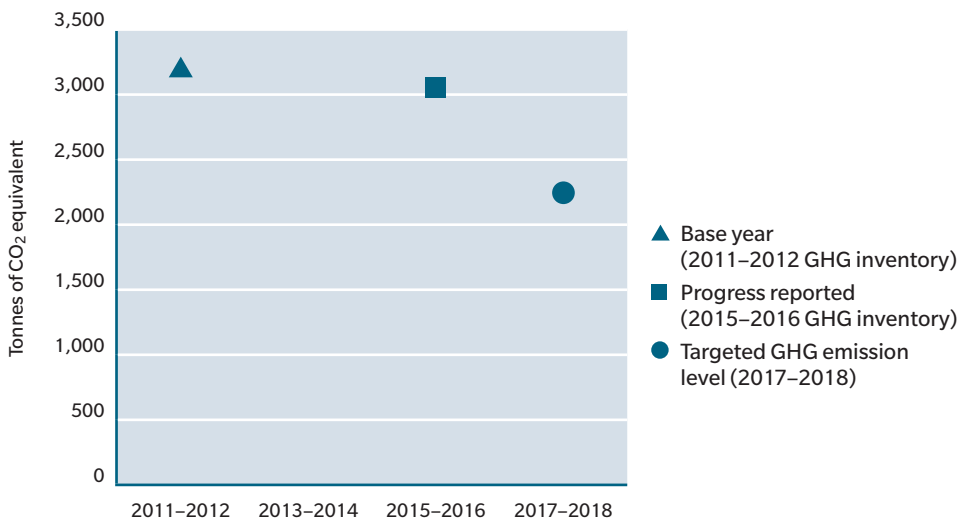
- Urban lands in Ontario and the Greenbelt (including NCC headquarters at 40 Elgin Street, Ottawa);
- Urban lands in Quebec and Gatineau Park;
- Official residences (Rideau Hall, 24 Sussex Drive, Rideau Gate, Stornoway, the Farm and Harrington Lake).

The reported greenhouse gas emission reduction was achieved through projects implemented by the NCC in previous years:

- Replacement of incandescent light bulbs used to illuminate streets, pathways and parks with light-emitting diode (LED) bulbs
- Demonstration of green energy technologies in the official residence portfolio
- Energy efficiency strategies (such as lowering the temperature of the building, improving heating and cooling system efficiency, and so on)
- Replacement of 34 percent of the vehicle fleet (15 new vehicles) with more energy-efficient vehicles.

To achieve its target of a 30 percent reduction in greenhouse gas emissions produced by its operations, the NCC will have to produce 797 fewer tonnes of CO₂ equivalent. Figure 3 presents the NCC's greenhouse gas emission reduction target.

Figure 3: NCC reduction target for greenhouse gas (GHG) emissions



ENERGY EFFICIENCY

The NCC conducts annual energy audits to check the energy efficiency of its residential buildings once they are vacated. In all, 17 energy audits were completed in 2016–2017. They measured the energy consumption and energy efficiency of the buildings studied to determine what action could be taken to reduce their environmental footprint. When possible, renovation work is performed to upgrade the building’s insulation and weatherproofing before new tenants move in.

At Rideau Hall, the old steam heating system was replaced with a decentralized hot-water heating system in the fall of 2016. Since it entered operation, the new system has achieved a savings of approximately 35 percent in the amount of natural gas used in the main building, for a reduction of 80,000 cubic metres of natural gas, and over 200 tonnes of CO₂ equivalent.

At Stornoway, the official residence of the leader of the Opposition of Canada, the existing gas-powered boilers were replaced by gas-powered condensation boilers. This upgrade maximized the efficiency of the heating system during the cold weather, and reduced operating and maintenance costs. The relocation of thermostats to inhabited parts of the house and decreasing the temperature to a minimal comfort level for electrical heating devices in the garage reduced energy needs. This resulted in a 15 percent energy savings in 2016–2017.

6. Conclusion

The NCC has achieved 16 of the 23 objectives in its environmental strategy for the 2009–2017 period. Although five objectives will not be reached, considerable progress has been made in every field of activity.

The NCC continues to report to the public and measure its progress. It ensures that the requirements of government regulations are met, but also aspires to surpass its responsibilities and thus help build a sustainable future in which Canada is one of the greenest countries in the world, and where quality of life continues to improve.

Aware that it cannot achieve its objectives and those of the Federal Sustainable Development Strategy on its own, the NCC continues to work with interested parties and partners to improve the quality of the environment. Engaging its entire staff is also essential to the ongoing greening of its policies, practices and activities.

The NCC continues to learn from its experiences, and strives to have an even more positive impact on the environment. The NCC’s future environmental strategy will also focus on environmental leadership in Canada’s Capital Region. However, progress on environmental issues requires the commitment of other partners and the general public, who play an important role in creating a dynamic conducive to establishing a greener capital.



Major's Hill Park

7. Glossary

Biodiversity: The full range of animals, plants and other living things, and the places where they live on the planet.

Carbon dioxide (CO₂): A greenhouse gas produced in part by human activities, whose emissions are largely responsible for climate change.

Carbon footprint: The total set of carbon-containing emissions (mainly CO₂) caused directly and indirectly by an individual, organization, event or product.

Conservation land: Land specially designated by federal, provincial/territorial or local bodies to protect fragile or important ecosystems, habitats and species at risk.

Contaminated site: Areas of land that contain chemical substances (e.g. heavy metals or petroleum products) that may pose a hazard to human health or the environment, or that exceed the levels set out in policies and regulations.

Critical habitat: The habitat that is necessary for the survival of a species at risk and that is identified under law in a recovery strategy or action plan for that species.

Ecosystem: A unit of interdependent organisms that share the same habitat.

Energy efficiency: Refers to how effectively energy is being used for a given purpose. For example, performing a similar function or providing a similar (or better) level of service with less energy consumption on a per unit basis is considered an improvement in energy efficiency.

Green demolition: The process of dismantling a building in such a way as to ensure that as many of its elements as possible can be recycled or reused, rather than sent to landfills.

Greenhouse gas: Emissions of gases such as nitrous oxide (N₂O), methane (CH₄) and especially carbon dioxide (CO₂) that accumulate in the atmosphere and act to retain atmospheric heat, thus contributing to climate change.

Greenhouse Gas Protocol: The most widely used international standard, the Greenhouse Gas Protocol is an accounting tool for understanding, quantifying and reporting corporate greenhouse gas emissions.

Green procurement: An approach to business purchasing in which the environmental impacts of goods and services, in addition to price and quality, play an important role in purchasing decisions.

High-value ecosystem or habitat: An ecosystem or habitat that is considered important for the maintenance of biodiversity because it has some combination of the following characteristics: a large diversity of species, habitat for species at risk and/or migratory species, and intact natural processes likely to support increased genetic diversity.

IUCN (International Union for the Conservation of Nature) category: Internationally recognized designations that classify protected areas according to their management objectives and take into account the following aspects: wilderness level; scientific, spiritual, educational and recreational opportunities; significant cultural, geological or natural features; species and habitat management; and sustainable use of natural resources.

LEED® (Leadership in Energy and Environmental Design): A third-party certification program administered by the Canada Green Building Council for the design, construction and operation of high-performance green buildings.

Recovery strategy: A detailed plan that outlines short-term objectives and long-term goals for protecting and recovering a specific species at risk.

Renewable energy: Energy derived from sources that are either inexhaustible, such as the sun (solar energy), wind or waves (tidal energy), or can be naturally replenished before being exhausted, such as biomass and river flow (hydroelectric power).

Secured site: A contaminated site where all necessary study, remediation and other risk management actions have been taken, consistent with the designated use of the site.

Species at risk: Plant and animal species with special status at the federal or provincial level because they are vulnerable to extinction. Species may be listed as special concern, threatened, endangered, extirpated or extinct.

Waste diversion: The reduction, reuse and recycling of waste, leading to a reduction of waste being sent to the landfill.

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