

# Appendix A

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How LID can meet  
Municipal, Provincial and  
Federal Objectives

## Appendix A – How LID can meet Municipal, Provincial and Federal Objectives

Small, medium and large municipalities are faced with providing a level a service dictated by Federal and Provincial legislation, as well as their own municipal plans, strategies and policies. In some cases, municipalities may also have additional standards, by-laws and policies enforced by an upper tier municipality. Meeting the requirements of these multiple levels of government for the effective management of stormwater can be challenging and calls for innovative approaches like low impact development (LID). LID practices offer an effective and affordable method of helping municipalities improve their stormwater management level of service and address the challenges of a changing climate and infrastructure deficits. LID allows municipalities to improve stormwater management in areas built before the introduction of modern stormwater controls through LID retrofits of existing municipal facilities, parks and roads and through the installation of LID in newly constructed roads and facilities. LID is also suited to managing stormwater on private property, including businesses, multi-residential properties, colleges & universities and residential properties. Municipalities can encourage the adoption of LID across these properties to enhance stormwater management throughout an entire municipality and/or watershed.

This document provides an overview of the provincial, regional and municipal policies dictating the management of stormwater at the municipal level in the Province of Ontario and describes how LID can be used as a tool to assist municipalities meet the objectives within the policies. This information is presented in the following tables:

Table 1 - Regional and municipal plans, strategies and policies

Table 2 - Provincial and federal legislation

The legislation, plans, strategies and policies discussed in this document include:

- Peel Council Priorities
- Climate Change Strategy
- Region of Peel Strategic Plan
- Transportation Plan
- Community Sustainability Plans
- City of Mississauga - Green Development Standards
- City of Mississauga - 10000 tree planting initiative
- City of Mississauga - Strategic Pillars for Change
- City of Brampton - 2006 Official Plan
- Town of Caledon - Community-Based Strategic Plan
- Sustainable Municipal Water Management in the Great Lakes and St. Lawrence Basin
- Federal Fisheries Act
- Canada Ontario Agreement Respecting the Great Lakes Basin Ecosystem,
- Climate Ready: Ontario's Adaptation Strategy and Action Plan
- Subwatershed Management
- Stormwater Management Requirements for Land Development Proposals
- Ontario Water Resources Act
- Stormwater Management Planning and Design
- Lake Simcoe Protection Plan
- Great Lakes Protection Act and Strategy
- Municipal Infrastructure Strategy
- Places to Grow plan for the Greater Golden Horseshoe Region
- Source Water Protection
- Planning Act
- Provincial Policy Statement
- Water Opportunities Act
- Ontario Environmental Protection Act
- Ontario Building Code
- Ontario Biodiversity Strategy
- Endangered Species Act
- Oak Ridges Moraine Conservation Plan
- Niagara Escarpment Plan
- Conservation Authorities Act

**Table 1: Summary of Regional Objectives Met Using LID**

Level of Government	Department	Policy	Policy Summary & Goals/Objectives/Actions	How LID can Help Meet the Policy
Regional Municipality	Executive Office/Regional Council Office	Council Priorities	<p>Many council members develop strategies to guide their work and decision making over their term in council.</p> <p>For the Region of Peel, Charting our Course document sets the Strategic Plan as the keystone of the strategic planning process. Furthermore, in 2011 the Term of Council Priorities were introduced to help the Region confidently chart its course. These council priorities outline themes or areas of focus developed by Council to advance the Strategic Plan. The environmental theme is to <i>Protect, Enhance and Restore the Environment</i> and stormwater management improvements is identified as a priority. This priority is in efforts to provide flood relief for citizens and address broader environmental goals.</p> <ul style="list-style-type: none"> <li>• Develop stormwater management framework with area municipalities and conservation authorities.</li> <li>• Support implementation of recommended framework.</li> </ul>	<ul style="list-style-type: none"> <li>• Can be easily integrated into stormwater management plans and frameworks</li> <li>• Long-term performance assessment will assist municipalities in implementing LID on a wider scale.</li> <li>• Improve stormwater quality through treatment and storage.</li> <li>• Improve overall stormwater quality discharging to rivers/creeks and Lake Ontario.</li> </ul>
Regional Municipality	All departments	Strategic Plans	<p>Many upper tier municipalities have strategic plans to guide consistent policy and decision making across the Region. The Region of Peel has of guiding strategies which include:</p> <p><b><u>1. PEEL CLIMATE CHANGE STRATEGY</u></b></p> <p>The strategy recognizes the urgent need to address climate change at the local level. The actions outlined in this strategy are built upon existing policies, plans and programs to ensure that they are applied, or revised, with consideration for anticipated climate change impacts.</p> <p>Under Peel Climate Change Strategy, the goals are as below:</p> <p><b>Goal 1: Proactive and Responsive Planning and Leadership</b></p> <p>1.6 As municipal official plans, by-laws and policies (including Water Quality Plans, Stormwater Management plans and Infrastructure Maintenance Plans) are updated on a regular cycle, ensure that they reflect climate change adaptation considerations targeted to reduce vulnerabilities to projected impacts.</p> <ul style="list-style-type: none"> <li>• Manage rainwater at source and opportunities for using rainwater as resource.</li> </ul> <p>1.6 Address water, natural heritage and land management issues related to climate change through integrated watershed management.</p> <p><b>Goal 3: Targeted and Proactive Adaptation Actions</b></p> <p>3.4 Redesign and retrofit water collection and conveyance infrastructure and systems to reduce vulnerabilities due to climate change.</p> <ul style="list-style-type: none"> <li>• Implement runoff reduction practices such as source and conveyance facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Manage rainwater on-site and control/treat runoff generated at the source.</li> <li>• In-the-ground demonstration and performance data collection will qualify runoff reductions on site which would normally be running off into stormsewers.</li> <li>• Provides retrofit opportunities in existing urban areas.</li> <li>• Improve stormwater quality through filtration and chemical/biological treatment.</li> <li>• Improve overall stormwater quality discharging to rivers/creeks and Lake Ontario.</li> </ul>

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			<p>that capture and reuse rainfall.</p> <p><b>2. REGION OF PEEL STRATEGIC PLAN</b>  This plan outlines the long-term vision for the communities in Peel and the Region’s role in achieving this vision. The strategic plan guides the work of council and staff to respond to Peel’s changing and diverse needs. The strategic plan goals have been aligned with seven key themes including the Environment.</p> <p>Under Region of Peel Strategic Plan, the goals are as below:</p> <p><b>Goal 1: Protect, enhance and restore the environment</b>  1.4 Protect and restore water resources, significant natural heritage and environmentally sensitive areas.  1.6 Promote low impact development and urban restoration.</p>	
Municipal	Community Services	Community Sustainability Plan	<p>Under the federal gas tax transfer program, municipalities are required to develop or enhance an Integrated Community Sustainability Plan — a long-term plan, developed in consultation with community members, that provides direction for the community to realize sustainability objectives, including environmental, cultural, social, and economic objectives.</p> <p>(from: <a href="http://www.moi.gov.on.ca/pdf/en/Municipal%20Strategy_English_Web.pdf">http://www.moi.gov.on.ca/pdf/en/Municipal%20Strategy_English_Web.pdf</a> p.16)</p>	<ul style="list-style-type: none"> <li>• LID planning and design involves hosting public information centres (PICs) and resident drop-in sessions.</li> <li>• Allows to gain insight for communities prior to implementation to help address public concerns, information gaps, identify public supporters and champions, and the level of importance of each design component has amongst local residents, the business community, ratepayer associations, and politicians.</li> <li>• Community consultation can provide education to residents and their feedback to designers in efforts to meet sustainability goals as identified in the Community Sustainability Plans.</li> </ul>
Municipal	Planning and Building  Transportation and Works	Asset Management Plans	<p>Every Municipality in Ontario is required to develop an Asset Management Plan. Opportunities to save resources by coordinating solutions to multiple problems must be explored. <b>The asset management strategy is the set of actions that, taken together, has the lowest total cost — not the set of actions that each has the lowest cost individually.</b> All decisions made regarding the set of preferred solutions and the person making the decision must be recorded.</p>	<ul style="list-style-type: none"> <li>• Provides cost savings and environmental benefits, including: <ul style="list-style-type: none"> <li>- Improved erosion control by slowing down and reducing peak flows.</li> <li>- Manage rainwater on-site and control/treat runoff generated at the source.</li> <li>- Managing stormwater at source is more effective and reduces downstream repair costs (i.e.: creek bank erosion etc.)</li> <li>- Reduce upgrade costs because these practices are easily scalable so municipalities can add additional capacity as needed, rather than the need to install large grey infrastructure projects.</li> </ul> </li> </ul>
Municipal	Community Services Planning and Building	Strategic and Environmental Plans <ul style="list-style-type: none"> <li>• Mississauga</li> <li>• Caledon</li> </ul>	<p>Many municipalities have strategic plans that direct decision making in light of climate change and environmental management. These include:</p> <p><b>1. City of Mississauga - Green Development Standards</b>  On July 7, 2010, City Council adopted the Green Development Strategy, which focuses</p>	<ul style="list-style-type: none"> <li>• Promotes water conservation through harvesting techniques by using cisterns or barrels.</li> <li>• Provides efficient water use by providing an alternative to municipal water for irrigation and urinal flushing.</li> <li>• Improve stormwater quality through filtration and</li> </ul>

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	Transportation and Works	<ul style="list-style-type: none"> <li>Brampton</li> </ul>	<p>on achieving sustainability and environmental responsibility in new development in Mississauga. In these standards, all site plan applications will be requested, where appropriate, to incorporate technologies that maximize the natural infiltration and retention of stormwater through site development.</p> <p><b><u>City of Mississauga - Strategic Pillars for Change</u></b></p> <p>The <b>Green Principle</b> states that Mississauga is a city that values its shared responsibility to leave a legacy of a clean and healthy natural environment. The strategic goals under this principle include:</p> <ul style="list-style-type: none"> <li><b>Lead and Encourage Environmentally Responsible Approaches</b> – to lead and promote the utilization of technologies and tactics to conserve energy and water, reduce emissions and waste, improve our air quality, and protect our natural environment.</li> <li><b>Conserve, Enhance and Connect Natural Environments</b> – to be responsible stewards of the land by conserving, enhancing and connecting natural environments.</li> <li><b>Promote a Green Culture</b> – to lead a change in behaviors to support a more responsible and sustainable approach to the environment, that will minimize our impact on the environment and contribute to reversing climate change.</li> </ul> <p><b><u>2. Town of Halton Hills – Green Development Standards</u></b></p> <p>The standards are designed to align with and will advance the objectives of the Strategic Plan, Official Plan, Green Plan, Cycling Master Plan, Community Sustainability Strategy, Mayor’s Community Energy Plan, Corporate Sustainable Building Policy, Green Development Evaluation Checklist, Pedestrian Charter, the Climate Change report prepared by the Town’s Environmental Advisory Committee, and others.</p> <p>Based on stakeholder consultation and a review of municipal best practices, the recommended Standards have been carefully designed to maximize benefits to the Town, the broader community, residents and builders/developers. The purpose of the Standards is to incrementally increase the performance for new development in order to:</p> <ul style="list-style-type: none"> <li>Improve water quality and conservation through such means as efficient water fixtures, Low Impact Development standards and drought resistant plantings which can lower utility costs and reduce the need for long-term infrastructure expansion;</li> <li>Improve biodiversity and health of the natural environment through such means as improved stormwater controls, increases in native species and a reduction in invasive species;</li> <li>Reduce long-term home/building/business operating and utility costs;</li> </ul>	<p>chemical/biological treatment.</p> <ul style="list-style-type: none"> <li>Improve overall stormwater quality discharging to rivers/creeks and Lake Ontario.</li> <li>Reduce upgrade costs because these practices are easily scalable so municipalities can add additional capacity as needed, rather than the need to install large grey infrastructure projects.</li> <li>Manage rainwater on-site and control/treat runoff generated at the source.</li> <li>In-the-ground demonstration and performance data collection will qualify runoff reductions on site which would normally be running off into stormsewers.</li> </ul>

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			<p><b>3. City of Brampton – Environmental Master Plan</b>            Brampton Grow Green, the city’s first Environmental Master Plan (EMP) in combination the City of Brampton Strategic Plan, Official Plan and Growth Management Program will outline Brampton’s long-term integrated community sustainability plan that builds on existing planning tools. The goals identified in the EMP include:</p> <p><b><u>Protect and respect WATER as a non-renewable, life critical resource</u></b>            Conserve water, and manage rainfall and snowmelt as a resource to improve the quality and quantity of water returned to the environment to limit disruption to water flows and contamination of water sources and habitats.</p> <p>Objective 1. Protect and enhance water quality            Objective 2. Reduce consumption of potable water            Objective 3. Increase use of captured or recycled site water            Objective 4. Reduce and manage surface runoff as stormwater</p> <p><b>4. Town of Caledon - Community-Based Strategic Plan</b>            The Community-Based Strategic Plan is an important management tool that strategically guides Caledon’s policies, plans and engages the larger community. In order to develop a comprehensive, robust, implementable community and corporate strategy, the Town decided that a “community based” Strategic Plan was the preferred approach, which engages the entire community: residents, businesses, the corporation and other stakeholders and interested members of the public. The strategic plan outlines the goals and objectives as provided below,</p> <p><b>Goal 1: Partner with land owners and community to preserve, protect and enhance our environment and agricultural resources and natural capital.</b></p> <p><b>Strategic Objective 1C - Support Green Energy and Energy Reduction</b>            Promote technologies that reduce emissions, protect the natural environment and conserve energy and water.</p>	

**Table 2: Summary of Provincial/Federal Objectives Met Using LID**

Level of Government	Department	Policy/Legislation	Summary	How LID can Help Meet the Policy
Bi-National	<p>Great Lakes and St. Lawrence Cities Initiative</p> <p>Group of mayors and other local officials that works actively with federal, state, and provincial governments to advance the protection and restoration of the Great Lakes and the St. Lawrence River</p>	<p><b>Sustainable Municipal Water Management in the Great Lakes and St. Lawrence Basin</b> (June 2012) - This report covers principles and milestones to achieve water management through water conservation, land use planning, public education, emergency response, pollution prevention and habitat restoration</p>	<p><b>Milestone 4.3 Reduce stormwater entering Waterways:</b> Stormwater management is recognized as a major element of a local strategy to improve water quality in the Great Lakes and St. Lawrence. Measured by: A. ‘Separated System: Reduction in the quantity of stormwater entering receiving waters/ or improvement in the quality of stormwater effluent’. B. ‘Combined System: Reduction in the number and/or volume of non-treated sewage (i.e. combined sewer overflow) entering receiving waters’.</p> <p><b>Milestone 5.4 Adopt Green Infrastructure Measured by:</b> A. ‘Objective or policy adopted by a municipality to encourage the use of green infrastructures (static indicator)’. B. ‘Percentage of permeable surfaces within serviced urban boundary’.</p> <p><b>Milestone 6.1 Conduct a vulnerability Assessment:</b> A municipality’s vulnerability to changes in weather will depend, among other characteristics, on the local geography that influences precipitation levels and stormwater conveyance, the age and capacity of infrastructure, including bridges and underground pipes, and the settlement patterns in relation to possible flooding scenarios</p>	<ul style="list-style-type: none"> <li>• Improve stormwater quality through filtration and chemical/biological treatment.</li> <li>• Improve overall stormwater quality discharging to rivers/creeks and Lake Ontario.</li> <li>• Manage rainwater on-site and control/treat runoff generated at the source.</li> <li>• In-the-ground demonstration and performance data collection will qualify runoff reductions on site which would normally be running off into stormsewers.</li> </ul>
Federal Government	Department of Fisheries and Oceans	Federal Fisheries Act	<p>Prior to 2012, the Federal Fisheries Act did not allow municipalities/developers/industry to discharge stormwater that would negatively impact fish and their habitat. Today the Act has been changed such that although stormwater is still identified as a deleterious substance it is a by-product of necessary development and therefore approved and to the discretion of the Minister can be discharged to streams.</p>	<ul style="list-style-type: none"> <li>• Improve stormwater quality through filtration and chemical/biological treatment.</li> <li>• Detention within subsurface soils/gravel has the potential to cool the water down and provide thermal mitigation especially if stormwater is discharged to cold water streams.</li> <li>• Maintain the water balance by promoting infiltration and evaporation</li> </ul>
Federal-Provincial Agreement	Federal and Provincial Governments	Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem	<p>The Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA) is an agreement between the federal government and the Ontario government that outlines how the two will collaborate to protect the Great Lakes Basin ecosystem. An objective of the COA is to reduce contaminant loading from urban stormwater runoff and combined sewer overflows in Great Lakes Basin communities.</p> <p>That agreement in turn helps Canada meet its commitments under the Canada U.S. Great Lakes Water Quality Agreement. Ontario signed a memorandum of cooperation with the Great Lakes and St. Lawrence Cities Initiative to support the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA).</p>	<ul style="list-style-type: none"> <li>• Supports Great Lakes Commitment to ensure long term health through improved water quality and quantity discharge to the Lakes</li> <li>• Supports ecosystem services</li> <li>• Improve stormwater quality through filtration and chemical/biological treatment.</li> </ul>

Provincial	Ministry of the Environment	Ontario's Adaptation Strategy and Action Plan	<p>The adaptation strategy and action plan shares a vision of “a province prepared for the impacts of a changing climate through implementation of policies and programs that minimize risks to our health and safety, the environment and the economy, and maximizes the benefits from opportunities which may arise. The strategy outlines a series of goals and corresponding actions to achieve those goals, which include:</p> <p><b>Goal 1: Avoid loss and unsustainable investment, and take advantage of economic opportunities.</b></p> <p>Action 3: Promote Water Conservation The act enables the province to develop regulations that will require new and innovative ways to reduce demands on existing water resources and also addresses impacts from a changing climate by:</p> <ul style="list-style-type: none"> <li>• Encouraging Ontarians to use water more efficiently by using innovative approaches to conservation</li> <li>• Strengthening the sustainability of municipal water infrastructure planning by helping municipalities identify and plan for long-term infrastructure needs.</li> </ul> <p>Action 10: Develop Guidance for Stormwater Management The Ministry of the Environment is currently reviewing best management practices in other jurisdictions in support of proposed Municipal Water Sustainability Planning under the Water Opportunities and Water Conservation Act. The review includes municipal water, wastewater and stormwater systems for additional guidance and information on adapting water systems to deal with impacts caused by climate change. Among system issues and practices being reviewed:</p> <ul style="list-style-type: none"> <li>• Source control (reuse and low impact development)</li> <li>• Water conservation</li> </ul> <p><b>Goal 3: Create and share risk management tools to support adaptation efforts across the province.</b></p> <p>Action 21: Increase awareness of land use planning tools</p> <p>In 2007, amendments to the Planning Act came into effect creating a number of new tools. These tools focus on sustainable development and include several measures which can be used for climate change mitigation and adaptation.</p> <p>Municipalities may use site plan control or a development permit system to require sustainable design features that support:</p> <ul style="list-style-type: none"> <li>• Water conservation</li> <li>• Energy efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Promotes water conservation through harvesting techniques by using cisterns or barrels.</li> <li>• Reduce upgrade costs because these practices are easily scalable so municipalities can add additional capacity as needed, rather than the need to install large grey infrastructure projects.</li> <li>• Manage rainwater on-site and control/treat runoff generated at the source.</li> <li>• Improve stormwater quality through filtration and chemical/biological treatment.</li> <li>• Improve overall stormwater quality discharging to rivers/creeks and Lake Ontario.</li> <li>• In-the-ground demonstration and performance data collection will qualify runoff reductions on site which would normally be running off into stormsewers.</li> <li>• Water quantity and quality performance data collected over time will complement climate-related monitoring.</li> </ul>
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			<ul style="list-style-type: none"> <li>• Sustainable transportation options</li> <li>• Improved air and water quality</li> </ul> <p>Action 22: Integrate adaptation policies into the Provincial Policy Statement</p> <p>In March 2010, the Ministry of Municipal Affairs and Housing launched a review of the Provincial Policy Statement (PPS). The PPS currently contains a number of policies with climate change mitigation and adaptation co-benefits including:</p> <ul style="list-style-type: none"> <li>• Protecting natural heritage features</li> <li>• Directing development outside of areas prone to flooding hazards</li> <li>• Promoting effective stormwater management, water conservation and efficient water use</li> </ul> <p><b>Goal 4: Achieve a better understanding of future climate change impacts across the province.</b></p> <p>Action 31 – Enhance climate-related monitoring Monitoring environmental conditions — specifically by looking at water, natural resources and conditions throughout the province. This would provide a better understanding of the implications of climate change and enables better risk-based decisions in a wide variety of sectors.</p>	
Provincial	Ministry of the Environment	Ontario Water Resources Act	<p>The Ontario Water Resources Act and its Environmental Compliance Approval (ECA) process currently govern stormwater in Ontario. The OWRA contains provisions for regulating municipal wastewater effluent and prevents the discharge of other harmful pollutants into any waters within provincial boundaries. Section 53 of the OWRA requires new municipal sewage works, as well as expansions and alterations to existing facilities, to obtain an ECA in order to operate. The OWRA includes stormwater facilities in its definition of sewage works, and requires that stormwater infrastructure projects obtain an ECA if stormwater is discharged to surface water bodies, onto the surface of the ground, or into groundwater. ECAs for stormwater management systems are considered by MOE on a site-specific basis.</p>	<ul style="list-style-type: none"> <li>• Improve stormwater quality through filtration and chemical/biological treatment.</li> <li>• Improve overall stormwater quality discharging to rivers/creeks and Lake Ontario.</li> <li>• Allows practitioners to meet MOE’s water quality objectives to obtain an ECA.</li> </ul>

Provincial	Ministry of the Environment	Stormwater Management Planning and Design Manual (2003)	Design guidelines for stormwater management systems to assist municipalities in obtaining an Environmental Compliance Approval (ECA) for stormwater management systems on a site-specific basis. In the manual, Enhance protection is defined as the long-term average removal of 80% of suspended solids. In Table 3.2 Water Quality Storage Requirements based on Receiving waters of the manual, it is noted that "SWM [stormwater management practices] type that can be demonstrated to the approval agencies to meet the required long-term suspended solids removal for the selected protection levels under the conditions of the site is acceptable for water quality objectives. As Table 3.2 of the manual lists infiltration (which is the primary mechanism of LID practices) as one of the options available to meeting the enhance protection requirements, this indicates that LID is a viable option for meeting the criteria.	<ul style="list-style-type: none"> <li>• Improve stormwater quality through filtration and chemical/biological treatment.</li> <li>• Improve overall stormwater quality discharging to rivers/creeks and Lake Ontario.</li> <li>• Allows practitioners to meet MOE's water quality objectives to obtain an ECA.</li> </ul>
Provincial	Ministry of the Environment	Lake Simcoe Protection Plan (LSPP)	Under the LSPP, municipalities in the Lake Simcoe Watershed are required to develop comprehensive stormwater master plans by 2014. Stormwater master plans will require an evaluation of cumulative impacts of stormwater runoff from both existing and planned development. Stormwater master plans also require an evaluation of the effectiveness of current stormwater management facilities and an assessment of opportunities to perform retrofits.	<ul style="list-style-type: none"> <li>• Remove excess nutrient to achieve low effluent concentration for parameters of concern such as Total Phosphorus.</li> <li>• Filtration through bioretention media can remove nutrient loadings through chemical and biological treatment mechanisms.</li> <li>• These practices can be easily complemented with enhanced filtration units in a treatment train scenario for further nutrient removal.</li> </ul>
Provincial	Ministry of the Environment	Source Water Protection (Clean Water Act)	Recognizes stormwater that is discharged to land or surface waters as a threat to drinking water quality.  Source Water Protection Committees established under the Clean Water Act are developing policies that ensure adequate management of stormwater in vulnerable areas. Future assessments of drinking water threats will consider climate change impacts.	<ul style="list-style-type: none"> <li>• Low impact development demonstration sites and long-term monitoring will assist in determining any potential impacts to groundwater or surface water quality due to infiltration practices. The data collection results will help inform the province and any adjustments can be made to the supporting guidance documents.</li> </ul>
Provincial	Ministry of the Environment	Water Opportunities Act	The WOWCA calls for an integrated approach to drinking water provision, stormwater and wastewater management, and the possible use of municipal water conservation targets.  The Act allows MOE to establish province-wide targets for water conservation, as well as additional targets that may vary by jurisdiction. In addition, the WOA provides the authority to create regulations that will require the eventual creation of Municipal Water Sustainability Plans. Overall the purpose and/or objective of the act is to :  <ul style="list-style-type: none"> <li>• Foster innovative water, wastewater and stormwater technologies, services and practices in the private and public sectors</li> <li>• Conserve and sustain water resources for present and future generations.</li> <li>• Assist in promoting the development of Ontario's water and</li> </ul>	<ul style="list-style-type: none"> <li>• In-the-ground demonstration and performance data collection will promote further implementation in private and public sectors and increase capacity.</li> <li>• Improve stormwater quality through filtration and chemical/biological treatment.</li> <li>• Improve overall stormwater quality discharging to rivers/creeks and Lake Ontario.</li> <li>• Provide opportunities for industry and academia to partner with the government to further innovative technologies in stormwater/wastewater treatment and reuse.</li> </ul>

			<p>wastewater sectors and increase their capacity</p> <ul style="list-style-type: none"> <li>• Develop, test, demonstrate and commercialize innovative technologies and services for the treatment and management of water and wastewater</li> <li>• Provide a forum for governments, the private sector and academic institutions to exchange information and ideas on how to make Ontario a leading jurisdiction in the development and commercialization of innovative technologies and services for the treatment and management of water and wastewater.</li> </ul>	
Provincial	Ministry of the Environment	Ontario Environmental Protection Act	Promotes sustainable development to be achieved through pollution prevention and the protection of the environment and human health.	<ul style="list-style-type: none"> <li>• Provide pollution prevention measures such as vegetated filter strips that have the ability to treat runoff from adjacent impervious areas by slowing runoff velocity and filtering out suspended sediment and associated pollutants and also providing some infiltration into underlying soils.</li> </ul>
Provincial	Ministry of the Environment	Great Lakes Protection Act and Strategy	<p>To achieve one or more purposes of this Act, the Minister of the Environment may, after consulting with the other Great Lakes ministers, establish qualitative or quantitative targets relating to the Great Lakes-St. Lawrence River Basin, specifying in each target the area to which it applies and the manner in which, in his or her opinion, public bodies with jurisdiction in that area should take it into consideration.</p> <p><b>Reduce stormwater and wastewater impacts</b> Assist municipalities, developers, the insurance industry and others in reducing the volumes and impacts of stormwater, including:</p> <ul style="list-style-type: none"> <li>• Updating Ontario's municipal wastewater policies to include stormwater, green infrastructure, construction runoff and sediment management</li> <li>• Enhancing the Province's approach to stormwater approvals with greater emphasis on effluent quality and quantity, in turn driving greater use of innovative source control measures</li> </ul>	<ul style="list-style-type: none"> <li>• In-the-ground demonstration and performance data collection will qualify runoff reductions on site which would normally be running off into stormsewers.</li> <li>• Improve stormwater quality through filtration and chemical/biological treatment.</li> <li>• Improve overall stormwater quality discharging to rivers/creeks and Lake Ontario.</li> </ul>
Provincial	Ministry of Transportation	Stormwater Management Requirements for Land Development Proposals	<p>This document is a guidance tool developed to specify the requirements and mandate of the Ministry of Transportation related to stormwater management for municipal development. It outlines specifically what information should be included in stormwater management reports that may be required in support of applications for Encroachment and/or Development and Land Use Permits. The information is for use by consultants, developers, municipalities, other government agencies and MTO staff.</p> <p>The requirement for producing a SWM report is determined by MTO but should be considered if a project is within the proximity of an MTO road.</p>	<ul style="list-style-type: none"> <li>• Provides opportunity for alternate drainage of stormwater.</li> <li>• Can be designed to ensure structural integrity of the road bas while providing infiltration/treatment opportunities.</li> <li>• Infiltration practices can be implemented within the road right of way such as enhanced grass swales or larger bioretention/infiltration facilities.</li> </ul>

			The stormwater management report is a document that presents the data, methods, procedures and results of the design of drainage works and erosion protection measures.	
Provincial	Ministry of Infrastructure	Municipal Infrastructure Strategy	<p>The goals of the municipal infrastructure strategy include: making good asset management planning universal; moving toward optimal use of a full range of infrastructure financing tools; and addressing the structural challenges facing small communities.</p> <p>Asset management will be the foundation of the strategy to ensure that investments are made at the right time to minimize future repair and rehabilitation costs and maintain municipal assets.</p> <p>Any municipality seeking provincial capital funding must prepare a detailed asset management plan and show how its proposed project fits within it.</p> <p>“Green infrastructure” is one way to reduce the need for costly, large-scale solutions. It uses natural processes like infiltration and evaporation — often on a small scale close to the source — to reduce the burden on built systems.</p> <p>Opportunities to save resources by coordinating solutions to multiple problems must be explored. <b>The asset management strategy is the set of actions that, taken together, has the lowest total cost — not the set of actions that each has the lowest cost individually.</b> All decisions made regarding the set of preferred solutions and the person making the decision must be recorded.</p>	<ul style="list-style-type: none"> <li>• Provides cost savings and environmental benefits, including: <ul style="list-style-type: none"> <li>- Improved erosion control by slowing down and reducing peak flows.</li> <li>- Manage rainwater on-site and control/treat runoff generated at the source.</li> <li>- Managing stormwater at source is more effective and reduces downstream repair costs (i.e.: creek bank erosion etc.)</li> </ul> </li> <li>• Reduce upgrade costs because these practices are easily scalable so municipalities can add additional capacity as needed, rather than the need to install large grey infrastructure projects.</li> </ul>
Provincial	Ministry of Infrastructure	Places to Grow	<p><b>Growth Plan for the Greater Golden Horseshoe Region</b></p> <p>The Growth Plan encourages municipalities that share an inland water source to coordinate stormwater plans, as well as plans for potable water and wastewater, to ensure that quality and quantity is maintained and improved. Municipalities are also encouraged to implement and support innovative approaches to stormwater management as part of redevelopment and intensification</p> <p>Note: This was updated in 2012 to allow the County of Simcoe and the cities of Barrie and Orillia to grow, while curbing sprawl and continuing to protect green spaces and valuable farmland.</p>	<ul style="list-style-type: none"> <li>• Improve stormwater quality through filtration and chemical/biological treatment.</li> <li>• Improve overall stormwater quality discharging to rivers/creeks and Lake Ontario.</li> <li>• Promotes water conservation through harvesting techniques by using cisterns or barrels.</li> <li>• Manage rainwater on-site and control/treat runoff generated at the source.</li> </ul>
Provincial	Ministry of Municipal Affairs and Housing	Provincial Policy Statement	<p>Requires that decisions on land use planning matters made by municipalities, the Province, the Ontario Municipal Board and other decision makers “shall be consistent with” the PPS</p> <p>Section 2.2.1 of the 2005 PPS requires planning authorities to ensure that stormwater management practices “minimize stormwater volumes and contaminant loads, and maintain or increase the extent of vegetative</p>	<ul style="list-style-type: none"> <li>• Mimic natural hydrology by controlling stormwater runoff volumes.</li> <li>• Promotes water conservation through harvesting techniques by using cisterns or barrels.</li> <li>• Provide groundwater recharge opportunities and maintain the water balance through</li> </ul>

		<p>and pervious surfaces.</p> <p>Proposed Policies in 2013 Update: NEW Policies for supporting LID</p> <p>1.6.5 Sewage, Water and Stormwater</p> <p>1.6.5.1 Planning for sewage and water services shall:</p> <p>a) direct and accommodate expected growth or development in a manner that promotes the efficient use and optimization of existing:</p> <ol style="list-style-type: none"> <li>1. municipal sewage services and municipal water services; and</li> <li>2. private communal sewage services and private communal water services, where municipal sewage services and municipal water services are not available;</li> </ol> <p>b) ensure that these systems are provided in a manner that:</p> <ol style="list-style-type: none"> <li>1. can be sustained by the water resources upon which such services rely;</li> <li>2. is feasible, financially viable and complies with all regulatory requirements; and</li> <li>3. protects human health and the natural environment;</li> </ol> <p>c) promote water conservation and water use efficiency;</p> <p>d) integrate servicing and land use considerations at all stages of the planning process; and</p> <p>e) be in accordance with the servicing hierarchy outlined through policies 1.6.5.2, 1.6.5.3, 1.6.5.4 and 1.6.5.5.</p> <p>1.6.5.7 Planning for stormwater management shall:</p> <p>a) minimize, or, where possible, prevent increases in contaminant loads;</p> <p>b) minimize changes in water balance and erosion;</p> <p>c) not increase risks to human health and safety and property damage;</p> <p>d) maintain or increase the extent and function of vegetative and pervious surfaces; and</p> <p>e) Promote stormwater management best practices, including stormwater attenuation and reuse.</p> <p>2.2 WATER – NOT DIFFERENT from 2005</p> <p>2.2.1 Planning authorities shall protect, improve or restore the quality and quantity of water by:</p> <p>a) using the watershed as the ecologically meaningful scale for integrated and long-term planning, which can be a foundation for considering cumulative impacts of development;</p> <p>b) minimizing potential negative impacts, including cross-jurisdictional and cross-watershed impacts;</p> <p>c) identifying water resource systems consisting of ground water features, hydrologic functions, natural heritage features and areas, and surface water features including shoreline areas, which are necessary for the ecological and hydrological integrity of the watershed;</p>	<p>infiltration.</p> <ul style="list-style-type: none"> <li>• Remove excess nutrient to achieve low effluent concentration for parameters of concern such as Total Phosphorus.</li> <li>• Filtration through bioretention media can remove nutrient loadings through chemical and biological treatment mechanisms.</li> <li>• Provides cost savings and environmental benefits, including: <ul style="list-style-type: none"> <li>- Improved erosion control by slowing down and reducing peak flows.</li> <li>- Manage rainwater on-site and control/treat runoff generated at the source.</li> <li>- Managing stormwater at source is more effective and reduces downstream repair costs (i.e.: creek bank erosion etc.)</li> </ul> </li> </ul>
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			<p>d) maintaining linkages and related functions among ground water features, hydrologic functions, natural heritage features and areas, and surface water features including shoreline areas;</p> <p>e) implementing necessary restrictions on development and site alteration to:</p> <ol style="list-style-type: none"> <li>1. protect all municipal drinking water supplies and designated vulnerable areas; and</li> <li>2. protect, improve or restore vulnerable surface and ground water, sensitive surface water features and sensitive ground water features, and their hydrologic functions;</li> </ol> <p>f) planning for efficient and sustainable use of water resources, through practices for water conservation and sustaining water quality; and</p> <p>g) ensuring stormwater management practices minimize stormwater volumes and contaminant</p>	
Provincial	Ministry of Municipal Affairs and Housing	2012 Ontario Building Code	<p>The Ontario Building Code provides opportunities to enhance existing stormwater measures and implement water conservation measures. With the updated Building Code, the proposed code could be geared towards climate change adaptation and as such enhancing the resilience of buildings to extreme weather events. The core objectives include protecting atmospheric quality by:</p> <ul style="list-style-type: none"> <li>• Limiting the release of pollutants</li> <li>• Protecting water and soil quality</li> </ul> <p>The updated building code also provides opportunities for innovation by:</p> <ul style="list-style-type: none"> <li>• Expanding the end uses of rainwater and other non-potable water</li> <li>• Clarifying the design requirements of non-potable water systems</li> </ul>	<ul style="list-style-type: none"> <li>• Remove excess nutrient to achieve low effluent concentration for parameters of concern such as Total Phosphorus.</li> <li>• Filtration through bioretention media can remove nutrient loadings through chemical and biological treatment mechanisms.</li> <li>• Promotes water conservation through harvesting techniques by using cisterns or barrels.</li> <li>• Manage rainwater on-site and control/treat runoff generated at the source.</li> </ul>
Provincial	Ministry of Municipal Affairs and Housing	Oak Ridges Moraine Conservation Plan (ORMCP)	<p>Section 45 of the ORMCP requires proponents of major development projects to prepare a stormwater management plan that promotes lot-level control of stormwater. A number of potential green infrastructure options that can be included in a stormwater management plan are outlined in the technical supporting documentation for the ORMCP. The ORMCP also establishes limits on the area of impervious surfaces that can be constructed in development projects.</p>	<ul style="list-style-type: none"> <li>• Manage rainwater on-site and control/treat runoff generated at the source.</li> <li>• Promotes water conservation through harvesting techniques by using cisterns or barrels.</li> </ul>
Provincial	Ministry of Natural Resources	Ontario Biodiversity Strategy (OBS)	<p>The 2011 OBS is outcome-based and includes key actions and responsibilities and 15 clear measurable, time-bound, targets. These targets represent important areas of focus for biodiversity conservation in Ontario.</p> <p>The strategy emphasizes the importance of sound conservation and development decisions.</p>	<ul style="list-style-type: none"> <li>• Strong potential to improve biodiversity and water quality through a number of notable environmental benefits including: <ul style="list-style-type: none"> <li>- Provide groundwater recharge opportunities and maintain the water balance through infiltration.</li> <li>- Decreased local and downstream water quality degradation</li> <li>- Increased open-space/ habitat conservation</li> </ul> </li> </ul>
Provincial	Ministry of Natural Resources	Endangered Species Act	<p>Mandates the protection of endangered species.</p> <p><b>Red Side Dace</b></p>	<ul style="list-style-type: none"> <li>• Provides water quality benefits such as: <ul style="list-style-type: none"> <li>- Lower effluent temperature.</li> <li>- Mimic natural hydrology by controlling</li> </ul> </li> </ul>

			<p>Stormwater Management – untreated runoff of urban landscapes may impact Redside Dace habitat by altering hydrologic regimes, increasing water temperatures, and conveyance of chemicals and pollutants to watercourses. Stormwater management ponds should attempt to target outflows having water temperatures less than 24C, dissolved oxygen levels above 7 mg/L and having total suspended sediment levels less than 25mg/L above background conditions. Stormwater management should attempt to mimic pre-development hydrologic regimes by incorporating a ‘treatment-train’ approach and low-impact development designs.</p>	<p>stormwater runoff volumes.</p> <ul style="list-style-type: none"> <li>- Remove excess nutrient to achieve low effluent concentration for parameters of concern such as Total Phosphorus.</li> <li>- Filtration through bioretention media can remove nutrient loadings through chemical and biological treatment mechanisms.</li> <li>- Easily complemented with enhanced filtration units in a treatment train scenario for further nutrient removal.</li> </ul>
Provincial	Niagara Escarpment Commission	Niagara Escarpment Plan	<p>The purpose of this Plan is to provide for the maintenance of the Niagara Escarpment and land in its vicinity substantially as a continuous natural environment, and to ensure only such development occurs as is compatible with that natural environment.</p> <p>The objectives of the Plan are:</p> <ol style="list-style-type: none"> <li>2. To maintain and enhance the quality and character of natural streams and water supplies;</li> <li>5. To ensure that all new development is compatible with the purpose of the Plan;</li> </ol>	<ul style="list-style-type: none"> <li>• Remove excess nutrient to achieve low effluent concentration for parameters of concern such as Total Phosphorus.</li> <li>• Filtration through bioretention media can remove nutrient loadings through chemical and biological treatment mechanisms.</li> <li>• Improve stormwater quality through filtration and chemical/biological treatment.</li> <li>• Improve overall stormwater quality discharging to rivers/creeks and Lake Ontario</li> </ul>
Provincial	Conservation Authorities	Conservation Authorities Act	<p>The Conservation Authorities Act mandates CAs to prevent, eliminate, or reduce the risk to life and property from flooding and erosion, and to encourage the protection and regeneration of natural systems. Through study, management, and enforcement, Ontario’s CAs work with municipal, provincial, and private sector partners to maintain the safety, quality, and sustainability of the water resources within our communities.</p> <p>To do this in a transparent manner, a number of CA’s have developed guidelines that outline expectations to reduce risk. Here are a couple that may be of importance:</p> <ol style="list-style-type: none"> <li>1. CVC Stormwater Guidelines</li> <li>2. TRCA Stormwater Management Criteria</li> <li>3. GRCA Preliminary and Final Stormwater Checklist</li> <li>4. LSRCA – Technical Guidelines for Stormwater Management Submissions</li> <li>5. NPCA – Stormwater Management Guidelines</li> </ol>	<ul style="list-style-type: none"> <li>• Provide relief to municipal infrastructure by soaking or delaying the release of stormwater.</li> <li>• Reduce risk to municipal infrastructure due to age and capacity.</li> <li>• Mimic natural hydrology by controlling stormwater runoff volumes.</li> <li>• Promotes water conservation through harvesting techniques by using cisterns or barrels.</li> <li>• Provide groundwater recharge opportunities and maintain the water balance through infiltration.</li> </ul>
Provincial	Conservation Authorities	Subwatershed Management	<p>Many CAs develop watershed and subwatershed plans which outline specific targets and recommendations for meeting objectives. Subwatershed management plans are generally aimed to preserve and/or improve conditions.</p>	<ul style="list-style-type: none"> <li>• Integrate urban form (how we build our communities) and stormwater infrastructure (how we manage stormwater) to support the hydrologic function of the watershed.</li> <li>• Mimic natural hydrology by controlling stormwater runoff volumes.</li> <li>• Promotes water conservation through harvesting techniques by using cisterns or barrels.</li> <li>• Provide groundwater recharge opportunities</li> </ul>

				<p>and maintain the water balance through infiltration.</p> <ul style="list-style-type: none"><li>• Improve stormwater quality through filtration and chemical/biological treatment.</li><li>• Improve overall stormwater quality discharging to rivers/creeks and Lake Ontario</li><li>• Remove excess nutrient to achieve low effluent concentration for parameters of concern such as Total Phosphorus.</li><li>• Filtration through bioretention media can remove nutrient loadings through chemical and biological treatment mechanisms.</li></ul>
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