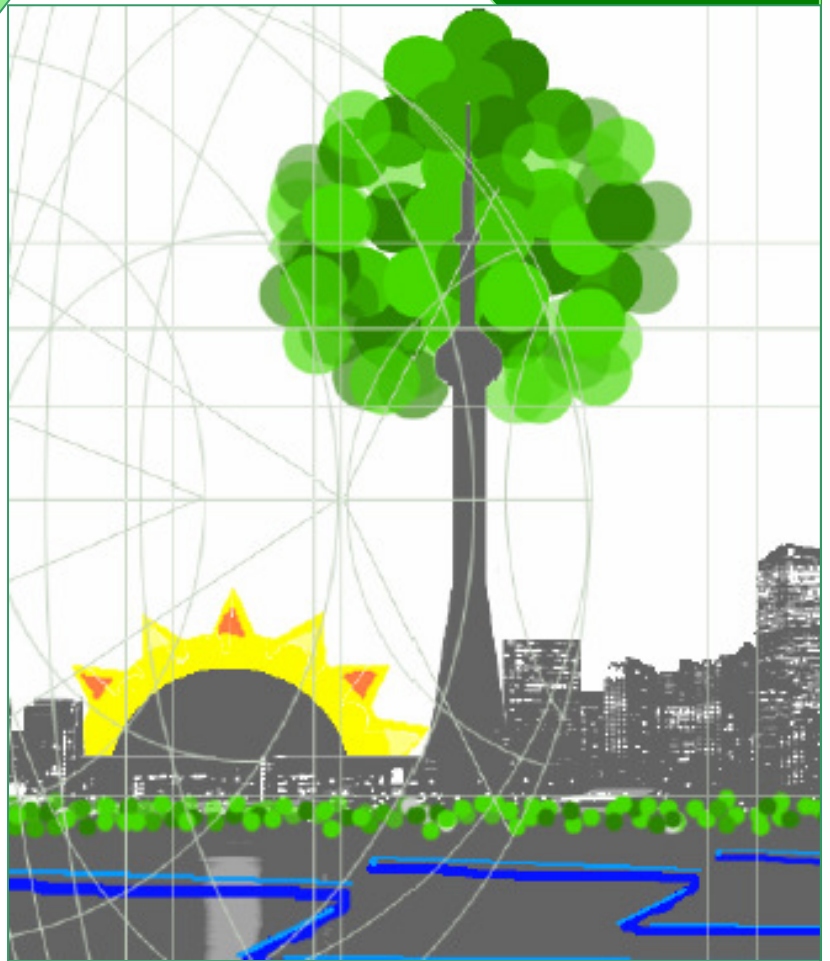


# MAKING a SUSTAINABLE CITY HAPPEN

## THE TORONTO GREEN DEVELOPMENT STANDARD 2006

July 27, 2006



# The TORONTO GREEN Standard

*The Toronto Green Development Standard* provides an integrated set of targets, principles, and practices to guide the development of City-owned facilities and to encourage sustainable development amongst the private sector. The *Toronto Green Development Standard* was created from a review of City guidelines and targets, popular private rating systems and the experiences of cities from around the world.

## Structure of the Standard

The Standard is presented in two charts in the following pages. The first chart is for mid- to high-rise residences, commercial industrial and institutional development, and the second chart is for grade-related residential development. This Standard is rooted in the key environmental drivers for the City. These are:

- Better air quality
- Reduced greenhouse gas emissions and urban heat island effects
- Greater energy efficiency
- Improved water quality and water efficiency
- Less solid waste
- Protection of the urban forest and wildlife habitat
- Reduced light pollution

The Standard is based on a number of principles, many of which were identified in consultation with key stakeholders: The principles are that the standard be:

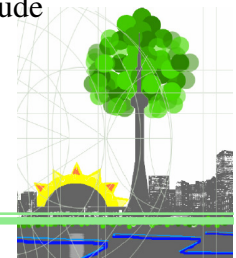
- measurable (e.g. plant shade trees to provide a 20% canopy at maturity);
- performance orientated (e.g. achieve 25% energy savings above the Model National Energy Code) to allow for flexibility such that innovation is encouraged to meet performance targets;
- focused on the design and construction of the built form (not on building operations or workplace programs that could also influence environmental performance);
- user friendly, and
- set high enough to raise the bar on environmental performance but still allow for green competition amongst developers.

The first column in the charts identifies the development features (building and site elements) that can affect Toronto's environmental drivers. Examples include ventilation, energy efficient fixtures and appliances, and building orientation.

### Made in Toronto

"Of particular interest to the City of Toronto is that any green development standard it adopts and promotes must address its key environmental drivers. The standard should reflect the City's climate, geography, urban infrastructure, and legislative context, and help Toronto achieve its own particular environmental "objectives."

- Green Development Standard Discussion Paper (June 2006)



# The TORONTO GREEN Standard

The second column identifies existing City standards, targets or guidelines for specific development features. Examples include standards such as the provision of bicycle parking found in the Zoning By-law, the target to increase sustainable tree canopy by 30-40% as identified in *Our Common Grounds*, and guidelines such as the interim Wet Weather Flow Management Guidelines.

In reading the chart, it should be noted that the Ontario Building Code is the existing baseline standard for many of the development features. Recently, the Province proposed changes to the Building Code that raise the bar on energy efficiency and remove barriers to green technologies. Toronto City Council supported the most aggressive of these options at its meeting in April, 2006. The proposed Green Development Standard meets or exceeds the proposed amendments.

The third column identifies the Toronto Standard or level for 'green' for each development feature. The Toronto Green Development Standard is intended to reflect an enhancement over current City requirements and business practices. It is based on input from the stakeholder workshops and consultation with the Green Development Standards Working Group. It is also based on proposed enhanced City guidelines and/or practices and on a comparative analysis with other well known standards such as LEED and Green Globes for each development feature. In other words, each standard has a basis in an existing City guideline or practice, and/or in an existing green building standard such as LEED, Green Globes, and Energy Star.

Within the third column, elements of the Standard marked with the symbol "▶" indicate the core or minimum requirements. The other elements identified in the Standard are considered to be enhancements that would further improve the sustainability of a development beyond the basic Green Standard. Where appropriate, graduated levels of achievement (minimum, preferred, excellent), have been identified.

The fourth column of the chart identifies the equivalent or related standard for each development feature set by LEED, Green Globes, Energy Star, and other rating systems.

The fifth column identifies some possible strategies to implement the proposed standard, including technologies and products that have been used in green development in Toronto.

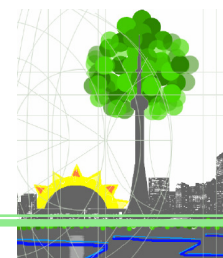
## (2003) Toronto Official Plan

"3.4.1 To support strong communities, a competitive economy and a high quality of life, public and private city-building activities and changes to the built environment, including public works, will be environmentally friendly."

"Within the third column, elements of the Standard marked with the symbol "▶" indicate the core or minimum requirements."

### For more information...

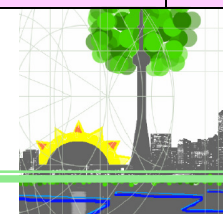
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[www.toronto.ca/environment/greendevlopment.htm](http://www.toronto.ca/environment/greendevlopment.htm)



# Toronto Green Standard for Mid to High Rise Residences, Commercial, Industrial and Institutional Development

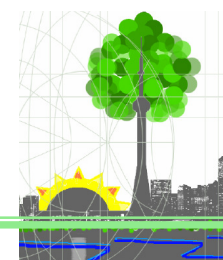
	Development Feature	Existing City Standards, Guidelines or Targets	The Toronto Green Standard 2006*	Relationship to Other Standards	Possible Implementation Strategies
Air Quality O.P., Environmental Plan, Air Quality Strategy	<b>Automobile Infrastructure</b> Discourage single-occupancy automobile use	<ul style="list-style-type: none"> <li>• <b>Zoning Bylaw:</b> Studies are currently underway to determine minimum and in some cases maximum parking standards for downtown office and residential buildings. Standards for shared parking to be incorporated into the zoning by-law.</li> </ul>	<ul style="list-style-type: none"> <li>• ► As required by current Zoning Bylaw.</li> <li>• Mixed use developments should include shared use of parking among uses that have different peaking characteristics.</li> <li>• Dedicated parking spaces for carpool ride sharing.</li> <li>• Dedicated parking spaces for high efficiency or hybrid vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>• Addressed in LEED Sustainable Sites (SS) Credits 4.3 and 4.4</li> <li>• Addressed in Green Globes Energy C.5</li> <li>• Addressed in Canadian Institute of Transportation Engineers (CITE): Promoting Sustainable Transportation Through Site Design Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>• Carpool parking spaces, shared parking with adjacent properties.</li> </ul>
	<b>Cycling Infrastructure</b> Encourage cycling as a clean air alternative	<ul style="list-style-type: none"> <li>• <b>Zoning Bylaw (former City only):</b> provide 0.75 bicycle spaces per unit for buildings with more than 10 units and 1 parking space for every 1250 sq metres of non-residential floor space (6 spaces minimum). [under review].</li> </ul>	<ul style="list-style-type: none"> <li>• ► As required by current Zoning Bylaw.</li> <li>• Provide bicycle storage, shower and change facilities for workplaces.</li> </ul>	<ul style="list-style-type: none"> <li>• Addressed in LEED SS 4.2</li> <li>• Addressed in Green Globes Energy C.5</li> <li>• Addressed in CITE Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>• Bicycle racks, secure storage, shower and change facilities</li> </ul>
	<b>Public Transit Accessibility</b> Encourage public transit as a clean air alternative	<ul style="list-style-type: none"> <li>• <b>O.P.</b> policies encourage transit-oriented development</li> </ul>	<ul style="list-style-type: none"> <li>• Where feasible, integrate transit facilities directly into the development or locate major entrance within 200 metres of a transit stop.</li> </ul>	<ul style="list-style-type: none"> <li>• Addressed in CITE Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>• Integrated design, transit shuttle.</li> </ul>
	<b>Pedestrian Infrastructure</b> Encourage walking as a clean air alternative	<ul style="list-style-type: none"> <li>• <b>O.P.</b> policies promote a beautiful, comfortable and safe public realm with accessible streets, parks and open spaces.</li> <li>• <b>Urban Design Guidelines:</b> Provide guidelines for orienting buildings and improving the public realm.</li> <li>• <b>Urban Design Streetscape Manual</b></li> </ul>	<ul style="list-style-type: none"> <li>• ► Priority should be given to compact design and human scale orientation including direct integration with existing pedestrian routes, adequate signage and lighting, appropriate grading and surface treatment and reduction of vehicular route conflicts.</li> </ul>	<ul style="list-style-type: none"> <li>• Addressed in CITE Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>• Pedestrian-scaled building design, landscaping, lighting and signage.</li> </ul>

\* The symbol “►” identifies the core, minimum requirements of the Toronto Green Standard.



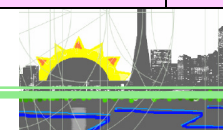
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<b>Air Quality</b> O.P., Environmental Plan, Air Quality Strategy	<b>Construction Activity</b> Minimize air pollution from construction and demolition	<ul style="list-style-type: none"> <li>• <b>City Building Permit Construction and Demolition, Article 363 By-law 598-2005:</b> requires identification of method for handling air and dust emissions, recognizing on-site resources, in compliance with sections 6 and 11 of regulation 346 made under the EPA.</li> </ul>	<ul style="list-style-type: none"> <li>• ► For construction and demolition, identify method for minimizing air and dust emissions.</li> <li>• For construction and demolition, identify method for minimizing VOC emissions.</li> </ul>	<ul style="list-style-type: none"> <li>• Addressed in LEED SS Prerequisite 1</li> </ul>	<ul style="list-style-type: none"> <li>• Air and Dust Emissions Control Plan</li> </ul>
	<b>Ozone Protection</b> Minimize contributions to ozone depletion from HVAC&R Equipment	<ul style="list-style-type: none"> <li>• <b>Toronto Atmospheric Fund: LEED Energy and Atmosphere (EA) Prerequisite 3.</b></li> </ul>	<ul style="list-style-type: none"> <li>• ► Zero use of CFC-based refrigerants and Halons in fire suppression</li> </ul>	<ul style="list-style-type: none"> <li>• Satisfied by LEED EA Prerequisite 3</li> <li>• Satisfied by Green Globes Emissions, Effluents and Other Impacts F.2</li> </ul>	<ul style="list-style-type: none"> <li>• Install HVAC equipment that uses no CFC refrigerants</li> </ul>
	<b>Local Materials</b> Avoid long-distance shipping of building materials	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• ► <u>Minimum:</u> 10% (based on cost) of materials to be sourced within 800 km of project. <u>Preferred:</u> 20% locally sourced materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Satisfied by LEED MR Credit 5.1</li> <li>• Addressed in Green Globes Resources E.2</li> </ul>	<ul style="list-style-type: none"> <li>• Identify materials and suppliers that can help to achieve this goal.</li> </ul>
	<b>Urban Heat Island Reduction: At Grade</b> Reduce ambient surface temperatures	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• ► Provide natural cover, including trees, that shade at least 30% of surface parking areas and other hard surfaces</li> <li>• ► Use light coloured materials for 50% of the hardscape.</li> </ul>	<ul style="list-style-type: none"> <li>• Addressed in LEED SS 7.1</li> <li>• Addressed in Green Globes Site B.2</li> </ul>	<ul style="list-style-type: none"> <li>• Soft landscaping, natural shading, light-coloured materials</li> </ul>



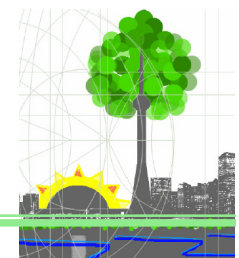
# Toronto Green Standard for Mid to High Rise Residences, Commercial, Industrial and Institutional Development

	Development Feature	Existing City Standards, Guidelines or Targets	The Toronto Green Standard 2006*	Relationship to Other Standards	Possible Implementation Strategies
<b>Air Quality</b> O.P., Environmental Plan, Air Quality Strategy	<b>Urban Heat Island Reduction: Roof</b> Reduce ambient surface temperatures	<ul style="list-style-type: none"> <li>Green Roof Strategy, adopted by City Council in 2006.</li> <li><b>Green Roof Performance Criteria:</b> 6 inch depth, 50% coverage, non-monoculture.</li> </ul>	<ul style="list-style-type: none"> <li>► <b>Minimum:</b> Public Buildings: install a green roof with 50% minimum coverage according to <u>preferred</u> criteria, described below.  Commercial Properties with a Gross Floor Area (GFA) &gt; 10,000 m<sup>2</sup> and Residential Properties with a GFA &gt; 20,000 m<sup>2</sup>: install a green roof with 50% minimum coverage according to <u>preferred</u> criteria, described below.  For all other development, install a green roof with 50% minimum coverage OR install light coloured roofing materials with SRI greater than 78 and emissivity greater than 0.9 according to ASTM Standard 408 for 75% of the roof OR install a combination of both for 75% of the roof.</li> <li><b>Preferred:</b> Install a green roof with at least 50% coverage of the roof. The rest of available roof space (not covered by green roof, other environmental technologies or mechanical equipment) must be covered with light coloured roofing materials, as defined above.</li> <li><b>Excellent:</b> Install a green roof with at least 75% coverage of the roof. The rest of available roof space must be covered with light coloured roofing materials, as defined above.</li> </ul>	<ul style="list-style-type: none"> <li>Addressed in LEED SS 7.2</li> <li>Addressed in Green Globes Site B.2</li> </ul>	<ul style="list-style-type: none"> <li>Green roofs, energy star light-coloured reflective roofing.</li> </ul>



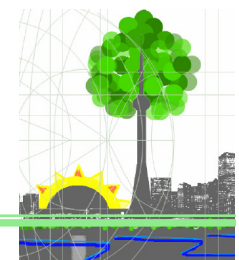
# Toronto Green Standard for Mid to High Rise Residences, Commercial, Industrial and Institutional Development

	Development Feature	Existing City Standards, Guidelines or Targets	The Toronto Green Standard 2006*	Relationship to Other Standards	Possible Implementation Strategies
<b>Air Quality</b> O.P., Environmental Plan, Air Quality Strategy	<b>Indoor Temperature</b> Ensure a comfortable indoor climate	<ul style="list-style-type: none"> <li>Compliance to ASHRAE 55-2004 Thermal Comfort standards for City-owned and leased buildings.</li> </ul>	<ul style="list-style-type: none"> <li>► Compliance to ASHRAE 55-2004 Thermal Comfort standards.</li> </ul>	<ul style="list-style-type: none"> <li>Satisfied by LEED Indoor Environmental Quality (EQ) Credit 7.1</li> <li>Satisfied by Green Globes Indoor Environment Credit G.4</li> </ul>	<ul style="list-style-type: none"> <li>Design building envelope and HVAC system to maintain specified comfort ranges</li> </ul>
	<b>Indoor Ventilation and Filtration</b> Ensure clean and fresh indoor air	<ul style="list-style-type: none"> <li>Compliance to ASHRAE 62-2004 Ventilation standard for City-owned and leased buildings.</li> <li>Smoke Free Bylaw</li> </ul>	<ul style="list-style-type: none"> <li>► <u>Minimum:</u> Compliance to ASHRAE 62-2004 Ventilation standards</li> <li><u>Preferred:</u> Outdoor ventilation rates 30% above minimum required by ASHRAE 62.1-2004.</li> </ul>	<ul style="list-style-type: none"> <li>Minimum satisfied by LEED EQ Prerequisite 1. Preferred satisfied by LEED for Existing Buildings IEQ Credit 2.</li> <li>Satisfied by Green Globes Indoor Environment Credit G.1</li> </ul>	<ul style="list-style-type: none"> <li>Design according to ASHRAE specifications, Bio-walls (e.g. Guelph-Humber Building, Etobicoke campus)</li> </ul>
	<b>Indoor Low-Emitting Materials</b> Minimize sources of air contaminants	<ul style="list-style-type: none"> <li>None.</li> </ul>	<ul style="list-style-type: none"> <li>Use low-emitting materials, including adhesives and sealants, paints and coatings, carpet systems, composite wood and agrifiber products and control fungus, mold and bacteria.</li> <li>► <u>Minimum:</u> 45%</li> <li><u>Preferred:</u> 75%</li> <li><u>Excellent:</u> 90%</li> </ul>	<ul style="list-style-type: none"> <li>Addressed by LEED EQ Credit 4.1 – 4.4. LEED enhanced credit would require additional fungus, mold and bacteria control.</li> <li>Addressed by Green Globes Indoor Environment G.2</li> </ul>	<ul style="list-style-type: none"> <li>Specify low-VOC materials in construction documents, provide manufacturer literature identifying emissions</li> </ul>



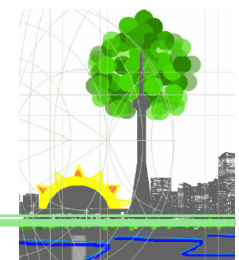
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<b>Greenhouse Gas Emissions / Energy Efficiency</b> O.P., Environmental Plan, Energy Plan, Air Quality Strategy	<b>Minimum Energy Performance</b> Minimize demand for energy through efficient building design	<ul style="list-style-type: none"> <li>• <b>Toronto Energy Efficiency Office Better Buildings Partnership:</b> target for a minimum of 25% savings above Model National Energy Code for Buildings (MNECB).</li> </ul>	<ul style="list-style-type: none"> <li>• New construction:                             <ul style="list-style-type: none"> <li>▶ <u>Minimum:</u> 25% improvement over the MNECB.</li> <li><u>Preferred:</u> 40% improvement</li> <li><u>Excellent:</u> 60% Improvement</li> </ul> </li> <li>• Retrofits:                             <ul style="list-style-type: none"> <li>▶ <u>Minimum:</u> 10% improvement over the MNECB.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Minimum satisfied by LEED EA Prerequisite 2 and Green Globes C.1</li> <li>• Preferred and Excellent targets addressed by LEED Credit 1 (5 points for 40% target and 10 points for 64%) Preferred target addressed by Green Globes Energy C.1 (50% target)</li> </ul>	<ul style="list-style-type: none"> <li>• Use computer modeling to determine most energy efficient design solutions.</li> </ul>
	<b>Energy Efficient Fixtures and Appliances</b> Minimize appliance and fixture energy demands	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• ▶ 70% of fixtures are to be Energy Star compliant.</li> <li>• ▶ Where the developer is supplying appliances, 70% are to be Energy Star compliant.</li> </ul>	<ul style="list-style-type: none"> <li>• Satisfied by LEED for Commercial Interiors EA Credit 1.4</li> <li>• Addressed in Green Globes Credit C.3</li> </ul>	<ul style="list-style-type: none"> <li>• Energy Star appliances</li> <li>• Lighting controls, motion sensor lighting</li> </ul>
	<b>Green Energy</b> Reduce demand for energy from the grid and encourage renewable energy production	<ul style="list-style-type: none"> <li>• <b>Environmental Plan:</b> Purchase 25% of energy needs for City buildings through green power (and encourage same of ABCs)</li> </ul>	<ul style="list-style-type: none"> <li>• Where feasible, provide on-site renewable energy to self-supply 5% -10% of requirements.</li> <li>• Where feasible, purchase 25% of energy needs through grid-source renewable energy.</li> </ul>	<ul style="list-style-type: none"> <li>• Satisfied by LEED EA Credits 2.1 / 2.2 and 6</li> <li>• On-site generation target addressed in Green Globes Energy C.4</li> </ul>	<ul style="list-style-type: none"> <li>• Wind turbines, photo-voltaics, solar thermal technologies, geothermal, deep lake water cooling biogas, green power purchase.</li> </ul>



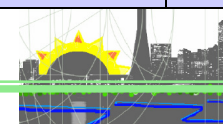
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<b>Greenhouse Gas Emissions / Energy Efficiency</b> O.P., Environmental Plan, Energy Plan, Air Quality Strategy	<b>Daylighting / Building Orientation</b> Minimize energy demand through passive solar heating and lighting	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Orient and design the building to take advantage of passive solar heating.</li> <li>Orient and design the building to take advantage of natural lighting so that ambient daylight in 75% of the internal space is 250 Lux.</li> </ul>	<ul style="list-style-type: none"> <li>Addressed in LEED Indoor Quality Credit 8.1</li> <li>Satisfied by Green Globes Indoor Quality G.3</li> <li>Meets requirements in Illuminating Engineering Society of North America (IESNA) Lighting Handbook, 2000.</li> </ul>	<ul style="list-style-type: none"> <li>Shallow floor plates, permanent shading devices, high performance glazing (e.g. SAS , 280 King St E)</li> </ul>
	<b>Systems Commissioning</b> Ensure building systems function properly	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>► Ensure the building's energy related systems are installed, calibrated and perform according to the owner's project requirements, based on design and construction documents</li> </ul>	<ul style="list-style-type: none"> <li>Satisfied by LEED Canada Energy and Atmosphere (EA) Prerequisite 1</li> <li>Satisfied by Green Globes Project Management A.3</li> </ul>	<ul style="list-style-type: none"> <li>Engage a 3<sup>rd</sup> party commissioning authority.</li> </ul>
	<b>Measurement and Verification</b> Confirm energy performance	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Providet a Measurement and Verification report after one year of post-construction occupancy.</li> </ul>	<ul style="list-style-type: none"> <li>Satisfied by LEED EA Credit 5</li> </ul>	<ul style="list-style-type: none"> <li>Install equipment to measure performance.</li> </ul>



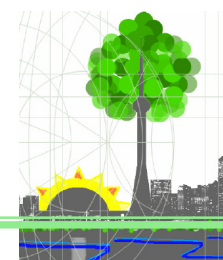
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Water Quality O.P., Environmental Plan, Wet Weather Flow Management Plan, Toronto Region Conservation Authority	<b>Construction Activity</b> Ensure protection of water quality during construction and demolition	<ul style="list-style-type: none"> <li>• <b>[Draft] WWF Interim Stormwater Management Guidelines:</b> Adherence to Greater Toronto Area Conservation Authorities on-site Erosion and Sediment Control Guidelines during construction and demolition activities. Long-term average removal of 80% of suspended solids from runoff.</li> </ul>	<ul style="list-style-type: none"> <li>• ► See existing draft guideline.</li> </ul>	<ul style="list-style-type: none"> <li>• Addressed by LEED Sustainable Sites (SS) Prerequisite 1</li> <li>• Addressed by Green Globes Site Credit B.2 and Emissions, Effluents and Other Impacts Credits F.3 and F.4</li> </ul>	<ul style="list-style-type: none"> <li>• Erosion and sediment control plan, silt fencing, sediment traps, sediment basins</li> </ul>
	<b>Stormwater Run-Off</b> Manage and clean stormwater that leaves the site	<ul style="list-style-type: none"> <li>• <b>[Draft] WWF Suspended Solids Removal:</b> Remove 80% of total suspended solids on an annual loading basis from all runoff leaving the site</li> </ul>	<ul style="list-style-type: none"> <li>• ► See existing draft guideline.</li> </ul>	<ul style="list-style-type: none"> <li>• Satisfied by LEED SS Credit 6.2</li> </ul>	<ul style="list-style-type: none"> <li>• Mechanical or natural treatment systems such as constructed, vegetated filter strips, bio-swales, sediment traps, oil/grit separators</li> </ul>
		<ul style="list-style-type: none"> <li>• <b>[Draft] WWF Disinfection:</b> Disinfect runoff from the site which discharges directly into Lake Ontario or Waterfront areas</li> </ul>	<ul style="list-style-type: none"> <li>• ► See existing draft guideline.</li> </ul>	<ul style="list-style-type: none"> <li>• Not addressed by LEED or Green Globes</li> </ul>	
		<ul style="list-style-type: none"> <li>• <b>[Draft] WWF Erosion Control:</b> Adherence to TRCA erosion control criteria for individual sites which discharge directly or are in close proximity to natural watercourses</li> </ul>	<ul style="list-style-type: none"> <li>• ► See existing draft guideline.</li> </ul>	<ul style="list-style-type: none"> <li>• Addressed by LEED Sustainable Sites (SS) Prerequisite 1</li> </ul>	
<b>Stormwater Retention (Water balance)</b> Minimize stormwater that leaves the site	<ul style="list-style-type: none"> <li>• <b>[Draft] WWF Water Balance:</b> Retention of stormwater on-site to the same level of annual volume of overland runoff allowable under pre-development conditions</li> <li>• Minimum Requirement: Retention of all runoff from small design rainfall events (typically 5 mm) through rainwater reuse, onsite infiltration, and evapotranspiration.</li> </ul>	<ul style="list-style-type: none"> <li>• ► See existing draft guideline.</li> </ul>	<ul style="list-style-type: none"> <li>• Addressed by LEED Sustainable Sites Credit 6.1</li> <li>• Addressed by Green Globes Site Credit B.3</li> </ul>	<ul style="list-style-type: none"> <li>• Green roofs, rain barrels, permeable paving (e.g. eco stone, turfstone), green streets instead of curb and gutter, downspout disconnection, infiltration trenches, absorbent landscaping</li> </ul>	



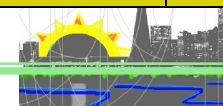
# Toronto Green Standard for Mid to High Rise Residences, Commercial, Industrial and Institutional Development

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<b>Water Efficiency</b> O.P., Environmental Plan, Water Efficiency Plan	<b>Low-Water Landscaping</b> Create natural landscapes that require little irrigation.	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Use drought-resistant plant material.</li> </ul>	<ul style="list-style-type: none"> <li>Addressed in LEED Water Efficiency Credits 1.1. and 1.2</li> <li>Addressed by Green Globes Water Credit D.2</li> </ul>	<ul style="list-style-type: none"> <li>Native plants, rainwater harvesting, high efficiency irrigation systems, drip irrigation</li> </ul>
	<b>Rain Water Harvesting</b> Use stormwater as a resource to reduce demand for potable water	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Capture, store, treat and use rain water for irrigation and/or flushing.</li> </ul>	<ul style="list-style-type: none"> <li>Addressed by LEED Water Efficiency Credits 1.1. and 1.2</li> <li>Addressed by Green Globes Water Credit D.2</li> </ul>	<ul style="list-style-type: none"> <li>Rain barrels, storage cisterns</li> </ul>
	<b>Grey Water Re-use</b> Re-use waste water to reduce demand for potable water	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>Integrate a system for collecting and treating laundry and bathing grey water for use in flushing, irrigation, janitorial cleaning, cooling and car washing. Where feasible, integrate a biological waste treatment system for the site.</li> </ul>	<ul style="list-style-type: none"> <li>Addressed by LEED Water Efficiency Credits 1.1, 1.2 &amp; 2</li> <li>Satisfied by Green Globes Water Credit D.3</li> <li>The Canadian Standards Association is currently developing a new grey-water standard (June 2006).</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>
	<b>High Efficiency Fixtures and Appliances</b> Reduce demand for potable water through greater efficiencies	<ul style="list-style-type: none"> <li><b>Toronto Water:</b> The City has rebate programs for low flow toilets and urinals and washing machines that use 40% less water.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Install water efficient fixtures including low-flow toilets (6.0 L) urinals (3.8L) and faucets (9.5L/min).</li> <li>▶ Where provided, install water efficient dishwashers (38L) and washing machines that use 40% less water.</li> <li>Install individual faucet metering (0.95 L / cy)</li> </ul>	<ul style="list-style-type: none"> <li>Satisfied by LEED Water Efficiency Credits 3.1 and 3.2</li> <li>Addressed by Green Globes Water Credit D.2</li> </ul>	<ul style="list-style-type: none"> <li>Composting toilets, waterless urinals</li> </ul>



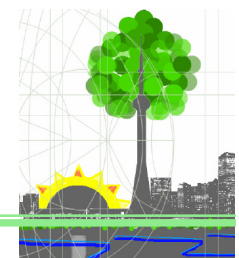
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<b>Solid Waste</b> O.P., Environmental Plan, Solid Waste Management Diversion Goals	<b>Storage and Collection of Recyclables</b> Facilitate waste reduction and efficient processing	<ul style="list-style-type: none"> <li>• <b>Solid Waste Division:</b> Mandatory participation in recycling collection for residential buildings. Commercial Waste Diversion Program provides free recycling and organic collection for participating businesses.</li> </ul>	<ul style="list-style-type: none"> <li>• ▶ Install user-friendly and accessible handling and storage facilities that provide for recyclable materials and organic waste.</li> </ul>	<ul style="list-style-type: none"> <li>• Addressed by LEED Materials and Resources Prerequisite 1</li> <li>• Addressed by Green Globes Resources Credit E.7</li> </ul>	<ul style="list-style-type: none"> <li>• Three chute system, aluminum can crushers, cardboard balers.</li> </ul>
	<b>Construction Waste Management</b> Reduce waste going to landfill and reduce demand for new materials	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• ▶ <u>Minimum:</u> Recycle and/or salvage at least 50% of non-hazardous construction and demolition debris. <u>Preferred:</u> Recycle and/or salvage at least 75% of non-hazardous C&amp;D debris.</li> </ul>	<ul style="list-style-type: none"> <li>• Satisfied by LEED Materials and Resources Credit 2.1</li> <li>• Addressed by Green Globes Resources Credit E.6</li> </ul>	<ul style="list-style-type: none"> <li>• Construction waste management plan, designated area on site for recyclable materials.</li> </ul>
	<b>Reuse of Building Materials</b> Reduce waste going to landfill and reduce demand for new materials	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• <u>Preferred:</u> Ensure that at least 5% of a project's materials (based on value) comprise salvaged, refurbished or reused materials. <u>Excellent:</u> 10% re-used materials</li> </ul>	<ul style="list-style-type: none"> <li>• Preferred satisfied by LEED Materials and Resources Credit 3.1; Excellent satisfied by LEED MR Credit 3.2</li> <li>• Addressed by Green Globes Resources Credit E.3</li> </ul>	<ul style="list-style-type: none"> <li>• Use salvaged beams, posts, flooring, paneling doors, frames, cabinetry, furniture, bricks and detailing.</li> </ul>
	<b>Use of Recycled Materials</b> Reduce demand for new materials and increase market for recycling	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Recycled content defined by CAN/CSA-ISO 14021-00 Environmental Labeling and Advertising Guidelines <u>Preferred:</u> Ensure that at least 7.5% of a project's materials (based on value) are comprised of recycled content <u>Excellent:</u> 15% recycled content</li> </ul>	<ul style="list-style-type: none"> <li>• Addressed by LEED Materials and Resources Credit 4.1</li> </ul>	<ul style="list-style-type: none"> <li>• Identify recycled materials suppliers, require manufacturer documentation</li> </ul>
	<b>Durable Buildings</b> Minimize need to replace materials and assemblies	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Compliance to CSA S478-95 (R2001) guideline for durable buildings</li> </ul>	<ul style="list-style-type: none"> <li>• Addressed by LEED Materials and Resources Credit 8</li> <li>• Addressed by Green Globes Materials Credit E.4</li> </ul>	<ul style="list-style-type: none"> <li>• Shading screens, eaves, overhangs, durable surface materials, drained walls.</li> </ul>



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<b>Urban Forest</b> O.P., Environmental Plan, Our Common Grounds, Tree Protection Policy and Bylaws	<b>Site and Adjacent Boulevard</b> Preserve and enhance the urban forest	<ul style="list-style-type: none"> <li>• <b>OP:</b> provide suitable growing environment for trees; increase the tree canopy coverage and diversity; especially long-lived native and shade trees; regulate the injury and destruction of trees.</li> <li>• <b>Our Common Grounds:</b> goal to achieve a sustainable canopy of 30-40%.</li> <li>• <b>Private Tree Bylaw:</b> Protect existing trees on private property that are 30cm or more DBH (diameter at breast height)</li> <li>• <b>Tree Protection Policy and Specifications for Construction Near Trees:</b> Guidelines specifying minimum protection distances and standards for tree protection barriers during construction</li> <li>• <b>Draft Streetscape Manual:</b> Construct walkways and driveways in a manner that permits the growth of trees by providing a continuous sub-grade that supports root growth. Provide a reliable watering system</li> </ul>	<ul style="list-style-type: none"> <li>• ► See Private Tree Bylaw</li> <li>• ► See draft Streetscape Manual guidelines</li> <li>• ► See existing guidelines in Specifications for Construction Near Trees</li> <li>• Retain native soil on site, adjust or replace as required</li> <li>• Plant large growing, predominantly native shade trees to achieve 20% canopy coverage of the site at maturity</li> <li>• ► Provide each tree a minimum soil volume of 30 m<sup>3</sup> of good soil.</li> </ul>	<ul style="list-style-type: none"> <li>• Not addressed by LEED or Green Globes</li> </ul>	<ul style="list-style-type: none"> <li>• Use soil cells, retain native topsoil, construction management plan to avoid site disturbance</li> </ul>



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<b>Wildlife Habitat</b> O.P., Environmental Plan, Ravine Protection By-law, Migratory Bird Policy	<b>Site</b> Protect and enhance natural habitat	<ul style="list-style-type: none"> <li>• <b>OP:</b> policies support biodiversity and ecological improvement for habitat for native flora and fauna and aquatic species.</li> <li>• <b>OP</b> policies generally prohibit development in designated Parkland and Open Space Areas and in the Natural Heritage System. When development is permitted, it will minimize adverse impacts and restore and enhance the natural heritage system</li> </ul>	<ul style="list-style-type: none"> <li>• Plant native trees, shrubs and ground cover. <u>Preferred:</u> 50% coverage of site area (excluding building footprint) <u>Excellent:</u> 75% coverage of site area (excluding building footprint).</li> <li>• ► No planting of invasive species on streets or properties adjacent to ravines and natural area parks</li> </ul>	<ul style="list-style-type: none"> <li>• Addressed by LEED Sustainable Sites Credits 5.1 and 5.2</li> <li>• Addressed by Green Globes Site B.1</li> </ul>	<ul style="list-style-type: none"> <li>• Plant native species, construction management plan to avoid site disturbance</li> </ul>
	<b>Glass and other design features</b> Glass and building features that reduce reflectivity to protect migratory birds	<ul style="list-style-type: none"> <li>• Under development.</li> </ul>	<ul style="list-style-type: none"> <li>• “Bird friendly” guidelines for buildings (when complete)</li> </ul>	<ul style="list-style-type: none"> <li>• Not addressed by LEED or Green Globes</li> </ul>	<ul style="list-style-type: none"> <li>• ‘Visual noise’ elements can include patterned glass, film treatments on windows, overhangs</li> </ul>
<b>Light Pollution</b> Migratory Bird Policy	<b>Lighting</b> Recognize needs of migratory birds and reduce nighttime glare from outdoor lighting	<ul style="list-style-type: none"> <li>• Under development</li> </ul>	<ul style="list-style-type: none"> <li>• “Bird friendly” guidelines for buildings (when complete).</li> <li>• ► Avoid directly lighting the sky</li> </ul>	<ul style="list-style-type: none"> <li>• Addressed by LEED Sustainable Sites Credit 8</li> <li>• Addressed by Green Globes Site Credit B.2 and Indoor Environment G.3</li> </ul>	<ul style="list-style-type: none"> <li>• No vanity lighting, motion sensor lighting, overhangs</li> </ul>

