

**SUSTAINABILITY STRATEGIES FOR  
PRIVATE DEVELOPMENTS**

The incentive programs contained in the Waterloo Northdale CIP focus on promoting development that exhibits an exemplary level of quality architecture, urban design, sustainability and environmental performance. The sustainability of a private development project is determined by both ***the design and development of the site***, as well as the ***design and construction of the building(s)*** on that site. The design and development of the site takes into account the design and layout of infrastructure and how these are linked to the environment within, and beyond, the site boundary. The way in which the site is developed will ultimately determine the way it “works” with the environment, the neighbourhood and the people who use the site. The buildings located within a sustainable private development should also achieve a minimum ‘green’ performance level through their design and construction.

Within the Northdale Community Improvement Project Area, a reurbanization project can achieve a minimum ‘green’ performance level via:

- a) **any level of LEED (Leadership in Energy and Environmental Design) Certification; OR,**
- b) **conforming to at least six (6) of the ten (10) Sustainability Strategies detailed below.**

Where a project does not pursue LEED Certification, the Sustainability Strategies listed below will be used by City staff to evaluate financial incentive program applications submitted to the City under the Northdale CIP Incentive Programs.

The ten Sustainability Strategies described below address both site development and building development. In total, there are 72 project components listed under the ten Sustainability Strategies. For a project to “conform” with a particular Sustainability Strategy, **the as-built project must include at least half (50%) of the project components listed under that particular Sustainability Strategy.** If you elect to demonstrate the sustainability of your project utilizing the Sustainability Strategies rather than LEED Certification, please read and complete the Sustainability Strategies Questionnaire below.

**Sustainability Strategies Questionnaire**

***For each of the ten (10) Sustainability Strategies below, place a check mark  only beside the components that you plan to include in your project. Please be advised that the City will require verification of the inclusion of these components in the as-built project once project construction is completed.***

**1) Environmental Sustainability**

It is important to minimize project impacts on the environment both during and after construction is complete. At all times during construction, a rigorous erosion and sedimentation control plan should be enforced. Through the site planning stages the development should maximize the amenity green space available to users and nature. In addition, the use of green space in the private development areas will complement and enhance those provided in the public realm. Soft landscaping can be incorporated into the buildings overall stormwater management plan.

The project includes:

- 1) Provision of amenity green space available to users and nature that exceeds minimum standards and contains native/adaptive and drought tolerant plants to promote biodiversity.
- 2) Collection and infiltration of storm water on-site.
- 3) Building runoff diverted into natural vegetated systems or building runoff captured in cisterns and reused for building sanitary conveyance and/or landscape irrigation.
- 4) Use of rainwater and/or grey water for landscape irrigation.

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- 5) Use of alternative pervious surfaces and paving materials such as open pavers and open rubber mats to promote storm water infiltration.
- 6) A Green Roofing system to reduce the amount of roof runoff by absorbing rainwater and reducing both the rate and quantity of its discharge.
- 7) Protection or restoration of parklands or other significant natural features.

**2) Plantings and Hardscape**

The environmental impact of the site should be minimized through careful selection of both soft and hardscaping materials. Soft landscaping comprising native/adaptive and drought tolerant plants will help to attract wildlife to the site and promote biodiversity. The use of native/adaptive species also has lower irrigation and fertilizer requirements. Using similar plantings throughout the neighbourhood will provide a consistency to the area. Where hardscaping is required, minimize the resulting heat island effect by using materials that reflect the sun's heat or through shading.

The project includes:

- 1) Native/adaptive and drought tolerant plant species in soft landscaping to minimize (eliminate) the need for irrigation and high levels of maintenance.
- 2) Efficient systems (e.g., drip delivery) and controllers with moisture sensors designed to ensure water is only provided when it is absolutely necessary for irrigation purposes or the use of harvested rainwater for irrigation purposes.
- 3) Appropriate soil volumes and/or structural soils depending on the type of plant materials used.
- 4) Vegetated swales where appropriate.
- 5) The avoidance of large expanses of manicured turf.
- 6) Light coloured surfaces (i.e. "high albedo") in hardscaped areas to limit any microclimate impacts (i.e. "heat island" effect).
- 7) Shading over hardscaped areas to minimize micro-climate heat islands.
- 8) Soft/permeable surfaces bordering hardscaped areas to allow storm water to slow and infiltrate.

**3) Transportation and Walkability**

Buildings play an important role in the creation of walkable streets by allowing the interaction between the inside and outside to occur. Incorporating the building into the streetscape and public realm creates an interactive and inviting atmosphere.

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Reducing automobile dependence should be targeted both at the neighbourhood and at the site level. Site development can contribute significantly by restricting the size of parking lots and encouraging alternative means of transportation through carpooling, carshare, bicycle or transit use.

The project includes:

- 1) Bicycle racks situated close to buildings to afford users the opportunity to ride to and from their intended destinations.
- 2) Covered and secure bicycle storage.
- 3) Designated space for shared parking, carshare, hybrid and carpool vehicles.
- 4) At least 50% of total parking underground.
- 5) Entrances and windows that break up the space and avoid significant stretches of solid, blank wall façade on the building, especially at street level.
- 6) Glazing along the façade of ground-level commercial space.
- 7) Accessibility features that exceed the required minimum standard.
- 8) A pedestrian network that is well connected both within the site, and with adjacent sites.

**4) Open Space and Amenities**

It is important to provide access to leisure and activity space and amenities in neighbourhoods such as Northdale that are undergoing reurbanization. Open space and public and private amenity features contribute to the social well-being and health of residents in the neighbourhood.

The project includes:

- 1) Open space on private or public property that exceeds the required minimum standard as per the Zoning By-law.
- 2) Exceptional and distinctive landscaping that exceeds the minimum standard.
- 3) One or more community oriented public gathering spaces.
- 4) The retention of a significant number of the mature trees on the property.
- 5) The planting of new trees at a rate that exceeds minimum standards.
- 6) Amenities such as benches, waste receptacles, public art, pools, and recreation areas.

**5) Public Health and Safety**

The design of a site and building can enhance the safety and security of residents, visitors and the community as a whole. Therefore, it is important that development projects be designed to promote a safe and secure environment. This can include features such as the location of entrances, service areas, and pedestrian accesses, as well as design features such as lighting. Outdoor lighting can extend access and use of many areas into the nighttime hours and allow for a more active and safe neighbourhood. Thoughtful design can address site illumination requirements while minimizing the negative impact on the environment. While having “eyes on the street” is very important, this must be balanced with the privacy of residents.

The project includes:

- 1) A design that incorporates Crime Prevention Through Environmental Design (CPTED) principles as demonstrated via a completed CPTED analysis of the site.
- 2) The use of full cut-off fixtures and design for no up lighting and minimal light trespass across the site boundary.
- 3) Lighting design for parking and congregation areas that is below ASHRAE 90.1-2004 power density allowances.
- 4) Lighting designed to provide a uniform level with few areas of high contrast to promote security.
- 5) Neighbourhood consultation at the planning/design stage that is over and above the minimum public consultation required by the Planning Act.
- 6) Site and design features that reduce intrusion on the privacy of adjacent properties.

**6) Energy Efficiency and Building Operation Optimization**

Early in the design phase of a new building and/or development, there is an opportunity for significant reductions in emissions to be made. Specifically, the ‘4R’ approach to energy efficiency should be considered:

- Rethink – your approach to energy use;
- Reduce – consumption and loads;
- Reuse – waste energy (find design trade-offs and synergies); and
- Replace – conventional with Renewable Energy Technologies (RETs).

A well designed and insulated building envelope results in a smaller, less energy intensive building system.

Large volumes of potable water are typically used by buildings. There are many ways to achieve water savings in a building including reusing roof water runoff for non-potable applications and installing water saving fixtures.

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The project includes:

- 1) A design strategy that will achieve a 25% energy consumption savings, relative to ASHRAE 90.1-2004.
- 2) Energy end-use monitoring, measurement and analysis in each building to help optimize building operations.
- 3) An optimal window to wall ratio in buildings, with greater than 40% glazing on the first floor.
- 4) Rooftops with high albedo materials or colours (i.e. white rooftops).
- 5) High performance energy efficient building components (insulation, walls, roof, windows) that exceed building code minimum requirements.
- 6) Lighting that is at or below ASHRAE 90.1-2004 power density requirements (e.g. office: <10W/m2).
- 7) Lighting controls such as occupancy/vacancy controls, daylight sensors/controls and dimmable fixtures.
- 8) HVAC systems that increase energy efficiency through the use of measures such as decoupling heating and cooling from ventilation; using heat recovery, using occupancy sensors/CO2 controls and utilizing variable speed pumps and fans, e.g., Power Smart and CFC-reducing HVAC systems.
- 9) Energy efficient components in the energy plant such as a condensing boiler, heating/cooling equipment that modulates to meet building loads, a ground coupled heat pump system.
- 10) The purchase of green power offsets for building energy use, which increases the amount of available green energy on the grid (thereby displacing the need for high-emitting energy sources).
- 11) A Renewable Energy Technology System (RETs) to produce green power, such as photovoltaic power systems, wind power systems and solar thermal systems.
- 12) Low-consumption plumbing fixtures that exceed minimum standards in the building code.
- 13) The use of captured rainwater for non-potable applications, including irrigation, sewage conveyance, floor cleaning, and cooling tower make-up.
- 14) Low water and energy consuming appliances (e.g. clothes dryers and dish-washers) that are EnergyStar™ compliant.

**7) Material Impacts**

Building material choices are important in green building design because they contribute to the depletion of natural resources and due to the ecological impacts of their eventual disposal. One of the most effective strategies for minimizing environmental impacts is to reuse existing buildings. Where this is not feasible, the source of material components should be considered. For example, where salvaged or recycled materials can be used instead of new materials, this is preferable. Finally, buildings should be designed and built to last for a long period of time with minimal maintenance. This reduces the demand for raw materials and amount of waste generated when compared with buildings that have a shorter life-span.

The project includes:

- 1) The re-use of existing buildings and building structures.
- 2) Locally sourced (extracted and manufactured) materials whenever possible to reduce the carbon impact of materials transportation.
- 3) The use of building components that contain high levels of recycled content to eliminate the need to extract raw materials from the natural environment.
- 4) The use of durable construction materials that exceed building code minimum standards and are intended to last more than 50 years.
- 5) An area in each building designated for the collection of recyclable materials, compostable and organic materials, household hazardous waste and general waste.
- 6) During construction, the diversion of construction waste from landfill by separating waste on-site and sending it to specific receiving facilities, or contracting with a waste hauler who is able to provide off-site sorting of waste products from construction.

**8) Indoor Environment**

Designing the indoor environment to minimize pollutants and maximize occupant comfort and enjoyment has the potential to enhance the indoor environment for building occupants. Improving indoor air quality can include measures from the supply of filtered outside air to improving the effectiveness of ventilation. Prevention of air quality problems is generally much less expensive than cleaning up after these problems occur. Measures such as moisture management and control of air contaminants during construction can greatly improve the air quality of the completed building. Selecting materials that release fewer and less harmful contaminants and interior design can significantly improve indoor environmental quality. Other measures that greatly increase occupant enjoyment of interior space include daylighting and lighting quality, thermal comfort, acoustics, occupant control of building systems, and access to views.

The project includes:

- 1) Building ventilation systems designed in accordance with the ventilation rate procedure outlined in the most recent version of the ASHRAE 62.1 standard.
- 2) Interior finishes that contain low levels of volatile organic compounds (VOCs). These include: paints, coatings, adhesives, sealants, carpet, flooring and furniture.

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- 3) Indoor spaces that are thermally comfortable i.e., meet human comfort conditions for temperature and humidity, as outlined by the most recent version of ASHRAE 55.
- 4) Thin profile buildings that provide daylighting benefits.
- 5) Vegetated roofs in areas where people will be able to see, or access, roof-tops.
- 6) Noise mitigation features (walls, doors, windows, etc...) that exceed the required minimum standard.

**9) Building Operation and Maintenance**

While the design and construction of a building can be done in a sustainable manner, it eventually falls upon building operations staff to ensure the building performs as expected; continues to operate in an efficient/green manner; and is maintained in such a way that its long term impact on the environment is minimized. There are a number of strategies that can be implemented to achieve these, as well as other, operating and maintenance goals. Many of these strategies can be considered “No Cost” or “Low Cost” items.

The project includes:

- 1) The purchase of renewable energy credits or green power.
- 2) Providing indoor garbage/recycling rooms, and providing regular pick-up schedules.
- 3) An education and collection program to encourage building users to separate their organic materials from general waste and recyclables.
- 4) A Green Site Maintenance Program that uses native and adaptive plants in the landscape design and low impact landscape maintenance practices, no harmful chemicals that may impact water quality, the environment or cause harm to site users.
- 5) A Green Housekeeping Program to set guidelines for the care and upkeep of the buildings in a manner that reduces the risk posed to human health and the environment (as compared to conventional housekeeping practices).
- 6) A Green Procurement Process which requires building purchases to be conducted in such a way that the impact to the environment is minimized in the long term. For example, consumables (e.g. Paper towels, toilet paper) should be made of recycled product. Socially responsible products should be preferred for food products (e.g., local, fair-trade).
- 7) University management presence in student oriented buildings.

**10) Local Identity and Heritage**

The project includes:

- 1) The conservation or restoration of heritage features.
- 2) The provision of significant heritage or cultural features.
- 3) Public art on public land.
- 4) Public art on private land.