

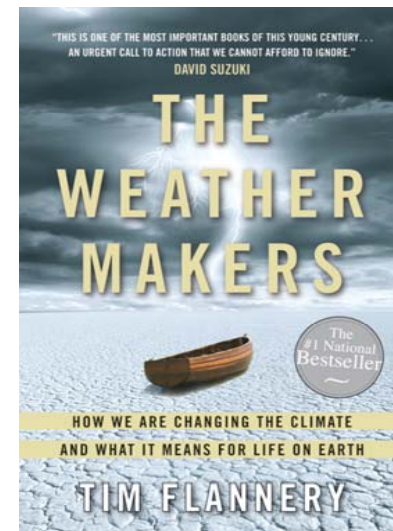
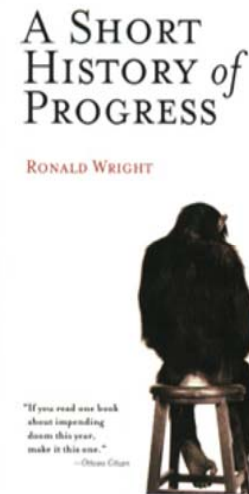
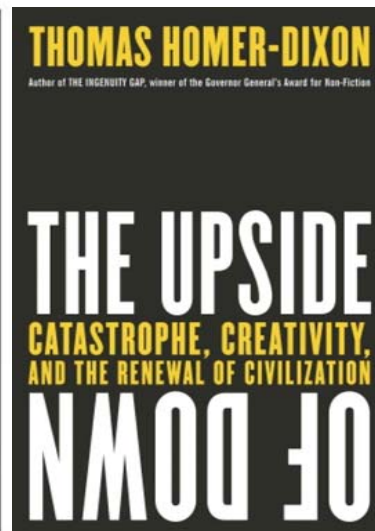
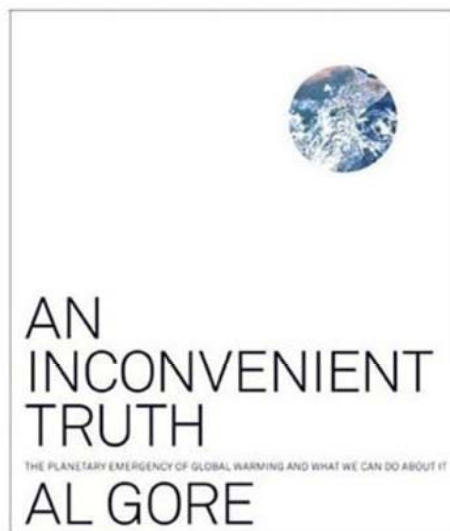
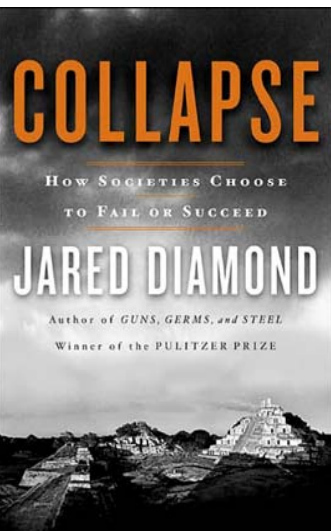


Sustainability at the Project Level

Canadian Brownfields 2008, October 24, 2008

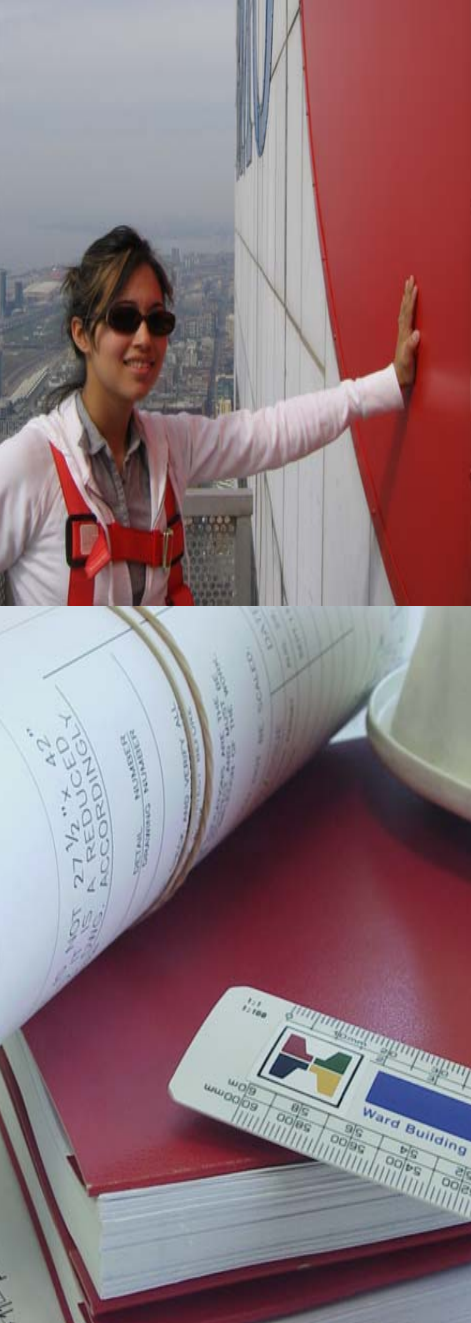


Moving Beyond Warnings



Drivers for Change





- 250+ employees with offices across Canada.
- Over 50 years providing solutions for clients in the development & construction industries.
- Industry leaders in sustainability consulting
- Walk the talk – LEED CI Platinum office, green powered offices, transit incentives

		RATING								
GOALS		BD1	BD4	BD5	BD6,7,8	BD9,10,11	GARAGE	BD12	BD14	BD16
CORE VALUES	Behavioral change:									
	Visitor Experience:									
	Wholesale of Ideas:									
	Demonstration, performance:					1		1		
	Heritage:									
	Conservation:									
	Partnerships:									
	Adaptability-changing technologies:									
	Metrics/performance measurement		2	2	2	2	2	2	2	2
	Integration Nature-Culture:									
PROJECT VALUES	Adaptive reuse:									
	Zero waste: Solid									
	Water:	3	3	3	3	3	3	3	3	3
	Local materials:									
	Technologies									
	Accessibility: Site									
	Building:									
	Promote green business									
	Water conservation-Harvesting:									
	Water use									
	Energy producer/ Energy efficiency: Heating					1		1		
	Cooling									
	Ventilation									
Envelope										
Durability										

75-100%
50-75%
25-50%
0-25% (or TBD)

- 1 Solar thermal providing 100% of thermal loads
- 2 Metering should be provided in all buildings
- 3 Water filtration technology to be extended to all buildings on site

Preliminary Sustainability Design Principles Related to ABC's Environmental Action Plan

Company Goals	Company Identified Actions	Halsall Suggested Design Strategies	LEED CI Credit Potential
Improve Waste Management Practices	<p>Implement a regional office program to enhance recycling of paper, cans, plastics and, potentially, organic waste.</p> <p>Safe disposal/recycling of dead batteries, Safe disposal/recycling of electronics and plastics, Recycling of used toner</p> <p>Divert waste from landfill</p> <p>Provide recycling bins at each cubicle/room</p> <p>Provide Organic waste bins</p>	<p>Provide sorting and recycling facilities within the space both in the lunchroom and at individual workstations.</p> <p>Implement waste management strategies during the fit up of the space</p> <p>Built-in recycling containers at work stations and kitchen</p>	<p>MRp1 Storage & Collection of Recyclables</p> <p>Possible ID credit.</p> <p>MRc2. Construction Waste Management</p>
Reduce Waste Generation	<p>Reduce kitchen, bathroom catering, printing and communications related waste.</p> <p>Furniture re-use</p>	<p>Design: The lunchroom should be fully equipped with dishes and flatware, discouraging the use of plastic and paper.</p> <p>Operation: Water cooler provided to reduce plastic bottle use.</p> <p>Bathroom use alternates to paper towels. Management of food orders to avoid wasted food.</p> <p>Reuse furniture from previous office</p>	<p>Possible LEED ID credit</p> <p>MRc3- Resource reuse- Furniture and furnishings</p>
Sustainable Materials and Resources	<p>Interior partitions built with sustainable materials</p> <p>Use environmental floor covering or use carpet that contains recycled material. In the kitchen areas, use green countertop solutions</p>	<p>Use materials extracted and manufactured regionally</p> <p>Use rapidly renewable materials and products, made from plants that are typically harvested within a 10- year or shorter cycle.</p> <p>Use Forest Stewardship Council certified wood products</p> <p>Use materials, including furniture and furnishings, with high recycled content.</p>	<p>MRc5 Regional Materials (20% manufactured locally, 10% extracted and manufactured locally)</p> <p>MRc6 Rapidly Renewable Materials</p> <p>MRc7 Certified Wood</p> <p>MRc4 Recycled Content 10%, 20%</p>
Reduce Energy Consumption	<p>Implement an awareness program and invest in energy efficient lighting and equipment.</p> <p>Reduce lighting energy consumption</p> <p>Energy Efficient appliances and equipment</p> <p>Raise awareness about and reduce energy consumption</p> <p>Use of sustainable power</p> <p>Reduce nocturnal lighting levels to reduce energy consumption and reduce night light pollution</p>	<p>Effective Daylighting/ light shelves /Fixture Density reduction/ Efficient bulbs</p> <p>Motion sensor triggered lights and dimmings</p> <p>Energy Star Appliances</p> <p>Commissioning of the systems to verify they are operated as intended</p> <p>1. Install sub-metering equipment to measure and record energy uses within the tenant space.</p> <p>2. Negotiate a lease where energy costs are paid by tenant and not included in base rent.</p> <p>3. See also Awareness and Communication below</p> <p>Engage in a contract with a renewable electricity supplier.</p> <p>Lighting dimming at night, automatic turn-off of lights after hours.</p>	<p>EAc1.1 Optimize Energy Performance, Lighting Power (15%, 25%, 35%)</p> <p>EAc1.2 Optimize Energy Performance, Lighting Controls</p> <p>EAc1.4 Optimize Energy Performance, Equipment & Appliances (70%, 80%)</p> <p>EAc2 Enhanced Commissioning</p> <p>EAc3 Energy Use, Measurement & Payment Accountability</p> <p>EAc4 Green Power</p>

What will it look like?



- 1 Lightshelves for Daylighting
Location: BC Gas Building Surrey, BC
LEED NC Photo Credit: Terr Meyer Boake
- 2 Interior Sunshade & Lightshelf
Location: Telus Head Office Vancouver, BC
LEED CI Photo Credit: Terr Meyer Boake
- 3 Natural Daylighting
Location: Toronto Federal Judicial Centre
Toronto, ON
LEED CI
- 4 Fully Equipped Lunch Room with Dishes & Flatware
Location: General Photo Credit: iStock
- 5 Open Workspaces / Daylighting & Views
Location: 210 Gladstone Ave., Halsall's
Ottawa Office, Ottawa, ON
LEED CI Platinum Certified
- 6 Options for Waste Diversion System
Location: General Photo Credit: iStock

Sustainable Solutions

The projects and images illustrated on this document highlight some of the potential design strategies that are relevant to the PwC space.

These strategies include:

- Daylight enhancement;
- providing outside views to building occupants;
- giving building occupants control over their comfort conditions; and
- supporting waste management systems by providing fully equipped kitchen spaces and recycling facilities.

Halsall's Green Building team will work with PwC to explore these and a variety of other innovative design strategies and solutions that will ensure your environmental objectives are achieved.



Halsall
ENGINEERS • CONSULTANTS



Frameworks for Measurement

LEED Rating System





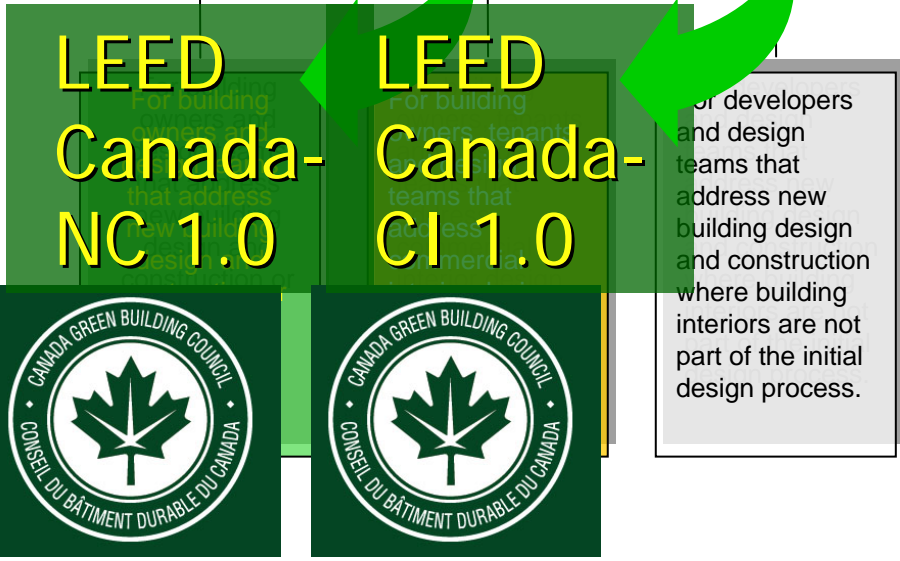
- LEED is a process of setting benchmarks, and verifying performance.
- Documentation is critical.
- Documentation is consolidated and submitted to the CaGBC (Or USGBC) who certify that the building meets the requirements.
- Certifiers audit some credits for additional information to ensure compliance.

LEED Certification Process



- **CaGBC**
 - completes application review
 - audits credits
 - awards LEED rating (certified, Silver, Gold, Platinum)
- Only the CaGBC awards credits and the final rating level.
- This occurs after project completion.

LEED Rating System Suite



For developers and design teams that address new building design and construction where building interiors are not part of the initial design process.

For building owners and service providers that address building operation and on-going upgrades and performance improvements.

For residential building owners, developers and design teams that address the new residential building design and construction process.

For residential building owners, developers and design teams that address the new residential building design and construction process.

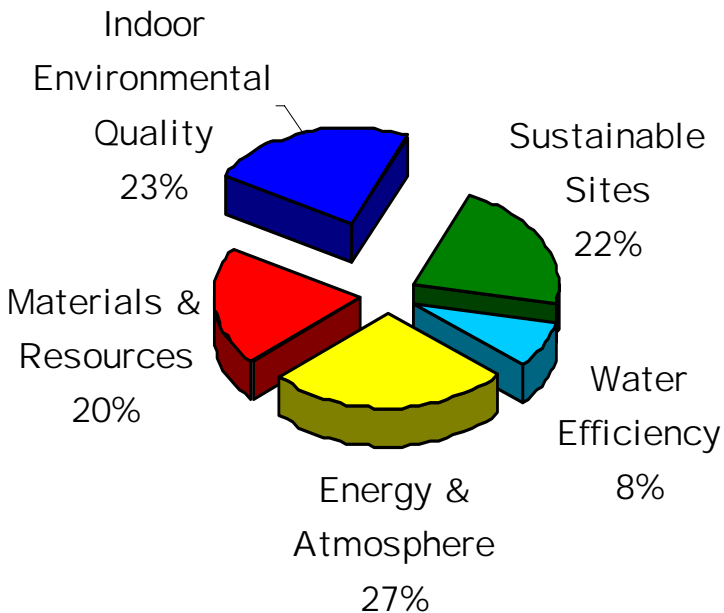
• graphic c/o the CaGBC

Sustainability Rating Categories



- **LEED examines and assigns points in:**

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality
- Design Excellence



- **Green Globes has similar categories**

LEED NC – Credits for Brownfields



Credits that support brownfield development:

SSc1: Site Selection

SSc2: Development Density

**SSc3: Redevelopment of
Contaminated Sites**

**SSc5: Reduced Site Disturbance:
Protect or Restore
Open Space**



Redevelopment of Contaminated Sites



INTENT:

Rehabilitate damaged sites where development is complicated by real or perceived environmental contamination, reducing pressure on undeveloped land.

REQUIREMENTS:

Develop on a contaminated site and provide remediation as required by Provincial Contaminated Sites Program.

Redevelopment of Contaminated Sites



SUBMITTALS:

- Provide a letter from the relevant regulatory agency, or an independent environmental assessment firm, confirming that the site was classified as a contaminated site and has been remediated.
- Provide the LEED Letter Template signed by civil or environmental engineer or responsible party, declaring the type of damage that existed on the site and describing the remediation performed.

Redevelopment of Contaminated Sites



TECHNOLOGIES AND STRATEGIES:

During site selection process, give preference to previously contaminated sites. Develop and implement a site remediation plan using strategies such as pump-and-treat, bioreactors, land farming, and in-situ remediation.



- LEED for Neighbourhood Development
- Certifies development projects based on smart growth, new urbanism, and green building principles.
- Projects can be whole, fractions of, or multiple neighbourhoods





- Currently a Pilot run by the USGBC with 238 projects (24 of these are in Canada)
- CaGBC Task Force is working simultaneously with US pilot to develop the system in Canada in 2010(?)

LEED-ND Credit Categories



- **Smart Location and Linkages**
 - Proximity to water/wastewater infrastructure, housing, jobs, and schools
 - Conservation of species, ecological communities, and wetlands
- **Neighbourhood Pattern & Design**
 - Compact, diverse, and affordable development
 - Walkability, public transit, public spaces
 - Local food production



LEED-ND Credit Categories

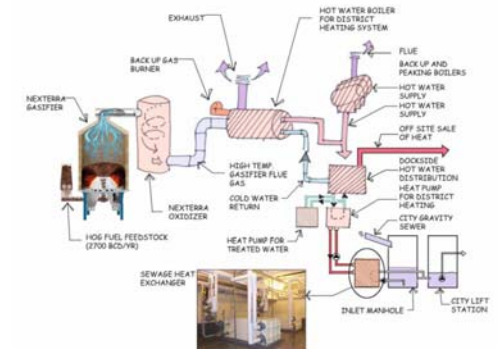


- **Green Construction & Technology**

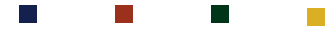
- LEED certified buildings
- Building and infrastructure energy efficiency
- Application of LEED-NC credits on a neighbourhood scale (i.e. heat island reduction, construction waste management, stormwater management)



- **Innovation and Design Process**



LEED-ND credits for brownfields



Credits that support brownfield development:

- Smart Location & Linkage
 - SSL prerequisite 5: Agricultural Land Conservation
 - SSL credit 1: Brownfields Redevelopment (2pts)
 - SSL credit 2: High Priority Brownfields Redevelopment
- Green Construction & Technology
 - GCT credit 8: Contaminant Reduction in Brownfields Remediation

Integrating Sustainability into Planning

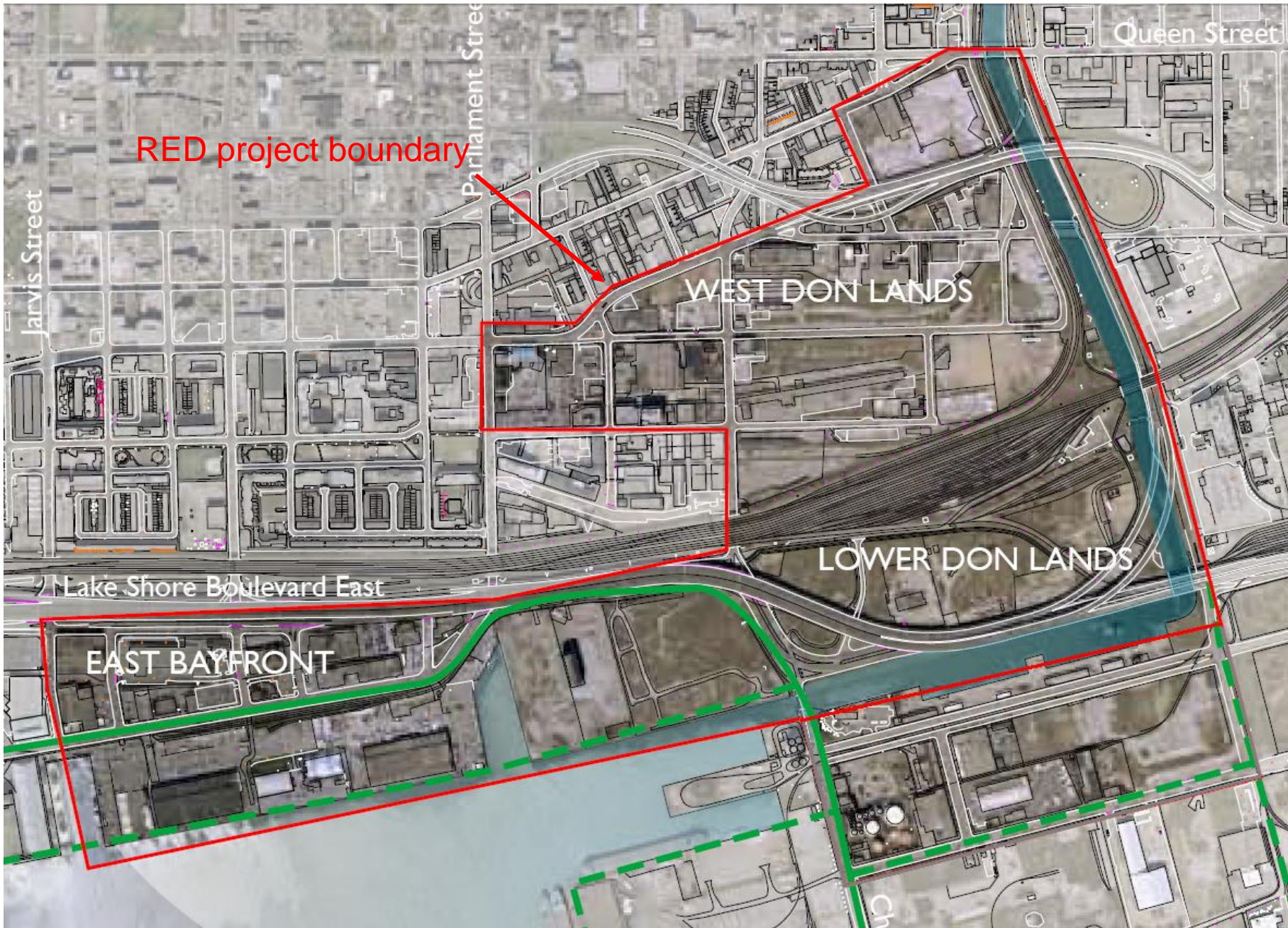


- Sustainability is not an overlay or add-on, it must be embedded in the planning process
- Sustainable communities cost more because they are paying the “true” cost of infrastructure – Accept this and find means to fund. Density can help.
- Integrated Design – including the Municipality, Utilities, and Public
- Need visionary developers and political leaders

Integrating Sustainability into Planning



- Regional governments need to study the full life cycle costs of investing in distributed, sustainable infrastructure vs. large centralized systems
- Politicians and bureaucrats – take some risk with codes on a pilot basis. We need leaders.
- Incremental changes on every planning project increases awareness and acceptance – push the Green agenda on all projects



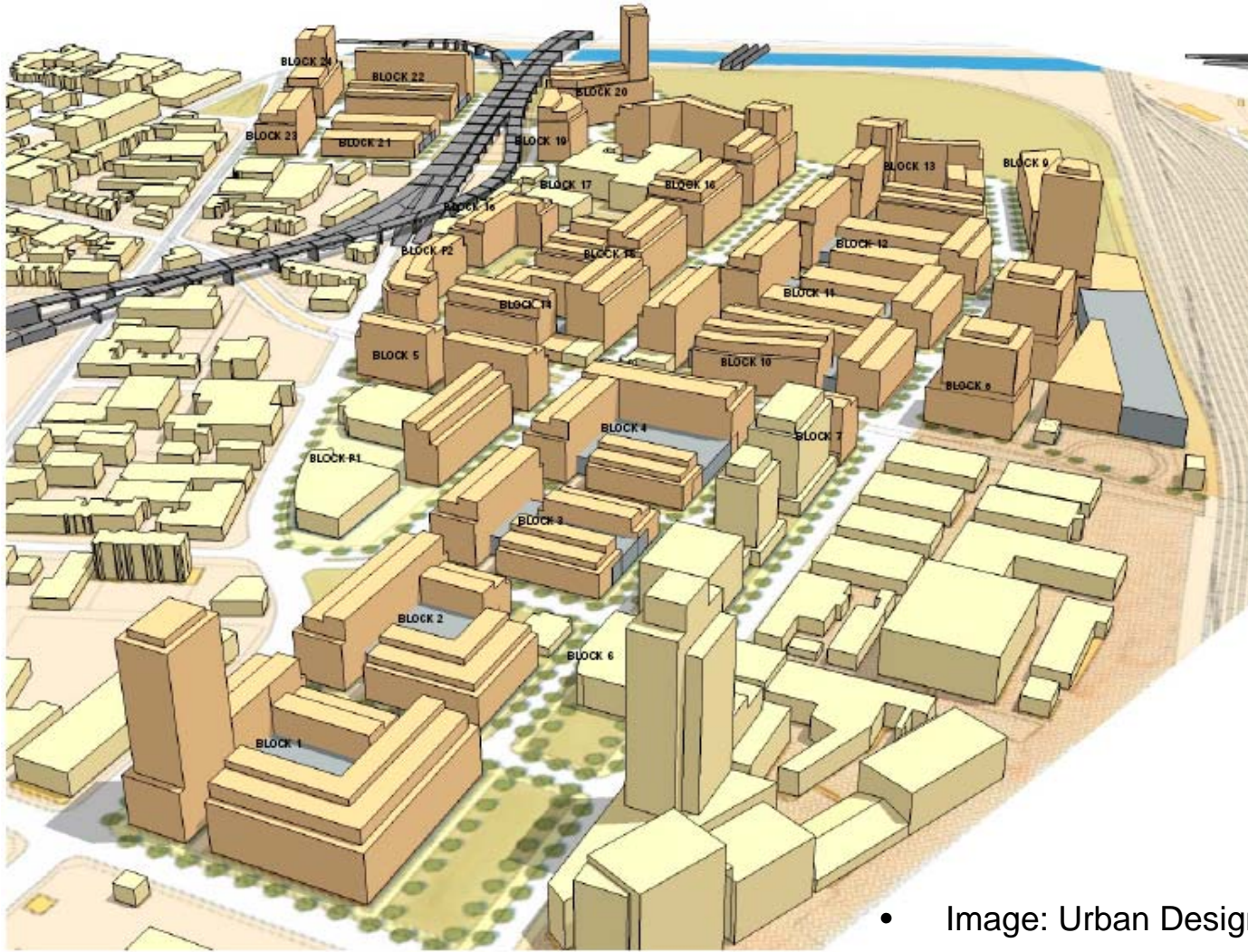
RED project boundary

WEST DON LANDS

LOWER DON LANDS

EAST BAYFRONT

West Don Lands



- This is Smart Growth in a GTA context
- ND is a natural fit, but not the driving force

- Image: Urban Design Associates

Summary

- Accelerating Change
- Identify Goals and Drivers
- Then select measurement framework
- Be Clear What You Value



Contact Information



Halsall Associates Limited

Regan Smith

416-644-2889

rsmith@halsall.com

www.halsall.com

