

## Cape on Bowen Sustainability Plan



This sustainability plan was prepared on the Cape on Bowen's behalf. The Cape on Bowen developers took a sustainable approach to the development and approvals for this spectacular piece of land. The plan documents the many measures already implemented, including a detailed environmental assessment which determined natural areas to be protected. As part of their ongoing commitment to sustainable development, this document offers some suggestions on how you can carry on their initiative.

Pottinger Gaherty Environmental Consultants Ltd. (PGL) assisted the Cape on Bowen in a review of the proposed development, using elements of LEED™ Canada for Homes, Built Green™ and Smart Growth principles as evaluation tools. This review is not intended to replicate these systems, but alternatively to articulate the sustainability goals the project has adopted, and the strategies available for achieving those goals under the categories listed below:

1. Energy
2. Environmental Protection
3. Water
4. Indoor Air Quality
5. Materials
6. Waste Management
7. Education

The available sustainability measures are divided into overall goals, specific strategies and timing as outlined in the following sections.

Many sustainability measures have already been implemented by the Cape on Bowen project during the rezoning, subdivision and other approval processes. These already implemented sustainability measures are outlined in Section 1: Sustainability Measures In Place.

Other sustainability measures will be of interest to home owners wishing to build a high performance and healthy “green” home. It will be the responsibility and opportunity of individual lot owners and their builders to carry this intention forward and implement strategies that best suit their personal goals. For owners wishing to follow a path towards a certified (LEED™ and Built Green™) sustainable home, advice is provided on the options available (Section 2: Optional Sustainability Measures)

Specific details on most of these measures can be obtained from your builder or contractor. Home owners can provide a copy of this document to their builder, and ensure that these measures can be implemented within their overall site and building plans. Most measures do not represent an additional cost to the home owner if they are considered early.

## SECTION 1: SUSTAINABILITY MEASURES IN PLACE

### 1. ENERGY

Energy Goals	Energy Strategies	Timing
Reduce air pollution and ozone depletion impacts of energy sources.	1.1 Air conditioning and refrigeration equipment should not contain HCFCs or Halon. All new air conditioning and refrigeration equipment does not contain HCFCs or halon.	Construction

### 2. ENVIRONMENTAL PROTECTION

Environmental Protection Goals	Environmental Protection Strategies	Timing
Maintain or augment existing biodiversity.	2.1 An environmental impact assessment was conducted by the Cape on Bowen project during the design phase of the development. The ecological integrity of Burke Creek, Huszar Creek, the coastal zone and their associated riparian areas has been protected. In addition to watercourse and marine habitat buffers, environmentally sensitive areas containing valuable wildlife habitat and unique plant species have been identified and protected (see attached map in Appendix 1).	Design
	2.2 Over 80% of the 600-acre site will remain as natural greenspace.	Design
	2.3 Home owners can support this work by knowing where the environmentally sensitive areas lie, and respecting them during design, construction and occupancy.	Design

Environmental Protection Goals	Environmental Protection Strategies	Timing
Minimize impacts to environment during construction and occupancy.	2.4 A construction environmental management plan (CEMP) was developed to mitigate environmental impacts during construction. The CEMP includes implementation of erosion and sediment control measures (silt fencing, cover stockpiles, etc.), wildlife and vegetation management measures (no tree removal during bird nesting season, flagging off sensitive habitat as no disturbance zones, etc.) and environmental monitoring. The independent third party Environmental Monitor ensures that the CEMP is followed.	Construction
	2.5 Home owners should ensure that their builder implements the CEMP as designed, to minimize construction impacts.	Construction
	2.6 Light pollution will be minimized based on the 'Fatal Light Awareness Program' (FLAP), by implementing educational strategies that carry the message about reducing bird collisions. A Home Owner's Environmental Care Manual has been developed and includes instructions for home owners to reduce risk of bird collisions. The Home Owner's Environmental Care Manual will be distributed to all home owners.	Occupancy
	2.7 Home owners should review the Home Owner's Environmental Care Manual and implement the recommended measures as much as possible.	Occupancy

### 3. WATER

Water Goals	Water Strategies	Timing
Preserve onsite watercourses and nearby coastal zone.	3.1 Burke and Huszar Creeks are not fish-bearing streams but they do provide food and nutrients for other aquatic life and wildlife habitat. A 15m buffer was established from the high water mark of both creeks to protect riparian vegetation, water quality and slope stability (see attached map in Appendix 1). The intertidal zone and marine foreshore riparian areas provide habitat for many marine and terrestrial wildlife species, and a 30m buffer has been established from the marine high water mark to protect this coastal zone.	Design
Reduce the need for treatment of stormwater.	3.2 Site perviousness maximized at over 80%, allowing for natural water filtration.	Design
	3.3 Ensure that the builder implements the CEMP and its associated erosion and sediment control measures (silt fencing, cover stockpiles, etc.), to assist in maintaining water quality during construction.	Construction

#### 4. INDOOR AIR QUALITY

Indoor Air Quality Goals	Indoor Air Quality Strategies	Timing
N/A. Refer to Section 2 for optional indoor air quality sustainability measures that can be implemented.		

#### 5. MATERIALS

Materials Goals	Materials Strategies	Timing
Minimize consumption and depletion of material resources.	5.1 Locally manufactured materials should be sourced wherever possible.	Construction

#### 6. WASTE MANAGEMENT

Waste Management Goals	Waste Management Strategies	Timing
Minimize waste generated from construction.	6.1 Any hazardous wastes generated or brought onsite will be disposed of at the appropriate facilities.	Construction
Encourage better management of waste and minimize waste generated during occupancy.	6.2 Information regarding recycling tips and local contacts is provided in the Home Owner's Environmental Care Manual.	Occupancy

#### 7. EDUCATION

Education Goals	Education Strategies	Timing
Provide and promote good household practices to achieve sustainability and environmental protection goals.	7.1 Home Owner's Environmental Care Manual has been developed and will be distributed to all home owners. The manual outlines a number of sustainability and environmental initiatives that should be undertaken to mitigate impacts.	Occupancy

## SECTION 2: OPTIONAL SUSTAINABILITY MEASURES

### 1. ENERGY

Energy Goals	Energy Strategies	Timing
Reduce total energy consumption of project.	1.1 Lighting fixtures should to be energy efficient. Most fixtures should be ENERGY STAR rated and contain compact fluorescent and halogen bulbs. Compact fluorescent and LED lamps use 50% less energy than standard lamps and last up to ten times longer. Halogen bulbs are slightly more energy efficient, last longer and provide a more effective task light than conventional bulbs.	Occupancy
	1.2 Most appliances including refrigerator, ceiling fans, dishwasher and clothes washer should be ENERGY STAR rated. ENERGY STAR labelled appliances meet strict requirements to reduce energy consumption.	Occupancy
	1.3 Windows in home should be ENERGY STAR rated. ENERGY STAR labelled windows save energy by insulating better than standard windows, making the home more comfortable all year round, reducing outside noise and can result in less condensation forming on the window in cold weather.	Construction
	1.4 Insulation should meet R-value requirements of International Energy Conservation Codes (IECC). This will reduce energy consumption.	Construction
	1.5 Use geothermal system and solar panels to optimize energy performance.	Construction

### 2. ENVIRONMENTAL PROTECTION

Environmental Protection Goals	Environmental Protection Strategies	Timing
Minimize impacts to environment during construction and occupancy.	2.1 Options to minimize negative impacts of lit buildings and grounds at night will be implemented, such as: adopting lower intensity lighting, reducing perimeter lighting, using blinds and curtains, and installing motion-sensitive lighting.	Construction
	2.2 Landscaping should consist primarily of native plants, with no invasive plants and the amount of conventional lawns should be minimized. Native plants are lower maintenance, and better suited to meet the needs of local wildlife, birds and beneficial insects. A Home Owner's Environmental Care Manual has been developed and includes tips on landscaping.	Construction

Environmental Protection Goals	Environmental Protection Strategies	Timing
	2.3 Pesticides are not to be used. They are known to be poisonous to birds and other wildlife, and indirectly to humans as well. A Home Owner's Environmental Care Manual has been developed and includes tips for a healthy yard.	Occupancy
Reduce Local Heat Island Effects	2.4 Keep existing trees that provide shade to driveways and patios etc. Install light-colored, high-albedo (reflective) materials (white concrete, grey concrete etc.) or vegetation for areas adjacent to house (driveways, patios etc.)	Occupancy

### 3. WATER

Water Goals	Water Strategies	Timing
Conserve and/or reuse potable water.	3.1 New BC water efficiency standards for toilets should be followed with the maximum water usage of 6L/flush.	Construction
	3.2 Install high-efficiency water fixtures and equipment: faucets, showers, dishwashers, and washing machines.	Construction
	3.3 Native drought-resistant species should be used for landscaping. These species will require less irrigation.	Construction
	3.4 Install a rainwater harvesting system. Design and install a roof rainwater harvesting and storage system for landscaping irrigation use or indoor water use.	Construction

### 4. INDOOR AIR QUALITY

Indoor Air Quality Goals	Indoor Air Quality Strategies	Timing
Minimize production and transmission of air pollution.	4.1 Low VOC (volatile organic compounds), products will be used for paints and coatings where possible. VOC content of less than 200g/L.	Construction
	4.2 Low VOC adhesives and sealants will be used where possible. VOC content of less than 150g/L.	Construction
	4.3 If carpet is being installed low VOC carpet will be used where possible. Carpet and Rug institute (CRI) labels should be on all carpet and underlay installed in home.	Construction
	4.4 Low VOC composite wood products will be used where possible.	Construction
	4.5 Tightly seal shared surfaces between garage and conditioned paces. Strategies could include weather-strip door, seal all penetrations and install carbon monoxide detectors in adjacent rooms that share a door with the garage.	Construction
	4.6 These indoor environmental quality strategies above all contribute to a healthier home as well.	Construction

## 5. MATERIALS

Materials Goals	Materials Strategies	Timing
Minimize consumption and depletion of material resources.	5.1 Locally manufactured materials should be sourced wherever possible.	Construction
	5.2 Do not purchase products containing tropical wood unless it is FSC-certified. Use regional produced FSC-certified or reclaimed wood.	Construction
	5.3 Conduct efficient framing so that less than 10% of framing material is wasted.	Construction
Minimize the life-cycle impact of materials on the environment.	5.4 Waste management will focus on reuse and recycling and building materials and fit up will focus on quality, durable products.	Occupancy

## 6. WASTE MANAGEMENT

Waste Management Goals	Waste Management Strategies	Timing
Minimize waste generated from construction.	6.1 Construction waste will be recycled wherever possible. Develop and implement a waste management plan, quantifying material diversion goals. Recycle and/or salvage 50% (weight or volume) of construction, demolition and land clearing waste.	Construction

## CERTIFIED GREEN HOMES

There are several systems available to follow in the design and construction of a green home, should the home owner be interested in achieving certification as a green home. They include the Built Green™ system developed by the Built Green™ Society of Canada and LEED™ Canada for Homes developed by the Canadian Green Building Council (CAGBC). If most of the sustainability measures above are implemented, it is possible to build a certified green home. Certified green homes are usually based on a point system. For example, to achieve a LEED™ certified home a certain amount of points need to be achieved:

LEED™ Canada for Homes Certification Levels	Number of LEED™ Canada for Homes Points Required
Certified	45–59
Silver	60–74
Gold	75–89
Platinum	90–136

If the sustainability measures outlined above (Sections 1 and 2) were to be implemented, it would be possible to achieve over 100 LEED™ points:

Category	Potential LEED™ Points
Energy	55
Environmental Protection	7
Water	7
Indoor Air Quality	13
Materials	8
Waste Management	11
Education	2
<b>Total</b>	<b>103</b>

An overview of each system is included for information (see attached Appendix 2). More detail can be found on their respective websites (<http://www.builtgreencanada.ca/> and <http://www.cagbc.org/leed/what/index.php> or through a sustainability consultant (Pottinger Gaherty Environmental Consultants Ltd., etc). A summary of the LEED™ process includes four main steps:

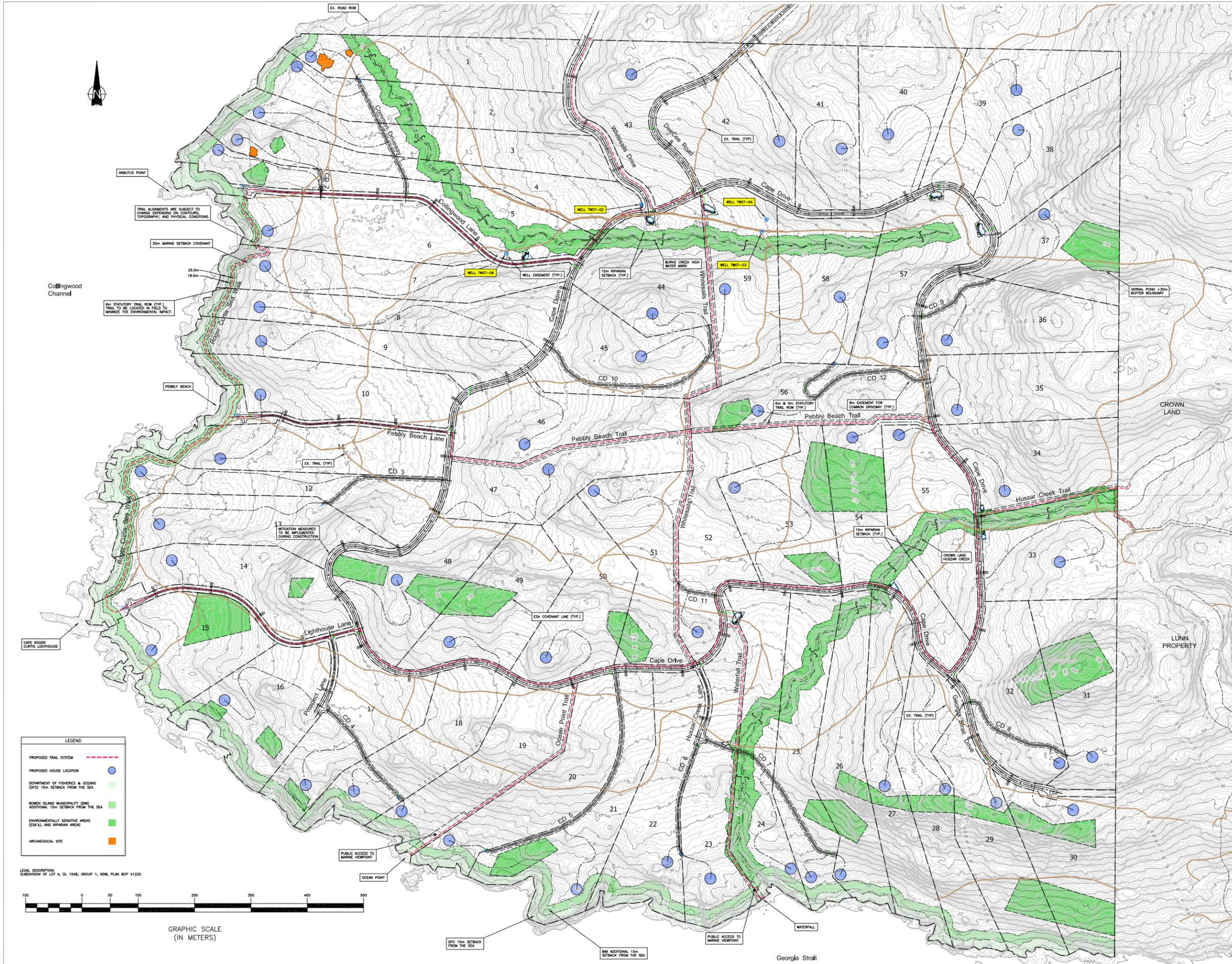
- If you intend to go for LEED™ certification, it is very important that you discuss options with a builder, architect or sustainability consultant during the design phase of your home. Your home can then be registered with the CAGBC in the LEED™ Canada for Homes program;
- Your architect, builder or sustainability consultant will articulate sustainability goals of the project and determine the specific strategies required to meet them. This step will also involve completion of a preliminary project LEED™ Canada for Homes checklist;
- Construction of the home can commence. A representative from CAGBC called a Green Rater will conduct onsite performance tests and visual inspection; and
- Once the home is built, it can be certified with CAGBC. This will involve final onsite inspections by the Green Rater. Also, a finalized LEED™ Canada for Homes checklist will be submitted to CAGBC.

The Built Green™ system follows a similar process to LEED™ but is administered by the Built Green™ Society of Canada.

Together, home owners and the Cape on Bowen Group can make a significant contribution to the goal of building green and healthy homes.

**Appendix 1**

**Map of Environmentally Sensitive Areas**



1	MAY/JUL	REVISED AS PER EASONS COMMENTS	ACF	DATE	BY	CHKD	DATE
2							

THE CAPE ON BOWEN COMMUNITY DEVELOPMENT LTD.  
 PROJECT  
 PROPOSED 59 LOT SUBDIVISION  
 CAPE ROGER CURTIS, BRITISH COLUMBIA



COMPOSITE PLAN  
 WITH HOUSE LOCATIONS, EASEMENTS  
 COVENANTS, & STATUTORY R's.O.W.

scale	1:2000	w/c
sheet no.	3266	
drawing no.	CP-1	1

**Appendix 2**

**LEED™ Canada for Homes and Built Green™ Checklists**



# LEED Canada for Homes Simplified Project Checklist

Builder Name:
Project Team Leader (if different):
Home Address (Street/City/Province):

**Project Description:**

Building type:  
# of bedrooms: 0

Project type:  
Floor area (sq ft): 0

**Adjusted Certification Thresholds**

Certified: 45.0      Gold: 75.0  
Silver: 60.0      Platinum: 90.0

<b>Project Point Total</b> Prelim: 0 + 0 maybe pts	<b>Final: 0</b>	<b>Final Credit Category Total Points</b>			
		ID: 0	SS: 0	EA: 0	EQ: 0
<b>Certification Level</b> Prelim: Not Certified	<b>Final: Not Certified</b>	LL: 0	WE: 0	MR: 0	AE: 0
<i>Min. Point Thresholds Not Met for Prelim. OR Final Rating</i>					

date last updated :  
last updated by :

				Max Points	Project Points		
					Preliminary	Final	Final
					Y/Pts	Maybe	No
<b>Innovation and Design Process (ID)</b> (No Minimum Points Required) OR							
1. Integrated Project Planning	1.1	Preliminary Rating		Prereq			
	1.2	Integrated Project Team		1	0	0	0
	1.3	Professional Credentialed with Respect to LEED Canada for Homes		1	0	0	0
	1.4	Design Charrette		1	0	0	0
	1.5	Building Orientation for Solar Design		1	0	0	0
2. Durability Management Process	2.1	Durability Planning		Prereq			
	2.2	Durability Management		Prereq			
	2.3	Third-Party Durability Management Verification		3	0	0	0
3. Innovative or Regional Design	3.1	Innovation #1 _____		1	0	0	0
	3.2	Innovation #2 _____		1	0	0	0
	3.3	Innovation #3 _____		1	0	0	0
	3.4	Innovation #4 _____		1	0	0	0
<i>Sub-Total for ID Category:</i>				<b>11</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Location and Linkages (LL)</b> (No Minimum Points Required) OR							
1. LEED ND	1	LEED for Neighbourhood Development	LL2-6	10	0	0	0
2. Site Selection	2	Site Selection		2	0	0	0
3. Preferred Locations	3.1	Edge Development	LL 3.2	1	0	0	0
	3.2	Infill		2	0	0	0
	3.3	Previously Developed		1	0	0	0
4. Infrastructure	4	Existing Infrastructure		1	0	0	0
5. Community Resources/ Transit	5.1	Basic Community Resources / Transit	LL 5.2, 5.3	1	0	0	0
	5.2	Extensive Community Resources / Transit	LL 5.3	2	0	0	0
	5.3	Outstanding Community Resources / Transit		3	0	0	0
6. Access to Open Space	6	Access to Open Space		1	0	0	0
<i>Sub-Total for LL Category:</i>				<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Sustainable Sites (SS)</b> (Minimum of 5 SS Points Required) OR							
1. Site Stewardship	1.1	Erosion Controls During Construction		Prereq			
	1.2	Minimize Disturbed Area of Site		1	0	0	0
2. Landscaping	2.1	No Invasive Plants		Prereq			
	2.2	Basic Landscape Design	SS 2.5	2	0	0	0
	2.3	Limit Conventional Turf	SS 2.5	3	0	0	0
	2.4	Drought Tolerant Plants	SS 2.5	2	0	0	0
	2.5	Reduce Overall Irrigation Demand by at Least 20%		6	0	0	0
3. Local Heat Island Effects	3	Reduce Local Heat Island Effects		1	0	0	0
4. Surface Water Management	4.1	Permeable Lot		4	0	0	0
	4.2	Permanent Erosion Controls		1	0	0	0
	4.3	Management of Runoff from Roof		2	0	0	0
5. Nontoxic Pest Control	5	Pest Control Alternatives		2	0	0	0
6. Compact Development	6.1	Moderate Density	SS 6.2, 6.3	2	0	0	0
	6.2	High Density	SS 6.3	3	0	0	0
	6.3	Very High Density		4	0	0	0
<i>Sub-Total for SS Category:</i>				<b>22</b>	<b>0</b>	<b>0</b>	<b>0</b>

## LEED Canada for Homes Simplified Project Checklist (continued)

			OR	Max	Project Points					
Water Efficiency (WE)			(Minimum of 3 WE Points Required)		Max	Y/Pts	Maybe	No	Y/Pts	
1. Water Reuse	1.1	Rainwater Harvesting System	WE 1.3	4	0	0		0		
	1.2	Graywater Reuse System	WE 1.3	4	0	0		0		
	1.3	Use of Municipal Recycled Water System		3	0	0		0		
2. Irrigation System	2.1	High Efficiency Irrigation System	WE 2.3, 2.4	3	0	0		0		
	2.2	Third Party Inspection	WE 2.3, 2.4	1	0	0		0		
	2.3	Reduce Overall Irrigation Demand by at Least 45%	WE 2.4	4	0	0		0		
	2.4	Non-Potable Water Irrigation System		4	0	0		0		
3. Indoor Water Use	3.1	Fixture Efficiencies		Prereq						
	3.2	High-Efficiency Fixtures and Fittings		3	0	0		0		
	3.3	Very High Efficiency Fixtures and Fittings		6	0	0		0		
<i>Sub-Total for WE Category:</i>				<b>15</b>	<b>0</b>	<b>0</b>		<b>0</b>		
Energy and Atmosphere (EA)			(Minimum of 0 EA Points Required)		OR	Max	Y/Pts	Maybe	No	Y/Pts
1. Optimize Energy Performance	1.1	Minimum Energy Performance		Prereq						
	1.2	Exceptional Energy Performance		34	0	0		0		
2. Insulation	2.1	Basic Insulation		Prereq						
	2.2	Enhanced Insulation		2	0	0		0		
3. Air Infiltration	3.1	Reduced Envelope Leakage		Prereq						
	3.2	Greatly Reduced Envelope Leakage		2	0	0		0		
	3.3	Minimal Envelope Leakage	EA 3.2	3	0	0		0		
4. Windows	4.1	Good Windows		Prereq						
	4.2	Enhanced Windows		2	0	0		0		
	4.3	Exceptional Windows	EA 4.2	3	0	0		0		
5. Heating and Cooling Distribution System	5.1	Reduced Distribution Losses		Prereq						
	5.2	Greatly Reduced Distribution Losses		2	0	0		0		
	5.3	Minimal Distribution Losses	EA 5.2	3	0	0		0		
6. Space Heating and Cooling Equipment	6.1	Good HVAC Design and Installation		Prereq						
	6.2	High-Efficiency HVAC		2	0	0		0		
	6.3	Very High Efficiency HVAC	EA 6.2	4	0	0		0		
7. Water Heating	7.1	Efficient Hot Water Distribution		2	0	0		0		
	7.2	Pipe Insulation		1	0	0		0		
	7.3	Efficient Domestic Hot Water Equipment		3	0	0		0		
8. Lighting	8.1	ENERGY STAR Lights		Prereq						
	8.2	Improved Lighting		1.5	0	0		0		
	8.3	Advanced Lighting Package	EA 8.2	3	0	0		0		
9. Appliances	9.1	High-Efficiency Appliances		2	0	0		0		
	9.2	Water-Efficient Clothes Washer		1	0	0		0		
10. Renewable Energy	10	Renewable Energy System		10	0	0		0		
11. Residential Refrigerant Management	11.1	Refrigerant Charge Test		Prereq						
	11.2	Appropriate HVAC Refrigerants		1	0	0		0		
<i>Sub-Total for EA Category:</i>				<b>38</b>	<b>0</b>	<b>0</b>		<b>0</b>		
Materials and Resources (MR)			(Minimum of 2 MR Points Required)		OR	Max	Y/Pts	Maybe	No	Y/Pts
1. Material-Efficient Framing	1.1	Framing Order Waste Factor Limit		Prereq						
	1.2	Detailed Framing Documents	MR 1.5	1	0	0		0		
	1.3	Detailed Cut List and Lumber Order	MR 1.5	1	0	0		0		
	1.4	Framing Efficiencies	MR 1.5	3	0	0		0		
	1.5	Off-site Fabrication		4	0	0		0		
2. Environmentally Preferable Products	2.1	FSC Certified Tropical Wood		Prereq						
	2.2	Environmentally Preferable Products		8	0	0		0		
3. Waste Management	3.1	Construction Waste Management Planning		Prereq						
	3.2	Construction Waste Reduction		3	0	0		0		
<i>Sub-Total for MR Category:</i>				<b>16</b>	<b>0</b>	<b>0</b>		<b>0</b>		
Indoor Environmental Quality (EQ)			(Minimum of 6 EQ Points Required)		OR	Max	Y/Pts	Maybe	No	Y/Pts
1. ENERGY STAR with IAP	1	ENERGY STAR with Indoor Air Package		13	0	0		0		
2. Combustion Venting	2.1	Basic Combustion Venting Measures	EQ 1	Prereq						
	2.2	Enhanced Combustion Venting Measures	EQ 1	2	0	0		0		
3. Moisture Control	3	Moisture Load Control	EQ 1	1	0	0		0		
4. Outdoor Air Ventilation	4.1	Basic Outdoor Air Ventilation	EQ 1	Prereq						
	4.2	Enhanced Outdoor Air Ventilation		2	0	0		0		
	4.3	Third-Party Performance Testing	EQ 1	1	0	0		0		
5. Local Exhaust	5.1	Basic Local Exhaust	EQ 1	Prereq						
	5.2	Enhanced Local Exhaust		1	0	0		0		
	5.3	Third-Party Performance Testing		1	0	0		0		
6. Distribution of Space Heating and Cooling	6.1	Room-by-Room Load Calculations	EQ 1	Prereq						
	6.2	Return Air Flow / Room by Room Controls	EQ 1	1	0	0		0		
	6.3	Third-Party Performance Test / Multiple Zones	EQ 1	2	0	0		0		
7. Air Filtering	7.1	Good Filters	EQ 1	Prereq						
	7.2	Better Filters	EQ 7.3	1	0	0		0		
	7.3	Best Filters		2	0	0		0		

8. Contaminant Control	<input checked="" type="checkbox"/>	8.1	Indoor Contaminant Control during Construction	EQ 1	1	0	0	0	
		8.2	Indoor Contaminant Control		2	0	0	0	
	<input checked="" type="checkbox"/>	8.3	Preoccupancy Flush	EQ 1	1	0	0	0	
9. Radon Protection	<input checked="" type="checkbox"/>	9.1	Radon-Resistant Construction: Passive Ventilation	EQ 1	Prereq				
	<input checked="" type="checkbox"/>	9.2	Radon-Resistant Construction	EQ 1	1	0	0	0	
10. Garage Pollutant Protection		10.1	No HVAC in Garage	EQ 1	Prereq				
		10.2	Minimize Pollutants from Garage	EQ 1, 10.4	2	0	0	0	
		10.3	Exhaust Fan in Garage	EQ 1, 10.4	1	0	0	0	
		10.4	Detached Garage or No Garage	EQ 1	3	0	0	0	
<i>Sub-Total for EQ Category:</i>					<b>21</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Awareness and Education (AE)</b> (Minimum of 0 AE Points Required)					Max	Y/Pts	Maybe	No	Y/Pts
1. Education of the Homeowner or Tenant	<input checked="" type="checkbox"/>	1.1	Basic Operations Training		Prereq				
	<input checked="" type="checkbox"/>	1.2	Enhanced Training		1	0	0	0	
		1.3	Public Awareness		1	0	0	0	
2. Education of Building Manager	<input checked="" type="checkbox"/>	2	Education of Building Manager		1	0	0	0	
<i>Sub-Total for AE Category:</i>					<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	



# BUILT GREEN™ CHECKLIST 2010

Effective April 1, 2010

To select points, click on boxes and select point value from drop-down list

Builder: House Address:

**Section 1: 0 Does not meet minimum Built Green™ criteria Section 2: 0 Does not meet minimum Built Green™ criteria Section 3: 0 Does not meet minimum Built Green™ criteria Section 4: 0 Does not meet minimum Built Green™ criteria Section 5: 0 Does not meet minimum Built Green™ criteria Section 6: 0 Does not meet minimum Built Green™ criteria Section 7: 0 Does not meet minimum Built Green™ criteria Section 8: 0 Does not meet minimum Built Green™ criteria = TOTAL POINTS: 0**

## I. OPERATIONAL SYSTEMS

This section awards points for construction methods and types of products that contribute toward lower energy consumption, as well as alternative heating and electrical systems.

**Minimum 10 Points Required**

- |     |   |                      |           |
|-----|---|----------------------|-----------|
| 1-1 | Install a zoned heating system. Either, from a single HVAC source utilizing two or more, programable, thermostatically controlled zones or zoning separate systems through separate programable thermostats. (2 Zones = 2 points, 3 = points, 4 = points)   | <input type="text"/> | 2, 3 or 4 |
|     | Efficiency can be significantly improved by only heating or cooling when occupants are present and by only heating/cooling to the exact desired temperature. Different desired temperatures can be set in each room or space and an individual zone can be turned off when not occupied. This type of system results in a dramatic reduction of energy consumption and operating costs.   |                      |           |
| 1-2 | Install high efficiency, sealed combustion heating appliance, with a minimum 94% AFUE (2 points) or 95% AFUE and above (3 points)   | <input type="text"/> | 2 or 3    |
|     | (Not for electric heat.) High efficiency furnaces or boilers, such as condensing systems, reduce energy consumption and consequently fossil fuel reliance. Because AFUE takes into account efficiency losses during start-up and cool down it's rating is slightly lower.   |                      |           |
| 1-3 | Install ground or water source heat pumps (10 points) or air source heat pumps (6 points) for heating and cooling.  | <input type="text"/> | 6 to 10   |
|     | Heat pumps can significantly reduce primary energy use for building heating and cooling. The renewable component displaces the need for primary fuels, which, when burned, produce greenhouse gases and contribute to global warming. Please Note: Cool climate heat pump systems are often more efficient due to the costs of electricity. However, cold climate heat pump systems are often not as efficient as typical boiler/furnace natural gas systems.   |                      |           |
| 1-4 | Programmable thermostat with dual set back & continuous fan setting.  | <input type="text"/> | 2         |
|     | A set back thermostat regulates the heating/cooling system to provide optimum comfort when the house is occupied and to conserve energy when it is not.   |                      |           |
| 1-5 | Install HVAC appliance with variable speed fan (ECM).   | <input type="text"/> | 3         |
|     | A variable speed fan motor (ECM or DC powered) is designed to vary its speed based on the homes heating and air conditioning requirements. Working in conjunction with the thermostat, it keeps the appropriate air temperature circulating through the home, reducing temperature variances in the home. It also provides greater air circulation and filtration, better temperature distribution, humidity control, higher efficiency and quiet performance.  |                      |           |
| 1-6 | Install sealed combustion 2 pipe tank system (2 points), or condensing DHW tank system (3 points)   | <input type="text"/> | 2 or 3    |
|     | Hot water heater is direct vented with a closed combustion system. All air for combustion is taken directly from the outside. A direct system utilizes a co-axial vent pipe (pipe inside a pipe) draws combustion air in through the outer pipe, and exhausts the products of combustion through the inner pipe. A power vented heater exhausts air out of the building via a positive exhaust during main burner operation. Both systems eliminate the need for conventional chimneys or flue systems. |                      |           |
| 1-7 | Install instantaneous "tankless" hot water heater.  | <input type="text"/> | 4         |
|     | A tankless water heater does not have a storage tank to keep heated all day, or a pilot light; it burns gas only when you need hot water. This eliminates standby heat loss and its higher efficiency will save on utility costs.   |                      |           |
| 1-8 | Install high efficiency (AFUE 90 or better) boiler domestic hot water system.   | <input type="text"/> | 4         |
| 1-9 | Install Ground Source Heat Pump DHW heating system to supply a minimum of 25% of the peak DHW heating load and 70% of the total DHW energy load.  | <input type="text"/> | 4         |
|     | A Ground Source Heat Pump system uses the earths constant temperature to heat water for the home.   |                      |           |

1-10	<b>Install drain water heat recovery units on the main drainage stack. 3 foot stack (1 point), 6 foot stack (2 points)</b> Drain water heat recovery units transfer the heat from waste water to incoming water. This reduces the amount of energy needed for the DHW system.		1 or 2
1-11	<b>Sealed combustion fireplace with electronic ignition if gas fueled.</b> Sealed combustion fireplaces involve a double-walled special vent supplied by the manufacturer that normally vents through a sidewall in a horizontal position. The unit must be Sealed Combustion, meaning that combustion gasses can not enter the home even if the home becomes depressurized.		2
1-12	<b>Install an EPA or CSA certified high-efficiency wood stove or pellet stove with a minimum efficiency of 72% (1 point) or 85% (2 points).</b> State-of-the-art wood and pellet stoves are among the cleanest burning heating appliances and deliver a high overall efficiency. EPA and CSA certified stoves ensure reduced emissions.		1 or 2
1-13	<b>Install fireplace fan kit to circulate warm air into room (1 point per fan, maximum 2 points).</b> A fan kit allows the heat generated by a fireplace to be transferred into the home more effectively.		1 or 2
1-14	<b>All windows in home are ENERGY STAR labeled or equivalent for the climatic zone of home.</b> ENERGY STAR labeled windows save energy by insulating better than standard windows, making the home more comfortable all year round, reducing outside noise and can result in less condensation forming on the window in cold weather.		2
1-15	<b>Electric range is self cleaning and/or Convection based</b> Ranges that self clean or have convection are better insulated and sealed, performing at or less than 500 kwh (520 kwh for convection when rated by EnerGuide.		1
1-16	<b>Refrigerator is an ENERGY STAR labeled product.</b> An ENERGY STAR label for refrigerator indicates the product has met strict requirements to reduce energy consumption.		2
1-17	<b>Dishwasher is an ENERGY STAR labeled product.</b> An ENERGY STAR label for a dishwasher indicates the product has met strict requirements to reduce energy consumption.		1
1-18	<b>Clothes washer or combo washer dryer is an ENERGY STAR labeled product.</b> An ENERGY STAR label for a clothes washer indicates the product has met strict requirements to reduce energy consumption.		1
1-19	<b>Clothes dryer has an energy performance "auto sense" dry setting which utilizes a humidity sensor for energy efficiency.</b>		1
1-20	<b>Home is built "Solar Ready" following Canadian Solar Industries Association (CANSIA) guidelines.</b> Designing a home to be solar ready will make the addition of panels in the future much easier. Contact the Canadian Solar Industries Association for more info: <a href="http://www.cansia.ca">www.cansia.ca</a> .	 	2
1-21	<b>Install active solar hot water heating system. Sized for 30% of DHW load (4 points), 50% (6 points), 80% (8 Points)</b> System capacity must be verified by professional installer or engineer using modeling software such as RETScreen or better, data provided to Built Green Energy Advisor at time of modeling	 	4, 6,8

1-22	Install photovoltaic electrical generation system. Sized for 30% of electric load (4 points), 50% (6 points), 80% (8 points).  A photovoltaic system will greatly reduce the reliance on fossil fuel energy and reduce greenhouse gas emissions. System capacity must be verified by professional installer or engineer.		4, 6, 8
1-23	50% (2 points) or 100% (4 points) of electricity used during construction of home is generated by wind power or equivalent green power certificate.		2 or 4
1-24	50% (2 points) or 100% (4 points) of electricity used by homeowner during first year of occupancy is generated by wind power or equivalent green power certificate. (prepaid by builder)		2 or 4
1-25	A properly supported and wired ceiling fan and a wall mounted switch roughed in for future installation.  Intended to allow for future temperature equalization.		1
1-26	Install interior motion sensor light switches. 1 point per switch to a maximum of 3 points.  Motion sensor switches prevent lights from remaining on in rooms that are unoccupied. This helps reduce electricity consumption. Switches on closet doors and pantries are also acceptable.		1 to 3
1-27	Install central, computerized control systems capable of unified automation control of lighting loads.  Lighting and automation control systems prevent lights from remaining on in rooms without occupants, thereby reducing electricity consumption.		4
1-28	Minimum 25% (1 point), 50% (2 points), 75% (3 points) or 100% (4 points) of interior and exterior light fixtures are fluorescent, compact fluorescent light bulbs or LEDs.  Fluorescent, compact fluorescent and LED lamps use 50% less energy than standard lamps and last up to ten times longer.		1 to 4
1-29	Minimum 50% of recessed lights use halogen bulbs.  Halogen bulbs are slightly more energy efficient, last longer and provide a more effective task light than conventional bulbs.		1
1-30	Air tight, insulation contact-rated recessed lights are used in all insulated ceilings, or insulated ceilings have no recessed lights.  Prevents heated air from exhausting through ceiling. Air tight light fixtures lead to a more airtight, energy efficient home.		1
<b>TOTAL SECTION POINTS</b>			

## II. BUILDING MATERIALS

This section deals with building components that make up the structure of the home. Items involve alternatives to using large dimensional lumber, products with a recycled component, utilizing wood products that come from sustainably managed forests and reducing the overall amount of lumber used. Many Building Material items also improve thermal performance and EnerGuide scores

### Minimum 15 Points Required

2-1	<p><b>Insulated Concrete Form (ICF) system used for foundation walls.</b></p> <p>Insulating Concrete Forms (ICF) are hollow building elements made of plastic foam that are assembled, often like building blocks, into the shape of a buildings exterior walls. The ICFs are filled with reinforced concrete to create structural walls. Unlike traditional forms, the ICFs are left in place to provide insulation and a surface for finishes.</p>		2
2-2	<p><b>Insulated Concrete Form (ICF) system used for 75% of above grade house walls.</b></p> <p>See description in 2.1. Use of modest a amount of stick framing is allowable, i.e. at bay windows, pony walls and walk out walls.</p>		3
2-3	<p><b>Non-solvent based damp proofing (seasonal application).</b></p> <p>Water based damp proofing products use water as a thinner. Oil based damp proofing gives off a number of volatile organic compounds (VOCs) as the solvent evaporates after application. These VOCs can be a strong irritant and can add to air pollution.</p>		1
2-4	<p><b>Exterior and interior wall stud spacing at 19.2" on-center (1 point) or 24" on-center (2 points) .</b></p> <p>Increasing stud spacing reduced the thermal performance of homes while saving materials.</p>		1 or 2
2-5	<p><b>Use of insulated headers / lintels (either manufactured or site built insulated headers) with minimum insulation value of R10.</b></p> <p>Headers can either be insulated on site or can be a pre-manufactured product (often insulated with a foamed plastic).</p>		1
2-6	<p><b>Install manufactured insulated rim/band joist, or build on-site built header wrap detail for continuous air barrier.</b></p> <p>Rim and band joists can either be insulated on site or can be pre-manufactured (often insulated with a foamed insulation).</p>		1
2-7	<p><b>Elimination of headers at non-bearing interior and exterior walls.</b></p> <p>It is not necessary to use the additional wood involved in header construction if the opening is less than 4' wide and is non-load bearing. For more details on Optimum Value Engineering framing principles see <a href="http://www.buildingscience.com">www.buildingscience.com</a>.</p>		1
2-8	<p><b>Use of header hangers instead of jack studs.</b></p> <p>Using metal header hangers instead of jack studs allows for savings in wood use. For more details on Optimum Value Engineering framing principles see <a href="http://www.buildingscience.com">www.buildingscience.com</a>.</p>		1
2-9	<p><b>Elimination of cripples on hung windows.</b></p> <p>For hung window openings, cripples are only necessary for siding or gypsum board attachment. For more details on Optimum Value Engineering framing principles see <a href="http://www.buildingscience.com">www.buildingscience.com</a>.</p>		1
2-10	<p><b>Elimination of double plates, using single plates with connectors by lining up roof framing with wall and floor framing.</b></p> <p>Stack framing principles will allow for reduced wood usage. For more details on Optimum Value Engineering framing principles see <a href="http://www.buildingscience.com">www.buildingscience.com</a>.</p>		1
2-11	<p><b>Use of two stud corner framing with drywall clips or scrap lumber for drywall backing instead of studs.</b></p> <p>Drywall clips can be used instead of a third corner stud allowing for reduced wood usage. For more details on Optimum Value Engineering framing principles see <a href="http://www.buildingscience.com">www.buildingscience.com</a>.</p>		1

2-12	Deck or veranda surfaces (1 point) and/or structure (1 point) made from a third-party certified sustainably harvested wood source.  Wood must come from a sustainably harvested source with certification from Forest Stewardship Council (FSC), Sustainable Forestry Initiative (SFI), or Canadian Standards Association's Sustainable Forest Management Standard (CAN/CSA-Z809-02).		1 or 2
2-13	Deck or veranda surfaces (1 point) and/or structure (1 point) made from a third-party certified sustainable concrete.  Concrete produced from aggregates derived from a pit or quarry with a valid reclamation plan approved by Materials and Resources Canada or the governing provincial body.		1 or 2
2-14	Structural insulated panel system used for at least 75% of roof/ceiling (4 points), 75% of walls (6 points), exposed floors (2 points) and/or Foundation (2 points).  Factory built Stressed-skin Insulating Panels (SIPS) can reduce thermal migration and control air leakage – keeps heating and cooling costs to a minimum and can use less framing material compared to a conventionally framed wall.		2 to 14
2-15	Dimensional lumber from a third-party certified sustainably harvested source used for floor framing. See 2-12		1
2-16	Dimensional lumber from a third-party certified sustainably harvested source used for wall framing. See 2-12		2
2-17	Dimensional lumber from a third-party certified sustainably harvested source used for roof framing. See 2-12		1
2-18	Use manufactured wood products for floor systems instead of dimensional lumber (1 point), from third party certified sustainably harvested sources (2 points). Engineered wood floor systems saves old growth forests by using components from second generation forests and the use of recycled materials. See 2-12		1 or 2
2-19	Reduce dimensional lumber use by using engineered product for all load bearing beams & columns (1 point), from third party certified sustainable sources (2 points). Engineered products include wood products, concrete and recycled steel.		1 or 2
2-20	Reduce dimensional lumber use by using engineered products for all exterior window and door headers. Engineered products include wood products, concrete and recycled steel.		1
2-21	Finger-jointed plate material and/or engineered plate material used for all framing plates. Use of recycled materials saves old growth forests.		1
2-22	Reduce dimensional lumber use by using engineered stud material for 10% of structural stud wall framing. Use of engineered lumber products saves old growth forests by using components from second generation forests and the use of recycled materials.		1
2-23	Finger-jointed studs for 90% of non-structural (1 point) and/or 90% of structural (1 point) wall framing. Use of recycled materials saves old growth forests.		1 or 2
2-24	Recycled and/or recovered content gypsum wallboard, minimum of 15% recycled content.		1
2-25	Recycled content exterior wall sheathing (minimum 50% pre- or post-consumer).		2
2-26	Use rain screen system separating cladding from the wall sheathing with a drainage plane (2 point), 60% or more recycled content (additional 1 point).  Use of recycled content polypropylene, steel or aluminum rain screen strapping may replace the traditional use of wood strapping on rain screen systems.		1 or 3
2-27	Advanced sealing package, non HCFC expanding foam around window and door openings and all exterior wall penetrations. Controls air leakage and keeps heating and cooling costs to a minimum.		2
2-28	All sill plates sealed with foam sill gaskets or a continuous sandwiched bead of acoustical sealant. Controls air leakage and keeps heating and cooling costs to a minimum.		1
2-29	All insulation used in home is certified by a third-party to contain a minimum recycled content: 40% (1 point) or 50% (2 points).		1 or 2
2-30	Install site applied spray foam to insulate entire rim joist area (1 point), Exposed floors (2 points) and/or house walls (4 points) and/or entire roof (3 points).  Spray insulations provide excellent air sealing and insulation value. Spray foam must be fire protected and some types cannot come in contact with heating ducts or lines. Some foams meet requirements for vapour barriers. Consult supplier or installer for further information.		1 to 10
2-31	Replace exterior wood sheathing with insulating sheathing and structurally required metal bracing. Using less materials when possible saves the forest reserves, reduces thermal migration and controls air leakage and keeps heating and cooling costs to a minimum compared to a conventional wall.		2
2-32	Install R5 (1 point), R8 (2 points) or R12 (3 points) above building code required under entire basement slab.  Insulation installed under the basement slab will reduce the downward heat transfer into the ground below the slab, especially when hydronic in-slab heating is installed. Insulation under the slab can reduce temperature swings in the heated space and respond quicker to new changes in thermostat settings.		1,2 or 3

- 2-33 Install additional rigid insulation on exterior of above grade walls, above code required framing cavity insulation. 1.5"  1 or 3  
 point) or 2" (3 points).  
 Exterior insulation can greatly reduce thermal bridging, improving thermal performance. Care must be taken to ensure the wall cavity remains permeable to the outside and foam must be fully protected from UV damage during and after construction. Refer to CHBA Builder Manual or Local Code Officials for additional information.
- 2-34 Install additional exterior insulations system on exterior of foundation, R Value of 7.5 (1 point), R10 (2 points), or R15 (3 points), above code required interior insulation level  1, 2 or 3  
 Insulation on the outside of a foundation system reduced energy loss
- 2-35 Overhead garage door is made of 75% or greater recycled material.  1
- 2-36 Attached garage overhead door is insulated with R8 to R12 (1 point) or greater than R12 (2 points).  1 or 2
- 2-37 Attached garage is fully insulated.  1  
 A fully insulated garage serves an additional insulating capacity for any walls encapsulated by it, further slowing heat loss through those walls.
- 2-38 Builder uses passive solar design shading devices for home. Permanent horizontal and/or vertical exterior shading devices for glazing (2 points), computer controlled devices (additional 1 point).  2 or 3  
 Excludes interior blinds.
- 2-39 Install 100% recycled content carpet underlayment.  1
- 2-40 Install finished concrete interior floors instead of other types of finished floors (tile, carpet, hardwood, etc). For 300-500 ft<sup>2</sup> (1 point), 501-1000 ft<sup>2</sup> (2 points), 1001-1500 ft<sup>2</sup> (3 points), 1501+ ft<sup>2</sup> (4 points).  1 to 4  
 Not applicable in unfinished basement areas. Using the concrete itself as a finished floor where concrete is being used regardless (for in floor heat or basement slabs) provides a durable floor with less material usage.
- 2-41 Install weather-stripped and insulated (R15 minimum) manufactured interior attic hatch (1 point), or no interior attic access (1 point)  1

**TOTAL SECTION POINTS**

 0

### III. EXTERIOR and INTERIOR FINISHES

This section focuses on the finish materials used both inside and outside of the home. The items listed include using longer lasting products, products with recycled content and products that are harvested from third-party certified sustainably managed forests.

#### Minimum 10 Points Required

3-1	Exterior doors with a minimum of 15% recycled and/or recovered content. Recycled or recovered content ensures we keep our landfill use to a minimum. Not including overhead garage doors (see 2-33).		1
3-2	Interior doors with a minimum of 15% recycled and/or recovered content.		1
3-3	Interior doors made from third-party certified sustainably harvested wood. Uses trees from forests managed sustainably, that prevent clear cutting and replant trees in areas from which they've been harvested.		2
3-4	All exterior doors manufactured from fiberglass. Fiberglass doors insulate better than steel skinned or wood doors, have a longer lifespan, do not warp, twist or crack, and therefore reduce landfill use.		1
3-5	Exterior window frames contain a minimum of 10% recycled content. Reusing materials such as plastics that may not be biodegradable reduces landfill usage.		1
3-6	Exterior window frames made from third-party certified sustainably harvested wood. Uses trees from forests managed sustainably, that prevent clear cutting and replant trees in areas from which they've been harvested.		2
3-7	Natural cementitious stone/stucco/brick or fiber cement siding – complete or combination thereof for 100% of exterior cladding. Strong, long lasting, fireproof material.		4
3-8	Recycled or reclaimed exterior cladding material. 1/3 of exterior (1 point), 2/3 or more of home (2 points). Use of reclaimed bricks, recycled content siding, etc. Intent is to replace siding materials, primarily exterior finish materials.		1 or 2
3-9	Fiber cement fascia and soffit. Fiber cement fascia and soffit, made with recycled content from sawmill waste and Portland cement, is a strong, long lasting and fireproof material.		2
3-10	Recycled and/or recovered-content fascia and soffit (minimum 50% pre- or post-consumer). Recycled and/or recovered-content fascia and soffit reduces the amount of new material used in production by gluing up mill scraps into large pieces, which conserves natural resources and reduces landfill usage.		1
3-11	Recycled and/or recovered-content siding (minimum 50% pre- or post-consumer). Recycled and/or recovered-content siding reduces the amount of new material used in production by gluing up mill scraps into large pieces, which conserves natural resources and reduces landfill usage.		4
3-12	Exterior trim materials are made from alternatives to solid lumber. Trim materials manufactured from OSB uses a laminating process to make larger pieces from smaller pieces or strands of wood. The process saves old growth forests by using trees from forests managed sustainably, that prevent clear cutting and replant trees in areas from which they've been harvested.		1
3-13	Exterior trim materials have recycled and/or recovered-content (minimum 50%). Recycled and/or recovered-content trim materials reduce the amount of new material used in production by gluing up mill scraps into large pieces, which conserves natural resources and reduces landfill usage.		3
3-14	All exterior trim is clad with pre-finished metal (1 point over wood backings, 2 points without wood backings). Trim clad with pre-finished metal is a durable long lasting product that requires no maintenance and reduces waste in landfills due to long life of product.		1 or 2
3-15	Deck or veranda surfaces made from low maintenance materials - deck surfaces do not need maintenance of any kind, including painting, for a minimum of 5 years. Materials that last longer reduce landfill usage and tend to require little to no maintenance, saving replacement costs and reducing energy use.		2
3-16	Minimum 25-year manufacturer warranty roofing material (2 points plus 1 point for each additional 5 years). A 25-year roof system saves homeowners money in replacement costs, and reduces the use of landfills due to the longevity of the product.		2 or more
3-17	Minimum 25% recycled-content roofing system (1 point underlay and 2 points roofing finish). Recycled content roofing material reduces the use of new resources and waste in landfills.		1 to 3
3-18	Domestic wood from reused/recovered or re-milled sources, 500 ft <sup>2</sup> minimum for flooring or all cabinets or all millwork. Reused, recovered or re-milled sources eliminate the need for new resources, saving energy, transportation costs, and forestry from depletion.		6
3-19	Natural or recycled-content carpet pad made from textile, carpet cushion or tire waste (rebond still qualifies). Natural or recycled-content carpet pad is a good use of reusable resources.		2

3-20	Install carpet that has a minimum of 50% recycled content. Recycled-content carpet is a good use of renewable resources, lessens off-gassing and improves air quality.		2
3-21	Install a minimum of 300 ft² of laminate flooring.		2
3-22	Bamboo, cork or hardwood flooring used in home, minimum of 300 ft² installed. Products must be third-party certified from sustainably managed forests or certified sustainable sources. Cork flooring comes from stripping the bark off cork oak, which regenerates itself. The cork tiles are moisture, rot and mould resistant, providing a floor that can last over 30 years. Bamboo flooring is a good use of natural resources because it is fast growing, durable and flexible. All hard floorings promote better indoor air quality by not trapping contaminants.		3
3-23	All ceramic tile installed in home has a minimum of 25% recycled-content. Reduces landfill usage.		2
3-24	MDF and/or finger jointed casing and baseboard used throughout home (1 point), and all jambs (1 point) Medium Density Fiberboard (MDF) casing is created from sawdust and glues, utilizing all wood waste to create usable product.		1 to 2
3-25	Solid hardwood trim from third-party certified sustainably harvested sources approved for millwork and/or cabinets (2 points per application – maximum of 4 points). This process saves old growth forests by using trees from forests managed sustainably, that prevent clear cutting and replant trees in areas from which they've been harvested.		2 or 4
3-26	Paints or finishes with minimum of 20% recycled content. Paints or finishes made from recycled content are environmentally friendly because recycling paint reduces the hazardous waste in landfills.		1
3-27	Local natural stone or recycled content (30% of content) solid countertops for all kitchen counters (2 points), all other counter tops (1 point). Solid counter top product is more durable, easy to clean and maintain, resistant to heat and scoring. By quarrying and sourcing in Canada, the environmental cost of shipping is greatly reduced. Foreign stone cut or polished in Canada is not acceptable, quarry must be located within 800km of project, see item 8-1 for additional point.		1 or 2
3-28	100% agricultural waste or 100% recycled wood particle board used for shelving. Products such as wheat board are made from agricultural waste.		2
3-29	PVD finish on all door hardware. Physical Vapour Disposition provides a more durable product. No toxic wastes are produced making it.		1
3-30	PVD finish on all faucets. Physical Vapour Disposition provides a more durable product. No toxic wastes are produced making it.		1
3-31	Install only Type 1 or 2 grade door hardware with lifetime mechanical and coating warranty. High quality, durable Type 1 and 2 hardware will not require replacing for life of home.		2
<b>TOTAL SECTION POINTS</b>			

## IV. INDOOR AIR QUALITY

This section focuses on the quality of the air within the finished home. Products listed here include materials that are low in VOC's, products made from all natural materials as well as various air cleaning and ventilation systems **Minimum 15**

### Points Required

4-1	Install pleated media filter on HVAC system with minimum MERV 7 rating. MERV rating system specifies allowable amounts and practical sizes that a filter must catch. The higher the MERV rating, the smaller and greater number of particulates are caught, providing better indoor air quality.		1
4-2	Install electrostatic air cleaner on HVAC system. Permanent washable air filter that traps and removes airborne particles from the air before being circulated through the furnace and into the home.		2
4-3	Install air filter on all fresh air inlets. A filter installed on the fresh air inlet will reduce the particulate that can be transferred from outside into the home. All air intakes must be easily accessible for maintenance. Bug screens are not considered a "filter". Check with furnace or HRV manufacture prior to		1
4-4	Install electronic air cleaner on HVAC system. An electronic air cleaner offers a superior level of filtration by using advanced, 3-stage filtration technology to trap and filter airborne particles like dust, cat dander and smoke. It works by placing an electric charge on airborne particles, and then collecting the charged pollutants like a magnet. The air cleaner cells can be washed in your dishwasher or sink.		3
4-5	Install HEPA filtration system in conjunction with an HVAC system. HEPA stands for High-Efficiency Particle Arresting. HEPA filtration offers the highest particulate removal available - 99.97% of particles that pass through the system including dust, cat dander, certain bacteria, pollens and more. The system is connected to the cold air return of the forced air heating/cooling system which provides a whole house filtration system.		6
4-6	Install thermostat that indicates the need for the air filter to be changed or cleaned. This feature displays filter maintenance reminders on the thermostat. Regular furnace maintenance is required to keep your mechanical equipment running efficiently and problem free as well as ensuring a healthy indoor air environment.		1
4-7	Power vacuum all HVAC ducting prior to occupancy by homeowner. This process helps eliminate pollutants that drop into the HVAC ducting during the construction process from being circulated into the home.		2
4-8	Central vacuum system vented to exterior & central vacuum system has Carpet and Rug Institute (CRI) IAQ approval. A central vacuum system collects dust centrally, while exhausting to the exterior so that dust mites and bacteria do not have the opportunity to re-circulate. The result is cleaner, healthier air. Note: install far enough from air intake areas. See manufacturer's installation guidelines.		1
4-9	All insulation in the home is third-party certified or certified with low or zero formaldehyde. Formaldehyde is colorless gaseous organic compound, water soluble, with a characteristic pungent and stifling smell. Products with low formaldehyde emission levels will improve indoor air quality of homes and long term owner health.		2
4-10	Low formaldehyde sub floor sheathing (less than 0.18 ppm). Formaldehyde is colorless gaseous organic compound, water soluble, with a characteristic pungent and stifling smell. Products with low formaldehyde emission levels will improve indoor air quality of homes and long term owner health. Industry Standard ANSI A208.1-1999 sets a 0.20 ppm limit. Built Green™ requires a 10% better level of performance at 0.18 ppm. Products using Phenol Formaldehyde, or PMDI or MDI will meet this standard without testing.		3
4-11	Low formaldehyde underlayment is used in home (less than 0.18 ppm). Low formaldehyde (phenol) and formaldehyde-free binders (PMDI) are available and becoming more common. FSC certified OSB is becoming more common, reducing environmental impacts on air, water, social quality.		1
4-12	Low formaldehyde particle board/MDF (less than 0.18 ppm) = 1 point, or zero formaldehyde particle board/MDF (2 points) used for cabinets. Urea formaldehyde-free fiberboard can be used in the same way as conventional fiberboard, but with the added caution of greater potential for water damage.		1 or 2
4-13	Low formaldehyde particle board/MDF (less than 0.18 ppm) = 1 point, or zero formaldehyde particle board/MDF (2 points) for shelving Urea formaldehyde-free fiberboard can be used in the same way as conventional fiberboard, but with the added caution of greater potential for water damage.		1 or 2
4-14	All interior wire shelving is factory coated with low VOC / no off gassing coatings Vinyl coating on conventional shelving units and site built MDF shelving off gas VOCs.		2
4-15	Water-based urethane finishes used on all site-finished wood floors. Water-based epoxy finish (generally referred to as epoxy-modified finish) differs from its solvent-based counterpart in that the epoxy resin is itself the catalyst for an acrylic or urethane resin.		2

4-16	All wood or laminate flooring in home is factory finished. Installing a pre-finished floor eliminates the time, the dust and the odours associated with the on-site sanding and finishing of an unfinished product.		2
4-17	Water-based lacquer or paints are used on all site built and installed millwork, including doors, casing and baseboards. (less than 200 grams/litre of VOC's) Using water based interior finish products reduces VOC off-gassing which improves indoor air quality.		3
4-18	Interior paints used have low VOC content (less than 200 grams/litre of VOCs). Volatile Organic Compounds (VOCs) are a class of chemical compounds that can cause short or long-term health problems. A high level of VOCs in paints/finishes off-gas and can have detrimental effects to a buildings indoor air quality and occupant health.		2
4-19	Interior paints used have no VOC's in base paint prior to tint. Volatile Organic Compounds (VOCs) are a class of chemical compounds that can cause short or long-term health problems. A high level of VOCs in paints/finishes off-gas and can have detrimental effects to a buildings indoor air quality and occupant health.		3
4-20	All ceramic tiles are installed with low VOC adhesives and plasticizer-free grout (low VOC standard is less than 150 grams per litre).  Most adhesives are still based on SB latex which releases large quantities of VOCs. The volatile solvents are used to emulsify (or liquefy) the resin that acts as the bonding agent. However, water-based adhesives emit far less VOCs than their conventional solvent based counterparts. There are three types of low-VOC formulas: water-based (latex and acrylics); reactive (silicone and polyurethane); and exempt solvent-based (VOC-compliant solvents). While all three technologies yield low- or zero-VOC caulks, sealants, and adhesives, their performance is slightly different.		1
4-21	All Vinyl flooring is replaced with natural linoleum installed with low VOC adhesives or other hard surface flooring (low VOC standard is less than 150 grams per litre). Hard surface flooring is generally more durable and improves the Indoor Air Quality within a building. Vinyl flooring typically releases VOC's as it ages and uses toxic glues in its application.		2
4-22	Carpet and Rug Institute (CRI) IAQ label on all carpet used in home. To identify carpet products that are truly low-VOC, CRI has established a labeling program. The CRI Indoor Air Quality Carpet Testing Program green and white logo displayed on carpet samples in showrooms informs the consumer that the product type has been tested by an independent laboratory and has met the criteria for very low emissions.		2
4-23	Carpet and Rug Institute (CRI) IAQ label on all underlay used in home. The adhesives used to install carpets and the latex rubber by some manufacturers to adhere face fibers to backing materials generate volatile organic compounds (VOCs). Carpets also cover large surfaces within an interior environment and can provide "sinks" for the absorption of VOCs from other sources.		1
4-24	Natural material based carpet in all living areas. Natural wool carpets are durable and use less secondary backing materials and chemicals. Off-gassing is typically caused by the secondary backings and chemical additives in synthetic carpets, for controlling mildew, fungus, fire and rot.		2
4-25	All carpet in home is replaced by hard surface flooring. Hard surface flooring is generally more durable and improves the Indoor Air Quality within a building. Carpets collect dust, dust mites and other allergens which when disturbed become airborne particulates- directly affecting the health of the occupants.		4
<b>TOTAL SECTION POINTS</b>			

## V. VENTILATION

This section covers the mechanical ventilation systems in the home, including filtrations and heat recovery.

### Minimum 6 Points Required

**\* Platinum Level Note\* Platinum level homes must use item 5-7 " Ventilation system is installed according to CSA Standard F326, as recommended by the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI)." as well as 6 additional points from this section.**

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5-1	<p>All ductwork joints and penetrations sealed with low toxic mastic or aerosolized sealant system.</p> <p>Duct mastic is a preferred flexible sealant that can move with the expansion, contraction, and vibration of the duct system components. A high quality duct system greatly minimizes energy loss from ductwork. The system should be airtight, sized and designed to deliver the correct airflow to each room.</p>		3
5-2	<p>Install motorized damper on fresh air inlet (must be interlocked with furnace system).</p> <p>A constantly open fresh air supply (passive air) wastes energy. Positive control of this air will assure building comfort, safety and energy efficiency.</p>		1
5-3	<p>Install all ventilation fans (bath or in-line type) to meet or exceed the Energy Star requirements</p> <p>Energy Star fans have to meet standards for efficiency, and sound transmission, providing quiet and effective ventilation fans. <a href="http://www.oeenrcan.gc.ca/energystar/english">www.oeenrcan.gc.ca/energystar/english</a></p>		2
5-4	<p>Install a programmable timer or humidistat controlled ventilation fan meeting the Energy Star requirements for efficiency and sound level</p> <p>A programmable timer ensures necessary, regular, automatic mechanical ventilation of the home.</p>		2
5-5	<p>Install passive Heat Recovery Ventilator (HRV) and verify balanced installation.</p> <p>A Heat Recovery Ventilator (HRV) is an air exchanger that exhausts humid, stale, polluted air out of the home and draws in fresh, clean outdoor air into the home. Invisible pollutants produced by common household substances, plus dust and excess humidity that get trapped in today's houses, can increase your risk of chronic respiratory illness and your homes risk of serious structural damage. A passive HRV unit does not have its own internal fan and is 100% furnace assisted. It works by tying the exhaust side of the unit to the supply air plenum which forces air to exhaust from the home and at the same time fresh air enters from outside through the unit and into the cold air return duct work.</p>		2
5-6	<p>Install an active Heat Recovery Ventilator or Energy Recovery Ventilator (HRV or ERV) and verify balanced installation.</p> <p>A Heat Recovery Ventilator (HRV) is an air exchanger that exhausts humid, stale, polluted air out of the home and draws in fresh, clean outdoor air into the home. Invisible pollutants produced by common household substances, plus dust and excess humidity that get trapped in today's houses, can increase your risk of chronic respiratory illness and your homes risk of serious structural damage. Much like the HRV, the ERV recovers heat; however, it also recuperates the energy trapped in moisture, which greatly improves the overall recovery efficiency. In dry climates and humidified homes the ERV limits the amount of moisture expelled from the home. In humid climates and air conditioned homes, when it is more humid outside than inside, the ERV limits the amount of moisture coming into the home.</p>		4
5-7	<p>Ventilation system is installed according to CSA Standard F326, as recommended by the Heating, Refrigeration and Air Conditioning Institute of Canada (HRAI). <a href="http://www.hrai.ca">www.hrai.ca</a></p>		5
5-8	<p>All bath fans used throughout home have a noise level of 1 sone or less</p> <p>Installing quiet fans will encourage use for home ventilation.</p>		2
<b>TOTAL SECTION POINTS</b>			

## VI. WASTE MANAGEMENT

This section deals with the handling of waste materials on the construction site and encourages recycling.

**Minimum 7 Points Required**

- |      |  |   |           |
|------|--|---|-----------|
| 6-1  | Comprehensive recycling program for building site including education, site signage and bins.<br>A comprehensive recycling program that is strictly followed significantly reduces the amount of waste ending up in landfills. Currently it is estimated that up to 50% of landfill waste is construction related.   |    | 2         |
| 6-2  | Collection of waste materials from site by a waste management company that is a current member of a provincial recycling council or equivalent association and verifies that a minimum of 10% of the materials collected from the construction site have been recycled.<br><br>Not only does this reduce overall waste of product, it ensures that as much product as possible is being utilized for the production of future resources. |    | 4         |
| 6-3  | Suppliers and trades recycle their own waste, including leftover material and packaging (1 point per trade - maximum 4 points).<br>Trades being responsible for recycling and removal of waste not only reduces landfill waste, but also promotes a cleaner and safer working environment.   |    | 1 to 4    |
| 6-4  | Minimum 15% (1 point) 25% (2 points) or 50% (6 points) by weight of waste materials collected from construction site is diverted from waste stream.<br>Trades being responsible for recycling and removal of waste not only reduces landfill waste, but also promotes a cleaner and safer working environment.   |    | 1, 2 or 6 |
| 6-5  | Use of recycled materials derived from local construction sites (1 point for each different product used, to max. of 3).<br>Products recycled from the construction site, such as mulched clean dimensional lumber free of metals, or mulched paperless gypsum are often useable as either clay/soil water retention additives.  |    | 1 to 3    |
| 6-6  | Trees and natural features on site protected during construction.<br>The protection of existing trees and other natural features such as streams, ponds and other vegetation reduces environmental and ecosystem impact. Many of these features can be protected simply by following good waste management procedures.   |    | 1         |
| 6-7  | Metal or engineered durable form systems used for concrete foundation walls.<br>The use of metal forming systems reduces the requirement of lumber, a limited resource.  |    | 1         |
| 6-8  | Concrete used in home has a minimum supplementary cementing material of 25% (1 point) or 40% (2 points) within the scope of proper engineering practices.<br>For every one ton of Portland cement generated, eighth tenths of a ton of carbon dioxide is produced. Supplementary cementations products include fly ash, blast furnace slag as well as metakaolin.  |   | 1 or 2    |
| 6-9  | Install recycling center with two or more bins.<br>By installing built in recycling centers, which can be as simple as labeled containers (paper, cardboard, cans, plastics, etc), homeowners are more likely to utilize the pre-existing facilities and thus contribute to the reduction in landfill waste.   |  | 3         |
| 6-10 | Provide composter to homeowner.<br>Providing a composter promotes a reduction in wastes heading to the landfill by giving homeowners an option for organic waste such as food leftovers.   |  | 2         |
| 6-11 | Existing dwellings onsite are recycled or moved instead of demolished (recycled 2 points, moved 4 points).   |  | 2 or 4    |

**TOTAL SECTION POINTS**

  
0

## VII. WATER CONSERVATION

This section encourages a reduction in the amount of water used in the home or in individual units within multi-story buildings.

### Minimum 7 Points Required

7-1	<p>Install a dual flush or pressure assisted toilet in one or more bathrooms (3 points for first, 1 additional point for each after)</p> <p>Dual flush toilets offer a choice between two water levels for every flush; at minimum should use, 1.6 GPF (6 LPF) or 0.8 GPF (3 LPF).</p>		3 or more
7-2	<p>Install a 1.28 GPF toilet in one or more bathrooms (2 points for first, 1 additional point for each after)</p> <p>1.28 GPF (Gallon per Flush) is general considered the new standard in water efficiency</p>		2 or more
7-3	<p>Install manufactured non-electric composting toilet (3 points each, max of 6 points).</p> <p>A composting toilet uses no water and is odourless. It uses a biological processes to break down the waste into organic compost material.</p>		3 or 6
7-4	<p>Insulate the hot water lines with flexible pipe insulation, first three feet from hot water tank (1 point) or all hot water lines (2 points).</p> <p>Minimizing the heat loss in the water line will decrease the initial water wasted by delivering hot water faster.</p>		1 or 2
7-5	<p>Install hot water recirculation system with all hot water lines insulated (4 points), or point-of-use instant DHW system (1 point each, max. 4)</p> <p>Having the hot water re-circulated from the hot water source to the fixture points will decrease the initial water wasted by delivery the hot water faster. Pump must be on program or timer to reduce stand-by losses. Kitchen counter top "boiling water taps" are not credited.</p>		1 to 4
7-6	<p>Install low flow faucets for all kitchen faucets and lavatories (2 points), all showers &amp; tub/showers (additional 1 point).</p> <p>Reduces water consumption by lowering the flow rate. Showers must use 9.8 L/min (2.2 imp. Gal./min) or less. Faucets, both kitchen and bath, must use 8.3 L/min (1.8 imp. Gal./min) or less.</p>		2 or 3
7-7	<p>Install hands free lavatory faucets. 1 point per faucet/unit.</p> <p>Battery powered electronic sensor minimizes the spread of germs and saves water.</p>		1 per unit
7-8	<p>Provide front loading clothes washer (3 points), or Condensing Combination wash/dry unit (4 points)</p> <p>Front loading clothes washers conserve water by design, as they are only required to fill up the washing compartment 1/3 full to effectively wash clothing. Additionally they use up to 75% less environmentally damaging laundry detergent, AND they also conserve electrical or gas energy by significantly reducing drying time for clothes with a more thorough spin cycle.</p>		3 or 4
7-9	<p>Install water saving dishwasher that uses less than 20.0 L/water per load.</p> <p>Water saving dishwasher use technology to reduce both the amount of water required as well as electrical energy requirements. The EnerGuide appliance directory put out by Natural Resources Canada has a comprehensive listing of all manufacturers and models of dishwashers and other appliances with water usage and energy efficiency ratings.</p>		1
7-10	<p>Install efficient irrigation technology that utilizes automatic soil moisture-based sensor technology at minimum</p> <p>Show storm water management plan &amp; design; water efficient irrigation systems, sensors, regulators, micro drip feed systems etc.</p>		3
7-11	<p>Install permeable paving materials for all driveways and walkways.</p> <p>Permeable paving allows for storm water to flow back into the ground rather than into the storm sewers.</p>		3
7-12	<p>Provide a list of drought tolerant plants and a copy of the local municipality water usage guide to homebuyers with closing package.</p> <p>Most municipalities provide a guide that gives the water requirements of various plants and grasses. When properly designed, landscaping choices can significantly contribute to water conservation.</p>		1
7-13	<p>Builder supplies a minimum of 8" of topsoil or composted yard waste, as finish grading throughout site.</p> <p>Compared to subsoil materials, topsoil usually has higher aggregate stability, lower bulk density, and more favorable pore size distributions which leads to higher hydraulic conductivity, water holding capacity, and aeration porosity.</p>		2
7-14	<p>Builder incorporates water wise landscaping or xeriscaping in show home or customer home (customers 50% of lawn 2 points, 100% 4 points).</p> <p>Xeriscaping (or drought resistant landscaping) plans and options can be obtained from professional landscaping contractors, and once a xeriscaping landscape is in place, it requires no manual watering. (Rain barrel usage, astro turf ineligible.)</p>		2 or 4
7-15	<p>Builder attaches water barrel with insect screen to downspout. Water barrel should also have a drain spout and overflow spout (1 point per barrel - maximum of 3 barrels).</p> <p>Supplying a water barrel encourages homeowners to use rainwater for landscaping needs and therefore save on potable water.</p>		1, 2 or 3
7-16	<p>Install grey water system collecting waste from sinks, shower and/or kitchen to capture and treat for use in toilets or irrigation (6 pts), rough-in for future grey water system (3 points)</p> <p>By reusing waste water, consumption can be drastically reduced. Rough-in must include clearly identified grey water drain stack, separated from sewer line.</p>		3 or 6

**TOTAL SECTION POINTS**

**0**

## VIII. BUSINESS PRACTICE

This section deals more with manufacturers and builders office and business practices.

### Minimum 6 Points Required

8-1	<p>Products used for home are manufactured within 800 km (1 point for each product - maximum of 5).</p> <p>Transportation of building materials is a substantial energy use, local manufacture reduces this embodied energy. Distances are calculated by road, not as the crow flies. Manufacturing or assembly must take place in a plant or factory, not on-site. Distance to raw material source is not included.</p>		1 to 5
8-2	<p>Builder provides Built Green™ homeowner manual, completed Built Green™ checklist and educational walkthrough with sale or possession.</p>		3
8-3	<p>Builders office and show homes purchase a minimum of 50% (1 point) or 100% (2 points) solar, wind or renewable energy.</p> <p>Wind energy is a cleaner way to provide energy. Lower CO2 emissions will benefit the environment.</p>		1 or 2
8-4	<p>Manufacturers and/or suppliers purchase 50% or more solar, wind or renewable electricity.</p> <p>Wind energy is a cleaner way to provide energy. Lower CO2 emissions will benefit the environment.</p>		1
8-5	<p>Builder has written an environmental policy which defines their commitment (must include an office recycling program and energy efficient lighting).</p> <p>A statement of commitment helps to emphasize priority and ultimately define a corporate culture.</p>		1
8-6	<p>Manufacturer and/or supplier has written an environmental policy which defines their commitment (must include an office recycling program and energy efficient lighting). (1 point per supplier/manufacturer - maximum of 2 points).</p>		1 or 2
8-7	<p>Builder has written an environmental policy which prioritizes milestones for future net zero housing developments.</p>		1
8-8	<p>Builders' company vehicles are hybrid or bio-diesel vehicles (1 point per vehicle - maximum of 3 points).</p> <p>A commitment to the environment shouldn't stop at construction. Using a hybrid vehicle produces lower harmful emissions. Diesel construction vehicles converted to bio-diesel reduce fuel consumption by up to 75%.</p>		1 to 3
8-9	<p>Environmental certification for builders place of business (building, office, etc).</p> <p>Many commercial buildings have been rated with various energy efficiency standards. Does your company work within an ENERGY STAR, EnerGuide for Houses (ERS), EnerGuide for New Houses (EGNH), REAP or LEED (or other certification standard) certified office building?</p>		3
8-10	<p>Builder agrees to construct and label a minimum of 50% of all homes to the Built Green™ standard per calendar year. (3 points for 50%, 5 points for 100%).</p>		3 or 5
8-11	<p>Contracted trades and/or suppliers have successfully taken and maintained Built Green™ Builder Training status (1 point per trade organization, Max 5).</p>		1 to 5

**TOTAL SECTION POINTS**  
**TOTAL CHECKLIST POINTS**

 0  
 0