VisionCNY Regional Sustainability Plan

Scale Project Opportunities

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Introduction

1. About us
2. What is it we are trying to achieve
3. Relevant projects and approach
4. Proposed projects
5. Next Steps

We are

a global firm of planners, designers & engineers

with nearly 10,000 staff in 90 offices

in 35 countries

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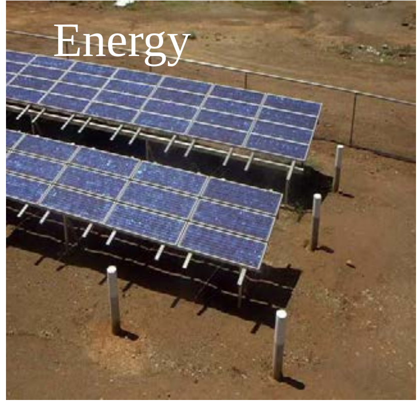
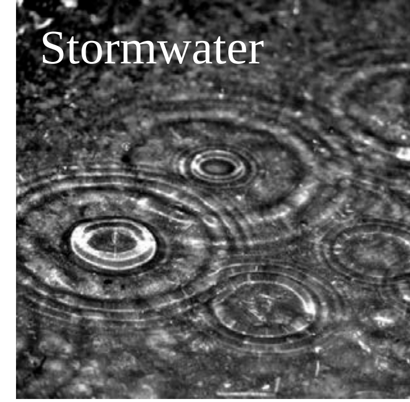
Opportunity Focus Areas





What are we trying to achieve?

- Identify projects/development opportunities which have the potential to transform Central New York’s built environment
- Develop conceptual plans of how these projects could meet the CNYVision for sustainable development
- Identify the program and sustainability strategies for these projects, focusing on energy
- Identify economic benefits from development
- Identify funding opportunities

Approach

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Portland South Waterfront Integrated Infrastructure Strategy and Climate Positive Development Program

- First of five eco-districts being developed in Portland

CLIMATE+

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PROJECT CASE STUDY

BEDDINGTON ZERO

Client: Peabody Trust

Architect: Bill Dunster Architects

Completed: December 2001

Construction of sustainable mixed use development on a brown field site including 82 dwellings plus workspaces, shops, sports facilities and sustainability exhibition centre. The development uses 100% renewable energy sources to achieve zero net carbon emissions in use and incorporates a renewable energy supply (bio-fuel CHP), a total water strategy which uses greywater recovery and a green transport plan.

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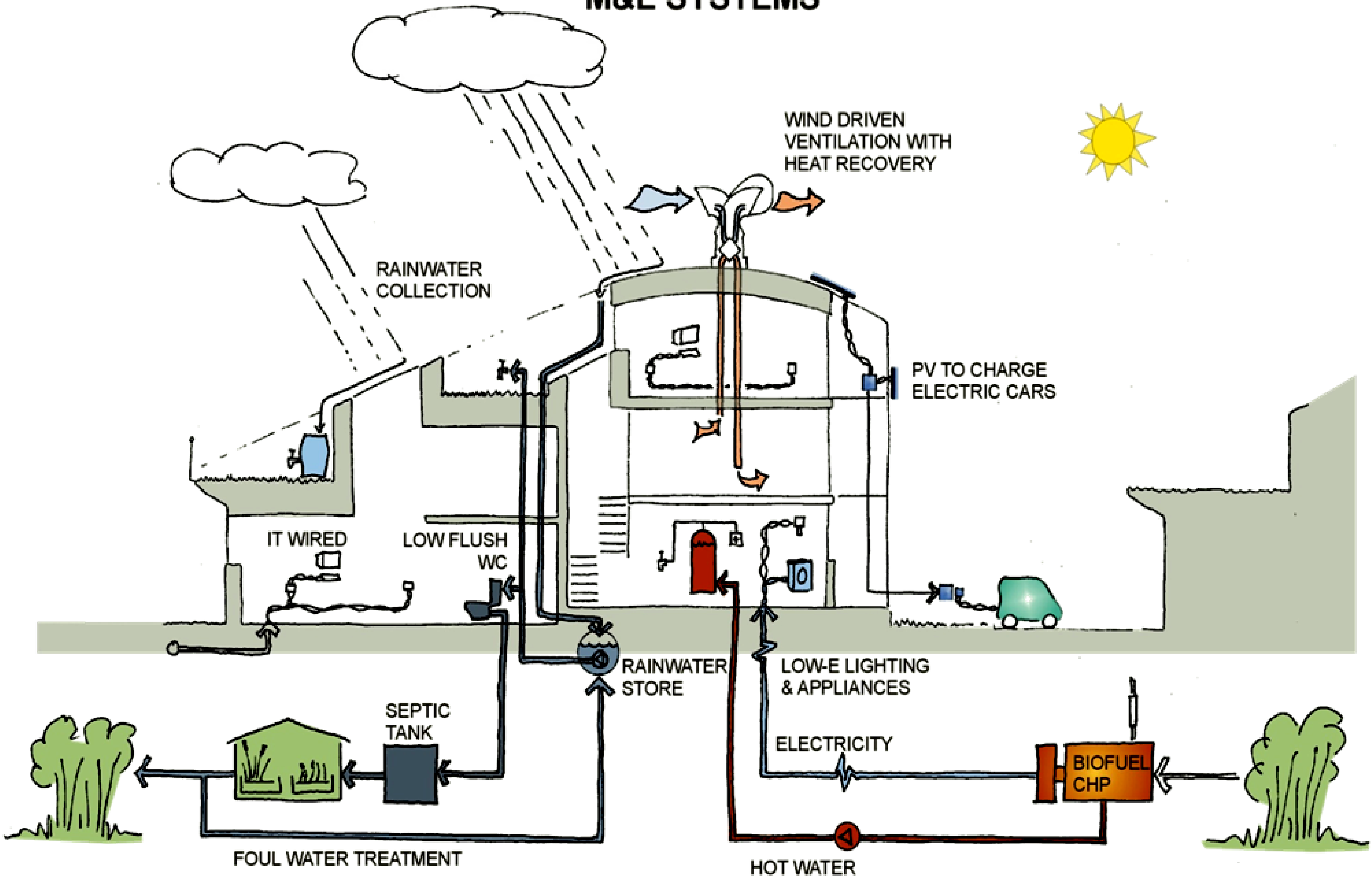
- Mixed development
- Zero fossil energy
- Zero heating
- Bio-fuel CHP
- Super-insulation
- Thermal mass
- Green transport
- Greywater

M&E SYSTEMS



RAINWATER
COLLECTION
WIND DRIVEN
VENTILATION WITH
HEAT RECOVERY
PV TO CHARGE
ELECTRIC CARS
IT WIRED
LOW FLUSH
WC
RAINWATER
STORE
LOW-E LIGHTING
& APPLIANCES
SEPTIC
TANK
ELECTRICITY
BIOFUEL
CHP
FOUL WATER TREATMENT
HOT WATER

West Lons, Waterfront Toronto

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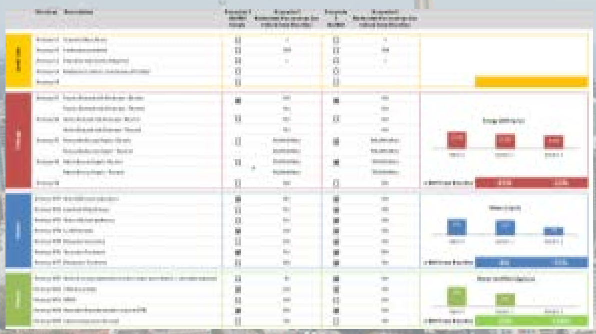
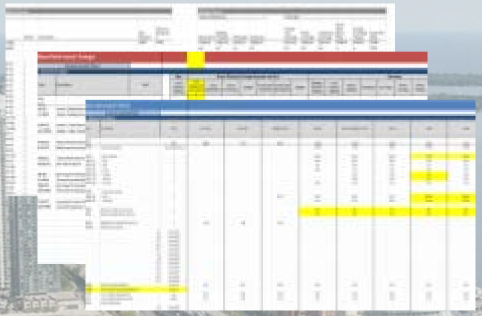
Integrated Resource Management

Scenario Control Panel

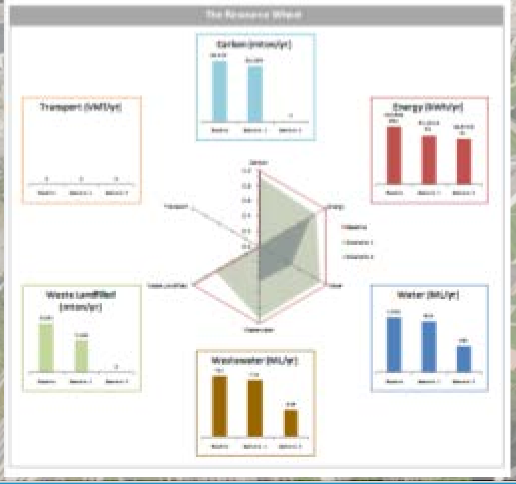


Inputs

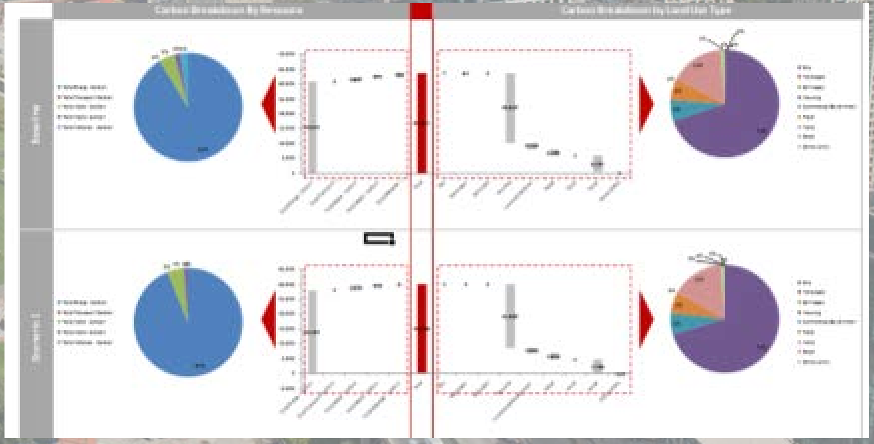


Calculations

Output 1 – Resource Wheel



Output 2 – Detailed Carbon Breakdown



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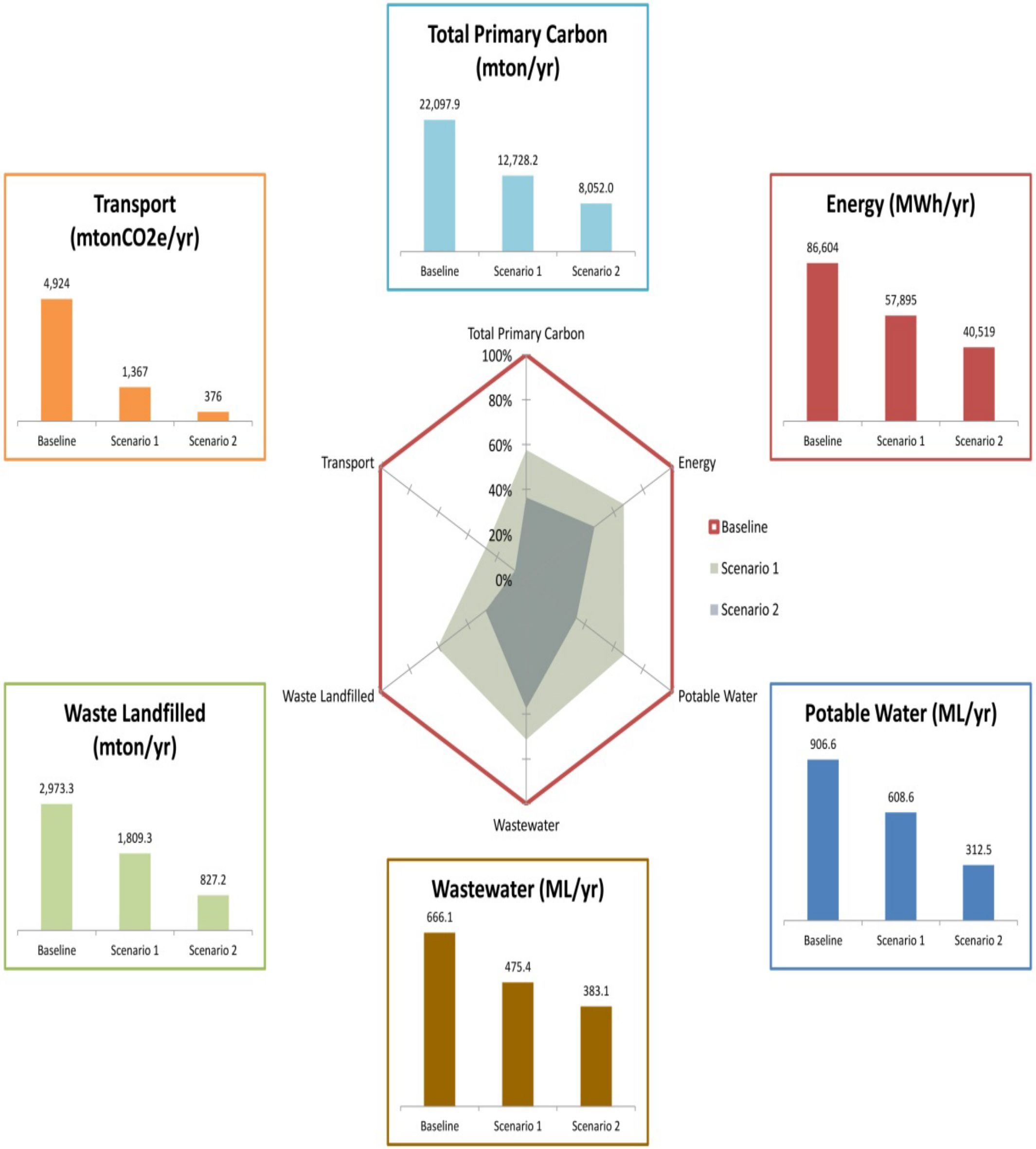
Resource assessment




heritage landscapes
village centres
schools / community facilities
5-10 minutes walking distances
PHASE 3
VILLAGE SUB-CENTRE
PHASE 1
VILLAGE CENTRE
PHASE 2
VILLAGE SUB-CENTRE
KEMPENFELT BAY
PROPOSED BIG BAY POINT DEVELOPMENT
BIG BAY POINT ROAD
CITY OF BARRIE
EXISTING SANDY COVE VILLAGE
25TH SIDEROAD
LAKE SIMCOE
MAPLEVIEW DRIVE
LOCKHEART ROAD
20TH SIDEROAD
concept development plan
1 mile
1 km

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Whitby, Ontario Development :

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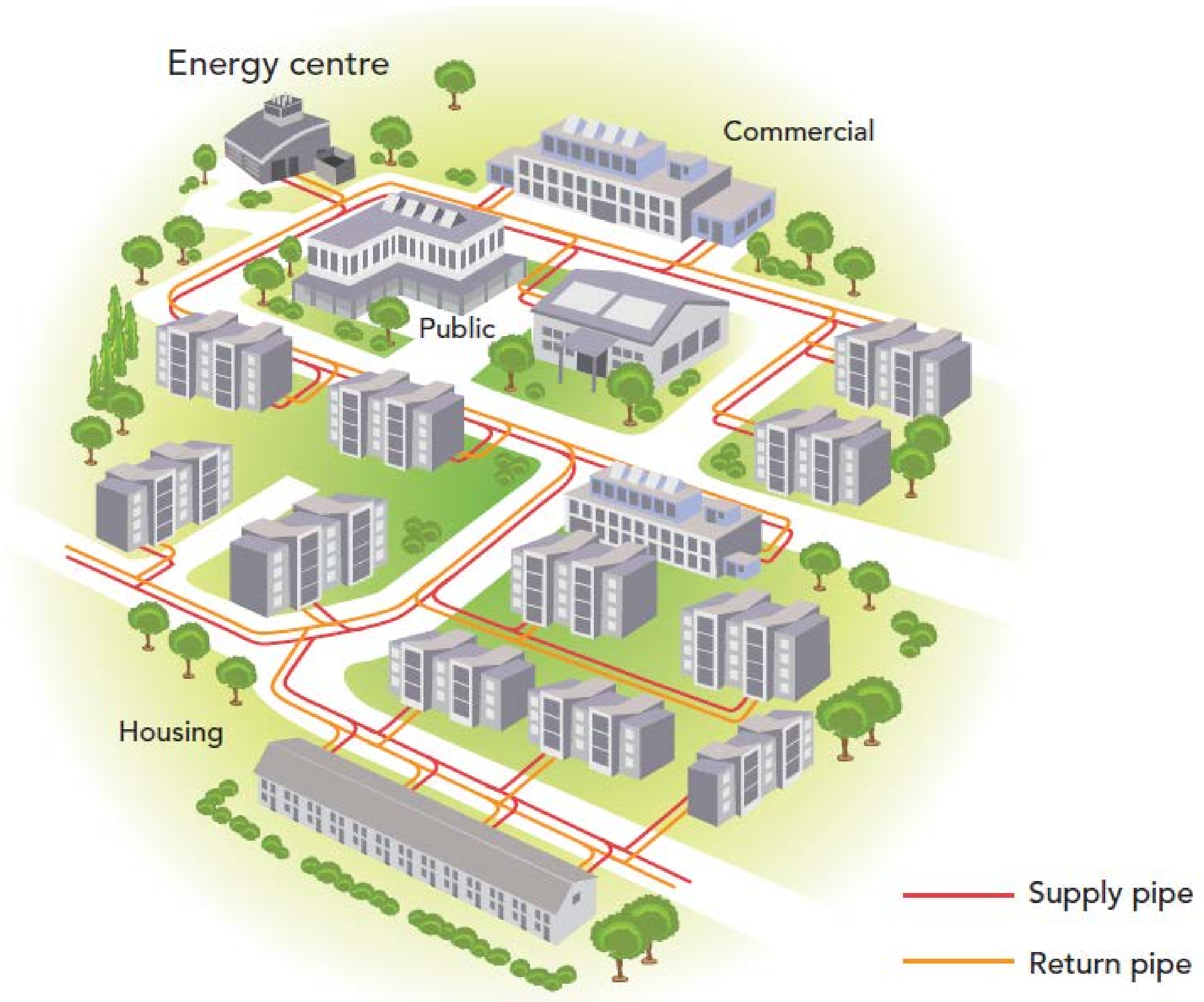
Components of District Energy



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Next steps

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PORT WHITBY SUSTAINABLE COMMMUNITY PLAN

Prepared by:

planningAlliance
Arup
Meridian Planning

with Trow Associates
MKI and
Will Dunning

September 2nd, 2010

5.2 DESIGN CONCEPT

Figure 5.2.2 Whitby GO Station Lands Draft Land Use Concept

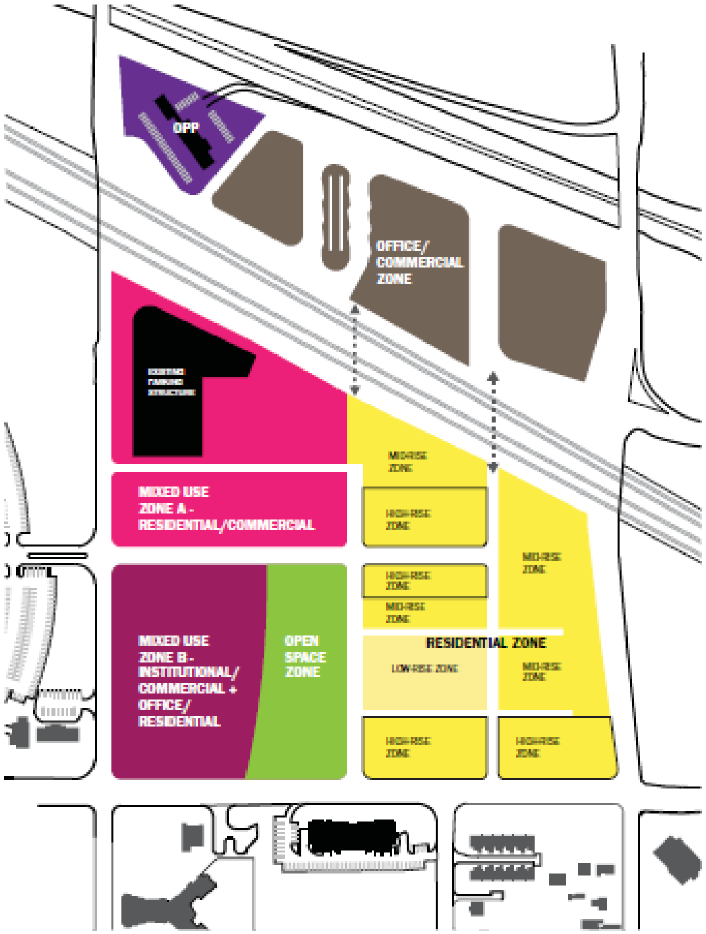
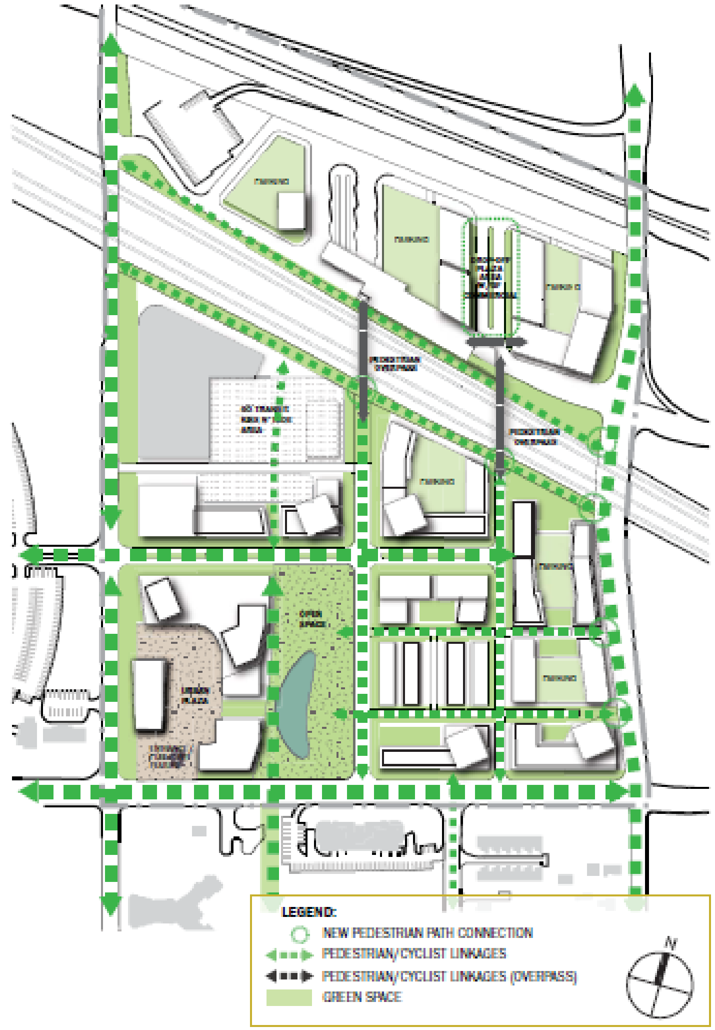


Figure 5.2.3: Whitby GO Station Lands Draft Open Space Concept



Port Whitby Sustainable Community Plan

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3.2 ENERGY

EXISTING CONDITIONS

Port Whitby is currently dominated by residential land uses. As a result, energy use in the area is strongly influenced by the age and type of the housing stock. The current housing stock ranges from relatively new apartment buildings to detached homes – some dating back to the early part of the last century. With ever improving building codes, newer construction will typically have better overall energy performance, but this is not always the case. Other factors are important as well, such as the way the occupants use the dwelling, recent energy efficiency retrofitting, and the age of the building's heating and cooling systems.

Using data from Natural Resources Canada's Energy Use Surveys for an area with similar climactic conditions to Port Whitby, the annual energy consumption breakdowns for the three most common dwelling types are shown in Figure 3.2.1. The figures are averaged into energy per square meter to allow dwelling types of different sizes to be compared.

Applying these figures to the current housing stock in Port Whitby allows us to estimate the annual energy building consumption for the area at approximately 25,000 MWh. How this energy is used is shown in Figure 3.2.2.

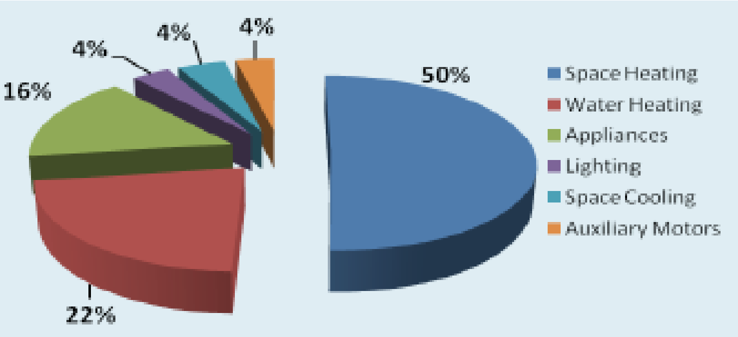
The electricity delivered to Whitby is generated through several different sources to give an average 'mixture' shown in Figure 3.2.3. The relatively high proportion of power generated by hydro and nuclear sources means Whitby's electricity mixture has a relatively low overall carbon production compared to jurisdictions outside of Ontario.

Figure 3.2.1: Energy Consumption Breakdown

	Apartments	Single Attached	Single Detached	Commercial
Total (kWh/m2/yr)	218	219	232	468
Space Heating	102	128	155	238
Water Heating	69	46	37	39
Appliances	37	27	22	77
Lighting	5	8	9	26
Space Cooling	6	10	9	31
Auxiliary Motors	-	-	-	53

Source: NRCan Energy Use Surveys

Figure 3.2.2: Energy Use Breakdown for a Typical Building



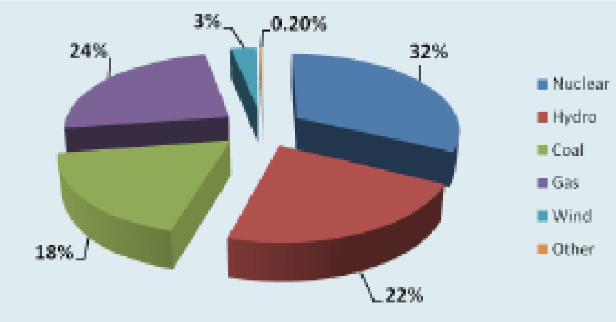


Figure 3.2.3: Whitby's Electricity Supply Fuel Breakdown

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- **Land Use** –consolidate similar uses where appropriate and provide for uses that reinforce urban design objectives, such as commercial-retail at-grade on arterial and collector roads and personal services at-grade on major mid-block roads.
- **Other Urban Design Objectives that Reinforce the SCP** – encourage the creation of an 'urban street front' along the east edge of the site for consistency with proposed 'main-streeting' of Brock Street. Facilitate the development of a high-density commercial-retail hub or cultural facility with hospitality uses on the Town-owned lands at the southwest corner of the site. Allow for increased density of commercial-retail development on the Metrolinx owned lands to the north of the rail corridor to accommodate employment growth near the transit node.

Figure 5.2.1: Whitby GO Station Lands Draft Urban Design Concept

SITE STATISTICS AND ASSUMPTIONS:

NORTH OF CN RAIL CORRIDOR:
1,900 JOBS @ 37sq.m/job
SOUTH OF CN RAIL CORRIDOR:
3,000 JOBS @ 37sq.m/job
4,000 RESIDENTS @ 50 sq.m/resident

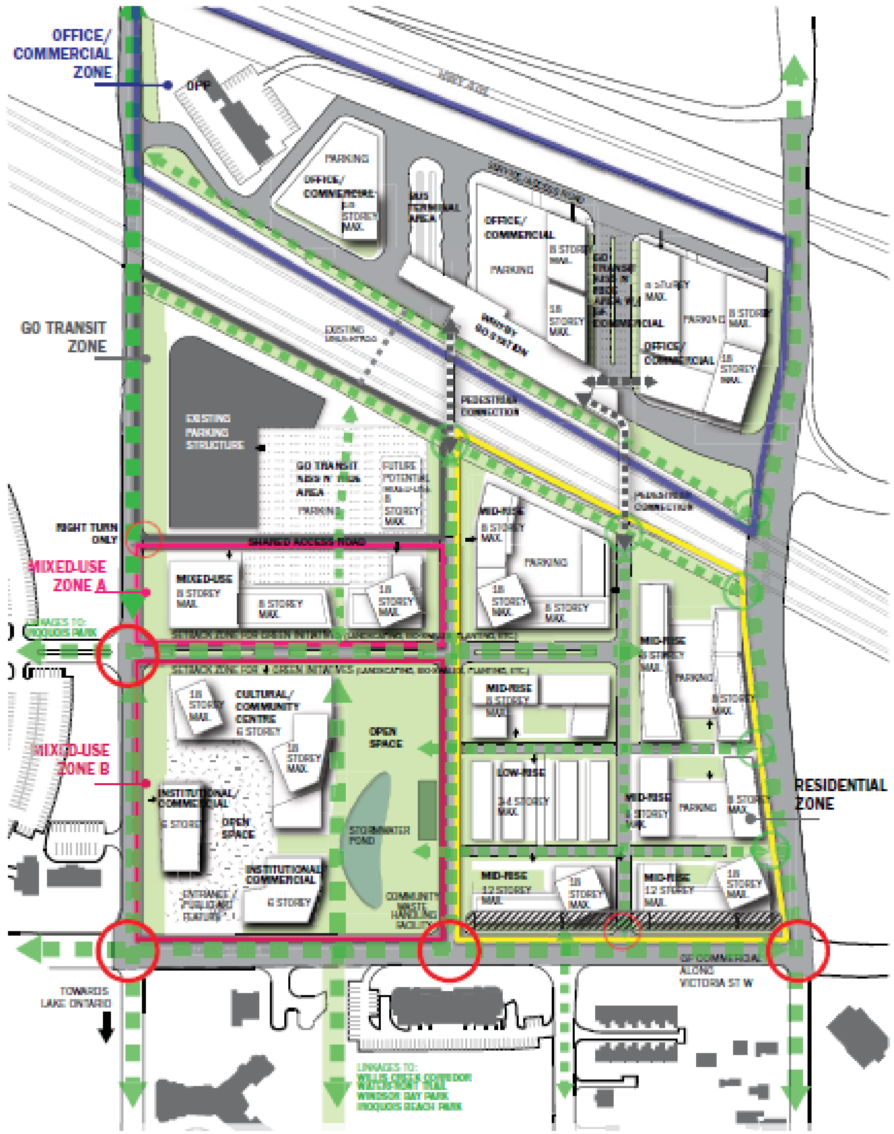
– Total Building Area: approx. 380,000 sq.m

MAXIMUM HEIGHTS:

STACKED TOWNHOUSE UNITS/PODIUM @ 4 STOREYS
MID-RISE SLAB BUILDINGS @ 8 STOREYS (EXCEPT ALONG VICTORIA ST. W. @ 12 STOREYS)
TOWERS @ 18 STOREY, 750 SQ.M. FLOOR PLATE MAXIMUM

LEGEND:

- SIGNALIZED INTERSECTION
- NON-SIGNALIZED INTERSECTION/RIGHT-TURN ONLY
- NEW PEDESTRIAN PATH CONNECTION
- VEHICULAR ROADS
- PEDESTRIAN/CYCLIST LINKAGES
- PEDESTRIAN/CYCLIST LINKAGES (OVERPASS)
- GREEN SPACE



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2.0 ANALYSIS

SUMMARY OF RESULTS

Figure 2.2 graphically represents how each scenario performed relative to the sustainability indicators. These diagrams are a general representation of the results of the sustainability analysis. A more detailed analysis of how each scenario performed for each of the 33 indicators is available in the *Options Sustainability Appraisal Report*.

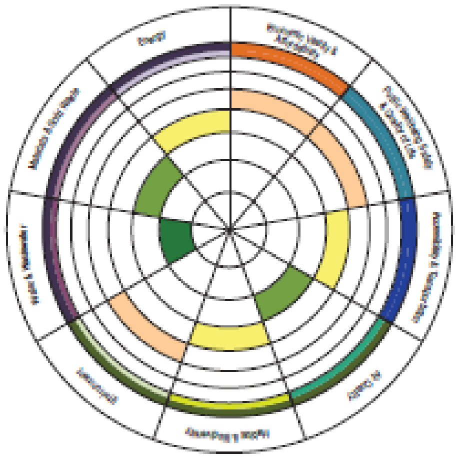
The centrepoint of each diagram represents optimal sustainability. Positive sustainability results relative to a particular indicator are shown as green tones toward the centrepoint of the diagram. Average sustainability performance is shown as yellow tones along the median line of the diagram. Poor results would be shown as red tones at the outer edge of the diagram (although none of the Scenarios achieved poor results relative to any of the indicators).

For example, the "Energy" category shown on each diagram captures the aggregated results of each scenario against the energy-related sustainability indicators. The Existing Permissions Scenario showed slightly lower than average performance for this group of indicators, and is therefore shown just outside of the yellow range. Scenario 1 showed slightly better than average performance, and is therefore shown in the green range. Scenario 2 scores the highest, almost achieving optimal sustainability at the centrepoint of the diagram.

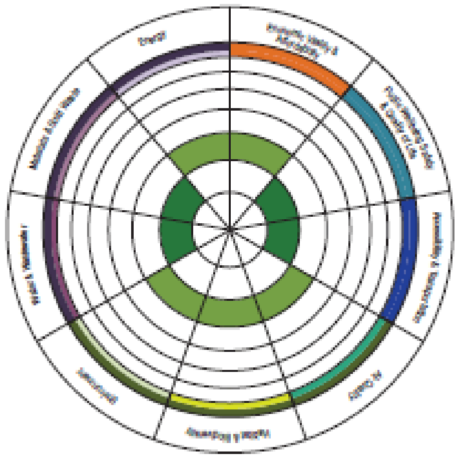
As can be seen in Figure 2.2, Scenario 2 achieved the highest level of sustainability, with the most indicators in the green range of the evaluation spectrum. The additional sustainability strategies included in Scenario 2, combined with a land use that emphasizes higher employment levels and more concentrated development near the GO station, contributed to its improved sustainability performance across all of the focus areas.

Figure 2.2: SPeAR Analysis

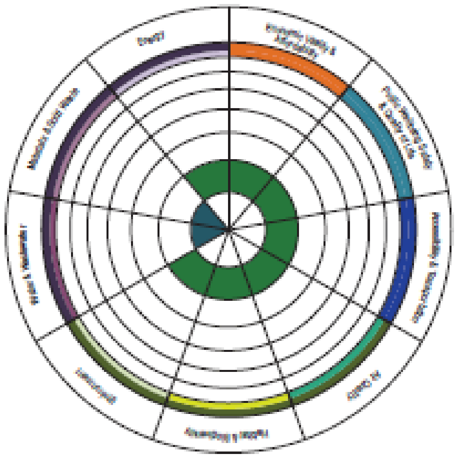
Existing Permissions Scenario



Scenario 1: Residential Focus with Distributed Density



Scenario 2: Employment and Mixed Use Focus with More Concentrated Density



Questions?