

## 407/7 Destination Ctr

Construction Costs	Cheaper - \$835+m
Operating Costs	Cheaper
Societal Costs	Sensitive
Land Value Capture (82 ha)	Up to \$ 2 billion
Incremental Economic Opportunity	Up to \$20 billion
Solution	Superior (For the people)
Alignments (407 Transitway/Yonge St Ext	In Establish Corridor

## Richmond Hill Transit Ctr

More Expensive
More Expensive
Insensitive
Sterilizing land & tearing down facilities
Zero
Dysfunctional
Veer to Silvercity

### 407/7 Integrated Destination Centre

- Cost of Construction	- \$ 2,555,600,000
- Savings	- \$ 835,000,000
- LVC – 52.5 ha	- \$ 1,250,000,000
- Incremental Economic Opportunity	- \$20,000,000,000

Versus

### Richmond Hill Transit Centre

- Cost of Construction	- \$3,390,000,000
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# Remove All Impediments & Constraints Impacting 407/7 Centre

## Current Planning Activity

Langstaff Gateway - 2008  
Richmond Hill Centre - 2008

Yonge Street 407/7 Centre Station could be extremely important destination Centre for the 407 Transitway and Yonge Subway. The Yonge Street 407/7 area should be planned holistically and comprehensively from an integrated system network planning standpoint.

Mass Transit Rail Corporation ('MTR') has provided Hong Kong with a world class railway system through a financially self-sustaining form of public private partnership called the rail plus property ('R+P') model. The R+P model is a form of land value capture that leverages the uplift in value of surrounding land from the joint development of railways and Rail Integrated Communities to fund the costs of 407 rail transitway and Yonge 407 Subway Station.

For a R+P model to be developed, privatization of the 407 Transitway could be considered. The degree of privatization must be balanced against an overriding obligation to the public and management of the different stakeholders.

Recommend the use of a single entity that manages all phases of the 407 Transitway and land development opportunities while building partnerships across each stage. The 407 P3 Corporation would be based on business commercial principles and a strong institutional framework that draws continuous support from governments.

## 1: Eliminate Impediments Impacting "The Langstaff/RH Gateway"

1. Need to bury the 407 High Voltage Hydro Transmission Lines and relocate stormwater pond
2. Bus Maintenance Facility 2007 Approved EA would have killed the Yonge Subway
3. Focus on Integrated land-use planning for the entire 200+ ha and ignore municipal boundaries

Richmond Hill Centre  
Study Area - 68.0 ha

B Viva Station

407 High-Voltage Hydro Transmission Corridor  
"The Great Hydro Wall" - 148 ha

Storm Pond

G GO Station

T 407/7 Island

2 Langstaff Development Applications  
147.3 hectares  
7,000 - 8,000 condo units  
2m sq ft of office/Retail

Approved Bus Maintenance Facility EA - 2007

Vaughan Hydro Corridor

Markham Hydro Corridor

# Integrate Langstaff & Richmond Hill Secondary Plans

## Current Approved Secondary Plans

Langstaff Gateway - 2009  
Richmond Hill Centre - 2010

The Region and Municipalities must do more than talk to each other. They should plan to remove the barriers and develop an 407/7 Integrated destination centre which included office, residential, entertainment, institutional, retail and integrated transit. Instead each municipality did their own secondary plans.

If decision-makers are to reach agreement on transit investment projects, they must have information that is clear, complete, and consistent to allow for the comparison of the relative merits and drawbacks of proposed projects. At present, this type of information is not readily available, and its absence is impeding public and political debates on how the region can use transit to reduce congestion and improve economic competitiveness.

More analysis is needed to understand the true economic potential of the 407/7 Integrated transit station once the hydro transmission towers are removed and the hydro transmission lines are buried, agreement to relocate the storm water management pond and urbanize the Yonge/407 interchange.

York Region need to give the residents confidence they are delivering a project that will meet its own principles and achieve our stated goals. The goal is to develop a great place, transit that meets the people's needs and demonstrates the power of transit to transform a region and keep it competitive.

## 2: Need To Eliminate Parochial Planning

1. Langstaff Approved Secondary Plan - Peter Calthorpe - 2009
2. RH Centre Approved Secondary Plan - Urban Strategies - 2010

Richmond Hill Centre  
Approved Secondary Plan  
68.0 hectares  
17,000 people & 20,000 jobs  
400 people & jobs per ha  
7,500 condo Units  
3.5 million sq ft Office/Retail

## 407 Hydro Transmission Corridor "The Great Hydro Wall" - 148 ha

Storm Pond  
7.0 ha

407/7 Island  
7.0 ha

Langstaff Gateway - by Peter Calthorpe  
Approved Secondary Plan - 2009  
47.4 hectares  
38,600 people & 20,000 jobs  
1,140 people & jobs per ha

Markham Hydro Corridor

Vaughan Hydro Corridor  
24.4 ha

The Langstaff approved Secondary Plan help create the justification for the Yonge Subway Extension north to Highway 407/7 in Richmond Hill



# Viva Bus Terminal - "Became De facto Transit Site"

The infrastructure planning and investments we do today will determine the quality of our lives for generations to come. Despite consensus on the seriousness and scope of the problem, we can't seem to agree on how to solve it.

Transit planning should not be a political decision, it should be based on technical and economic merits.

Baseline - Current Approved EAs and Secondary Plans

407 Bus Transitway (should be amended)	- 2008
Yonge Street Subway Ext (should be amended)	- 2010
Approved Langstaff Secondary Plan	- 2009
Approved RH Ctr Secondary Plan	- 2010

Yonge St Subway Ext and 407 EA ran from the constraints -  
Yonge Subway & 407 Transitway were directed to Silvercity

- 1: Avoided Yonge subway line staying on Yonge Street
- 2: Avoided addressing Storm Pond
- 3: Avoided Hydro Transmission Towers
- 4: Avoided land between Hwy 407 and Hwy 7
- 5: Avoided addressing 7/407 bridges issue
- 6: Avoided Yonge Street Woodlot - (woodlot is in bad shape)
- 7: Replicating Finch parking lot in the 407 hydro corridor

The municipal planning process that happened at the Yonge Street 407/7 area is a clear example of parochial planning.

RHC Development & Construct Costs - \$3,390,973,000

## 3: Viva Bus Terminal - "Became The DeFacto Transit Site"

1. Bus Terminal Site - Selected by York Region - no EA was ever done
2. GO Transit were told to move from 407 to Bus Terminal site - no EA was ever done
- 3: MTO's 407 Transitway EA - was steered to York Region's Bus Terminal
- 4: TTC'S Yonge Subway Extension EA was steered to York Region's Bus Terminal

Silvercity S B T G

RH Centre Secondary Plan  
68.0 hectares  
17,000 people & 20,000 jobs  
400 people & jobs per ha

## 407 Hydro Transmission Corridor

"The Great Hydro Wall" - 148 ha

Storm Pond  
7.0 hectares

407/7 Island  
7.0 hectares

Langstaff Community  
47.5 hectares  
38,600 people & 20,000 jobs  
1140 people & jobs per ha

Markham Hydro  
Corridor

Vaughan Hydro Corridor  
24.4 hectares  
TTC 2,000 car parking lot

S Longbridge

1. Keep 407 Transitway in its own established transportation corridor
2. Keep Yonge Subway Extension in its own established transportation corridor

Baseline Construction Costs - \$ 3,390,973,000

# The Whole is Greater Than The Sum of Its Parts

Need to do some new EAs or amend some existing EAs

Amend 407 Bus Transitway (rail)	2019
Amend Yonge Street Extension	2019
Relocate Storm Pond EA	2019
Bury the Transmission Lines EA	2019
Urbanize Yonge St 407 Interchanges	2019

Relocate the Richmond Hill Transit Hub to 407/7 Island:

1. Reduce cost of construction
2. Reduce cost of rail operation
3. Reduce societal impact cost
4. Gain \$1+ Billion in land value capture

Solving and managing baseline constraints:

- 1: Keep Yonge Subway Extension on Yonge Street
  - 2: Re-locate the Storm Pond to south of 407, west of Yonge
  - 3: Locate the Hydro Transmission lines into a 10m ductbank
  - 4: Use the 407/7 Island land as the Integrated Destination hub
  - 5: Engineering solution for the 7/407 Bridges
  - 6: Keep Subway on Yonge Street (Woodlot is in bad shape)
  - 7: Build 2,500 car parking structure over a storm surge tank
  - 8: Urbanize Yonge 407 Interchange
  - 9: Build parkland over CN Rail Line
  - 10: Build winter garden over 407 - connecting Hub to Langstaff
  - 11: Build store link over Highway 7 connecting north side to Hub
  - 12: Develop RIC community in the former Vaughan Hydro Corridor
- Re-purposed the hydro lands for their highest & best use

Economic Opportunities by addressing and solving the constraints

Construction Costs - saves over RHC	\$ 835,000,000
Land value capture 52.5 ha	\$ 1,250,000,000
Additional Economic Opportunity - \$20 billion - 30 billion	

**Vaughan Hydro Corridor 20.0 ha**  
**Storm surge tank with 2,5000 garage on top**  
**6,500 Condo Units, 1m sq commercial**  
**LVC - \$500,000,000**

## 4: The Whole is Greater Than The Sum of Its Parts

1. Burying the 407 Hydro Transmission Lines - Feasibility Study done by Siemens Canada
2. Approval in Principle by Hydro One on GIL Technology - Hydro One wants a 10m ductbank
3. Construction Cost analysis done between RH Ctr and 407/7 Ctr - Study by NCE
4. Cost Analysis and Economic Impact Studies done by HDR Engineering
5. Hwy 407 Hwy 7 bridge structural analysis - done by Footprint Engineering
6. Feasibility Study & 3D Massing Modelling - done by Torti Gallis
7. Alectra Inter City Express 3D Animation Video - Michael Morressey & Sean Guadron
8. Integrated Infrastructure and Transit Hub - 3D Modelling - Adamson & Associates, Caesar Pilli

**RH Centre Secondary Plan**  
**68.0 hectares**  
**17,000 people & 20,000 jobs**

**Storm Pond Area & Island**  
**32.0 hectares**  
**LVC - \$750,000,000**

**Storm Pond**  
**7.0 hectares**

**407/7 Island**  
**3.0 hectares**

**Langstaff Community**  
**47.5 hectares**  
**35,000 people & 20,000 jobs**

**Markham Hydro Corridor**

**Items included in the 407/7 station construction costs are:**

- 1: Bury 407 hydro lines from Red Maple to Valley lands west of Yonge - roughly 2km
- 2: Relocating 407/Yonge storm pond to the Vaughan hydro corridor
- 3: Urbanizing the Yonge Street 407 interchange
- 4: Hwy 407 & Bridge structure construction costs taking into consideration
- 5: Eliminate Longbridge and Silvercity Stations and replaced with Yonge/407/7 Station
- 6: Frees up 52.5 ha of land to repurpose for the highest and best use



# Land Value Capture – (Maximum Returns by Creating A Great Place)

## Land Value Capture Strategies

Land value capture (LVC) is a method of funding infrastructure improvements that is successful upon recovering all or some of the increase in property value generated by public infrastructure investment. LVC can help mitigate the challenges governments face in obtaining public funding, while also providing benefits to private sector partners. Land Value capture mechanisms rectify clawing back at least some or all of the increased business revenue or land value. These funds are then allocated towards the initial costs of infrastructure provision. Land value uplift can also help ensure that affordable housing for low income groups are included in new development. Most of the lands in the 407 hydro corridor is in government hands. To get the maximum land value capture return, we need to masterplan the area as a complete, walkable urbanism, high-rise, mixed use rail integrated community.

## Transit Development Impact Fees (TDIF- Development charge)

A one-time charge on new development designed to cover costs associated with its impact on public transit systems. Local governments can look to developers to contribute to the impacts of the rail integrated communities development.

## Tax Increment Financing (TIF) - "approved but not enacted by the Ont Gov't yet"

A funding strategy used by cities to promote economic development within a designated area that is deemed "blighted" or "underdeveloped" (407 Hydro Corridor). Widely used in USA Cities, TIF is used to divert anticipated property tax increases to a dedicated fund, which is reinvested into public infrastructure within the TIF district.

## Special Assessment Districts (SAD)

In districts in which land value has increased as a result of public infrastructure improvements, like upgraded transit systems, an additional tax is assessed on parcels to recover the costs of the public improvement project. SADs are most useful to fund localized improvements, such as new transit stations on existing lines or district-specific improvements like bus or light rail.

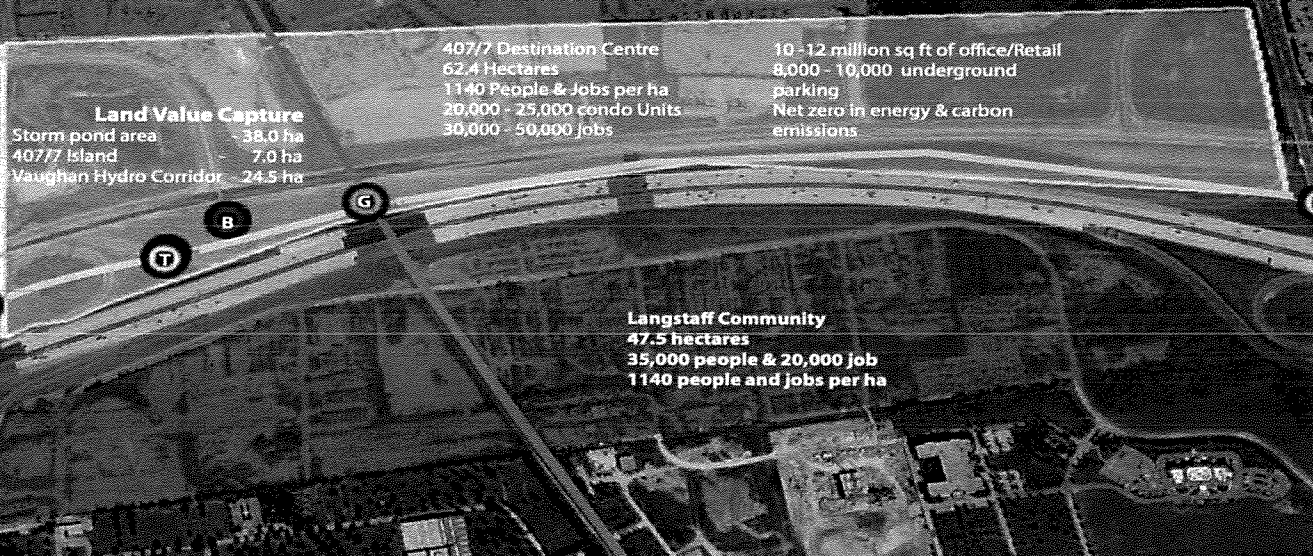
Vaughan TDD  
Storm Pond with 3,000 parking Structure on top  
6,500 condo units  
1 million sq ft - Retail/Office

## 5: Land Value Capture

Engage a world class, architectural, urban design, engineering firm, if we want to realized maximum land value capture

RH Centre Secondary Plan  
68.0 hectares  
17,000 people & 20,000 jobs  
400 people and jobs per ha

DG Group



**Estimated Land Value Capture 52.5 ha - \$1,250,000,000**

# 407/7 Integrated Destination Centre

## Create Complete Rail Integrated Community Stations

- Make it better with a vision
- Get the land use right, promote density
- Create convenient pedestrian connections
- Ensure good urban design
- Create compact development patterns
- Get the parking right
- Make each station a "Place" not a "Project"
- Make retail development market driven, not transit driven
- Engage Corporate and Investor Attention
- Get the local transit right "first mile/last mile strategy"

## How far will people walk to the station?

Planners invariably work on the basis that bus and tram users will walk no more than 400 metres from home to the nearest stop. It's known travellers will walk further to catch a train, so the maximum walk distance to a rail station is accordingly usually taken as 800 to 1,000 metres.

People will walk further for rail transit, especially if the walk is protected from the elements, safe, interesting, productive and enjoyable. People travelling on the GO system to Union Station will walk 1,700 metres to the Queen Street area in an underground animated walkway.

Developing a first mile, last mile strategy which could include autonomous vehicles, uber type services, Personal People Mover, trams and walkways.

## 6: Transit Destination Centre "Zone of Influence"

1. Create one integrated community "the whole is greater than the sum of its parts"
2. Create One integrated complete mixed-use destination transit Hub
3. Solve the last mile/first mile with an autonomous vehicle strategy, PPM or Tram
4. Comprehensively, holistically and strategically plan the Destination Centre uses
5. Incorporate District Energy, central garbage system, fire station, energy storage, IOT

RHC - 18,000 people  
- 19,000 jobs

RH Centre Secondary Plan  
68.0 hectares  
17,000 people & 20,000 jobs  
400 people & jobs per ha

Storm pond - 7.4ha

407/7 Destination Ctr - 7.4ha

407/7 - 38,000 people  
- 50,000 jobs

Langstaff - 38,000 people  
- 19,000 jobs

Langstaff Community  
47.5 hectares  
35,000 people & 20,000 jobs  
1140 people & jobs per ha

Vaughan - 18,000 people  
- 8,000 jobs

## 407/7 Integrated Destination Transit Centre

1. Keep 407 Transitway in its own established transportation corridor
2. Keep Yonge Subway Extension in its own established transportation corridor

Vaughan TDD  
Storm Pond with  
6,000 cond units



# World Class Architectural/Urban Design/ Engineering Opportunity

## Importance of Visionary Planning

**framework for growth:** Need a common vision and follow it through with a plan to implement in an orderly fashion. Such transformational change is not a product of spontaneity but instead of good constructive visionary planning.

**planned community is a well prepared community:** Anticipating the future allows us to stay ahead of challenges. With reliable information, we will be able to make decisions between the long-term vision and the short term actions. Communities that don't actively plan for their future will be left behind.

**planning improves impact:** We were elected to deliver community improvements. Successful communities build momentum by undertaking priority projects that are aligned with their vision.

**well thought out Urban form is extremely important:** Housing, employment, accessibility, security, affordable and seniors housing, transit and safety are key concerns for urban dwellers. The right policies on density, land use, public space and the layout of infrastructure make a difference in delivering quality of life.

**good visionary plan will have a positive impact on the urban economy:** We compete to attract investment with a view to generate economic activity. Planning coordinates the spatial location, distribution of economic activity, facilitates land value capture from public investment and the transformation of underutilized land to valuable urban land.

**collectively held plan allows communities to build lasting relationships:** People that see opportunity in urbanization need to engage all possible avenues toward realizing it. A commonly held vision gives people a road map to mobilize citizens and partners to be engaged in realizing the plan.

**broader territorial perspective helps communities attain economies of scale:** Communities that plan together can make a competitive advantage out of cross-municipal coordination. In addition to spatial efficiencies, this would allow them to draw on economies of scale to boost their economic negotiation powers.

**continuity generates credibility:** Successful communities have ensured continuity of plans through political cycles, realizing that a stable road map will make us more credible. Investment is a long term endeavour that benefits from predictable conditions. Spatial planning is an asset to reduce uncertainties and continuity contributes to the creation of opportunities for an engaged society.

**anticipating is more cost effective than reacting to problems:** We have an opportunity of driving constructive change, we must move away from laissez-faire. Communities that long term plan will be in a position of anticipating rather than reacting.

**vision gives consistency to message:** Communication is a key asset for communities, but the opportunity to connect and convey a community's advantages can be undermined by empty or contradictory messages. Momentum and support are increased when we demonstrate substantive progress that is consistent with the collective framework (vision) for action.

## 7: World Class Architectural Design/Engineering Opportunity

Need a Comprehensive and Holistic Community Building Planning Approach

SOM – Skidmore Owens and Merrill – Chicago, IL  
Adamson & Associates – Toronto, Ont

Kohn Pedersen Fox Architects – New York, NY  
César Pelli.-Pelli Clarke Pelli Architects – Princeton, N.J.

407 / 7 Integrated Destination Transit Centre						
Area	Hectares	Condo Units	People	Retail/Office (M)	Jobs	People/Jobs
Langstaff	47.37	15,000	33,000	3.5 sqft	21,000	1140 per ha
Richmond Hill Centre	68.02	7,500	16,500	3.5 sqft	21,000	400 per ha
Hwy 7 Hydro Corridor	48.58	18,000	39,600	8 sqft	48,000	1140 per ha
Vaughan TDD	21.86	7,500	16,500	1 sqft	6,000	1140 per ha
<b>Totals</b>	<b>185.83</b>	<b>47,000</b>	<b>105600</b>	<b>16 sqft</b>	<b>96,000</b>	

## Burying the Hydro Transmission Lines "A Game Changer"

Estimated Construction Costs  
**\$2,555,612,000**

### Langstaff/Richmond Hill/Vaughan Centre Design Objectives

- 1: Reduce urban sprawl & Gridlock
- 2: Maximize utilization of government lands and assets
  - (a) bury hydro transmission lines
  - (b) relocate the storm pond
  - (c) urbanize 407 interchange
  - (d) bury hydro transformer station
  - (e) urbanize public schools and high school
- 3: Build parks over the CN rail lines

- 6: Create a seniors friendly community
- 7: Create a net-zero in energy and carbon emissions community
- 8: Create a leading edge IOT technology community
- 9: Encourage every price point to live around the transit station
- 10: Manage waste, graywater & storm water locally
- 11: Plan the 200+ ha as a RIC community to achieve a high transit modal split
- 12: Plan the 407/7 development centre as a high-tech IIOT community



## Land Ownership

### 8: Langstaff, Richmond Hill and Vaughan Land Ownership



# Development Charges, Cash-in-lieu, Tax Incremental Financing

## 9: Development Charges / Tax Incremental Financing

### Estimated Development Charges - \$50,000 a condo unit

1: Langstaff Gateway	18,000 units x \$50,000 = \$900,000,000
2: Richmond Hill Centre	7,500 units x \$50,000 = \$375,000,000
3: Hwy 7 Hydro Corridor	18,000 units x \$50,000 = \$900,000,000
4: Vaughan Hydro Corridor	7,500 units x \$50,000 = \$375,000,000

### Estimated Cash-in-Lieu - \$20,000 per Condo unit

1: Langstaff Gateway	18,000 units x \$20,000 = \$360,000,000
2: Richmond Hill Centre	7,500 units x \$20,000 = \$150,000,000
3: Hwy 7 Hydro Corridor	18,000 units x \$20,000 = \$360,000,000
4: Vaughan Hydro Corridor	7,500 units x \$20,000 = \$150,000,000

### Land Value Capture - Land Values = \$24.7m per hectare

1: Langstaff Gateway	10.0 ha x \$24.7m = \$ 247,000,000
2: Richmond Hill Centre	0.0 ha x \$24.7m = \$ 0
3: Hwy 7 Hydro Corridor	50.0 ha x \$24.7m = \$1,237,000,000
4: Vaughan Hydro Corridor	20.0 ha x \$24.7m = \$ 494,000,000

### Tax Incremental Financing - Average Property Tax per Condo Unit - \$2,000

1: Langstaff Gateway	
2: Richmond Hill Centre	
3: Hwy 7 Hydro Corridor	
4: Vaughan Hydro Corridor	

### Richmond Hill Integrated Transit Centre

1: Cost of Construction	\$3,390,600,000
2: 50 yr Operation Costs	\$110m a yr x 50yrs \$5,500,000,000
3: 50 yr Societal Costs	Excessively High

### Yonge Street 407/7 Integrated Destination, Transit and Utilities Centre

1: Cost of Construction	\$2,555,600,000
2: 50 yr operation Costs	\$ 52m a yr x 50 yrs \$2,510,000,000
3: 50 yr societal Costs	very comfortable

## 9: Development Charges / Tax Incremental Financing

Richmond Hill Centre

Highway 7 Hydro Corridor

Langstaff Gateway

Vaughan Hydro Corridor



# Burying 407 Hydro Line Alternatives – (Gas Insulated Line Technology)

## Advantages of Gas Insulated Lines Technology

**Low losses:** Resistance losses with GIL are lower than with cables or overhead lines. The dielectric losses with GIL are negligible, which helps to reduce the operating costs. Heat emissions are better than with cables, thanks to the larger external diameter. With GIL, there is normally no need for highly refined cooling systems.

**Low electrical compensation:** The low capacitance of GIL systems means that they only need phase angle compensation devices once the system length exceeds about 70 kilometers.

**Low electromagnetic fields:** The phase current induces an almost identical reverse current in the enclosure. This means the magnetic field outside the GIL is negligible. Even in EMC-sensitive areas (such as close to residential areas or hospitals), there is generally no need for special shielding.

**Greater safety:** Even in the event of an internal insulation failure, the internal arc would be safely enclosed within the outer housing. There are no external impacts on humans or other parts of the system. GIL systems are non-flammable and do not contribute to the fire load. The result is the best possible protection for both people and the environment.

**High reliability:** GIL technology has proven its reliability in more than 40 years of operation, with no failures to date.

**No aging:** The GIL insulation system is not prone to either electrical or thermal aging. GIL systems are almost maintenance-free.

**Used in the same way as overhead lines:** GIL systems are the ideal complement to overhead lines. The high transmission capacity offered by GIL makes it possible to provide a continuation for overhead lines underground, with one GIL tube per phase, which minimizes space consumption. GILs allow automatic reclosure, hence do not require major changes of operation and protection schemes of the grid.

**Maintenance-free design:** The physical properties and the use of high-quality materials make this an almost maintenance-free product. Routine maintenance is limited to an external inspection, and the line can remain in operation during inspection activities.

## 10: Gas Insulated Lines Technology Alternative Alignments



North of Highway 7  
3,780m - \$222,754,000

South 407 Highway  
3,200m - \$228,695,000

Holy Cross Cemetery  
3,212m - \$190,057,000



# Richmond Hill Centre – Zone of Influence



# Yonge Street – 407/7 Destination Centre – Zone of Influence

800 Metres

Bantry

1000 Metres

407/7 Centre

Storm Pond – 27.0 ha

407 Island – 8.0 ha

800 Metres

Royal Orchard

