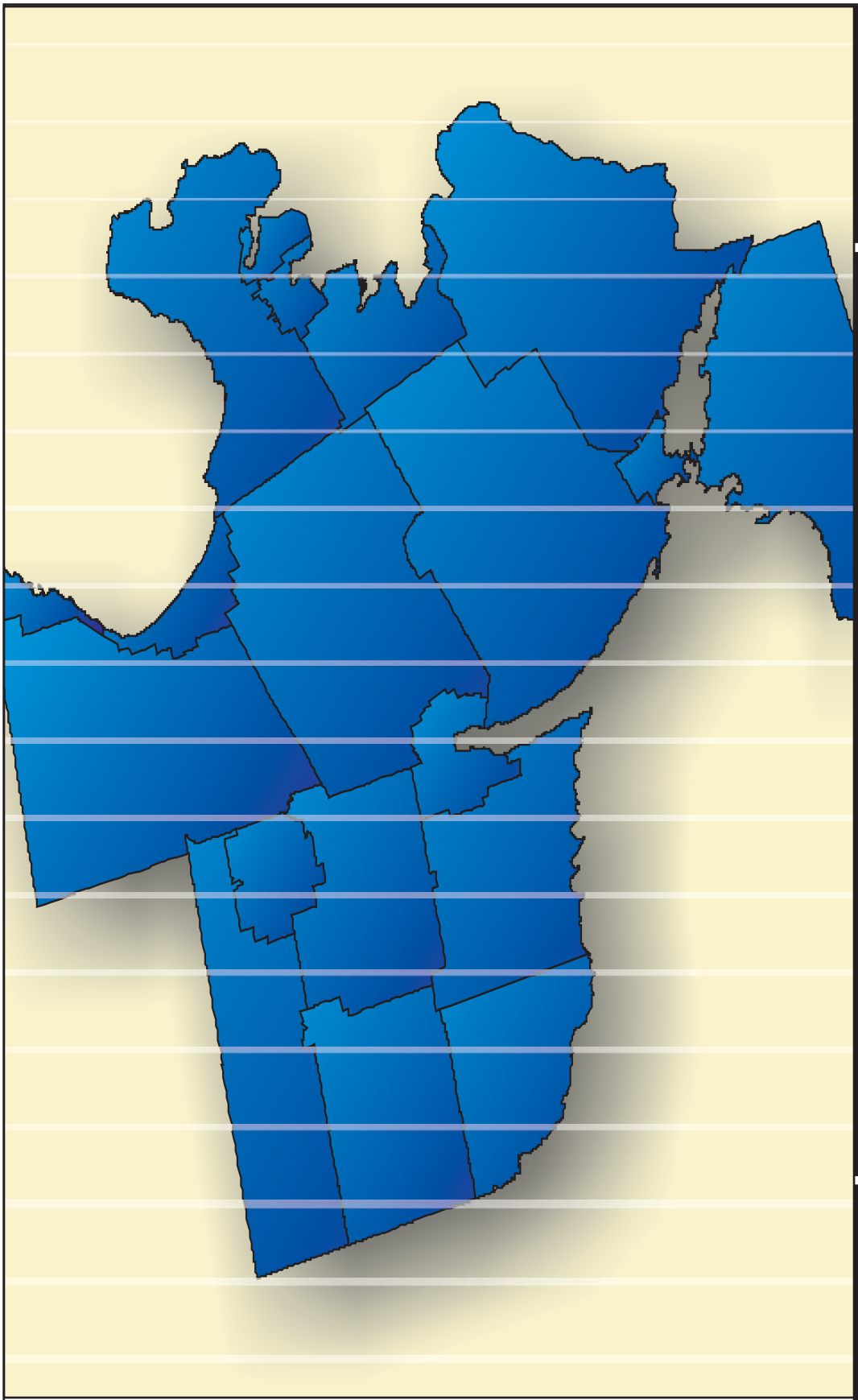

August
2006

Intergovernmental Action Plan for Simcoe, Barrie & Orillia

Growth Potentials Assessment Report

DILLON CONSULTING

Ainley Group
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TeraTrends
Will Dunning Inc

August 29, 2006

Ministry of Municipal Affairs and Housing
2nd Floor, 777 Bay St
Toronto, ON L3S 2J1

Attention: Bruce Singbush, Manager – Planning Projects

Intergovernmental Action Plan (IGAP) for Simcoe County, Barrie and Orillia - Growth Potentials Assessment Report

Dear Mr Singbush:

We are pleased to submit the Growth Potentials Assessment Report to the IGAP Partners. This report along with the Implementation Assessment Report, Existing Capacities Assessment Report and seven foundation reports represents the culmination of a comprehensive sixteen month effort by our consultant team in conjunction with the Infrastructure Working Group and Growth Potential Working Group for IGAP. As part of the IGAP process, we assessed the existing capacity in the Study Area to accommodate approved development and planned growth, recommended an urban structure to accommodate the growth projected for the Study Area in the Greater Golden Horseshoe Growth Plan and proposed service delivery options to support the recommended urban structure.

This work represents the best efforts of our team to provide the IGAP Partners with a solid information base and sound professional advice as they move forward over the coming months to make some strategic decisions on the management of future growth and governance in the Study Area. We believe our work provides a strong foundation and reference point to the Partners in their deliberations.

We have enjoyed the opportunity of working on this challenging growth planning assignment.

Yours sincerely,

DILLON CONSULTING LIMITED

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Project Manager

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The consulting team would like to thank the following stakeholders who participated in the growth potentials analysis.

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Mayor Brian Jackson, Town of Innisfil
Mayor George MacDonald, Town of Midland
Mayor Mike MacEachern, Town of New Tecumseth
Mayor Anita Dubeau, Town of Penetanguishene
Mayor Cal Patterson, Town of Wasaga Beach
Mayor Tom Walsh, Township of Adjala-Tosorontio
Mayor Fran Sainsbury, Township of Clearview
Mayor David Guergis, Township of Essa
Mayor J. Neil Craig, Township of Oro-Medonte
Mayor Bill Duffy, Township of Ramara
Mayor Phil Sled, Township of Severn
Mayor John Brown, Township of Springwater
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Stakeholders
We gratefully acknowledge the participation of those stakeholders from the community known to have participated in this study. We also thank all others who contributed to this study either anonymously or whom we have inadvertently left unrecorded. We appreciate the contribution of the following persons or groups to the success of this study:

Aggregate Producers Association of Ontario
Barrie Land Developers Association
Blue Mountain Watershed Trust
Brereton Field Naturalists
Collingwood Environment Network
Ducks Unlimited Canada
Dufferin Federation of Agriculture
Durham Region Federation of Agriculture
Farm Credit Canada
Federation of Ontario Naturalists (York Simcoe Naturalists)
Federation of Ontario Cottagers Association
Friends of the Minesing Swamp
Environmental Defense
Georgian Triangle Anglers Association
Georgian Triangle Development Institute
New Tecumseth Farmers Association
New Tecumseth Streams Committee
Nottawasaga Steelheaders
Ontario Cattlemens Association
Ontario Federation of Agriculture - Simcoe County
Ontario Federation of Anglers and Hunters
Ontario Independent Poultry Processors
Ontario Institute of Agrologists, Huronia Branch
Ontario Stockyards Inc.
Orillia Fish and Game Conservation Club
Provincial Federation of Agriculture
Rescue Lake Simcoe Coalition
South Lake Simcoe Naturalists
Township of Springwater Developers
Urban Development Institute
York Region Federation of Agriculture

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EXECUTIVE SUMMARY

The areas of Barrie, Orillia and Simcoe County are growing at a rapid rate. Over the next thirty years the area as a whole can expect an additional 275,000 residents and another 100,000 jobs, making it the second most highly populated area of outer ring municipalities[1] in the Greater Golden Horseshoe.

With the pressure for growth comes a host of issues and questions that need to be resolved in order for the area to blossom and prosper in a manner that satisfies the residents, businesses, governments and agencies that call the area home.

The Inter-Governmental Action Plan (IGAP) is a wide-ranging initiative aimed at addressing the key issues surrounding growth. Participants from the Province, County and the sixteen member municipalities, the Cities of Barrie and Orillia, along with the two conservation authorities, consultants and various stakeholders have all come together with the goal of providing development, environment (watershed) and governance certainty.

The Province of Ontario has taken a lead role in providing municipalities with a general vision of how communities should grow through its Provincial Policy Statement, *Growth Plan for the Greater Golden Horseshoe* and a number of other policy initiatives and legislation.

The overall objective for the Growth Potentials Assessment (GPA) is to provide direction for an appropriate and practical urban structure for the study area, as well as recommendations regarding future steps and actions. The GPA is built upon the previous work completed in the Existing Capacities Assessment and the Assimilative Capacity Study. Using provincial policy and stakeholder feedback as a guide, the study team set out to develop and evaluate a number of possible options for future growth. All options assume that a significant portion of new growth is through intensification (i.e. 15% minimum based on a physical potentials assessment and up to 40% as per the provincial target). Option 1 uses a business as usual approach to growth management, meaning that municipalities would maintain the existing shape and form of local plans, with no consideration for new urban expansion areas. Because Option 1 does not account for urban expansion and only allocates growth to fully serviced settlement areas, it does not quite meet the provincial population projections or match growth to all areas of demand. Options 2 and 3 more strongly take into account the provincial vision for growth, directing growth to the areas' major urban centres. Options 2-4 assume that growth can be redistributed given that land supply commitments already accommodate population forecasts. For all options, the majority of growth is accommodated in existing urban areas with some urban expansion. Option 2 considers new urban residential lands in Barrie and area only and assesses two different levels of intensification, both physical potential and a 40% level (to meet the *Growth Plan for the GGH* target). Option 3 considers new urban residential lands in Barrie and area, Bradford-West Gwillimbury and Alliston. Option 4 considers new urban lands in Barrie and area, Bradford West-Gwillimbury, Alliston, Cookstown and Alcona. All options considered new employment lands in Barrie and area. In addition to this, Options 1, 3 and 4 also considered new employment lands in Bradford West Gwillimbury.

A detailed evaluation of each option was undertaken and used a wide range of indicators that considered criteria based on the following categories:

[1] The outer ring municipalities of the GGH is comprised of the County of Cumberland, County of Peterborough, City of Peterborough, City of Kawartha Lakes, County of Simcoe, City of Barrie, City of Orillia, County of Dufferin, County of Wellington, City of Guelph, Region of Waterloo, County of Brant, City of Brandford, County of Haldimand and the Region of Niagara.

- Building strong communities;
- Protecting public health and safety;
- Wise use and management of resources;
- Financial viability;
- Implementation assessment; and,
- Public response.

The study team compiled evaluation data for the options and based on the results, two options were selected for further consideration - Options 2 and 3. Each option was then optimized and reconsidered. Option 2, Barrie and Area Centred Single Node, was selected as the preferred urban structure option, as it best responds to the challenges and criteria.

The recommended urban structure:

- Allocates 25 years of growth to each area municipality to meet the residential and employment demand predicted by the GPA analysis;
- Directs most growth to three-tiers of fully-serviced settlement areas (Barrie; five settlements of 25,000 population or more; 15 smaller settlements, as well as supporting a number of partially-serviced rural service centres with modest growth);
- Contains urban expansion to one mixed use node south of Barrie in the Town of Innisfil and a small expansion of the employment area at Highway 400 and Hwy 88;
- Recommends intensification of existing urban areas.

It is important to note that, with the selection of the Barrie and Area Centred Option, come a number of additional recommendations. The recommended urban structure is a "package deal" of social, economic and environmental benefits and costs. For example, in order to reap the benefits of the growth in the vulnerable water systems of south Simcoe, it is essential that the environmental impacts are kept to an acceptable range (i.e. maintain and improve watershed health) by implementing a number of initiatives and best practices. In addition, the recommended urban structure is dependant on redistributing committed growth within the parameters set out in the *Growth Plan for the Greater Golden Horseshoe* and the *Provincial Policy Statement*. The recommended urban structure also recognizes that additional study is required, including:

- Initiatives are needed by the IGAP partners to implement the planned urban structures through one regional vision;
- A comprehensive intensification study and implementing strategies are needed to meet the *Growth Plan for the GGH* population and employment forecasts for Barrie, Orillia and Simcoe;
- Health of the watersheds needs to be maintained and improved through cooperative decision-making and innovative design standards and practices;
- An implementation strategy is needed to strengthen the countryside; and
- A program is needed to prioritize infrastructure investment.

The findings and recommendations documented in this report, the seven foundation reports, and the ECA SWOT Report are intended to be used as tools for IGAP partners and future decision-makers. The time for change is now. The IGAP process has brought the area municipalities together as partners to discuss which options are best for all. The IGAP partners can take the opportunity to continue to use this forum and the comprehensive facts and analysis available to confirm the area-wide urban structure and establish the necessary implementation mechanisms, tools and policy.

The cover page displays the study area as a collection of distinct, separate municipalities. The above LANDSAT 7 image offers a counter to this view, showing the study area as one contiguous system.

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1.0 IMPETUS

The County of Simcoe and Cities of Barrie and Orillia recognize that they must change their approach to managing growth. Significant demand for residential and employment development in the area is putting pressure on the watershed systems and the natural amenities that define the health and character of the area. As well, the Province has provided clear direction on the quantum of growth for the area over the next twenty-five years and guidance on how communities can achieve a strong economy, a clean and healthy environment and social equity. In response, the Province, County of Simcoe and its area municipalities, as well as the Cities of Barrie and Orillia have collectively embarked on an ambitious process to manage growth in an effective and sustainable manner.

The Intergovernmental Action Plan (IGAP) process was created as a forum for collaborative research, dialogue and decision-making among the Province, County, 16 area municipalities as well as the separated Cities of Barrie and Orillia in order to achieve the collective goals of the partners. The four desired outcomes of the IGAP are:

1. A defined growth (assimilative) capacity of the Lake Simcoe and Nottawasaga River watersheds;
2. Development (servicing) certainty for intensification and approved growth;
3. Defined capacity for Barrie and area's additional growth; and,
4. Effective and sustainable municipal governance.

The purpose of the IGAP is to provide the affected partners with facts, analysis and the proper tools to assist them in their planning and development decision-making. Building upon the IGAP process, and through subsequent municipal analysis and decision making, it is expected governments will have a solid basis for:

- A long-term urban structure plan for Simcoe County and the Cities of Barrie and Orillia;
- A sustainable infrastructure strategy for Simcoe, Barrie and Orillia;
- Development certainty for affected stakeholders; and,

The health of lakes and rivers in the study area are a key consideration in IGAP.

"The purpose of the IGAP is to provide the affected partners with facts, analysis and the proper tools to assist them in their planning and development decision-making".

- A suitable governance structure and/or service coordination mechanisms to manage future growth and development.

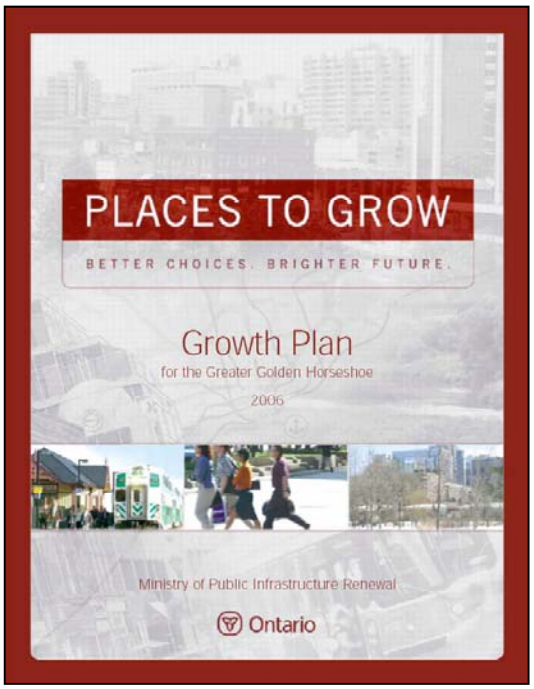
One indirect outcome of IGAP is that the process has, for the first time, begun a multi-faceted dialogue amongst the study area's key stakeholders. This dialogue should help develop social capital, as planners, engineers, politicians and other stakeholders from all over the study area have come together in an open forum to address growth management.

The Province's Strong Communities program includes developing long-range planning solutions for Central Ontario. Multiple interrelated initiatives are in-place, including, the *Growth Plan for the Greater Golden Horseshoe (GGH)*, Planning Reform, Watershed-based Source Water Protection Planning, *Greenbelt Plan*, and the 10-Year Strategic Infrastructure Investment Plan.

Unique growth and development challenges exist in Simcoe County and the Cities of Barrie and Orillia (referred to as the Study Area in this report). The southern area of Simcoe County and Barrie, in particular, are experiencing increased development pressure, and are expected to continue to have rapid growth. A number of the municipalities in the study area rely on inland water systems which have been demonstrated to be under strain (for example the Lake Simcoe watershed has known issues as a result of phosphorous loadings). Without intervening action, the available potable water, aquaculture and recreational opportunities of these watersheds are threatened.

Through their approved official plans, the municipalities in the study area make provision for a significant amount of growth. At the same time, several major developments are being proposed that involve the establishment of new urban settlement areas or the expansion of existing urban areas. Based on current conditions, there will be insufficient existing sewer and/or water capacity to accommodate approved development and/or planned land uses within existing settlement areas.

In order to accommodate planned growth, several major infrastructure municipal class environmental assessments are underway and/or nearing completion. However, these studies have not been undertaken in a comprehensive or coordinated fashion.



The Places to Grow Growth Plan for the Greater Golden Horseshoe provides strategic direction for IGAP.

The municipalities in the study area are also under increasing administrative and financial capacity constraints.

The partnership for IGAP is made up of the following Provincial Ministries and municipalities[2]:

Provincial Ministries include:

- Municipal Affairs and Housing
- Environment
- Public Infrastructure Renewal
- Natural Resources

Municipalities include:

- Simcoe County
- Township of Adjala-Tosorontio
- Town of Bradford West Gwillimbury
- City of Barrie
- Township of Clearview
- Town of Collingwood
- Township of Essa
- Town of Innisfil
- Town of Midland
- Town of New Tecumseth
- City of Orillia
- Township of Oro-Medonte
- Town of Penetanguishene
- Township of Ramara
- Township of Severn
- Township of Springwater
- Township of Tay
- Township of Tiny, and
- Town of Wasaga Beach

Figure 1.1 shows the location of the above municipalities and the study area as a whole.

The partners want to further their common interests in:

- Protecting the environment, including the water quality and quantity of the Nottawasaga River and Lake Simcoe watersheds;
- Fiscally sustainable growth, through efficient, cost-effective development and land use patterns;

"The partners want to further their common interests in effective municipal governance and service delivery through inter-governmental cooperation and coordination".

[2] Note that the two First Nations communities, Christian Island and Mnjikaning (Rama) are not included in the analysis undertaken in the GPA, as the federal government has jurisdiction over these lands.

Parry Sound

GEORGIAN BAY

District of Muskoka

PENETANGUISHENE

MIDLAND

TINY

TAY

SEVERN

LAKE COUCHICHING

COLLINGWOOD

WASAGA BEACH

ORILLIA

RAMARA

ORO-MEDONTE

SPRINGWATER

CLEARVIEW

County of Grey

County of Simcoe

BARRIE

LAKE SIMCOE

City of Kawartha Lakes

CFB BORDEN

ESSA

INNISFIL

NOTTAWASAGA BAY

County of Dufferin

ADJALA-TOSORONTIO

NEW TECUMSETH

BRADFORD-WEST GWILLIMBURY

County of Wellington

Region of York

Region of Durham

Region of Peel

City of Toronto

LAKE ONTARIO

Region of Halton

Kilometres

0 5 10 20 30 40

Intergovernmental Action Plan for Simcoe, Barrie and Orillia

Figure 1.1 Study Area

LEGEND

- Upper Tier Municipality[1]
- Lower Tier Municipality[1]
- IGAP Study Boundary[2]
- Single Tier Municipality[1]

Ontario

Projection: UTM zone 17N NAD83
Data Sources: 1. Ontario Ministry of Natural Resources
2. Ontario Ministry of Municipal Affairs and Housing

Created by: CCK
Checked by: EW

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Last Modified July 26, 2006

- Effective municipal governance and service delivery, through inter-governmental cooperation and coordination.

The IGAP is a four-step approach to address the above-noted matters of common interest. The first step of the IGAP is an analysis of assimilative capacity of the Nottawasaga River and Lake Simcoe watersheds by the Lake Simcoe Region (LSRCA) and Nottawasaga Valley (NVCA) Conservation Authorities. The second step of the IGAP consists of an Existing Capacities Assessment (ECA). The third step is a Growth Potential Assessment (GPA) (this report). The final stage of IGAP is an Implementation Assessment. The Existing Capacities Assessment, Growth Potential Assessment and Implementation Assessment were undertaken by Dillon Consulting in association with the Ainley Group, Enid Slack Consulting, Lapointe Consulting, Clara Consulting, Bourrie & Associates, Caldwell Consulting, TeraTrends, EDP Consulting and Will Dunning Inc.

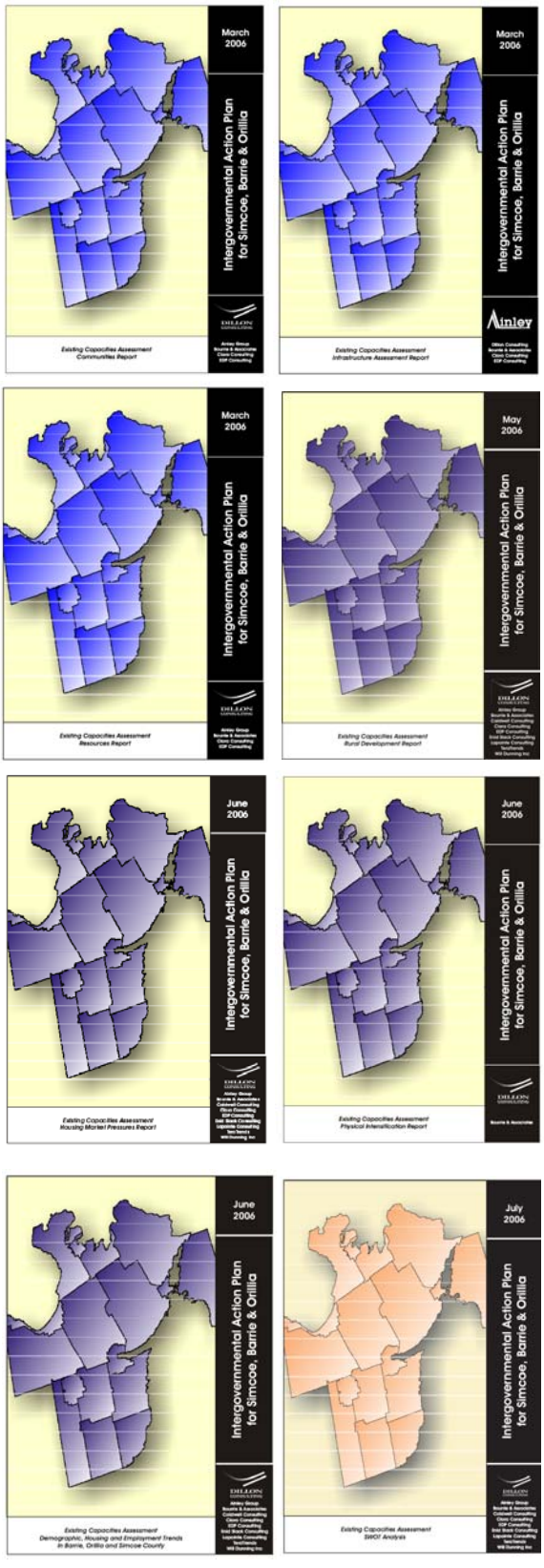
The Existing Capacities Assessment was completed in July 2006. The purpose of the ECA was to:

- Assemble a sound and defensible database on infrastructure and services; and
- Determine existing capacity to accommodate approved development and growth.

The ECA included a review of:

- Approved development and planned land use in settlement areas;
- Existing and planned water and sanitary sewage infrastructure;
- Natural and cultural heritage resources;
- Transportation facilities;
- Public service facilities;
- Economic indicators;
- Physical intensification potential
- Population, employment and demographic trends;
- Housing market; and,
- Rural and agricultural issues.

The results of the ECA are documented in seven foundation reports: *Resources Report* (March 2006), *Communities Report* (March 2006), *Infrastructure Assessment Report* (March 2006), *Physical Intensification Report* (June 2006), *Rural Development Potential* (May 2006) *Housing Market Pressures Report* (June 2006), and *Demographic, Housing and*



Employment Trends in Barrie, Orillia and Simcoe County (June 2006). The key findings of these reports are documented in the *Existing Capacities Assessment SWOT Analysis* (July 2006).

The Assimilative Capacity Study is comprised several reports, including the *CANWET Modeling Project for Lake Simcoe and Nottawasaga River Basins* (April 2006) and the *Pollutant Target Loads: Lake Simcoe and Nottawasaga River Basins* (June 2006), which are summarized in an *Assimilative Capacity Study for Lake Simcoe Watershed and the Nottawasaga River Executive Summary* (July 2006).

The overall objective for this GPA report is to provide direction for an appropriate and practical urban structure for the study area as well as recommendations regarding future steps and actions.

1. It should be recognized that the GPA has been prepared assuming that growth can be re-distributed given that land supply commitments already accommodate population forecasts.

2. In addition, it is assumed that the quantum and distribution of growth will be refined through further analysis and decision-making by the IGAP partners.

The GPA is built upon the previous work completed in the Existing Capacities Assessment and the Assimilative Capacity Study. The recommended urban structure provides a foundation for the last major step of the IGAP process, the Implementation Assessment.

Figure 1.2 shows the overall IGAP process.

This report is divided into five major sections and is as follows:

- Section 1.0 - Impetus (introduction and rationale for report)
- Section 2.0 - Opportunity (a quick overview of central issues driving the GPA)
- Section 3.0 Understanding (a discussion of growth options and evaluation methods)
- Section 4.0 - Vision (a discussion of the preferred option)
- Section 5.0 - Action (concluding thoughts moving forward into the Implementation Assessment phase of IGAP).

Some Acronyms to Remember

ACS: Assimilative Capacities Study
ECA: Existing Capacities Assessment
IGAP: Inter-Governmental Action Plan
IA: Implementation Assessment
GGH: Greater Golden Horseshoe
GPA: Growth Potential Assessment
PPS: Provincial Policy Statement
NHS: Natural Heritage System
SWOT: Strengths, Weaknesses, Opportunities and Threats
UGC: Urban Growth Centre

"It is recognized that the quantum and distribution of growth will be refined through further analysis and decision-making by the IGAP partners".

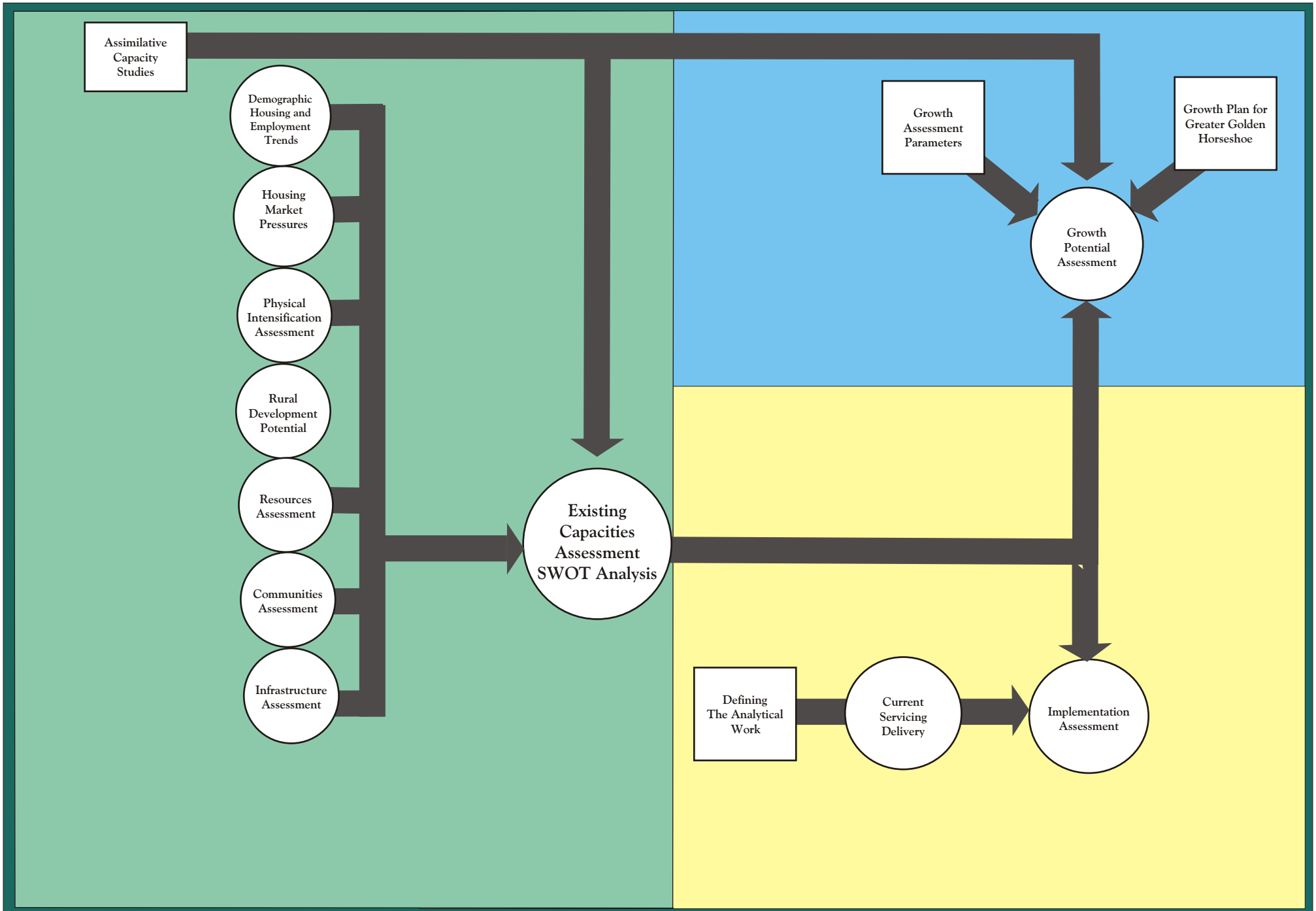


Figure 1.2 IGAP Process

Legend:

Existing Capacities Assessment

Growth Potential Assessment

Implementation Assessment

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August 2006

2.0 OPPORTUNITY

The time for change is now. The IGAP process has brought the area municipalities together as partners to discuss and debate which options are best for all. The IGAP partners can seize the opportunity to use this forum for continued dialogue and decision-making. Appropriate change should build upon the number of opportunities within the study area that already exist. The study area presents many opportunities for vibrant growth including its attractive communities, natural amenities, infrastructure, social services, diverse economy and proximity to the GTA. These opportunities form the starting point for the GPA. They also provide the incentive for a coordinated forum for decision-making based on the best available information. The GPA provides an opportunity for an informed analysis and debate of the issues and options for urban structure for the study area.

The starting point for the GPA is to understand and express the complex and sometimes controversial issues and opportunities facing growth in the study area. The *Existing Capacities Assessment SWOT Analysis Report*, as well as the ECA foundation reports identified the strengths, weaknesses and opportunities for the study area in detail. The following sub-sections provide a synthesis of these issues and opportunities which are the basis for the identification and evaluation of growth options.

2.1 Existing Designated Residential Land Supply is Equivalent to 25-Year Supply and Beyond

The gap analysis documented in the *Communities Report* for land supply indicates that taken as a whole, the land supply needed for the next 25 years is currently designated.

The data reveals that the approved and existing population along with the estimated intensification figures exceed the *Growth Plan for the GGH* population forecasts, meaning that there is enough designated land in the study area to satisfy projected growth. The analysis indicates that one option for accommodating residential growth is to accommodate it within the

existing urban boundaries. However, this type of an option would not address the matching of designated lands with the population and housing projections for the area.

2.2 Currently Designated Residential Land Does Not Match Market Take-up

As previously stated the currently designated land is not always matched to areas of market desirability and rate of land absorption/take-up. The market, population and housing projections show a mismatch between some areas of demand and available supply particularly in Barrie. Some municipalities have land supply that far exceeds the projected population and housing projections for the next 25 years. In order for change from "business as usual" to occur permitting a new urban structure, an acceptable approach to "redistribute" available supply must be agreed to by the IGAP partners. Information on these projections is discussed further in Section 3 of this report.

The ACS model considered impacts of growth on the study area's lakes and rivers. The Black River is shown above.

2.3 The ACS provides a Defensible Modelling Tool to Assess Impacts and Mitigation for Future Growth

The ACS for Lake Simcoe and Nottawasaga River watersheds uses cutting edge technology to predict impacts resulting from future growth based on land use change. The tool was used to assess the impacts of the growth options, allowing for a more informed consideration of watershed targets related to each option. In order for change in the approved growth pattern to be permitted, the ACS targets should be met both in the study area and in adjacent watershed municipalities.

Using these tools, municipalities and developers have the opportunity to explore possible BMP options to determine which methods result in the most effective and efficient mitigation to assure maintenance/ improvement of watershed health.

2.4 The Study Area's Watersheds are Under Some Stress

With the realization of presently committed growth, the findings of the ACS Study show that the Lake Simcoe

watershed is under some stress and can expect large increases in nitrogen and phosphorous levels in Lake Simcoe over the planning horizon. Meanwhile, the model shows that the Georgian Bay watershed is not adversely impacted by water coming from the Nottawasaga River watershed. However, phosphorous as well as other pollutant loading does have a negative impact on the Nottawasaga River watershed health and slight changes in phosphorous and nitrogen levels within its lakes and rivers are expected with additional growth and development.

The ACS Study recommended additional monitoring and the implementation of a series of best management practices/education to ensure that the health of each watershed is adequately addressed. The Study shows that Lake Simcoe is under considerable threat as a result of agricultural activities, existing and future development. Through the implementation of best management practices and other improvements, there is an opportunity to improve and enhance the two watersheds.

"Provincial policy is clear that growth should be directed to the built up area of existing settlement areas, through intensification…"

2.5 Municipalities will be Required to Revise their Official Plans (by June 2009)

The Growth Plan for the GGH requires all municipalities to update Official Plans to be in conformity with the *Growth Plan for GGH* (by June 2009). Growth should be directed to:

- The built-up area of existing settlement areas, through intensification;
- New development in greenfield areas should be compact, transit supportive greenfield areas;
- Areas with current planned transit infrastructure support;
- Areas with full municipal water and wastewater servicing;
- Complete communities, with a range of employment and housing types; and,
- Downtown Barrie, identified as an Urban Growth Centre (UGC) for the GGH.

2.6 The Study Area has a Strong Base of Complete Communities for Future Growth

The study area has a number of existing communities that can provide full servicing for future development, a range of employment opportunities and a mix of housing options with access to both local and regional transit. This network of complete communities forms a solid base for future residential growth and is used to shape the growth options in the GPA.

The scene of a summer dance recital in downtown Collingwood is just an example of the diverse activities that take place in vibrant communities throughout the study area on a daily basis. The strong base of complete communities is a good foundation for long term growth in the study area.

2.7 There are Intensification Opportunities throughout the Study Area

The assessment of physical intensification potential concluded that there was potential for 17,000 units across the study area. Specific locational opportunities for intensification were investigated in detail in the *Physical Intensification Report*. The Report showed that the best opportunity for intensification can be found in mature settlement areas with well defined node and corridor community characteristics, such as Barrie and Orillia. Note that the scope of this assessment did not factor in potential municipal policy changes that will occur as a result of the municipal *Growth Plan for the GGH* conformity exercise. As part of the municipal process to conform to the *Growth Plan*, municipalities will need to undertake further detailed assessment of intensification opportunities.

2.8 The Study Area Has a Strong and Diversified Economic Base, with Potential for Growth

The study area has a strong and diversified economic base and provides a solid foundation for future growth. Simcoe has a range of employment in a well-established agriculture sector and also in manufacturing, tourism and a host of other fields. The study area's key employment centres are located in Barrie and New Tecumseth, both possessing a strong employment base in manufacturing.

There is an opportunity to provide support for future economic development and investment, and attraction of a talented, knowledge-intensive labour pool by enabling

The Honda plant in Alliston is one of the area's major employers and is the foundation of New Tecumseth's strong manufacturing employment base.

the infrastructure, servicing and land supply/market choice for businesses and quality of life factors for future labour markets. Similarly, sustainable tourism development that increases the amount of time and money that visitors spend in the study area, while not adversely impacting the environment is an economic opportunity.

Economic development in the study area will provide for live/work connections and reduce commuting. Further intensification of downtown areas for mixed-use residential and employment development will also provide greater live-work opportunities.

2.9 Agriculture Remains a Productive and Vital Component in the Study Area

Agriculture in Simcoe County remains a productive and dynamic industry throughout the study area. The areas in the most southerly portion of the County have the highest values of farm capital per acres, gross farm receipts and expenses. Potential for growth in the agricultural industry remains strongest in this area.

Assuming a secure land base, aspects of agriculture in this area will remain provincial leaders. The central part of County also has positive aspects, including the highest level of agricultural activity (number of farms, farm operators and acres of farmland). Prospects for long term growth in this area are also strong. The northern areas of Simcoe County have some agricultural operations but long-term growth, unlike the south and central portions of Simcoe, is limited due to soil conditions.

2.10 Highway 400 and Other Transportation Corridors Provide Solid Links for Moving People and Goods to and from Simcoe

Highway 400 connects the GTA to the study area and northern Ontario. There is opportunity to build upon the positive attributes of this north-south link, as it offers the potential for increased capacity and an anchor for future employment lands. The improvement of other transportation corridors within the study area will further enhance the Highway's status as it develops into an

Highway 400 provides a link for moving people and goods to and from the study area. The improvement and upgrading of other transportation corridors will also help to develop Highway 400 as an internal gateway to other places within the study area.

internal 'gateway' granting access to other municipalities within the study area.

Most of the essential road infrastructure or rights-of-way are in place to accommodate future growth and although transit use is quite limited, there are some local and regional transit networks to build on. Rail and regional airport facilities are in place to stimulate economic activity. Significant roadway link improvements are planned and necessary to accommodate anticipated growth.

2.11 The Study Area's Natural Setting is a Draw for Tourism and New Residents Seeking Lifestyle Changes

The study area has a number of attractive aspects, including abundant natural heritage/resource features that contribute to the recreation, tourism and agricultural sectors of the economy. These assets will also be a draw for a number of people seeking lifestyle changes, be they GTA bound commuters living in the south of Simcoe or empty nesters retiring to the north of the study area.

The emphasis on compact communities will help to protect these essential resources and reduce overall effects of growth on natural systems.

Bright and colourful deck chairs are a reminder that while many call the study area home, a number of others call it their backyard. The study area's splendid natural setting is a draw for tourism, cottagers and still others seeking a more permanent lifestyle change.

2.12 A Strong Data Base Exists Regarding Natural Heritage

The municipalities, Province and Conservation Authorities have amassed a strong natural heritage data base. The data compiled was used to help create and evaluate of growth options. A future opportunity exists to update the existing County natural heritage system using current methodology to assist in implementation of the growth strategy from IGAP.

2.13 There is Variation in the Adequacy of Full Water and Wastewater Service Capacity

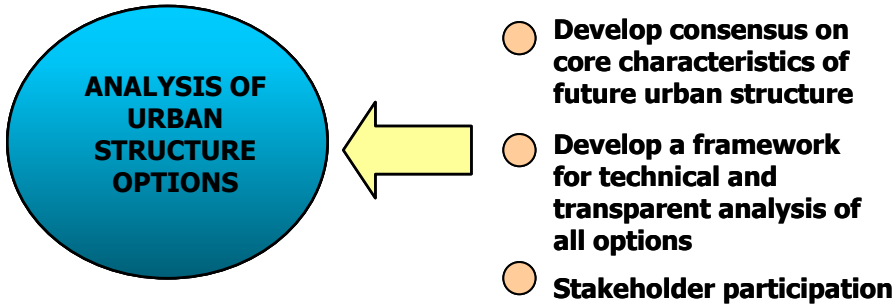
Full service capacity exists in some communities in the study area but not all and significant improvements in servicing capacity are needed to accommodate the growth demand for the area. In areas where full servicing is not available, it will be necessary to

accommodate some growth on partial services to sustain existing communities. Administrative challenges exist for servicing because cross-municipal sharing of services is necessary and environmental challenges exist because the receiving body (Lake Simcoe) is at or near capacity for contaminant loading and some sub-watersheds have limited capacity.

3.0 UNDERSTANDING

It was clear from the outset of the GPA that the analysis of urban structure/growth options needed to be a creative, reasoned analysis based on three elements. The first was to develop consensus on a clear vision of the core characteristics that are desirable for the future communities and urban structure in the study area. The second was the need for an objective, technically strong and transparent analysis of a range of growth options so that the advantages and disadvantages of each could be explored and discussed. A goal was to find solutions that work and consequently, members of the IA team took part in the identification and evaluation of options. Finally, there was a need for the analysis to be informed by stakeholders. Although most of the partners shared a common vision of the nature and character of growth for the next twenty-five years, it was important that the GPA was informed by a number of different perspectives. **Figure 3.1** graphically depicts the process described above. **Appendix A** provides a brief overview of the consultation activities undertaken for IGAP and a summary of comments received on the GPA.

Figure 3.1: GPA Analysis



Section 3 discusses:

- The vision for growth and criteria used to compare options;
- The methodology used to create the options;
- The outcome of the evaluation;
- The process used to optimize the preferred option to respond to issues and improve the recommended urban structure.

3.1 Setting the Stage – A Vision For Growth and Criteria for Comparing Options

One of the first steps of the GPA was to assemble the vision for growth from a range of municipal and provincial policy documents as well as stakeholder input. This information is documented in detail in the *ECA SWOT Analysis Report* as well as in each of the individual ECA foundation reports. These directions for growth were synthesized and presented to the partners and public at open houses and through newsletters. A detailed summary of the Vision for Growth – Key Policy Drivers is provided in **Appendix B**[3].

The fundamental vision revolves around the following characteristics which provide benchmarks for defining a future urban structure. The preferred urban structure will maintain and enhance:

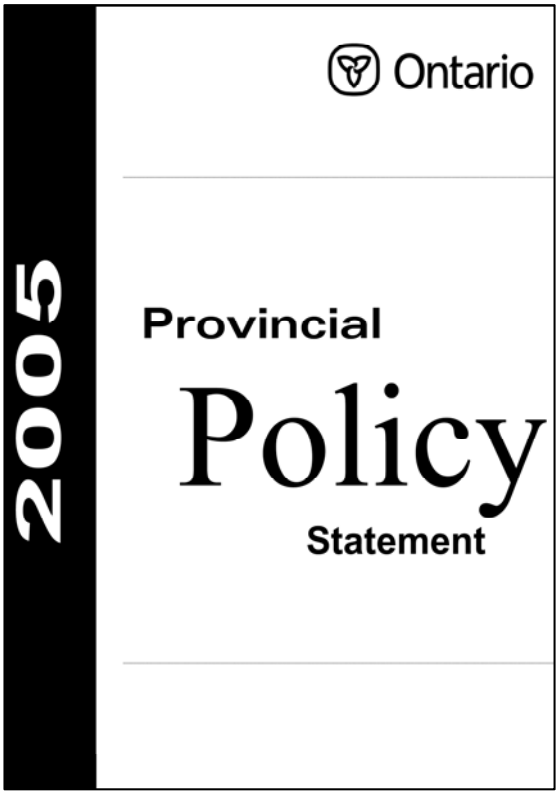
- Healthy water and natural heritage systems
- Strong, sustainable, complete communities
- The diverse character of existing communities and choices for housing and employment
- Strong live/work connections
- Reduced reliance on the automobile
- Efficient infrastructure
- Provincial growth targets and projected demand will be met.

The Vision for Growth was reviewed, refined and transcribed into a set of questions that were then used in the development and evaluation of growth options. These questions are listed below under several headings (Building Strong Communities, Wise Use and Management of Resources, Protecting Public Health and Safety, Implementation Assessment, Financial Viability and Public Response).

Criteria were identified for each of the following questions and were used to compare options. The criteria are listed in **Appendix F**.

3.1.1 Building Strong Communities

- Does the option accommodate the Province's intensification and density targets?



*The 2005 Provincial Policy Statement is the basis for a number of the key questions used to evaluate each growth option. The policy drivers are discussed in **Appendix B** of this report.*

[3] The policy drivers for that have shaped the GPA are also discussed in detail in the ECA *SWOT Analysis Report* (July 2006).

- Does the option accommodate the Province's population forecasts?
- Does the option accommodate the Province's improved people/jobs mix objectives?
- Does the option address the Province's *Growth Plan for GGH* policies for community form?
- Does the option support existing neighbourhoods and downtowns?
- Does the option achieve a mix of residential building types and uses?
- Does the option support closer live/work connections?
- Can the option be efficiently serviced?
- Does the option support non-auto modes of travel and reduce vehicle/km. traveled?
- Does the option provide an adequate number of quality jobs?
- Can the option attract and retain a skilled, innovative, diverse workforce?
- Does the option support existing commercial and transit nodes?

3.1.2 Wise Use and Management of Resources

- Does the option protect cultural heritage?
- Does the option protect functions of ecological systems?
- Does the option meet/maintain watershed health?
- Does the option preserve agricultural and rural land areas?
- Does the option result in cleaner air and water?

The evaluation of the growth options considers the impact on ecological systems and the ability to maintain watershed health.

3.1.3 Protecting Pubic Health and Safety

- Does the option protect communities from flooding and other natural hazards?
- Does the option protect communities from human-made hazards?

3.1.4 Implementation Assessment

- Can the option be implemented with little or no change in the existing model for provision of services?

3.1.5 Financial Viability

- Is the option financially viable?

3.1.6 Public Response

- What is the stakeholder response to this option?

3.2 Identification and Evaluation of Growth Options

The following sub-section discusses the methodology applied to create and evaluate the growth options against each of the criteria listed above. The approach taken to optimize the preferred option is also described.

3.2.1 Is Approved Development and Planned Growth in the "Right Place to Meet Demand?"

The Growth Plan for the GGH defines the distribution of population and employment for the Greater Golden Horseshoe from 2001 to 2031. The County of Simcoe and Cities of Barrie and Orillia are projected to grow to a combined population of 667,000 and 254,000 jobs by 2031. The *Growth Plan for the GGH* does not identify the distribution of growth among these three upper tier municipalities. Rather the Province intends to work with municipalities to determine separate forecasts for affected cities and county in Schedule 3 of the Growth Plan.

As noted in Section 2, the ECA identified that there is enough land currently designated to match these targets but the location of these urban lands does not always match the areas of market demand. **Figures 3.2 and 3.3** show that the 2031 population forecast of 667,000 can be met with existing land-use designations. Thus, a fundamental first step of the GPA was to investigate existing residential and employment supply and demand for each area municipality and identify any demand-land supply gaps for the 25-year time horizon to coincide with the Growth Plan for the GGH. This information could then be used to identify first, if there are any new urban expansion areas needed and second, if there are any municipalities with a land supply greater than 25 years. This analysis can be used by Simcoe County, in consultation with the lower-

Figure 3.2: 2031 Population Based on Approved Development and Planned Land Use (Modest Intensification)

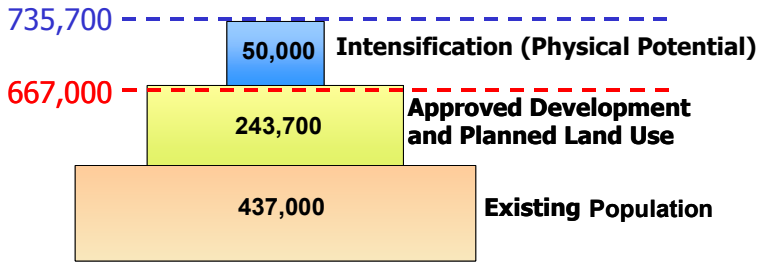


Figure 3.3: 2031 Population Based on Approved Development and Planned Land Use (Higher Level of Intensification)

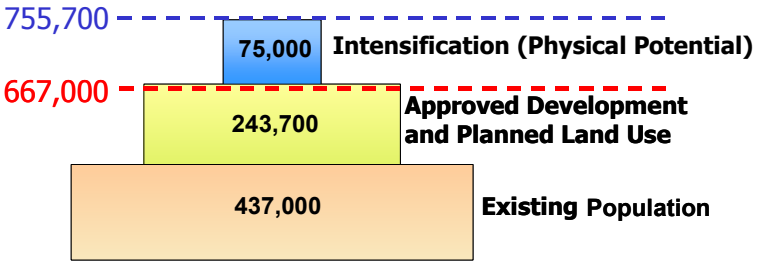


Figure 3.2 and 3.3 show how intensification could push the population well above the 2031 projection if all designated lands are developed (755,700 vs. 667,000). Table 3.1 shows the base level of intensification as reported in the Physical Potential Assessment Report in units (approximately 50,000 people). Source: Lapointe Consulting & Communities Report, 2006.

tier municipalities in allocating the population and employment forecasts as part of the *Growth Plan for the GGH* conformity exercise. The information can also inform the exercise to provide more detailed forecasts to the cities of Barrie and Orillia through their *Growth Plan for the GGH* conformity exercise. The following sub-sections describe the intensification, residential and employment land supply and demand assumptions applied to the growth options.

3.2.1.1 Intensification Assumptions

A decision on appropriate intensification level was needed to build each urban structure option. A target of 40% of growth to occur within the built-up area of each upper and single tier municipality by 2015 and each year thereafter has been set by the province. This intensification target, accompanied by policies on urban form and mix of use, will help achieve compact, transit supportive and cost efficient communities. The *Physical Intensification Report* identified the level of intensification that can be achieved in each municipality, based on physical potential and present day policy permissions. The overall average achieved for the area is in the order of 15%. **Table 3.1** lists the outcome of the analysis for each municipality from the *Physical Intensification Report*. These intensification levels do not meet the *Growth Plan for the GGH* target of 40% after 2015 for Barrie and the County although they are met for Orillia. The increased intensification will be achieved by adding additional sites to those identified in the *Physical Potential Assessment* (e.g. approximately 70 new ha needed for Barrie and 840 ha County wide[5]) and/or increasing the density assumptions used for each site.

Table 3.1: Overall Summary of Intensification Analysis[4]

Municipality	Overall Intensification Potential	
	Lower Range	Upper Range
Barrie	1,417	3,673
Bradford-West Gwillimbury	227	369
Clearview	82	82
Collingwood	296	970
Essa	11	32
Innisfil	600	620
Midland	480	966
New Tecumseth	549	865
Orillia	6,126	7,549
Penetanguishene	795	923
Ramara	7	7
Springwater	54	54
Tay	265	387
Wasaga Beach	164	514
Total	**11,065 units**	**17,011 units**

[4] From *Physical Intensification Potential Report, 2006.*
[5] Based on original densities used in the *Physical Intensification Potential Report.*

Further detailed field work, urban design, education and analysis are required to determine what will be necessary to meet the 40% provincial target during the municipal conformity exercise. Pending the completion of that work, the physical potentials exercise can be used. For the purposes of characterizing the growth options, the decision was made to use both the intensification estimate of 15% (physical potential) for all options and the intensification target of 40%; the latter was used to explore the implications of greater intensification for one of the options. It was recognized in the evaluation that the lower values (15%) overstate the need for new urban expansion areas (and consequently the environmental impacts) and understate the supply of land available within the current urban areas. As part of the municipal OP conformity process to the *Growth Plan for the GGH*, municipalities will undertake a more detailed assessment of intensification opportunities.

Places like Barrie and Orillia have potential to accommodate higher density dwelling structures. Increased densities in the major urban areas will bring the intensification levels closer to 40% target, however it is likely that future work will also need to contemplate additional sites beyond those previously identified.

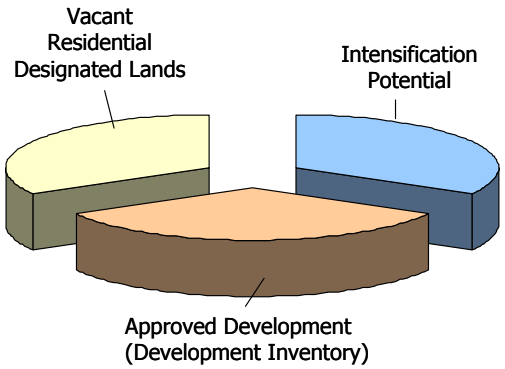
3.2.1.2 Residential Land Supply and Demand

Residential supply is comprised of approved development, vacant residential lands and intensification potential. The *Communities Report* identified supply for each area municipality based on approved and in-process applications as well as approved residential use on vacant land. The *Physical Intensification Report* documents the potential for intensification for each area municipality. The intensification level based on physical potential of approximately 17, 000 units was used in the supply analysis. However, it is recognized that as the intensification levels rise, the amount of land for urban expansion will be reduced.

A range of factors were relevant to determining how to allocate twenty-five years of growth to each municipality:

- Status of urban land approvals (e.g. draft or final approved, in process application, vacant land without any development plan);
- Current market demand and population and housing projections;
- Health of the watershed affected by the development;
- Availability of short-term full servicing;
- Adjacency to a complete community.

Clear direction was provided by stakeholders that one set of consistent rules was needed and that these rules



Graphic above shows the conceptual composition of residential land supply. Approved development includes draft and final plans and in process applications)

should reflect the core characteristics of the vision for growth. Appropriate growth for each municipality for the next twenty-five years was initially identified by considering all of these factors. The intent was to attempt to match supply and demand (while meeting the overall *Growth Plan for GGH's* 25 year population forecast) and minimize disruption to the existing fabric of approved land and yet still reflect the desire for complete, fully serviced communities in areas of demand and with minimal environmental impact. The ACS team participated in the team meetings to identify appropriate options and provided input on areas of relative environmental concern. The *Infrastructure Report* provides data on status of available infrastructure and the Ainley team provided insight into areas where full servicing could be efficiently provided in a cost effective manner. Population and housing forecasts were developed by Lapointe Consulting in accordance with the MMAH Projection Methodology. This is a guideline document on how to project growth and land needs that has been applied and accepted by approval authorities since the early 1990's. **Table 3.2** provides the existing 2006 and projected 2031 projections for housing and population for each municipality.

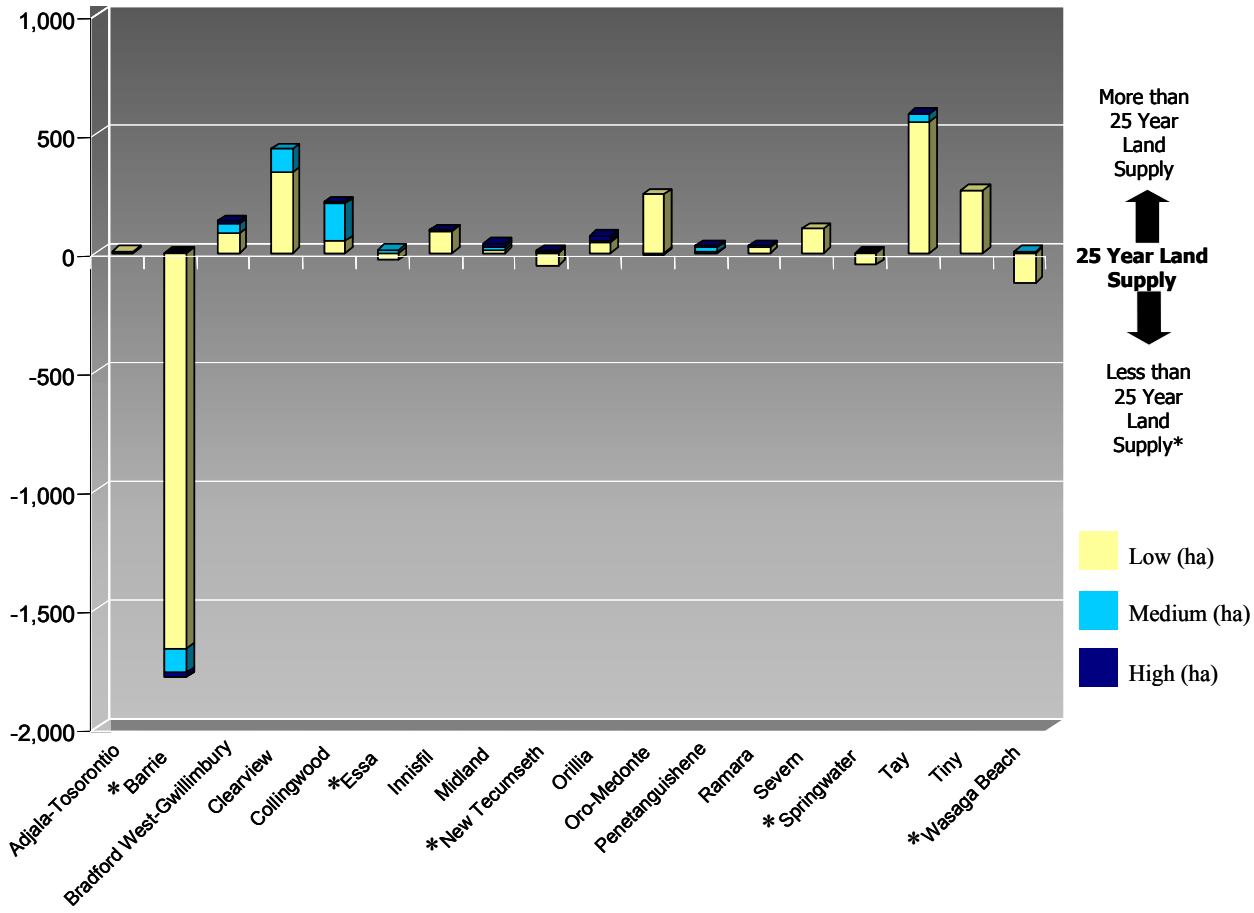
Figure 3.4 shows the results of the residential land supply analysis when the projections are compared to the land supply values (broken down by unit type and reflected by hectares).

Table 3.2: Unit and Population Breakdown, By Municipality 2006-2031

	2006		2031		2006-2031	
Municipality	**Households**	**Population**	**Households**	**Population**	**Household**	**Population**
Adjala-Tosorontio	3,883	11,548	5,205	14,070	1,322	2,522
Barrie	47,526	131,918	96,635	243,803	49,109	111,885
Innisfil	11,634	32,292	17,905	45,256	6,271	12,963
Essa	6,332	18,831	9,174	24,826	2,842	5,994
Bradford West Gwillimbury	8,309	25,534	14,652	40,955	6,343	15,421
Clearview	5,195	14,420	8,457	21,336	3,262	6,916
Collingwood	7,765	18,474	13,143	28,422	5,378	9,947
Midland	7,055	16,785	9,984	21,574	2,929	4,788
New Tecumseth	10,494	29,128	16,742	42,317	6,248	13,189
Orillia	12,577	29,923	16,791	36,282	4,214	6,359
Oro-Medonte	7,604	21,106	10,817	27,341	3,213	6,235
Penetanguishene	3,487	8,642	5,470	12,308	1,983	3,666
Ramara	3,951	9,792	5,341	12,017	1,390	2,225
Severn	4,868	12,547	6,260	14,643	1,392	2,096
Springwater	6,168	18,343	8,344	22,579	2,176	4,235
Tay	3,836	9,887	4,951	11,583	1,115	1,696
Tiny	4,266	10,572	6,016	13,536	1,750	2,964
Wasaga Beach	6,885	16,381	15,305	33,071	8,420	16,690
Total Housing Requirements	161,835	436,124	271,192	665,916	109,357	229,792

Totals do not include First Nations (source: see Table 9 and 10 in Appendix C)

Figure 3.4: 25 Year Residential Land Supply (ha)



Municipalities that rise above zero represent locales where there is a surplus of land relative to the projected 25-year demand. Areas that fall below zero represent locales where there is a shortage of existing land supply to meet the projected 25-year demand. The analysis indicated that Barrie is the only area with a significant land under-supply for the 25-year period. The demand/supply analysis also identified a small number of municipalities (other than Barrie) where demand will exceed supply to a modest amount over the 25-year period. The GPA did not attempt to address these gaps as it is more appropriately dealt with at a local planning level. The areas affected are Essa, New Tecumseth, Springwater and Wasaga Beach.

Appendix C provides the detailed methodology for the population and housing projections. **Appendix D** describes the methodology for defining the growth allocated to each municipality for the four options in detail.

The methodology for allocating growth was later modified to take into account stakeholder feedback. The methodology was modified so that appropriate 25 year growth for each municipality was defined based on the population and housing projection analysis conducted in accordance with the MMAH Projection Methodology[6]. The status of approved development was not longer considered, thereby removing any bias towards municipalities that have either over or under-designated land relative to demand for the next 25 years. The projection methodology considered a range of factors in allocating growth including recent shares of household growth, building permit data, recent market trends, servicing capacity and demographic changes. This modification was applied to the preferred growth option only. The change in methodology had only a modest impact in the overall shape of growth for the area for the preferred urban structure. Details are provided in Section 4.

The recommended urban structure does not identify areas where land is to be re-designated or development frozen (due to oversupply), but rather it assumes that an appropriate mechanism will be put in place in order to assure a balanced supply and demand for the 25 year horizon.

3.2.1.3 Employment Land Supply and Demand

Generally speaking employment consists of three types of job categories, which are, "employment land" employment, "population-related" employment and "work at home" employment. Employment land employment refers to jobs located in industrial parks/employment lands. Population-related employment describes the diverse collection of jobs, which primarily serve, and normally occur, in close proximity to the area's residential population. These include most retail, health, education and government jobs. Work at home is comprised of home-based businesses of all types. The following section deals with land needs for jobs on employment lands.

The level of lands required to support future employment within the study area is calculated using the projected employment forecasts of 254,000 persons as identified in the *Growth Plan for the GGH*. The primary

[6] The MMAH Projection Methodology is a guideline produced for consistency in growth projection methodology that has been applied and accepted by approval authorities since the early 1990's.

purpose of this exercise is to determine the total amount of new land needed to accommodate the new jobs over the 25 year horizon. Currently, there are an estimated 158,000 jobs in the study area, meaning that the area can expect a further 96,000 jobs between 2006-2031. A portion of these jobs will be population related employment and/or persons who work at home (32,600). The remainder of employment to be satisfied on employment lands is estimated to be 63,400 jobs.

Appendix E provides a more detailed overview the methodology used for the employment land analysis as well as further discussion of the findings.

A portion of the 63,400 jobs will be allocated to vacant designated employment lands and another portion to newly designated lands. The study area currently has an existing inventory of vacant designated employment lands of 3,796 ha. Approximately 2,000-2,370 ha are needed to accommodate the anticipated growth demand for employment lands. While the study area as a whole appears to have enough designated land to satisfy growth, there are a couple of municipalities with employment demand, but as shortage of land supply.

Table 3.3 lists the land demand for employment as well as the supply and the gap (demand minus supply) in hectares for each municipality applied to all growth options.

Table 3.3 Supply of Land Required to Support New Jobs on Employment Lands

Municipality	Supply (ha)	Demand (ha)	Gap (ha)
Adjala-Tosorontio	0	9	9
Clearview	415	30	-385
New Tecumseth	501	351	-150
Springwater	91	39	-52
Bradford West Gwillimbury	55	110	72
Severn	0	19	19
Innisfil	199	141	-58
Ramara	813	8	-811
Essa	138	38	-100
Oro-Medonte	37	35	-2
Collingwood	279	182	-97
Barrie	801	1,134	350
Rama First Nation	0	12	12
Orillia	195	110	-85
Wasaga Beach	Na	48	Na
Tiny	97	12	-85
Christian Island	-	-	0
Tay	0	3	3
Penetanguishene	32	28	-4
Midland	135	59	-76
Study Area	3796	2,369	-

Source: EDP Consulting (See Table E1 and E2 in Appendix E).

The outcome displayed in **Table 3.3** indicates that the primary need for additional employment land is in Barrie and Bradford. These values were modified somewhat for the preferred growth option based on additional analysis including field-work that assessed the feasibility of existing designated employment lands south of Barrie. The additional work confirmed the need for additional employment lands in Bradford-West Gwillimbury at Highway 88 and 400 to provide highly visible employment land on a 400 series highway in the near term. Current existing designated employment lands are on the proposed Bradford Area by-pass which is not expected to be functioning prior to 2031. **Section 4** provides the final employment land and job values for the preferred option.

As previously noted, the land supply analysis indicates that some municipalities have an undersupply of employment lands and others have an oversupply of employment lands. Generally speaking, provincial policy

discourages conversion or re-designation of existing employment lands for alternative purposes. Conversion of designated employment lands are to be subjected to comprehensive review and analysis. The scope of the analysis undertaken here does not contemplate any re-designation or conversion of existing employment lands. Municipalities with an oversupply of employment lands seeking conversion are still required to conduct a municipal comprehensive review.

3.2.2 Growth Options

The growth options are considered to reflect a broad range of urban outcomes for the study area that allow for exploration of key issues central to the areas long-term growth.

"The scope of the analysis undertaken here does not contemplate any re-designation or conversion of existing employment lands"

Four growth options were identified, mapped and evaluated. **Appendix D** describes the process used to identify the options. The options are as follows:

- Option 1. *Business as Usual:* Reflects current build out of existing designated residential and employment lands.
- Option 2 *Barrie and Area (tested with 15% and 40% intensification)*: Reflects provincial policy direction that growth should be directed to existing serviced settlement areas and also supports downtown Barrie UGC:
  - 2a) 91% of growth for 2006 to 2031 is allocated to existing designated lands throughout the study area including 40% through intensification (after 2015) in the built up areas. 9% of growth is allocated to one node adjacent and south of Barrie in the Town of Innisfil.
  - 2b) 80% of growth for 2006 to 2031 is allocated to existing designated lands throughout the study area including 15% intensification based on the physical potentials assessment. 20% of growth is allocated to one node adjacent and south of Barrie in the Town of Innisfil.
- Option 3. *Multiple Nodes (3 nodes*): 80% of growth for 2006 to 2031 is allocated to existing designated lands throughout the study area including 15% intensification based on the physical potentials assessment. 10% of growth is allocated to one node adjacent and south of Barrie in the Town of Innisfil and Township of Essa. 10% of growth is

allocated to two additional nodes in Alliston and Bradford (5% each).

- Option 4. *Dispersed (5 nodes)*: 80% of growth for 2006 to 2031 is allocated to existing designated lands throughout the study area including 15% intensification based on the physical potentials assessment. 10% of growth is allocated to one node adjacent and south of Barrie in the Town of Innisfil and Township of Essa. 10% of growth is allocated to four additional nodes at Alliston, Bradford, Alcona and Cookstown (2.5% each).

The Barrie and Area Centred Single Node and the Multiple Node options reflect the *Growth Plan for GGH* principles that growth should be directed to existing serviced built-up areas. A node is a central focus or core that centres a community. Nodes often contain a mix of commercial, residential and civic buildings, open spaces or commons. The size of the node is dependent on the number of people living and working within the area and can range considerably. Access to and within a node is crucial in defining the space as a node. One of the fundamental characteristics of a node is its role a major hub within the transit network, meaning that the space is linked to other nodes within a larger urban region. Access to a variety of spaces within the node should facilitate a range of transportation modes including walking, bicycling, transit and automobile.

The Barrie and Area Centred Single Node option considers the opportunities afforded by confining new growth to a single node where there might be potential to build on an existing node to create a complete, transit supportive, compact community. Downtown Barrie has been identified as an Urban Growth Centre (UGC) in the *Growth Plan for GGH*[7]. The ECA analysis identified that Barrie is clearly the dominant urban centre in the area, providing core employment, higher education, social service and recreational amenities. It is a highly attractive area for housing and employment reflected by its rapid growth and land supply deficit and it provides key transit and road transport connections.

Since Barrie has no land remaining for urban expansion, the option must consider other lands external to the municipality and is hence called the Barrie and Area option. The multiple node option explores the potential

[7] The term Urban Growth Centre refers to downtown Barrie. The status of its downtown as a UGC reinforces the City's status as the dominant urban centre in the study area.

for multiple community expansions to support a number of existing vibrant nodes.

All of the options were geographically defined to avoid significant natural heritage areas and with input from the ACS team and were identified considering information on land use available from the Official Plans and ECA reports.

3.2.2.1 Identification of Employment Expansion Area Options

The demand and supply analysis for employment identified the need for new employment lands in the Barrie and Bradford areas. Two employment nodes were identified that matched employment to residential lands to reduce commuting times and encourage live/work connections. Employment lands were located along Highway 400 to allow for ease of access and visibility for businesses. Employment expansion areas were matched to the residential options as follows:

- Barrie and area – single employment node along Hwy 400 in Innisfil south of Barrie (300 ha)[8];
- Multiple node and Dispersed node – large employment node along Hwy 400 in Innisfil south of Barrie (300 ha) and a smaller employment node at Hwy 88 and 400 (100 ha)[9].

All of the employment nodes were geographically defined to avoid significant natural heritage areas and with input from the ACS team. The employment expansion nodes were identified considering information on land use available from the Official Plans and ECA reports.

Figures 3.5 to 3.9 show the four growth options.

[8] For preferred and optimized options this value was refined to 350 ha for Barrie and Area. Refer to **Appendix E.**
[9] For preferred and optimized options this value was refined to 72 ha for Bradford West Gwillimbury. Refer to **Appendix E.**

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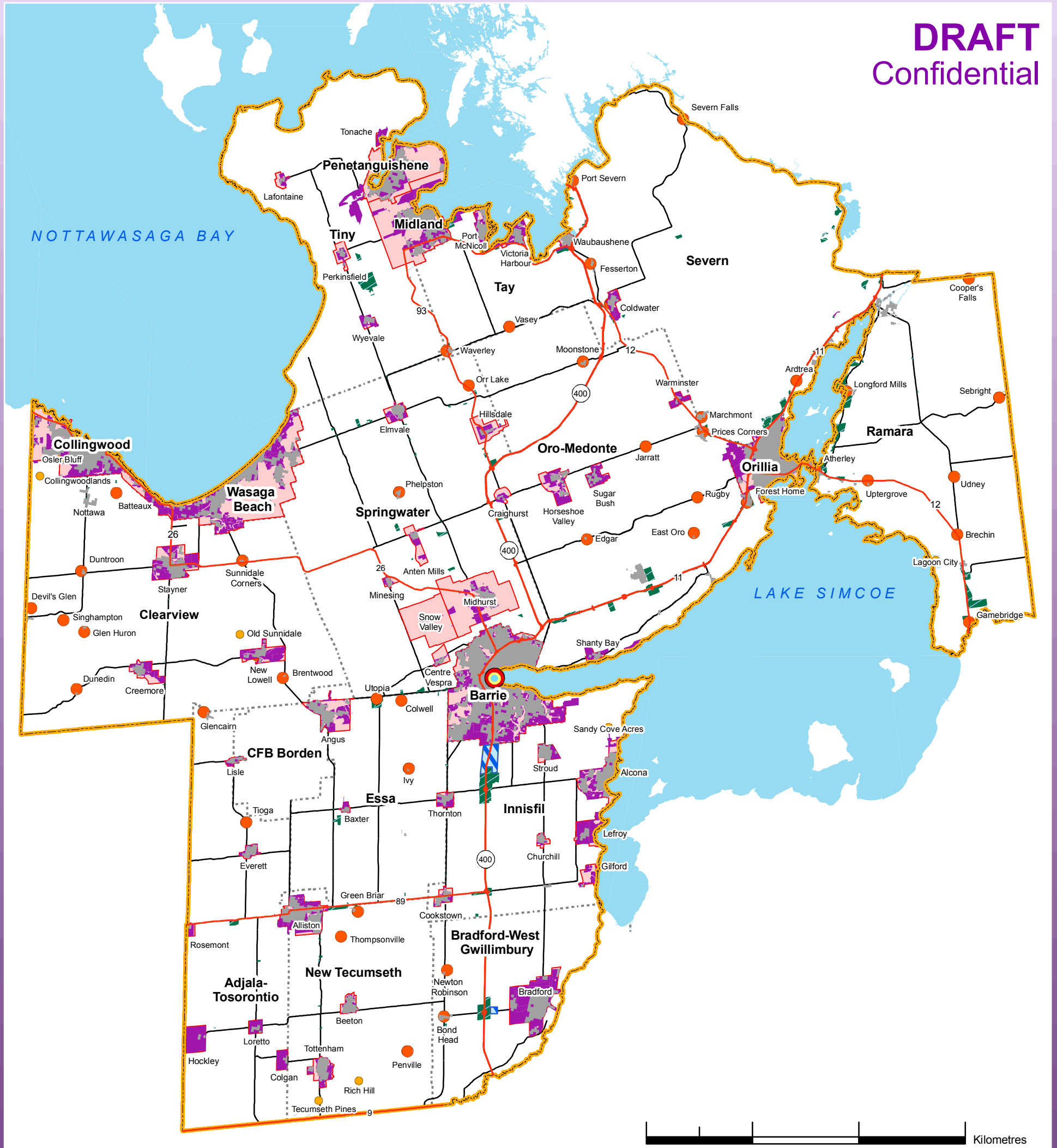

Note: Potential Residential and Potential Employment Expansion Areas are Not Drawn to Scale.

Intergovernmental Action Plan for Simcoe, Barrie and Orillia

Figure 3.5 Growth Option 1, Business as Usual (Existing Designations for Residential Uses with Employment Expansion Area)

LEGEND

- IGAP Study Boundary[2]
- Area Municipalities[2]
- Provincial Highways[1]
- County Roads[1]
- Ponds and Lakes[1]
- Designated Settlement Boundary[3]
- Potential Employment Expansion Area (conceptual)
- Designated Urban Uses[3]
- Built Up Urbanized Area (conceptual)[4]
- Designated Employment/Industrial[3]
- Settlement With No Official Boundary[3]
- Settlement Non-Decision[3]
- Regional Centre

Ontario

Projection: UTM zone 17N NAD83
Data Sources: 1. Ontario Ministry of Natural Resources
2. Ontario Ministry of Municipal Affairs and Housing
3. Simcoe County

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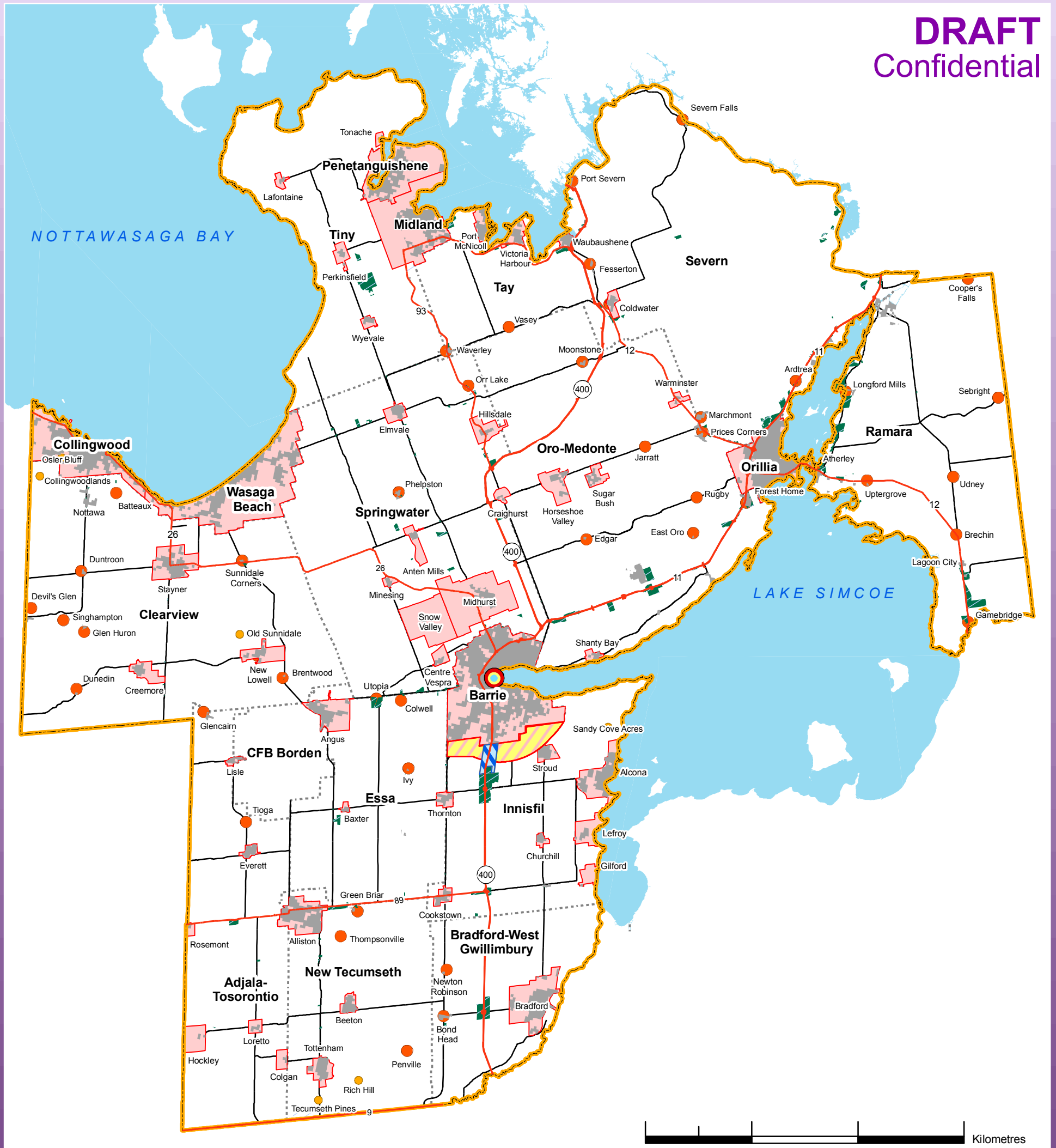

Note: Potential Residential and Potential Employment Expansion Areas are Not Drawn to Scale.

Intergovernmental Action Plan for Simcoe, Barrie and Orillia

Figure 3.6 Growth Option 2A, Barrie and Area Centred Single Node with 40% Study Area Wide Intensification

LEGEND

- IGAP Study Boundary[2]
- Area Municipalities[2]
- Provincial Highways[1]
- County Roads[1]
- Ontario
- Ponds and Lakes[1]
- Designated Settlement Boundary[3]
- Potential Residential Expansion Area (conceptual)
- Potential Employment Expansion Area (conceptual)
- Built Up Urbanized Area (conceptual)[4]
- Designated Employment/Industrial[3]
- Settlement With No Official Boundary[3]
- Settlement Non-Decision[3]
- Regional Centre

Projection: UTM zone 17N NAD83
Data Sources: 1. Ontario Ministry of Natural Resources
2. Ontario Ministry of Municipal Affairs and Housing
3. Simcoe County

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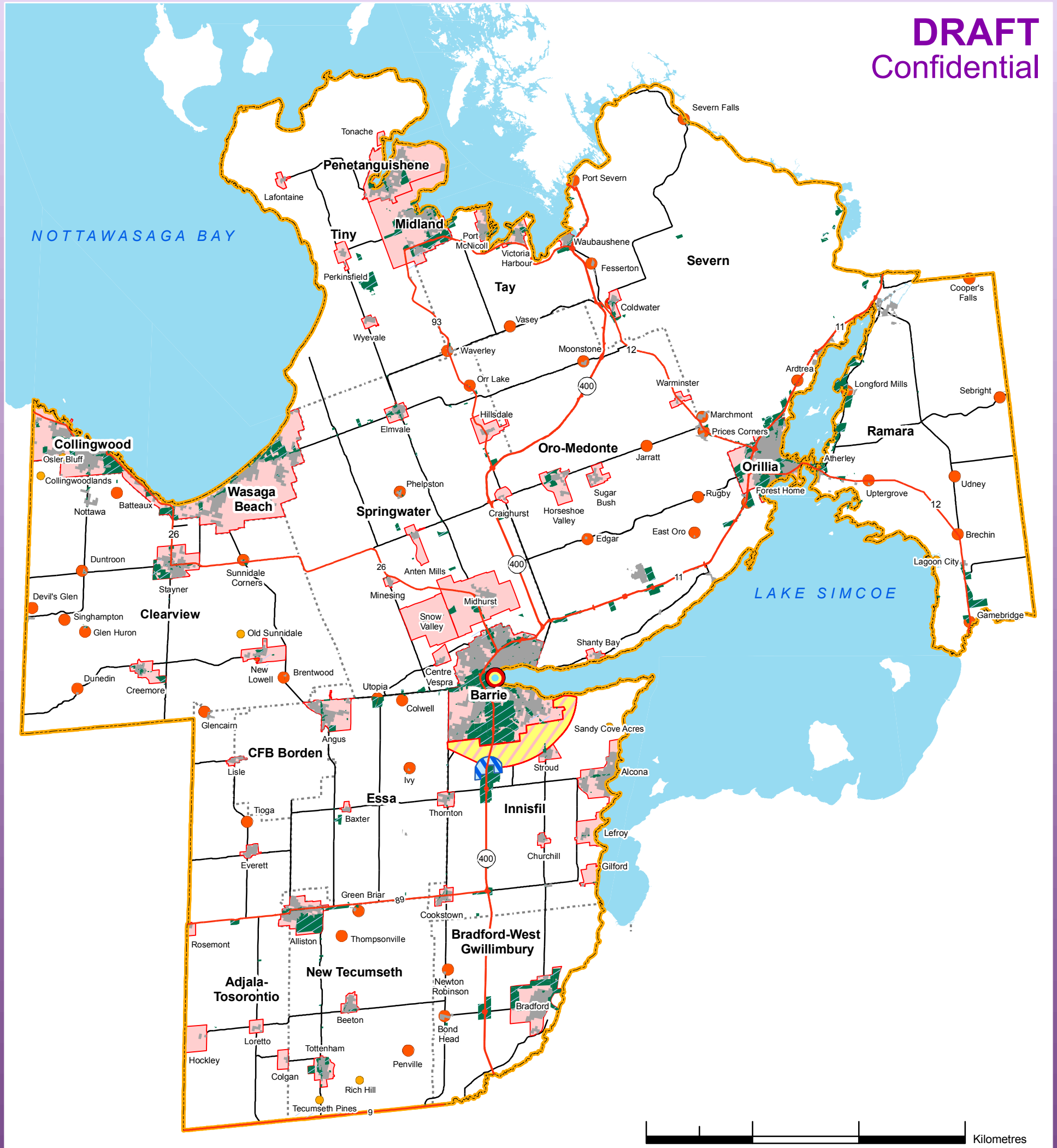

Note: Potential Residential and Potential Employment Expansion Areas are Not Drawn to Scale.

Intergovernmental Action Plan for Simcoe, Barrie and Orillia

Figure 3.7 Growth Option 2B, Barrie and Area Centered Single Node With 15% Study Area Wide Intensification

LEGEND

- IGAP Study Boundary[2]
- Area Municipalities[2]
- Provincial Highways[1]
- County Roads[1]
- Ontario
- Ponds and Lakes[1]
- Designated Settlement Boundary[3]
- Potential Residential Expansion Area (conceptual)
- Potential Employment Expansion Area (conceptual)
- Built Up Urbanized Area (conceptual)[4]
- Designated Employment/Industrial[3]
- Settlement With No Official Boundary[3]
- Settlement Non-Decision[3]
- Regional Centre

Projection: UTM zone 17N NAD83
Data Sources: 1. Ontario Ministry of Natural Resources
2. Ontario Ministry of Municipal Affairs and Housing
3. Simcoe County

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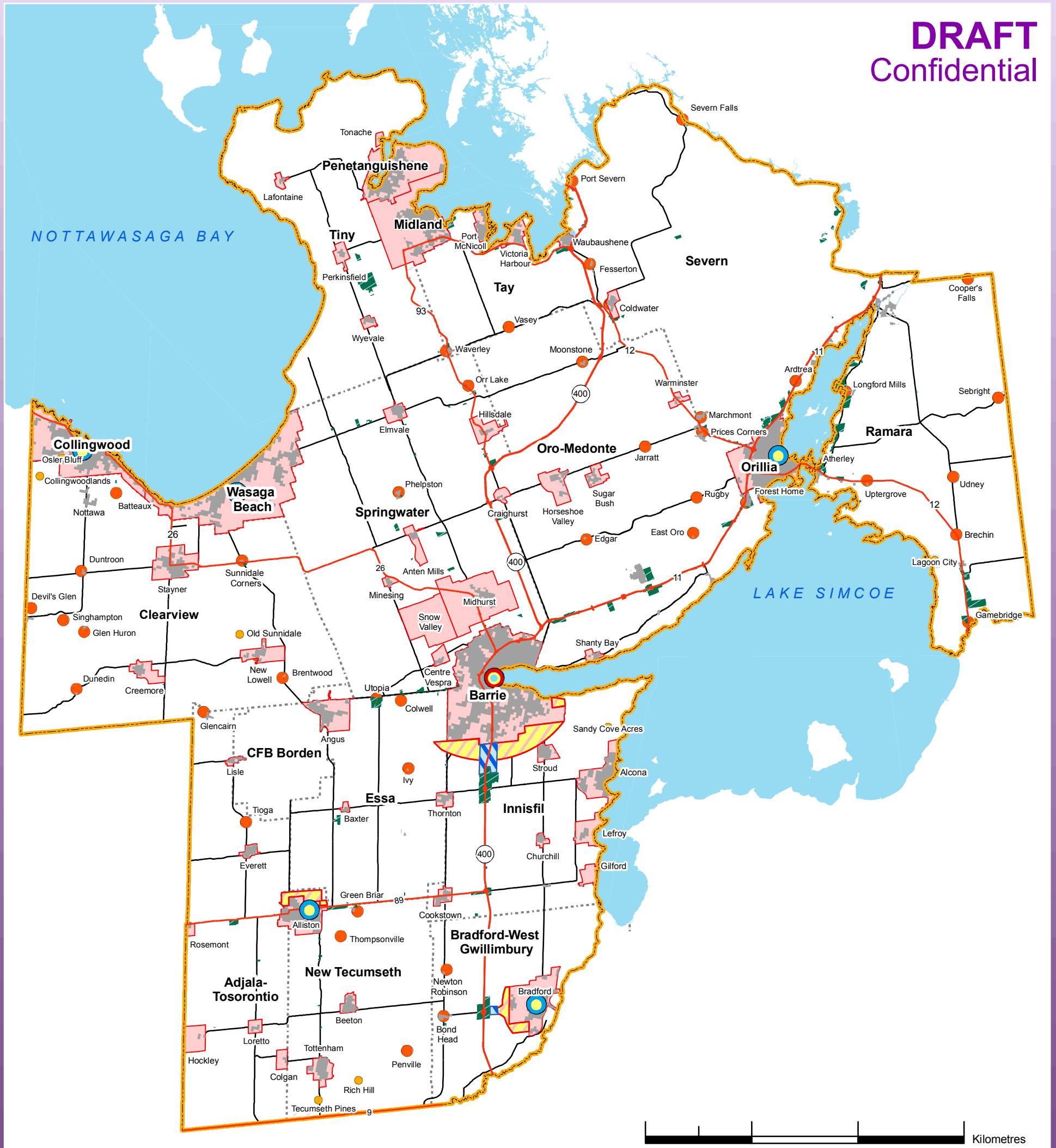

Note: Potential Residential and Potential Employment Expansion Areas are Not Drawn to Scale.

Intergovernmental Action Plan for Simcoe, Barrie and Orillia

Figure 3.8 Growth Option 3, Multi-Nodal

LEGEND

- IGAP Study Boundary[2]
- Area Municipalities[2]
- Provincial Highways[1]
- County Roads[1]
- Ponds and Lakes[1]
- Designated Settlement Boundary[3]
- Potential Residential Expansion Area (conceptual)
- Potential Employment Expansion Area (conceptual)
- Built Up Urbanized Area (conceptual)[4]
- Employment/Industrial[3]
- Settlement With No Official Boundary[3]
- Settlement Non-Decision[3]
- Regional Centre
- Growth Nodes

Ontario

Projection: UTM zone 17N NAD83
Data Sources: 1. Ontario Ministry of Natural Resources
2. Ontario Ministry of Municipal Affairs and Housing
3. Simcoe County

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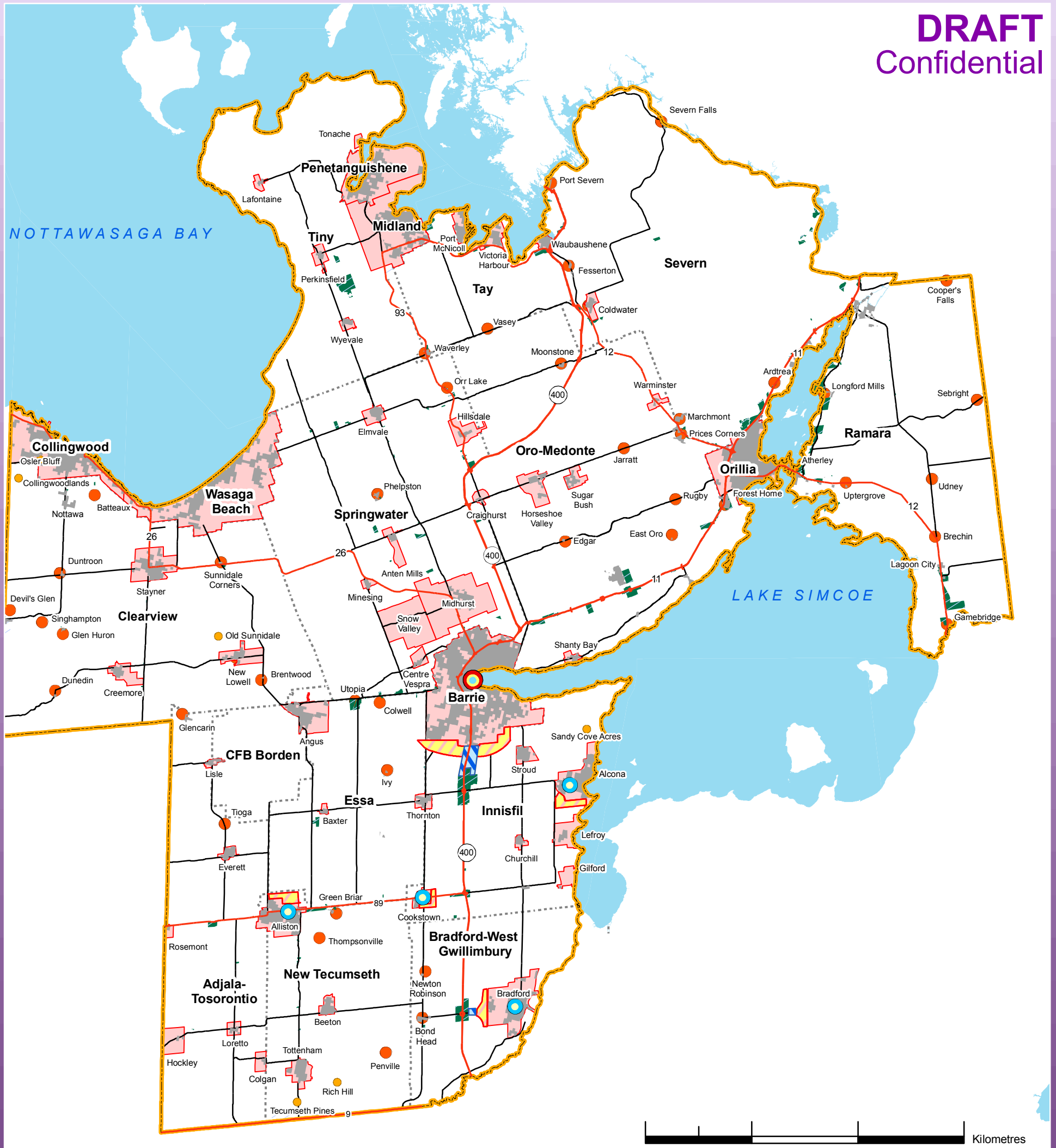

Note: Potential Residential and Potential Employment Expansion Areas are Not Drawn to Scale.

Intergovernmental Action Plan for Simcoe, Barrie and Orillia

Figure 3.9 Growth Option 4, South Simcoe Dispersed

LEGEND

- IGAP Study Boundary[2]
- Area Municipalities[2]
- Provincial Highways[1]
- County Roads[1]
- Ponds and Lakes[1]
- Designated Settlement Boundary[3]
- Potential Residential Expansion Area (conceptual)
- Potential Employment Expansion Area (conceptual)
- Built Up Urbanized Area (conceptual)[4]
- Designated Employment/Industrial[3]
- Settlement With No Official Boundary[3]
- Settlement Non-Decision[3]
- Regional Centre
- Growth Nodes

Ontario

Projection: UTM zone 17N NAD83
Data Sources: 1. Ontario Ministry of Natural Resources
2. Ontario Ministry of Municipal Affairs and Housing
3. Simcoe County

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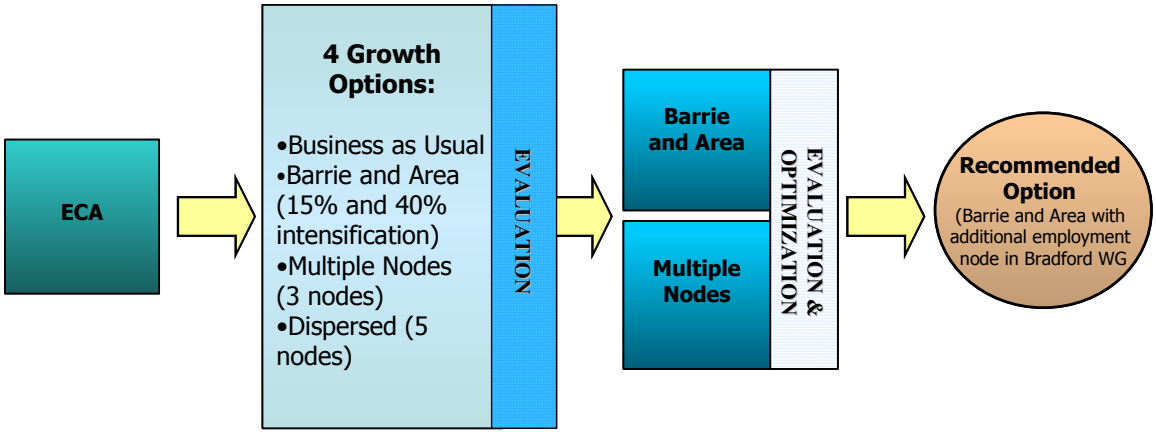
3.2.3 Evaluation of Growth Options

Figure 3.10 displays the process used to identify and compare urban expansion options. The four urban expansion options were evaluated and, of these, two were screened out and two were retained for further analysis. The preferred urban expansion option is a single node in the Barrie and Area (i.e. south of Barrie in the Town of Innisfil).

Figure 3.10: IGAP Growth Options Comparison Process



The four options were evaluated against the criteria reflecting the vision listed in Section 3.1. **Appendix F** contains the detailed evaluation data table. The following is a brief overview of the evaluation.

A key component of the evaluation was input and analysis regarding impacts to watersheds provided by the ACS team. For each option, the ACS model was run to determine impacts on both local sub-watersheds and on the total lake capacity. It was assumed that the total approved loadings for each sewage treatment plant defined by the Ministry of Environment would be maintained through improved technology and best practices regardless of increases in growth affecting the plants. The ACS model also assumes a range of best management practices are put in place regardless of the option chosen. The ACS model was developed based on a full build out of all approved development areas, with no adjustment made to reflect areas with an over supply

of designated land (i.e. beyond 25 years)[10]. These key assumptions, along with the results of the analysis are documented in **Appendix G** and in the ACS reports listed earlier.

Similarly, a cost analysis was undertaken by Ainley and Assoc. for the four options[11] and is contained in **Appendix H**. **Appendix K** contains the results of the financial viability analysis undertaken for each option.

As noted in Section 3.1, there were seven fundamental characteristics which provided benchmarks for evaluating the growth options. The preferred urban structure will maintain and enhance:

- Healthy water and natural heritage systems
- Strong, sustainable, complete communities
- The diverse character of existing communities and choices for housing and employment
- Strong live/work connections
- Reduced reliance on the automobile
- Efficient infrastructure
- Provincial growth targets and projected demand will be met.

Based on the evaluation applying all 24 criteria (see ***Appendix F***), two options were screened out because they clearly did not reflect the core characteristics for urban structure defined by the partners:

- Business as Usual - Does not meet significant demand/supply needs, particularly in Barrie. This option results in a highly dispersed growth form that does not meet the goals of *the Growth Plan for the GGH*.
- Dispersed Node – This option was found to be most expensive, with complex implementation requirements and it exhibits less support for complete, compact urban form than do the remaining options. The nodes do not match the demand analysis which shows that the only significant area with additional demand beyond supply is in Barrie.

"two options were screened out because they clearly did not reflect the core characteristics for urban structure defined by the partners"

[10] The assumption was that this build out reflects a long term impact to the watersheds (beyond 25 years) that and should be considered as a conservative base case.
[11] This analysis specifically costed infrastructure for each option for the 25 year period which for some municipalities does not reflect the full build out of all designated lands with associated infrastructure.

Based on this analysis, the Barrie and Area option (with 15 and/or 40% intensification) and the Multiple Node (3 nodes) option were carried forward for further analysis.

The evaluation highlighted several advantages and disadvantages of the two remaining options. These advantages and disadvantages are highlighted in **Table 3.4** below for each core characteristic identified

Table 3.4: Comparison of Options 2 and 3 Based on Core Characteristics For Urban Structure

Core Characteristics	Option 2 Barrie and Area Single Node	Option 3 Multiple Nodes (3)
Healthy water and natural heritage systems	▪ Exceeds ACS targets for some sub-watersheds and overall lake capacity, particularly with 15% intensification assumption; ▪ All significant natural features are protected. ▪ Agricultural impacts are comparable for both options.	▪ Exceeds ACS targets for some subwatersheds; and overall lake capacity (though less than single node at 15% intensification and similar to single node at 40% intensification); ▪ All significant natural features are protected. ▪ Agricultural impacts are comparable with higher levels of intensification for both options.
Strong, sustainable, complete communities	▪ Adjacent to existing major centre (Barrie as a UGC); ▪ Builds on complete community amenities for Barrie.	▪ Builds on complete community amenities for Barrie, Bradford and Alliston.
The diverse character of existing communities and choices for housing and employment	▪ All options would provide 25 years of land supply to each area municipality to support existing communities and retain diversity and housing choices.	▪ All options would provide 25 years of land supply to each area municipality to support existing communities and retain diversity and housing choices.
Strong live/work connections	▪ Employment/residential connections are provided for entire urban expansion node.	▪ Potential for employment/residential connections for each urban expansion node though may be disconnected in Bradford and Alliston.
Reduced reliance on the automobile	▪ Local and regional transit is available for entire urban expansion node. ▪ Good transportation access.	▪ Growth not fully transit supportive (none in Alliston and no local transit in Bradford); ▪ Good transportation access.
Efficient infrastructure	▪ Least cost/most efficient servicing; ▪ Preferred for provision of services (IA).	▪ More costly than Barrie and Area; ▪ Less preferred for provision of services (IA).
Meets provincial Growth Plan for the GGH targets and projected demand	▪ Fully supports population projections/land supply as growth is focused on Barrie and area where deficit in land supply exists relative to demand.	▪ Does not match population projections/land supply as land supply analysis does not indicate deficit for Bradford or Alliston.

for the urban structure. **Appendix F** provides the detailed evaluation for each of the 24 criteria.

The evaluation highlighted that the single node option has more advantages with only one off-setting technical disadvantage – higher watershed impacts particularly with 15% intensification. Given that watershed and water health and protection are a cornerstone of the vision for growth for the area, the decision was made to investigate further means to reduce watershed impacts by optimizing the location of new urban expansion lands to avoid natural heritage features and minimize the overall area of land needed. A number of changes to the options were made to achieve this outcome:

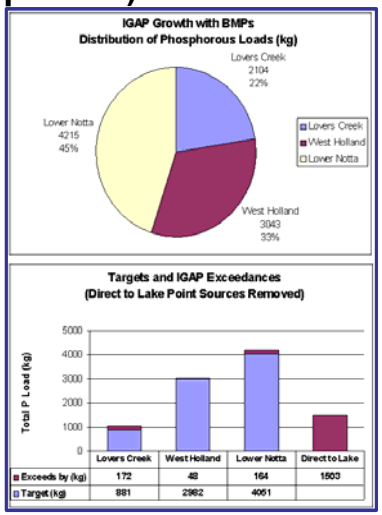
- The assumptions were changed regarding achievable densities for growth inside existing urban areas (vacant residential lands) and for new expansion areas. Lands with approved (draft and final or in-process) applications retained there approved densities but future densities for all vacant lands were adjusted to more fully reflect the goals of a compact community form. **Appendix I** describes the methodology used to calculate densities for the urban expansion area and the optimized vacant land inventory.
- Staff from the LSRCA optimized the location of the new urban expansion lands to avoid known natural heritage features (thus both protecting these features and improving permeability of the landscape) using the revised, smaller land areas;
- The ACS modeling was re-run to test the improvements achieved.

These adjustments significantly improved the outcomes for the two options bringing them closer together with respect to their impacts on both local sub-watersheds and the lake capacity. The multi-node option continued to have lower impacts due to the dispersion of effects among the watersheds of the three nodes when compared to the Barrie and area node based on 15% intensification which provides a "worst case" impact. These levels will need to be further reduced through a number of strategies listed later in this report. Both options result in loadings above target to Lake Simcoe that can only be managed through corresponding improvements in other parts of the watershed. **Figures 3.11 and 3.12**[12] illustrate the watershed impacts for the four original options and the two short listed options.

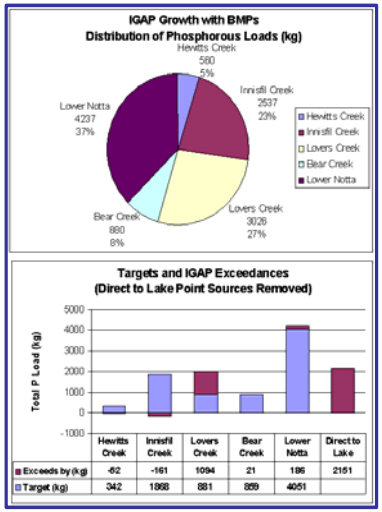
[12] Figure 11 and 12 use an older version of option numbers.

Figure 3.11: Comparison of P Load: Target, ACS Scenario & IGAP Scenarios

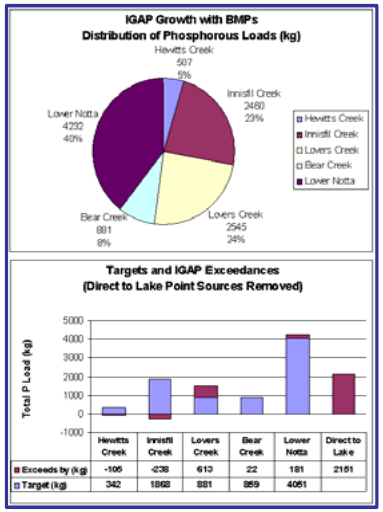
Option 1: Business As Usual (Existing Designations Residential Uses and Expansion)



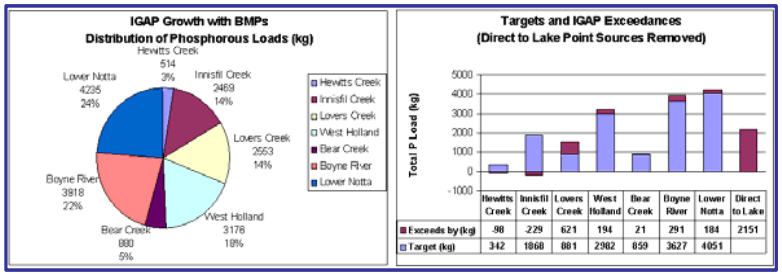
Option 2B: Barrie and Area Centered Single Node (with 15% Intensification)



Option 2A: Barrie and Area Node Centred Single Node (with 40% Intensification)



Option 3: Multi Nodal



Option 4: South Simcoe Dispersed

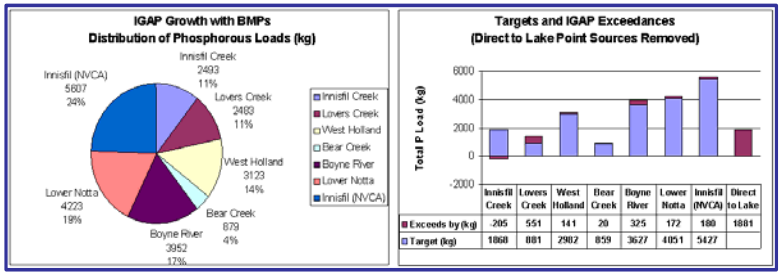
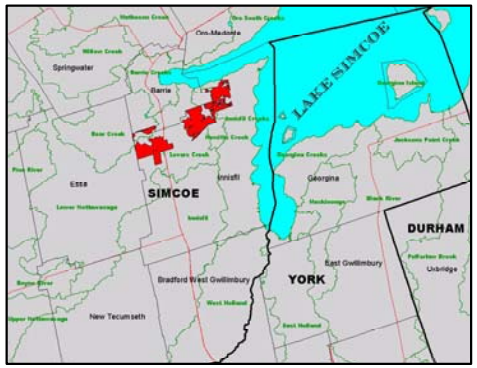
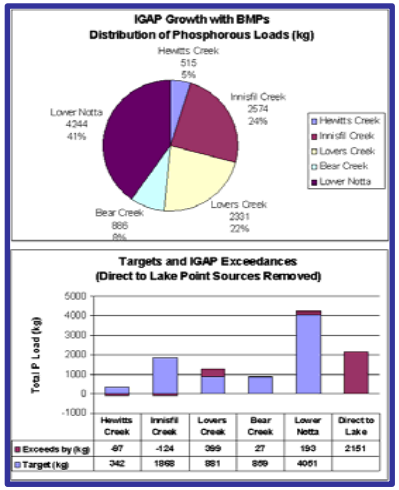


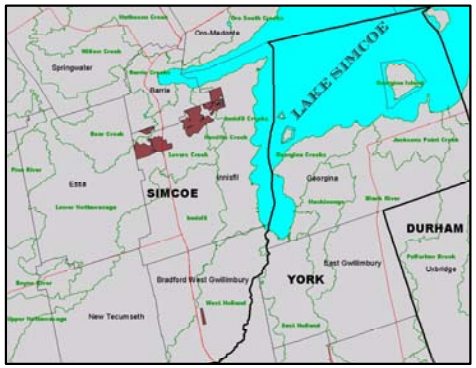
Figure 3.12: Optimized Proposed Scenarios

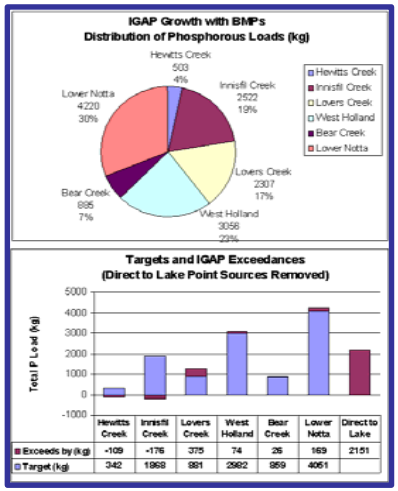
Option 2: Refined



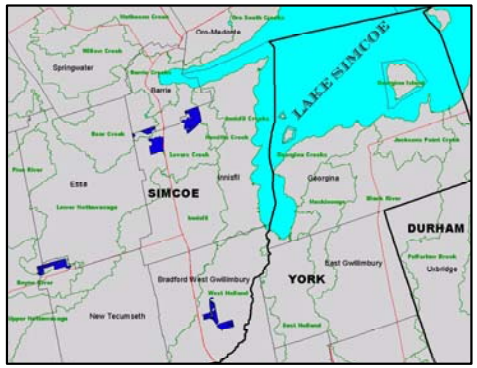


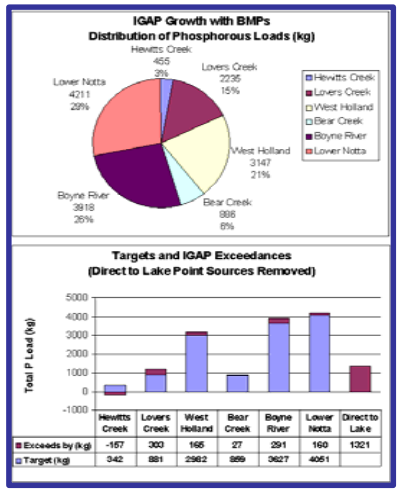
Preferred Option:





Option 3: Refined





Agricultural impacts were also reduced with the adjusted configuration.

The refined Barrie and Area option has the following advantages over the refined Multiple Node option:

- Best meets Provincial policy objectives (PPS, Growth Plan for the GGH);
- Fully matches demand/supply requirements (reflected in **Figure 3.4**);
- Least cost/most efficient servicing ($880-890 million compared to $925 million for Multiple Node);
- All new urban expansion areas will have access to local and inter-regional transit;
- All new urban expansion areas will have access to the full range of community and social services, jobs, amenities, etc. in a complete urban centre (Barrie) and will build on this important area-wide urban centre;
- Most preferred for service delivery (IA);
- As with the Multiple Node Option, can maintain environmental and watershed health by focusing growth in existing build-up areas, reducing land need for urban expansion areas and implementing a range of management strategies.

The Multiple Node option has no other off-setting advantages compared to the Barrie and Area option and consequently, the Barrie and Area option was selected as the preferred option when this refinement for environmental impacts was completed recognizing that a key component of future work will be to continue to optimize the preferred option to lower watershed impacts through on-going adjustments to the location of the urban expansion areas and increased intensification.[13] Future work by the IGAP partners will identify target intensification supply numbers for the three upper tier municipalities based on a more detailed assessment of re-development opportunities as part of the *Growth Plan for GGH* conformance exercise.

Although there is a preference for all partners to reduce or at least maintain the status quo for impacts to watersheds, the GPA has found that this would be

"Achievement of intensification numbers that are greater than the physical potential assessment and ideally that reach the 40% will reduce watershed impacts by reducing the land needed for urban expansion requirements for Barrie and Area."

[13] Achievement of intensification numbers that are greater than the physical potential assessment and ideally that reach the 40% may only marginally reduce watershed impacts by reducing the land needed for urban expansion requirements for the optimized Barrie and Area option because the majority of growth in the urban expansion area is projected as single and semi-detached dwelling units to match overall housing projection needs. Intensification and greenfield growth has been assumed to be most highly suited to respond to the projected demand for higher density housing forms.

difficult to achieve while still meeting the goals of building strong communities and a strong economy. The recommended growth option is considered to provide an appropriate and acceptable balance in meeting these community building and environmental protection goals. Some impacts to watersheds are inevitable due to the magnitude of growth that will occur in the area in the next 25 years. The identified impacts can be minimized further through:

1. Further application of best management practices and sustainable design performance measures;
2. Managing development in municipalities with an over supply of designated land;
3. Refinement of geographical locations for growth; and,
4. Off-setting impacts through water quality improvements to other portions of the watershed as well as control of development in adjacent watersheds to meet ACS targets are also needed.

3.2.4 Optimization of Option 2B and the Creation of the Recommended Urban Structure

Additional work has been undertaken for the Barrie and Area option to fine-tune the location of future growth and to describe the characteristics of the preferred urban structure. The following section describes the optimization made to the preferred option.

During the course of the evaluation of options, a number of comments were received from stakeholders suggesting improvements that could be made to better reflect the vision and policy direction for the urban structure. In response, a number of changes were made to the recommended urban structure based on the Barrie and Area option:

- The distribution of growth among the 18 municipalities was adjusted to match the population and housing projections contained in **Appendix C**.
- Improvements to avoid natural heritage areas and improved overall densities were applied (see Section 3.2.3 and **Appendix I**)
- The residential growth node south of Barrie was confined to the Town of Innisfil to reduce the complexity of providing services. Spreading development slightly north and west into Essa was not thought to have potential to reduce impacts on watersheds or natural systems; and

- Adjustments were made to the employment nodes to reflect the final outcome of the employment analysis (See **Appendix C** and **E**). Nodes in both Innisfil and Bradford on Hwy 400 were included in the preferred option.

These improvements resulted in a reduction of total land requirement, from 2385 ha to 1785 ha (Recommended Option), a difference of 600 ha.

Revised costs and watershed impacts were also calculated for the recommended urban growth structure. **Appendix F** contains a listing of data for each of the evaluation criteria for the recommended urban structure.

4.0 VISION

The recommended urban structure will provide the framework for healthy watersheds, vibrant, sustainable and complete communities. The recommended urban structure will enable growth in all settlement areas, predominantly reflecting the approved, designated urban areas in place for each municipality. The following section describes the vision for the study area.

The following sections describe the recommended urban structure. The description assumes that a 15% minimum level of intensification across the study area will be achieved recognizing that higher intensification is desirable. As part of the municipal process to conform to the *Growth Plan*, municipalities will undertake a more detailed analysis to achieve the 40% intensification target. This conservative assumption thus reflects "worst case" environmental impacts.

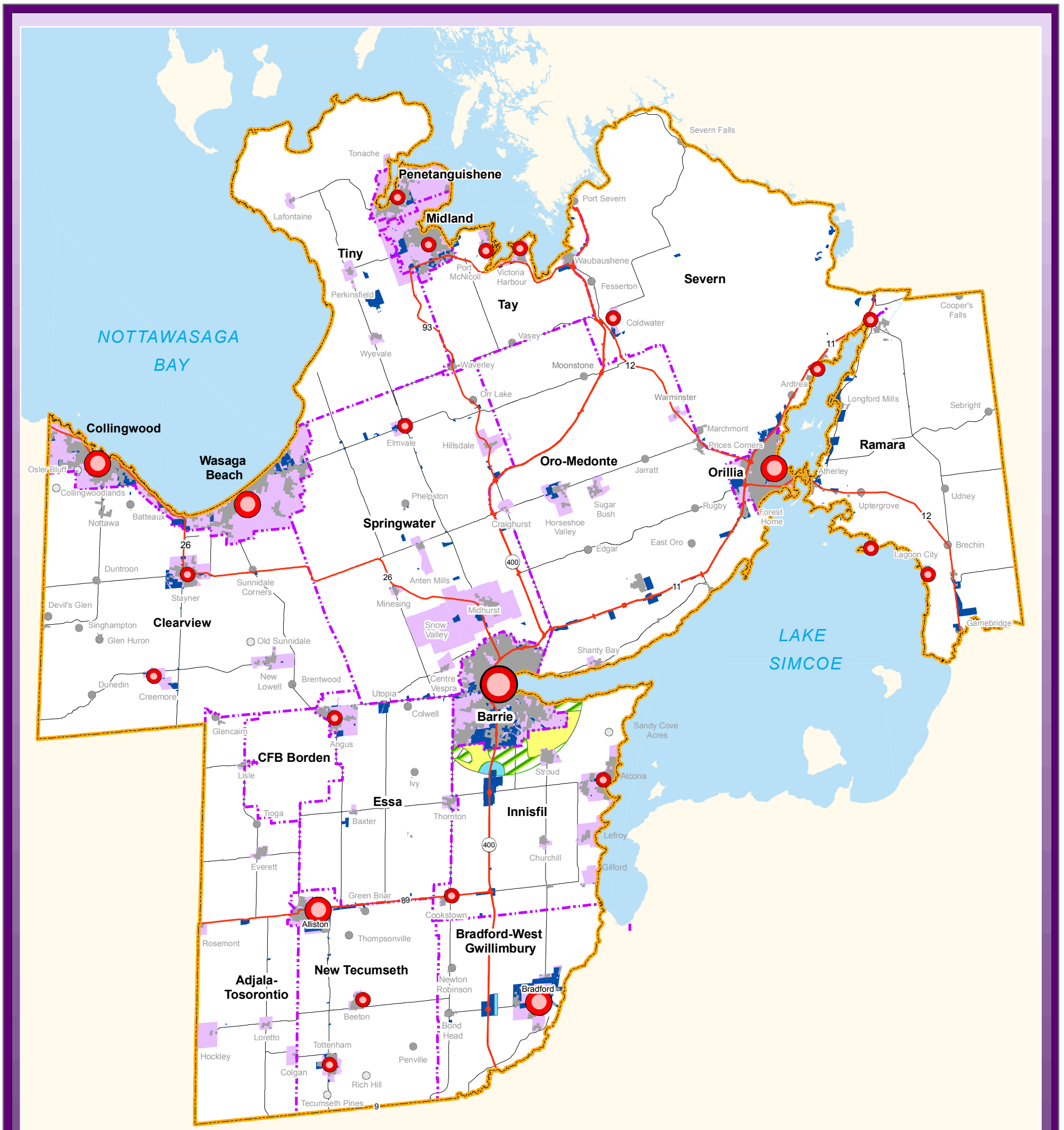
"Every community will grow…every municipality is allocated twenty-five years of growth to meet demand "

4.1 Strong Region, Strong Communities

Every community will grow. Fifty five percent of future residential growth is allocated to the 17 municipalities outside of the Barrie and area. Every municipality is allocated twenty-five years of growth to meet the demand predicted by the GPA analysis and to meet the *Growth Plan for the GGH* population forecasts. **Appendix J** provides a detailed breakdown of units, population and employment for each area municipality for the period of 2006 to 2031 as well as comparisons to OP targets, the demand analysis results and comparable growth plan allocations completed by others.

Figure 4.1 illustrates the overall vision for the urban structure. **Figure 4.2** illustrates the population growth for 2031 (note that Barrie's total population includes the proposed new urban expansion area in what is presently the Town of Innisfil because the expansion responds to demand for growth in Barrie). [14]

[14] The scope of the study did not extend to considering the implications of the growth pattern for municipal boundary adjustments. The population for the urban boundary expansion has been allocated to Barrie to reflect the centre of demand for employment and housing.



Intergovernmental Action Plan for Simcoe, Barrie and Orillia

Figure 4.1 Recommended Urban Structure

LEGEND

- IGAP Study Boundary[2]
- Area Municipalities[2]
- Provincial Highways[1]
- County Roads[1]
- Built Up Urbanized Area (conceptual)[5]
- Employment/Industrial[3]
- Settlement Boundary[3,4]
- Residential Expansion Area (conceptual)
- Employment Expansion Area (conceptual)
- Natural Heritage Constraints (conceptual)
- Regional Centre (Urban Growth Centre)
- Major Growth Node (fully serviced settlement area, with 2031 Population > 25,000)
- Growth Node (other settlement area with full services)
- Other Settlement Area[3]
- Settlement Non-Decision[3]

Ontario

Projection: UTM zone 17N NAD83
Data Sources: 1. Ontario Ministry of Natural Resources
2. Ontario Ministry of Municipal Affairs and Housing
3. Simcoe County
4. Note that settlement area boundaries have not been altered to reflect 25 year land surplus.
5.Ministry of Public Infrastructure Renewal

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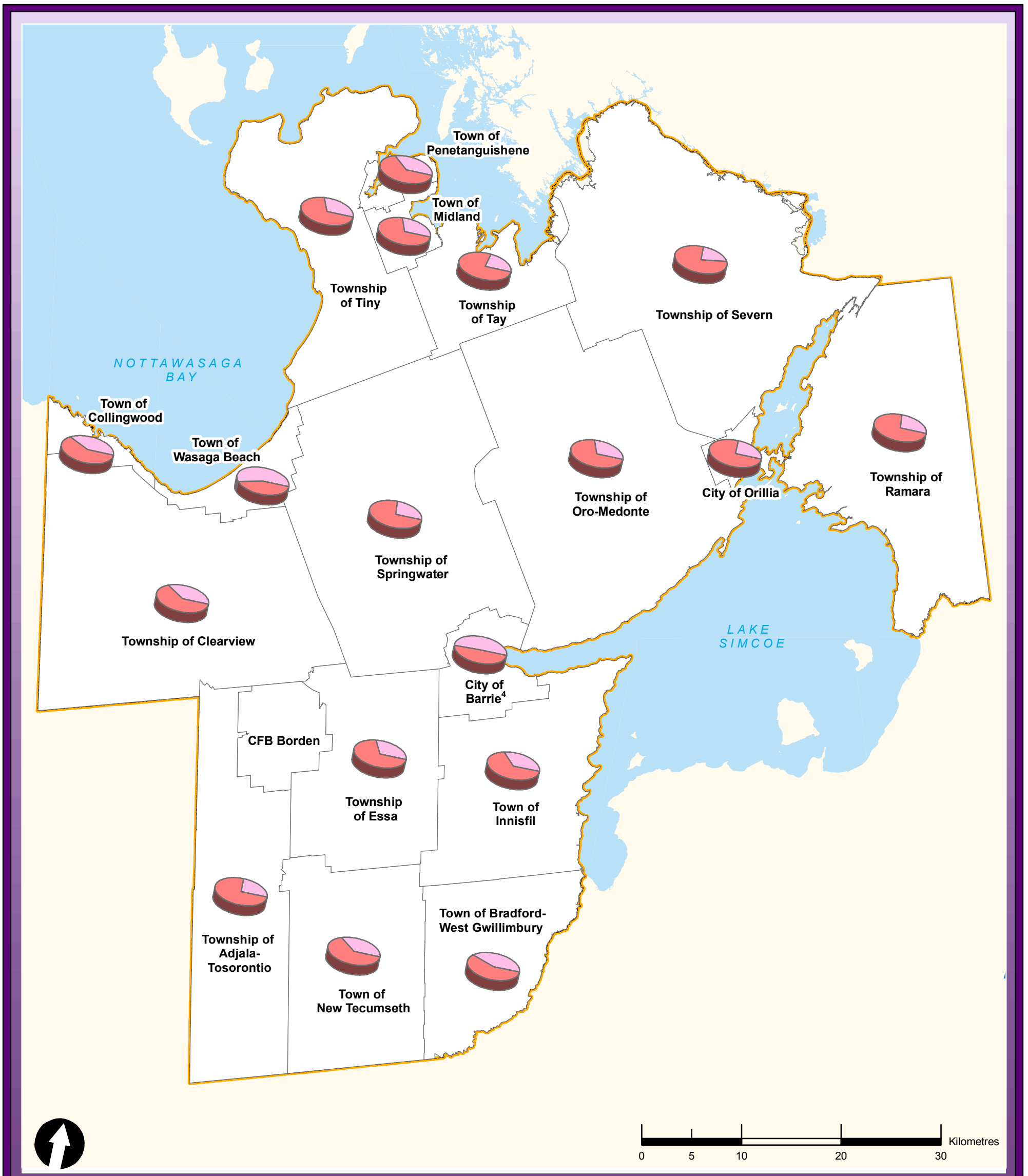

Intergovernmental Action Plan for Simcoe, Barrie and Orillia

Figure 4.2: Recommended Population Growth by Municipality 2006-2031

IGAP Study Boundary[2]
Provincial Highways[1]
County Roads[1]
Ponds and Lakes[1]

2006-2031 Population (New Growth)[3]
2006 Base Population[3]

Ontario

Projection: UTM zone 17N NAD83
Data Sources: 1. Ontario Ministry of Natural Resources
2. Ontario Ministry of Municipal Affairs and Housing
3. Lapointe Consulting, 2006. Figures for future growth include urban expansion.

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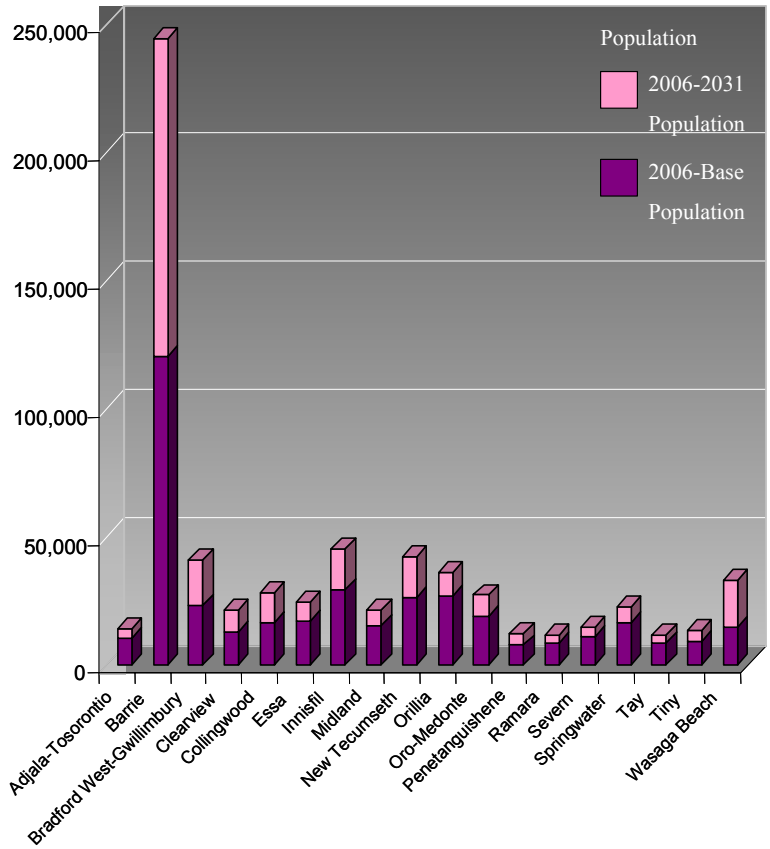
The recommended structure directs growth to three tiers of fully serviced settlement areas providing for strong sustainable complete communities for the next 25 years. Barrie and area will form the anchor urban growth centre for the area with an ultimate population of 243,800 by 2031 inside and outside the current urban boundary. This fully serviced, transit supported, complete community provides the full range of amenities, employment and services needed by new neighbourhoods. At present, the conceptual area for this new urban expansion node is 1,785 ha with a population of 91, 500 or 36, 600 units (using 15% intensification)[15]. The area is located south of Barrie in the Town of Innisfil.[16] The option will support approximately 150 persons and jobs per hectare in downtown Barrie. **Figure 4.3** below shows the population distribution and total population by municipality for 2006-2031.

Figure 4.3 Population Distribution for Recommended Urban Structure



[15] Using the 40% intensification level the land required would be approximately 1750 ha, with a population of 83,250 or 33,000 units.

[16] The scope of the study did not extend to considering the implications of the growth pattern for municipal boundary adjustments. The population for the urban boundary expansion has been allocated to Barrie to reflect the centre of demand for employment and housing.

Barrie will be supported by a number of significant smaller fully serviced nodes with a population of 25,000 or more. These include Orillia, Collingwood, Alliston, Bradford and Wasaga Beach. These areas provide a range of employment, services and amenities and are also core areas for future growth. Fifteen smaller scale full-service settlement areas form the next tier for directing growth. A number of partially serviced rural service centres form a fourth-tier as settlement areas. Overall, new growth will average more than 51 person/jobs per ha. across Simcoe.

A very modest proportion of growth has been allocated in principle to the fourth tier (partially serviced rural service centres) for the service cost and feasibility analysis in response to a strong message that was received from stakeholders that the sustainability of these smaller centres is important to the health of the countryside areas. Overall, growth on partial services represents approximately 10% of the total growth[17]. As the GPA was not intended to address local planning issues at this scale, the final allocation of growth will be determined through future local area planning and the *Growth Plan for the GGH* conformity exercise.

By supporting and strengthening large to small communities, the urban structure ensures that the current diverse character of the area is maintained and enhanced. The structure reflects the outcomes of the population demand analysis and market assessment emphasizing preferences for a range of housing and employment choices as well as the need for housing to accommodate an aging population.

Stronger live/work connections are supported. The number of jobs available in the area will grow reducing reliance on out-commuting for work:

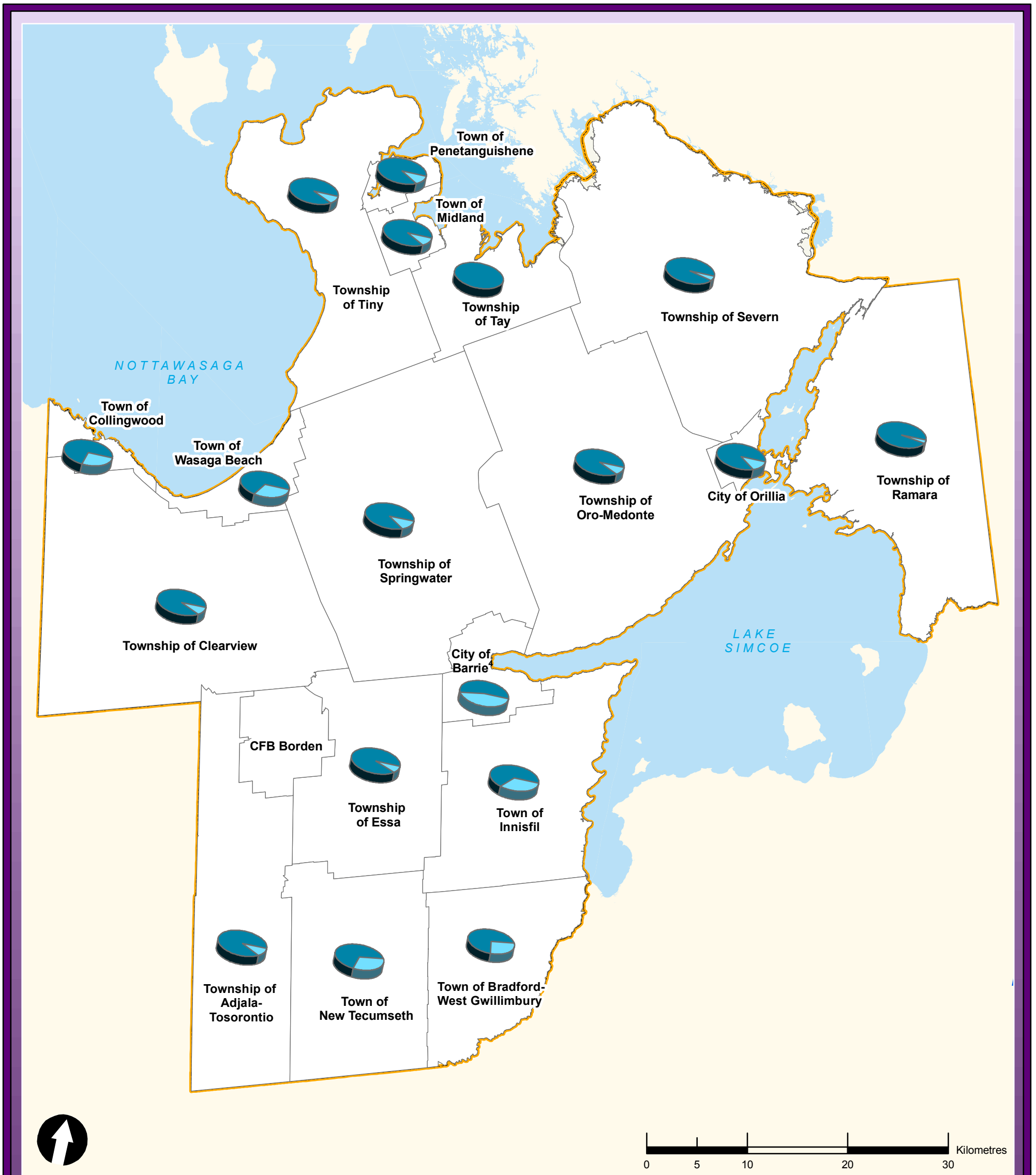
- Employment or the number of jobs will grow from 175,000 in 2006 to 254,000 (45% increase over next 25 years);
- 63,400 new jobs are expected in employment areas including business parks, industrial areas and major commercial developments;
- About 18,000 are expected to work in commercial intensification areas and institutional areas; and,
- Approximately 4,400 are expected to work at home.

[17] The majority of this 10% is accounted for by the municipalities that only have partial services (Adjala-Tosorontio, Oro-Medonte and Tiny). A limited amount of infilling in partially serviced settlement areas was also accounted for in all municipalities.

Figure 4.4 shows the change in employment in jobs for each municipality and **Figure 4.1** also shows existing employment areas and the two proposed conceptual employment expansion areas south of Barrie at Innisfil beach Rd. (350 ha) and at Highway 400 and Highway 88 in Bradford (72 ha).

The urban structure makes efficient use of existing infrastructure by focusing growth on fully serviced areas with facilities capable of expansions to accommodate growth and by focusing urban expansions to one new residential/employment node and expansion of a second existing employment node. The option chosen has the least cost for municipal servicing.

"The urban structure makes efficient use of existing infrastructure by focusing growth on fully serviced areas with facilities capable of expansions to accommodate growth and by focusing urban expansions to one new residential/employment node and expansion of a second employment node"



Intergovernmental Action Plan for Simcoe, Barrie and Orillia

Figure 4.4: Recommended Job Growth by Municipality 2006-2031

IGAP Study Boundary[2]
Provincial Highways[1]
County Roads[1]
Ponds and Lakes[1]

2006 Jobs (Existing Jobs)[3]
2006-2031 Job Growth (New Jobs)[3]

Ontario

Projection: UTM zone 17N NAD83
Data Sources: 1. Ontario Ministry of Natural Resources
2. Ontario Ministry of Municipal Affairs and Housing
3. Lapointe Consulting, EDP Consulting, 2006. Figures for future growth include urban expansion.

Created by: PJK
Checked by: RSS

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4.2 Healthy Waters, Healthy Futures

The recommended urban structure protects watersheds by:

- Minimizing urban land expansion to one area by focusing development inside existing urban boundaries through build out of approved areas and intensification at compact densities;
- Protecting most watersheds to within the targets established by the ACS;
- Distributing 66% of the growth in existing urban areas among the 18 area municipalities;
- Avoiding all areas with significant natural heritage features in the urban boundary expansion south of Barrie in the Town of Innisfil;
- Recommending the full implementation of best management practices as identified by the ACS reports.

The ACS provides an excellent tool for ensuring healthy waters and a healthy future as development proceeds over the next 25 years. The results of the ACS have identified the areas where work will be needed to manage growth in such a way that the health of watersheds is maintained and improved. In addition to the best management practices identified by the ACS team, further work will be needed to obtain commitment to sustainable development standards on the Barrie and Area expansion lands and to identify and implement specific projects to off-set increased loads to Lake Simcoe once an appropriate mechanism is in place to formally accept this approach. In addition, commitment is needed from adjacent watershed municipalities to meet the ACS targets for new development and to contribute to the projects to off-set increased loads to Lake Simcoe. Section 5.0 discusses these issues in further detail.

"In addition to the best management practices identified by the ACS team, further work will be needed to obtain commitment to sustainable development standards in the Barrie and area expansion lands in particular and to identifying and implementing projects to off-set increased loads to Lake Simcoe"

5.0 ACTIONS

5.1 Watersheds – Doing more with less…

When the IGAP partners and technical team began the process, it was widely recognized that watershed issues would have a strong influence on the outcome. Lake Simcoe is the key receiving body for development in high demand areas of a number of growing municipalities including south Simcoe, York and Durham Regions. Decisions that are made on how capacity of the lake is used must be equitable and most importantly they must maintain the health of the lake and subwatersheds through sustainable development standards, best management practices, as well as clean-up and improvement projects to off-set additional lake loadings. The chosen inter-regional strategy should use the public and private funds available in the most cost effective manner that achieves the highest environmental return for each dollar spent.

The recommended urban structure has been carefully designed and optimized so-as to protect the health of sub-watersheds as well as minimize effects on the natural heritage system. A significant amount of growth has been achieved using less land and in a form that is conducive to non-auto modes of travel, live work connections and high quality, vibrant neighbourhoods. Strategies will be needed to implement the plan carefully to ensure that the supply of urban land does not exceed demand and that compact development within currently designated lands is encouraged over new urban expansion area development.

"A significant amount of growth has been achieved using less land and in a form that is conducive to non-auto modes of travel, live work connections and high quality, vibrant neighbourhoods"

Despite these efforts to minimize the need for new urban expansion areas through intensification and compact urban form, the ACS model has identified the Lover's Creek sub-watershed may be impacted and that the overall lake target could be exceeded as growth proceeds for the recommended urban structure. These impacts have emerged in order to provide an urban structure that achieves fundamental social and economic objectives but they must be further mitigated through refinement of the recommended urban structure.

The urban structure is a "package deal" of social, economic and environmental benefits and costs. In order to reap the benefits of the growth in the vulnerable water systems of south Simcoe, it is essential that the environmental impacts are kept to an acceptable range (i.e. watershed health is maintained and improved). To achieve this, a number of fundamental actions must be taken:

- The health of the watersheds needs to be maintained and improved. All of the best watershed management practices for urban and agricultural land recommended by the ACS team must be implemented in order to maintain and improve the health of area's watersheds;
- Further opportunities for best practices should be explored;
- Barrie, Orillia and other Simcoe municipalities should commit to becoming leaders in sustainable urban design by requiring that all future urban development adhere to strict performance standards with respect to water balance, watershed management, erosion control, natural heritage protection and other environmental design/planning elements. Examples are emerging of sustainable design practices and performance targets in other jurisdictions that should be looked to as models for implementation of sustainable urban design;
- Coordinated growth management planning should occur. Further detailed/field work must be undertaken to further optimize the location of the residential and employment expansion areas by working to a 40% intensification target and adjusting the land needs to further reduce natural system and watershed impacts;
- Projects to off-set the over-target loads to the lake must be identified, funded and implemented in concert with any development and in collaboration with other municipalities along Lake Simcoe, once an appropriate watershed mechanism to authorize off-setting is in place. Although the benefits of this approach are clear, there is currently no framework within which "off-setting" could be formally accepted as a long-term watershed management strategy;
- Barrie, Orillia and other Simcoe municipalities should recognize the ACS targets in their Official Plans;
- The natural heritage system for the area should be updated using up-to-date methodologies and used as a basis for approval and design of urban development; and
- Adjacent watershed municipalities must also adhere to the ACS targets for new development for their

"The urban structure is a "package deal" of social, economic and environmental benefits and costs. In order to reap the benefits of the growth in the vulnerable water systems of south Simcoe, it is essential that the environmental impacts are kept to an acceptable range (i.e. at, below or near the ACS targets)."

contributions to Lake Simcoe and participate in projects to offset loads.
- Strategies to ensure that supply of developable land (relative to demand) is balanced must be implemented. The ACS modelling assumed that all approved lands were built out, along with the urban expansion areas. Retraction of the land supply will improve modelling outcomes. The IA Report further explores this issue.

5.2 Land Use – One regional vision…

One of the key opportunities presented by the IGAP process is the potential to implement one regional vision in a collaborative, open and technically supported forum. The process of finding an optimal urban structure has highlighted places where work has yet to be completed at an area-wide scale and places where work is best undertaken at a local scale where the proponents are close to the details and character of the land and local culture.

The following identifies some of the key actions to implement the recommended urban structure.

5.2.1 Planned Urban Structure

The overriding goal of the GPA is to identify an urban structure that provides a strong regional framework for prioritizing growth and infrastructure investment. Implementation of the recommended urban structure necessitates that the IGAP partners continue to work together to achieve a number of goals including:

- Most municipalities have been identified as having more than 25 years of growth currently approved in their land supply inventories. As part of the *Growth Plan for the GGH* conformity exercise, it will be necessary for the partners to implement a process to balance supply and demand to meet the *Growth Plan for the GGH* and PPS targets for population, employment, intensification and density mix of people and jobs on an annual and longer-term basis. A number of options for identifying areas of over/inappropriate supply and for managing release of supply are analyzed in the IA Report;
- Area-wide intensification study to refine intensification analysis and confirm targets to address *Growth Plan GGH* and Provincial Policy Statement (conformance with the 40%

intensification target for each upper tier municipality).
- Area-wide growth management study to refine population and employment demand and land supply and growth directions to address *Growth Plan for GGH* and Provincial Policy Statement.
- Official Plan policy updating to address *Growth Plan for GGH* conformity and Provincial Policy Statement consistency.
- Development and implementation of a phasing plan for infrastructure (consideration should be given to preparing area-wide transportation and water/wastewater Master Plans).
- The IGAP partners will need to develop and implement the tools needed to match supply to demand and defer approvals for residential and employment lands that are not needed within the 25 year time horizon. Although the overall quantum for deferral for each municipality has been defined in this report, further refinement of consistent rules to apply to identify the specific lands for deferral should be discussed at the regional level. Identification of the specific lands that can best be deferred should be the responsibility of the local municipalities. The IA Report explores this further;
- Implementation of the necessary environment and watershed management strategies as identified above.

There are some aspects of implementing the regional structure that will benefit from local insights and knowledge including:

- Identification of properties for intensification;
- Identification of properties that may not develop in the next 25 years;
- Identification of the optimum properties for residential and employment urban expansion nodes.

5.2.2 Achieving Intensification Target

The assessment of physical intensification potential concluded that presently there was potential for between 11,065-17,011 units across the study area. Clearly, the study partners need to work hard to improve on this to reach the 40% provincial target. The benefits of increased intensification include lower urban expansion requirements, as well as setting a market precedent that will gradually improve market acceptance of denser Greenfield and urban expansion neighbourhoods. The physical potentials range

"Implementation of the recommended urban structure necessitates that IGAP partners continue to work together to achieve a number of goals including conformance with 40% intensification target for each upper tier municipality..."

represents a minimum achievable area-wide level of intensification focused on underutilized lands with opportunity for consolidation and increased density. It should be noted that the scope of this assessment does not factor in potential municipal policy changes that will occur as a result of the municipal *Growth Plan for the GGH* conformity exercise. As part of the municipal process to conform to the *Growth Plan*, municipalities will need to undertake further detailed assessment of intensification opportunities. Implementation of intensification targets will require a number of new initiatives. In addition to the need for a comprehensive intensification study to identify how the 40% targets can be met, the following are some ideas that emerged through completion of the physical intensification potentials study:

- Emphasis on intensification as the highly preferred form of development in municipal Official Plans (OP) and Council decisions;
- Prioritizing infrastructure that encourages and supports intensification over new urban expansion area growth including transit;
- Specific attention to transit locations and corridors and connectors as intensification areas;
- OP amendments stating specific intensification targets at a sub-area level and /or map schedules identifying specific intensification sites/areas/corridors;
- Amendment to make residential land use policies in OPs more permissive towards a broad range of housing densities including minimum densities;
- Urban design work to identify attractive ways of achieving intensification in a cost effective manner;
- Incentives for intensification (fees, rebates, waivers/exemptions, grants, loans, reduced taxes, reduced development charges, increased approval times…);
- Neighbourhood specific education programs to inform residents and the development industry of the attractiveness, vibrancy and safety of compact communities;
- Improved monitoring and reporting including the classification of intensification or urban expansions (i.e. anything beyond the built boundary) applications for clear record-keeping;
- Program to gauge the validity of urban expansion land needs relative to achievement of intensification development;
- New programs to encourage intensification beyond traditional mechanisms (such as Community Improvement Plans);

"Implementation of intensification targets will require a number of new initiatives."

- Matching of lifestyle amenities and employment opportunities to intensification areas. Incorporate elements that knit together the urban fabric of livable places: recreation/open space, retail, service and institutional amenities as well as a functional transportation network supporting pedestrians, cyclists, transit and automobiles.

5.2.3 Strengthening the Countryside

During the course of the GPA, a great many stakeholders from the rural areas came forward to present concerns with the effects of urban development on the countryside areas in south Simcoe in particular. Strengthening the countryside is also essential to achieving a sustainable urban structure. The countryside supports a vibrant and important economy, contains settlement areas that are diverse and unique in character and protects the study area's natural amenities that are a major draw for residents. The following are ideas to be considered as part of the implementation strategy for the countryside areas:

- Create rules for timely, sequential urban development that are firm and permanent to provide certainty to the agricultural industry and reduce/stabilize land costs. This applies both to moving forward appropriate development applications and firmly stopping those that do not meet the regional vision;
- Establish a fairer municipal tax system for farmers so that they are not penalized by land sales/values for urban development;
- If lands are identified as deferred or non-developable for a 25-year time frame they should be identified to improve the chances that farmers will invest in these lands for agricultural operations before the land is left fallow for too long and damaged;
- Implement consistent and flexible near-urban/countryside land use policies to permit a range of appropriate uses;
- Implement near-urban farming policies to reduce farm/urban conflicts from operations and farm vehicles;
- Build farm-friendly roads to allow farm vehicles to operate safely;
- Promote flexibility in agricultural land use policies to enhance agricultural economy (e.g. allow for new and secondary agricultural related uses to take

"Strengthening the countryside is also essential to achieving a sustainable urban structure. The countryside supports a vibrant and important economy, supports settlement areas that are diverse and unique in character and supports the study area's natural amenities that are a major draw for residents."

advantage of the relatively close proximity of rural and urban spaces);
- Encourage all types, sizes and intensities of agricultural uses and activities;
- Undertake education programs to promote greater understanding and tolerance of farming practices and food sustainability/security.

5.3 Prioritizing Infrastructure Investment

One of the drivers for undertaking the IGAP process was the need for collaboration in order to identify an efficient investment strategy for infrastructure. **Appendix H** identifies preliminary estimates of the infrastructure needed to support the recommended urban structure. The advantage of such a regional approach to infrastructure planning and investment is that least cost solutions are found and infrastructure is prioritized and coordinated with land use planning to facilitate the appropriate level of development over time.

Some work that is needed to implement a coordinated infrastructure development plan includes:
- Development of infrastructure Master Plans for the study area;
- Consideration of future high speed transportation corridors in any land use planning as well as the role of Highway 400 as a gateway;
- Development of OP policies defining a hierarchy of servicing in compliance with *Growth Plan for the GGH* and establishing the role of partial serviced areas to support sustainable countryside rural service centres.

5.4 In Conclusion…..

The impetus for this study is the extreme growth pressure found in the study area. As documented in the Neptis Foundation's 2004 report[18], the area's "unprecedented growth" and several large-scale development proposals have prompted the need for a comprehensive growth management strategy. The partners of IGAP have come together with the will and desire to change the way growth has traditionally been occurring. The findings and recommendations documented in this report, the seven foundation reports, and the ECA SWOT Report are intended to be used as tools for IGAP partners and future decision-makers. The recommended urban structure is a "package deal" that is

[18] *Simcoe County, The New Growth Frontier*, 2004.

dependent on redistributing committed growth within the parameters set out in the *Growth Plan for the GGH* and the PPS, meeting watershed targets through implementation of a range of aggressive watershed management practices combined with sustainable development standards as well as a number of other planning and engineering initiatives.

The time for change is now. The IGAP process has brought the area municipalities together as partners to discuss which options are best for all. The IGAP partners take the opportunity to continue to use this forum and the comprehensive facts and analysis available to confirm the area-wide urban structure and establish the necessary implementation mechanisms, tools and policy.

APPENDIX A: CONSULTATION REPORT

1.0 INTRODUCTION

In 2005, an Intergovernmental Action Plan (IGAP) was set in motion by a governmental partnership of ministries and municipalities for future planning and development in the County of Simcoe and the Cities of Barrie and Orillia. IGAP is designed to provide comprehensive information for long term planning that recognizes the need to protect the environment, plan for sustainability, and ensure that municipal infrastructure is effectively delivered. The purpose of the following document is provide a brief overview of the consultation activities related to both the ECA and GPA. Additional information on consultation activities related the IA phase of IGAP will be provided in the IA report.

A number of consultation activities were held to ensure that members of the public, municipal and regional partners and key stakeholders were incorporated into planning process. The consultation program completed to date has included the following:

- Public open houses;
- Stakeholder workshops;
- Interviews and internal meetings with municipal partners;
- Newsletters;
- Project website.

2.0 SUMMARY OF PUBLIC EVENTS

2.1 September Open House Meeting

In September 20th and 21st, 2005 the first series of IGAP related open house meetings were held in Elmvale and Bradford. The purpose of this event was to provide attendees with an understanding of IGAP and its preliminary stages as well as to introduce the consulting teams and governmental agencies involved in the planning and decision making process. The main focus of the September 2005 meeting was also to provide information related to the Assimilative Capacities Study. A summary of this event is provided in the Final ACS Study.

2.2 March Open House Meeting

On March 22 and 23, 2006 the second round of open house meetings were held in Orillia and Alliston to present findings related to the Infrastructure Report, Communities Report and Resources Report.

Furthermore, the commencement of the final phase of IGAP was announced, which considers options for accommodating future growth and distributing municipal services. Approximately 199 people (100 in Orillia, 99 in Alliston) attended the two open house meetings. Limited written responses in the form of letters and emails were received. The following is a brief summary of some of the key written comments received:

- General support for the IGAP process;
- IGAP process must do more than identify infrastructure gaps, it must solve them in the currently approved settlement areas;
- Additional detailed analysis may be required to accurately identify water-waste water capacity;
- Financial resources are needed to accompany IGAP solutions;
- Alternate infrastructure servicing solutions must be considered (e.g. package plant);
- Concern about short timing of project and input opportunities;

- Desire to explore growth options that go beyond the status quo and address how existing residential supply might not match demand so that population growth is reflected in a more realistic manner;
- Preservation of greenspace and farmland should be considered;
- Phasing of urban expansion areas should not be permitted until the end of planning horizon, giving intensification activities time to materialize and mature;
- No new settlement areas;
- Growth options should focus on increasing densities and intensification;
- Assimilative capacity should be the key issue;
- Several other comments specific to information published in the reports was also noted (i.e. water/waste water, employment and planning report findings).

2.3 June Open House Meeting

The third open house meeting for IGAP was held on June 20 at the Simcoe County Museum in Midhurst and on the 21st at the Southshore Community Centre in Barrie. The purpose of this Open House was to present results of the SWOT analysis, the growth options and their advantages and disadvantages, and to acquire input on growth options as input to their evaluation.

The two open houses were attended by approximately 177 people (83 on June 20th, 94 on June 21st). Twenty-four (24) comment forms were submitted and the team also received an additional 5 letters/emails following the meeting. A summary of the key written comments from the two open house events is listed below:

- Written comment forms submitted showed Option 2 (Barrie and Area Centred Node), Option 4 (Multi-Nodal) and Option 5 (South Simcoe Disbursed) as all receiving approximately the same degree of support as the preferred option;
- Several noted that intensification should be supported where it tends to occur naturally, in the larger urban centres;
- A number of comments stated that, generally speaking, growth should be allocated to the study area's complete communities with access to good infrastructure, employment opportunities and public transportation (Alliston, Barrie, Bradford);
- Some comments also identified specific areas better suited for intensification, including GO stations, downtown Barrie, south and southeast Barrie and downtown Bradford.

2.4 July Open House Meeting

On July 26, 2006, the final public open house meeting was held in Midhurst at the South Simcoe Museum. The meeting was attended by approximately 170 people. The purpose of this meeting was to present the findings of the GPA, including the preferred growth option, and receive feedback on the findings to date for the Implementation Assessment (1A).

Comment forms from this open house asked questions related to service delivery. Responses returned have been addressed in the IA and are not documented here. In addition, a number of submissions were received providing general comments on the study. The following summarizes the general comments received.

- IGAP process is neglecting key aspects affecting growth in Simcoe County:
  - Understates potential of Simcoe County to fulfill employment need
  - Does not recognize current ongoing municipal planning exercises
  - Not considering development of complete communities outside of Barrie
  - Alternative servicing technologies to allow for growth while protecting Lake Simcoe.

- Support for IGAP assessment and preferred growth option with Barrie as a natural major urban growth centre.
- Regional and municipal governments have a significant role to play in shaping the physical, economic, social and natural environments that support healthy communities. The public health community has been reviewing the impact of municipal planning on health and offers comment for consideration:
    - Direct and indirect impact on health should be considered when making decisions about communities
    - Health needs to be considered in definition of complete community. A complete community must be a healthy community
    - Processes subsequent to IGAP carried out at the County or Municipal level should involve a representative from the public health field.
- Level of intensification proposed in options is too low. Only Option 3 has a half-way sensible level of 40%. Need to have multi-nodal options that have a high level of intensification. 40% should be a minimum for all existing settlement nodes in Simcoe. Need to move beyond sprawl and shift to a more denser, sustainable development.
- Watershed loading does not include trends related to global warming.
- Province needs to: mandate bike paths and make sure they are mapped; provide financial compensation for natural environment designated lands so they can be cared for/maintained; improvements to Hwy 400 as a transportation corridor (e.g. moveable medians, maglev trains).
- Need to consider bussing employees from major employers (e.g. Honda, CFB Borden).
- Ontario Municipal Board could change whatever is decided which is a concern.
- Need guiding principles and mandates at provincial level; can't leave planning up to the municipalities.
- Infrastructure has a longer life than the growth planning horizon and thus should be sized for greater growth subject to meeting the following tests:
    - Cost is borne by the proponent (developer)
    - Must not be a negative impact on the environment
    - Appropriate planning controls are in place.

The following submissions were also received and relate to specific development proposals within the study area:

- Big Bay Point Resort (Geranium Corporation);
- Bradford Bond Head Planning Area (Geranium Corporation);
- Maple Bay Lands (Blue Sky Capital Corporation);
- Lockhart-Mapleview Landowners Group (Jones Consulting Group);
- Innisfill Heights Area (KLM Planning, Watersand Construction Ltd.);
- Town of New Tecumseth Property (Mattamy Homes and Ontario Potato Distributing Inc.);
- Craighurst Secondary Plan (Meridian Planning Consultants);
- Lefroy Belle Ewart Management Inc. and the South Simcoe Business Park (Malone Givens Parsons).

3.0 OTHER MEETINGS

Meetings with study area municipalities and workshop with key stakeholders were also held to obtain input into both the GPA and the IA. The input provided was used as a valuable tool to aid in the developments evaluation of the options for growth and the development and evaluation of service delivery options in the IA.

Interviews of each of the municipalities in the study area were carried out in April and May. The following documents the questions and a consolidation of the responses provided.

IGAP
GPA Component

Municipal Partner Interviews

QUESTION 1: The ECA indicates that sufficient land is designated in existing Official Plans to supply the residential needs of the Study Area for the next 25 years. What is your reaction to this?

- Many municipalities disagree with the build out timeline
- Assumes the calcuations are correct; based on historic trends
- Concern over the level of Provincial involvment
- Some areas do not have sufficient employment lands
- Northern areas tend to have sufficient or an oversuppply of designated land
- Is the designated land in the right places?
- Suppy and demand of residential supply needs to be examined

QUESTION 2: The ECA indicates that there may be urban areas where the existing vacant residential land inventories exceed the 25 year market requirements for those lands. What is your reaction to this?

- Excess designations in some areas (e.g. north Simcoe)
- North and south Simcoe should be assessed separately
- In some areas growth may be faster than current projections
- Developers have offered to invest $ to resolve current servicing constraints
- Public process was used to designate the lands
- Development pressure in serviced areas
- Concerns of share of development because of servicing restrictions

QUESTION 3: This suggestion may result in requiring a change in land use designation or a de-designation of lands in an official plan to bring a municipality's residential land supply in alignment with its projected

population growth? Would you like to comment on this?

- De-designation would require Ministry support
- There could be legal and financial difficulties; shifting land use is problematic
- Expropriation? Compensation?
- Holding/phasing policies
- Adjust the imbalance between residential supply and demand
- Many municipalities do not support dedesignation
- Let the markets address the timing of build outs
- Industrial land oversupply should not be dedesignated
- De-designation on prime agricultural land could be warranted

QUESTION 4:

Where within the IGAP study area do you believe future growth should be allocated and why?

- Growth should go where the market exists
- Should be allocated accoring to PtG
- South Simcoe should be focus for residential and employment growth
- Need to adhere to planning principles
- Address imbalance in employment lands in south Simcoe
- ACS has had too much influence – technical solutions can be developed.
- Lands must be fully serviced
- Barrie and Orillia want to be focus of growth but other municipalities also want their share
- Growth should be in urban centres; encourage intensification
- IGAP partners should decide amongst themselves

QUESTION 4:
Where within the IGAP study area do you believe future growth should be allocated and why? CON'T

- Sensitive areas need to be protected
- Need to address impacts on surrounding communities, adjacent municipalities, impacts on infrastructure
- Provide a range of housing types
- Direct growth to transit supportive communities and MTO plans should be considered

QUESTION 5:
Given the direction of the PPS and the Proposed Growth Plan, where would you recommend accommodating future growth through intensification?

- 40% is unrealistic
- Growth within designated settlement areas
- Intensification can cause social problems, needs to be sensitive to community character
- Residents of Simcoe County like the non-urban character
- Barrie, Orillia and other urban centres should be focus of intensitification
- No annexation
- Only in fully serviced communities and must include cost of up-sizing infrastructure
- Difficult in small communities

QUESTION 6: What criteria do you think are essential when evaluating growth options?

- Proximity of employment and residential lands
- Adequate infrastructure
- Existing growth centres
- Transportation
- Market demand
- Adequate supply of employment lands
- Compact growth area
- Impact on surrounding communities
- Intensification potential
- Density choices
- Local community as well as seasonal/tourist needs
- Consistent with PPS, PtG and County OP

QUESTION 7: Based on the information known to date, how do you perceive the growth trends of your municipality? I.e.Above/below your OP growth projections? Where and in what form is the current trend of

growth?

Workshops were also held with key stakeholders.

Some of the key questions posed at these workshops were:

- Where would you like to see growth occur in the study area? Why?
- What criteria would you like to have considered in defining where growth should occur?
- Are there locations more suitable than others for intensification? Why?

The following is a brief summary of these workshops and the key comments heard:

- ***Environment*** – Participants invited to attend the environment workshop included:

    - Rescue Lake Simcoe Coalition
    - Orillia Fish and Game Conservation Club
    - South Lake Simcoe Naturalists
    - Federation of Ontario Naturalists
    - (York Simcoe Naturalists)
    - Federation of Ontario Cottagers Association
    - Ontario Federation of Anglers and Hunters
    - Ducks Unlimited Canada
    - Blue Mountain Watershed Trust
    - Brereton Field Naturalists
    - Collingwood Environment Network
    - Ducks Unlimited Canada
    - Friends of the Minesing Swamp
    - New Tecumseth Streams Committee
    - Georgian Triangle Anglers Association
    - Nottawasaga Steelheaders

    Few participants attended (2 representatives from two interest groups were in attendance), however, discussion did result in the following key comments:

    - Keep development and associated runoff away from surface water – adequate buffer;
    - Focus growth where there is high speed transit; not pleased with current transit system;
    - Map shows both agriculture and natural areas as green – should be changed to differentiate;
    - Want assurance that features once identified will be permanently protected;
    - How will environmental features in urban areas be protected;
    - Evaluation criteria should consider natural features; potential to impact links between features; oak ridges moraine;
    - Development framework needs to be long term; needs to be cooperation and stability; conservation authority roles and funding must be clear and they must be accountable;
    - Need regulations to require better land use planning (full servicing; higher density; connectivity; sustainability);
    - Any urban expansion should be done in an environmentally responsible manner;
    - Needs to be consistency in the environmental approach in the study area;
    - Need more cooperation with cooperative service and finance agreements between municipalities.

- ***Agriculture*/Aggregate** – participants invited to attend this workshop included:

  - Durham Region Federation of Agriculture
  - OFA Simcoe County
  - OMAFRA
  - Ontario Stockyards Inc.
  - Ontario Institute of Agrologists
  - Huronia Branch,
  - Provincial Federation of Agriculture
  - Farm Credit Canada
  - Ontario Creamerymen's Association
  - Ontario Independent Poultry Processors
  - Aggregate Producers Association of Ontario
  - New Tecumseh Farmers Association

  Only one participant attended. The following key comments were raised:

  - Areas with good drainage should be left for agricultural purposes;
  - Should put higher density in existing urban areas where infrastructure already exists;
  - Have jobs and houses mixed to de-emphasize community;
  - Lines or maps delineating urban vs rural areas need to be flexible until they can be ground-truthed;
  - More funding is needed to provide necessary infrastructure;
  - Planning should be done long range so that it is efficient (i.e. post the next election) and streamlined;
  - Governments need to be accountable at all levels;
  - Expand transit between Barrie and Toronto
  - Recognize not everyone wants to live in a high-rise.

- ***Development*** – all known developers in the area were invited. The Urban Development Institute assisted in contacting developers including Geranium; Matttamy; Sorbara Group; Cortellucci Group; Great Gulf Homes; Alcona Downs; ARG Group Inc., Brookfield Homes, Ontario Potato; Armland Group; Cole Engineering.

  Sixteen people attended. The following key comments/questions were raised at the meeting held with developers:

  - Population allocation – is it based on traditional growth as it relates to all municipalities within Simcoe County?
  - Do the growth projections reflect the Hemson Report in that they predict that two-third of the growth will occur in South Simcoe?
  - Has Dillon looked at the issues outside of Simcoe County, in particular South Simcoe County that could affect growth patterns for this area? In particular the issue of land supply as affected by Growth Management as it affects York, Peel and Durham Regions?
  - Has Dillon taken a fresh look at South Simcoe County to consider what areas could be readily developable?
  - Have they looked at the principles of growth management and to see whether the existing proposed designated population figures would meet the guidelines of Growth Management?
  - Is Dillon willing or is it in your Terms of Reference to look at potential growth areas that could meet the objectives of growth management such as:

- Job creation
- Access to infrastructure, e.g. sewer, water and roads
- Provide a range of housing types
- Compact forms of development, mixed use developments
- Provide transit
- Able to protect or have minimal impact on the environment
- Provide development that enhances the environment, i.e. dealing with phosphorous

- Has Dillon considered how the growth will be financed? Are the areas able to finance their projected growth?
- Have they considered what areas could be developed that requires the least or more efficient dollars to provide the necessary infrastructure?
- Have they looked at areas that could provide sustainable development to meet the future needs?

4.0 NEWSLETTERS AND NOTICES

Prior to each public open house newsletters were mailed out and notices were posted in local newspapers. The newsletters were also available at a project site located on the County's website.

APPENDIX B: KEY POLICY DRIVERS

1.0 VISION FOR GROWTH - KEY POLICY DRIVERS

Key provincial policy direction for community planning includes:

- A significant portion of new growth will be directed to built-up areas through intensification (*Growth Plan for the GGH*).
- A minimum of 40% of all residential development occurring annually within each upper and single tier municipality will be within the built up area by 2015. The Ministry of Public Infrastructure Renewal may also permit an alternative minimum intensification target in outer ring municipalities to ensure that the target is appropriate given the size, location and capacity of existing built-up areas. (*Growth Plan for the GGH*).
- Downtown Barrie is identified as an Urban Growth Centre and will be planned to meet provincial targets for infrastructure, transit and minimum gross densities (*Growth Plan for the GGH*).
- Schedule 3 of *The Growth Plan for the Greater Golden Horseshoe* will be used as the basis for planning for growth (population, unit and employment forecasts).
- Growth is directed to settlement areas that offer municipal water and wastewater services (*Growth Plan for the GGH* and *PPS*).
- Intensification will be encouraged throughout the built-up area in intensification areas (*Growth Plan for the GGH*).
- Major transit station areas, urban growth centres and intensification corridors will be recognized as a key focus for intensification (*Growth Plan for the GGH*).
- Greenfield growth will be compact and transit-supportive (*Growth Plan for the GGH* and *PPS*).
- Designated Greenfield areas of each upper- or single-tier municipality will be planned to achieve a minimum density target that is not less than 50 residents and jobs combined per hectare. The measurement of the target will net out certain natural features and areas (*Growth Plan for the GGH*).
- Downtown Barrie, which has been identified as a an Urban Growth Centre, will be planned to achieve 150 residents and jobs combined per hectare *(Growth Plan for GGH*).
- Greenfield areas will be planned to create complete communities, support transit services, provide a diverse mix of land uses and create high quality public open spaces (*Growth Plan for the GGH*).
- Focus of growth is to reduce dependencies on the automobile through the development of mixed use, transit-supportive, pedestrian-friendly urban communities (*Growth Plan for the GGH* and PPS).
- Planning for growth will ensure the availability of sufficient land for employment (*Growth Plan for the GGH* and *PPS*).
- Growth will support a balance of jobs and housing to develop cities and towns as complete communities (*Growth Plan for the GGH*).
- Establishment of new settlement areas is prohibited (*Growth Plan for the GGH*).
- New development taking place in designated growth areas should occur adjacent to existing built-up areas (*PPS*).
- Intensification strategies and comprehensive planning will precede any expansion to urban boundaries; a settlement area boundary expansion may only occur as part of a municipal comprehensive review, under a number of conditions as outlined in the *Growth Plan for the GGH* policies (2.2.8.2).

- Growth in rural areas is restricted to development related to the management of resources, resource-based recreational activities and limited residential development (Growth Plan for the GGH and *PPS*).
- Conversion of employment lands to non-employment uses or major retail uses is restricted; a municipal comprehensive review is required, and among other things, it must demonstrate that the lands are not required for employment purposes over the long term and the need for conversion is clear (*Growth Plan for the GGH* and *PPS*).
- Need for range of housing types (affordability, special needs, densities, infill/intensification) (*PPS*).
- Need for full range and equitable distribution of recreation opportunities (*PPS*).

2.0 INFRASTRUCTURE PLANNING POLICY DRIVERS

Key provincial policy direction for community planning includes:

- Planning for infrastructure shall be integrated with planning for growth (*Growth Plan for the GGH* and *PPS*).
- Transit infrastructure will shape growth (*Growth Plan for the GGH*).
- Priority will be placed on increasing capacity of existing transit systems to support intensification areas (*Growth Plan for the GGH*).
- Service areas will be expanded to support transit-supportive residential and employment densities (*Growth Plan for the GGH* and *PPS*).
- Infrastructure investment will facilitate improved linkages from nearby neighbourhoods to urban growth centres and major transit centres (*Growth Plan for the GGH*).
- An improved inter-regional transit link is identified to link Barrie to the southern GTA (*Growth Plan for the GGH*).
- Planning for transportation corridors (which includes transit, roads and rail lines), ensure that corridors are identified and protected to meet current and projected needs for various travel modes (*Growth Plan for the GGH* and *PPS*).
- The use of existing infrastructure should be optimized wherever feasible, before consideration is given to developing new infrastructure (*PPS*).
- Infrastructure should be strategically located to support delivery of emergency management services (*PPS*).
- Make efficient use of existing and planned transportation infrastructure. (*PPS*)
- Maintain and improve connectivity among transportation systems including cross- jurisdictional (*PPS*).
- Support non-auto modes of transportation and reduced trip length (*PPS*).
- Protect and reuse transportation corridors (*PPS*).
- Protect the long-term operation and economic role of airports through land use planning (*PPS*).
- Provide waste management facilities to accommodate present and future requirements and facilitate 3Rs (*PPS*).
- Direct and accommodate expected growth to promote efficient use of existing water and wastewater services *(PPS).*

- Ensure that stormwater, water and wastewater services can be sustained by the water resources upon which such services rely, are financially viable and protect human health and the environment *(PPS).*
- Promote development on full municipal services and direct growth to these areas *(Growth Plan for the GGH and PPS).*
- Expansions or new services are to serve growth in a manner that supports achievement of intensification and density targets *(Growth Plan for the GGH).*

3.0 RESOURCES PROTECTION POLICY DRIVERS

Key provincial policy direction for protecting and wise use and management of resources includes:

- Natural features shall be protected for the long-term (*PPS*).
- Diversity, connectivity, long-term ecological function and biodiversity of natural systems should be maintained, restored or improved *(PPS).*
- Water quality and quantity shall be protected, improved or restored (*PPS*).
- Prime agricultural areas shall be protected for long-term use (*PPS*).
- Minerals and petroleum resources shall be protected for long-term use (*PPS*).
- Mineral aggregate resources shall be protected for long-term use (*PPS*).
- Significant built heritage resources and significant cultural heritage landscapes shall be conserved (*PPS*).
- Development shall be directed away from areas of natural or human-made hazards where there is an unacceptable risk (*PPS*).
- Development shall not result in the harmful alteration, disruption or destruction of fish habitat (*Fisheries Act*).

There are several area specific provincial plans which regulate land use in Simcoe County. The contents of these plans support the protection and wise use and management of resources. The provincial plans are:

- *The Niagara Escarpment Plan*;
- *The Oak Ridges Moraine Conservation Plan*; and
- *The Greenbelt Plan*.

An overview of each plan and how each relates to IGAP is provided in the *Existing Capacities Assessment Resources Report*.

The federal Fisheries Act also provides additional guidance for development, stating that no new development shall result in the harmful alteration, disruption or destruction of fish habitat.

APPENDIX C: POPULATION, HOUSING AND EMPLOYMENT PROJECTIONS

POPULATION, HOUSING AND EMPLOYMENT PROJECTIONS BARRIE, ORILLIA AND SIMCOE COUNTY AREA MUNICIPALITIES: 2006-2031

Prepared by Linda Lapointe,
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For the Intergovernmental Action Plan
for Barrie, Simcoe and Orillia

August, 2006

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1 INTRODUCTION

This document describes population and household projections as well as projections of housing requirements for the IGAP study area for the period 2006-2031. The document also describes how these overall projections were distributed amongst area municipalities. In addition we describe employment projections for the IGAP study area in total and by sector as well as how employment was allocated to individual municipalities. A discussion of the need for additional employment lands is provided in Appendix E.

It should be noted that both population and employment projections for 2031 from the Places to Grow report were used in this report.

The IGAP study area – Barrie, Orillia and Simcoe County is referred to as "Simcoe" in this document.

The report describes housing requirement by type for the IGAP study area and individual municipalities based on our best information about housing preferences and tastes. As there is a major change occurring in the population with the aging of the baby boom generation and as housing tastes and preferences are constantly changing, these housing projections need to be monitored and adjusted as required in the future.

2 POPULATION, HOUSEHOLD AND HOUSING PROJECTIONS

2.1 PROJECTED POPULATION GROWTH

According to the Provincial *Places to Grow: Growth Plan for the Greater Golden Horseshoe* (2006) the population in the Greater Golden Horseshoe is anticipated to grow from 7.8 million in 2001 to 11.5 million in 2031.[1] This growth represents an increase of 3.7 million persons in the GGH areas. The proportion of Ontario residents residing in the GGH will grow from two-thirds in 2001 to 70% by 2031. The GGH growth will account for over 80% of Ontario's population increase over this period.[2] A more detailed description of population forecasts is provided in the background report, Demographic, Housing and Employment Trends in Barrie, Orillia and Simcoe County, prepared by Lapointe Consulting Inc. The population projections were prepared for the Province's Ministry of Public Infrastructure Renewal by Hemson Consulting.

Migration to the GGH from within Canada and abroad will be the main source of population growth. While growth in the inner ring is driven by international immigration, growth in most of the outer ring will be based on out-migration from the inner ring.

[1] The Greater Golden Horseshoe includes the Greater Toronto Area (the City of Toronto and the Regional Municipalities of York, Durham, Peel and Halton) and the City of Hamilton. Ten other areas are included in the outer ring of the GGH including: Simcoe, Northumberland, Peterborough, Kawartha Lakes, Haldimand, Niagara, Brant, Waterloo, Wellington and Dufferin.
[2] Province of Ontario,*Places to Grow: Draft Growth Plan*, 2005, Page 13

Simcoe (which includes Barrie, Orillia and Simcoe County) will have one of the highest growth rates in the GGH as its population will grow by 70% over the 2001-2031 period. The anticipated growth in Simcoe to 667,000 persons in 2031 from 392,000 persons in 2001 represents approximately a third (31%) of population growth in the outer ring between 2001 and 2031. Despite the high anticipated growth in Simcoe between 2001 and 2031, population increase in this area is expected to account for only 7% of the total GGH area population growth.

Table 1 below shows the change in the age distribution of the population in Simcoe. Generally speaking the population in Simcoe is aging, reflecting overall trends in Ontario's population particularly the aging of the baby boom generation. These changes are summarized below:

- The proportion of the population composed of children and youth (0-19 years of age) is projected to decline from 28% of the population in 2001 to 22% in 2031. In 2001 there were 109,100 persons under the age of 20; by 2031 there will be 143,500 persons under the age of 20. Though this represents an absolute increase of 34,400 and a 32% rise in this demographic, as a proportion of the total population persons under the age of 20 will be less significant in 2031 than in 2001.

- The proportion of the population composed of adults aged 20-44 is projected to decline from 37% in 2001 to 31% in 2031, although in absolute numbers this group is expected to grow by 62,100 or by 43% from 144,100 in 2001 to 206,200 in 2031.

- Those aged 45-64 years of age are expected to increase from 88,300 persons in 2001 to 168,500 in 2031—representing an increase of 91%, or some 80,200 persons. This group will grow from 23% of the population in 2001 to 25% in 2031. An increase in this age group should result in continued household growth and demand for "move up", "move down" and "life-style" housing. This cohort will be the fastest growing age group in Simcoe after seniors 65+ between 2001 and 2031.

- Reflecting the aging of the population, the proportion of the population 55+ is expected to grow from 86,100 in 2001 to 144,700 in 2031 increasing from 22% of the population in 2001 to over a third in 2031 (34.6%). This cohort will grow by 144,700 over the 30-year period or 168%.

- The proportion of persons aged 65 years and over is expected to nearly double from 13% of the population in 2001 to 22% in 2031. Those aged 65 and over will almost triple in number from 50,500 in 2001 to 149,000 in 2031, representing a gain of 98,500 persons in this age group and an increase of 195%. Growth in this cohort will account for over a third of the entire population increase in Simcoe between 2001 and 2031.

The aging of the population will have significant impacts on housing demand and services across Simcoe. Trends in Simcoe mirror those that are occurring throughout Ontario and represent a major challenge in terms of how housing and communities are planned and designed in the future. As well, there will be an increased need for health care services and improved community support services.

The age distribution varies across the IGAP study area with municipalities in the more northern part of the study area having a higher proportion of their population that is older while those closer to the GTA tend to have younger populations. The younger age pattern in certain more southern municipalities reflects the stronger and more diversified economies of areas such as Barrie and New Tecumseth to provide employment for younger households as well as the higher likelihood of families moving to such areas while still working in the GTA. At the same time, some more northern municipalities have fewer employment opportunities for young people and therefore are experiencing an aging population while others are becoming targets for empty nester, retirement and active retirement communities and developments.

Table 1: Projected Age Distribution, Simcoe, 2001-2031

Age	2001		2011		2021		2031		30-Year Change	
	Total	%	Total	%	Total	%	Total	%	#	%
0-4	23,900	6.1%	26,300	5.4%	32,300	5.5%	33,500	5.0%	9,600	40.2%
5-9	29,100	7.4%	27,000	5.6%	32,200	5.5%	36,600	5.5%	7,500	25.8%
10-14	29,400	7.5%	28,900	6.0%	31,500	5.4%	37,300	5.6%	7,900	26.9%
15-19	26,700	6.8%	33,200	6.9%	31,300	5.4%	36,100	5.4%	9,400	35.2%
0-19	109,100	27.8%	115,400	23.8%	127,300	21.9%	143,500	21.5%	34,400	31.5%
20-24	22,600	5.8%	32,600	6.7%	32,300	5.5%	34,700	5.2%	12,100	53.5%
25-29	23,300	5.9%	30,900	6.4%	37,600	6.5%	35,300	5.3%	12,000	51.5%
30-34	27,700	7.1%	31,200	6.4%	41,500	7.1%	40,500	6.1%	12,800	46.2%
35-39	36,400	9.3%	33,500	6.9%	41,400	7.1%	47,300	7.1%	10,900	29.9%
40-44	34,100	8.7%	34,900	7.2%	38,600	6.6%	48,400	7.3%	14,300	41.9%
20-44	144,100	36.8%	163,100	33.7%	191,400	32.9%	206,200	30.9%	62,100	43.1%
45-49	28,100	7.2%	40,700	8.4%	38,000	6.5%	45,600	6.8%	17,500	62.3%
50-54	24,600	6.3%	36,600	7.6%	37,500	6.4%	41,100	6.2%	16,500	67.1%
55-59	19,700	5.0%	30,800	6.4%	43,200	7.4%	40,600	6.1%	20,900	106.1%
60-64	15,900	4.1%	28,700	5.9%	40,600	7.0%	41,200	6.2%	25,300	159.1%
45-64	88,300	22.5%	136,800	28.2%	159,300	27.4%	168,500	25.3%	80,200	90.8%
65-69	14,900	3.8%	23,200	4.8%	34,100	5.9%	45,500	6.8%	30,600	205.4%
70-74	13,500	3.4%	16,700	3.4%	28,400	4.9%	38,900	5.8%	25,400	188.1%
75-79	10,600	2.7%	12,900	2.7%	20,000	3.4%	28,900	4.3%	18,300	172.6%
80-84	6,600	1.7%	9,000	1.9%	11,800	2.0%	20,100	3.0%	13,500	204.5%
85-89	3,300	0.8%	5,100	1.1%	7,000	1.2%	11,200	1.7%	7,900	239.4%
90+	1,600	0.4%	2,100	0.4%	3,100	0.5%	4,400	0.7%	2,800	175.0%
55+	86,100	22.0%	128,500	26.5%	188,200	32.3%	230,800	34.6%	144,700	168.1%
65+	50,500	12.9%	69,000	14.2%	104,400	17.9%	149,000	22.3%	98,500	195.0%
Total	392,000	100.0%	484,300	100.0%	582,400	100.0%	667,200	100.0%	275,200	70.2%

Source: Projections provided by Hemson Consulting Inc. for the Ministry of Public Infrastructure Renewal; data manipulation by Lapointe Consulting

2.2 PROJECTED HOUSEHOLD GROWTH

Based on an assumed 2031 population for Simcoe of 667,000, the total number of households in the study area is expected to increase from an estimated 162,245 in 2006 to 271,302 in 2031 (refer to Table 2 below). This represents an increase of 109,055 households or 67% for the 25-year period from 2006 to 2031. Due to a gradual slowing of population growth, the rate of five-year increase is expected to slow from a high of 14% from 2006 to 2011 to 7% for the last 5-year period from 2026 to 2031.

The increase in the number of households is synonymous with the increase in the additional housing units that are required.

Table 2: Simcoe Projected Households 2006-2031

		5-Year Change		Annual
Year	Hhlds	#	%	#
2001	141,979			
2006	162,245	20,266	14.3%	4,053
2011	184,669	22,425	13.8%	4,485
2016	208,187	23,518	12.7%	4,704
2021	231,836	23,649	11.4%	4,730
2026	253,021	21,185	9.1%	4,237
2031	271,302	18,281	7.2%	3,656
2006-2031	109,058		67.2%	

Source: Lapointe Consulting

Tables 3a and 3b below show the increase in households headed by household maintainers of different age groups. While the overall increase in the number of households between 2006 and 2031 is 67%, for households with older household maintainers (65 years of age or older), the increase over the twenty-five year period is 150% or higher (see Table 3). Taken as a whole, the number of households with a household maintainer 55 years or older will increase by approximately 74,000 or 120% (accounting for approximately two-thirds of household growth between 2006 and 2031). Another way of looking at this is that by 2031, almost 1 in 2 households will be headed by someone 55 years or older compared to just over 1 in 3 today.

What this implies is a revisiting of the type of housing that needs to be developed in the future as well as how communities are planned. There will be a greater need for housing that is suited to empty nesters, early retirees and seniors ranging from small lot singles, condominium singles to medium density row housing, low-rise apartments and higher density apartment buildings. Apartment buildings will be a mixture of condominium type ownership, life lease and rental housing.

Other planning considerations such as community support services and public transportation will be more important in the future.[3]

Table 3a: Household Projections, By Age of Household Maintainer, 2006-2031, Simcoe

Age Of	2006		2011		2021		2031		2006-2031 Ch.	
Head	Total	%	Total	%	Total	%	Total	%	#	%
15-24	4,600	2.8%	5,104	2.8%	4,933	2.1%	5,492	2.0%	892	19.4%
25-34	23,492	14.5%	26,817	14.5%	34,159	14.7%	32,734	12.1%	9,241	39.3%
35-44	37,408	23.1%	35,937	19.5%	42,032	18.1%	50,280	18.5%	12,872	34.4%
45-54	35,316	21.8%	42,194	22.8%	41,211	17.8%	47,325	17.4%	12,009	34.0%
55-64	26,671	16.4%	32,787	17.8%	46,177	19.9%	45,075	16.6%	18,405	69.0%
65-74	19,220	11.8%	24,116	13.1%	37,775	16.3%	51,012	18.8%	31,792	165.4%
75-84	12,692	7.8%	14,181	7.7%	20,591	8.9%	31,729	11.7%	19,037	150.0%
85+	2,846	1.8%	3,533	1.9%	4,956	2.1%	7,656	2.8%	4,809	169.0%
Total	162,245	100.0%	184,669	100.0%	231,836	100.0%	271,302	100.0%	109,058	67.2%

Source: Lapointe Consulting Inc.

Table 3b: Household Projections, By Age of Household Maintainer Grouped, 2006-2031, Simcoe

Age Of	2006-2011		2011-2021		2021-2031		2006-2031	
Head	Total	%	Total	%	Total	%	Change	%
under 44	2,358	10.5%	13,265	28.1%	7,382	18.7%	23,006	35.1%
45-64	12,994	57.9%	12,408	26.3%	5,011	12.7%	30,413	49.1%
65+	7,072	31.5%	21,493	45.6%	27,073	68.6%	55,638	160.1%
55+	*13,189*	*58.8%*	*34,884*	*74.0%*	*25,971*	*65.8%*	*74,043*	*120.5%*
Total	22,425	100.0%	47,166	100.0%	39,467	100.0%	109,058	244.3%

Source: Lapointe Consulting Inc.

[3] See for example, *Peel Seniors' Community Support Services Needs Study: Final Report,* prepared by Lapointe Consulting Inc. in association with Campbell Research Associates for a group of agencies serving seniors managed by Peel Senior Link, *September, 2004*

2.3 PROJECTING HOUSING REQUIREMENTS FOR SIMCOE

2.3.1 Approach Used for Housing Preferences

In this section we discuss future housing requirements for Barrie, Orillia and Simcoe County ("Simcoe") as a whole using a demographic approach. Initially, we projected housing requirements for Simcoe using 2001 housing propensities for different age groups, that is, the likelihood of different age groups to prefer different dwelling types and tenures (own or rent).[4] However, as the proportion of household maintainers who live in different dwelling types at any point in time reflects both demand and supply trends over time, as tastes and opportunities change, these housing preferences will also change.

In this section the Simcoe housing preference patterns are compared to those of other areas, namely, the GTA and Ontario. As can be seen from Table 4 below, Simcoe's housing preferences are considerably different from those of the GTA and it is unlikely that they will reach the GTA mix for some time.

Table 4: Current Housing Preferences, Ontario, Toronto CMA and Simcoe, 2001

	Single	Semi	Row	Apt.	Total
Ontario	58.5%	6.3%	7.6%	27.6%	100.0%
Toronto CMA	45.2%	9.1%	7.9%	37.9%	100.0%
Simcoe	77.1%	3.8%	4.9%	14.3%	100.0%

Source: Census Custom Tabulation, 2001

Using Lapointe Consulting's housing projection model and the projected age distribution for Simcoe prepared by Hemson Consulting Inc. and provided to us by the Ministry of Public Infrastructure Renewal, Lapointe Consulting projected housing demand for the IGAP study area from 2006 to 2031. In the section below, the resulting housing requirements are shown using the Simcoe housing propensities for the period 2006-2011 and then using Ontario housing propensities after 2011. (See Table 6 below). Finally, some adjustments were made to reflect knowledge of the housing market in Simcoe and the strong preferences that have been shown there for row housing among older adults as well as the general preference among older adults for such housing in other communities.

[4] To project housing requirements for the Simcoe Study area, a special cross-tabulation from Statistics Canada was ordered titled "Persons in Private Households in Private Occupied Dwellings by Age Groups of Primary Household Maintainer and Tenure, showing Structural Type of Dwelling for Simcoe County, 2001 Census."

Our recommended mix is based on a hybrid-model that takes into account demographically-based projections of housing requirements and market trends in Simcoe and other parts of Ontario among older adults. The advantage of using a demographically based housing projection is that housing requirements are based on known housing preferences by age group – one of the major determinants of housing preferences.

2.3.2 Housing Demand Using Simcoe 2001 Preferences

Using housing preferences by dwelling type from the 2001 Census, households by dwelling type were estimated for the period 2006 to 2031. The 5-year and annual housing demand for Simcoe is shown in Table 5 below. As the rate of population growth slows in the next 25 years, the demand for housing in Simcoe is expected to gradually decline. Demand for new housing is expected to remain at a high level until 2021 when annual demand is expected to peak at 4,729 units. After 2021 demand will fall off, slowing to 4,237 units annually between 2021 and 2026, and to 3,656 units between 2026 and 2031.

If Simcoe residents were to continue to live in the same type of housing as reflected in the 2001 census housing preferences, demand for single-detached dwellings would remain at the same high levels, with approximately 77% of households living in them. Based on 2001 housing preferences, production of single-detached homes would peak at 3,667 units annually between 2016 and 2021 before falling off to 3,277 units annually between 2021 and 2026 and 2,804 units annually between 2026 and 2031.

Based on 2001 preferences, semi-detached housing would be the choice of an average of 5% of households throughout the projection period. Annual production would fall from a high of around 250 units annually between 2006 and 2016 to just 165 units by 2031.

Table 5: Annual Housing Demand
Based on 2001 Simcoe Housing Preferences

Dwelling Type	2006-2011		2011-2016		2016-2021		2021-2026		2026-2031	
	5-Year	Annual	5-Year	Annual	5-Year	Annual	5-Year	Annual	5-Year	Annual
Single Detached	17,404	3,481	18,197	3,639	18,336	3,667	16,385	3,277	14,018	2,804
% of Total		77.6%		77.4%		77.5%		77.3%		76.7%
Semi Detached	1,252	250	1,270	254	1,154	231	970	194	825	165
% of Total		5.6%		5.4%		4.9%		4.6%		4.5%
Row Housing	978	196	1,062	212	1,007	201	829	166	686	137
% of Total		4.4%		4.5%		4.3%		3.9%		3.7%
Apartments	2,790	558	2,988	598	3,151	630	3,002	600	2,752	550
% of Total		12.4%		12.7%		13.3%		14.2%		15.0%
Total	22,425	4,485	23,518	4,703	23,649	4,729	21,185	4,237	18,281	3,656
% of Total		100.0%		100.0%		100.0%		100.0%		100.0%

Source: Lapointe Consulting Inc.

If 2001 housing preferences prevailed throughout the projection period, demand for row housing would also be modest. Between 2006 and 2021 only approximately 200 row

housing units would be required annually to meet demand. After 2021 demand for row housing would continue to drop from an annual average of 166 units between 2021 and 2026 to 137 units between 2026 and 2031.

If 2001 housing preferences continued into the future, demand for apartments would also be relatively modest. However, because of the aging of the population and the higher demand for apartments among seniors over the age of 65, annual production levels would remain steady in the range of 550 to 600 units throughout the projection period. Because total demand is expected to fall, the proportion of apartments would rise from just over 12% between 2006 and 2011 to 15% between 2026 and 2031.

2.3.3 Adjusting Housing Demand Using Ontario 2001 Preferences

In the next 25 years—as the population of Simcoe almost doubles—it will also become more urban with its housing choices likely to resemble the rest of Ontario. To reflect the urbanization of Simcoe, housing demand for Simcoe was modified to use Ontario housing preferences after 2011. The results are shown in Table 6, below.

Table 6: Annual Housing Demand Based on Ontario Housing Preferences (After 2011)

Dwelling Type	2006-2011		2011-2016		2016-2021		2021-2026		2026-2031	
	5-Year	Annual	5-Year	Annual	5-Year	Annual	5-Year	Annual	5-Year	Annual
Single Detached	17,404	3,481	14,062	2,812	14,268	2,854	12,934	2,587	11,179	2,236
% of Total		77.6%		59.8%		60.4%		61.0%		61.1%
Semi Detached	1,252	250	1,798	360	1,722	344	1,430	286	1,175	235
% of Total		5.6%		7.7%		7.3%		6.7%		6.4%
Row Housing	978	196	1,537	307	1,462	292	1,213	243	978	196
% of Total		4.4%		6.5%		6.2%		5.7%		5.4%
Apartments	2,790	558	6,121	1224	6,197	1239	5,608	1122	4,949	990
% of Total		12.4%		26.0%		26.2%		26.5%		27.1%
Total	22,425	4,485	23,518	4,703	23,649	4,729	21,185	4,238	18,281	3,657
% of Total		100.0%		100.0%		100.0%		100.0%		100.0%

Source: Lapointe Consulting Inc.

Applying 2001 Ontario housing preferences after 2011, results in an overall demand for fewer single-detached dwellings with production falling from a peak of 3,481 units annually between 2006 and 2011 to just 2,236 units annually between 2026 and 2031. As a proportion of total demand, single-detached homes would fall from 78% between 2006 and 2011 to just 61% between 2026 and 2031—a difference of 17%.

Demand for semi-detached housing changes very little when Ontario housing preferences are used after 2011. Using Ontario housing preferences would cause demand for semi-detached units to rise from 6% of total demand between 2006 and 2011 to a peak of 8% between 2011 and 2016. However, since semi-detached homes are often an affordable housing choice for young families, an increasingly older population would result in a decline in demand for semi-detached housing to 6% of total demand by 2026-2031.

Demand for row housing also shows only a modest change when Ontario housing preferences are used after 2011. Using Ontario housing preferences would cause demand for row housing units to rise from 4% of total demand between 2006 and 2011 to a peak of 6.5% between 2011 and 2016. After 2016 annual demand for row housing declines, falling to 5% between 2026 and 2031.

The main effect of applying Ontario housing preferences after 2011 would be a significant increase in the demand for apartment units, with demand doubling from 558 units annually between 2006 and 2011 to 1,224 units annually between 2011 and 2016. Because of the aging of the population, demand for apartments would rise to 27% of total demand by the period 2026 to 2031.

2.4 HOUSING DEMAND USING SIMCOE AND ONTARIO PREFERENCES

Table 7 on page 10 below compares the demand for housing using 2001 Simcoe County and Ontario housing preferences.

Using Ontario 2001 housing preferences after 2011 would result in 69,847 single detached units between 2006 and 2031 compared to 84,340 units when Simcoe County 2001 housing preferences are used. Over the 25-year period, Ontario preferences result in 64% of housing production in the form of single detached units. On the other hand, if 2001 Simcoe County housing preferences were to continue, 77% of production between 2006 and 2031 would be in the form of single-detached units.

Production of semi-detached units and row housing units are not much different when the two sets of preferences are used. Semi-detached production would be 5,470 units (5% of the total) using Simcoe County preferences compared to 7,376 units (7% of the total) using Ontario 2001 preferences. Row housing production using Simcoe housing preferences would be 4,564 (4% of total) compared to 6,169 units (6% of total) using Ontario housing preferences.

The most dramatic difference between using the two sets of housing preferences shows up in the demand for apartment units. If Simcoe 2001 housing preferences are used, the demand for apartments would be 14,684 units, or 13.5% of total production for the period 2006 to 2031. However, using Ontario 2001 housing preferences would result in a demand for 25,666 apartments, which would be 23.5% of total housing production for the same period.

However, given the relative popularity of rows in Collingwood and among early retirees and empty nesters, we have split the higher density housing into apartments and row housing.

Table 7 below compares the housing projections by dwelling type using Simcoe propensities, Ontario propensities and adjusted overall mix between apartments and rows.

Table 7: Housing Demand for Simcoe Using Simcoe, Ontario Housing Preferences and Adjusted "Ontario Preferences"

Dwelling Type	Simcoe 2001		Ontario 2001		Adjusted	
	2006-31	Annual	2006-31	Annual	2006-31	Annual
Single Detached	84,340	3,374	69,847	2,794	69,847	2,794
% of Total		77.3%		64.0%		64.0%
Semi Detached	5,470	219	7,376	295	7,376	295
% of Total		5.0%		6.8%		6.8%
Row Housing	4,564	183	6,169	247	15,917	637
% of Total		4.2%		5.7%		14.6%
Apartments	14,684	587	25,666	1,027	15,917	637
% of Total		13.5%		23.5%		14.6%
Total	109,058	4,363	109,058	4,363	109,058	4,363
% of Total		100.0%		100.0%		100.0%

Source: Lapointe Consulting Inc.

2.5 ALLOCATION OF HOUSING AND POPULATION ACROSS SIMCOE

2.5.1 Approach Used

In this section of the report housing and population is allocated across Simcoe based on a number of factors as described in *the Provincial Methodology Guideline* such as[5]:

- Market trends including recent and anticipated market orientation of the local area;
- Servicing constraints; and,
- Land constraints/opportunities.

The shares of housing growth allocated to each municipality was based on:

- A review of the shares of household growth between 1996 and 2001;
- Shares of dwelling permits for individual municipalities provided to Will Dunning by CMHC for the period, 2001-2006;[6]
- An identification of municipalities where there was limited servicing capacity and services could not be expanded;
- An understanding of the market in individual municipalities based on Will Dunning's work and knowledge of the individual markets;
- An understanding of the demographic changes and their implications for future housing needs.

[5] For a description of how housing and population is allocated from a "regional" market area see Provincial Methodology Guideline: Technical Guideline for Projecting Population, Housing Need, Employment and Land Requirements, Projection Methodology, 1995.

[6] Data on dwelling permits for the two first nations in Simcoe, Mnjikaning First Nation (Rama), and Christian Island was not obtained.

2.5.2 Projecting Future Households/Housing by Municipality

Table 8 shows the results of the projection of future households (and therefore housing) across Simcoe.

The resulting allocation of housing is shown below in Table 8. The first three columns compare the shares of housing and household growth from three sources:

- 1996-01 based on growth in households from the 1996 and 2001 census from Statistics Canada;
- 2006-2011 shares based on Will Dunning's projected housing for the period 2006-2009.[7]
- 2006-2031 shares of housing/household growth based on Lapointe Consulting estimates. The column on the far right indicates the resulting additional housing for the period 2006-31 for each municipality and Simcoe as a whole.
- Absolute housing growth for the period 2006-2031 is shown in the fourth and fifth columns based on the 2011-31 and 2006-2011 shares.

Over the projection period, 2006-2031, the Barrie Area (Barrie, Innisfil and Essa) is expected to account for over half of all future housing (53.2%). This reflects the strong employment growth and strong housing demand in the area which is expected to continue into the future.

New Tecumseth and Bradford West Gwillimbury each account for close to 6% - 5.7% in New Tecumseth and 5.8% in Bradford West Gwillimbury reflecting their proximity to the GTA and their employment prospects (especially New Tecumseth).

Northern municipalities close to waterfront locations such as Orillia and Collingwood will become increasingly attractive to empty nesters. Orillia's market share is expected to be 3.8% over the 2006-2031 period, Collingwood's share is expected to be 4.9%. Wasaga Beach is attractive to younger and older households and as one of Canada's fastest growing municipalities is expected to continue to attract a strong market share of Simcoe's overall growth – 7.7%.

Other smaller communities such as Clearview, Midland and Penetanguishene will continue to benefit from the active retirement/recreational development that is occurring around Georgian Bay. Clearview is expected to attract 3% of future 2006-2031, Midland – 2.7%, and, Penetanguishene – 1.8%.

Smaller, more rural communities with limited servicing capacity are expected to have relatively slow growth in the future. For example, Adjala-Tosorontio is expected to have 1.2% of 2006-31 growth, Ramara – 1.3%, Severn -1.3%, Springwater- 2.0%, Tay – 1.0% and and Tiny 1.6%.

[7] A minor adjustment was used to take into account the two First Nations communities. See Note below Table 8.

Table 8: Allocation of Housing 2006-2031

	Shares			2006-31			
Municipality	**1996-01**	**2006-11**	**2011-31**	**Total**	**Ann.**	**Share**	**Explanation for 2011-2031 share used**
Adjala-Tosorontio	1.7%	2.0%	1.0%	1,313	53	1.2%	Rural; limited urban services
Barrie Area (Barrie, Innisfil & Essa)							
Barrie	45.9%	44.6%	45.0%	48,985	1,959	44.9%	Strong market demand; reflects current market share and strong economy; land shortage needs to be addressed.
Innisfil	7.9%	4.6%	6.0%	6,240	250	5.7%	Increased market share due to proximity to Barrie and northern GTA as well as anticipated increase in employment
Essa	1.0%	2.6%	2.6%	2,827	113	2.6%	Used 06-11 market share as indicator of future share.
Barrie Area Total	*54.9%*	*51.8%*	*53.6%*	*58,052*	*2,322*	*53.2%*	
Bradford West Gwillimbury	4.1%	5.0%	6.0%	6,322	253	5.8%	Market share increases from recent market share to reflect proximity to GTA.
Christian Island	0.0%	0.0%	0.0%	0	0	0.0%	Christian Island's household growth has been very slow; expect little household growth in the future (assuming young people move out due to lack of employment opportunities).
Clearview	2.7%	2.9%	3.0%	3,251	130	3.0%	Slight increase in 2006-11 market share.
Collingwood	2.6%	4.9%	4.9%	5,354	214	4.9%	Market share expected to remain strong due to strong growth in the second home/retirement/empty nester housing market.
Midland	3.6%	1.4%	3.0%	2,912	116	2.7%	Midland's market share expected to grow due to retirement/empty nester housing market.
Mnjikaning First Nation (Rama)	0.0%	0.1%	0.1%	112	4	0.1%	Slow growth reflects recent minor increases in households even though economic growth.
New Tecumseth	7.4%	4.6%	6.0%	6,219	249	5.7%	New Tecumseth expected to continue to grow due to strong economic growth (Honda Plant expansion). Also, close to the GTA so can accommodate spillover as well as retirement communities
Orillia	3.7%	3.2%	4.0%	4,184	167	3.8%	Increased market share because it will attract a growing share of the retirees/empty nesters and recreational housing market; has a lot of support services for seniors.
Oro-Medonte	3.6%	3.8%	2.7%	3,191	128	2.9%	Limited growth due to rural nature of the community.
Penetanguishene	2.1%	1.1%	2.0%	1,979	79	1.8%	Increased market share because it will attract a growing share of the retirees/empty nesters and recreational housing market.
Ramara	2.0%	2.3%	1.0%	1,380	55	1.3%	Increased market share because it will attract a growing share of the retirees/empty nesters and recreational housing market.

	Shares			2006-31			
Municipality	**1996-01**	**2006-11**	**2011-31**	**Total**	**Ann.**	**Share**	**Explanation for 2011-2031 share used**
Severn	2.3%	2.3%	1.0%	1,375	55	1.3%	Severn is primarily a rural community, and, therefore, future growth is expected to be limited.
Springwater	2.6%	2.7%	1.8%	2,160	86	2.0%	Springwater is primarily a rural community, and, therefore, future growth is expected to be limited.
Tay	-3.5%	1.1%	1.0%	1,102	44	1.0%	Tay is primarily a rural community, and, therefore, future growth is expected to be limited.
Tiny	1.3%	3.1%	1.2%	1,743	70	1.6%	Tiny is primarily a rural community, and, therefore, future growth is expected to be limited.
Wasaga Beach	8.9%	7.7%	7.7%	8,401	336	7.7%	Wasaga Beach continues to attract both families and empty nesters/retirees and therefore, we have used the market share for 2006-11.
Total Housing Requirements	**100.0%**	**100.0%**	**100.0%**	**109,050**	**4,362**	**100.0%**	

Notes:

1. *1996-2001 household growth based on Census data from Statistics Canada*
2. *2006-2011 household growth shares based on Will Dunning's market projections (2006-2009) carried forward to 2011 with adjustments to align with Simcoe County projection. Also, First Nations were included although not in Will Dunning's work.*

2.5.3 Projecting Future Population by Municipality

In order to project the 2031 population, the 2006 population was estimated based on dwelling permit data from Statistics Canada and the total number of households estimated in each municipality for 2006 multiplied by the 2001 household size. For 2031, the household size was projected for each municipality based on the overall change in household size that was derived from the projection model used to project households. (As we had population and projected households for Simcoe County for each horizon year, the household size for each forecasted period was the households divided by the population.) Table 9 below provides a summary of the projected population for each municipality in 2006 and 2031.

Table 9: Distribution of Population, 2006 and 2031

	2006			2031				2006-2031		
Municipality	Households	Hhld Size	Population	Households	% of total	Hhld Size	Population	Pop. Increase	Change	% of Change
Adjala-Tosorontio	3,883	2.97	11,548	5,205	1.9%	2.70	14,070	2,522	21.8%	1.1%
Barrie Area (Barrie, Innisfil & Essa)										
Barrie	47,526	2.78	131,918	96,635	35.6%	2.52	243,803	111,885	84.8%	48.7%
Innisfil	11,634	2.78	32,292	17,905	6.6%	2.53	45,256	12,963	40.1%	5.6%
Essa	6,332	2.97	18,831	9,174	3.4%	2.71	24,826	5,994	31.8%	2.6%
Barrie Area Total	*65,492*	*2.79*	*183,042*	*123,714*	*45.5%*	*2.54*	*313,884*	*130,843*	*71.5%*	*56.9%*
Bradford West Gwillimbury	8,309	3.07	25,534	14,652	5.4%	2.80	40,955	15,421	60.4%	6.7%
Christian Island	175	2.97	520	170	0.1%	2.70	460	(61)	-11.7%	0.0%
Clearview	5,195	2.78	14,420	8,457	3.1%	2.52	21,336	6,916	48.0%	3.0%
Collingwood	7,765	2.38	18,474	13,143	4.8%	2.16	28,422	9,947	53.8%	4.3%
Midland	7,055	2.38	16,785	9,984	3.7%	2.16	21,574	4,788	28.5%	2.1%
Mnjikaning First Nation (Rama)	236	2.78	655	327	0.1%	2.52	824	169	25.8%	0.1%
New Tecumseth	10,494	2.78	29,128	16,742	6.2%	2.53	42,317	13,189	45.3%	5.7%
Orillia	12,577	2.38	29,923	16,791	6.2%	2.16	36,282	6,359	21.3%	2.8%
Oro-Medonte	7,604	2.78	21,106	10,817	4.0%	2.53	27,341	6,235	29.5%	2.7%
Penetanguishene	3,487	2.48	8,642	5,470	2.0%	2.25	12,308	3,666	42.4%	1.6%
Ramara	3,951	2.48	9,792	5,341	2.0%	2.25	12,017	2,225	22.7%	1.0%
Severn	4,868	2.58	12,547	6,260	2.3%	2.34	14,643	2,096	16.7%	0.9%
Springwater	6,168	2.97	18,343	8,344	3.1%	2.71	22,579	4,235	23.1%	1.8%
Tay	3,836	2.58	9,887	4,951	1.8%	2.34	11,583	1,696	17.1%	0.7%
Tiny	4,266	2.48	10,572	6,016	2.2%	2.25	13,536	2,964	28.0%	1.3%
Wasaga Beach	6,885	2.38	16,381	15,305	5.6%	2.16	33,071	16,690	101.9%	7.3%
Total Housing Requirements	162,246	2.70	437,300	271,689	100.0%	2.46	667,200	229,900	52.6%	100.0%

Source: Lapointe Consulting Inc.

2.5.4 Housing Requirements

Table 10 below shows housing requirements by dwelling type for municipalities within Simcoe over the 25-year period 2006-2031. Three factors were considered in developing the mix for each municipality:

- the distribution within the existing stock;
- the short-term market demand;
- consideration of demographic trends that affect individual municipality; and,
- market orientation of particular communities.

The resulting mix is very similar to the adjusted mix for units that was developed earlier on page 10.

It should be noted that no mix was provided for First Nations communities although generally speaking such housing has been single detached dwellings. The total provided in Table 10 excludes housing on First Nations communities and is, therefore, slightly lower than the overall total housing requirement for the period 2006-2031.

Table 10: Housing Units Required, 2006-2031

Municipality	Singles	Semis	Row	Apartments	Total
Adjala-Tosorontio	1,058	79	93	93	1,322
Factor	80.0%	6.0%	7.0%	7.0%	100.0%
2001 Stock	94.1%	3.0%	0.3%	2.6%	100.0%
Short-term market	100%	0%	0%	0%	100%
Barrie	31,921	2,455	7,366	7,366	49,109
Factor	65.0%	5.0%	15.0%	15.0%	100.0%
2001 Stock	64.3%	4.9%	8.6%	22.2%	100.0%
Short-term market	75%	5%	14%	6%	100.0%
Bradford West Gwillimbury	4,757	317	634	634	6,343
Factor	75.0%	5.0%	10.0%	10.0%	100.0%
2001 Stock	74.1%	6.7%	2.4%	16.8%	100.0%
Short-term market	93%	2%	5%	0%	100%
Clearview	2,610	196	228	228	3,262
Factor	80.0%	6.0%	7.0%	7.0%	100.0%
2001 Stock	90.0%	0.7%	2.6%	5.6%	100.0%
Short-term market	100%	0%	0%	0%	100.0%
Collingwood	2,151	269	2,151	807	5,378
Factor	40.0%	5.0%	40.0%	15.0%	100.0%
2001 Stock	62.4%	5.9%	8.5%	23.3%	100.0%
Short-term market	70%	3%	18%	9%	100%
Essa	2,132	284	142	284	2,842
Factor	75.0%	10.0%	5.0%	10.0%	100.0%
2001 Stock	80.8%	10.8%	1.9%	6.5%	100.0%
Short-term market	94%	3%	3%	1%	100%
Innisfil	5,017	314	627	314	6,271
Factor	80.0%	5.0%	10.0%	5.0%	100.0%
2001 Stock	95.7%	0.4%	2.0%	1.9%	100.0%
Short-term market	96%	0%	4%	0%	100%
Midland	1,757	146	293	732	2,929
Factor	60.0%	5.0%	10.0%	25.0%	100.0%
2001 Stock	67.6%	4.6%	4.1%	23.7%	100.0%
Short-term market	60%	0%	2%	39%	100%
New Tecumseh	4,561	375	562	750	6,248
Factor	73.0%	6.0%	9.0%	12.0%	100.0%
2001 Stock	72.9%	6.4%	6.7%	14.0%	100.0%
Short-term market	74%	2%	16%	9%	100%
Orillia	2,655	211	506	843	4,214
Factor	63.0%	5.0%	12.0%	20.0%	100.0%
2001 Stock	61.8%	3.3%	6.9%	28.0%	100.0%
Short-term market	64%	0%	11%	26%	
Oro-Medonte	2,571	161	321	161	3,213
Factor	80.0%	5.0%	10.0%	5.0%	100.0%
2001 Stock	95.4%	0.5%	0.9%	3.2%	100.0%
Short-term market	96%	0%	2%	2%	100%
Penetanguishene	1,388	99	198	297	1,983
Factor	70.0%	5.0%	10.0%	15.0%	100.0%
2001 Stock	68.8%	4.6%	1.4%	25.1%	100.0%
Short-term market	80%	6%	4%	10%	100%
Ramara	1,112	69	139	69	1,390
Factor	80.0%	5.0%	10.0%	5.0%	100.0%
2001 Stock	90.9%	0.6%	7.5%	1.0%	100.0%
Short-term market	100%	0%	0%	0%	100%
Severn	1,113	70	139	70	1,392
Factor	80.0%	5.0%	10.0%	5.0%	100.0%
2001 Stock	93.1%	0.8%	1.9%	4.2%	100.0%
Short-term market	97%	0%	3%	0%	100%
Springwater	1,741	109	218	109	2,176
Factor	80.0%	5.0%	10.0%	5.0%	100.0%
2001 Stock	93.5%	0.7%	0.8%	5.0%	100.0%
Short-term market	98%	0%	2%	0%	100%
Tay	892	56	112	56	1,115
Factor	80.0%	5.0%	10.0%	5.0%	100.0%
2001 Stock	95.2%	1.0%	0.3%	3.5%	100.0%
Short-term market	98%	0%	2%	0%	100%
Tiny	1,400	88	175	88	1,750
Factor	80.0%	5.0%	10.0%	5.0%	100.0%
2001 Stock	97.5%	0.1%	0.1%	2.3%	100.0%
Short-term market	100%	0%	0%	0%	100.0%
Wasaga Beach	6,315	421	842	842	8,420
Factor	75.0%	5.0%	10.0%	10.0%	100.0%
2001 Stock	90.5%	2.6%	1.7%	5.2%	100.0%
Short-term market	96%	0%	2%	1%	
Municipal Total	75,150	5,718	14,747	13,742	109,357
	68.7%	5.2%	13.5%	12.6%	99.9%
Mix -adjusted Ont.	64.1%	6.8%	14.6%	14.6%	100.0%

3 EMPLOYMENT PROJECTIONS

3.1 INTRODUCTION

This section presents a high level analysis of the possible employment growth that could take place in the study area by 2031. It should be noted that this assessment assumes a 2031 employment level of 254,000 based on the *Places to Grow*. *Growth Plan for the Greater Golden Horseshoe*. The increase from 153,000 jobs in 2001 to 254,000 jobs in 2031 represents a growth of 101,000 jobs or an increase of 66% over that period.

In order to project employment by municipality for 2031, initially the 2006 employment levels for Simcoe and area municipalities were estimated. A share approach was then used to allocate growth amongst area municipalities. The share was based on several factors taken together:

- Historic share of employment growth;
- Employment share used by Hemson in its *2004 Population, Households and Employment Forecasts Update* prepared for Simcoe County;
- Revisions to the employment share based on a consideration of growth factors and business location trends, understanding of the underlying employment structure in various municipalities (in terms of the strength of service and industrial employment); knowledge of plans for new employment developments; and, finally, an assessment of the future mix of employment in terms of major sectors of the local economy.

The resulting employment projections in this report may be lower than employment levels which individual municipalities aspire to, as noted in their official plans and employment lands studies.

3.2 ESTIMATING EMPLOYMENT IN SIMCOE IN 2006

As described above, the starting point for estimating employment in Simcoe was to estimate the 2006 employment figure and its allocation across the study area. The 2001 employment figure from the draft Growth Plan for the Greater Golden Horseshoe, Feb. 2005 - that is, the estimate of the number of persons employed in Simcoe – 153,000.[8]

[8] Employment distribution was discussed in one of the foundation reports, Demographic, Housing and Employment Trends in Barrie, Orillia and Simcoe County, June 2006. That report identified 123,855 jobs; however, that figure did not include the 19,765 who lived in Simcoe County but had “no fixed place of work” (could be construction workers, truck drivers and landscape workers, etc.) and the people working at home. When these are included, the total is 158,135. This is similar to the figure that Hemson used in its Population, Households & Employment Forecasts Update: Simcoe County, May 2004, Table B.8. As part of the study direction was to use the employment forecasts in the GGH Growth Plan, it seemed

The overall level of employment projected for the study area at different time intervals is shown below.

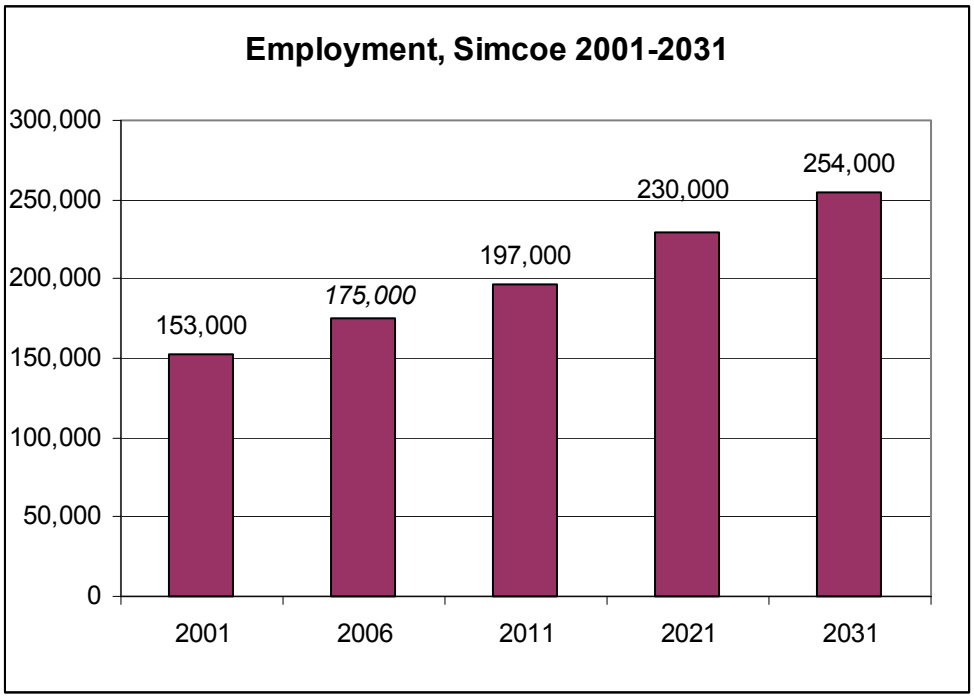

Figure 1

Note: All figures were derived from the Growth Plan for the Greater from the Greater Golden Horseshoe, 2006, Schedule 3 except 2006 which was extrapolated based on the annual change between 2001 and 2011.

Table 11 on the following page provides an estimate of the 2006 employment distribution within the study area. The distribution shows the predominant position of the Greater Barrie Area as an employment centre (including Barrie, Innisfil and Essa) which accounts for 41% of total employment. New Tecumseth and Orillia are the next two largest employment centres, each with approximately 10% of total employment (New Tecumseth has 11% and Orillia has 10%). Midland and Collingwood each have close to 7% of employment. The remaining 25% of employment is scattered across the other 13 municipalities, many of which are rural.

appropriate therefore to use the 2001 figure from that report as well (so as not to distort the change between 2001 and 2031) and to use the percentage distribution of jobs across Simcoe from the 2004 Hemson report.

Table 11: Total Employment in Simcoe from the 2001 Census and 2006 Estimated

	2001		2001	2001-2006	2006	
	Census data from 2004 Hemson report		Adjusted to match Places to Grow	Annual Growth	Estimated	
	#	%	#	#	%	#
Adjala-Tosorontio	1304	0.8%	1,261	24	0.8%	1,383
Barrie Area (Barrie, Innisfil & Essa)						
Barrie	52660	33.3%	50,926	1,490	33.4%	58,378
Innisfil	5914	3.7%	5,719	164	3.7%	6,542
Essa	6807	4.3%	6,583	189	4.3%	7,529
Barrie Area Sub-total	*65381*	*41.3%*	*63,228*	*1,844*	*41.4%*	*72,449*
Bradford West Gwillimbury	6733	4.3%	6,511	187	4.3%	7,448
Christian Island	110	0.1%	106	3	0.1%	122
Clearview	3768	2.4%	3,644	105	2.4%	4,168
Collingwood	10841	6.9%	10,484	302	6.9%	11,992
Midland	10346	6.5%	10,005	288	6.5%	11,444
Mjikaning First Nation (Rama)	2987	1.9%	2,889	70	1.9%	3,238
New Tecumseth	17254	10.9%	16,686	480	10.9%	19,085
Orillia	16100	10.2%	15,570	448	10.2%	17,809
Oro-Medonte	4197	2.7%	4,059	117	2.7%	4,642
Penetanguishene	4443	2.8%	4,297	124	2.8%	4,915
Ramara	1908	1.2%	1,845	53	1.2%	2,110
Severn	3448	2.2%	3,334	96	2.2%	3,814
Springwater	4389	2.8%	4,244	122	2.8%	4,855
Tay	1422	0.9%	1,375	40	0.9%	1,573
Tiny	1260	0.8%	1,219	35	0.8%	1,394
Wasaga Beach	2318	1.5%	2,242	64	1.5%	2,564
Simcoe County	158209	100.0%	153,000	4,400	100.0%	175,000

3.3 EMPLOYMENT PROJECTIONS BY MUNICIPALITY

In this section, the future jobs by municipality are outlined including the future share of total employment growth in Simcoe. As can be seen below, the 2001 employment distribution was maintained in 2006 to estimate the 2006 employment figures for area municipalities. Between 2006 and 2031, it is estimated that future demand will be concentrated in the Greater Barrie area which already has a strong diversified economy and a critical mass of industries to attract more growth, as well as a strategic location close to Highway 400 and other major highways serving the area. Recognizing that Barrie has limited land supply, nevertheless, Barrie's share continues to increase assuming that additional land can be provided in Innisfil, particularly along the Highway 400 corridor.

Barrie has undergone significant growth over the past 15 years and is one of Canada's fastest growing communities. Growth in Barrie has been shaped by its geographical proximity to the Toronto, being the first urban centre along Highway 400 north of the GTA, and by its role as a service centre to the surrounding communities for retail and public services such as health and education. It is expected that Barrie's role as an economic centre will be strengthened in the future.

Projected employment levels for study area municipalities are shown in Table 12. Given that much of the land to accommodate the projected growth for Barrie is located along the Highway 400 corridor in Innisfil, the overall growth numbers for Barrie and Innisfil are combined. As with the housing and population projections, employment projections for Barrie, Innisfil and Essa are shown as the Barrie Area projections.

Table 12: Share of Future Employment, Simcoe 2001, 2006 and 2031

	Shares of Employment		
	2001	2006	2,031
Adjala-Tosorontio	0.8%	0.8%	0.6%
Barrie Area (Barrie, Innisfil & Essa)			
Barrie	33.3%	33.4%	43.0%
Innisfil	3.7%	3.7%	4.0%
Essa	4.3%	4.3%	3.2%
Barrie Area Sub-total	*41.3%*	*41.4%*	*50.2%*
Bradford West Gwillimbury	4.3%	4.3%	4.0%
Christian Island	0.1%	0.1%	0.0%
Clearview	2.4%	2.4%	1.8%
Collingwood	6.9%	6.9%	6.6%
Midland	6.5%	6.5%	5.0%
Mjikaning First Nation (Rama)	1.9%	1.9%	1.4%
New Tecumseth	10.9%	10.9%	11.0%
Orillia	10.2%	10.2%	8.0%
Oro-Medonte	2.7%	2.7%	2.0%
Penetanguishene	2.8%	2.8%	2.2%
Ramara	1.2%	1.2%	0.8%
Severn	2.2%	2.2%	1.6%
Springwater	2.8%	2.8%	2.2%
Tay	0.9%	0.9%	0.6%
Tiny	0.8%	0.8%	0.6%
Wasaga Beach	1.5%	1.5%	1.5%
Simcoe County	100.0%	100.0%	100.0%

Table 13 on the following page shows the change in employment between 2006 and 2031 in the study area. As mentioned previously, it should be noted that this assessment assumes a 2031 employment level of 254,000 based on *Places to Grow* legislation. As such, the projected employment levels per municipality may not reflect the market demand and distribution which could occur if there were no legislated employment growth threshold and an unlimited land supply. Additionally, it should be noted that these employment projections may be significantly lower than employment levels which individual municipalities aspire to, as noted in their official plans and employment lands studies.

Some of the major highlights of the projected employment are:

- Employment in the Barrie area (Barrie, Innisfil and Essa) is expected to increase from 72,400 jobs to 127,500 by 2031 – an increase of 55,100 jobs and representing 50% of employment in the study area;
- Collingwood is projected to grow from 12,000 to 16,800 jobs – an increase of 4,800 jobs. Due to its growing importance as a centre for tourism and lifestyle living, much of Collingwood's employment growth is anticipated to be in the service sector.
- New Tecumseth is expected to continue to act as a focal point for automotive sector and related employment and will continue to capture approximately 11% of jobs, growing from an estimated 19,000 jobs in 2006 to 27,900 in 2031 – an increase of 8,900 jobs.
- Employment in Orillia is expected to grow from 17,800 jobs to around 20,300 jobs – an increase of over 2,500. Many of these jobs are expected to be in the service and institutional sector.
- Employment in Bradford West Gwillimbury is expected to grow from 7,500 in 2006 to 10,200 in 2031 – an increase of 2,700 jobs. Many of these jobs will be in the service sector although there is also the likelihood of light manufacturing development close to Highway 400 in the Highway 400/88 area.
- More rural communities such as Adjala-Tosorontio, Clearview, Oro-Medonte, Ramara, Severn, Tay and Tiny are expected to experience slower growth.
- Wasaga Beach is expected to grow from 2,600 jobs in 2006 to 3,800 in 2031 – an increase of 1,200 jobs. Many of these jobs will be in the service sector and the construction industry to service the growing residential development in that community.
- Similarly, Midland is expected to grow from 11,400 jobs to 12,700 in 2031 – an increase of 1,300 jobs. Although Midland has a strong industrial base, it is at a locational disadvantage compared to those municipalities closer to Highway 400. While it will continue to attract industrial employment, much of the future employment growth will be in the service sector.
- Springwater employment is expected to increase from 4,900 to 5,500- an increase of over 600 jobs.
- Penetanguishene is expected to increase from 4,900 jobs to 5,500 in 2031 – an increase of close to 600 jobs. While the town has a good industrial base, its

location is not as amenable to future employment growth as those locations closer to Highway 400. Employment is expected to increase in the service sector.

- Employment on Mjikaning First Nation (Rama) shows a small increase while employment in Christian Island is expected to decline slightly.

Table 13: Employment Growth, Simcoe, 2006-2031

	2006		2031		Share of New Jobs 2006-31	
	#	%	#	%	#	%
Adjala-Tosorontio	1,383	0.8%	1,524	0.6%	142	0.2%
Barrie Area (Barrie, Innisfil & Essa)						
Barrie	58,378	33.4%	109,220	43.0%	50,842	64.4%
Innisfil	6,542	3.7%	10,160	4.0%	3,618	4.6%
Essa	7,529	4.3%	8,128	3.2%	599	0.8%
Barrie Area Sub-total	*72,449*	*41.4%*	*127,508*	*50.2%*	*55,059*	*69.7%*
Bradford West Gwillimbury	7,448	4.3%	10,160	4.0%	2,712	3.4%
Christian Island	122	0.1%	100	0.0%	-22	0.0%
Clearview	4,168	2.4%	4,572	1.8%	404	0.5%
Collingwood	11,992	6.9%	16,764	6.6%	4,772	6.0%
Midland	11,444	6.5%	12,700	5.0%	1,256	1.6%
Mjikaning First Nation (Rama)	3,238	1.9%	3,500	1.4%	263	0.3%
New Tecumseth	19,085	10.9%	27,940	11.0%	8,855	11.2%
Orillia	17,809	10.2%	20,320	8.0%	2,511	3.2%
Oro-Medonte	4,642	2.7%	5,080	2.0%	438	0.6%
Penetanguishene	4,915	2.8%	5,500	2.2%	585	0.7%
Ramara	2,110	1.2%	2,032	0.8%	-78	-0.1%
Severn	3,814	2.2%	4,000	1.6%	186	0.2%
Springwater	4,855	2.8%	5,500	2.2%	645	0.8%
Tay	1,573	0.9%	1,500	0.6%	-73	-0.1%
Tiny	1,394	0.8%	1,524	0.6%	130	0.2%
Wasaga Beach	2,564	1.5%	3,810	1.5%	1,246	1.6%
Simcoe County	175,000	100.0%	254,000	100.0%	79,000	100.0%

Source: Lapointe Consulting and EDP Consulting

3.4 POPULATION: EMPLOYMENT RATIO

Table 14 below compares the employment to population ratios in 2001 and 2031 across the study area. The overall ratio of jobs to population is expected to decline from 2001 to 2031 – 44.6% to 38.1%. This is based on the threshold employment level for 2031 as legislated in *Places to Grow*.

The highest jobs: population ratios are found in established communities such as the Barrie area, Orillia, Penetanguishene, Collingwood and Midland, and New Tecumseth, which attracts workers from outside of its immediate boundaries due to the presence of Honda.

Table 14: Employment: Population Ratios, 2001 and 2031

	2001			2031		
	Adjusted Population	Jobs	Jobs: Pop	Population	Jobs	Jobs: Pop
Adjala-Tosorontio	10,483	1,261	12.0%	14,070	1,524	10.8%
Barrie Area (Barrie, Innisfil & Essa)						
Barrie	107,831	50,926	47.2%	243,803	109,220	44.8%
Innisfil	29,805	5,719	19.2%	45,256	10,160	22.5%
Essa	17,476	6,583	37.7%	24,826	8,128	32.7%
Barrie Area Sub-total	*155,112*	*63,228*	*40.8%*	*313,884*	*127,508*	40.6%
Bradford West Gwillimbury	23,111	6,511	28.2%	40,955	10,160	24.8%
Christian Island	535	106	19.9%	460	100	21.8%
Clearview	14,344	3,644	25.4%	21,336	4,572	21.4%
Collingwood	16,676	10,484	62.9%	28,422	16,764	59.0%
Midland	16,858	10,005	59.3%	21,574	12,700	58.9%
Mjikaning First Nation (Rama)	621	2,889	465.4%	824	3,500	424.7%
New Tecumseth	27,180	16,686	61.4%	42,317	27,940	66.0%
Orillia	30,278	15,570	51.4%	36,282	20,320	56.0%
Oro-Medonte	19,043	4,059	21.3%	27,341	5,080	18.6%
Penetanguishene	8,646	4,297	49.7%	12,308	5,500	44.7%
Ramara	8,957	1,845	20.6%	12,017	2,032	16.9%
Severn	11,577	3,334	28.8%	14,643	4,000	27.3%
Springwater	16,744	4,244	25.3%	22,579	5,500	24.4%
Tay	9,526	1,375	14.4%	11,583	1,500	13.0%
Tiny	9,394	1,219	13.0%	13,536	1,524	11.3%
Wasaga Beach	12,913	2,242	17.4%	33,071	3,810	11.5%
Simcoe County	392,000	153000	44.6%	667,200	254000	38.1%

APPENDIX D: METHODOLOGY FOR DEFINING GROWTH OPTIONS

1.0 PURPOSE

The following appendices provides a detailed description of how each growth option was created, addressing both residential and employment growth.

2.0 CREATION OF GROWTH OPTIONS

2.1 Description of Initial Growth Concepts

Growth concepts were the starting point for the creation of geographically based growth options. The concepts provided the building blocks for determining where growth might occur, i.e. the alternative future urban structures. The concepts are:

- 1. Business as usual;
- 2. Barrie and area centred single node;
- 3. Multiple node.

The concepts and their objectives are described in below.

Concept 1 reflects a no urban boundary expansion option where the existing urban designations are retained. In some respects, this option represents the status quo, with one crucial distinction, that it does not consider growth in areas with partial services.

Concepts 2 and 3 reflect the *Growth Plan for the GGH* principles and in particular the principles that growth should be directed to nodes adjacent to existing built up areas. A node is a central focus or core that centres a larger community. Nodes often contain a mix of commercial, residential and civic buildings, open spaces or commons. The size of the node is dependent on the number of people living and working within the area and can range considerably. Access to and within a node is crucial in defining the space as a node. One of the fundamental characteristics of a node is its role as a major hub within the transit network, meaning that the space is linked to other nodes within a larger urban region. Access to a variety of spaces within the node should facilitate a range of transportation modes including walking, bicycling, transit and automobile.

Concept 2 considers the opportunities afforded by confining new growth to a single node where there might be potential to build on an existing node to create a complete, transit supportive, compact community. The *Growth Plan for the GGH* identifies downtown Barrie as an Urban Growth Centre and the ECA work also confirmed the importance of Barrie as a core urban centre in the study area.

Concept 3 explores the potential for multiple community expansions to support a number of vibrant nodes.

These concepts were considered to reflect a broad range of urban outcomes for Simcoe that would allow for exploration of key growth issues.

2.2 Creation of Testable Residential Growth Options

The following sections describe how each of the mapped residential growth options was created to both reflect the fundamental planning principles defined by provincial policy and to reflect the objectives for the growth concepts.

In general, the options were developed by:

- Identifying the total approved growth appropriate to retain as a starting point for the growth concept (allocated to each municipality);
- Identifying the total intensification appropriate for the option (allocated to each municipality); and
- Identifying any urban expansion area if appropriate (allocated to municipalities).

The following provides a description of the specific methodology applied for each growth option.

2.3 Approach to Development of Growth Options for Business as Usual

For this option, all existing designated lands were retained including approved development applications, draft approved plans of subdivision, applications under review and vacant lands. For the areas under application, the unit number and mix identified in the applications were applied. For vacant lands, the highest density allowed by the Official Plan was applied. In addition, the intensification levels identified by the physical assessment was applied (17,037 units[1]).

The total number of units identified by this option is 94,600. **Table 2.1** on the following page provides a breakdown of Option 1, Business as Usual. It should be noted that this option does not meet the population projections stated in the *Growth Plan for the GGH* of 667,000 by 2031. It is estimated that 109,050 units are needed between 2006-2031 to meet an anticipated total population of 667,000 by 2031.

The residential mix for this option is 77% single-detached, 4% semi-detached, 5% townhouses, and 14% apartments, representing the status quo of development in the study area.

[1] Draft results from the Physical Intensification Report were used for all growth options. The Draft results of the analysis concluded that there was potential for up to 17,037 units across the study area. The final version of this report was amended to 17,011 units, a difference of 26 units (1.5% change).

Table 2.1

Simcoe Housing Allocation By Municipality 2006-2031

Option 1: Business As Usual (Existing Designations for Residential Uses)

	A1	A2		A3 4=A1+A2+A3	B1	B2	B3		B4 B5=B1+B2+B3+B4	C	D=A3+B5+C
Municipality	**Development Status**				**Intensification**					**Vacant**	**Total (Units)**
	Units in Approved Development Applications	**Units in Draft Approved Plans of Subdivision**	**Units in Development Applications Being Reviewed**	**Subtotal (units)**	**Single**	**Semi**	**Row**	**Apart**	**Subtotal (units)**	**Subtotal (units)**	
Adjala-Tosorontoio	-	-	-	-					-	-	-
Barrie	3,559	3,040	2,142	8,741			186	3,495	3,681	-	12,422
Bradford West Gwillimbury	119	117	2,598	2,834			83	286	369	4,311	7,514
Clearview	50	-	4,418	4,468			82		82	4,488	9,038
Collingwood	346	963	2,190	3,499			25	997	1,022	9,547	14,068
Essa	488	628	475	1,591			4	28	32	881	2,504
Innisfil	1,635	2,142	884	4,661			162	508	670	540	5,871
Midland	484	1,644	30	2,158			6	941	947	1,022	4,127
New Tecumseh	273	4,315	1,023	5,611			133	733	866	-	6,477
Orillia	960	1,401	239	2,600	1,040		2,155	4,354	7,549	3,987	14,135
Oro-Medonte	-	-	-	-					-	-	-
Penetanguishene	130	506	16	652	60		331	531	922	813	2,387
Ramara	188	-	488	676			7		7	517	1,200
Severn	17	-	8	25					-	480	505
Springwater	-	331	-	331			20		20	-	351
Tay	125	496	313	934			15	322	337	7,346	8,617
Tiny	-	-	-	-					-	-	-
Wasaga Beach	771	713	1,062	2,546			34	499	533	2,313	5,392
TOTAL UNITS	**9,145**	**16,296**	**15,886**	**41,327**	**1,100**	**-**	**3,243**	**12,694**	**17,037**	**36,246**	**94,610**

*Development Status and portions of vacant land data from Communities Report, March 2006.

*Intensification data based on preliminary results of intensification assessment.

2.4 Approach to Development of Growth Options for Barrie and Area Centred Single Node Concept

Two growth options were identified to reflect the single node concept. The two options reflect differing levels of intensification. One applies the level of intensification identified by the physical assessment (17, 037 units). The second increases intensification level to meet the *Growth Plan for the GGH* target of 40% of annual growth within the built up area by the year 2015 and each year thereafter. The following subsections describe each step in the process.

2.4.1 Identification of Appropriate Approved Development to Build-Out in 25 Year Time Horizon

The discussions with stakeholders and the SWOT analysis clearly indicates that not all approved growth is in the right place for the market. Consequently, the first step in creating the nodal options was to identify which approved development is appropriate to retain in the 25-year timeframe.

The amount of appropriate future approved growth was identified by considering the following:

- Status of approval;
- Current market demand;
- Health of the watershed affected by the development;
- Availability of short-term full servicing;
- Adjacency to a complete community.

This approach was later modified based on stakeholder feedback so that growth for each municipality was defined based on a demand analysis conducted in accordance with the MMAH Projection Methodology. This modification was applied to the preferred growth option only and is described in detail in Appendix C.

To establish the status of approvals, the development inventory from the *Communities Report* was compiled. The fully serviced units in process, draft and final Approved Plans of Subdivision were assumed to be appropriate because the details of their form had been through extensive consultation and approvals and were thus carried forward. The un-serviced and partially serviced units in the Vacant Land inventory were assumed to be eligible for deferral (see below).

Municipalities with development applications eligible for deferral were then screened through a technical team analysis regarding the composition of land uses within communities to meet the characteristics of a complete community and availability of full servicing (residual capacity and EA-approved capacities in wastewater systems). Municipalities that were considered to be "complete" communities and had available full servicing were identified as suitable for future urban development. These municipalities retained their entire development inventories. Municipalities without immediately available full servicing and which did not constitute "complete" communities, were identified as less suitable for future urban development and some of their approved developments (excluding fully serviced in-process, draft or final approved plans of subdivision) were thus identified to be deferred for development beyond the 2031 timeframe. **Table 2.2** shows how municipalities were determined to be complete communities.

Table 2.2: Complete Community Index

Municipality	Presence of Settlement Areas with Potential for Mixed Use Community with Good Intensification Potential, Diverse Employment Base and Vibrant Downtown	Presence of Settlement Areas with Existing or Proposed Local and/or Regional Transit	Presence of Settlement Areas with Existing Full Serving	Potential Complete Community
Adjala-Tosorontio	No	No	No	No
Barrie	Yes	Yes	Yes	Yes
Bradford-West Gwillimbury	Yes	Yes	Yes	Yes
Clearview	No	No	Yes	No
Collingwood	Yes	No	Yes	Yes
Essa	Yes (potential)	No	Yes	No
Innisfil	Yes (potential)	Yes	Yes	Yes
Midland	Yes	Yes	Yes	Yes
New Tecumseth	Yes	No	Yes	Yes
Orillia	Yes	Yes	Yes	Yes
Oro-Medonte	No	No	No	No
Penetanguishene	Yes	No	Yes	No
Ramara	No	No	Yes	No
Severn	No	No	Yes	No
Springwater	No	No	Yes	No
Tay	No	No	Yes	No
Tiny	No	No	No	No
Wasaga Beach	No	No	Yes	No

The volume of planned development in the vacant land inventory and in-process applications in municipalities which were identified for deferral of supply in the previous step was subtracted from the existing land supply inventory. This is predominantly vacant designated land that is not in or near complete communities which can not be developed on available short-term servicing. The total transfer amount was approximately 17,700 units (Adjala Tosorontio, Clearview, Oro-Medonte, Ramara, Tay, Tiny). Using this approach, this number constituted the amount of units that could be transferred to areas of higher demand in the 25-year time horizon. The transfer process assumed densities found in local official plans . Conversion from units to people used County PPUs.

2.4.2 Identification of Intensification Units

The intensification was calculated in two different ways resulting in two different growth options for the Barrie and Area Centred Single Node Concept.

Intensification was first calculated using the outcome of the physical assessment of intensification documented in the Physical Intensification Report. This resulted in 17,037 units of intensification.

A second option for the Barrie and Area Centred Concept was created by applying a level of intensification that allows for 40% of all new growth to occur within built-up areas beginning in 2015 and for every year thereafter. This option thus contains 29,744 intensification units.

The following is an overview the steps involved in determing the 40% level of intensification for Barrie, Simcoe County[2]:

- Determine base level of intensification that occurs from 2015-2031;
- Determine projected level of growth between 2015-2031;
- Multiply .4 by the 2015-2031 demand to get 40% target;
- Subtract 40% target from base level of intensification to determine the additional level of intensification units required to meet target;
- Determine mix for additional units.

Barrie requires an additional 4,784 units to meet the 40% target of 8,037 units. Simcoe County requires an additional 8,072 units to meet the 40% target of 13, 511. **Table 2.3** on the following page shows the detailed results of the calculation. Orillia would need 3,698 units to meet the 40% target. The base level of intensification identified for Orillia in through the physical potential assessment was 7,5492.

[2] It was determined that Orillia had enough physical potential to meet the 40% target.

Table 2.3

A

BASE
INTENSIFICATION (2006-2031)

Municipality	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio					-
Barrie			*186*	*3,495*	*3,681*
Bradford West Gwillimbury			*83*	*286*	*369*
Clearview			*82*		*82*
Collingwood			*25*	*997*	*1,022*
Essa			*4*	*28*	*32*
Innisfil			*162*	*508*	*670*
Midland			*6*	*941*	*947*
New Tecumseh			*133*	*733*	*866*
Orillia	*1,040*		*2,155*	*4,354*	*7,549*
Oro-Medonte					-
Penetanguishene	*60*		*331*	*531*	*922*
Ramara			*7*		*7*
Severn					-
Springwater			*20*		*20*
Tay			*15*	*322*	*337*
Tiny					-
Wasaga Beach			*34*	*499*	*533*
STUDY AREA TOTALS	**1,100**	**-**	**3,243**	**12,694**	**17,037**
Simcoe Only Totals	60	-	902	4,845	5,807

Intensification data from preliminary results of physical intensification assessment.

B

BASE
INTENSIFICATION AFTER 2015

Municipality	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio					
Barrie			*167*	*3,146*	*3,313*
Bradford West Gwillimbury			*75*	*257*	*332*
Clearview			*74*	-	*74*
Collingwood			*23*	*962*	*985*
Essa			*4*	*25*	*29*
Innisfil			*146*	*457*	*603*
Midland			*5*	*931*	*937*
New Tecumseh			*120*	*680*	*799*
Orillia	*1,040*		*2,148*	*4,157*	*7,344*
Oro-Medonte			-	-	-
Penetanguishene	*60*		*298*	*478*	*836*
Ramara			*6*	-	*6*
Severn			-	-	-
Springwater			*18*	-	*18*
Tay			*14*	*327*	*340*
Tiny			-	-	-
Wasaga Beach			*31*	*449*	*480*
STUDY AREA TOT	**1,100**	**-**	**3,127**	**11,869**	***16,096***
Simcoe Only Totals	60	-	905	4,567	*5,439*

B- Due to a limited number of shovel-ready intensification sites in the County, it was assumed that only approximately 10% of the total projected intensification would occur between 2006-2015. The two largest sites and all other brownfield sites were not factored into the 10% discount calculation as these are considered to be sites that will not develop between now and 2015 for a varierty of reasons (property ownership issues, environmental contamination, environmental constraints etc.)

C

2015-31
DEMAND

Municipality	Units
Adjala-Tosoro	-
Barrie	20,093
Bradford Wes	4,464
Clearview	2,762
Collingwood	8,318
Essa	1,520
Innisfil	3,980
Midland	2,802
New Tecums	3,819
Orillia	9,245
Oro-Medonte	-
Penetanguish	1,566
Ramara	414
Severn	406
Springwater	234
Tay	828
Tiny	-
Wasaga Beac	2,663
STUDY AREA	**63,115**
Simcoe Only	33,777

D (D=C*40%)

P2G 40% TARGET INTENSIFICATION

BARRIE	**ORILLIA**	**SIMCOE**
Units	Units	Units
8,037		
	3,698	
		13,511

Table 2.3

Municipality	E (E=D-B) ADDITIONAL UNITS REQ'D FOR P2G BARRIE	ORILLIA	SIMCOE	F (F=B*Type) MIX OF UNITS - INTENSIFICATION BARRIE ONLY Single Det.	Semi-Det.	Row	Apts.	Municipal Total	G (G=B*Type) MIX OF UNITS - INTENSIFICATION SIMCOE ONLY Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio									*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Barrie	4,724			0.00%	0.00%	5.05%	94.95%	100.00%					
Bradford West Gwillimbury									*0.00%*	*0.00%*	*1.37%*	*4.73%*	*6.11%*
Clearview									*0.00%*	*0.00%*	*1.36%*	*0.00%*	*1.36%*
Collingwood									*0.00%*	*0.00%*	*0.41%*	*17.70%*	*18.11%*
Essa									*0.00%*	*0.00%*	*0.07%*	*0.46%*	*0.53%*
Innisfil									*0.00%*	*0.00%*	*2.68%*	*8.41%*	*11.09%*
Midland									*0.00%*	*0.00%*	*0.10%*	*17.12%*	*17.22%*
New Tecumseh									*0.00%*	*0.00%*	*2.20%*	*12.50%*	*14.70%*
Orillia		(3,646)											
Oro-Medonte									*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Penetanguishene									*1.10%*	*0.00%*	*5.48%*	*8.79%*	*15.37%*
Ramara									*0.00%*	*0.00%*	*0.12%*	*0.00%*	*0.12%*
Severn									*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Springwater									*0.00%*	*0.00%*	*0.33%*	*0.00%*	*0.33%*
Tay									*0.00%*	*0.00%*	*0.25%*	*6.01%*	*6.26%*
Tiny									*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Wasaga Beach									*0.00%*	*0.00%*	*0.56%*	*8.26%*	*8.82%*
STUDY AREA TOTALS													
Simcoe Only Totals			8,072						1.10%	0.00%	14.93%	83.97%	100%

Table 2.3

H (H=F*E)
BREAKDOWN OF ADDITIONAL INTENSIFICATION UNITS
BARRIE ONLY

Municipality	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio					
Barrie	-	-	239	4,486	4,724
Bradford West Gwillimbury					
Clearview					
Collingwood					
Essa					
Innisfil					
Midland					
New Tecumseh					
Orillia					
Oro-Medonte					
Penetanguishene					
Ramara					
Severn					
Springwater					
Tay					
Tiny					
Wasaga Beach					
STUDY AREA TOTALS					
Simcoe Only Totals					

I (I=G*E)
BREAKDOWN OF ADDITIONAL INTENSIFICATION UNITS
SIMCOE ONLY

Single Det.	Semi-Det.	Row	Apts.	Municipal Total
-	-	-	-	-
-	-	*111*	*382*	*493*
-	-	*110*	-	*110*
-	-	*33*	*1,428*	*1,462*
-	-	*5*	*37*	*43*
-	-	*216*	*679*	*895*
-	-	*8*	*1,382*	*1,390*
-	-	*178*	*1,009*	*1,186*
-	-	-	-	-
89	-	*442*	*709*	*1,240*
-	-	*9*	-	*9*
-	-	-	-	-
-	-	*27*	-	*27*
-	-	*20*	*485*	*505*
-	-	-	-	
-	-	*45*	*667*	*712*
89	-	1,205	6,778	8,072

J (J=H+I)
SUMMARY OF ADDITIONAL INTENSIFICATION UNITS FOR P2G
BARRIE AND SIMCOE

Single Det.	Semi-Det.	Row	Apts.	Municipal Total
-	-	-	-	-
-	-	239	4,486	*4,724*
-	-	111	382	*493*
-	-	110	-	*110*
-	-	33	1,428	*1,462*
-	-	5	37	*43*
-	-	216	679	*895*
-	-	8	1,382	*1,390*
-	-	178	1,009	*1,186*
-	-	-	-	-
	-	442	709	*1,151*
-	-	9	-	*9*
-	-	-	-	-
-	-	27	-	*27*
-	-	20	485	*505*
-	-	-	-	
-	-	45	667	*712*
-	-	1,444	11,264	12,707

Table 2.3

K(K=J+A)

TOTAL INTENSIFICATION UNITS FOR 40% SCENARIO 2006-2031

BARRIE, ORILLIA AND SIMCOE

Municipality	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio	-	-	-	-	-
Barrie	-	-	425	7,981	*8,405*
Bradford West Gwillimbury	-	-	194	668	*862*
Clearview	-	-	192	-	*192*
Collingwood	-	-	58	2,425	*2,484*
Essa	-	-	9	65	*75*
Innisfil	-	-	378	1,187	*1,565*
Midland	-	-	14	2,323	*2,337*
New Tecumseh	-	-	311	1,742	*2,052*
Orillia	*1,040*		*2,155*	*4,354*	*7,549*
Oro-Medonte	-	-	-	-	-
Penetanguishene	60	-	773	1,240	*2,073*
Ramara	-	-	16	-	*16*
Severn	-	-	-	-	-
Springwater	-	-	47	-	*47*
Tay	-	-	35	807	*842*
Tiny	-	-	-	-	-
Wasaga Beach	-	-	79	1,166	*1,245*
STUDY AREA TOTALS	**1,100**	**-**	**4,687**	**23,958**	**29,744**
Simcoe Only Totals	60	-	2,107	11,623	13,790

2.4.3 Identification of Urban Expansion Areas

With the information for appropriate approved development and intensification in hand it was then possible to determine the amount of urban expansion lands needed for each of the Barrie and Area Centred options in order to meet the 2031 *Grow Plan for GGH* population targets. For Options 2A and 2B (Barrie and Area Centred) the entire urban expansion area land requirement was allocated to Barrie and the surrounding areas. For Option 2A (40% intensification), this added 9,586 units. For Option 2B (Physical Growth potential intensification), this added a much larger portion of urban expansion units as a total of 22,293 new units were required (given the lower level of intensification).

The unit mix was developed to reflect a mix of 70% singles, 5% semi detached, 15% rows and 10% apartments. This reflects an increase in the higher density forms of development over what exists today (i.e. 77% singles, 4% semis, 5 % rows and 14% apartments) and yet provides a mix that can support a complete community. The amount of urban expansion lands needed would be decreased if the mix is moved closer to the Toronto or Ontario-wide mix which have lower numbers of singles and higher numbers of apartments. The size could also be reduced if higher densities were applied[3].

2.4.4 Mapping of New Urban Expansion Area

The new urban expansion areas were identified to accommodate the land supply needed as described above (2,385 ha with physical potential intensification and 1,025 for 40% intensification).

The new urban expansion node was placed south of the Barrie urban boundary in Innisfil and Essa to take advantage of the access and employment land next to Highway 400 and to be closer to the demand generated by proximity to employment areas in south Simcoe and the GTA. Environmental constraints to the north and west also precluded development in these directions.

The lands identified for urban expansion was identified considering the following:

- Minimizing impacts on the resource opportunities and agriculture opportunities areas identified in the Resources Report. Small amounts of Natural Heritage (No Development) lands are contained within these growth areas but are assumed to be non-developable. They are shown within the growth areas as a practical rounding out of the growth areas;
- Capable of efficient servicing;
- Adjacent to built-up area;
- Consistent with municipal planning documents; and
- No obvious or unique watershed based disadvantages identified by the ACS team.

By applying the above criteria, the growth area was identified as an arc extending across the south boundary of Barrie to Stroud and the natural heritage features to the south in the Town of Innisfil and Essa Township. This approach takes advantage of the employment and access opportunities along Hwy. 400 and responds to the demand for housing in south Simcoe. There are several regional level access routes providing north/south access through the area. The area is, of course significantly smaller for Option 3 with 40% intensification. No additional unconstrained lands are available within the urban boundary for consideration as new growth areas in Barrie.

It is important to note that the arc shape represents the conceptual nature of the expansion area, as additional stakeholder consultation and analysis would be required in the future to determine appropriate boundaries of any urban expansion in this area. All other growth options were drawn up with similar considerations. **Tables 2.4** and **2.5** show the breakdown on the following page.

[3] The preferred option uses higher densities for new greenfield development (VLI and urban expansion lands).

Table 2.4

Simcoe Housing Allocation By Municipality 2006-2031

Option 2A: Single Barrie Area Node with 40% Intensification

Intensification
A

Municipality	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio	-	-	-	-	-
Barrie	-	-	*425*	*7,981*	*8,405*
Bradford West Gwillimbury	-	-	*194*	*668*	*862*
Clearview	-	-	*192*	-	*192*
Collingwood	-	-	*58*	*2,425*	*2,484*
Essa	-	-	*9*	*65*	*75*
Innisfil	-	-	*378*	*1,187*	*1,565*
Midland	-	-	*14*	*2,323*	*2,337*
New Tecumseh	-	-	*311*	*1,742*	*2,052*
Orillia	*1,040*	-	*2,155*	*4,354*	*7,549*
Oro-Medonte	-	-	-	-	-
Penetanguishene	*60*	-	*773*	*1,240*	*2,073*
Ramara	-	-	*16*	-	*16*
Severn	-	-	-	-	-
Springwater	-	-	*47*	-	*47*
Tay	-	-	*35*	*807*	*842*
Tiny	-	-	-	-	-
Wasaga Beach	-	-	*79*	*1,166*	*1,245*
Intensification Total	1,100	-	4,687	23,958	29,744

*Based on preliminary results of intensification assessment.See Accompanying table for details.

Optimized Approved Landuse
B

Municipality	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio	-	-	-	-	-
Barrie	5,589	453	1,632	1,069	*8,743*
Bradford West Gwillimbury	5,138	257	1,294	655	*7,344*
Clearview	2,807	0	1,869	15	*4,691*
Collingwood	2,587	57	9,854	851	*13,349*
Essa	1,601	168	797	29	*2,595*
Innisfil	5,528	0	235	444	*6,207*
Midland	2,196	86	806	806	*3,894*
New Tecumseh	3,214	867	660	991	*5,732*
Orillia	5,635	412	623	1,755	*8,425*
Oro-Medonte	0	0	0	0	-
Penetanguishene	1,030	10	563	181	*1,784*
Ramara	197	0	401	111	*709*
Severn	701	0	0	0	*701*
Springwater	323	0	31	30	*384*
Tay	849	0	245	0	*1,094*
Tiny	0	0	0	0	-
Wasaga Beach	3,402	0	666	0	*4,068*
Rest of Urban Total	40,797	2,310	19,676	6,937	69,720

* Derived by combining approved development with plans in place, developments currently serviced with EA completed for servicing and selections of other approved development areas based on key planning principals (complete community, transit supportive etc.)

Greenfields, Barrie-centric
C

	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio					-
Barrie	*6,710*	*479*	*1,438*	*959*	*9,586*
Bradford West Gwillimbury					-
Clearview					-
Collingwood					-
Essa					-
Innisfil					-
Midland					-
New Tecumseh					-
Orillia					-
Oro-Medonte					-
Penetanguishene					-
Ramara					-
Severn					-
Springwater					-
Tay					-
Tiny					-
Wasaga Beach					-
Barrie-centric Total	6,710	479	1,438	959	9,586
Unit Mix	70%	5%	15%	10%	

Total Demand
D (A+B+C)

	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio	-	-	-	-	-
Barrie	*12,299*	*932*	*3,495*	*10,008*	*26,734*
Bradford West Gwillimbury	*5,138*	*257*	*1,488*	*1,323*	*8,206*
Clearview	*2,807*	-	*2,061*	*15*	*4,883*
Collingwood	*2,587*	*57*	*9,912*	*3,276*	*15,833*
Essa	*1,601*	*168*	*806*	*94*	*2,670*
Innisfil	*5,528*	-	*613*	*1,631*	*7,772*
Midland	*2,196*	*86*	*820*	*3,129*	*6,231*
New Tecumseh	*3,214*	*867*	*971*	*2,733*	*7,784*
Orillia	*6,675*	*412*	*2,778*	*6,109*	*15,974*
Oro-Medonte	-	-	-	-	-
Penetanguishene	*1,090*	*10*	*1,336*	*1,421*	*3,857*
Ramara	*197*	-	*417*	*111*	*725*
Severn	*701*	-	-	-	*701*
Springwater	*323*	-	*78*	*30*	*431*
Tay	*849*	-	*280*	*807*	*1,936*
Tiny	-	-	-	-	-
Wasaga Beach	*3,402*	-	*745*	*1,166*	*5,313*
Barrie-centric Total	48,607	2,789	25,800	31,853	109,050
Housing Mix %	*44.6%*	*2.6%*	*23.7%*	*29.2%*	*100.0%*

Municipal Densities
E

Municipality	Single Det.	Semi-Det.*	Row	Apts.
Adjala-Tosorontoio	2.5 upgh	2.5 upgh	1.0 upgh	1.0 upgh
Barrie	7.5 upgh	7.5 upgh	26.5 upgh	75.0 upgh
Bradford West Gwillimbury	12.0 upgh	12.0 upgh	20.0 upgh	37.5 upgh
Clearview	15.0 upgh	15.0 upgh	50.0 upgh	1.0 upgh
Collingwood	12.0 upgh	12.0 upgh	50.0 upgh	100.0 upgh
Essa	18.5 upgh	18.5 upgh	37.0 upgh	1.0 upgh
Innisfil	12.0 upgh	12.0 upgh	20.0 upgh	37.0 upgh
Midland	12.5 upgh	12.5 upgh	15.0 upgh	25.0 upgh
New Tecumseh	15.0 upgh	15.0 upgh	20.0 upgh	37.5 upgh
Orillia	25.0 upgh	25.0 upgh	20.0 upgh	50.0 upgh
Oro-Medonte	2.6 upgh	2.6 upgh	1.0 upgh	1.0 upgh
Penetanguishene	7.5 upgh	7.5 upgh	15.0 upgh	37.0 upgh
Ramara	6.0 upgh	6.0 upgh	18.5 upgh	37.0 upgh
Severn	10.0 upgh	10.0 upgh	18.5 upgh	1.0 upgh
Springwater	5.0 upgh	5.0 upgh	1.0 upgh	1.0 upgh
Tay	12.8 upgh	12.8 upgh	37.0 upgh	1.0 upgh
Tiny	1.2 upgh	1.2 upgh	1.0 upgh	1.0 upgh
Wasaga Beach	13.5 upgh	13.5 upgh	18.5 upgh	37.0 upgh

Densities from local official plans, as reported in the Communities Report.

New Greenfield Units

F

Municipality	Single Det.	Semi-Det.*	Row	Apts.
Adjala-Tosorontoio				
Barrie	6,710	479	1,438	959
Bradford West Gwillimbury				
Clearview				
Collingwood				
Essa				
Innisfil				
Midland				
New Tecumseh				
Orillia				
Oro-Medonte				
Penetanguishene				
Ramara				
Severn				
Springwater				
Tay				
Tiny				
Wasaga Beach				
Totals	6,710	479	1,438	959

New Greenfield Hectares

G

Municipality	Single Det.	Semi-Det.*	Row	Apts.	**Totals (ha)**
Adjala-Tosorontoio	-	-	-	-	**-**
Barrie	894.7	63.9	54.3	12.8	**1,025.6**
Bradford West Gwillimbu	-	-	-	-	**-**
Clearview	-	-	-	-	**-**
Collingwood	-	-	-	-	**-**
Essa	-	-	-	-	**-**
Innisfil	-	-	-	-	**-**
Midland	-	-	-	-	**-**
New Tecumseh	-	-	-	-	**-**
Orillia	-	-	-	-	**-**
Oro-Medonte	-	-	-	-	**-**
Penetanguishene	-	-	-	-	**-**
Ramara	-	-	-	-	**-**
Severn	-	-	-	-	**-**
Springwater	-	-	-	-	**-**
Tay	-	-	-	-	**-**
Tiny	-	-	-	-	**-**
Wasaga Beach	-	-	-	-	**-**
Totals	894.7	63.9	54.3	12.8	**1,025.6**

Table 2.5

Simcoe Housing Allocation By Municipality 2006-2031

Option 2B: Barrie and Area Centered Single Node (15%)

Intensification
A

Municipality	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio					-
Barrie			*186*	*3,495*	*3,681*
Bradford West Gwillimbury			*83*	*286*	*369*
Clearview			*82*		*82*
Collingwood			*25*	*997*	*1,022*
Essa			*4*	*28*	*32*
Innisfil			*162*	*508*	*670*
Midland			*6*	*941*	*947*
New Tecumseh			*133*	*733*	*866*
Orillia	*1,040*		*2,155*	*4,354*	*7,549*
Oro-Medonte					-
Penetanguishene	*60*		*331*	*531*	*922*
Ramara			*7*		*7*
Severn					-
Springwater			*20*		*20*
Tay			*15*	*322*	*337*
Tiny					-
Wasaga Beach			*34*	*499*	*533*
Intensification Total	1,100	-	3,243	12,694	17,037

*Based on preliminary results of intensification assessment.

Optimized Approved Landuse
B

Municipality	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio	-	-	-	-	-
Barrie	5,589	453	1,632	1,069	*8,743*
Bradford West Gwillimbury	5,138	257	1,294	655	*7,344*
Clearview	2,807	0	1,869	15	*4,691*
Collingwood	2,587	57	9,854	851	*13,349*
Essa	1,601	168	797	29	*2,595*
Innisfil	5,528	0	235	444	*6,207*
Midland	2,196	86	806	806	*3,894*
New Tecumseh	3,214	867	660	991	*5,732*
Orillia	5,635	412	623	1,755	*8,425*
Oro-Medonte	0	0	0	0	-
Penetanguishene	1,030	10	563	181	*1,784*
Ramara	197	0	401	111	*709*
Severn	701	0	0	0	*701*
Springwater	323	0	31	30	*384*
Tay	849	0	245	0	*1,094*
Tiny	0	0	0	0	-
Wasaga Beach	3,402	0	666	0	*4,068*
Rest of Urban Total	40,797	2,310	19,676	6,937	69,720

* Derived by combining approved development with plans in place, developments currently serviced with EA completed for servicing and selections of other approved development areas based on key planning principals (complete community, transit supportive etc.)

Greenfields, Barrie-centric
C

	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio					-
Barrie	*15,605*	*1,115*	*3,344*	*2,229*	*22,293*
Bradford West Gwillimbury					-
Clearview					-
Collingwood					-
Essa					-
Innisfil					-
Midland					-
New Tecumseh					-
Orillia					-
Oro-Medonte					-
Penetanguishene					-
Ramara					-
Severn					-
Springwater					-
Tay					-
Tiny					-
Wasaga Beach					-
Barrie-centric Total	15,605	1,115	3,344	2,229	22,293
Unit Mix	70%	5%	15%	10%	

Total Demand
D (A+B+C)

	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosoro	-	-	-	-	-
Barrie	*21,194*	*1,568*	*5,162*	*6,793*	*34,717*
Bradford Wes	*5,138*	*257*	*1,377*	*941*	*7,713*
Clearview	*2,807*	-	*1,951*	*15*	*4,773*
Collingwood	*2,587*	*57*	*9,879*	*1,848*	*14,371*
Essa	*1,601*	*168*	*801*	*57*	*2,627*
Innisfil	*5,528*	-	*397*	*952*	*6,877*
Midland	*2,196*	*86*	*812*	*1,747*	*4,841*
New Tecumse	*3,214*	*867*	*793*	*1,724*	*6,598*
Orillia	*6,675*	*412*	*2,778*	*6,109*	*15,974*
Oro-Medonte	-	-	-	-	-
Penetanguish	*1,090*	*10*	*894*	*712*	*2,706*
Ramara	*197*	-	*408*	*111*	*716*
Severn	*701*	-	-	-	*701*
Springwater	*323*	-	*51*	*30*	*404*
Tay	*849*	-	*260*	*322*	*1,431*
Tiny	-	-	-	-	-
Wasaga Beac	*3,402*	-	*700*	*499*	*4,601*
Barrie-centric	57,502	3,425	26,263	21,860	109,050
Housing Mix %	*52.7%*	*3.1%*	*24.1%*	*20.0%*	*100.0%*

Municipal Densities
E

Municipality	Single Det.	Semi-Det.*	Row	Apts.
Adjala-Tosorontoio	2.5 upgh	2.5 upgh	1.0 upgh	1.0 upgh
Barrie	7.5 upgh	7.5 upgh	26.5 upgh	75.0 upgh
Bradford West Gwillimbury	12.0 upgh	12.0 upgh	20.0 upgh	37.5 upgh
Clearview	15.0 upgh	15.0 upgh	50.0 upgh	1.0 upgh
Collingwood	12.0 upgh	12.0 upgh	50.0 upgh	100.0 upgh
Essa	18.5 upgh	18.5 upgh	37.0 upgh	1.0 upgh
Innisfil	12.0 upgh	12.0 upgh	20.0 upgh	37.0 upgh
Midland	12.5 upgh	12.5 upgh	15.0 upgh	25.0 upgh
New Tecumseh	15.0 upgh	15.0 upgh	20.0 upgh	37.5 upgh
Orillia	25.0 upgh	25.0 upgh	20.0 upgh	50.0 upgh
Oro-Medonte	2.6 upgh	2.6 upgh	1.0 upgh	1.0 upgh
Penetanguishene	7.5 upgh	7.5 upgh	15.0 upgh	37.0 upgh
Ramara	6.0 upgh	6.0 upgh	18.5 upgh	37.0 upgh
Severn	10.0 upgh	10.0 upgh	18.5 upgh	1.0 upgh
Springwater	5.0 upgh	5.0 upgh	1.0 upgh	1.0 upgh
Tay	12.8 upgh	12.8 upgh	37.0 upgh	1.0 upgh
Tiny	1.2 upgh	1.2 upgh	1.0 upgh	1.0 upgh
Wasaga Beach	13.5 upgh	13.5 upgh	18.5 upgh	37.0 upgh

*Densities from local official plans, as reported in the Communities Report.

New Greenfield Units
F

Municipality	Single Det.	Semi-Det.*	Row	Apts.
Adjala-Tosorontoio				
Barrie	15,605	1,115	3,344	2,229
Bradford West Gwillimbury				
Clearview				
Collingwood				
Essa				
Innisfil				
Midland				
New Tecumseh				
Orillia				
Oro-Medonte				
Penetanguishene				
Ramara				
Severn				
Springwater				
Tay				
Tiny				
Wasaga Beach				
Totals	15,605	1,115	3,344	2,229

New Greenfield Hectares
G

Municipality	Single Det.	Semi-Det.*	Row	Apts.	**Totals (ha)**
Adjala-Tosorontoio	-	-	-	-	**-**
Barrie	2,080.7	148.7	126.2	29.7	**2,385.2**
Bradford West Gwillimbur	-	-	-	-	**-**
Clearview	-	-	-	-	**-**
Collingwood	-	-	-	-	**-**
Essa	-	-	-	-	**-**
Innisfil	-	-	-	-	**-**
Midland	-	-	-	-	**-**
New Tecumseh	-	-	-	-	**-**
Orillia	-	-	-	-	**-**
Oro-Medonte	-	-	-	-	**-**
Penetanguishene	-	-	-	-	**-**
Ramara	-	-	-	-	**-**
Severn	-	-	-	-	**-**
Springwater	-	-	-	-	**-**
Tay	-	-	-	-	**-**
Tiny	-	-	-	-	**-**
Wasaga Beach	-	-	-	-	**-**
Totals	2,080.7	148.7	126.2	29.7	**2,385.2**

2.5 Approach to Development of Multi Node Growth Options

2.5.1 Identification of Appropriate Approved Development to Build-Out in 25 Year Time Horizon

The approach to identification to appropriate approved development for these options is the same as that described above for the Barrie and Area Centred options.

2.5.2 Identification of Intensification Units

The physical potential values for intensification were applied to this option (17,037 units).

2.5.3 Identification of Urban Expansion Areas

Communities with potential for expansion as nodes were identified if they displayed a number of the following characteristics which reflect the objectives for this concept:

1. Complete communities or emerging complete communities supporting intensification opportunities and reinforcing mixed use areas and jobs with accessibility to jobs;
2. Displays short-term market demand based on the work by Will Dunning;
3. Provides adequate transportation access for local, regional and interregional needs;
4. Has potential for efficient servicing;
5. Has no over-riding constraints based on the outcomes of the ACS analysis and ACS team input;
6. Has adjacent unconstrained lands; and
7. Existing or proposed local and regional transit in place.

In addition, the analysis considered how to distribute the calculated Greenfield opportunity area in a manner that resulted in viable community size and number.

All of the communities considered were found to be equal for criteria 4 based on the high level analysis because it is feasible to service all areas with adequate mitigation. All the communities considered were also equal with respect to agricultural impacts. Of all communities, only Alcona had any significant unconstrained agricultural areas adjacent to its urban boundaries.

The following communities were considered:

- Bradford
- Alliston
- Alcona
- Wasaga Beach
- Orillia
- Collingwood
- Midland
- Penetanguishene
- Tottenham

Barrie was considered as a node given that it's status as an Urban Growth Centre in the *Growth Plan for GGH*. It also clearly meets each of the above criteria and is an obvious node for growth in Simcoe.

Bradford and Alliston were selected in addition to Barrie as nodes for new growth for Option 3. It was decided to concentrate the development in three areas to allow for: more efficient servicing; concentrating watershed impacts; focusing employment to strong job base, if possible; efficient transportation; complete communities or neighbourhoods as opposed to "edge" development.

Two multi-node options were developed to explore the implications of a small versus a more modest number of nodes. The first considered three nodes and the second five. The three-node option featured new urban expansion nodes in:

- Barrie;
- Bradford; and,
- Alliston.

The five-node option featured new urban expansion nodes in:

- Barrie;
- Bradford;
- Alliston;
- Cookstown; and,
- Alcona.

Bradford was selected because it has regional transit access, is a complete community, has good transportation access, has a strong short-term market demand and has fairly unconstrained lands to the north and west. It has no significant disadvantages that could hinder further growth.

Alliston was elected because it is a complete community including good local employment opportunities with good transportation access and good short-term market demand with fairly unconstrained surrounding lands.

The five-node option was created in response to stakeholder input asking that additional nodes be considered. For the five node option, Cookstown and the Alcona area were added because of their proximity to Highway 400 and the full servicing capacity for Alcona. Alcona does not presently meet the characteristics of a complete community but is actively expanding towards characteristics that meet this definition and has the added advantages of having full service capability and containing a future inter-regional transit location as well as being adjacent to Barrie.

The other communities were not selected because:

- Wasaga Beach is not considered to be a complete community;
- Orillia has a more moderate market demand and higher surrounding locational constraints than Bradford and Alliston;
- Collingwood is considered as a good candidate for a node but was set aside because Collingwood has nearly twice the number of appropriate approved units than any other community (13,300 units versus the next highest community Barrie at 8,700 units, see for example, Appendix J);
- Midland and Penetanguishene have more moderate market demand than either Alliston or Bradford and both have moderate or high adjacent land constraints; and
- Tottenham has moderate to high locational constraints for adjacent lands.

No communities were rejected based soley on their ACS impacts because it was felt that the level of information is not available to make such decisions and future detailed modeling as part of IGAP will provide certainty regarding environmental watershed constraints.

Another consideration was the appropriate number of nodes to optimize the potential for viable community nodes. Given that the Barrie area is identified as a UGC, 50% of the urban expansion growth was allocated to the Barrie and surrounding area in the multi-nodal option (11,000 units or approximately 1000 ha). The remaining units (5,500 (or approx. 500 ha)) were allocated to each of Alliston and Bradford for Option 3 and to Alliston, Bradford, Cookstown and Alcona for Option 4.

2.5.4 Mapping of Urban Expansion Areas

These areas were identified to accommodate the land supply needed as described approximately 2000 ha (assuming physical potential intensification across the study area). These areas should be considered preliminary and for illustrative purposes for the comparison of options. Final delineation of growth areas requires detailed, site specific assessment and consultation.

Specifically, the location of the areas for Greenfield growth were identified considering the following:

- Minimizing impacts on the resource opportunities and agriculture opportunities areas identified in the Resource Report. Small amounts of Natural Heritage (No Development) lands are contained within these growth areas but are assumed to be non-developable. They are shown within the growth areas as a practical rounding out of the growth areas.
- Capable of efficient servicing;
- Adjacent to built-up area;
- Consistency with municipal planning documents;
- No obvious or unique watershed based disadvantages identified by the ACS team.

By applying these criteria, the growth areas were identified,

As for the Barrie and Area Centred growth options, the growth for Barrie was allocated to the south of the City in the Town of Innisfil and Essa Township.

An area north of Highway 89 was identified for Alliston in keeping with their official plan and to continue existing residential areas. An area west of the built up area for Bradford was identified to provide access along the corridor to Hwy 400 and in keeping with existing planning documents. An area west of Alcona is in keeping with Innisfil's vision of expanding Alcona in the direction of the 400 and is adjacent to the existing community. The urban expansion area for Cookstown was added to the south eastern portion of the town, in the direction of existing employment lands located at Highway 400 (limited opportunity for expansion to the west). **Tables 2.6** and **2.7** show breakdown for Option 3 and 4.

Table 2.6

Simcoe Housing Allocation By Municipality 2006-2031

Option 3: Multi-Nodal (3 Nodes)

Intensification
A

Municipality	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio					-
Barrie			*186*	*3,495*	*3,681*
Bradford West Gwillimbury			*83*	*286*	*369*
Clearview			*82*		*82*
Collingwood			*25*	*997*	*1,022*
Essa			*4*	*28*	*32*
Innisfil			*162*	*508*	*670*
Midland			*6*	*941*	*947*
New Tecumseh			*133*	*733*	*866*
Orillia	*1,040*		*2,155*	*4,354*	*7,549*
Oro-Medonte					-
Penetanguishene	*60*		*331*	*531*	*922*
Ramara			*7*		*7*
Severn					-
Springwater			*20*		*20*
Tay			*15*	*322*	*337*
Tiny					-
Wasaga Beach			*34*	*499*	*533*
Intensification Total	1,100	-	3,243	12,694	17,037

*Based on preliminary results of intensification assessment.

Optimized Approved Land Use
B*

Municipality	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio	-	-	-	-	-
Barrie	5,589	453	1,632	1,069	*8,743*
Bradford West Gwillimbury	5,138	257	1,294	655	*7,344*
Clearview	2,807	0	1,869	15	*4,691*
Collingwood	2,587	57	9,854	851	*13,349*
Essa	1,601	168	797	29	*2,595*
Innisfil	5,528	0	235	444	*6,207*
Midland	2,196	86	806	806	*3,894*
New Tecumseh	3,214	867	660	991	*5,732*
Orillia	5,635	412	623	1,755	*8,425*
Oro-Medonte	0	0	0	0	-
Penetanguishene	1,030	10	563	181	*1,784*
Ramara	197	0	401	111	*709*
Severn	701	0	0	0	*701*
Springwater	323	0	31	30	*384*
Tay	849	0	245	0	*1,094*
Tiny	0	0	0	0	-
Wasaga Beach	3,402	0	666	0	*4,068*
Rest of Urban Total	40,797	2,310	19,676	6,937	69,720

* Derived by combining approved development with plans in place, developments currently serviced with EA completed for servicing and selections of other approved development areas based on key planning principals (complete community, transit supportive etc.)

Greenfields, Nodes
C

	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio					-
Barrie	*7,803*	*557*	*1,672*	*1,115*	*11,147*
Bradford West Gwillimbury	*3,901*	*279*	*836*	*557*	*5,573*
Clearview					-
Collingwood					-
Essa					-
Innisfil					-
Midland					-
New Tecumseh	*3,901*	*279*	*836*	*557*	*5,573*
Orillia					-
Oro-Medonte					-
Penetanguishene					-
Ramara					-
Severn					-
Springwater					-
Tay					-
Tiny					-
Wasaga Beach					-
Greenfield Total	14,945	1,601	3,203	1,601	22,293

Nodes Housing Distribution	Singles	Semis	Row	Apartment
Barrie (50% of Total)	70%	5%	15%	10%
Alliston-New Tech. (25%)	70%	5%	15%	10%
Bradford (25%)	70%	5%	15%	10%
May 9th Barrie mix	70%	10%	15%	5%

Total Demand
D (A+B+C)

	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio	-	-	-	-	-
Barrie	*13,392*	*1,010*	*3,490*	*5,679*	*23,571*
Bradford West Gwillimbury	*9,039*	*536*	*2,213*	*1,498*	*13,286*
Clearview	*2,807*	-	*1,951*	*15*	*4,773*
Collingwood	*2,587*	*57*	*9,879*	*1,848*	*14,371*
Essa	*1,601*	*168*	*801*	*57*	*2,627*
Innisfil	*5,528*	-	*397*	*952*	*6,877*
Midland	*2,196*	*86*	*812*	*1,747*	*4,841*
New Tecumseh	*7,115*	*1,146*	*1,629*	*2,281*	*12,171*
Orillia	*6,675*	*412*	*2,778*	*6,109*	*15,974*
Oro-Medonte	-	-	-	-	-
Penetanguishene	*1,090*	*10*	*894*	*712*	*2,706*
Ramara	*197*	-	*408*	*111*	*716*
Severn	*701*	-	-	-	*701*
Springwater	*323*	-	*51*	*30*	*404*
Tay	*849*	-	*260*	*322*	*1,431*
Tiny	-	-	-	-	-
Wasaga Beach	*3,402*	-	*700*	*499*	*4,601*
Nodes - Total	57,502	3,425	26,263	21,860	109,050
Housing Mix %	*52.7%*	*3.1%*	*24.1%*	*20.0%*	*100.0%*

Municipal Densities
E

Municipality	Single Det.	Semi-Det.*	Row	Apts.
Adjala-Tosorontoio	2.5 upgh	2.5 upgh	1.0 upgh	1.0 upgh
Barrie	7.5 upgh	7.5 upgh	26.5 upgh	75.0 upgh
Bradford West Gwillimbury	12.0 upgh	12.0 upgh	20.0 upgh	37.5 upgh
Clearview	15.0 upgh	15.0 upgh	50.0 upgh	1.0 upgh
Collingwood	12.0 upgh	12.0 upgh	50.0 upgh	100.0 upgh
Essa	18.5 upgh	18.5 upgh	37.0 upgh	1.0 upgh
Innisfil	12.0 upgh	12.0 upgh	20.0 upgh	37.0 upgh
Midland	12.5 upgh	12.5 upgh	15.0 upgh	25.0 upgh
New Tecumseh	15.0 upgh	15.0 upgh	20.0 upgh	37.5 upgh
Orillia	25.0 upgh	25.0 upgh	20.0 upgh	50.0 upgh
Oro-Medonte	2.6 upgh	2.6 upgh	1.0 upgh	1.0 upgh
Penetanguishene	7.5 upgh	7.5 upgh	15.0 upgh	37.0 upgh
Ramara	6.0 upgh	6.0 upgh	18.5 upgh	37.0 upgh
Severn	10.0 upgh	10.0 upgh	18.5 upgh	1.0 upgh
Springwater	5.0 upgh	5.0 upgh	1.0 upgh	1.0 upgh
Tay	12.8 upgh	12.8 upgh	37.0 upgh	1.0 upgh
Tiny	1.2 upgh	1.2 upgh	1.0 upgh	1.0 upgh
Wasaga Beach	13.5 upgh	13.5 upgh	18.5 upgh	37.0 upgh

Densities from local official plans, as reported in the Communities Report.

New Greenfield Units
F

Municipality	Single Det.	Semi-Det.*	Row	Apts.
Adjala-Tosorontoio				
Barrie	7,803.0	1,115.0	1,672.0	557.0
Bradford West Gwillimbury	3,901.0	279.0	836.0	557.0
Clearview				
Collingwood				
Essa				
Innisfil				
Midland				
New Tecumseh	3,901.0	279.0	836.0	557.0
Orillia				
Oro-Medonte				
Penetanguishene				
Ramara				
Severn				
Springwater				
Tay				
Tiny				
Wasaga Beach				
Totals	15,605.0	1,673.0	3,344.0	1,671.0

New Greenfield Hectares
G

Municipality	Single Det.	Semi-Det.*	Row	Apts.	**Totals**
Adjala-Tosorontoio	-	-	-	-	**-**
Barrie	1,040.4	148.7	63.1	7.4	**1,259.6**
Bradford West Gwillimbury	325.1	23.3	41.8	14.9	**405.0**
Clearview	-	-	-	-	**-**
Collingwood	-	-	-	-	**-**
Essa	-	-	-	-	**-**
Innisfil	-	-	-	-	**-**
Midland	-	-	-	-	**-**
New Tecumseh	260.1	18.6	41.8	14.9	**335.3**
Orillia	-	-	-	-	**-**
Oro-Medonte	-	-	-	-	**-**
Penetanguishene	-	-	-	-	**-**
Ramara	-	-	-	-	**-**
Severn	-	-	-	-	**-**
Springwater	-	-	-	-	**-**
Tay	-	-	-	-	**-**
Tiny	-	-	-	-	**-**
Wasaga Beach	-	-	-	-	**-**
Totals	1,625.6	190.5	146.7	37.1	**1,999.9**

Table 2.7

Simcoe Housing Allocation By Municipality 2006-2031

Option 4: South Simcoe Dispersed

Intensification
A

Municipality	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio					-
Barrie			*186*	*3,495*	*3,681*
Bradford West Gwillimbury			*83*	*286*	*369*
Clearview			*82*		*82*
Collingwood			*25*	*997*	*1,022*
Essa			*4*	*28*	*32*
Innisfil			*162*	*508*	*670*
Midland			*6*	*941*	*947*
New Tecumseh			*133*	*733*	*866*
Orillia	*1,040*		*2,155*	*4,354*	*7,549*
Oro-Medonte					-
Penetanguishene	*60*		*331*	*531*	*922*
Ramara			*7*		*7*
Severn					-
Springwater			*20*		*20*
Tay			*15*	*322*	*337*
Tiny					-
Wasaga Beach			*34*	*499*	*533*
Intensification Total	1,100	-	3,243	12,694	17,037

*Based on preliminary results of intensification assessment.

Optimized Approved Land Use
B*

Municipality	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio	-	-	-	-	-
Barrie	5,589	453	1,632	1,069	*8,743*
Bradford West Gwillimbury	5,138	257	1,294	655	*7,344*
Clearview	2,807	0	1,869	15	*4,691*
Collingwood	2,587	57	9,854	851	*13,349*
Essa	1,601	168	797	29	*2,595*
Innisfil	5,528	0	235	444	*6,207*
Midland	2,196	86	806	806	*3,894*
New Tecumseh	3,214	867	660	991	*5,732*
Orillia	5,635	412	623	1,755	*8,425*
Oro-Medonte	0	0	0	0	-
Penetanguishene	1,030	10	563	181	*1,784*
Ramara	197	0	401	111	*709*
Severn	701	0	0	0	*701*
Springwater	323	0	31	30	*384*
Tay	849	0	245	0	*1,094*
Tiny	0	0	0	0	-
Wasaga Beach	3,402	0	666	0	*4,068*
Rest of Urban Total	40,797	2,310	19,676	6,937	69,720

* Derived by combining approved development with plans in place, developments currently serviced with EA completed for servicing and selections of other approved development areas based on key planning principals (complete community, transit supportive etc.)

Greenfields, South Simcoe Dispersed
C

	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontio					-
Barrie	*7,803*	*557*	*1,672*	*1,115*	*11,147*
Bradford West Gwillimbury	*1,951*	*139*	*418*	*279*	*2,787*
Clearview					-
Collingwood					-
Essa					-
Innisfil	*3,901*	*279*	*836*	*557*	*5,573*
Midland					-
New Tecumseth	*1,951*	*139*	*418*	*279*	*2,787*
Orillia					-
Oro-Medonte					-
Penetanguishene					-
Ramara					-
Severn					-
Springwater					-
Tay					-
Tiny					-
Wasaga Beach					-
Greenfield Total	15,605	1,115	3,344	2,229	22,293

Barrie (50%)	70%	5%	15%	10%	
Alliston (12.5%)	70%	5%	15%	10%	New Tec.
Bradford (12.5%)	70%	5%	15%	10%	BWG
Cookstown (12.5%)	70%	5%	15%	10%	Innisfil
Alcona (12.5%)	70%	5%	15%	10%	Innisfil

Total Demand
D (A+B+C)

	Single Det.	Semi-Det.	Row	Apts.	Municipal Total
Adjala-Tosorontoio	-	-	-	-	-
Barrie	*13,392*	*1,010*	*3,490*	*5,679*	*23,571*
Bradford West Gwillimbury	*7,089*	*396*	*1,795*	*1,220*	*10,500*
Clearview	*2,807*	-	*1,951*	*15*	*4,773*
Collingwood	*2,587*	*57*	*9,879*	*1,848*	*14,371*
Essa	*1,601*	*168*	*801*	*57*	*2,627*
Innisfil	*9,429*	*279*	*1,233*	*1,509*	*12,450*
Midland	*2,196*	*86*	*812*	*1,747*	*4,841*
New Tecumseh	*5,165*	*1,006*	*1,211*	*2,003*	*9,385*
Orillia	*6,675*	*412*	*2,778*	*6,109*	*15,974*
Oro-Medonte	-	-	-	-	-
Penetanguishene	*1,090*	*10*	*894*	*712*	*2,706*
Ramara	*197*	-	*408*	*111*	*716*
Severn	*701*	-	-	-	*701*
Springwater	*323*	-	*51*	*30*	*404*
Tay	*849*	-	*260*	*322*	*1,431*
Tiny	-	-	-	-	-
Wasaga Beach	*3,402*	-	*700*	*499*	*4,601*
Dispersed - Total	57,502	3,425	26,263	21,860	109,050
Housing Mix %	*52.7%*	*3.1%*	*24.1%*	*20.0%*	*100.0%*

Municipal Densities
E

Municipality	Single Det.	Semi-Det.*	Row	Apts.
Adjala-Tosorontoio	2.5 upgh	2.5 upgh	20.0 upgh	37.5 upgh
Barrie	7.5 upgh	7.5 upgh	26.5 upgh	75.0 upgh
Bradford West Gwillimbury	12.0 upgh	12.0 upgh	20.0 upgh	37.5 upgh
Clearview	15.0 upgh	15.0 upgh	50.0 upgh	37.5 upgh
Collingwood	12.0 upgh	12.0 upgh	50.0 upgh	100.0 upgh
Essa	18.5 upgh	18.5 upgh	37.0 upgh	37.5 upgh
Innisfil	12.0 upgh	12.0 upgh	20.0 upgh	37.0 upgh
Midland	12.5 upgh	12.5 upgh	15.0 upgh	25.0 upgh
New Tecumseh	15.0 upgh	15.0 upgh	20.0 upgh	37.5 upgh
Orillia	25.0 upgh	25.0 upgh	20.0 upgh	50.0 upgh
Oro-Medonte	2.6 upgh	2.6 upgh	20.0 upgh	37.5 upgh
Penetanguishene	7.5 upgh	7.5 upgh	15.0 upgh	37.0 upgh
Ramara	6.0 upgh	6.0 upgh	18.5 upgh	37.0 upgh
Severn	10.0 upgh	10.0 upgh	18.5 upgh	37.5 upgh
Springwater	5.0 upgh	5.0 upgh	20.0 upgh	37.5 upgh
Tay	12.8 upgh	12.8 upgh	37.0 upgh	37.5 upgh
Tiny	1.2 upgh	1.2 upgh	20.0 upgh	37.5 upgh
Wasaga Beach	13.5 upgh	13.5 upgh	18.5 upgh	37.0 upgh

Densities from local official plans, as reported in the Communities Report.

New Greenfield Units
F

Municipality	Single Det.	Semi-Det.*	Row	Apts.
Adjala-Tosorontoio	-	-	-	-
Barrie	7,803	557	1,672	1,115
Bradford West Gwillimbury	1,951	139	418	279
Clearview	-	-	-	-
Collingwood	-	-	-	-
Essa	-	-	-	-
Innisfil	3,901	279	836	557
Midland	-	-	-	-
New Tecumseh	1,951	139	418	279
Orillia	-	-	-	-
Oro-Medonte	-	-	-	-
Penetanguishene	-	-	-	-
Ramara	-	-	-	-
Severn	-	-	-	-
Springwater	-	-	-	-
Tay	-	-	-	-
Tiny	-	-	-	-
Wasaga Beach	-	-	-	-
Totals	15,605	1,115	3,344	2,229

New Greenfield Hectares
G

Municipality	Single Det.	Semi-Det.*	Row	Apts.	**Totals**
Adjala-Tosorc	-	-	-	-	**-**
Barrie	1,040.3	74.3	63.1	14.9	**1,192.6**
Bradford Wes	162.6	11.6	20.9	7.4	**202.5**
Clearview	-	-	-	-	**-**
Collingwood	-	-	-	-	**-**
Essa	-	-	-	-	**-**
Innisfil	325.1	23.2	41.8	15.1	**405.2**
Midland	-	-	-	-	**-**
New Tecums	130.0	9.3	20.9	7.4	**167.7**
Orillia	-	-	-	-	**-**
Oro-Medonte	-	-	-	-	**-**
Penetanguish	-	-	-	-	**-**
Ramara	-	-	-	-	**-**
Severn	-	-	-	-	**-**
Springwater	-	-	-	-	**-**
Tay	-	-	-	-	**-**
Tiny	-	-	-	-	**-**
Wasaga Beac	-	-	-	-	**-**
Totals	1,658.0	118.4	146.7	44.8	**1,968.0**

3.0 CREATION OF TESTABLE EMPLOYMENT GROWTH OPTIONS

The preliminary outcome of the employment analysis used to create options is contained in **Table 3.1** below, which shows the amount of new employment lands which are needed within the study area, mainly along Highway 400. These lands are needed to service the 25-year demand beyond that currently designated for commercial or employment. In some municipalities the analysis indicates that surplus land exists. The table indicates that relatively small amounts of new employment lands are required along Highway 400. This is the case because significant amounts of employment lands have been designated or planned in the southern portion of the study area over the last year. Additionally, some municipalities in the northern part of Simcoe County have excess designated employment lands. The only significant area where new lands are needed to accommodate growth is Barrie where 236 ha of land are needed along Highway 400. For all other communities the land needs are considered too small to be adequately dealt with through IGAP. It is expected that these land needs will be accommodated over time through market take-up or through conversion of lands or perhaps small urban expansions in unique areas.

The new employment area for the greater Barrie area was identified for all growth options south of Barrie and along the 400. This provides adequate highway access and profile, provides proximity of jobs to labour force and residences to encourage non-auto modes of travel for employees and is consistent with current planning designations and policy.

Table 3.1 New Employment Lands Needed by 2031

Municipality	**New Employment Lands Needed (hectares)**
Adjala-Tosorontio	20
Clearview	-
New Tecumseth	-
Springwater	-
Bradford West Gwillimbury	100
Severn	50
Innisfil	-
Ramara	-
Essa	-
Oro-Medonte	28
Collingwood	-
Barrie	304
Orillia	-
Wasaga Beach	-
Tiny	-
Tay	12
Penetanguishene	9
Midland	-

APPENDIX E: EMPLOYMENT LAND SUPPLY

1.1 Scope and Background

The purpose of this component of the GPA work is to identify the supply of employment lands needed to support study area employment projected for 2031. Specifically, this land requirements analysis is strictly an assessment of the additional land needed to support projected employment in the study area after taking into account the available supply of vacant lands designated or zoned for commercial or industrial development.

It should be noted that the scope of this analysis differs significantly from an analysis of the level and type of employment lands that could be used by individual municipalities to increase their competitiveness for investment attraction or to achieve economic development aspirations.

The level of lands required to support future employment within the study area is calculated using an overall projected employment threshold of 254,000 persons as identified in '*Places to Grow*' for the whole study area in 2031.

It should be noted that the employment threshold of 254,000 for 2031 is not necessarily consistent with the level of employment which could potentially occur in the study area based on market demand if an unlimited supply of employment lands existed.

A discussion of the employment projections methodology and projected employment by municipality is provided in the *Appendix C: Population, Housing and Employment Projections*.

1.2 Key Assumptions

The estimated employment lands requirements have been based on the following assumptions:

- The level of lands required to support future employment within the study area is calculated using an overall employment threshold of 254,000 persons for the whole study area in 2031, as identified in '*Places to Grow*'.

- In 2001, the study area had an overall 'fixed location' employment of 138,720. This includes 14,410 people who worked at home in the study area in 2001, and people who commuted into the study area for work. It excludes workers who commuted out of the study area to work in other regions and those with 'no fixed location of work' such as truck drivers, construction workers, landscape workers, etc. Overall projected employment for the study area for 2006 is approximately 158,000. Additional new employment between 2006 and 2031 is projected to be around 96,000 (see ***Appendix C***). For the land needs analysis, we have assumed that all of these jobs will be at fixed locations in the study area, and as such land will be needed to accommodate these jobs.

- The estimate of the level of employment lands required is based on the projected employment for each municipality, as outlined in Appendix C: *Population, Housing and Employment Projections*. Should the distribution or type of employment in the future differ significantly from that projected, the employment lands analysis will need to be revisited.

- No consideration has been given to market factors that may increase the demand for additional employment lands in the study area.

- A high level review of the appropriateness of existing employment lands in Barrie, South Simcoe and Orillia was undertaken – see Section 2.0. Lands which have been identified as potentially unsuitable from a market perspective have been subtracted from the existing vacant employment lands supply.

- Data were provided by municipalities on the employment lands supply. It is assumed that this data accurately reflects the supply of vacant designated and zoned employment lands in the study area.

- No physical inspection has been undertaken of topographic conditions of designated or zoned vacant employment lands in the study area. However, a 'suitability factor' of 5% has been added to employment land requirements to take into account potentially unsuitable lands.

- It is expected that 15% of new employment across the study area will consist of people working at home. In 2001, about 10% of employees in the study area worked at home and based on trends, the portion of employees working at home is expected to increase. The projected number of employees working at home has been excluded from the employment lands analysis.

- 5% of service employment in each municipality (with the exception of Barrie where a 2.5% factor has been used given a much larger employment level) is expected to locate in commercial intensification areas and as such has been excluded from the employment lands assessment.

- It is assumed that 90% of new institutional employment will locate on lands designated for institutional uses. These institutional jobs have therefore been excluded from the employment lands analysis.

- The number of employees per hectare will vary in the study area, with the most dense employment areas being in Barrie. Based on previous studies and industry standards, the number of employees per net hectare for employment lands in Barrie is estimated at 45 to 47; the number of employees per net hectare for employment lands in other areas of the study area have been estimated as being between 28 and 38 persons. At this high level assessment, a differentiation is not made between the number of employees per hectare for commercial and industrial lands.

- The potential for higher density development in urban areas and in existing employment areas along the Highway 400 corridor (i.e. more than 47 jobs per net hectare) has not been taken into account when estimating future land needs; this may result in a slight overestimation of the amount of land needed.

- A factor of 15% has been added to net hectares to convert to gross hectares to allow for roads, parking areas, etc.

- A vacancy factor of 15% has been added to provide for market choice.

1.3 Calculation of Employment Lands Required

High level estimates of the amount of employment lands needed to support projected employment levels in the study area in 2031 were based on the following steps:

- The number of jobs in the study area was estimated at approximately 158,000 in 2006. Subtracting this number from the 2031 threshold of 254,000 jobs leaves around 96,000 new jobs to be located in the study area between 2006 and 2031.

- Using the assumptions outlined in Section 1.2 of this Appendix, the estimated number of persons working at home, at jobs on institutional lands and in existing employment areas through intensification has been subtracted from the total projected employment for the purpose of determining the number of jobs to be accommodated on employment lands. Based on the foregoing, it is estimated that the portion of future employment in the study area which will need to be accommodated on employment lands is roughly 63,400 jobs.

- A density factor was then applied to the resulting employment levels to calculate number of net hectares required to support the projected growth. As noted in Section 1.2, the number of employees per net hectare for employment lands in Barrie is estimated at 45 to 47; the number of employees per net hectare of employment lands in other areas of the study area have been estimated as being between 28 and 38 persons.

- A 35% factor was then applied to the numbers calculated in the previous step. This included factors for land suitability (5%), conversion from net hectares to gross hectares (15%) and a vacancy factor to provide for market choice (15%).

- Lands which have been identified as potentially unsuitable from a market perspective based on a high level lands adequacy review – see Section 2.0 - were subtracted from the existing employment lands supply.

- The estimated number of hectares needed to support 63,400 jobs was subtracted from the employment lands supply to determine which municipalities have a surplus or deficit of employment lands.

1.4 Supply of Vacant Employment Lands

To determine the amount of additional lands required beyond what is currently designated or zoned, it was first necessary to determine the supply of available employment lands in the study area. This information was provided by study area municipalities as part of the data collection for the GPA. Based on data provided by individual municipalities, the supply of vacant employment lands in the study area is around 3,800 hectares. Data on the supply of employment lands is provided below.

Table E.1: Supply of Vacant Employment Lands in the Study Area

Municipality	Vacant Land (Ha)
Adjala-Tosorontio	0.0
Clearview	415.6
New Tecumseth	500.7
Springwater	91.1
Bradford West Gwillimbury*	*55.0*
Severn	0.0
Innisfil	199.8
Ramara	819.3

Municipality	Vacant Land (Ha)
Essa	138.0
Oro-Medonte	36.7
Collingwood	279.0
Barrie	*681.8*
Rama First Nation	0.0
Orillia	194.4
Wasaga Beach	NA
Tiny	97.1
Christian Island	0.0
Tay	0.0
Penetanguishene	32.5
Midland	135.0
Simcoe County	3,796.00

Source: data collection interviews with study area municipalities, Lake Simcoe Regional Airport, 2006
Adjusted based on a review of the adequacy of existing employment lands in Bradford West Gwillimbury and Barrie - see Section 2.0.

1.5 Employment Lands Required

It is estimated that roughly between 2,000 and 2,370 hectares of land is needed to accommodate the projected 63,400 new jobs on employment lands, as shown below.

Table E.2: Supply of Land Required to Support New Jobs on Employment Lands

Municipality	New Jobs on Employment Lands (2006-2031)	Hectares Required – Low	Hectares Required – High
Adjala-Tosorontio	196	7	9
Clearview	630	22	30
New Tecumseth	7,278	259	351
Springwater	814	29	39
Bradford West Gwillimbury	2,283	81	110
Severn	395	14	19
Innisfil	2,934	104	141
Ramara	172	6	8
Essa	787	28	38
Oro-Medonte	726	26	35
Collingwood	3770	134	182
Barrie	37,784	1,085	1,134
Rama First Nation	249	9	12
Orillia	2,276	81	110
Wasaga Beach	994	35	48
Tiny	253	9	12
Christian Island	-	-	-
Tay	64	2	3

Municipality	New Jobs on Employment Lands (2006-2031)	Hectares Required – Low	Hectares Required – High
Penetanguishene	582	21	28
Midland	1,223	43	59
Simcoe County	63,400	1,995	2,369

Source: EDP Consulting, Lapointe Consulting 2006

As shown in **Table E.3**, based on this high level analysis, it appears that most municipalities in the study area have more land than will be required to support their allocation of projected employment to 2031 in the study area. The one large exception is Barrie and Area where between 350-450 hectares of additional employment lands is needed (the higher end is based on discounting the supply to account for potentially unsuitable lands from a market perspective – see Section 2.0).

Given the land supply constraints in Barrie, land beyond Barrie municipal boundaries will be needed to support the additional employment expected for Barrie and Area.

At this high level review, it appears that the Innisfil Heights/Highway 400 area would be the most appropriate location to satisfy Barrie's additional employment land needs given that it is part of the Greater Barrie area and strategically located for future employment lands development.

Bradford West Gwillimbury has been identified as having a deficit of employment lands. The adequacy of employment lands has been taken into account in estimating the additional land requirements – see Section 2.0, attached. The Highway 400/88 area would be an appropriate location to satisfy these needs.

Table E.3: Additional Employment Lands (Hectares) Required To Support Projected Employment Lands Growth (2006-2031)

Municipality	Low End	High End
Adjala-Tosorontio	7	9
Clearview	-393	-385
New Tecumseth	-242	-150
Springwater	-62	-52
Bradford West Gwillimbury	*55*	*72*
Severn	14	19
Innisfil	-96	-58
Ramara	-813	-811
Essa	-110	-100
Oro-Medonte	-11	-2
Collingwood	-145	-97
Barrie	*350*	*450*
Rama First Nation	9	12
Orillia	-114	-85
Wasaga Beach	Na	Na
Tiny	-88	-85
Christian Island	0	0
Tay	2	3
Penetanguishene	-12	-4
Midland	-92	-76

note: negative values denote a surplus of available vacant hectares of employment lands
source: EDP Consulting, Lapointe Consulting 2006.

2.0 BARRIE, ORILLIA AND SIMCOE COUNTY, EMPLOYMENT LANDS ADEQUACY ANALYSIS

2.1 Scope and Approach

With the exception of Barrie, municipalities in the study area generally have a sufficient amount of employment lands from a pure numbers perspective – i.e. number of hectares needed to accommodate projected employment. However, an issue that needs to be addressed is the adequacy of the existing supply of land from a market perspective - i.e. is the supply of land in the optimal location to attract and support the type of economic development envisioned in area economic development strategies and is there a need for additional Highway 400 corridor employment lands to stimulate economic growth while not exceeding the level of growth outlined in the Growth Plan for the GGH.

To address this issue, we have undertaken a high level analysis of the location of employment lands in Barrie, South Simcoe, and in Orillia. This has involved a review of the location of the supply of vacant employment lands along or near the Highway 400 corridor and elsewhere in these municipalities, both within and outside of urban settlements.

The focus of this work is on the adequacy of the existing vacant supply of employment lands to accommodate the projected employment threshold of 254,000. The amount of land needed in the study area is driven by the projected employment levels for study area municipalities as identified ***Appendix C***. It is noted that these projected employment levels may be significantly lower than employment levels being projected by specific municipalities within the study area. For example, if 'projected' employment based on growth aspirations for municipalities in the study area were summed, it is likely that the overall projected employment level would be close to double the *Places to Grow* 2031 employment threshold for the area. However, as the 254,000 employment threshold has been mandated, this analysis considers the adequacy of employment lands from a market perspective to support that level of employment.

This work involved a review of:

- Projected employment levels and portion allocated for employment lands for each municipality in the study area;
- Available background reports on employment lands supply for Barrie, South Simcoe municipalities and Orillia;
- Area economic development strategies as they relate to employment lands and targeted sectors;
- Identification of critical locational factors for target sectors;
- Reconnaissance survey of vacant employment lands in Barrie, South Simcoe and Orillia.

Based on the foregoing, a high level assessment was undertaken of the adequacy of the supply of vacant employment lands in Barrie, South Simcoe and Orillia for target industries. Where inadequacies were identified, recommendations were made regarding the location and amount of additional Highway 400 corridor employment lands needed to accommodate the projected employment threshold of 254,000 for 2031.

2.2 Findings

A discussion of employment lands needs and adequacy is provided by municipality on the following pages.

2.2.1 South Simcoe

For the purpose of this assessment, the South Simcoe region includes the five municipalities: Adjala-Tosorontio, Bradford West Gwillimbury, Essa, Innisfil and New Tecumseth. A *Business Attraction Strategy and Competitiveness Analysis* study for the South Simcoe region was prepared by the firm urbanMetrics in 2004. It was concluded that sectors the region should target for future investment attraction include manufacturing such as food processing, plastics, fabricated metal, machinery manufacturing, and chemicals. Some of these manufacturing subsectors would serve the automotive sector.

There are a number of locational criteria that site selectors consider for manufacturing facilities when assessing locations for expansion and relocation. These include the following:

Human Resources:
- Labour quality and availability
- Competition for labour
- Productivity
- Union activity

Access to Markets and Suppliers:
- Size of market
- Proximity to customers and suppliers
- Accessibility by different modes of transportation – air, road, rail, port

Operating Environment:
- Infrastructure
- Business environment
- Real estate and land availability
- Zoning
- Utilities
- Potential for natural disasters/business disruption

Costs:
- Construction/start-up costs
- Labour
- Occupancy
- Freight in/out
- Utilities
- Taxes
- Government incentives

Quality of Life:
- Cost of living and housing
- Quality of education
- Recreational amenities
- Crime

The importance of these factors varies by the specific type of operation. Generally the three most important criteria are cost, labour availability and highway accessibility. In general, factors such as access to highways are more important for manufacturing operations with a high level of inbound and outbound shipments. Manufacturing operations also need large sites with room for expansion and good

access to a highway network – generally within 15 kilometres distance of an interchange to a major highway such as Highway 400. They do not require high visibility along a major highway corridor, and generally do not locate on such high profile sites due to location cost sensitivities.

A discussion of the suitability of employment lands in South Simcoe, taking into account the above discussion and employment land attributes is provided in the following section.

2.2.2 Bradford West Gwillimbury (BWG)

BWG is considered part of the Toronto CMA and shares economic linkages with York Region, as well as being part of the South Simcoe region.

BWG is attractive for the type of manufacturing and light industrial operations recommended for targeting in South Simcoe, as noted in the urbanMetrics report. Given its proximity to the GTA, the town also may be attractive to other types of operations which serve the GTA and benefit from immediate highway access and exposure.

The number of jobs for projected for BWG in 2031 is 10,160 (see ***Appendix C***). Around 3,500 new jobs will need to be accommodated in BWG between 2006 and 2031; however only a portion of this total (2,283 jobs) is projected for employment lands. It is noted that the projected employment and land needs are significantly lower than identified in other studies. For example, Clayton Research projected around 40,000 jobs in BWG by 2026, which is a very aggressive projection assuming significant increases in activity rates.

Based on the GPA projections and employment land analysis, BWG needs about 110 gross hectares to accommodate the 2,283 jobs projected for employment lands. Its supply of employment lands is around 259 gross ha, not taking into account the adequacy of lands from a market perspective.

BWG's supply of vacant employment lands is as follows:

- Reagens Industrial Park & Surrounding Area: 64.5 gross ha
- 400/404 Link and Surrounding Area: 79.3 gross ha
- Artesian Industrial Park and Surrounding Area: 116 gross ha

Based on a review of background documents and a reconnaissance survey of these areas, it can be concluded that:

- The Reagens Park industrial lands is a viable area for large light industrial uses that are location cost sensitive and don't need exposure on major highways. Approximately 90% of all development on employment lands in BWG in the past 20 years has occurred within Reagens Industrial Park, and the area is still attractive for new growth. Taking into account both historical development and likely future development trends, Reagens Industrial Park area will continue to be a suitable location for industrial development that does not require direct highway exposure but relatively good access and lower land costs.

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- The Artesian Industrial Park which is located in the NE quadrant of BWG has had marginal performance - absorption has been less than 1 ha per year. It is much less optimally located than the Reagens Industrial Area. Most of the development has consisted of low level industrial multi-unit buildings. This area has relatively low market appeal.

- The marketability of the 400/404 Link and surrounding areas is also limited at the present time given the status of Bradford Bypass, which is now considered a long term initiative beyond or near the end of the planning period considered in the GPA. At present, they have limited market appeal due to their relatively low accessibility.

As mentioned previously, based on projected land requirements, about 110 hectares of employment lands is needed in BWG. It appears that the only viable vacant employment lands area from a market perspective in BWG are in the Reagens Industrial Park & Surrounding Area, which is 64.5 hectares. Assuming that a portion (15%) of these lands will not develop due to odd lot sizes and configuration and market choice factors, this leaves about 55ha of vacant marketable employment lands in that area. As such the need for additional employment lands in BWG would be around 55ha. Together with the existing marketable supply, this would equal the projected need of 110 hectares

It is expected that some demand may also exist for prestige business park/higher order industrial development with direct highway exposure and proximity to a highway interchange. The Highway 400/88 employment lands area would be appropriate for this type of development. The attractiveness of the 400/88 employment lands area will depend on a number of factors including size of land parcels and configuration, uses that locate in the area, and land/lease costs. At this high level analysis, it is not possible to definitively state what the demand would be for the Highway 400/88 area relative to the Regeans Industrial park area. However, given the lack of available Highway 400 corridor employment lands in the study area, it is likely that the demand for land in this area would be significant.

2.2.3 New Tecumseth

The eastern boundary of New Tecumseth is located five kilometers west of Highway 400, with the Alliston urban area located approximately 15 km from Highway 400. Employment uses in New Tecumseth are serviced by Highways 9 and 89 and several County roads. The distance to Highway 400 is adequate for the types of manufacturing operations that New Tecumseth and the rest of South Simcoe are targeting.

New Tecumseth's Growth Management Study and subsequent employment projections identified a need for an additional 210 ha of employment lands to the year 2026. Lands recently designated to support this new growth are located between the Alliston and Green Briar/Briar Hill, bounded to the west by Tottenham Road, the north by Highway 89 and Springhill Creek, the east by Leach Road and Briarhill West, and the south by the realignment of County Rd 10. Lands to the immediate west are part of an existing commercial/industrial area. The total net area of the new area is around 296 hectares.

These lands will be provided with full urban services including municipal water, waste water and storm water systems.

Presently, around 500 ha of employment lands are available in New Tecumseth, with the majority consisting of the new land described above and in other areas in Alliston, accounting for about 93% of the town's employment land supply. The remaining 7% is located in Tottenham off of Mill Road and Industrial Road.

Based on the projected employment level for New Tecumseth – see ***Appendix C*** – the Town will need up to 350 hectares of employment lands to support projected employment land needs to 2031. New Tecumseth has more than adequate supply of employment lands in appropriate locations to accommodate future employment growth and a wide range of operation sizes, including those that have space expansion site needs.

2.2.4 Adjala Tosorontio

Aadjala Tosorontio is located west of New Tecumseth. Adjala-Tosorontio is very rural, and has a high concentration in agriculture and related activities. Most existing businesses serve the local economy and surrounding communities, and are not export oriented industries. Additionally large tracts of lands outside settlement areas are used for agricultural and aggregate operations. Given likely continued rural nature of Adjala Tosorontio and its distance to Highway 400 relative to other locations in South Simcoe, it is not expected that this area will be highly attractive to future manufacturing or large scale service operations.

No vacant employment lands were identified in Adjala Tosorontio in Section 2.0, however, based on projected employment growth, the community will need between 7 ha to 9 ha of new employment land mainly to service the needs of future population. It is likely that the majority of these lands will be located in the various hamlets within Adjala Tosorontio.

2.2.5 Essa

A large portion of Essa's existing employment consists of military and associated personnel at CFB Borden, agricultural operations, aggregates and trucking firms.

Approximately 120 hectares of vacant land is designated for industrial development in Essa, distributed nearly equally between the Angus, Baxter and MeKeever, and located along major roads such as Highways 21 and 10, which have access to the Highway 400 network. Around 18 hectares of vacant land is designated for commercial development – these consist of 2-4 ha sites in Turnbull, Mill St., Browns Line, Bryan, Brentwood, County Rd 9/27 and Thornton.

New employment projected for employment lands in Essa by 2031 is around 800, with a projected employment lands need of up to 38 hectares. The supply of land within the township at present is around 138 ha, i.e. 100 hectare more than required to accommodate projected growth.

Essa has more than sufficient designated employment land to support its level of projected employment growth. The location of employment lands within the town appear to be adequate given the scale and type of development likely to occur.

2.2.6 Innisfil

Employment lands in Innisfil are known as the Innisfil Heights Industrial-Commercial Area, and are located along the Highway 400 corridor, to the north and south of Highway 21. This area includes the new Doral Business Park in the northern portion of the area. Based on information provided by the Town of Innisfil, the area includes about 181 hectares of vacant employment lands. A wide range of light industrial and commercial uses have located in the Innisfil Heights Industrial-Commercial area. Higher end uses are expected to locate in the new Doral Business Park area in the northern section of the area.

The number of jobs as projected in the GPA for Innisfil is 10,160 for the year 2031. Around 4,510 new jobs will need to be accommodated in Innisfil between 2006 and 2031; only a portion of this total (2,934 jobs) is projected for employment lands.

It should be noted that the projected employment and land needs identified in GPA are significantly lower those identified in other studies such as Innisfil Heights/Hwy 400 Growth Strategy where projected employment based on a 50% activity rate is 24,300. However, this high level of employment is inconsistent with the level which could be attained based on the town's projected share of the 254,000 threshold employment level as mandated in the Growth Plan for the GGH.

Based on the GPA projections and employment land needs analysis, about 141 gross hectares is needed to accommodate the projected employment growth. Innisfil's supply of employment lands is around 181 gross ha.

Vacant employment lands in the Highway 400/21 area are in a strong location for future growth given their immediate proximity and exposure to the Highway 400 corridor and major interchange access at Highway 21. Adequate areas are provided for higher end business park development in Doral Business Park and light industrial and commercial uses elsewhere in the employment area.

While Innisfil has sufficient employment land to suitable locations to accommodate projected employment growth, its employment needs and land supply can not be considered in isolation from Barrie – it needs to be considered within a regional context given that it is part of the Greater Barrie Area. A need for between 350 and 450 hectares of new employment lands beyond the existing supply have been estimated for Barrie, after adjusting for potentially unsuitable lands. Expansion of the Innisfil Heights Business Employment Area could accommodate this growth.

2.2.7 Barrie

Barrie is recognized as the key urban economic centre in the study area, accounting for about 33% of study area employment in 2001; this is expected to increase to 43% in 2031. It is expected that much of the future economic growth in the study area will be concentrated in the Greater Barrie area which already has a strong diversified economy and a critical mass of industries to attract more growth. It benefits from a strategic location close to Highway 400 and other major highways serving the area.

The overall direction for future economic growth in Barrie, as outlined in the City's economic development strategy is oriented toward higher knowledge intensive industries. The economic development goal is to shift Barrie's employment structure, talent pool and profile to a more intensive and wealth generating profile. Future economic growth in Barrie is dependent on a number of factors including how well the city is able to overcome external negative perceptions (i.e. 'blue-collar' labour force), foster a knowledge intensive and innovation economy and competitive labour force, and compete in the economic development marketplace as a preferred location for business investment.

The economic development strategy for Barrie is to build on its strengths in manufacturing, tourism, and its institutions, targeting innovation and high technology industries. In the short term, these include smaller service firms able to move or expand quickly into Barrie and offer strategic support in the areas of existing strengths: these businesses could include CAD consultants, software developers, manufacturing process consultants, prototype design and manufacturing service providers, advertising/graphic arts, new media service providers, etc. Medium term initiatives include establishing an auto sector/manufacturing cluster for the broader area, medical technology cluster, etc.

Critical location factors for the higher knowledge intensive industries being targeted by Barrie include:

Availability and Quality of Labour:

- Professional and technical talent - the labour skill level requirements will vary depending on the specific high technology or innovation industry – more specialized labour requirements will necessitate drawing from a regional labour market which may extend into the GTA.

***Operating Environment*:**

- High quality business environment/business parks with exposure and amenities/green space;

- Medium sized firms typically need a high degree of facility build-out, including executives offices and conference area;
- May prefer central business area or class A office space in business parks;
- Proximity to amenities and perhaps public transit.

Access/Exposure

- Good highway access will be important, particularly for regional labour commuting to Barrie for work;
- Highway exposure may be desirable for some professional service firms and knowledge intensive operations from an image and marketing perspective.

***Costs*:**

- Moderate labour and real estate costs (not as cost sensitive as manufacturing operations which generally have higher labour and real estate needs).

Quality of Life

- Higher quality of life requirements to attract and retain staff.

For some of the types of operations that Barrie is targeting such as those in the medical cluster, software development and new media service, the most important factors pertain to the quality and availability of labour, business environment/level of entrepreneurship, quality of life. However, to be attractive to knowledge intensive and innovation operations, Barrie will need to be able to provide a high level of market choice for quality business park space which has accessibility and some visibility along the Highway 400 corridor.

An employment level of 109,220 has been projected for Barrie for 2031. New employment between 2006 and 2031 has been estimated at close to 57,000 with nearly 38,000 jobs on employment lands for Barrie and Area.

Barrie's supply of employment lands consist of about 802 hectares:

- Vacant M1, M2 & Business Park lands comprise around 661 hectares
- Vacant lands designated but not zoned comprise around 27 hectares
- Commercial lands comprise about 113 hectares

Given the number of employment lands parcels located throughout the city, it was not possible to undertake a comprehensive high level assessment of the market suitability of such lands within the study time frame and scope. However, based on a cursory overview and review of the location of lands as outlined on the Vacant Commercial and Industrial Lands Map provided by the City of Barrie, it appears that only roughly 80% of Barrie's available employment land supply is in sufficient parcel sizes and along or in proximity to the Highway 400 corridor. There appears to be no significant mass of high quality business park lands in Barrie.

It was estimated that up to 350 hectares of new employment lands are needed to accommodate the projected employment growth for Barrie and Area to 2031 – see Section 2.0.

However, when taking into account the quality and location of employment lands in the city, it is likely that the need could be higher – possibly in the order of 450 hectares. However, a more detailed

assessment of the adequacy of existing employment lands in Barrie and Area needs to be undertaken to determine the exact amount and location of land needed.

Given the limited supply of vacant employment lands and overall land constraints in Barrie, a portion of new employment will need to be accommodated along the Highway 400 corridor beyond Barrie's municipal boundaries. At this high level review, it appears that the Innisfil Heights/Highway 400 area would be the most appropriate location to satisfy Barrie's additional employment land needs given that it is already part of the Greater Barrie area, and ideally located for future employment lands development due to its strategic highway corridor location.

2.2.8 Orillia

Orillia is the most northerly city in the study area. The City of Orillia and other economic development agencies in the region are targeting tourist attractions and manufacturers and distributors of gaming equipment and supplies for investment attraction. The objective is to make Orillia the "Heart of Ontario's Lake Country", and a primary tourist destination in Ontario. Other industry targets include the automotive sector and manufacturers and distributors of security and police products.

Orillia's employment level is projected to reach around 20,300 jobs by 2031, with about 3,700 of these being new jobs between 2006 and 2031. About 2,280 of these jobs are projected for employment lands. It is estimated that Orillia needs up to 110 hectares of employment lands to accommodate its projected employment level for employment lands to 2031.

The locational factors relevant to the types of industrial and manufacturing operations Orillia is targeting are similar to those noted on page 9 and 10 of this appendix.

Based on information provided by the City of Orillia, the city has a total of 194.4 hectares of employment lands, with about 180 hectares being vacant industrial lands. The major parcels of vacant industrial land is 133 gross hectares of land. This is a strategically located area, situated west of Harvie Settlement Road with close access to Highway 11 and 12 interchanges.

Based on the foregoing, it appears that Orillia has a sufficient land supply in adequate locations from a market perspective, although the majority of land is unserviced at present.

2.3 Conclusions

A high level analysis has been undertaken of the adequacy of employment lands in South Simcoe, Barrie and Orillia from a market perspective to meet the level of projected growth and target sectors. Based on this review, it was determined that both Barrie and Bradford-West Gwillimbury require additional employments lands to accommodate projected growth from a market perspective. The location of employment lands in other municipalities was considered to be generally adequate from a market perspective, although they may be limited from topographic and servicing perspectives, which are beyond the scope of this review.

It is suggested that a more detailed analysis of employment lands adequacy be undertaken in Barrie.

APPENDIX F: DETAILED EVALUATION TABLE

Appendix F
Detailed Evaluation Table

Key Questions	Evaluation Criteria	Option 1 Business as Usual	Option 2A Barrie and Area Centred (40% Intensification)	Option 2B Barrie and Area Centred (Physical Potential Intensification)	Option 3 Multi-Nodal Three Nodes	Option 4 Multi-Nodal Dispersed	Preferred Option Barrie and Area Centred[1]
Building Strong Communities							
• Does the option accommodate the Province's intensification and density targets?	○ Approaches 40% intensification target for the study area combined (PTG 2.2.3.1)	• 40% only achieved in Orillia. Ranks second best.	• Only option that meets 40% Provincial target for Simcoe, Barrie and Orillia. Ranks best.	• 40% only achieved in Orillia. Ranks second best.	• 40% only achieved in Orillia. Ranks second best.	• 40% only achieved in Orillia. Ranks second best.	• 40% only achieved in Orillia using physical potentials assumptions. Potential to achieve 40% target in Barrie and County wide, subject to further investigation.
• Does the option accommodate the Province's population forecasts?	○ Ability to meet 667,000 population for 2031 ○ Ability to meet UGC targets for downtown Barrie (PTG 2.2.3.4) (150 residents and jobs/ha by 2031) ○ Degree of match to GPA growth allocations (Lapointe Consulting)	• Option doesn't meet the projected 667,000 2031 population for study area. Ranks worst. • Meets target of 150 people and jobs/hectare in downtown Barrie (154). • Poor match to GPA growth allocation. Ranks Second Best.	• Option meets the 667,000 population for 2031. • Meets target of 150 people and jobs/hectare in downtown Barrie (266). • Matches GPA growth allocation. Ranks Best.	• Option meets the 667,000 population for 2031. • Meets target of 150 people and jobs/hectare in downtown Barrie (154). Ranks Second Best. • Matches GPA growth allocation. Ranks Best.	• Option meets the 667,000 population for 2031. • Meets target of 150 people and jobs/hectare in downtown Barrie (154). • Poor match to GPA growth allocation. Ranks Second Best.	• Option meets the 667,000 population for 2031. • Meets target of 150 people and jobs/hectare in downtown Barrie (154). • Poor match to GPA growth allocation. Ranks Second Best.	• Meets the 667,000 population for 2031. • Meets target of 150 people and jobs/hectare in downtown Barrie. • Matches GPA growth allocation.
• Does the option accommodate the Province's improved people/jobs mix objectives?	○ Meets balance of jobs and people target (PTG 2.2.7.2 (50 residents and job/ha by 2031)	• Orillia meets PTG target for 50 residents and jobs per ha (77 pgh). • Both Simcoe County (36) and Barrie (45) do not meet PTG target. • All rank equally.	• Orillia meets PTG target for 50 residents and jobs per ha (77). • Both Simcoe County (34) and Barrie (29) do not meet PTG target. • All rank equally.	• Orillia meets PTG target for 50 residents and jobs per ha (77). • Both Simcoe County (34) and Barrie (27) do not meet PTG target. Ranks worst. • All rank equally.	• Orillia meets PTG target for 50 residents and jobs per ha (77). • Both Simcoe County (37) and Barrie (27) do not meet PTG target. Ranks second best. • All rank equally.	• Orillia meets PTG target for 50 residents and jobs per ha (77). • Both Simcoe County (37) and Barrie (27) do not meet PTG target. • All rank equally.	• Adjustment of original densities in Barrie for new urban expansion areas means that the option will meet the P2G target of 50 combined people and jobs per hectare[2].

[1] Provided for information purposes. This option has refined and optimized Option 2B.
[2] By increasing the densities in Barrie for vacant lands as well as urban expansion densities for singles, semis and townhomes to the size of new urban expansion area required is significantly smaller than originally estimated. Densities from density review in Appendix I.

Appendix F
Detailed Evaluation Table

Key Questions	Evaluation Criteria	Option 1 Business as Usual	Option 2A Barrie and Area Centred (40% Intensification)	Option 2B Barrie and Area Centred (Physical Potential Intensification)	Option 3 Multi-Nodal Three Nodes	Option 4 Multi-Nodal Dispersed	Preferred Option Barrie and Area Centred[1]
• Does the option address the Province's *Places to Grow* policy for community form?	○ Option supports dense, mixed use, complete communities that are transit supportive and extend existing urban areas	• Highly dispersed growth does not reinforce complete communities with transit. Doesn't support reinforcement of Barrie as a UGC. Ranks Worst.	• Good support for Barrie, which is a complete community identified as a UGC with both local and regional transit in place. Also supports other existing complete communities. Ranks Best.	• Good support for Barrie, which is a complete community identified as a UGC with both local and regional transit in place. Also supports other existing complete communities. Ranks Best.	• Some support as all new growth nodes are complete communities. Only Barrie and Bradford have some transit. Ranks Second Best.	• Some support. Barrie, Bradford, Alliston and Cookstown are complete communities though of different sizes. Alcona is an emerging community that could become a complete community with additional growth over time. Only Barrie, Bradford and Alcona (future) have some transit. Ranks Third Best.	• Good support for Barrie, which is a complete community identified as a UGC with both local and regional transit in place. Also supports other existing complete communities.
• Does the option support existing neighbourhoods and downtowns?	○ Analysis of implications of intensification for downtowns ○ Analysis of the implications of new growth on downtowns	• Reasonable volume of intensification supportive of downtown areas. • Highly dispersed urban expansion development may not be supportive of downtowns. Ranks Worst.	• Potential challenges for downtown areas (Barrie, throughout Simcoe) through substantial and swift intensification; may have challenges to residential areas due to land use compatibility issues and, disruption of stable, viable neighbourhoods unless carefully managed. • Concentrated urban expansion development facilitates ability to create compact new neighbourhoods. Ranks Second Best.	• Reasonable volume of intensification supportive of downtown areas. • Concentrated urban expansion development may be supportive of downtown Barrie and facilitate the ability to create compact new neighbourhoods. Ranks Best.	• Reasonable volume of intensification is supportive of downtown areas. • Concentrated urban expansion development facilitates ability to create compact new neighbourhoods. Ranks Best.	• Reasonable volume of intensification is supportive of downtown areas. • Concentrated urban expansion development facilitates ability to create compact new neighbourhoods. Ranks Best.	• Reasonable volume of intensification supportive of downtown areas. • Concentrated urban expansion development may be supportive of downtown Barrie.
• Does the option achieve a mix of residential building types and uses?	○ Total dwelling type mix ratio: singles / semis / towns / apartments	• Mix is 77%/ 4% / 5% / 14%. Mix represents the status quo mix.	• Mix for urban expansion area is 70% /5% / 15% / 10%. Urban expansion mix is supportive of complete community. However, there is potential for an over supply of towns and apartments in Barrie's built up area which may affect ability to create a good mix	• Mix for urban expansion area is 70% /5% / 15% / 10%. Urban expansion mix is supportive of complete community. Ranks Best.	• Mix for urban expansion area is 70% /5% / 15% / 10%. Urban expansion mix is supportive of complete community. Ranks Best.	• Mix for urban expansion area is 70% /5% / 15% / 10%. Urban expansion mix is supportive of complete community. Ranks Best.	• 77 / 15/ 8 (singles and semis combined)[3]. • Urban expansion mix is supportive of complete community. Urban expansion mix may require an over supply of townhomes and apartment units in Barrie and Area should intensification levels go beyond 17,000.

[3] The mix for the preferred option is different from the previous options, as it represents the difference between existing supply and projected demand (see Appendix J, Demand/Supply Gap Table)

Appendix F

Detailed Evaluation Table

Key Questions	Evaluation Criteria	Option 1 Business as Usual	Option 2A Barrie and Area Centred (40% Intensification)	Option 2B Barrie and Area Centred (Physical Potential Intensification)	Option 3 Multi-Nodal Three Nodes	Option 4 Multi-Nodal Dispersed	Preferred Option Barrie and Area Centred[1]
			of units in new expansion areas. Ranks Second Best.				
• Does the option support closer live/work connections?	◦ Number of residents within 5 km of a downtown or business park ◦ Number of residents within 1 km of commercial areas of 5 acres or more	• Development is scattered to a number of places throughout the study area. Some growth allocated (through existing designations) to places that have limited employment opportunities. Doesn't support Barrie's status as major employment centre. Ranks Worst among options.	• Urban expansion is targeted to Barrie, the largest employment centre in the study area. Higher intensification levels to support downtown employment growth. Ranks Best.	• Urban expansion is targeted to Barrie, the largest employment centre in the study area. Ranks Second Best.	• Urban expansion growth is targeted to Alliston, Barrie and Bradford. Expansion Growth areas in Bradford and Alliston may be disconnected from existing employment areas. Some limited expansion growth in Barrie. Supports the study areas two major manufacturing bases in Alliston and Barrie. Ranks Third Best among options.	• Urban expansion in Alcona and Cookstown is not close to any major employment lands. Ranks Fourth Best.	• Majority of growth is targeted to Barrie, the largest employment centre in the study area.
• Can the option be efficiently serviced?	◦ Ability to use existing water, waste water and transportation services ◦ Considerations for potential future freeways (Bradford By-pass, additional north south highway parallel to 400) ◦ Impacts on goods movement ◦ Impacts on airports ◦ Cost of additional water and wastewater infrastructure	• No change to planned infrastructure. • All servicing options assume that MOE effluent caps are maintained. • Existing transportation services are best utilized in options that favour intensification as long as the intensification is not so intensive that transportation capacity cannot be provided. • All equal for consideration of potential future freeways. • Goods movement by truck is dependent on low congestion levels and access to 400, 9/89 and former Highway 24. Due to the dispersed nature of development in this option, it is considered to be the Fourth Best option.	• Barrie centred options serviced by Barrie assuming Bradford and New Tecumseth expansions. • All servicing options assume that MOE effluent caps are maintained. • Existing transportation services are best utilized in options that favour intensification as long as the intensification is not so intensive that transportation capacity cannot be provided. Ranked Best. • All equal for consideration of potential future freeways. • Goods movement by truck is dependent on low congestion levels and access to 400, 9/89 and former Highway 24. Due to the concentrated nature of development and lower	• Barrie centred options serviced by Barrie assuming Bradford and New Tecumseth expansions. • All servicing options assume that MOE effluent caps are maintained. • Existing transportation services are best utilized in options that favour intensification as long as the intensification is not so intensive that transportation capacity cannot be provided. Option 2 is considered second best among options. • All equal for consideration of potential future freeways. • Goods movement by truck is dependent on low congestion levels and access to 400, 9/89 and former Highway 24. Due to the concentrated nature of	• All servicing options assume that MOE effluent caps are maintained. • No significant changes to planned infrastructure. • Existing transportation services are best utilized in options that favour intensification as long as the intensification is not so intensive that transportation capacity cannot be provided. Option 4 is considered fourth best among options. • All equal for consideration of potential future freeways. • Goods movement by truck is dependent on low congestion levels and access to 400, 9/89 and former Highway 24. Due to the dispersed nature of development in this option, it is ranked Worst among	• All servicing options assume that MOE effluent caps are maintained. • No significant changes to planned infrastructure • Existing transportation services are best utilized in options that favour intensification as long as the intensification is not so intensive that transportation capacity cannot be provided. Option 5 is considered third best among options (due to future GO Rail station location in Innisfil). • Goods movement by truck is dependent on low congestion levels and access to 400, 9/89 and former Highway 24. Due to the dispersed nature of development in this option[4], it is ranked Third Best	• Barrie centred options serviced by Barrie assuming Bradford and New Tecumseh expansions. • All servicing options assume that MOE effluent caps are maintained. • Existing transportation services are best utilized in options that favour intensification as long as the intensification is not so intensive that transportation capacity cannot be provided. Option 2 is considered second best among options. • All equal for consideration of potential future freeways. • Goods movement by truck is dependent on low congestion levels and access to 400, 9/89 and former Highway 24. Due to the concentrated nature of development in this option, it

[4] From a goods movement perspective, Option 5 is slightly more concentrated than Option 4 as growth is directed to Barrie, Bradford and Innisfil (as opposed to New Tecumseth).

Appendix F

Detailed Evaluation Table

Key Questions	Evaluation Criteria	Option 1 Business as Usual	Option 2A Barrie and Area Centred (40% Intensification)	Option 2B Barrie and Area Centred (Physical Potential Intensification)	Option 3 Multi-Nodal Three Nodes	Option 4 Multi-Nodal Dispersed	Preferred Option Barrie and Area Centred[1]
		• Impacts on regional and local airports are similar in all options. Slight preference for options directing growth toward Barrie and Orillia. Ranks Third Best.	amount of urban expansion growth in this option, it is ranked Best among options. • Impacts on regional and local airports are similar in all options. Slight preference for options directing growth toward Barrie and Orillia. Ranks Best among options.	development in this option, it is ranked Second Best. • Impacts on regional and local airports are similar in all options. Slight preference for options directing growth toward Barrie and Orillia. Ranks Second Best among options.	options. • Impacts on regional and local airports are similar in all options. Slight preference for options directing growth toward Barrie and Orillia. Ranks Fourth Best among options.	among options. • Impacts on regional and local airports are similar in all options. Slight preference for options directing growth toward Barrie and Orillia. Ranks Worst among options.	is ranked second best. • Impacts on regional and local airports are similar in all options. Slight preference for options directing growth toward Barrie and Orillia. Ranks second best among options.
• Does the option support non-auto modes of travel and reduce vehicle/km. traveled?	○ Qualitative assessment of potential to support transit and reduce commuting ○ Proximity of residents to transit/transit opportunity (population located within 400 metres of existing or planned transit system) ○ Match between new employment areas/type and local labour force	• Poor potential because growth is highly dispersed without concentration in transit supportive communities. • Employees are located in close proximity to new development along Highway 400. Ranks Worst due to dispersed nature of overall settlement pattern.	• Best potential as Barrie provides local and regional transit and node concentrates all new urban expansion development near this system. • Perhaps better than Option 2B because intensification is more highly concentrated in existing built up area closer to GO bus transit system which will be located to the east end of the City. • Ranks Best.	• Best potential as Barrie provides local and regional transit and node concentrates all new urban expansion development near this system. • Employees are located in close proximity to new development along Highway 400. • Ranks Second Best.	• Offers some potential as Barrie provides local and regional transit and node concentrates half of all new urban expansion development near this system. Other urban expansion development is partially transit supportive. • Employees are located in close proximity to new development along Highway 400. • Ranks Second Best.	• Offers some potential as Barrie provides local and regional transit and node concentrates half of all new urban expansion development near this system. Other urban expansion development is partially transit supportive. • Employees are located in close proximity to new development along Highway 400. Smaller size of Alcona/ Cookstown vis a vis Option 3 means that opportunity to support transit faces more challenges in these areas. • Ranks Third Best.	• Best potential as Barrie provides local and regional transit and node concentrates all new urban expansion development near this system. • Employees are located in close proximity to new development along Highway 400.
• Does the option provide an adequate number of quality jobs?	○ Number and type of jobs created	• All equal.	• All equal.	• All equal.	• All equal.	• All equal.	• Provides adequate number and quality of jobs.
• Can the option attract and retain a skilled, innovative, diverse workforce?	○ Population growth in downtown and core areas	• Intensification in all fully-serviced settlement areas, but new urban expansion is directed to areas without demand (less portion of growth to core settlement areas). Ranks Worst among options.	• Highest level of population growth in downtown through intensification in and growth is allocated to meet demand for urban expansion growth. Ranks Best among options.	• Intensification in all fully serviced areas and growth is allocated to meet demand for urban expansion growth. Ranks Second best among options.	• Intensification in all fully serviced areas and growth is allocated to meet demand for urban expansion growth. Ranks Second best among options.	• Intensification in all fully serviced areas and growth is allocated to meet demand for urban expansion growth. Ranks Second best among options.	• Intensification in all fully serviced areas and growth is allocated to meet demand for urban expansion growth.

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Detailed Evaluation Table

Key Questions	Evaluation Criteria	Option 1 Business as Usual	Option 2A Barrie and Area Centred (40% Intensification)	Option 2B Barrie and Area Centred (Physical Potential Intensification)	Option 3 Multi-Nodal Three Nodes	Option 4 Multi-Nodal Dispersed	Preferred Option Barrie and Area Centred[1]
• Does the option support existing commercial and transit nodes?	○ Population within 1 km of existing complete communities	• Growth is allocated based on existing designations, some locales don't offer range of services/employment options that are available in larger centres. Ranks Worst among options.	• All urban expansion is within 1 km of existing complete community. Ranks Best among options.	• All urban expansion is within 1 km of existing complete community. Ranks Best among options.	• All urban expansion is within 1 km of existing complete communities though Alliston and Bedford are not fully transit supportive. Ranks Second Best among options.	• Alcona and Cookstown do not possess full range of services and employment options available in other settlement areas (Barrie, Bradford, Alliston). Communities are not all fully transit supportive. • Ranks Third Best among options.	• All urban expansion is within 1 km of existing complete communities.
Wise Use and Management of Resources							
• Does the option protect cultural heritage?	○ *No data available*	• *No data available.*	• *No data available.*	• *No data available.*	• *No data available.*	• *No data available.*	• *No data available.*
• Does the option protect functions of ecological systems?[5]	○ Number of hectares in growth areas that are in Category A (no development) and B Resource Opportunity areas identified in the SWOT analysis	• 0 ha of Category A (no development) lands in growth areas. 133 ha of Category B lands (Development Restricted, Subject to Further Study). Ranks best among options, as this option doesn't contemplate any urban	• 33 ha of Category A lands (no development) in new urban expansion areas. 528 of Category B lands. Ranks second best among options.	• 60 ha of Category A lands (no development) in new urban expansion areas. 795 ha of Category B lands. Ranks worst among options.	• 78 ha of Category A lands (no development) in new urban expansion areas. 681 ha of Category B lands. Ranks worst among options.	• 53 ha of Category A lands (no development) in new urban expansion areas. 485 ha of Category B lands. Ranks second best among options.	• 0 ha of Category A lands (no development) in new urban expansion areas. 317 ha of Category B lands.

[5] The final recommended urban structure will protect all Category A as well as appropriate Category B lands through area refinement and more detailed field analysis. This comparison provides an indication of the character of the areas potentially affected but does not reflect actual potential impacts.

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Key Questions	Evaluation Criteria	Option 1 Business as Usual	Option 2A Barrie and Area Centred (40% Intensification)	Option 2B Barrie and Area Centred (Physical Potential Intensification)	Option 3 Multi-Nodal Three Nodes	Option 4 Multi-Nodal Dispersed	Preferred Option Barrie and Area Centred[1]
		boundary expansion.					
• Does the option maintain and improve watershed health?	○ Ability to meet or exceed ACS targets[6]	• Stormwater impacts on sub-watersheds assuming direct to lake point source portion is excluded - some/minimal impact to Lovers Creek. • Potential for further mitigation is to move development out of sub-watershed to less impacting area(s). • Virtually no impact to West Holland or Lower Nottawasaga Creeks. • Lake targets exceeded. Potential to mitigate lake impacts is through improvement in another portion of the watershed (e.g. Holland Marsh improvements) though this may still leave Kempenfelt Bay at risk. • Implementation of such mitigation/watershed based management requires significant administrative changes/negotiation/commitment beyond Study Area municipalities.	• Stormwater impacts on sub-watersheds impact to Lovers Creek (though less than Option 2B and similar to Options 3 and 4). • Potential for further mitigation is to move development out of sub-watershed to less impacting area(s). • Virtually no impact to Hewitts, Innisfil, Bear and Lower Nottawasaga Creeks. • Lake targets exceeded. Potential to mitigate lake impacts is through improvement in another portion of the watershed (e.g. Holland Marsh improvements) though this may still leave Kempenfelt Bay at risk. • Implementation of such mitigation/watershed based management requires significant administrative changes/negotiation/commitment beyond Study Area municipalities.	• Stormwater impacts on sub-watersheds - significant impact to Lovers Creek due to area of watershed affected and type of land converted. Potential for further mitigation is to move development out of sub-watershed to less impacting area(s). • Virtually no impact to Hewitts, Innisfil, Bear and Lower Nottawasaga Creeks. • Lake targets exceeded. Potential to mitigate lake impacts is through improvement in another portion of the watershed (e.g. Holland Marsh improvements) though this may still leave Kempenfelt Bay at risk. • Implementation of such mitigation/watershed based management requires significant administrative changes/negotiation/commitment beyond Study Area municipalities.	• Stormwater impacts on sub-watersheds - significant impact to Lovers Creek (similar to Option 2A and 5). Potential for further mitigation is to move development out of sub-watershed to less impacting area(s). • Virtually no impact to Hewitts, Innisfil, Bear, West Holland, Boyne and Lower Nottawasaga Creeks. • Lake targets exceeded. Potential to mitigate lake impacts is through improvement in another portion of the watershed (e.g. Holland Marsh improvements) though this may still leave Kempenfelt Bay at risk. • Implementation of such mitigation/watershed based management requires significant administrative changes/negotiation/commitment beyond Study Area municipalities.	• Stormwater impacts on sub-watersheds - significant impact to Lovers Creek (similar to Options 2A and 3). Potential for further mitigation is to move development out of sub-watershed to less impacting area(s). • Virtually no impact to Innisfil, Bear, West Holland, Boyne and Lower Nottawasaga Creeks. • Lake targets exceeded. Potential to mitigate lake impacts is through improvement in another portion of the watershed (e.g. Holland Marsh improvements) though this may still leave Kempenfelt Bay at risk. • Implementation of such mitigation/watershed based management requires significant administrative changes/negotiation/commitment beyond Study Area municipalities.	• Some impact to Lovers Creek remains after option refinement, particularly with 15% intensification. • No exceedances for other sub-watersheds. • Potential to further mitigate watershed impacts through development standards, BMPs and further option refinement. • Lake targets exceeded. • ACS model assumes full build out of all approved development. Matching supply to demand to meet Growth Plan for the GGH targets may significantly reduce overall lake impacts. • Only potential to mitigate lake impacts is through improvement in another portion of the watershed (e.g. Holland Marsh improvements) though this may still leave Kempenfelt Bay at risk. • Implementation of such mitigation/watershed based management requires significant administrative changes/negotiation/commitment beyond Study Area municipalities.
• Does the option preserve agricultural and rural land areas?	○ Acreage of prime agricultural areas in new growth areas	• 270 ha of prime agricultural areas located in new employment expansion areas (87 ha Class 1; 0 Class	• 1,469 ha Prime Ag (Class 1 -1,003 ha in new residential and employment expansion areas; Class 2 - 0 ha; 466 ha	• 2,433 ha Prime Ag (Class 1 -1,859 ha in new residential and employment expansion areas; Class 2 - 0 ha; Class 3	• 2,234 ha Prime Ag (Class 1 -1,530 ha in new residential and employment expansion areas; Class 2 - 265 ha;	• 1,638 ha Prime Ag (Class 1 - 944 ha in new residential and employment expansion areas; Class 2 - 202 ha;	• 1,886 ha Prime Ag (Class 1 - 1,541 ha in new residential and employment expansion areas; Class 2 - 0 ha; Class 3 -

[6] Note that a refinement was made to Options 2B and 3 to further reduce the impacts to watersheds recorded here. See ACS Report, Appendix G.

Appendix F
Detailed Evaluation Table

Key Questions	Evaluation Criteria	Option 1 Business as Usual	Option 2A Barrie and Area Centred (40% Intensification)	Option 2B Barrie and Area Centred (Physical Potential Intensification)	Option 3 Multi-Nodal Three Nodes	Option 4 Multi-Nodal Dispersed	Preferred Option Barrie and Area Centred[1]
		2; 183 ha Class 3). Ranks Best as this option doesn't consider any new residential expansion areas (only employment areas).	Class 3). Ranks Second Best among options.	- 574 ha). Ranks Worst among options.	Class 3 - 439 ha). Ranks Fourth Best.	Class 3 - 492 ha). Ranks Third Best among options.	345 ha).
• Does the option result in cleaner air and water?	○ *See transportation criteria for air and ACS criteria for water*	• *See transportation criteria for air and ACS criteria for water*	• *See transportation criteria for air and ACS criteria for water*	• *See transportation criteria for air and ACS criteria for water*	• *See transportation criteria for air and ACS criteria for water*	• *See transportation criteria for air and ACS criteria for water*	• *See transportation criteria for air and ACS criteria for water*
Protecting Pubic Health and Safety							
• Does the option protect communities from flooding and other natural hazards?	○ *Known flood areas will be identified for growth*[7]	• No major flood issues identified. All equal.	• No major flood issues identified. All equal.	• No major flood issues identified. All equal.	• No major flood issues identified. All equal.	• No major flood issues identified. All equal.	• No major flood issues identified. All equal.
• Does the option protect communities from human-made hazards?	○ Where known, all human-made hazards will be avoided	• All equal.	• All equal.	• All equal.	• All equal.	• All equal.	• No known human hazards.
Implementation Assessment							
▪ Can the option be implemented with little or no change in the existing model for provision of services?	○ Changes necessary in servicing arrangements to implement the option over twenty years	• The option has the greatest impact on current service delivery throughout the study area and will require the greatest degree of change by the County, the Cities and the local municipalities. Worst among options.	• This option has significant impact on the City of Barrie and the Town of Innisfil but lesser impact on the rest of the study area. The City of Barrie has a service delivery structure that can be expanded to accommodate growth. There are significant implications for the Town of Innisfil and governance implications are evident. Ranks First.	• This option has significant impact on the City of Barrie and the Town of Innisfil but lesser impact on the rest of the study area. The City of Barrie has a service delivery structure that can be expanded to accommodate growth. There are significant implications for the Town of Innisfil and governance implications are evident. Ranks First.	• This option spreads the impact of growth to a number of municipalities. The impacts vary by municipality and would require a range of service delivery changes to accommodate the expected growth. Ranks Second.	• This option spreads the impact of growth to a number of municipalities. The impacts vary by municipality and would require a range of service delivery changes to accommodate the expected growth. Ranks Second.	• This option has significant impact on the City of Barrie and the Town of Innisfil but lesser impact on the rest of the study area. The City of Barrie has a service delivery structure that can be expanded to accommodate growth. There are significant implications for the Town of Innisfil and governance implications are evident.

[7] Detailed floodplain mapping is incomplete for parts of the study area. Local analysis will determine the appropriateness for specific development sites during the planning process (i.e. official plan, site plan, secondary plan etc.).

Appendix F
Detailed Evaluation Table

Key Questions	Evaluation Criteria	Option 1 Business as Usual	Option 2A Barrie and Area Centred (40% Intensification)	Option 2B Barrie and Area Centred (Physical Potential Intensification)	Option 3 Multi-Nodal Three Nodes	Option 4 Multi-Nodal Dispersed	Preferred Option Barrie and Area Centred[1]
Financial Viability							
▪ Is the option financially viable?	○ Total Cost of growth options	• Estimated combined cost of water and wastewater infrastructure is $825,000,000. Cost difference among all options are marginal. Ranks Best (due to a lower overall population, as Barrie is not allocated full growth potential and doesn't contemplate any new urban boundary expansions).	• Estimated combined cost of water and wastewater infrastructure is $896,000,000. Cost difference among all options are marginal. Ranks third Best among options.	• Estimated combined cost of water and wastewater infrastructure is $882,000,000. Cost difference among all options are marginal. Ranks Second Best among options.	• Estimated combined cost of water and wastewater infrastructure is $936,000,000. Cost difference among all options are marginal. Ranks Worst among options (similar to Option 4).	• Estimated combined cost of water and wastewater infrastructure is $937,000,000. Cost difference among all options are marginal. Ranks Worst among options (Similar to Option 3)	• Estimated combined cost of water and wastewater infrastructure is $603,685,000. Ranks second best among options.[8]
	○ Financial Viability						
	- Total capital cost per capita	• Slightly higher cost than Option 2.	• Lower cost.	• Slightly higher cost than Option 2.	• Significantly higher cost than Option 2.	• Significantly higher cost than Option 2.	
	- Per capita costs by municipality	• Tay would face significantly higher costs and Ramara moderately higher costs.	• Lowest cost in all municipalities.	• Midland would face moderately higher costs.	• BWG would face moderately higher costs.	• Innisfil would face significantly higher costs and BWG moderately higher costs.	
	- Potential financing difficulties	• Slightly worse than Option 2 on balance. • Less Preferred Overall.	• Best option. • Preferred Option Overall.	• Potential to create severe difficulties for Penetanguishene. • Less preferred Overall.	• Slightly worse than Option 2. • Less Preferred Overall.	• Slightly worse than Option 2. • Least preferred Overall.	
Public Response							
▪ What is the public response to this option?	○ Public response to option	• At the June 2006 Open Houses, there was equal support for Options 2, 3 and 4 with less support for Option 1.	• At the June 2006 Open Houses, there was equal support for Options 2, 3 and 4 with less support for Option 1.	• At the June 2006 Open Houses, there was equal support for Options 2, 3 and 4 with less support for Option 1.	• At the June 2006 Open Houses, there was equal support for Options 2, 3 and 4 with less support for Option 1.	• At the June 2006 Open Houses, there was equal support for Options 2, 3 and 4 with less support for Option 1.	• At the June 2006 Open Houses, there was equal support for Options 2, 3 and 4 with less support for Option 1.

[8] The cost for the preferred option is significantly lower than the previous cost estimate because the recommended option costs are based on refined assumptions as documented in Appendix H. In particular, the persons per unit (PPU) were refined to reflect the 2031 household size (Table 9, Appendix C), rather than the PPUS provided by the County which reflect current household size which were used for Options 1-4. The changes in assumptions would generally affect all of the options equally, and therefore it was concluded that the original cost comparison was valid.

APPENDIX G: PROPOSED GROWTH OPTIONS: EVALUATION OF WATER QUALITY (PHOSPHOROUS) IMPACTS

NOTE TO READER:

ACS APPENDIX USES AN OLDER NAMING CONVENTION FOR OPTIONS FOR REFERENCE SEE BELOW:

ACS Appendix G	Main Text
Option 1 (Business As Usual)	Option 1
Option 2 (Barrie and Area Centred with 16% Intensification)	Option 2B
Option 2B (Modified Barrie and Area Centred with 16% Intensification	Option 2B (modified)
Option 2C (Modified Barrie and Area Centred with 16% Intensification)	Option 2B (modified)
Option 3 (Barrie and Area Centred with 40% Intensification)	Option 2A
Option 4 and 4B (Multi Nodal, 3 nodes)	Option 3
Option 5 (Dispersed Nodes, 5 nodes)	Option 4

INTERGOVERNMENTAL ACTION PLAN (IGAP)
PROPOSED GROWTH OPTIONS:
EVALUATION OF WATER QUALITY (PHOSPHOROUS) IMPACTS

DRAFT REPORT

Prepared For:

Lake Simcoe Region Conservation Authority

Prepared by:
GREENLAND INTERNATIONAL CONSULTING LTD.

04 August 2006

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04 August 2006

Lake Simcoe Region Conservation Authority File No. 1803
120 Bayview Parkway,
Box 282, Newmarket,
Ontario L3Y 4X1

Attention: Michael Walters, Director of Watershed Management
RE: IGAP Growth Scenario Analysis DRAFT Final Report

Dear Mr. Walters,

Greenland International Consulting Ltd. (Greenland) is pleased to submit this Draft Final Report documenting the estimated nutrient (phosphorous) loads associated with the proposed growth options provided by Dillon Consulting Ltd.

The methodology used in this evaluation of scenarios was consistent with the method used for the Assimilative Capacity Studies (ACS) nutrient modeling and target setting components.

The evaluation found that in all scenarios examined, phosphorous loads exceeded the targets set by the ACS. Recommendations have been provided that could be used, at a more detailed level, to mitigate impacts associated with the proposed additional growth. Assessment of the degree to which these practices could mitigate impacts was not determined in this study.

Please feel free to call with any questions or concerns you may have regarding this report. The report will be finalized once comments have been received.

Sincerely,

GREENLAND INTERNATIONAL CONSULTING LTD.

Trevor Boston, M.Sc. P.Eng.
Project Manager

Michelle (Xuefei) Lu, M.Sc.
Environmental / Water Resources Analyst

Water Resources

Municipal Infrastructure

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Monitoring

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1 Introduction

The Inter-governmental Action Plan (IGAP) for the County of Simcoe and the Cities of Barrie and Orillia is a joint initiative between the Province of Ontario and the affected municipalities to plan for expected population growth over the next 25 years. The projected increase in population is expected to reach 240,000 for a total population of 667,000 in the region, by 2031.

The majority of new growth is anticipated to be located within existing serviced areas and in new subdivisions that are not yet complete.

The IGAP process set out to evaluate a variety of potential options according to a list of planning principles including availability of municipal servicing, watershed health, proximity to complete communities, transit, preservation of agricultural and natural heritage areas and the promotion of a strong economy.

The objective of this report was to evaluate the potential for water quality impacts associated with the five (5) proposed scenarios. The proposed scenarios would see the conversion of existing, un-developed lands to developed, urban lands. Impacts would be incurred both from the change in land use and also from the increased loading to wastewater treatment facilities that service the proposed growth areas.

Lake Simcoe and the Nottawasaga River systems have been identified as phosphorous limited with respect to their ability to sustain high quality fisheries with adequate levels of dissolved oxygen. Therefore, phosphorous was used as an indicator constituent in this analysis. Other constituents and environmental impacts were not considered.

The Province of Ontario contracted the Lake Simcoe Region Conservation Authority to estimate the change in phosphorous loading that would result from the proposed growth options and evaluate the total sub-watershed loads against the targets set by the Assimilative Capacity Study. The Conservation Authority, in turn, sub-contracted Greenland International Consulting (Greenland) to run CANWET^{TM} for each of the scenarios under consideration.

2 Methodology

2.1 Consistency with the Assimilative Capacity Studies

The intent was to maintain consistency with the recently-completed Assimilative Capacity Studies (ACS) for the Lake Simcoe and Nottawasaga River Basins. The ACS saw the development of detailed water quality models that were used to support 3-dimensional hydrodynamic modeling of Lake Simcoe and Nottawasaga Bay. In combination with other studies, the modeling results were instrumental in the evaluation of sub-watershed health and the determination of appropriate phosphorous loading targets.

During the ACS, the Canadian Nutrient and Water Evaluation Tool (CANWET™ v2.0) was used to estimate sub-watershed nutrient and sediment loads and to evaluate the affect of implementing a host of Best Management Practices (BMPs) and urban mitigative measures to arrive at achievable sub-watershed target phosphorous loads.

In keeping with the methodology applied in the ACS, this study reapplied CANWET™ v2.0 under five (5) proposed future growth scenarios to evaluate the potential change associated with movement toward greater urban land use in the affected sub-watersheds. The Approved Future Growth land use map, produced during the ACS, was used as a base map to create new land use layers reflecting the proposed option conditions. The base land use map considers new growth associated with the approved official plans from member municipalities. Official Plans over a breadth of long range planning horizons were considered in the mapping.

The options considered in this exercise go a step further by attempting to define additional growth areas that will accommodate the additional population expected over the next 25 years that is not accounted for by the municipal official plans.

Related digital mapping was modified according to the land use scenario mapping for each proposed growth option. Loads from wastewater treatment plants were calculated separately to facilitate comparison with the sub-watershed targets which are broken down into non-point source and waste load allocations.

2.2 Target Setting Approach from ACS

The target setting approach used by the Louis Berger Group (2006) in association with Greenland International Consulting was a tiered approach that applied one (1) of four (4) target setting methods to establish phosphorous loading targets for each sub-watershed. The approach taken was dependent on whether the sub-watershed was assessed as being impaired or unimpaired based on watershed reports and other sources. The second determining factor was compliance with Provincial Water Quality Objective (PWQO) based loading targets.

Compliance with the PWQO based loading target was assessed using the estimated loads calculated with CANWET™ and comparing them against the product of the PWQO concentration criteria and the CANWET™ simulated stream flow for each sub-watershed. Concentration multiplied by flow yields the target mass of phosphorous in kilograms.

Table 2.1 together with Figure 2.1 indicate for each sub-watershed designation, whether the target was set at the existing CANWET™ estimated load, the PWQO-based target or the best achievable load using best management practices, as assessed using the PRedICT module in CANWET™.

Table 2.1 Sub-watershed target setting method and criteria for application

Method	Impaired?	PWQO Compliance?	Target Setting Details
A	NO	YES	Set target load to CANWET™ estimated load for Approved Future Growth Scenario
B	YES	NO	Set target load to PWQO-based load or lowest possible under comprehensive BMP program
C	NO	NO	
D	YES	YES	Set target load to CANWET™ estimated load for Approved Future Growth Scenario & identify additional stressors

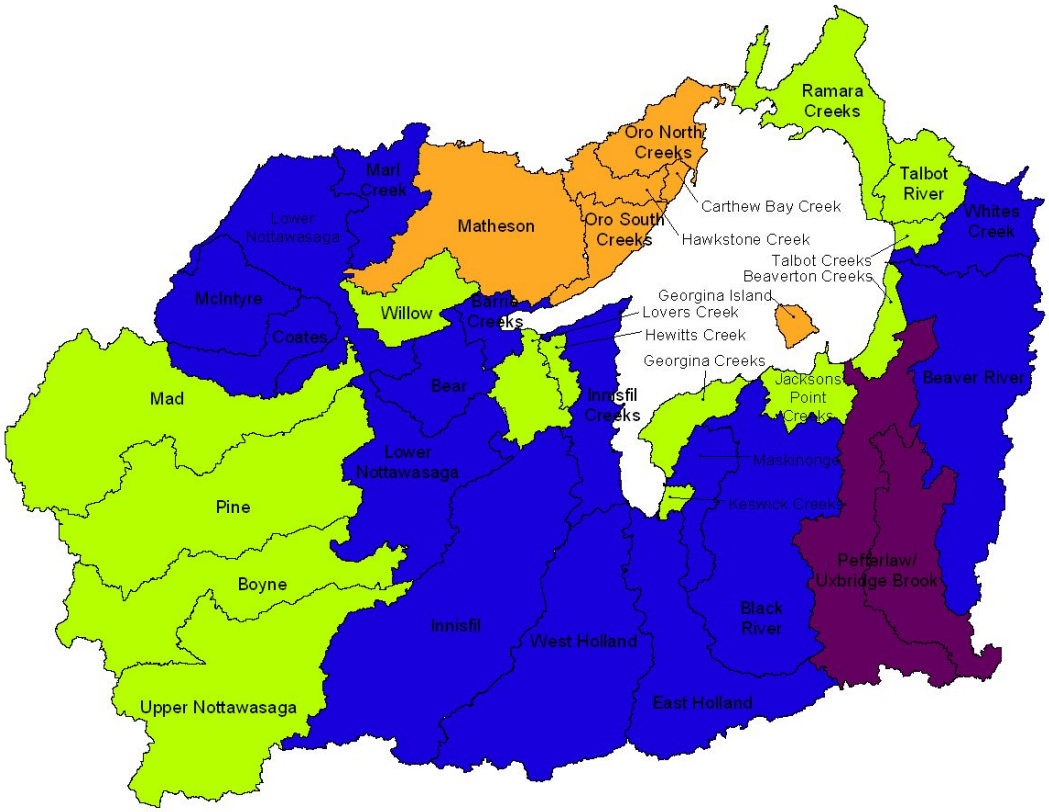


Figure 2.1: ACS sub-watersheds and target setting method designation

Sub-watersheds considered in this study for potential future growth are indicated with the growth option they were considered for in Table 2.2.

The sub-watersheds surrounding Barrie presented a particular conceptual challenge for target setting because the Barrie wastewater treatment facility services populations within the Barrie Creeks sub-watershed, where the plant is located, as well as populations in the surrounding sub-watersheds of Hewitts, Innisfill and Lovers Creeks. Contribution from the Nottawasaga River watershed is also pumped across the watershed divide from the Bear and Willow Creek sub-watersheds.

Table 2.2: Sub-watersheds and Growth Options

Sub-watershed & Conservation Authority	Included in IGAP Growth Option #							
	1	2	2b	2c	3	4	4b	5
Lovers Creek (LSRCA)	x	x	x	x	x	x	x	x
West Holland (LSRCA)	x			x		x	x	x
Hewitts Creek (LSRCA)		x	x	x	x	x	x	x
Innisfil Creeks (LSRCA)		x	x	x	x	x		x
Bear Creek (NVCA)		x	x	x	x	x	x	x
Boyne River (NVCA)						x	x	x
Innisfil Creek (NVCA)								x
Lower Nottawasaga (NVCA)	x	x	x	x	x	x	x	x

The Barrie and Alcona wastewater treatment plants discharge directly to Lake Simcoe rather than emptying into a creek that feeds the lake. Therefore, added load from these plants has no impact on receiving streams, but it does impact the lake as a whole and must be considered in the context of the larger lake target.

To address this issue, the Louis Berger Group (2006), under the direction of the ACS Steering Committee, apportioned the waste load allocation for the Barrie wastewater treatment plant between the sub-watersheds serviced by it. By this approach, each contributing sub-watershed was assigned a portion of its allowable target load as a point-source contribution and the remainder as a non-point source contribution.

2.3 Direct to Lake Discharges

In this study, the existing Certificate of Approval for phosphorous from wastewater treatment plants was used as the point source load in the future scenarios under the assumption that these limits would not be permitted to increase.

The direct to lake point sources were considered as a portion of the load allocation within the target. As an example, Innisfil Creeks has an annual target load of 1,868 kg. Of this quantity, 851 kg are associated with non-point source loads, 830 kg are assigned to point sources discharging directly to Lake Simcoe and 187 kg is considered as a margin of safety. The calculated scenario option load, including both point and non-point source loads together, exceeded both the sub-watershed target and contributed to the excess load to the Lake.

By comparing only the non-point source loads against the entire sub-watershed targets and considering the point sources separately, the growth areas could be reallocated between sub-watersheds to meet (or nearly meet) sub-watershed targets, which were designed to protect sub-watershed health and water quality.

Mitigation of point-source loads that exceeded the Lake target were addressed by suggesting opportunities to reduce phosphorous loads in other parts of the lake by

an amount equal to the target exceedance or through adopting practices within the proposed developments that would contribute less than the typical high intensity urban load.

By considering the load in this way, the load to streams within the sub-watersheds is maintained within the target. The direct to lake contribution from the sub-watershed is managed through reduction of loading from other sources in other parts of the watershed. If sufficient BMPs and other reduction technologies are employed, the net change in contribution to the lake could be maintained below both the sub-watershed targets and also below the over-all lake target.

2.4 Input Data Development

The Approved Future Growth scenario map from the ACS was used as the base mapping for the scenario analysis. Dillon Consulting provided five (5) proposed options as GIS shape files. The areas contained within the polygon boundaries were assumed to be uniform, high intensity urban development. The shape files were laid over the land use grid in order to re-classify the grid in the locations where development was proposed for each growth option.

Groundwater nitrogen and soil phosphorous grids are estimated based on the land use grids and other information. These maps were updated to correspond with the land use designations from each of the growth options. Tile drainage was removed from areas with proposed growth. The number of persons serviced by private septic systems in rural areas was edited in a digital layer to reflect the changes to serviced urban land use.

Wastewater treatment plants within the affected sub-watersheds were assumed to discharge at the maximum allowable level under their current certificate of approval (C of A). This was consistent with the assumptions made under the target setting process. Allocations of available load from treatment plants were divided between the serviced areas that contribute the load.

In the initial calculation of loads, CANWET™ assumes that no storm water management practices are in place when contributions from non-point sources are estimated. Urban mitigative measures were applied to the estimated sub-watershed loading rates to account for reductions in load associated with urban storm water management facilities. This was carried out only for new proposed growth areas included within the ACS approved future growth scenario and for the IGAP scenarios.

Agricultural BMPs were applied using PRedICT and the maximum potential application rates determined during the ACS Target setting process. Reductions were applied on a percentage basis in a manner consistent with that reported by the Louis Berger Group (2006). When agricultural lands are converted to urban lands, they are no longer contributing load associated with agricultural practices and agricultural BMPs that were considered previously can not be considered for those lands. By maintaining the application of BMPs on a percentage basis, this effect of reducing the potential for BMP applications on agricultural lands is accounted for.

2.5 Iterative Approach

An iterative approach was used. Five (5) initial growth option concepts were evaluated using the CANWET^{TM} tools. The first set of growth option boundaries provided by Dillon Consulting were intended only as conceptual boundaries without considerations for specific parcels of land within the boundaries. The areas were over estimated to account for the fact that within the conceptual areas, development constraints existed that would prevent growth in certain sensitive areas.

Based on the first iteration, Options 2 and 4 were refined by reallocating the growth in less environmentally sensitive sub-watersheds with available capacity and by adjusting the boundaries to exclude “no growth” areas such as natural heritage lands and significant wetlands. These are referred to as Options 2B and 4B.

In the final scenario, growth Option 2B was further refined by increasing the intensification level to 15%, concentrating a higher population in a smaller area of land, thus reducing the load associated with developed land by reducing the overall area and adding a growth area in the West Holland.

3 Results

3.1 Initial Assessment of Growth Options

Sub-watersheds assessed in the study are located either within the Nottawasaga River or Lake Simcoe drainage basins. The Lower Nottawasaga, Innisfil Creek, Bear Creek and Boyne River are within the Nottawasaga River basin, while Lovers Creek, Hewitts Creek, Innisfil Creeks and the West Holland River drain to Lake Simcoe.

Tables showing comparison between sub-watershed nutrient sources for each of the model runs are shown in Appendix A. Table A-1 summarizes results before urban mitigative measures and agricultural BMPs are applied. Table A-2 compares the final loads after reductions have been applied.

<u>Option 1</u>

Growth Option 1, depicted in Figure 3.1, is distributed between three (3) sub-watersheds within the Lake Simcoe and Nottawasaga River drainage basins.

Figure 3.2 compares the estimated non-point source load for each sub-watershed against the sub-watershed targets. Because Lovers Creek is serviced by the Barrie wastewater treatment facility, a portion of the target load for Lovers Creek is allotted as a point source and the remainder is allotted to non-point source load. In this analysis, the non-point source phosphorous, alone, accounts for the entire target allocation for Lovers Creek and exceeds the target by 172 kg. The sum of direct to lake point source contributions is shown separately as an exceedance. The West Holland has non-point source loading that marginally exceed its target while the Lower Nottawasaga is marginally below target.

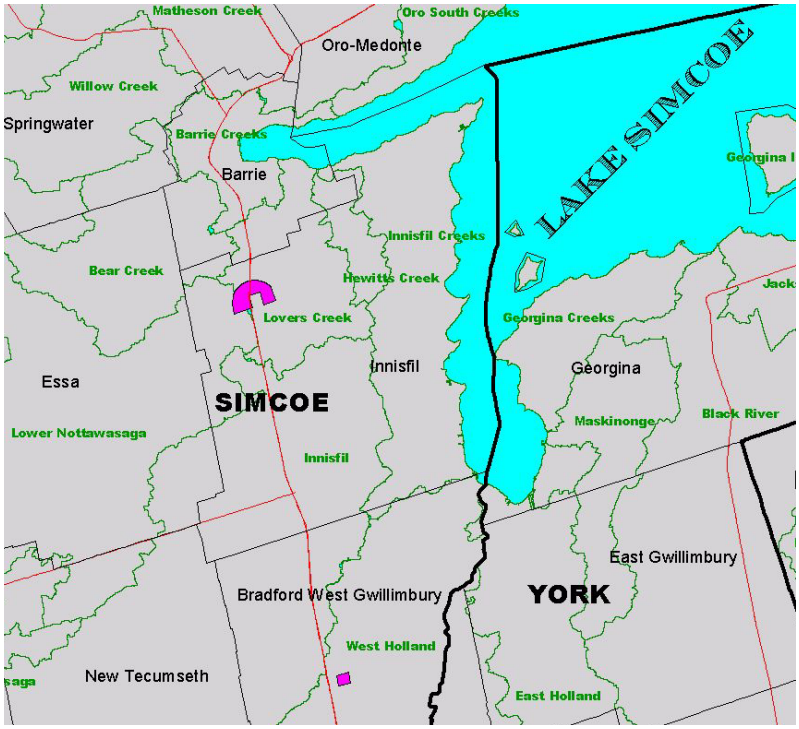
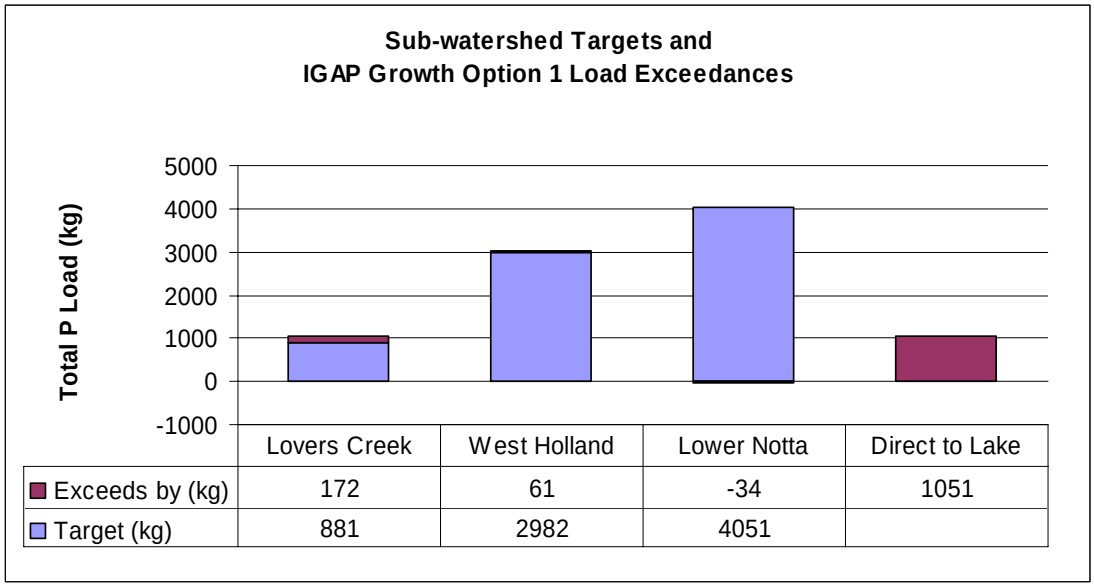


Figure 3.1 Growth Option 1 location map



	Lovers Creek	West Holland	Lower Notta	Direct to Lake
Exceeds by (kg)	172	61	-34	1051
Target (kg)	881	2982	4051	

Figure 3.2 Option 1 Sub-watershed targets and exceedance levels

The summation of loads from each of the affected sub-watersheds and the point source allocation is 9,164 kg while the sum of the targets is 7,914 kg resulting in an overall target exceedance of 1,250 kg or 16%.

Appendix B, Table B-1, shows the breakdown of contributing sources. Roughly 42% of the total estimated load for this option originates from agricultural sources, while

30% of the load originates from high intensity urban development and 16% is attributed to sewage treatment plants.

Option 2

Growth Option 2, depicted in Figure 3.3, is distributed between five (5) sub-watersheds.

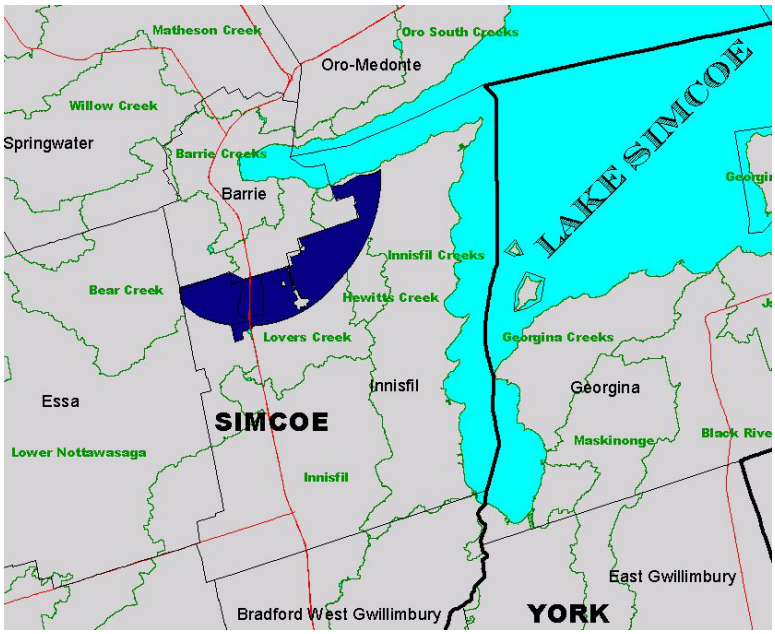


Figure 3.3 Growth Option 2 location map

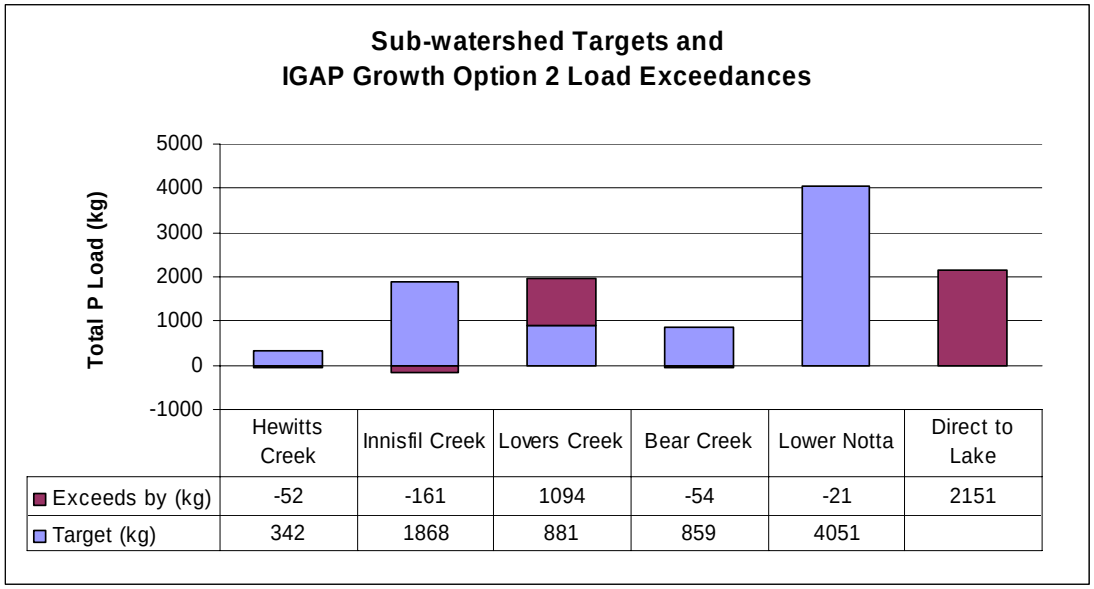
Figure 3.6 shows the amount that the sub-watershed targets are exceeded in the Option 2 scenario. In this case, Lovers, Innisfil and Hewitts Creeks are serviced by the Barrie wastewater treatment facility. The balance of the load for the Innisfil Creeks sub-watershed is serviced by the Alcona waste water treatment facility. Both the Barrie and Alcona facilities are direct to lake dischargers.

For each of the Option 2 sub-watersheds, serviced by direct to lake point sources, a portion of the target load is allotted as a point source and the remainder is allotted to non-point source load. In this analysis, the non-point source phosphorous, alone, accounts for more than the entire target allocations for Lovers Creek.

When the direct to lake point sources are removed from the sub-watershed load calculation for Lovers, Hewitt and Innisfil Creeks, the sum of the sub-watershed targets is exceeded by 806 kg from non point sources. From direct to lake point sources, the sum of sub-watershed targets is exceeded by 2,151 kg that do not impact water quality in the creeks; only in Lake Simcoe. Therefore the total annual exceedance for Option 2 is 2957 kg or 37%. The summation of loads from each of the affected sub-watersheds and the point source allocation is 10,958 kg while the sum of the targets is 8,001 kg.

Figure 3.4 shows that when direct to lake point sources are removed from the sub-watershed total, there is additional capacity in Hewitts and Innisfil Creeks. This available capacity was used in Option 2B and 2C, discussed in Section 3.2, to reduce the impact on Lovers Creek by reallocating some of the growth to other sub-watersheds with available capacity. The excess load from the direct to lake point sources must still be addressed by reducing an equivalent load elsewhere in the Lake Simcoe basin.

As further detailed in Appendix B, Table B-2, 32% of the total estimated load for this option originates from agricultural sources while 27% of the load originates from high intensity urban development and 23% is attributed to sewage treatment plants.



	Hewitts Creek	Innisfil Creek	Lovers Creek	Bear Creek	Lower Notta	Direct to Lake
Exceeds by (kg)	-52	-161	1094	-54	-21	2151
Target (kg)	342	1868	881	859	4051	

Figure 3.4 Option 2 Sub-watershed targets and exceedance levels

Option 3

Option 3 is similar to Option 2, except that it specifies 40% intensification of growth such that the same number of homes and businesses occupy less land area. Figure 3.5 shows the boundaries of this growth option.

Given that Options 2 and 3 vary primarily on the level of intensification, the similarity between Figures 3.4 and 3.6 is expected. The amount of available capacity in Hewitts and Innisfil Creeks is greater in Option 3 while the amount that Lovers and Bear Creeks and the Lower Nottawasaga exceed their respective sub-watershed targets is reduced. Because the C of A is unchanged and the assumed load to all treatment plants is assumed to remain at the level of the C of A, the direct to lake point source contribution and exceedance is unchanged.

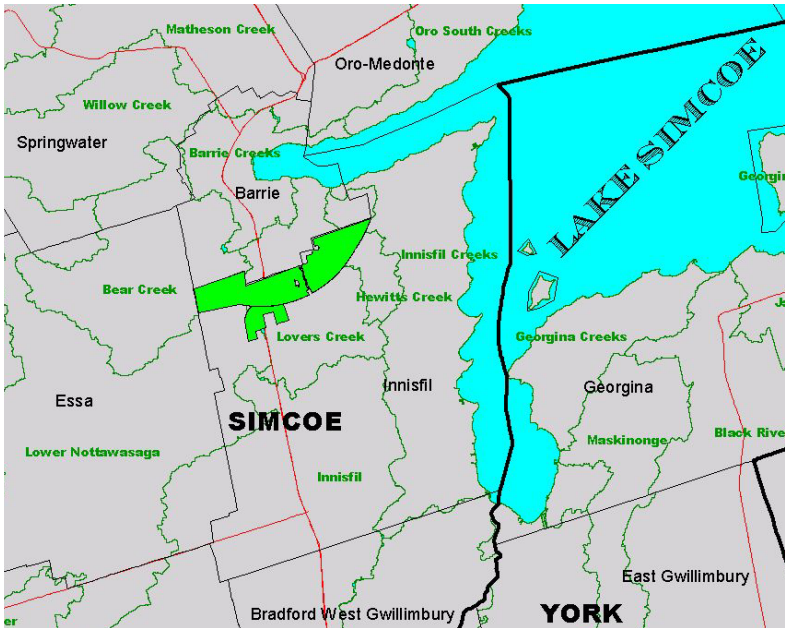
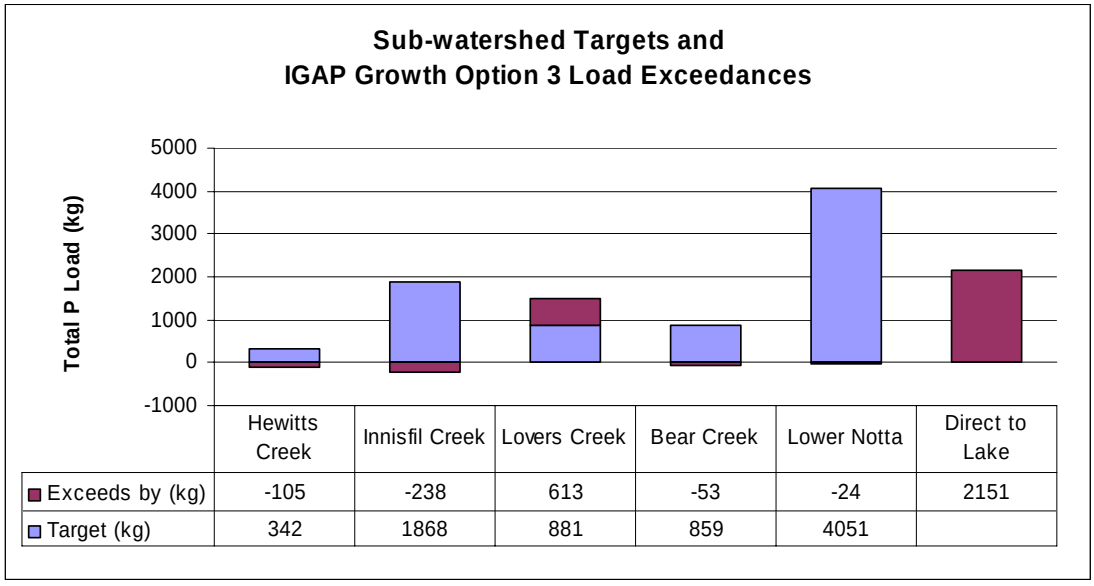


Figure 3.5 Growth Option 3 location map

The summation of loads from each of the affected sub-watersheds and the point source allocation is 10,344 kg while the sum of the targets is the same as for Option 2 at 8,001 kg resulting in an overall target exceedance of 2,343 kg or 29%.

For this option, 35% of the total estimated load originates from agricultural sources while 22% of the load originates from high intensity urban development and 25% is attributed to sewage treatment plants. Further details of this distribution can be found in Appendix B, Table B-3.



	Hewitts Creek	Innisfil Creek	Lovers Creek	Bear Creek	Lower Notta	Direct to Lake
Exceeds by (kg)	-105	-238	613	-53	-24	2151
Target (kg)	342	1868	881	859	4051	

Figure 3.6 Option 3 Sub-watershed targets and exceedance levels

Option 4

As shown in Figure 3.7, Option 4 reduces the amount of proposed growth area directly south of Barrie and adds growth in the West Holland and Boyne River sub-watersheds.

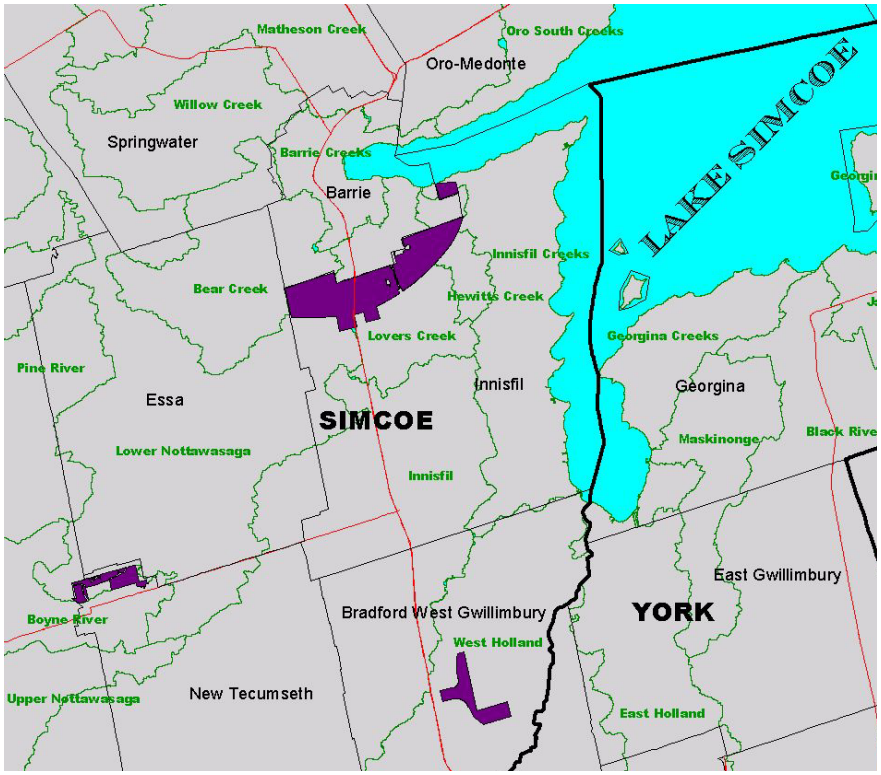


Figure 3.7 Growth Option 4 location map

The direct to lake component remains the same because the same sub-watersheds are affected, but to a somewhat different extent. Once again, Hewitts and Innisfil Creeks have some available capacity when the direct to lake point sources are considered separately. Lovers Creek exceeds the target by an amount similar to the amount of Option 3. Bear Creek and the Lower Nottawasaga remain similar to the previous options. Growth in the Boyne River sub-watershed and West Holland both exceed sub-watershed targets. There are no direct to lake contributions from these sub-watersheds. Figure 3.8 makes this comparison.

The summation of loads from each of the affected sub-watersheds and the point source allocation is 17,418 kg while the sum of the targets is 14,610 kg resulting in an overall target exceedance of 2,808 kg or 19%. The estimated load exceedance is 100 kg less than the estimate for Option 2, but the percentage exceedance is half because the load is distributed between more sub-watersheds.

For this option, 42% of the total estimated load originates from agricultural sources while 23% of the load originates from high intensity urban development and 17% is

attributed to sewage treatment plants. Further details of this distribution can be found in Appendix B, Table B-4,

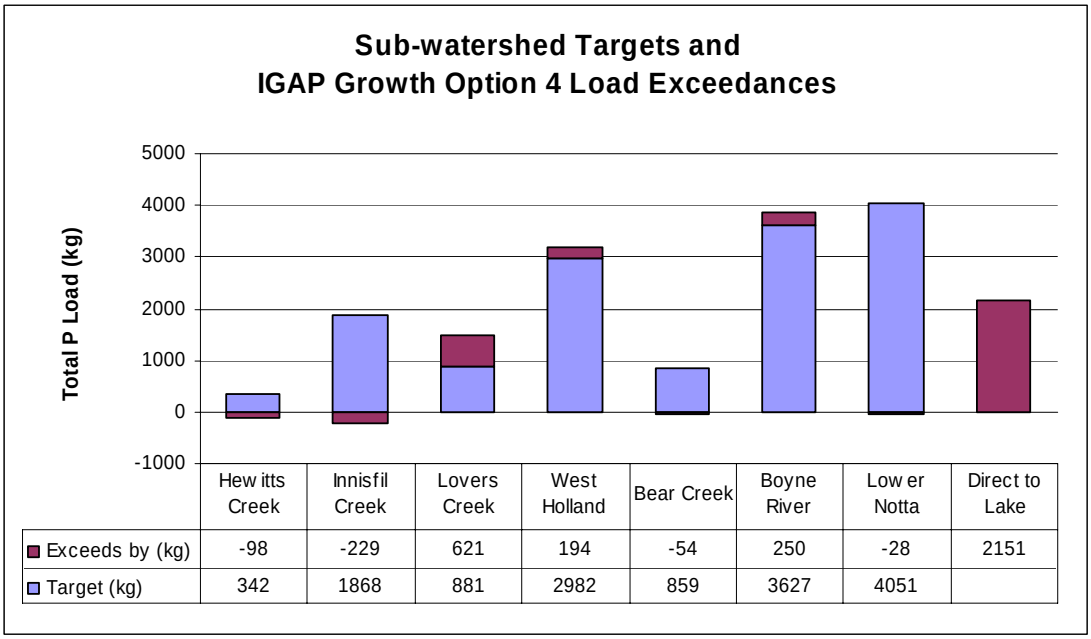


Figure 3.8 Option 4 Sub-watershed targets and exceedance levels

Option 5

Option 5 adds two (2) more growth nodes over Option 4 with additional development in central Innisfil Creeks (LSRCA) and Innisfil Creek (NVCA) replacing growth in the northern portion of Innisfil Creeks (LSRCA) and Hewitts Creek.

The affect of this change over Option 4 analysis is to further disperse the phosphorous loading sources. Modest reductions in load were seen in Innisfil Creeks (LSRCA), Lovers Creek, West Holland and Lower Nottawasaga. Because Hewitts Creek has been removed from this scenario, the direct to lake component of it's discharge to the Barrie treatment plant is removed from the analysis. The growth in Innisfil Creek (NVCA) and added growth area in the Boyne counter these reductions resulting in a net reduction of 192 kg over the Option 4 scenario.

The summation of loads from each of the affected sub-watersheds and the point source allocation is 22,311 kg while the sum of the targets is 19,695 kg resulting in an overall target exceedance of 2,617 kg or 13%.

For this option, 54% of the total estimated load originates from agricultural sources while 13% of the load originates from high intensity urban development and 13% is attributed to sewage treatment plants. Further details of this distribution can be found in Table B-5 of Appendix B.

Figures 3.9 illustrate the locations of the Option 5 growth areas and Figure 3.10 compares the estimated sub-watershed loads against targets.

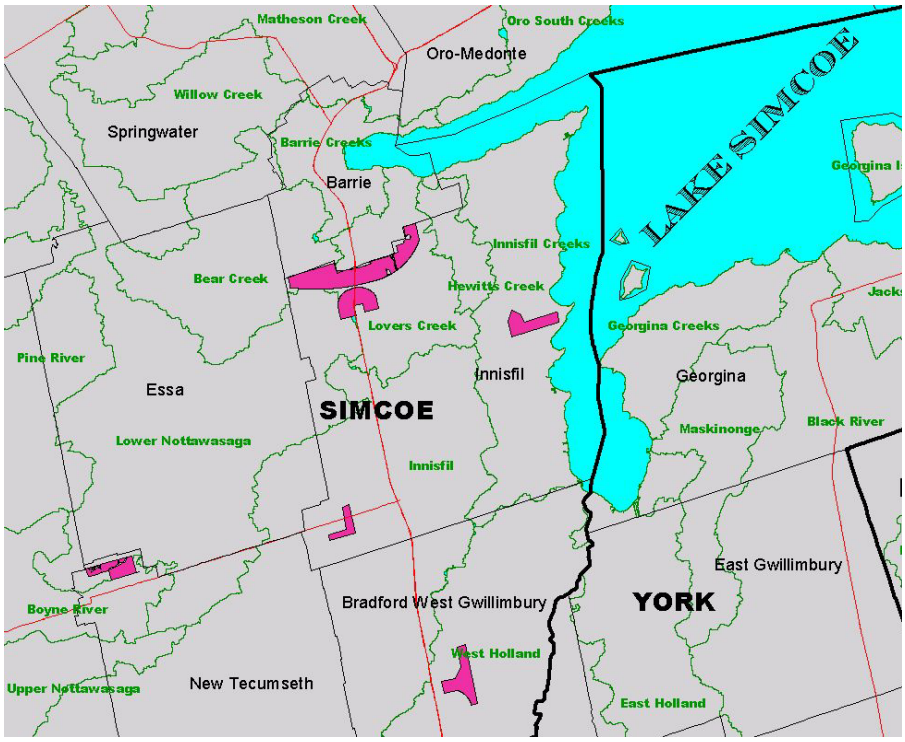


Figure 3.9 Growth Option 5 location map

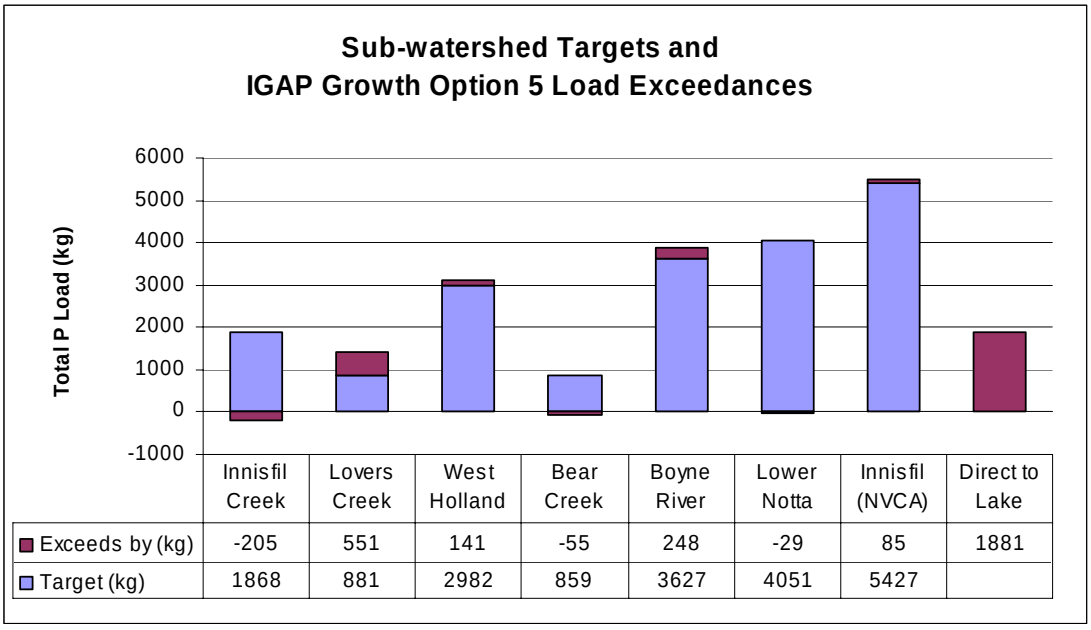


Figure 3.10 Option 5 Sub-watershed targets and exceedance levels

3.2 Refinement of Growth Options

The growth areas defined by Dillon Consulting in the study were intended only as conceptual depictions of areas for potential growth based on established planning criteria. The boundaries presented in the original designations encompassed both urban growth areas and "no development" areas. In order to more accurately model the scenarios in CANWET™ it was necessary to clip out natural heritage features, sensitive wetlands and other "no growth" areas. The remaining core areas were reallocated between the sub-watersheds based on the loading estimates from the first iteration of the analysis. Figure 3.11, 3.13 and 3.15, in this section, depict areas that are intended as 100% high intensity urban lands with more than 50% impermeable surface.

The reallocation of the proposed growth areas for this scenario tended to replace primarily agricultural lands, therefore there was somewhat less net increase associated with this land use change as compared to replacement of forest or wetland.

Table 3.1 compares the total number of hectares specified for each of the development options.

Table 3.1 Development areas

Option ID	Area (Ha)
Option 1	324
Option 2	3595
Option 2B	2720
Option 2C	2220
Option 3	2100
Option 4	3155
Option 4B	1625
Option 5	1954

Option 2B

Figure 3.11 shows the revised growth area boundaries used for Option 2B. The impact of this change on the loading rates was to reduce the total associated load by 705 kg per year and reduce the amount that the Option exceeds the target by the same amount.

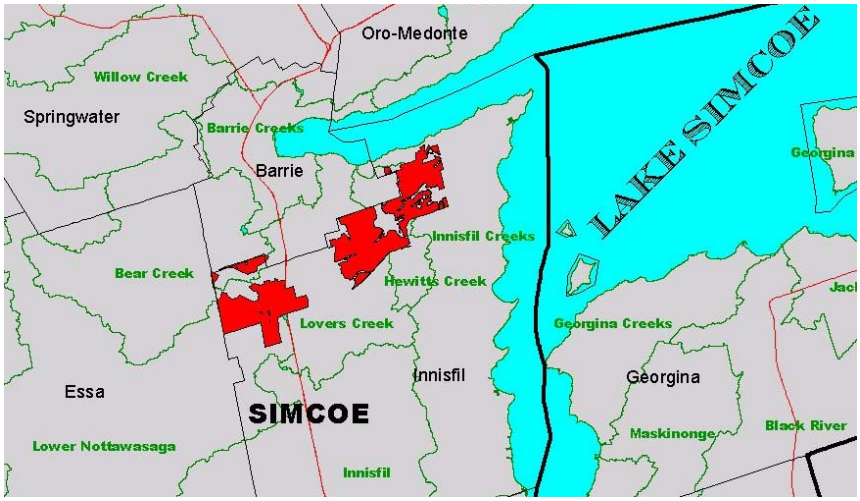
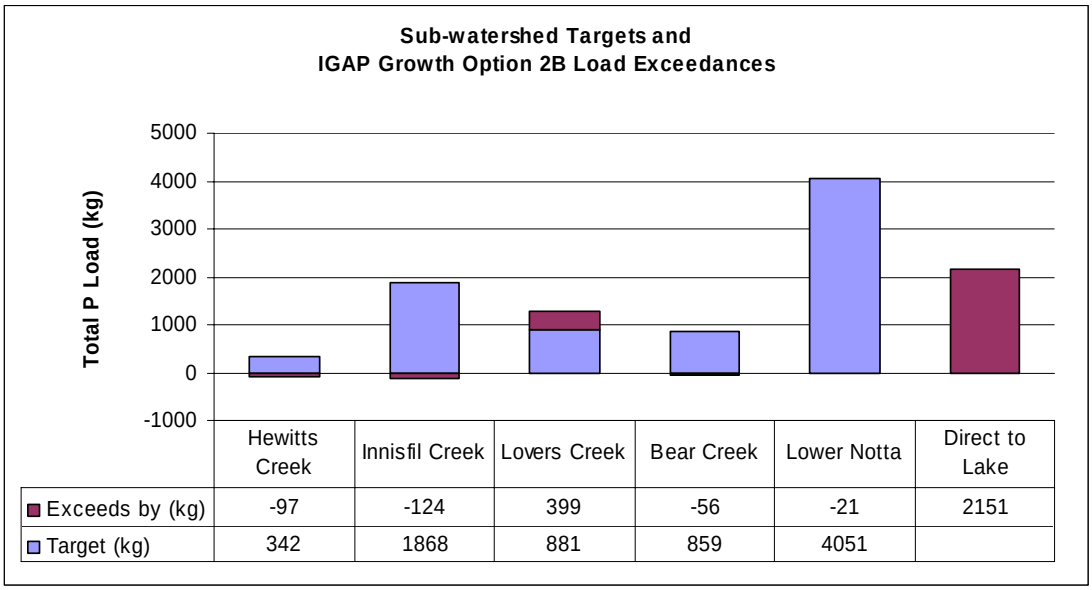


Figure 3.11 Growth Option 2B location map

The majority of the reduction was associated with changes to Lovers Creek amounting to a reduction of approximate 700 kg. The load from Innisfil Creeks (LSRCA) increased approximately 30 kg but remained below the sub-watershed target. The load from Hewitts Creek was reduced approximately 45 kg. Figure 3.12 compares results from each sub-watershed and the direct to lake portion of the load.



	Hewitts Creek	Innisfil Creek	Lovers Creek	Bear Creek	Lower Notta	Direct to Lake
Exceeds by (kg)	-97	-124	399	-56	-21	2151
Target (kg)	342	1868	881	859	4051	

Figure 3.12 Option 2B Sub-watershed targets and exceedance levels

Further details on the load sources and other details for each sub-watershed can be found in Appendix B, Table B-6.

Option 2C

The impact of the final revision to Option 2 was to increase the total load by 2,245 kg over the original, but reduce the amount that the option exceeds the target to 2,220 kg – 32 kg less than Option 2B. The target amount changes because more sub-watersheds were included in this option than the original Option 2 or Option 2B. The amount of reduction in target exceedance was less than that seen in Option 2B because new area was added in the West Holland and only marginal areas were removed from Hewitts Creek, Innisfil Creeks and Lovers Creek.

Figure 3.13 and 3.14 show the growth Option 2C boundaries and comparative loading results, respectively.

Further details on the load sources and other details for each sub-watershed can be found in Appendix B, Table B-8.

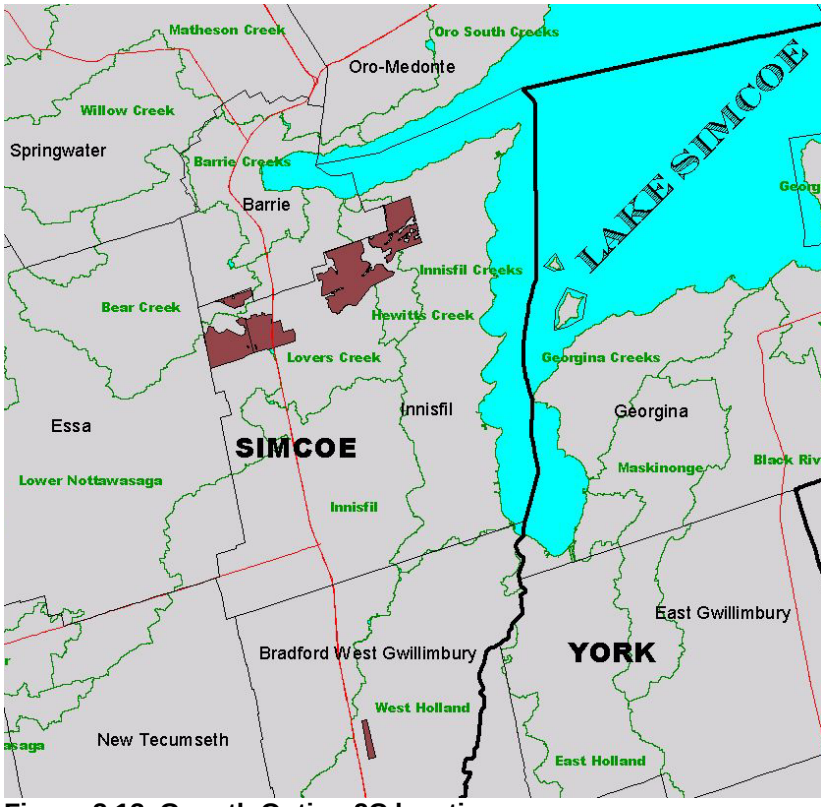
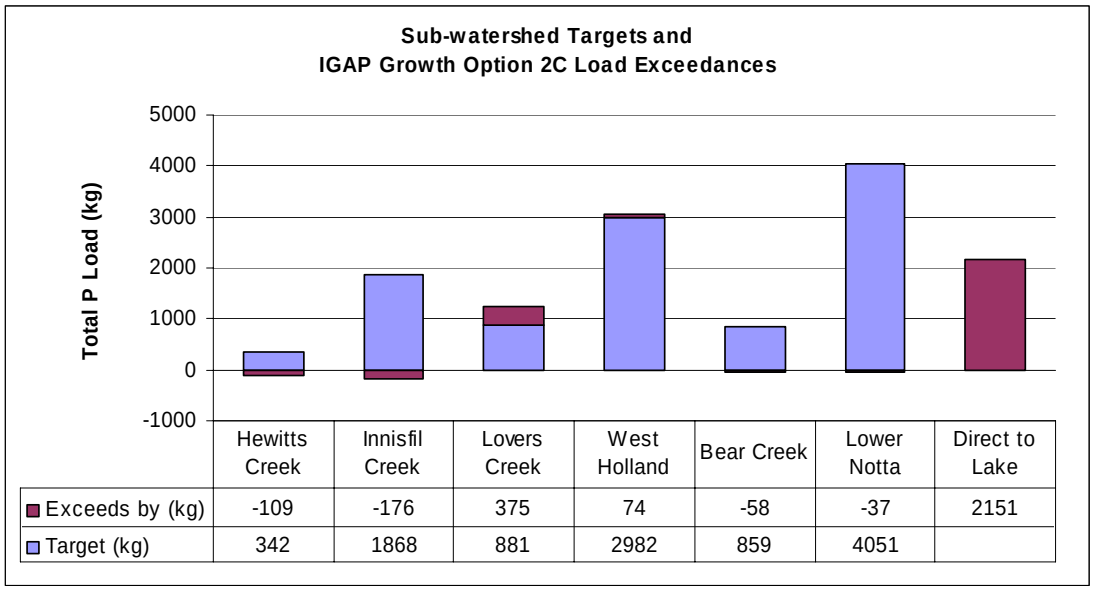


Figure 3.13 Growth Option 2C location map



	Hewitts Creek	Innisfil Creek	Lovers Creek	West Holland	Bear Creek	Lower Notta	Direct to Lake
Exceeds by (kg)	-109	-176	375	74	-58	-37	2151
Target (kg)	342	1868	881	2982	859	4051	

Figure 3.14 Option 2C Sub-watershed targets and exceedance levels

Option 4B

Figure 3.15 shows the revised growth area boundaries used for Option 4B. The impact of this change on the loading rates was to reduce the total associated load by

2,896 kg per year and reduce the amount that the Option exceeds the target from 2,816 kg to 1,781 kg, representing a difference of 1,035 kg.

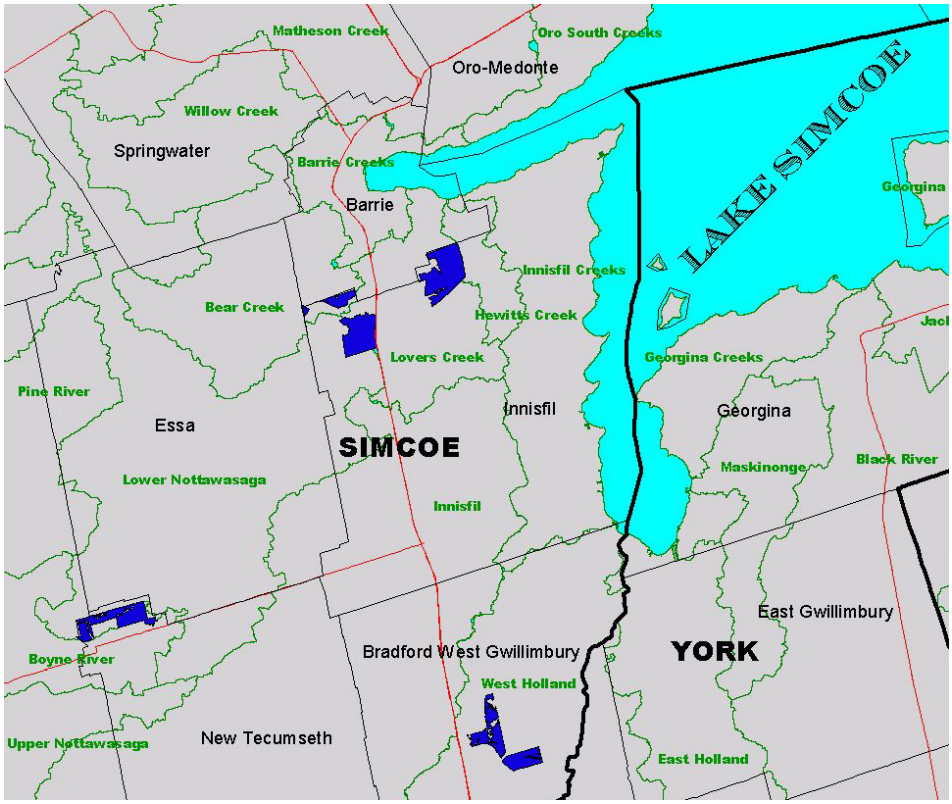


Figure 3.15 Growth Option 4B location map

The majority of the reduction was associated with changes to Lovers and Hewitt Creeks amounting to a reduction of approximate 377 kg. Because Innisfil Creeks was not part of the Option 4B, the direct to lake component was reduced from 2151 to 1321 accounting for 830 kg. Smaller reductions were associated with changes to developed land area in the West Holland, Bear Creek, Boyne River and Lower Nottawasaga Rivers. Figure 3.16 compares results from each sub-watershed and the direct to lake portion of the load.

Further details on the load sources and other details for each sub-watershed can be found in Appendix B, Table B-7.

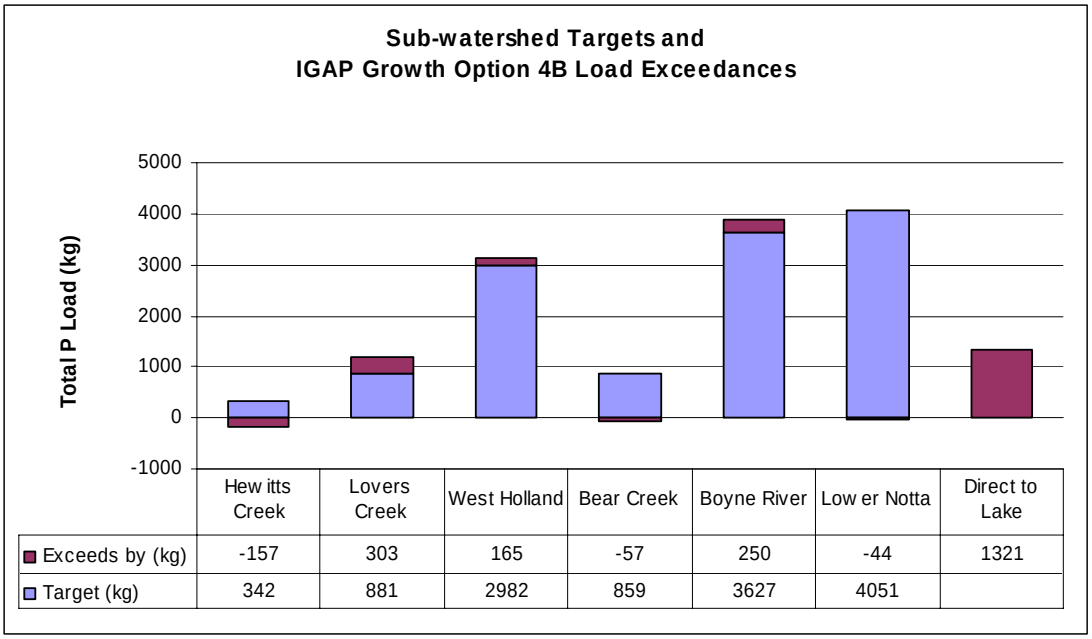


Figure 3.16 Option 4B Sub-watershed targets and exceedance levels

4 Best Management Practices

The growth options analyzed assumed the implementation of mandatory storm water management facilities to service all new development lands and the application of rural BMPs consistent with recommendations set out in the Louis Berger (2006) report on target setting. Table 4.1 indicates costs on a sub-watershed basis and estimated load reductions. This table illustrates that the cost/benefit ratio associated with agricultural BMPs is significantly less than that associated with urban mitigative practices.

Table 4.1 Costs and phosphorous removal rates for urban mitigative measure and agricultural BMPs

Sub-watershed	(Urban + Ag.) BMP Cost	All BMPs kg reduced	Ag. BMP Cost	Ag. BMPs kg reduced	Urban Mitigative Cost	Urban Mitigative kg reduced
Bear Creek	$8,431,938	143	$539,644	116	$7,892,294	27
Hewitts Creek	$6,131,129	213	$85,836	132	$6,045,294	81
Innisfil Creeks	$12,161,600	783	$231,070	453	$11,930,529	330
Lovers Creeks	$11,620,315	895	$104,583	208	$11,515,732	687
Lower Nottawasaga River	$23,450,651	777	$7,715,264	716	$15,735,387	61
West Holland	$22,369,031	2,484	$1,386,880	1,654	$20,982,151	830
TOTAL	$84,164,664	5,295	$10,063,277	3,279	$74,101,386	2,016

* loading calculations for growth scenarios assume urban and agricultural BMPs implemented

Costs presented in this table are calculated from estimated unit costs for various rural BMP and for stormwater management ponds.

5 Recommendations

This evaluation of proposed IGAP growth options considered only phosphorous loading. Known “no development” areas including significant woodlots, wetlands and other features were removed from the refined options prior to running the phosphorous load analysis for Options 2B, 2C and 4B.

Thermal impacts on cold water fisheries, groundwater recharge areas, habitat destruction and impacts from other contaminants resulting from these growth options were not considered in this evaluation.

All of the growth scenarios considered in this study incurred higher phosphorous loading rates on affected sub-watershed streams and to receiving water bodies (i.e. Lake Simcoe and Nottawasaga Bay). Some of the sub-watersheds considered in these analyses appeared to have available capacity (i.e. targets are not exceeded by non-point source loads) when direct to lake point sources are considered separately. However, all of the options exceeded the sum of sub-watershed targets and the lake target. Therefore, if development of any of the proposed lands is to proceed, the following recommendations should be considered as possible means to mitigate the estimated impacts. This study did not evaluate the extent to which any of these measures could reduce loads toward achieving sub-watershed targets. Before growth or implementation of these suggested practices and policies proceeds more detailed studies are needed in the form of comprehensive nutrient management components for proposed secondary plans. Recommendations include:

- More detailed, site level studies to identify opportunities for further reduction in phosphorous loading.
- Treatment plant loading maintained at or below existing CofA limits for phosphorous. Wastewater treatment plant upgrades will be needed to significantly reduce nutrient concentrations while handling greater volumes of waste water to meet this objective. Tertiary level treatment or other advanced technology may be required to provide significant reductions in load.
- Identification of opportunities for phosphorous reductions elsewhere in the Lake Simcoe watershed. Reductions must be equal to or greater than the combined target exceedances. An example of such an opportunity is treatment of the Holland River polder water.
- The Province, Municipalities and Conservation Authorities should consider implementing a policy of low impact development that would see the use of specialized technologies to minimize the contribution of phosphorous from growth areas. Overall, such strategies would have the goal of decreasing the portion of impermeable land that is currently typical of urban development. The increased use of infiltration trenches, rain gardens, green roofs, disconnected roof leaders, greater public use of rain barrels, and other source management techniques have the potential to reduce peak flood events as well as reduce nutrient loads. This policy might also consider

attempting to regulate the amount of chemical fertilizers applied to urban green areas.

- Wetlands and forested areas have a minimal contribution to phosphorous loading and serve to fix nutrients rather than allowing them to enter watercourses. Greater integration of natural features in new growth areas will take advantage of the natural tendency of these features to improve water quality. This should include the preservation of existing features as well as reforestation, buffer strip planting and construction of wetlands.
- The analysis assumes that all new development areas are serviced by storm water management ponds. Opportunities may exist to retrofit existing urban areas with such facilities.
- The efficiency of conventional storm water management facilities may be increased through the use enhanced design features.
- The growth analysis assumes that agricultural BMPs are implemented to the maximum possible extent within each sub-watershed as well as urban mitigative measures for all new growth. Further support, funding, education and advocacy are needed to ensure that both urban and rural land owners recognize their role as land stewards to protect water quality and watershed integrity.
- Growth should only proceed once the appropriate environmental impact assessments have been completed and strategies for mitigating impacts are developed.

6 References

The Louis Berger Group (2006) Pollutant Target Load Study: Lake Simcoe and Nottawasaga River Watersheds, Final Report prepared for the Lake Simcoe Region and Nottawasaga Valley Conservation Authorities

Greenland International Consulting (2006) Assimilative Capacity Studies CANWET™ Modeling Project: Lake Simcoe and Nottawasaga River Basins, Final Report prepared for the Lake Simcoe Region and Nottawasaga Valley Conservation Authorities

Appendix A: Summary of Scenario Total Phosphorous Load for Affected Sub-watersheds

Table A -1: Scenario Total Phosphorous Load for Affected Sub-watersheds (without BMPs)										
	Targets Summed (kg)	ACS Existing Loads Summed (kg)	ACS Future Loads Summed (kg)	Estimated IGAP Loads Summed (kg)	Exceeds Target Loads by (kg)	Exceeds Target Loads by %	Exceeds ACS Existing Loads by (kg)	Exceeds ACS Existing Loads by %	Exceeds ACS Future Loads by (kg)	Exceeds ACS Future Loads by %
Option 1	7914	10693	13013	13593	5679	72	2899	27	580	4
Option 2	8001	9713	12402	17932	9931	124	8219	85	5530	45
Option 2B	8001	9713	12402	14080	6079	76	4367	45	1678	14
Option 2C	10983	13976	17889	19427	8444	77	5452	39	1539	9
Option 3	8001	9713	12402	14921	6920	86	5208	54	2519	20
Option 4	14610	18869	23007	26164	11554	79	7295	39	3157	14
Option 4B	12742	16859	19829	20992	8250	65	4133	25	1163	6
Option 5	19695	25565	29437	32199	12504	63	6634	26	2762	9

Table A - 2: Scenario Total Phosphorous Load for Affected Sub-watersheds (with BMPs)										
	Targets Summed (kg)	ACS Existing Loads Summed (kg)	ACS Future Loads (with BMPs) (kg)	Estimated IGAP Loads (with BMPs) (kg)	Exceeds Target Loads by (kg)	Exceeds Target Loads by %	Exceeds ACS Existing Loads by (kg)	Exceeds ACS Existing Loads by %	Exceeds ACS Future Loads by (kg)	Exceeds ACS Future Loads by %
Option 1	7914	10693	8502	9164	1250	16	-1529	-14	662	8
Option 2	8001	9713	9278	10958	2957	37	1246	13	1681	18
Option 2B	8001	9713	9278	10253	2252	28	541	6	976	11
Option 2C	10983	13976	12252	13203	2220	20	-773	-6	951	8
Option 3	8001	9713	9278	10344	2343	29	631	7	1066	11
Option 4	14610	18869	16176	17418	2808	19	-1451	-8	1242	8
Option 4B	12742	16859	13753	14522	1780	14	-2337	-14	769	6
Option 5	19695	25565	21265	22312	2617	13	-3253	-13	1047	5

* assumes use of all practicle urban mitigative measures and agricultural BMPs as identified in the ACS Pollutant Target Load Study
** urban mitigative measures have been applied to all new growth areas included in the ACS Committed Future and IGAP Growth scenarios

Appendix B: Details of Phosphorous Load by Source for Affected Sub-watersheds

Option 1: Business As Usual (Existing Designations for Residential Uses and Employment Expansion)

Lovers Creek

Table B - 1a: Phosphorous Load by Source in the Lovers Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA [5]
Row Crops	563	525	27	451	159	159				
Hay/Pasture [1]	22	20	9	18	18	18				
High Intensity Development	327	721	277	1468	1255	690				
Low Intensity Development	6	5	0	5	5	5				
Other [2]	39	32	0	32	32	32				
Stream Bank Erosion	6	9	1	10	10	10				
Groundwater/Subsurface [3]	146	118	8	133	133	133				
Point Source [4]	0	1051	1051	1051	1051	1051				
Septic Systems	12	12	0	7	7	7				
Non_point Source Total	1122	1442	322	2123	1619	1053				
Totals	**1122**	**2493**	**1373**	**3174**	**2670**	**2104**	**881**	**1223**	**139**	**172**

West Holland

Table B - 1b: Phosphorous Load by Source in the West Holland Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	2686	2484	893	2466	886	886				
Hay/Pasture	395	369	291	374	296	296				
High Intensity Development	628	2115	1308	2128	1320	1208				
Low Intensity Development	46	37	37	39	39	39				
Other	86	100	100	229	229	229				
Stream Bank Erosion	14	20	20	28	28	28				
Groundwater/Subsurface	342	303	267	317	317	317				
Point Source	20	12	12	12	12	12				
Septic Systems	46	46	46	28	28	28				
Non_point Source Total	4243	5474	2962	5609	3142	3030				
Totals	**4263**	**5487**	**2974**	**5621**	**3155**	**3043**	**2982**	**61**	**2**	

Lower Nottawasaga

Table B - 1c. Phosphorous Load by Source in the Lower Nottawasaga Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	3179	2908	2123	2704	1974	1974				
Hay/Pasture	562	528	528	503	503	503				
High Intensity Development	109	203	155	205	157	157				
Low Intensity Development	0	2	0	2	0	0				
Other	77	183	183	177	177	177				
Stream Bank Erosion	9	19	18	18	17	17				
Groundwater/Subsurface	742	727	684	734	734	734				
Point Source	335	440	440	440	440	440				
Septic Systems	295	24	24	15	15	15				
Non_point Source Total	4973	4594	3716	4357	3577	3577				
Totals	**5308**	**5034**	**4156**	**4797**	**4017**	**4017**	**4051**	**-34**	**-1**	

SUMMARY

Table B - 1d: Scenario Total Phosphorous for Affected Sub-watersheds

Target	ACS Existing Load (kg)	ACS Future Load (kg)	ACS Future (with BMPs) (kg)	Estimated IGAP Load (kg)	Estimated IGAP Load (with BMPs) (kg)	Exceeds by (with BMPs) (kg)	Exceeds by (with BMPs) %
7914	**10693**	**13013**	**8502**	**13593**	**9164**	**1250**	**16**

[1] The total of Hay/Pasture and Surf/Sod.
[2] The total of Forest, Wetland, Quarry, and Unpaved_RD.
[3] The total of groundwater/subsurface and tile drainage.
[4] The ACS existing point source uses historical flow data and recent phosphorous concentration. However, the point source for ACS future scenario and IGAP growth options are based on C of A.
[5] Waste load allocated to each sub-watershed for direct to lake WWTP discharge.

Option 2: Barrie and Area Centered Single Node

Hewitts Creek

Table B - 2a: Phosphorous Load by Source in the Hewitts Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	304	234	83	153	54	54				
Hay/Pasture	12	7	6	1	1	1				
High Intensity Development	13	96	47	373	324	171				
Low Intensity Development	0	0	0	0	0	0				
Other	7	5	5	4	4	4				
Stream Bank Erosion	1	1	1	2	2	2				
Groundwater/Subsurface	65	56	50	55	55	55				
Point Source	0	270	270	270	270	270				
Septic Systems	7	7	7	3	3	3				
Non_point Source Total	409	407	198	592	443	290				
Totals	**409**	**677**	**468**	**862**	**713**	**560**	**342**	**218**	**64**	**-52**

Innisfil Creek

Table B - 2b: Phosphorous Load by Source in the Innisfil Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	867	754	269	711	253	253				
Hay/Pasture	294	279	278	271	272	272				
High Intensity Development	409	953	701	1346	1095	752				
Low Intensity Development	6	13	9	9	6	6				
Other	102	41	41	99	99	99				
Stream Bank Erosion	8	12	11	14	15	15				
Groundwater/Subsurface	276	248	235	281	281	281				
Point Source	0	830	830	830	830	830				
Septic Systems	49	49	49	28	29	29				
Non_point Source Total	2010	2348	1593	2761	2050	1707				
Totals	**2010**	**3178**	**2423**	**3591**	**2880**	**2537**	**1868**	**669**	**36**	**-161**

Lovers Creek

Table B - 2c: Phosphorous Load by Source in the Lovers Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	563	525	27	225	79	79				
Hay/Pasture	22	20	9	10	10	10				
High Intensity Development	327	721	277	6317	6104	1756				
Low Intensity Development	6	5	0	4	4	4				
Other	39	32	0	14	14	14				
Stream Bank Erosion	6	9	1	19	19	19				
Groundwater/Subsurface	146	118	8	88	88	88				
Point Source	0	1051	1051	1051	1051	1051				
Septic Systems	12	12	0	5	5	5				
Non_point Source Total	1122	1442	322	6681	6324	1975				
Totals	**1122**	**2493**	**1373**	**7732**	**7375**	**3026**	**881**	**2145**	**243**	**1094**

Bear Creek

Table B - 2d: Phosphorous Load by Source in the Bear Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	525	444	317	388	277	277				
Hay/Pasture	131	115	113	105	104	104				
High Intensity Development	47	89	62	109	82	82				
Low Intensity Development	0	1	0	0	0	0				
Other	33	196	196	187	187	187				
Stream Bank Erosion	2	3	3	4	4	4				
Groundwater/Subsurface	122	119	114	120	120	120				
Point Source	0	0	0	0	0	0				
Septic Systems	4	54	54	31	31	31				
Non_point Source Total	863	1020	859	944	805	805				
Totals	**863**	**1020**	**859**	**944**	**805**	**805**	**859**	**-54**	**-6**	

Lower Nottawasaga

Table B - 2e: Phosphorous Load by Source in the Lower Nottawasaga Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	3179	2908	2123	2673	1951	1951				
Hay/Pasture	562	528	528	499	499	499				
High Intensity Development	109	203	155	244	196	196				
Low Intensity Development	0	2	0	2	0	0				
Other	77	183	183	176	176	176				
Stream Bank Erosion	9	19	18	20	19	19				
Groundwater/Subsurface	742	727	684	734	734	734				
Point Source	335	440	440	440	440	440				
Septic Systems	295	24	24	15	15	15				
Non_point Source Total	4973	4594	3716	4363	3590	3590				
Totals	**5308**	**5034**	**4156**	**4803**	**4030**	**4030**	**4051**	**-21**	**-1**	

SUMMARY

Table B - 2f: Scenario Total Phosphorous for Affected Sub-watersheds

Target	ACS Existing Load (kg)	ACS Future Load (kg)	ACS Future (with BMPs) (kg)	Estimated IGAP Load (kg)	Estimated IGAP Load (with BMPs) (kg)	Exceeds by (with BMPs) (kg)	Exceeds by (with BMPs) %
8001	**9713**	**12402**	**9278**	**17932**	**10958**	**2957**	**37**

Option 2B: Barrie and Area Centered Single Node_Revised

Hewitts Creek

Table B - 6a: Phosphorous Load by Source in the Hewitts Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	304	234	83	183	64	64				
Hay/Pasture	12	7	6	5	4	4				
High Intensity Development	13	96	47	191	142	107				
Low Intensity Development	0	0	0	0	0	0				
Other	7	5	5	5	5	5				
Stream Bank Erosion	1	1	1	2	2	2				
Groundwater/Subsurface	65	56	50	60	60	60				
Point Source	0	270	270	270	270	270				
Septic Systems	7	7	7	3	3	3				
Non_point Source Total	409	407	198	449	280	245				
Totals	**409**	**677**	**468**	**719**	**550**	**515**	**342**	**173**	**51**	**-97**

Innisfil Creek

Table B - 6b: Phosphorous Load by Source in the Innisfil Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	867	754	269	671	239	239				
Hay/Pasture	294	279	278	258	258	258				
High Intensity Development	409	953	701	1478	1226	821				
Low Intensity Development	6	13	9	11	8	8				
Other	102	41	41	98	98	98				
Stream Bank Erosion	8	12	11	15	15	15				
Groundwater/Subsurface	276	248	235	277	277	277				
Point Source	0	830	830	830	830	830				
Septic Systems	49	49	49	28	28	28				
Non_point Source Total	2010	2348	1593	2836	2149	1744				
Totals	**2010**	**3178**	**2423**	**3666**	**2979**	**2574**	**1868**	**706**	**38**	**-124**

Lovers Creek

Table B - 6c: Phosphorous Load by Source in the Lovers Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	563	525	27	307	108	108				
Hay/Pasture	22	20	9	14	14	14				
High Intensity Development	327	721	277	2432	2219	1001				
Low Intensity Development	6	5	0	5	5	5				
Other	39	32	0	29	29	29				
Stream Bank Erosion	6	9	1	13	13	13				
Groundwater/Subsurface	146	118	8	104	104	104				
Point Source	0	1051	1051	1051	1051	1051				
Septic Systems	12	12	0	6	6	6				
Non_point Source Total	1122	1442	322	2910	2498	1280				
Totals	**1122**	**2493**	**1373**	**3961**	**3549**	**2331**	**881**	**1450**	**165**	**399**

Bear Creek

Table B - 6d: Phosphorous Load by Source in the Bear Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	525	444	317	396	283	283				
Hay/Pasture	131	115	113	106	105	105				
High Intensity Development	47	89	62	96	69	69				
Low Intensity Development	0	1	0	0	0	0				
Other	33	196	196	190	190	190				
Stream Bank Erosion	2	3	3	4	4	4				
Groundwater/Subsurface	122	119	114	120	120	120				
Point Source	0	0	0	0	0	0				
Septic Systems	4	54	54	32	32	32				
Non_point Source Total	863	1020	859	944	803	803				
Totals	**863**	**1020**	**859**	**944**	**803**	**803**	**859**	**-56**	**-7**	

Lower Nottawasaga

Table B - 6e: Phosphorous Load by Source in the Lower Nottawasaga Watershed

Source		ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	3179	2908	2123	2628	1919	1919				
Hay/Pasture	562	528	528	491	491	491				
High Intensity Development	109	203	155	290	242	242				
Low Intensity Development	0	2	0	2	0	0				
Other	77	183	183	175	175	175				
Stream Bank Erosion	9	19	18	21	20	20				
Groundwater/Subsurface	742	727	684	728	728	728				
Point Source	335	440	440	440	440	440				
Septic Systems	295	24	24	15	15	15				
Non_point Source Total	4973	4594	3716	4350	3590	3590				
Totals	**5308**	**5034**	**4156**	**4790**	**4030**	**4030**	**4051**	**-21**	**-1**	

SUMMARY

Table B - 6f: Scenario Total Phosphorous for Affected Sub-watersheds

Target	ACS Existing Load (kg)	ACS Future Load (kg)	ACS Future (with BMPs) (kg)	Estimated IGAP Load (kg)	Estimated IGAP Load (with BMPs) (kg)	Exceeds by (with BMPs) (kg)	Exceeds by (with BMPs) %
8001	**9713**	**12402**	**9278**	**14080**	**10253**	**2252**	**28**

Option 2C: Barrie and Area Centered Single Node_Final

Hewitts Creek

Table B - 8a: Phosphorous Load by Source in the Hewitts Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	304	234	83	199	70	70				
Hay/Pasture	12	7	6	5	4	4				
High Intensity Development	13	96	47	162	113	87				
Low Intensity Development	0	0	0	0	0	0				
Other	7	5	5	5	5	5				
Stream Bank Erosion	1	1	1	2	2	2				
Groundwater/Subsurface	65	56	50	61	61	61				
Point Source	0	270	270	270	270	270				
Septic Systems	7	7	7	4	4	4				
Non_point Source Total	409	407	198	438	259	233				
Totals	**409**	**677**	**468**	**708**	**529**	**503**	**342**	**161**	**47**	**-109**

Innisfil Creek

Table B - 8b: Phosphorous Load by Source in the Innisfil Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	867	754	269	701	250	250				
Hay/Pasture	294	279	278	266	266	266				
High Intensity Development	409	953	701	1240	988	743				
Low Intensity Development	6	13	9	12	8	8				
Other	102	41	41	99	99	99				
Stream Bank Erosion	8	12	11	14	14	14				
Groundwater/Subsurface	276	248	235	283	283	283				
Point Source	0	830	830	830	830	830				
Septic Systems	49	49	49	29	29	29				
Non_point Source Total	2010	2348	1593	2644	1937	1692				
Totals	**2010**	**3178**	**2423**	**3474**	**2767**	**2522**	**1868**	**654**	**35**	**-176**

Lovers Creek

Table B - 8c: Phosphorous Load by Source in the Lovers Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	563	525	27	318	112	112				
Hay/Pasture	22	20	9	14	14	14				
High Intensity Development	327	721	277	2324	2111	973				
Low Intensity Development	6	5	0	5	5	5				
Other	39	32	0	29	29	29				
Stream Bank Erosion	6	9	1	13	13	13				
Groundwater/Subsurface	146	118	8	104	104	104				
Point Source	0	1051	1051	1051	1051	1051				
Septic Systems	12	12	0	6	6	6				
Non_point Source Total	1122	1442	322	2813	2394	1256				
Totals	**1122**	**2493**	**1373**	**3864**	**3445**	**2307**	**881**	**1426**	**162**	**375**

West Holland

Table B - 8d: Phosphorous Load by Source in the West Holland Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	2686	2484	893	2456	883	883				
Hay/Pasture	395	369	291	374	295	295				
High Intensity Development	628	2115	1308	2177	1369	1225				
Low Intensity Development	46	37	37	39	39	39				
Other	86	100	100	229	229	229				
Stream Bank Erosion	14	20	20	28	28	28				
Groundwater/Subsurface	342	303	267	317	317	317				
Point Source	20	12	12	12	12	12				
Septic Systems	46	46	46	28	28	28				
Non_point Source Total	4243	5474	2962	5648	3188	3044				
Totals	**4263**	**5487**	**2974**	**5660**	**3200**	**3056**	**2982**	**74**	**2**	

Bear Creek

Table B - 8e: Phosphorous Load by Source in the Bear Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	525	444	317	397	284	284				
Hay/Pasture	131	115	113	106	105	105				
High Intensity Development	47	89	62	93	66	66				
Low Intensity Development	0	1	0	0	0	0				
Other	33	196	196	190	190	190				
Stream Bank Erosion	2	3	3	4	4	4				
Groundwater/Subsurface	122	119	114	120	120	120				
Point Source	0	0	0	0	0	0				
Septic Systems	4	54	54	32	32	32				
Non_point Source Total	863	1020	859	942	801	801				
Totals	**863**	**1020**	**859**	**942**	**801**	**801**	**859**	**-58**	**-7**	

Option 2C: Barrie and Area Centered Single Node_Final (Cont.)

Lower Nottawasaga

Table B - 8f: Phosphorous Load by Source in the Lower Nottawasaga Watershed

Source		ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	Exceeds by (kg)	% Exceeded	kg exceeded no WLA
Row Crops	3179	2908	2123	2644	1930	1930				
Hay/Pasture	562	528	528	493	493	493				
High Intensity Development	109	203	155	262	214	214				
Low Intensity Development	0	2	0	2	0	0				
Other	77	183	183	176	176	176				
Stream Bank Erosion	9	19	18	20	19	19				
Groundwater/Subsurface	742	727	684	727	727	727				
Point Source	335	440	440	440	440	440				
Septic Systems	295	24	24	15	15	15				
Non_point Source Total	4973	4594	3716	4339	3574	3574				
Totals	**5308**	**5034**	**4156**	**4779**	**4014**	**4014**	**4051**	**-37**	**-1**	

SUMMARY

Table B - 8g: Scenario Total Phosphorous for Affected Sub-watersheds

Target	ACS Existing Load (kg)	ACS Future Load (kg)	ACS Future (with BMPs) (kg)	Estimated IGAP Load (kg)	Estimated IGAP Load (with BMPs) (kg)	Exceeds by (with BMPs) (kg)	Exceeds by (with BMPs) %
10983	**13976**	**17889**	**12252**	**19427**	**13203**	**2220**	**20**

Option 3: Single Barrie Area Node with 40% Intensification in County

Hewitts Creek

Table B - 3a: Phosphorous Load by Source in the Hewitts Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	304	234	83	199	70	70				
Hay/Pasture	12	7	6	5	4	4				
High Intensity Development	13	96	47	184	134	92				
Low Intensity Development	0	0	0	0	0	0				
Other	7	5	5	5	5	5				
Stream Bank Erosion	1	1	1	2	2	2				
Groundwater/Subsurface	65	56	50	60	60	60				
Point Source	0	270	270	270	270	270				
Septic Systems	7	7	7	4	4	4				
Non_point Source Total	409	407	198	459	279	237				
Totals	**409**	**677**	**468**	**729**	**549**	**507**	**342**	**165**	**48**	**-105**

Innisfil Creek

Table B - 3b: Phosphorous Load by Source in the Innisfil Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	867	754	269	746	266	266				
Hay/Pasture	294	279	278	278	278	278				
High Intensity Development	409	953	701	960	708	630				
Low Intensity Development	6	13	9	13	9	9				
Other	102	41	41	102	102	102				
Stream Bank Erosion	8	12	11	13	13	13				
Groundwater/Subsurface	276	248	235	302	303	303				
Point Source	0	830	830	830	830	830				
Septic Systems	49	49	49	30	29	29				
Non_point Source Total	2010	2348	1593	2442	1708	1630				
Totals	**2010**	**3178**	**2423**	**3272**	**2538**	**2460**	**1868**	**592**	**32**	**-238**

Lovers Creek

Table B - 3c: Phosphorous Load by Source in the Lovers Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	563	525	27	296	104	104				
Hay/Pasture	22	20	9	13	13	13				
High Intensity Development	327	721	277	3667	3454	1233				
Low Intensity Development	6	5	0	4	4	4				
Other	39	32	0	19	19	19				
Stream Bank Erosion	6	9	1	17	17	17				
Groundwater/Subsurface	146	118	8	98	98	98				
Point Source	0	1051	1051	1051	1051	1051				
Septic Systems	12	12	0	6	6	6				
Non_point Source Total	1122	1442	322	4119	3715	1494				
Totals	**1122**	**2493**	**1373**	**5170**	**4766**	**2545**	**881**	**1664**	**189**	**613**

Bear Creek

Table B - 3d: Phosphorous Load by Source in the Bear Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	525	444	317	389	278	278				
Hay/Pasture	131	115	113	105	104	104				
High Intensity Development	47	89	62	109	82	82				
Low Intensity Development	0	1	0	0	0	0				
Other	33	196	196	187	187	187				
Stream Bank Erosion	2	3	3	4	4	4				
Groundwater/Subsurface	122	119	114	120	120	120				
Point Source	0	0	0	0	0	0				
Septic Systems	4	54	54	31	31	31				
Non_point Source Total	863	1020	859	945	806	806				
Totals	**863**	**1020**	**859**	**945**	**806**	**806**	**859**	**-53**	**-6**	

Lower Nottawasaga

Table B - 3e: Phosphorous Load by Source in the Lower Nott Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	3179	2908	2123	2693	1966	1966				
Hay/Pasture	562	528	528	502	502	502				
High Intensity Development	109	203	155	225	177	177				
Low Intensity Development	0	2	0	2	0	0				
Other	77	183	183	176	176	176				
Stream Bank Erosion	9	19	18	19	18	18				
Groundwater/Subsurface	742	727	684	733	733	733				
Point Source	335	440	440	440	440	440				
Septic Systems	295	24	24	15	15	15				
Non_point Source Total	4973	4594	3716	4365	3587	3587				
Totals	**5308**	**5034**	**4156**	**4805**	**4027**	**4027**	**4051**	**-24**	**-1**	

SUMMARY

Table B - 3f: Scenario Total Phosphorous for Affected Sub-watersheds

Target	ACS Existing Load (kg)	ACS Future Load (kg)	ACS Future (with BMPs) (kg)	Estimated IGAP Load (kg)	Estimated IGAP Load (with BMPs) (kg)	Exceeds by (with BMPs) (kg)	Exceeds by (with BMPs) %
8001	**9713**	**12402**	**9278**	**14921**	**10344**	**2343**	**29**

Option 4: Multi Nodal Expansion

Hewitts Creek

TableB - 4a: Phosphorous Load by Source in the Hewitts Creek Watershed										
Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	304	234	83	196	69	69				
Hay/Pasture	12	7	6	6	5	5				
High Intensity Development	13	96	47	219	169	101				
Low Intensity Development	0	0	0	0	0	0				
Other	7	5	5	5	5	5				
Stream Bank Erosion	1	1	1	2	2	2				
Groundwater/Subsurface	65	56	50	58	59	59				
Point Source	0	270	270	270	270	270				
Septic Systems	7	7	7	3	4	4				
Non_point Source Total	409	407	198	490	313	244				
Totals	**409**	**677**	**468**	**760**	**583**	**514**	**342**	**172**	**50**	**-98**

Innisfil Creek

Table B - 4b: Phosphorous Load by Source in the Innisfil Creek Watershed										
Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	867	754	269	745	266	266				
Hay/Pasture	294	279	278	278	278	278				
High Intensity Development	409	953	701	1021	770	643				
Low Intensity Development	6	13	9	12	9	9				
Other	102	41	41	101	101	101				
Stream Bank Erosion	8	12	11	13	13	13				
Groundwater/Subsurface	276	248	235	301	301	301				
Point Source	0	830	830	830	830	830				
Septic Systems	49	49	49	29	29	29				
Non_point Source Total	2010	2348	1593	2501	1766	1639				
Totals	**2010**	**3178**	**2423**	**3331**	**2596**	**2469**	**1868**	**601**	**32**	**-229**

Lovers Creek

Table B - 4c: Phosphorous Load by Source in the Lovers Creek Watershed										
Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	563	525	27	298	105	105				
Hay/Pasture	22	20	9	12	12	12				
High Intensity Development	327	721	277	3739	3527	1247				
Low Intensity Development	6	5	0	4	4	4				
Other	39	32	0	16	15	15				
Stream Bank Erosion	6	9	1	17	17	17				
Groundwater/Subsurface	146	118	8	96	96	96				
Point Source	0	1051	1051	1051	1051	1051				
Septic Systems	12	12	0	6	6	6				
Non_point Source Total	1122	1442	322	4188	3781	1502				
Totals	**1122**	**2493**	**1373**	**5239**	**4832**	**2553**	**881**	**1672**	**190**	**621**

West Holland

Table B - 4d: Phosphorous Load by Source in the West Holland Watershed										
Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	2686	2484	893	2386	858	858				
Hay/Pasture	395	369	291	365	288	288				
High Intensity Development	628	2115	1308	2689	1881	1384				
Low Intensity Development	46	37	37	38	39	39				
Other	86	100	100	227	227	227				
Stream Bank Erosion	14	20	20	30	30	30				
Groundwater/Subsurface	342	303	267	310	310	310				
Point Source	20	12	12	12	12	12				
Septic Systems	46	46	46	28	28	28				
Non_point Source Total	4243	5474	2962	6072	3660	3164				
Totals	**4263**	**5487**	**2974**	**6085**	**3673**	**3176**	**2982**	**194**	**7**	

Bear Creek

Table B - 4e: Phosphorous Load by Source in the Bear Creek Watershed										
Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	525	444	317	389	278	278				
Hay/Pasture	131	115	113	105	104	104				
High Intensity Development	47	89	62	108	81	81				
Low Intensity Development	0	1	0	0	0	0				
Other	33	196	196	187	187	187				
Stream Bank Erosion	2	3	3	4	4	4				
Groundwater/Subsurface	122	119	114	120	120	120				
Point Source	0	0	0	0	0	0				
Septic Systems	4	54	54	31	31	31				
Non_point Source Total	863	1020	859	944	805	805				
Totals	**863**	**1020**	**859**	**944**	**805**	**805**	**859**	**-54**	**-6**	

Option 4: Multi Nodal Expansion (Cont.)

Boyne River

Table B - 4f: Phosphorous Load by Source in the Boyne River Watershed										
Source	**ACS Existing Scenario (kg/year)**	**ACS Future Scenario (kg/year)**	**ACS Future (with BMPs)**	**IGAP Growth Scenario (kg/year)**	**IGAP Growth (with BMPs)**	**IGAP Growth (with BMPs & Urban Reduct)**	**Target P Load (kg/year)**	**kg exceeded**	**% Exceeded**	**kg exceeded no WLA**
Row Crops	3728	3470	2469	3373	2399	2399				
Hay/Pasture	271	245	242	234	231	231				
High Intensity Development	151	428	275	456	303	303				
Low Intensity Development	0	2	1	2	0	0				
Other	176	123	123	122	122	122				
Stream Bank Erosion	7	14	14	14	14	14				
Groundwater/Subsurface	450	430	396	431	431	431				
Point Source	37	334	334	334	334	334				
Septic Systems	72	72	72	43	43	43				
Non_point Source Total	4856	4784	3590	4675	3543	3543				
Totals	**4893**	**5118**	**3924**	**5009**	**3877**	**3877**	**3627**	**250**	**7**	

Lower Nottawasaga

Table B - 4g: Phosphorous Load by Source in the Lower Nottawasaga Watershed										
Source	**ACS Existing Scenario (kg/year)**	**ACS Future Scenario (kg/year)**	**ACS Future (with BMPs)**	**IGAP Growth Scenario (kg/year)**	**IGAP Growth (with BMPs)**	**IGAP Growth (with BMPs & Urban Reduct)**	**Target P Load (kg/year)**	**kg exceeded**	**% Exceeded**	**kg exceeded no WLA**
Row Crops	3179	2908	2123	2669	1948	1948				
Hay/Pasture	562	528	528	481	481	481				
High Intensity Development	109	203	155	262	214	214				
Low Intensity Development	0	2	0	2	0	0				
Other	77	183	183	176	176	176				
Stream Bank Erosion	9	19	18	20	19	19				
Groundwater/Subsurface	742	727	684	730	730	730				
Point Source	335	440	440	440	440	440				
Septic Systems	295	24	24	15	15	15				
Non_point Source Total	4973	4594	3716	4355	3583	3583				
Totals	**5308**	**5034**	**4156**	**4796**	**4023**	**4023**	**4051**	**-28**	**-1**	

SUMMARY

Table B - 4h: Scenario Total Phosphorous for Affected Sub-watersheds							
Target	**ACS Existing Load (kg)**	**ACS Future Load (kg)**	**ACS Future (with BMPs) (kg)**	**Estimated IGAP Load (kg)**	**Estimated IGAP Load (with BMPs) (kg)**	**Exceeds by (with BMPs) (kg)**	**Exceeds by (with BMPs) %**
14610	**18869**	**23007**	**16176**	**26164**	**17418**	**2808**	**19**

Option 4B: Multi Nodal Expansion_Revised

Hewitts Creek

Table B - 7a: Phosphorous Load by Source in the Hewitts Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	304	234	83	227	80	80				
Hay/Pasture	12	7	6	7	6	6				
High Intensity Development	13	96	47	72	23	23				
Low Intensity Development	0	0	0	0	0	0				
Other	7	5	5	6	6	6				
Stream Bank Erosion	1	1	1	1	1	1				
Groundwater/Subsurface	65	56	50	65	65	65				
Point Source	0	270	270	270	270	270				
Septic Systems	7	7	7	4	4	4				
Non_point Source Total	409	407	198	382	185	185				
Totals	**409**	**677**	**468**	**652**	**455**	**455**	**342**	**113**	**33**	**-157**

Lovers Creek

Table B - 7b: Phosphorous Load by Source in the Lovers Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	563	525	27	368	129	129				
Hay/Pasture	22	20	9	14	14	14				
High Intensity Development	327	721	277	2033	1820	875				
Low Intensity Development	6	5	0	5	5	5				
Other	39	32	0	30	30	30				
Stream Bank Erosion	6	9	1	12	12	12				
Groundwater/Subsurface	146	118	8	112	112	112				
Point Source	0	1051	1051	1051	1051	1051				
Septic Systems	12	12	0	7	7	7				
Non_point Source Total	1122	1442	322	2581	2129	1184				
Totals	**1122**	**2493**	**1373**	**3632**	**3180**	**2235**	**881**	**1354**	**154**	**303**

West Holland

Table B - 7c: Phosphorous Load by Source in the West Holland Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	2686	2484	893	2401	863	863				
Hay/Pasture	395	369	291	367	290	290				
High Intensity Development	628	2115	1308	2561	1753	1345				
Low Intensity Development	46	37	37	39	39	39				
Other	86	100	100	228	228	228				
Stream Bank Erosion	14	20	20	29	29	29				
Groundwater/Subsurface	342	303	267	312	312	312				
Point Source	20	12	12	12	12	12				
Septic Systems	46	46	46	28	28	28				
Non_point Source Total	4243	5474	2962	5965	3542	3134				
Totals	**4263**	**5487**	**2974**	**5977**	**3554**	**3147**	**2982**	**165**	**6**	

Bear Creek

Table B - 7d: Phosphorous Load by Source in the Bear Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	525	444	317	397	284	284				
Hay/Pasture	131	115	113	106	105	105				
High Intensity Development	47	89	62	94	67	67				
Low Intensity Development	0	1	0	0	0	0				
Other	33	196	196	190	190	190				
Stream Bank Erosion	2	3	3	4	4	4				
Groundwater/Subsurface	122	119	114	120	120	120				
Point Source	0	0	0	0	0	0				
Septic Systems	4	54	54	32	32	32				
Non_point Source Total	863	1020	859	943	802	802				
Totals	**863**	**1020**	**859**	**943**	**802**	**802**	**859**	**-57**	**-7**	

Boyne River

Table B - 7e: Phosphorous Load by Source in the Boyne River Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	3728	3470	2469	3373	2399	2399				
Hay/Pasture	271	245	242	234	231	231				
High Intensity Development	151	428	275	456	303	303				
Low Intensity Development	0	2	1	2	0	0				
Other	176	123	123	122	122	122				
Stream Bank Erosion	7	14	14	14	14	14				
Groundwater/Subsurface	450	430	396	431	431	431				
Point Source	37	334	334	334	334	334				
Septic Systems	72	72	72	43	43	43				
Non_point Source Total	4856	4784	3590	4675	3543	3543				
Totals	**4893**	**5118**	**3924**	**5009**	**3877**	**3877**	**3627**	**250**	**7**	

Option 4B: Multi Nodal Expansion_Revised (Cont.)

Lower Nottawasaga

Table B - 7f: Phosphorous Load by Source in the Lower Nottawasaga Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	3179	2908	2123	2671	1950	1950				
Hay/Pasture	562	528	528	481	481	481				
High Intensity Development	109	203	155	243	195	195				
Low Intensity Development	0	2	0	2	0	0				
Other	77	183	183	176	176	176				
Stream Bank Erosion	9	19	18	20	19	19				
Groundwater/Subsurface	742	727	684	731	731	731				
Point Source	335	440	440	440	440	440				
Septic Systems	295	24	24	15	15	15				
Non_point Source Total	4973	4594	3716	4339	3567	3567				
Totals	**5308**	**5034**	**4156**	**4779**	**4007**	**4007**	**4051**	**-44**	**-1**	

SUMMARY

Table B - 7g: Scenario Total Phosphorous for Affected Sub-watersheds

Target	ACS Existing Load (kg)	ACS Future Load (kg)	ACS Future (with BMPs) (kg)	Estimated IGAP Load (kg)	Estimated IGAP Load (with BMPs) (kg)	Exceeds by (with BMPs) (kg)	Exceeds by (with BMPs) %
12742	**16859**	**19829**	**13753**	**20992**	**14522**	**1780**	**14**

Option 5: Dispersed Expansion

Innisfil Creek

Table B - 5a: Phosphorous Load by Source in the Innisfil Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	867	754	269	731	261	261				
Hay/Pasture	294	279	278	268	268	268				
High Intensity Development	409	953	701	1135	883	685				
Low Intensity Development	6	13	9	12	8	8				
Other	102	41	41	100	100	100				
Stream Bank Erosion	8	12	11	14	14	14				
Groundwater/Subsurface	276	248	235	298	298	298				
Point Source	0	830	830	830	830	830				
Septic Systems	49	49	49	29	29	29				
Non_point Source Total	2010	2348	1593	2586	1861	1663				
Totals	**2010**	**3178**	**2423**	**3416**	**2691**	**2493**	**1868**	**625**	**33**	**-205**

Lovers Creek

Table B - 5b: Phosphorous Load by Source in the Lovers Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	563	525	27	389	137	137				
Hay/Pasture	22	20	9	13	13	13				
High Intensity Development	327	721	277	3552	3340	1116				
Low Intensity Development	6	5	0	5	5	5				
Other	39	32	0	28	28	28				
Stream Bank Erosion	6	9	1	14	14	14				
Groundwater/Subsurface	146	118	8	113	113	113				
Point Source	0	1051	1051	1051	1051	1051				
Septic Systems	12	12	0	6	6	6				
Non_point Source Total	1122	1442	322	4121	3655	1432				
Totals	**1122**	**2493**	**1373**	**5172**	**4706**	**2483**	**881**	**1602**	**182**	**551**

West Holland

Table B - 5c: Phosphorous Load by Source in the West Holland Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	2686	2484	893	2413	867	867				
Hay/Pasture	395	369	291	371	293	293				
High Intensity Development	628	2115	1308	2455	1647	1315				
Low Intensity Development	46	37	37	39	39	39				
Other	86	100	100	228	228	228				
Stream Bank Erosion	14	20	20	29	29	29				
Groundwater/Subsurface	342	303	267	311	311	311				
Point Source	20	12	12	12	12	12				
Septic Systems	46	46	46	28	28	28				
Non_point Source Total	4243	5474	2962	5873	3442	3110				
Totals	**4263**	**5487**	**2974**	**5886**	**3454**	**3123**	**2982**	**141**	**5**	

Bear Creek

Table B - 5d: Phosphorous Load by Source in the Bear Creek Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	525	444	317	391	279	279				
Hay/Pasture	131	115	113	105	104	104				
High Intensity Development	47	89	62	106	79	79				
Low Intensity Development	0	1	0	0	0	0				
Other	33	196	196	187	187	187				
Stream Bank Erosion	2	3	3	4	4	4				
Groundwater/Subsurface	122	119	114	120	120	120				
Point Source	0	0	0	0	0	0				
Septic Systems	4	54	54	31	31	31				
Non_point Source Total	863	1020	859	944	804	804				
Totals	**863**	**1020**	**859**	**944**	**804**	**804**	**859**	**-55**	**-6**	

Boyne River

Table B - 5e: Phosphorous Load by Source in the Boyne River Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	3728	3470	2469	3379	2404	2404				
Hay/Pasture	271	245	242	235	232	232				
High Intensity Development	151	428	275	448	295	295				
Low Intensity Development	0	2	1	2	0	0				
Other	176	123	123	122	122	122				
Stream Bank Erosion	7	14	14	14	14	14				
Groundwater/Subsurface	450	430	396	431	431	431				
Point Source	37	334	334	334	334	334				
Septic Systems	72	72	72	43	43	43				
Non_point Source Total	4856	4784	3590	4674	3541	3541				
Totals	**4893**	**5118**	**3924**	**5008**	**3875**	**3875**	**3627**	**248**	**7**	

Option 5: Dispersed Expansion (Cont.)

Lower Nottawasaga

Table B - 5f: Phosphorous Load by Source in the Lower Nottawasaga Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	3179	2908	2123	2695	1967	1967				
Hay/Pasture	562	528	528	500	500	500				
High Intensity Development	109	203	155	222	174	174				
Low Intensity Development	0	2	0	2	0	0				
Other	77	183	183	176	176	176				
Stream Bank Erosion	9	19	18	18	17	17				
Groundwater/Subsurface	742	727	684	733	733	733				
Point Source	335	440	440	440	440	440				
Septic Systems	295	24	24	15	15	15				
Non_point Source Total	4973	4594	3716	4361	3582	3582				
Totals	**5308**	**5034**	**4156**	**4801**	**4022**	**4022**	**4051**	**-29**	**-1**	

Innisfil (NVCA)

Table B - 5g: Phosphorous Load by Source in the Innisfil (NVCA) Watershed

Source	ACS Existing Scenario (kg/year)	ACS Future Scenario (kg/year)	ACS Future (with BMPs)	IGAP Growth Scenario (kg/year)	IGAP Growth (with BMPs)	IGAP Growth (with BMPs & Urban Reduct)	Target P Load (kg/year)	kg exceeded	% Exceeded	kg exceeded no WLA
Row Crops	4687	4463	3040	4382	2984	2984				
Hay/Pasture	885	853	853	843	831	831				
High Intensity Development	112	172	139	198	165	165				
Low Intensity Development	0	20	4	20	4	4				
Other	174	221	221	220	220	220				
Stream Bank Erosion	7	20	19	21	20	20				
Groundwater/Subsurface	998	986	910	985	985	985				
Point Source	69	200	200	200	200	200				
Septic Systems	172	172	172	103	103	103				
Non_point Source Total	7036	6908	5358	6773	5312	5312				
Totals	**7105**	**7108**	**5557**	**6972**	**5512**	**5512**	**5427**	**85**	**2**	

SUMMARY

Table B - 5h: Scenario Total Phosphorous for Affected Sub-watersheds

Target	ACS Existing Load (kg)	ACS Future Load (kg)	ACS Future (with BMPs) (kg)	Estimated IGAP Load (kg)	Estimated IGAP Load (with BMPs) (kg)	Exceeds by (with BMPs) (kg)	Exceeds by (with BMPs) %
19695	**25565**	**29437**	**21265**	**32199**	**22312**	**2617**	**13**

APPENDIX H: COST AND INFRASTRUCTURE NEEDS ANALYSIS

Part 1: Recommended Urban Structure Servicing Cost Analysis

The municipal water and wastewater systems in the study area were assessed based on the preferred urban structure. Data obtained through the Infrastructure Assessment Report, March 2006, was the foundation of the analysis and represents the current system capacity. The preferred urban structure offers new growth that ultimately increases the required capacities of the municipal systems. Appendix H1 and H3 summarize the analyzed information and presents approximate costs and a suggested course of action to close the gap created by the new proposed populations.

The columns within Appendix H1 and H3 are described below. Any assumptions that were made during the assessment of the systems are noted:

- **Current Rated Capacity (m^3/day) -** The rated capacity is as per the Infrastructure Assessment Report, March 2006. This value identifies the existing capacity of the system.

- **Committed Capacity Increase (m^3/day) -** The committed capacity increase is the future increase in a systems capacity that has been identified in Class Environmental Assessment (EA) which will be achieved through plant expansions or optimizations. A total cost for the expansion or optimization is typically identified in the EA.

- **Ultimate Required Capacity –** The ultimate required capacity includes the existing serviced population, as identified in Appendix A and C of the Infrastructure Assessment Report, the new recommended urban structure populations and new employment growth. Appendix H2 and H4 restate the serviced populations for both water and wastewater systems. These Appendices also include the total residential and employment demand, as per the recommended urban structure. Several assumptions were made when applying the new growth to the municipal systems, they are as follows:

    - The recommended urban structure populations from 2006-2031 were calculated for the municipalities as an entirety therefore, it was necessary to disperse the new growth into the municipal system. It was assumed that the ratio of a systems current serviced population versus the current serviced population of the municipality would be applied to the new growth. For example, the total water supply serviced population of a municipality is 10,000 persons and a system within the municipality has a serviced population of 5000 persons, therefore creating a ratio of 2:1. This ratio was then applied to the recommended urban structure; in this case, the system would receive 50% of the municipal growth.

    - The total additional demands do not correlate for water and wastewater servicing. This is because approximately 10% of the new residential demand is allocated to partially serviced systems (no wastewater services). It was assumed that the same growth would be applied to areas with both water and wastewater servicing. In these cases, the wastewater servicing residential demand was made to correspond with the systems water servicing residential demand.

- The employment demand includes the additional land required for the projected employment growth between 2006 and 2031. It does not include any new employment within the existing municipal boundaries as it is considered in the recommended urban structure (equivalent population).

- The employment data was provided in hectares. Therefore it is assumed that for all municipalities, except Barrie, the persons per hectare is 38. The persons per hectare for Barrie is 47.

- The Barrie and Area's recommended urban structure residential growth was dispersed through the City's limits and the Town of Innisfil. The recommended structure identifies new greenfield land supply of 1,785.28 hectares for the Barrie Area which equates to approximately 36,571 units. The persons per unit used to determine the number of people in the area was 2.52. Therefore, it was assumed that 92,159 persons (36,571 units x 2.52 ppu) is the additional demand within the Town of Innisfil limits.

  The new growth population for the Barrie Area between 2006 and 2031, based on the recommended urban structure, is 111,885 persons. Therefore, it was assumed that a population growth of 19,726 persons (111,885 persons – 92,159 persons) would be within the City of Barrie limits. The additional employment lands required were assumed to be within the Town of Innisfil limits.

- It was assumed that any additional growth in the Town of New Tecumseth, as per the recommended urban structure, would be serviced at the Regional Wastewater Treatment Plant.

- The ultimate required capacity in persons was converted to m^3/day using the respective ADD/cap for wastewater and MDD/cap for water supply, as per Appendix A and C of the Infrastructure Assessment Report, March 2006.

- **Total Additional Demand –** The total additional demand represents the residential growth from 2006 to 2031 as per the recommended urban structure and the additional employment land required.

- **Total Gap (m^3/day) –** The total gap represents the difference between the current rated capacity and the ultimate required capacity in m^3/day. If a negative gap is the result, there is insufficient capacity in the current system to service the additional demand. All values have been rounded to the nearest 50 m^3/day.

- **Alternatives to Close Gap –** The alternatives to close the gap were assumed based on the magnitude of the total gap.

- **Evaluation Criteria: Environmental –** The environmental evaluation criteria is as per the Infrastructure Assessment Report, March 2006. The opinions were made based on a general understanding of the anticipated impacts rather than on detailed assessment. They are expressed as "N/A", "Low", "Medium", "High" and "Extremely High"

- **N/A** – There is no environmental impact due to the fact that there are no identified works required. There is no Gap in the residual capacity.

- **Low** – A majority of the "Low" designated projects have been the subject of previously completed Class Environmental Assessments. Depending on the completion date of the Class EA, an Addendum may be necessary if the Class EA was completed more than 5 years prior to final design and construction. The remainder of the "Low" designated projects fall under either a Schedule A or B Activity as defined by the MEA Class EA Document. Examples of these works include upgrading well pumps and reducing inflow and infiltration into existing sewers. In these cases, a minimal amount of work will be required to complete the Class EA planning process.

- **Medium** – These projects fall into the category of Schedule B Activities as defined by the MEA Class EA Document. Projects such as the transfer of water from a supply source with more than adequate residual capacity to another, near-by distribution system or the development of new groundwater supplies that are not "GUDI" have been classed as Medium. With respect to wastewater, any projects involving the transfer of either raw or treated wastewater from one municipality to an existing plant with more than sufficient capacity were rated as "Medium".

- **High** – Projects, which involve the development of a new surface water supply, were rated as requiring a "High" level of environmental assessment. This is due to the increased level of treatment and the higher cost. Included in this group are the projects that involve a connection to the Regional pipeline. With respect to wastewater, all projects involving the expansion of an existing treatment plant beyond its current rated capacity were classed as "High".

- **Extremely High** – The only project that was rated as "Extremely High" was the option of increasing the capacity of the Stayner STP with an increased discharge to Lamont Creek. It is considered that such an option will never be acceptable under any circumstances.

- **Evaluation Criteria: Estimated Costs per m^3/day –** The estimated costs per m^3/day are common to the suggested method of expansion. The following tables describe the type of expansion, the cost associated and a description of the works included. The estimated costs differ from those of the Infrastructure Assessment Report, March 2006, due to inflation. The previous report was based on 2005 prices where the following is based on 2006:

Wastewater Treatment Expansion Rates

Type of Expansion	Estimated Cost per Cubic Meter ($/$m^3$)	Description of Works Included

Construction of a new or expansion of an existing wastewater treatment plant that provides a secondary level of treatment	$3,000	Includes Engineering Design & Approvals (EA): Includes new property; Includes Secondary Treatment; Includes new outfall; Excludes expansion of collection system;
Construction of a new or expansion of an existing wastewater treatment plant that provides a tertiary level of treatment and regularly used phosphorus removal technology.	$3,500	Includes Engineering Design & Approvals (EA): Includes Tertiary Treatment; Includes outfall expansion; Excludes expansion of collection system;
Construction of a new or expansion of an existing wastewater treatment plant that provides a tertiary level of treatment and extremely advanced phosphorus removal technology.	$4,500	Includes Engineering Design & Approvals (EA): Includes Tertiary Treatment; Includes advanced phosphorus removal technology; Includes outfall expansion; Excludes expansion of collection system;

Water Supply Expansion Rates

Type of Expansion	Estimated Cost per Cubic Meter ($/m^3)	Description of Works Included
Expansion of the Collingwood Surface Water Treatment Plant	$800	Based on Preliminary Design completed by the Town of Collingwood for their Surface water Treatment Plant expansion. (Estimate used for Collingwood and potential users along Collingwood to Alliston pipeline only).
Construction of a new Barrie Surface Water Treatment Plant	$900	Based on Preliminary Design completed by the City of Barrie for their new Surface water Treatment Plant and any further expansions required. (Estimate used for Barrie).
Expand existing Groundwater Supply systems which are larger than 500m^3/day capacity.	$1,000	Includes Engineering Design & Approvals (EA & PTTW): Includes development of new Well; Includes expansion to Pumping Station; Excludes any Reservoirs; Excludes distribution mains;
Expansion of the existing Alcona Surface Water Treatment Plant.	$1,250	Estimate based upon the agreement between the Town of Bradford and the Town of Innisfil (Estimate used for Bradford and Alcona only).
Expand existing Groundwater Supply systems which are smaller than 500m^3/day capacity.	$1,500	Includes Engineering Design & Approvals (EA & PTTW): Includes development of new Well; Includes expansion to Pumping Station; Excludes any Reservoirs; Excludes distribution mains;

Expansion of an existing Surface Water Treatment Plant (SWTP)	$1,500	Includes Engineering Design & Approvals (EA & PTTW); Assumes 3 log removal filters; Includes expansion to intake and associated low lift pumping; Excludes any Reservoirs; Excludes any distribution mains;

- **Evaluation Criteria: Total Cost –** The total cost was calculated by multiplying the total gap in m^3/day by the estimated cost per m^3/day. For example, if a system has a gap of 1,000 m^3/day then the total cost to service the gap at $1,500 m^3/day is $1,500,000 ($1.5 million). In some cases the total cost is a lump sum. When this occurs, notes have been included in the Other Issues column to describe what is included in the lump sum cost.

- **Evaluation Criteria: Other Issues –** The other issues column is used to describe pending conflicts or actions that will have to be addressed prior to closing the gap. N/A is included in cases where there are no apparent conflicts. The other issues also include the description of the lump sum cases.

- **Suggested Course of Action –** The suggested course of action describes the optional process that could be taken to close the servicing gap.

The following footnotes have been included with the Appendices:

Wastewater Systems Cost Analysis and Option Assessment

- The Completed EA for New Tecumseth Wastewater allows the Regional WWTP to expand to 23,000 m^3/day. The Sir Frederic Banting WWTP will remain at the current capacity of 5,681 m^3/day and the Tottenham WWTP will be decommissioned. The value of 16,642 m^3/day is the difference between the expanded capacity and the adjusted rated capacities of the Regional and Tottenham WWTPs (adjusted to compensate for current Provincial Orders).

- The Ultimate Required Capacity includes the existing sewage flow and the additional sewage flow demand.

- The Total Additional Demand includes the Additional residential and employment sewage demand.

- The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity Increase has not been included in the total gap.

- Residential Units provided by Dillon Consulting via email August 11, 2006: Revised Table for Table 3.2.xls

- The service population is as per Appendix A of the Infrastructure Assessment Report, March 2006.

- Employment Data provided by Dillon Consulting via email July 19, 2006: Employmentrevised071906.xls

- Employment Data includes the high end approximation of additional employment land required. The persons per hectare for each municipality, excluding Barrie, is 38. The persons per hectare for Barrie is 47.

- The existing Residual Capacities does not include additional capacity from approved EA expansions.

- Snow Valley Highlands Wastewater Treatment Plant only became operational in 2006 and therefore it does not have any historical flow data and is not referenced in the March 2006 Infrastructure Report. The Ultimate Required Capacity is as per the Township of Springwater Snow Valley Secondary Plan Master Servicing Report dated January 2002.

- The total municipal residential demand is dispersed throughout the systems based on the ratio between the system's serviced population and the serviced population of the municipality. In some cases, the residential demand is equal to the system's water supply residential demand.

Water Systems Cost Analysis and Option Assessment

- The existing Residual Capacities does not include additional capacity from approved EA expansions.

- The total municipal residential demand is dispersed throughout the systems based on the ratio between the system's population and the population of the municipality.

- The Ultimate Required Capacity includes the existing water supply demand and the additional water supply demand.

- The Total Additional Demand includes the Additional residential and employment water supply demand.

- The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity has not been included in the total gap.

- The Collingwood EA identified a committed capacity range of 16,035 m^3/day to 30,300 m^3/day. For the purpose of the assessment, the high range of 30,300 m^3/day was used.

- Residential Units provided by Dillon Consulting via email August 11, 2006: Revised Table for Table 3.2.xls

- The service population is as per Appendix C of the Infrastructure Assessment Report, March 2006.

- Employment Data provided by Dillon Consulting via email July 19, 2006: Employmentrevised071906.xls

- Employment Data includes the high end approximation of additional employment land required. The persons per hectare for each municipality, excluding Barrie, is 38. The persons per hectare for Barrie is 47.

Appendix H1
Recommended Urban Structure
Optimized Barrie and Area Centered Single Node
Wastewater Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Town of Bradford West Gwillimbury		8,870	10,980	35,557	16,001	18,157	8,171	-7,150	Expand the Existing WPCP	High	$3,500	**$25,025,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
City of Barrie		57,100	18,900	264,485	117,664	148,185	65,924	-60,550	Expand the Existing WPCP	High	$4,500	**$272,475,000**	Review Impacts on Lake Simcoe via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Township of Clearview	Stayner	2,500	0	8,172	3,321	4,112	1,671	-800	Existing WPCP cannot be expanded due to limits on receiving Lamont Creek	Extremely High	$3,000	**$12,400,000**	N/A	Pump raw sewage to Wasaga Beach and/or Collingwood. Note: The total cost includes the cost per cubic meter and $10,000,000 for a pump station and forcemain to either Collingwood or Wasaga Beach.
									Raw wastewater could be pumped to either Collingwood or Wasaga Beach	Medium or High			Cross Boundary Servicing Agreements Required	
									Treated effluent could be pumped to another discharge point	High			Cross Boundary Servicing Agreements Required	
	Creemore	1,400	0	2,923	860	1,523	448	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Town of Collingwood		24,545	0	24,926	29,564	9,947	11,798	-5,000	Expand the Existing WPCP	High	$3,000	**$15,000,000**	Review Impacts of new outfall on Georgian Bay via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is also suggested that an intensive program to eliminate I/I be implemented to reduce flows. Subsequently expand Existing Wastewater Treatment Plant.
Township of Essa - Angus		5,511	0	11,431	4,529	5,231	2,072	1,000	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Town of Innisfil	Alcona Lakeshore	14,370	0	28,191	11,586	9,021	3,707	2,800	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Cookstown	825	0	2,724	1,049	1,200	462	-200	Expand existing WPCP using existing discharge stream	High	$7,300,000	**$500,000**	Review Impacts on receiving stream via ACS Model	Reinvestigate the Historical Flows as the flow meter(s) were faulty in 2003 & 2004. In the interim reduce historical per capita flow by eliminating Inflow/Infiltration (I/I).
									Pump Wastewater to another facility (Alliston or Alcona)	High	$8,000,000		Possibly Cross Boundary Servicing Agreements Required	
									Expand existing WPCP and discharge effluent elsewhere	High	$8,200,000		Possibly Cross Boundary Servicing Agreements Required	
									Reduce I/I and Per Capita Flows	Low	$500,000 (L.S.)		N/A	
Town of Midland		15,665	0	18,788	13,094	4,788	3,337	2,600	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Town of New Tecumseth (See Note 1)	Tottenham	2,509	16,642	8,460	4,245	3,460	1,736	-1,750	Expand existing WPCP using existing discharge stream	High	$4,500	**$34,100,000**	Review Impacts on receiving stream via ACS Model	Expand Regional Wastewater Treatment Plant in accordance with the completed Environmental Assessment and subsequently pump sewage to Alliston. Note: The total cost includes the cost per cubic meter times the Ultimate Required Capacity in Tottenham (4,245m^3/day) and $10,000,000 for a pump station and forcemain to Alliston and $5,000,000 for decommission existing WWTP.
									Divert Wastewater and associated loadings to Alliston Regional Plant	High			Review Impacts on receiving stream via ACS Model	
	Alliston Sir Frederic Banting & Regional WWTP	9,530		23,862	12,695	9,729	4,993	-3,200	Retrofit Existing & Expand WPCP using existing discharge stream	High	$4,500	**$39,400,000**	Review Impacts on receiving stream via ACS Model	Expand Regional Wastewater Treatment Plant in accordance with the completed Environmental Assessment. Note: The total cost includes the cost per cubic meter and $25,000,000 for the retrofits to the existing Regional WWTP.
City of Orillia		27,300	0	34,773	22,573	6,359	4,128	4,750	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Town of Penetanguishene	Fox Street	1,500	0	1,883	1,815	714	688	-300	Expand the Existing WPCP	High	$3,500	**$1,050,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	Main Street	4,545	2,205	7,783	6,825	2,952	2,588	-2,300	Expand the Existing WPCP	High	$3,500	**$8,050,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.

Appendix H1
Recommended Urban Structure
Optimized Barrie and Area Centered Single Node
Wastewater Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Ramara	Lagoon City	1,713	0	3,916	2,532	1,608	1,040	-900	Expand the Existing WPCP	High	$3,500	**$3,150,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	Bayshore Village	399	0	1,023	502	362	178	-100	Expand the Existing WPCP	High	$4,500	**$450,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Township of Severn	Washago	228	0	484	155	166	53	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Coldwater	545	0	2,697	833	1,374	424	-300	Expand existing WPCP	High	$4,500	**$1,350,000**	Review Impacts of expanded outfall on the receiving stream	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	West Shore	1,390	0	3,275	1,474	1,025	461	-100	Expand existing WPCP	High	$3,500	**$350,000**	Review Impacts of expanded outfall on the receiving stream	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Township of Springwater	Elmvale	1,800	0	3,480	1,829	1,191	626	0	Reduce I/I and Per Capita Flows, Optimize plant.	N/A	L.S.	**$200,000**	N/A	Reduce historical per capita flow by eliminating inflow and infiltration and optimize the plant.
	Snow Valley Highlands (See Note 5)	225	0	1,542	892	1,150	667	-650	Expand existing WPCP	High	$3,500	**$2,275,000**	Review Impacts of expanded outfall on the receiving stream	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Township of Tay - Port McNicoll / Village of		4,282	0	6,929	3,118	1,454	654	1,150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Town of Wasaga Beach		15,433	0	32,123	9,372	16,690	4,870	6,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
						250,399		-64,400				**$415,775,000**		

Note 1: The Completed EA for New Tecumseth Wastewater allows the Regional WWTP to expand to 23,000 m^3/day. The Sir Frederic Banting WWTP will remain at the current capacity of 5,681 m^3/day and the Tottenham WWTP will be decommissioned. The value of 16,642 m^3/day is the difference between the expanded capacity and the adjusted rated capacities of the Regional and Tottenham WWTPs (adjusted to compensate for current Provincial Orders).

Note 2: The Ultimate Required Capacity includes the existing sewage flow and the additional sewage flow demand.

Note 3: The Total Additional Demand includes the Additional residential and employment sewage demand.

Note 4: The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity Increase has not been included in the total gap.

Note 5: Snow Valley Highlands Wastewater Treatment Plant only became operational in 2006 and therefore it does not have any historical flow data and is not referenced in the March 2006 Infrastructure Report. The Ultimate Required Capacity is as per the Township of Springwater Snow Valley Secondary Plan Master Servicing Report dated January 2002.

Appendix H2
Recommended Urban Structure
Optimized Barrie and Area Centered Single Node
Wastewater Option Assessment

System	Existing Residual Capacity (Incl. 10% buffer)	Serviced Population	Total Demand				Gap Analysis	
			Residential	Employment		Total	Total	
	Persons	Persons	Persons	Hectares	Persons	Persons	Persons	m^3/day (Incl. 10% buffer)
Town of Bradford West Gwillimbury								
Total	**2,300**	**17,400**	**15,421**	**72**	**2,736**	**18,157**	**-15,857**	**-7,150**
City of Barrie								
City of Barrie	**12,050**	**116,300**	**19,726**		**19,850**	**39,576**	**-27,526**	**-12,250**
Within the Town of Innisfil Limits	**-27,526**		**92,159**	**350**	**16,450**	**108,609**	**-136,135**	**-60,550**
Township of Clearview								
Stayner	2,100	4,060	4,112			**4,112**	**-2,012**	-800
Creemore	3,350	1,400	1,523			**1,523**	**1,827**	500
Total	**5,450**	**5,460**	**5,634**			**5,634**	**-185**	**-300**
Town of Collingwood								
Total	**5,700**	**14,979**	**9,947**			**9,947**	**-4,247**	**-5,000**
Township of Essa								
Angus	7,700	6,200	5,231			**5,231**	**2,469**	1,000
Total	**7,700**	**6,200**	**5,231**			**5,231**	**2,469**	**1,000**
Town of Innisfil								
Alcona Lakeshore	15,800	19,170	9,021			**9,021**	**6,779**	2,800
Cookstown	600	1,524	1,200			**1,200**	**-600**	-200
Total	**16,400**	**20,694**	**10,221**			**10,221**	**6,179**	**2,600**
Town of Midland								
Total	**8,500**	**14,000**	**4,788**			**4,788**	**3,712**	**2,600**
Town of New Tecumseth								
Tottenham	0	5,000	3,460			**3,460**	**-3,460**	-1,750
Alliston Sir Frederic Banting and Regional WWTP	3,550	14,133	9,729			**9,729**	**-6,179**	-3,200
Total	**3,550**	**19,133**	**13,189**			**13,189**	**-9,639**	**-4,950**
City of Orillia								
Total	**13,650**	**28,414**	**6,359**			**6,359**	**7,291**	**4,750**
Town of Penetanguishene								
Fox Street	400	1,169	714			**714**	**-314**	-300
Main Street	350	4,831	2,952			**2,952**	**-2,602**	-2,300
Total	**3,250**	**6,000**	**3,666**			**3,666**	**-2,916**	**-2,600**
Township of Ramara								
Lagoon City	350	2,308	1,608			**1,608**	**-1,258**	-900
Bayshore Village	150	661	362			**362**	**-212**	-100
Total	**500**	**2,969**	**1,970**			**1,970**	**-1,470**	**-1,000**
Township of Severn								
Washago	400	318	166			**166**	**234**	50
Coldwater	450	1,323	652	19	722	**1,374**	**-924**	-300
West Shore	850	2,250	1,025			**1,025**	**-175**	-100
Total	**1,850**	**3,891**	**1,843**	**19**	**722**	**2,565**	**-1,099**	**-350**
Township of Springwater								
Elmvale	1,150	2,289	1,191			**1,191**	**-41**	-0
Snow Valley	-200	200	1,342			**1,342**	**-1,542**	-900
Total	**1,150**	**2,289**	**2,533**			**2,533**	**-41**	**-900**
Township of Tay								
Port McNicoll / Village of Victoria Harbour	4,050	5,475	1,340	3	114	**1,454**	**2,596**	1,150
Total	**4,050**		**1,340**	**3**	**114**	1,454	**2,596**	**1,150**
Town of Wasaga Beach								
Total	**37,450**	**15,433**	**16,690**			**16,690**	**20,760**	**6,050**
	123,550	**278,637**	**210,719**	**444**	**39,872**	**250,591**	**-128,583**	**-64,400**

Note 1: Residential Units provided by Dillon Consulting via email August 11, 2006: *Revised Table for Table 3.2.xls*

Note 2: The service population is as per Appendix A of the Infrastructure Assessment Report, March 2006.

Note 3: Employment Data provided by Dillon Consulting via email July 19, 2006: Employmentrevised071906.xls

Note 4: Employment Data includes the high end approximation of additional employment land required. The persons per hectare for each municipality, excluding Barrie, is 38. The persons per hectare for Barrie is 47.

Note 5: The existing Residual Capacities does not include additional capacity from approved EA expansions.

Note 6: Snow Valley Highlands Wastewater Treatment Plant only became operational in 2006 and therefore it does not have any historical flow data and is not referenced in the March 2006 Infrastructure Report. The Ultimate Required Capacity is as per the Township of Springwater Snow Valley Secondary Plan Master Servicing Report dated January 2002.

Note 7: The total municipal residential demand is dispersed throughout the systems based on the ratio between the system's serviced population and the serviced population of the municipality. In some cases, the residential demand is equal to the system's water supply residential demand.

Appendix H3
Recommended Urban Structure
Option 5 - Optimized Barrie and Area Centered Single Node
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Adjala-Tosorontio	Everett	3,917	0	3,963	2,873	2,061	1,494	1,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Colgan	157	0	406	380	193	180	-200	Develop a new well with treatment works.	Low	$1,500	**$300,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Lisle	657	0	320	249	152	118	400	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Loretto Heights	137	0	149	146	71	69	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Rosemont	73	0	268	128	127	61	-50	Develop a new well with treatment works.	Medium	$1,500	**$75,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Weca	916	0	468	607	222	288	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Hockley	90	0	80	130	38	62	-50	Develop a new well with treatment works.	Medium	$1,500	**$75,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Total	5,947	0	5,654	4,513	2,864	2,273	1,450						
City of Barrie		92,490	60,000	296,035	201,997	170,035	116,022	-109,500	Construct and Expand Approved Future Water Filtration Plant.	Medium	$900	**$98,550,000**	N/A	Construct currently proposed surface water treatment plant and expand future WTP.
Town of Bradford West Gwillimbury		13,986	6,350	36,557	25,677	18,157	12,753	-11,700	Supply water from the Alcona water supply in accordance with the Approved Environmental Assessment and Water supply agreement.	Medium	$1,250	**$17,125,000**	An upgrade to the trunk watermain feeding the Alcona Reservoir will need to be completed. The estimated cost for the aforementioned watermain of 2.5 million is included.	Supply water from Alcona.
Township of Clearview	New Lowell	747	0	1,335	1,270	663	631	-500	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$800	**$400,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir. However, Cost Sharing of the existing Collingwood/Alliston Watermain will be required and is not included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Stayner	6,541	0	8,278	11,868	4,112	5,895	-5,300	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$800	**$4,240,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir. However, Cost Sharing of the existing Collingwood/Alliston Watermain will be required and is not included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Creemore	2,688	0	3,065	3,818	1,523	1,896	-1,150	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$800	**$4,920,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include a trunk watermain from the regional pipeline to a reservoir. The estimated cost for the aforementioned watermain of 4 million is included. However, Cost Sharing of the existing Collingwood/Alliston Watermain will be required and is not included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	McKean Subdivision	1,055	0	779	1,099	387	0	-50	Develop a new well with treatment works.	Medium	$1,500	**$75,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Colling-Woodlands Subdivision	270	0	373	415	185	0	-150	Develop a new well with treatment works.	Medium	$1,500	**$225,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Buckingham Woods	76	0	95	117	47	0	-50	Develop a new well with treatment works.	Medium	$1,500	**$75,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Total	11,376	0	13,925	18,587	6,916	8,422	-7,200						
Town of Collingwood		20,640	30,300	27,498	30,810	9,947	11,145	-10,200	Complete expansion of the existing Water Filtration Plant.	Low	$800	**$8,160,000**	N/A	Expand the existing Water Filtration Plant in accordance with the completed EA.
Township of Essa	Angus	6,554	0	11,441	6,270	5,231	2,867	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Thornton-Glen	1,540	0	1,382	1,334	632	610	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Baxter	225	0	287	268	131	122	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total	8,319	0	13,110	7,871	5,994	3,599	500						
	Innisfil Heights	2,799	0	1,785	1,603	705	633	1,200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Crossroads	2,030	0	1,715	990	0	0	1,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Stroud	2,098	0	3,093	3,090	1,221	1,220	-1,000	Develop a new well with treatment works.	Medium	$1,250	**$6,250,000**	Booster station and watermain from Alcona will be required, estimated cost of 5 Million is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Construct watermain from Alcona and connect to Alcona WFP.
	Churchill	743	0	859	1,116	339	441	-400	Supply from the Alcona to Bradford pipeline.	Medium	L.S.	**$1,500,000**	Booster station and trunk watermain will be required, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, connect to Alcona Water System.

Appendix H3
Recommended Urban Structure
Option 5 - Optimized Barrie and Area Centered Single Node
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Town of Innisfil	Goldcrest (Golf Haven and Gold Crest)	702	0	1,206	1,137	476	514	-400	Supply from the Alcona to Bradford pipeline.	Medium	L.S.	**$1,500,000**	Abandon existing well supply systems.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, connect to Alcona Water System.
	Cookstown	851	0	2,590	1,888	1,200	875	-1,000	Supply water from the Alcona water supply in accordance with an Approved Environmental Assessment.	Medium	$1,250	**$6,250,000**	Additional Capacity would be required at the Alcona WFP. The estimated supply cost and trunk watermain of 5 million is included in the total cost.	Construct watermain from Alcona/BWG Pipeline in accordance with EA.
	Alcona Lakeshore	12,700	5,997	21,581	12,907	9,021	5,396	-200	Complete further expansion of the existing Water Filtration Plant.	Medium	$1,250	**$250,000**	N/A	Complete Environmental Assessment and expand the existing Water Filtration Plant.
	Total	21,923	0	32,830	22,732	12,963	9,078	-750						
Town of Midland		20,776	0	21,488	22,379	4,788	4,987	-1,600	Develop of a new well with treatment works.	Medium	$1,000	**$1,600,000**	Assumes available groundwater supply.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
Town of New Tecumseth	Alliston / Beeton / Hillcrest	23,886	0	23,083	29,788	9,729	12,554	-5,900	Supply water from the Collingwood to Alliston Regional Pipeline in accordance with the Approved Environmental Assessment.	Medium	$800	**$9,720,000**	A booster station will be required, estimated cost of 5 million is included.	Increase existing supply from the Collingwood/New Tecumseth Pipeline.
	Tottenham	6,000	0	8,211	6,666	3,460	2,810	-650	Supply water from the Collingwood to Alliston Regional Pipeline.	Medium	$800	**$5,520,000**	Trunk watermain and booster stations will need to be constructed for supply from Beeton to Tottenham, estimated cost of 5 million is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Supply from Collingwood/New Tecumseth Pipeline.
	Total	29,886	0	31,294	36,454	13,189	15,364	-6,550						
City of Orillia		39,502	0	36,398	29,483	6,359	5,151	10,100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Oro-Medonte	Canterbury	209	0	110	131	64	76	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Craighurst	458	0	330	484	192	281	-50	Develop a new well with treatment works.	Medium	$1,500	**$75,000**	The treatment facility will have to be increased in capacity, the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop two new groundwater wells.
	Horseshoe Highlands	3,370	0	3,299	9,745	1,919	5,668	-6,400	Develop two new wells with treatment works.	Medium	$1,000	**$6,400,000**	The treatment facility will have to be increased in capacity, the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop two new groundwater wells.
	Maplewood	164	0	304	394	177	229	-250	Develop a new well with treatment works.	Medium	$1,500	**$375,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Robin Crest	850	0	581	1,323	338	769	-450	Develop a new well with treatment works.	Medium	$1,500	**$675,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Sugarbush	2,485	0	2,077	2,514	1,208	1,462	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Cedarbrook	196	0	155	226	90	132	-100	Develop a new well with treatment works.	Medium	$1,500	**$150,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Harbourwood	922	0	846	1,359	492	791	-450	Develop a new well with treatment works.	Medium	$1,500	**$675,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Lake Simcoe Regional Airport	73	0	127	55	74	32	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Medonte Hills	393	0	877	910	510	529	-500	Develop a new well with treatment works.	Medium	$1,500	**$750,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Shanty Bay	1,220	0	722	1,028	420	598	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Warminister	600	0	1,291	1,591	751	925	-1,000	Develop a new well with treatment works.	Medium	$1,000	**$1,000,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Total	10,939	0	10,719	19,761	6,235	11,494	-8,900						
Town of Penetanguishene	Payette	11,000	3,300	10,331	14,105	3,631	4,958	-3,100	Develop new groundwater wells	Medium	$1,000	**$3,100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Lepage	432	0	99	89	35	31	350	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total	11,432	0	10,430	14,194	3,666	4,989	-2,750						
Township of Ramara	Bayshore Village	1,244	0	1,037	1,163	362	406	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Park Lane	50	0	65	74	23	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lagoon City/Brechin	4,000	0	4,608	4,306	1,608	1,503	-300	Expand the existing surface water treatment plant .	Medium	$1,500	**$450,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
	Davy Drive	76	0	123	86	43	30	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	South Ramara	387	0	326	616	114	215	-300	Expand the existing water supply.	Medium	$1,500	**$450,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Val Harbour	207	0	215	291	75	102	-100	Expand the existing water supply.	Medium	$1,500	**$150,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Total	5,964	0	6,375	6,536	2,225	2,255	-600						
Township of Severn	Severn Estates	109	0	90	75	28	24	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bass Lake Woodlands	818	0	472	877	148	275	-100	Expand the existing water supply.	N/A	$1,500	**$150,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Sandcastle Estates	389	0	244	378	76	118	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Washago	544	0	531	404	166	126	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Coldwater	2,138	0	2,805	2,969	1,374	1,454	-800	Expand the existing groundwater supply source.	Medium	$1,500	**$1,200,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	West Shore	2,780	0	3,275	3,316	1,025	0	-550	Expand the existing water supply.	Medium	$1,500	**$825,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Total	6,778	0	7,417	8,020	2,818	1,997	-1,300						

Appendix H3
Recommended Urban Structure
Option 5 - Optimized Barrie and Area Centered Single Node
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Springwater	Anten Mills	1,558	0	529	655	181	224	900	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Del Trend	786	0	483	998	165	342	-200	Expand the existing groundwater supply source.	Medium	$1,000	**$200,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Elmvale	4,546	0	3,480	3,523	1,191	1,206	1,000	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Hillsdale	1,185	0	1,624	1,827	556	625	-650	Expand the existing groundwater supply source.	Medium	$1,000	**$650,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Midhurst	6,850	0	4,415	5,420	1,511	1,855	1,400	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Minesing	740	0	971	1,241	332	425	-500	Expand the existing groundwater supply source.	N/A	$1,000	**$500,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Snow Valley	1,400	0	771	1,192	264	408	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Vespra Downs	169	0	105	212	36	73	-50	Expand the existing groundwater supply source.	Medium	$1,500	**$75,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Total	17,234	0	12,377	15,068	4,235	5,156	2,100						
Township of Tay	Victoria Harbour/Port McNicoll	7,845	0	7,514	6,762	1,454	1,308	1,100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Rope	274	0	98	121	18	22	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Midland Bay Woods	301	0	281	348	51	63	-50	Expand existing groundwater supply source or decommission and service from Victoria Harbour/Port McNicoll	High	$1,500	**$75,000**	N/A	In March 2006, the Midland Bay Woods Water Treatment Plant was decommissioned. The Victoria Harbour Water Treatment Plant now services the area.
	Bayberry Estates	392	0	122	151	22	27	200	No Gap	N/A	N/A	**$0**	N/A	In March 2006, the Bayberry Estates Water Treatment Plant was decommissioned. The Victoria Harbour Water Treatment Plant now services the area.
	Waubaushene	1,225	0	1,465	1,648	265	298	-400	Expand the existing surface water treatment plant .	High	$1,500	**$600,000**	N/A	The Township has advised that the Waubaushene Water Treatment Plant will be decommissioned and the area will be serviced by the Victoria Harbour Water Treatment Plant by December 31, 2006.
	Total	10,037	0	9,480	9,030	1,810	1,719	1,000						
Township of Tiny	Perkinsfield	1,382	0	677	1,024	240	363	400	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bluewater	836	0	951	1,595	337	565	-800	Develop an additional well with associated treatment and storage works.	Medium	$1,000	**$800,000**	The treatment facility and reservoir will have to be expanded and the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Georgian Bay Estates	949	0	866	1,102	307	391	-150	Develop an additional well with associated treatment and storage works.	Medium	$1,000	**$150,000**	The treatment facility and reservoir will have to be expanded and the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Georgian Sands	3,145	0	2,465	3,645	874	1,292	-500	Develop an additional well with associated treatment and storage works.	Medium	$1,000	**$500,000**	The treatment facility and reservoir will have to be expanded and the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	LA Place	198	0	230	332	81	118	-100	Develop an additional well with associated treatment and storage works.	Medium	$1,000	**$100,000**	The treatment facility and reservoir will have to be expanded and the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	TeePee Points	123	0	367	281	130	100	-200	Install a new well pump into the existing well.	Low	$1,000	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Sand Castle Estates	490	0	129	191	46	68	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Vanier Woods	360	0	161	210	57	74	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Wyevale Central	920	0	797	1,247	283	442	-350	Install a new well pump into one of the existing wells.	N/A	L.S.	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Cook's Lake	400	0	346	353	123	125	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Georgian Highlands	752	0	326	421	116	149	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lefaive	309	0	266	274	94	97	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Pennorth	61	0	129	162	46	57	-100	Install a new well pump into the existing well.	N/A	L.S.	**$200,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Rayko	194	0	129	209	46	74	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Sawlog Bay	189	0	141	223	50	79	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Thunder Bay	200	0	72	312	26	111	-100	Develop an additional well with associated treatment and storage works.	Medium	L.S.	**$200,000**	The treatment facility and reservoir will have to be expanded and the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Whip-Poor-Will 2	360	0	234	791	83	280	-450	Develop an additional well with associated treatment and storage works.	Medium	$1,500	**$675,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Woodland Beach	170	0	77	334	27	118	-100	Develop an additional well with associated treatment and storage works.	Medium	L.S.	**$200,000**	The treatment facility and reservoir will have to be expanded and the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Total	11,038	0	8,361	12,706	2,964	0	-1,650						
Town of Wasaga Beach		31,415	0	36,239	40,762	16,690	18,773	-9,300	Operate existing offline groundwater well and develop an additional well with treatment works	Medium	L.S.	**$2,500,000**	The treatment facility and reservoir of the existing well will have to be expanded. The estimated cost includes $250,000 to operate the existing offline well, $2,250,000 for a new well, however, excludes any additional storage capacity.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well and begin operation of existing offline well.
		369,682				291,856		-156,850				**$190,860,000**		

Note 1: The Ultimate Required Capacity includes the existing water supply demand and the additional water supply demand.

Note 2: The Total Additional Demand includes the Additional residential and employment water supply demand.

Appendix H3
Recommended Urban Structure
Option 5 - Optimized Barrie and Area Centered Single Node
Water Supply Systems Cost Analysis

System	Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
			Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	

Note 3: The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity has not been included in the total gap.

Note 4: The Collingwood EA identified a committed capacity range of 16,035 m^3/day to 30,300 m^3/day. For the purpose of the assessment, the high range of 30,300 m^3/day was used.

Appendix H4
Recommended Urban Structure
Optimized Barrie and Area Centered Single Node
Water Supply Option Assessment

System	Existing Residual Capacity (No. of pers.)	Existing Serviced Population	Total Demand				Gap Analysis	
			Residential	Employment		Total	Total	
		Persons	Persons	Hectares	Persons	Persons	Persons	m^3/day (Incl. 10% buffer)
Township of Adjala-Tosorontio								
Everett	3,500	1,902	1,719	9	342	2,061	1,439	1,050
Colgan	-50	213	193			193	-243	-200
Lisle	650	168	152			152	498	400
Loretto Heights	50	78	71			71	-21	0
Rosemont	0	141	127			127	-127	-50
Weca	450	246	222			222	228	300
Hockley	0	42	38			38	-38	-50
Total	**4,600**	**2,790**	**2,522**		**342**	**2,864**	**1,736**	**1,450**
City of Barrie								
City of Barrie	**9,550**	126,000	19,726		**41,700**	61,426	-51,876	**-35,400**
Within the Town of Innisfil Limits	**-51,876**		**92,159**	**350**	**16,450**	108,609	-160,485	**-109,500**
Town of Bradford West Gwillimbury								
Total	**1,500**	18,400	**15,421**	**72**	**2,736**	18,157	-16,657	**-11,700**
Township of Clearview								
New Lowell	100	672	663			663	-563	-500
Stayner	400	4,166	4,112			4,112	-3,712	-5,300
Creemore	600	1,543	1,523			1,523	-923	-1,150
McKean Subdivision	350	392	387			387	-37	-50
Colling-Woodlands Subdivision	50	188	185			185	-135	-150
Buckingham Woods	0	48	47			47	-47	-50
Total	**1,500**	**7,008**	**6,916**			**6,916**	**-5,417**	**-7,200**
Town of Collingwood								
Total	**850**	17,551	9,947			9,947	-9,097	**-10,200**
Township of Essa								
Angus	5,750	6,210	5,231			5,231	519	300
Thornton-Glen	850	750	632			632	218	200
Baxter	100	156	131			131	-31	0
Total	**6,700**	**7,116**	**5,994**			**5,994**	**706**	**500**
Town of Innisfil								
Innisfil Heights	2,050	1,080	705			705	1,345	1,200
Crossroads	1,800	1,715	0			0	1,800	1,050
Stroud	250	1,872	1,221			1,221	-971	-1,000
Churchill	50	520	339			339	-289	-400
Goldcrest (Golf Haven and Gold Crest)	-0	730	476			476	-476	-400
Cookstown	-200	1,390	1,200			1,200	-1,400	-1,000
Alcona Lakeshore	8,650	12,560	9,021			9,021	-371	-200
Total	**12,600**	**19,867**	**12,963**			**12,963**	**-363**	**-750**
Town of Midland								
Water Supply	**3,250**	16,700	4,788			4,788	-1,538	**-1,600**
Town of New Tecumseth								
Alliston / Beeton / Hillcrest	5,150	13,355	9,729			9,729	-4,579	-5,900
Tottenham	2,650	4,750	3,460			3,460	-810	-650
Total	**7,800**	**18,105**	**13,189**			**13,189**	**-5,389**	**-6,550**
City of Orillia								
Water Supply	**18,750**	30,039	6,359			6,359	12,391	**10,100**
Township of Oro-Medonte								
Canterbury	150	46	64			64	86	100
Craighurst	150	138	192			192	-42	-50
Horseshoe Highlands	-250	1,380	1,919			1,919	-2,169	-6,400
Maplewood	-0	127	177			177	-177	-250
Robin Crest	150	243	338			338	-188	-450
Sugarbush	1,200	869	1,208			1,208	-8	0
Cedarbrook	50	65	90			90	-40	-100
Harbourwood	200	354	492			492	-292	-450
Lake Simcoe Regional Airport	100	53	74			74	26	0
Medonte Hills	0	367	510			510	-510	-500
Shanty Bay	550	302	420			420	130	200
Warminister	-50	540	751			751	-801	-1,000
Total	**2,250**	**4,484**	**6,235**			**6,235**	**-3,985**	**-8,900**
Town of Penetanguishene								
Payette (see Note 5)	1,350	6,700	3,631			3,631	-2,281	-3,100
Lepage	300	64	35			35	265	350
Total	**1,650**	**6,764**	**3,666**			**3,666**	**-2,016**	**-2,750**
Township of Ramara								
Bayshore Village	450	675	362			362	88	100
Park Lane	0	43	23			23	-23	0
Lagoon City/Brechin	1,300	3,000	1,608			1,608	-308	-300
Davy Drive	50	80	43			43	7	0
South Ramara	-0	213	114			114	-114	-300
Val Harbour	0	140	75			75	-75	-100
Total	**1,800**	**4,150**	**2,225**			**2,225**	**-425**	**-600**

Appendix H4
Recommended Urban Structure
Optimized Barrie and Area Centered Single Node
Water Supply Option Assessment

System	Existing Residual Capacity (No. of pers.)	Existing Serviced Population	Total Demand				Gap Analysis	
			Residential	Employment		Total	Total	
		Persons	Persons	Hectares	Persons	Persons	Persons	m^3/day (Incl. 10% buffer)
Township of Severn								
Severn Estates	50	62	28			28	22	0
Bass Lake Woodlands	100	324	148			148	-48	-100
Sandcastle Estates	100	167	76			76	24	0
Washago	350	365	166			166	184	150
Coldwater	600	1,431	652	19	722	1,374	-774	-800
West Shore	500	2,250	1,025			1,025	-525	-550
Total	**1,700**	**4,599**	**2,096**		**722**	**2,818**	**-1,118**	**-1,300**
Township of Springwater								
Anten Mills	900	348	181			181	719	900
Del Trend	50	318	165			165	-115	-200
Elmvale	2,200	2,289	1,191			1,191	1,009	1,000
Hillsdale	-0	1,068	556			556	-556	-650
Midhurst	2,700	2,904	1,511			1,511	1,189	1,400
Minesing	-50	639	332			332	-382	-500
Snow Valley	400	507	264			264	136	200
Vespra Downs	0	69	36			36	-36	-50
Total	**6,200**	**8,142**	**4,235**			**4,235**	**1,965**	**2,100**
Township of Tay								
Victoria Harbour/Port McNicoll	2,650	6,060	1,340	3	114	1,454	1,196	1,100
Rope	150	80	18			18	132	150
Midland Bay Woods	0	230	51			51	-51	-50
Bay Berry	200	100	22			22	178	200
Waubaushene	-100	1,200	265			265	-365	-400
Total	**2,900**	**7,670**	**1,696**		**114**	**1,810**	**1,090**	**1,000**
Township of Tiny								
Perkinsfield	500	437	240			240	260	400
Bluewater	-100	614	337			337	-437	-800
Georgian Bay Estates	200	559	307			307	-107	-150
Georgian Sands	550	1,591	874			874	-324	-500
LA Place	-0	148	81			81	-81	-100
TeePee Points	-100	237	130			130	-230	-200
Sand Castle Estates	250	83	46			46	204	300
Vanier Woods	150	104	57			57	93	100
Wyevale Central	50	515	283			283	-233	-350
Cook's Lake	150	224	123			123	27	50
Georgian Highlands	350	211	116			116	234	300
Lefaive	150	172	94			94	56	50
Pennorth	-50	83	46			46	-96	-100
Rayko	50	83	46			46	4	0
Sawlog Bay	50	91	50			50	0	0
Thunder Bay	-0	47	26			26	-26	-100
Whip-Poor-Will 2	-50	151	83			83	-133	-450
Woodland Beach	-0	49	27			27	-27	-100
Total	**2,150**	**5,398**	**2,964**			**2,964**	**-814**	**-1,650**
Town of Wasaga Beach								
Water Supply	**8,400**	19,549	16,690			16,690	-8,290	**-9,300**
	94,150	**324,332**	**229,792**		**62,064**	**291,856**		**-156,850**

Note 1: Residential Units provided by Dillon Consulting via email August 11, 2006: *Revised Table for Table 3.2.xls*

Note 2: The service population is as per Appendix C of the Infrastructure Assessment Report, March 2006.

Note 3: Employment Data provided by Dillon Consulting via email July 19, 2006: Employmentrevised071906.xls

Note 4: Employment Data includes the high end approximation of additional employment land required. The persons per hectare for each municipality, excluding Barrie, is 38. The persons per hectare for Barrie is 47.

Note 5: The existing Residual Capacities does not include additional capacity from approved EA expansions.

Note 6: The total municipal residential demand is dispersed throughout the systems based on the ratio between the system's population and the population of the municipality.

Part 2: Growth Option Servicing Cost Analysis

General

The municipal water and wastewater systems in the study area were assessed based on five (5) different urban structure options. Data obtained through the Infrastructure Assessment Report, March 2006, was the foundation of the analysis and represents the current system capacity.

Option 1 to 4 Servicing Cost Analysis

The servicing cost analysis for Options 1 through 4, for both wastewater and water, are presented in Appendices H5 through H13. The analysis includes approximate costs and a suggested course of action to close the gap created by the new proposed populations for each respective option.

The columns within Appendices H5 to H13 are described below. Any assumptions that were made during the assessment of the systems are noted:

- **Current Rated Capacity (m^3/day) -** The rated capacity is as per the Infrastructure Assessment Report, March 2006. This value identifies the existing capacity of the system.

- **Committed Capacity Increase (m^3/day) -** The committed capacity increase is the future increase in a systems capacity that has been identified in Class Environmental Assessment (EA) which will be achieved through plant expansions or optimizations. A total cost for the expansion or optimization is typically identified in the EA.

- **Ultimate Required Capacity –** The ultimate required capacity includes the existing serviced population, as identified in Appendix A and C of the Infrastructure Assessment Report, the new recommended urban structure populations and new employment growth. Several assumptions were made when applying the new growth to the municipal systems, they are as follows:

    - The urban structure options populations from 2006-2031 were calculated for the municipalities as an entirety therefore, it was necessary to disperse the new growth into the municipal system. It was assumed that the ratio of a system's Additional Approved Population Potential (AAPP), as per the Infrastructure Assessment Report/Communities Report dated March 2006, versus the AAPP of the municipality would be applied to the new growth. For example, the total AAPP of a municipality is 10,000 persons and a system within the municipality has an AAPP of 5000 persons, therefore creating a ratio of 2:1. This ratio was then applied to urban structure options 1 through 4; in this case, the system would receive 50% of the municipal growth. (*The AAPP numbers were derived for the Infrastructure Assessment Report, dated March 2006, by assessing existing planning information. For the purpose of determining the ratio, the high intensification AAPP numbers were used).*

- The urban structure populations were provided in additional units. For the purpose of the cost analysis, it was necessary to convert the units to equivalent number of people. This was done by using the persons per unit of each municipality as identified in the County Official Plan. The respective ppu's used in the conversion are identified in Appendix A and C of the Infrastructure Assessment Report, dated March 2006.

- The employment demand includes the additional land required for the projected employment growth between 2006 and 2031. It does not include any new employment within the existing municipal boundaries as it is considered in the recommended urban structure (equivalent population).

- The employment data was provided in hectares. The persons per hectare used for each municipality, excluding Barrie, was 38. The persons per hectare used for Barrie was 47.

- Options 1 through 4 identified greenfield land in the Town of Innisfil to be serviced by the City of Barrie. Any new employment for Barrie was assumed to be within the new greenfield land.

- It was assumed that any additional growth in the Town of New Tecumseth, as per the recommended urban structure, would be serviced at the Regional Wastewater Treatment Plant.

- The ultimate required capacity in persons was converted to m^3/day using the respective Average Day Flow per capita (ADF/cap) for wastewater and Maximum Day Demand per capita (MDD/cap) for water supply, as per Appendix A and C of the Infrastructure Assessment Report, Dated March 2006.

- **Total Additional Demand –** The total additional demand represents the residential growth from 2006 to 2031 as per the urban structure options and the additional employment land required.

- **Total Gap (m^3/day) –** The total gap represents the difference between the current rated capacity and the ultimate required capacity in m^3/day. If a negative gap is the result, there is insufficient capacity in the current system to service the additional demand. All values have been rounded to the nearest 50 m^3/day.

- **Alternatives to Close Gap –** The alternatives to close the gap were assumed based on the magnitude of the total gap.

- **Evaluation Criteria: Environmental –** The environmental evaluation criteria is as per the Infrastructure Assessment Report, March 2006. The opinions were made based on a general understanding of the anticipated impacts rather than on detailed assessment. They are expressed as "N/A", "Low", "Medium", "High" and "Extremely High"

- **N/A** – There is no environmental impact due to the fact that there are no identified works required. There is no Gap in the residual capacity.

- **Low** – A majority of the "Low" designated projects have been the subject of previously completed Class Environmental Assessments. Depending on the completion date of the Class EA, an Addendum may be necessary if the Class EA was completed more than 5 years prior to final design and construction. The remainder of the "Low" designated projects fall under either a Schedule A or B Activity as defined by the MEA Class EA Document. Examples of these works include upgrading well pumps and reducing inflow and infiltration into existing sewers. In these cases, a minimal amount of work will be required to complete the Class EA planning process.

- **Medium** – These projects fall into the category of Schedule B Activities as defined by the MEA Class EA Document. Projects such as the transfer of water from a supply source with more than adequate residual capacity to another, near-by distribution system or the development of new groundwater supplies that are not "GUDI" have been classed as Medium. With respect to wastewater, any projects involving the transfer of either raw or treated wastewater from one municipality to an existing plant with more than sufficient capacity were rated as "Medium".

- **High** – Projects, which involve the development of a new surface water supply, were rated as requiring a "High" level of environmental assessment. This is due to the increased level of treatment and the higher cost. Included in this group are the projects that involve a connection to the Regional pipeline. With respect to wastewater, all projects involving the expansion of an existing treatment plant beyond its current rated capacity were classed as "High".

- **Extremely High** – The only project that was rated as "Extremely High" was the option of increasing the capacity of the Stayner STP with an increased discharge to Lamont Creek. It is considered that such an option will never be acceptable under any circumstances.

- **Evaluation Criteria: Estimated Costs per m^3/day –** The estimated costs per m^3/day are common to the suggested method of expansion. The estimated costs differ from those of the Infrastructure Assessment Report, March 2006, due to inflation. The previous report was based on 2005 prices where the following is based on 2006:

- **Evaluation Criteria: Total Cost –** The total cost was calculated by multiplying the total gap in m^3/day by the estimated cost per m^3/day. For example, if a system has a gap of 1,000 m^3/day then the total cost to service the gap at $1,500 m^3/day is $1,500,000 ($1.5 million). In some cases the total cost is a lump sum. When this occurs, notes have been included in the Other Issues column to describe what is included in the lump sum cost.

- **Evaluation Criteria: Other Issues –** The other issues column is used to describe pending conflicts or actions that will have to be addressed prior to closing the gap. N/A is included in cases where there are no apparent conflicts. The other issues also include the description of the lump sum cases.

- **Suggested Course of Action –** The suggested course of action describes the optional process that could be taken to close the servicing gap.

The following footnotes have been included with the Appendices:

Wastewater Systems Cost Analysis

- The Completed EA for New Tecumseth Wastewater allows the Regional WWTP to expand to 23,000 m3/day. The Sir Frederic Banting WWTP will remain at the current capacity of 5,681 m3/day and the Tottenham WWTP will be decommissioned. The value of 16,642 m3/day is the difference between the expanded capacity and the adjusted rated capacities of the Regional and Tottenham WWTPs (adjusted to compensate for current Provincial Orders).

- The Ultimate Required Capacity includes the existing sewage flow and the additional sewage flow demand.

- The Total Additional Demand includes the Additional residential and employment sewage demand.

- The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity Increase has not been included in the total gap.

- Snow Valley Highlands Wastewater Treatment Plant only became operational in 2006 and therefore it does not have any historical flow data and is not referenced in the March 2006 Infrastructure Report.

Water Systems Cost Analysis

- The Ultimate Required Capacity includes the existing water supply demand and the additional water supply demand.

- The Total Additional Demand includes the Additional residential and employment water supply demand.

- The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity has not been included in the total gap.

Option 5 - Recommended Urban Structure Servicing Cost Analysis

The recommended urban structure offers new growth that ultimately increases the required capacities of the municipal systems. Appendix H1 and H3 summarize the analyzed information and presents approximate costs and a suggested course of action to close the gap created by the new proposed populations.

The columns within Appendix H1 and H3 are described below. Any assumptions that were made during the assessment of the systems are noted:

- **Current Rated Capacity (m^3/day) -** The rated capacity is as per the Infrastructure Assessment Report, March 2006. This value identifies the existing capacity of the system.

- **Committed Capacity Increase (m^3/day) -** The committed capacity increase is the future increase in a systems capacity that has been identified in Class Environmental Assessment (EA) which will be achieved through plant expansions or optimizations. A total cost for the expansion or optimization is typically identified in the EA.

- **Ultimate Required Capacity –** The ultimate required capacity includes the existing serviced population, as identified in Appendix A and C of the Infrastructure Assessment Report, the new recommended urban structure populations and new employment growth. Appendix H2 and H4 restate the serviced populations for both water and wastewater systems. These Appendices also include the total residential and employment demand, as per the recommended urban structure. Several assumptions were made when applying the new growth to the municipal systems, they are as follows:

    - The recommended urban structure populations from 2006-2031 were calculated for the municipalities as an entirety therefore, it was necessary to disperse the new growth into the municipal system. It was assumed that the ratio of a systems current serviced population versus the current serviced population of the municipality would be applied to the new growth. For example, the total water supply serviced population of a municipality is 10,000 persons and a system within the municipality has a serviced population of 5000 persons, therefore creating a ratio of 2:1. This ratio was then applied to the recommended urban structure; in this case, the system would receive 50% of the municipal growth.

      When comparing the total cost of servicing between Options 1 through 4 and Option 5, the different ratio methods of dispersing growth amongst the municipal systems provides nominal discrepancies.

    - The recommended urban structure populations were provided in number of additional persons. The new growths for Option 5 in persons were significantly lower than for Option 1 through 4. This is due to the estimated persons per unit. Options 1 through 4 assumed the same ppu's as identified in the County Official Plan where as Option 5 numbers were derived using an approximate ppu for the year 2031, assuming that persons per household decrease over time. When compared, this variation creates the greatest difference in the overall costs to service Options 1 through 4 and Option 5.

    - The total additional demands do not correlate for water and wastewater servicing. This is because approximately 10% of the new residential demand is allocated to partially serviced systems (no wastewater services). It was assumed that the same growth would be applied to areas with both water and wastewater servicing. In these cases, the wastewater servicing residential demand was made to correspond with the systems water servicing residential demand.

When comparing the total cost of servicing between Options 1 through 4 and Option 5, the 10% growth that has been removed from Option 5 wastewater servicing analysis provides a significant difference. There is 10% less servicing cost required ultimately resulting in a lower overall cost.

- The employment demand includes the additional land required for the projected employment growth between 2006 and 2031. It does not include any new employment within the existing municipal boundaries as it is considered in the recommended urban structure (equivalent population).

- The employment data was provided in hectares. The persons per hectare used for each municipality, excluding Barrie, was 38. The persons per hectare used for Barrie was 47.

  The employment data was optimized for Option 5. The difference contributes to the lower overall costs between Options 1 through 4 and Option 5.

- The City of Barrie's recommended urban structure residential growth was dispersed through the City's limits and the Town of Innisfil. The recommended structure identifies new greenfield land supply of 1,785.28 hectares for Barrie which equates to approximately 36,571 units. The persons per unit used to determine the number of people in the area was 2.52. Therefore, it was assumed that 92,159 persons (36,571 units x 2.52 ppu) is the additional demand within the Town of Innisfil limits.

  The new growth population for Barrie between 2006 and 2031, based on the recommended urban structure, is 111,885 persons. Therefore, it was assumed that a population growth of 19,726 persons (111,885 persons – 92,159 persons) would be within the City of Barrie limits. The additional employment lands required were assumed to be within the Town of Innisfil limits.

- It was assumed that any additional growth in the Town of New Tecumseth, as per the recommended urban structure, would be serviced at the Regional Wastewater Treatment Plant.

- The ultimate required capacity in persons was converted to m^3/day using the respective ADF/cap for wastewater and MDD/cap for water supply, as per Appendix A and C of the Infrastructure Assessment Report, March 2006.

- **Total Additional Demand –** The total additional demand represents the residential growth from 2006 to 2031 as per the recommended urban structure and the additional employment land required.

- **Total Gap (m^3/day) –** The total gap represents the difference between the current rated capacity and the ultimate required capacity in m^3/day. If a negative gap is the result, there is insufficient capacity in the current system to service the additional demand. All values have been rounded to the nearest 50 m^3/day.

- **Alternatives to Close Gap –** The alternatives to close the gap were assumed based on the magnitude of the total gap.

- **Evaluation Criteria: Environmental –** Same as Options 1 through 4

- **Evaluation Criteria: Estimated Costs per m^3/day –** The estimated costs per m^3/day are common to the suggested method of expansion. The costs have been optimized from those present in Options 1 through 4. The following tables describe the type of expansion, the cost associated and a description of the works included. The estimated costs differ from those of the Infrastructure Assessment Report, March 2006, due to inflation. The previous report was based on 2005 prices where the following is based on 2006:

Wastewater Treatment Expansion Rates

Type of Expansion	Estimated Cost per Cubic Meter ($/m^3)	Description of Works Included
Construction of a new or expansion of an existing wastewater treatment plant that provides a secondary level of treatment.	$3,000	Includes Engineering Design & Approvals (EA): Includes new property; Includes Secondary Treatment; Includes new outfall; Excludes expansion of collection system;
Construction of a new or expansion of an existing wastewater treatment plant that provides a tertiary level of treatment and regularly used phosphorus removal technology.	$3,500	Includes Engineering Design & Approvals (EA): Includes Tertiary Treatment; Includes outfall expansion; Excludes expansion of collection system;
Construction of a new or expansion of an existing wastewater treatment plant that provides a tertiary level of treatment and extremely advanced phosphorus removal technology.	$4,500	Includes Engineering Design & Approvals (EA): Includes Tertiary Treatment; Includes advanced phosphorus removal technology; Includes outfall expansion; Excludes expansion of collection system;

Water Supply Expansion Rates

Type of Expansion	Estimated Cost per Cubic Meter ($/m^3)	Description of Works Included
Expansion of the Collingwood Surface Water Treatment Plant	$800	Based on Preliminary Design completed by the Town of Collingwood for their Surface water Treatment Plant expansion. (Estimate used for Collingwood and potential users along Collingwood to Alliston pipeline only).
Construction of a new Barrie Surface Water Treatment Plant	$900	Based on Preliminary Design completed by the City of Barrie for their new Surface water Treatment Plant and any further expansions required. (Estimate used for Barrie only).
Expand existing Groundwater Supply systems which are larger than 500m^3/day capacity.	$1,000	Includes Engineering Design & Approvals (EA & PTTW): Includes development of new Well; Includes expansion to Pumping Station;
Expansion of the existing Alcona Surface Water Treatment Plant.	$1,250	Estimate based upon the agreement between the Town of Bradford and the Town of Innisfil (Estimate used for Bradford and Alcona only).
Expand existing Groundwater Supply systems which are smaller than 500m^3/day capacity.	$1,500	Includes Engineering Design & Approvals (EA & PTTW): Includes development of new Well; Includes expansion to Pumping Station;
Expansion of an existing Surface Water Treatment Plant (SWTP)	$1,500	Includes Engineering Design & Approvals (EA & PTTW); Assumes 3 log removal filters; Includes expansion to intake and associated low lift pumping;

- **Evaluation Criteria: Total Cost –** The total cost was calculated by multiplying the total gap in m^3/day by the estimated cost per m^3/day. For example, if a system has a gap of 1,000 m^3/day then the total cost to service the gap at $1,500 m^3/day is $1,500,000 ($1.5 million). In some cases the total cost is a lump sum. When this occurs, notes have been included in the Other Issues column to describe what is included in the lump sum cost.

- **Evaluation Criteria: Other Issues –** The other issues column is used to describe pending conflicts or actions that will have to be addressed prior to closing the gap. N/A is included in cases where there are no apparent conflicts. The other issues also include the description of the lump sum cases.

- **Suggested Course of Action –** The suggested course of action describes the optional process that could be taken to close the servicing gap.

The following footnotes have been included with the Appendices:

Wastewater Systems Cost Analysis and Option Assessment

- The Completed EA for New Tecumseth Wastewater allows the Regional WWTP to expand to 23,000 m^3/day. The Sir Frederic Banting WWTP will remain at the current capacity of 5,681 m^3/day and the Tottenham WWTP will be decommissioned. The value of 16,642 m^3/day is the difference between the expanded capacity and the adjusted rated capacities of the Regional and Tottenham WWTPs (adjusted to compensate for current Provincial Orders).

- The Ultimate Required Capacity includes the existing sewage flow and the additional sewage flow demand.

- The Total Additional Demand includes the Additional residential and employment sewage demand.

- The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity Increase has not been included in the total gap.

- Residential Persons provided by Dillon Consulting via email August 11, 2006: Revised Table for Table 3.2.xls

- The service population is as per Appendix A of the Infrastructure Assessment Report, March 2006.

- Employment Data provided by Dillon Consulting via email July 19, 2006: Employmentrevised071906.xls

- Employment Data includes the high end approximation of additional employment land required. The persons per hectare used for each municipality, excluding Barrie, was 38. The persons per hectare used for Barrie was 47.

- The existing Residual Capacities does not include additional capacity from approved EA expansions.

- Snow Valley Highlands Wastewater Treatment Plant only became operational in 2006 and therefore it does not have any historical flow data and is not referenced in the March 2006 Infrastructure Report. The Ultimate Required Capacity is as per the

Township of Springwater Snow Valley Secondary Plan Master Servicing Report dated January 2002.

- The total municipal residential demand is dispersed throughout the systems based on the ratio between the system's serviced population and the serviced population of the municipality. In some cases, the residential demand is equal to the system's water supply residential demand.

Water Systems Cost Analysis and Option Assessment

- The existing Residual Capacities does not include additional capacity from approved EA expansions.

- The total municipal residential demand is dispersed throughout the systems based on the ratio between the system's population and the population of the municipality.

- The Ultimate Required Capacity includes the existing water supply demand and the additional water supply demand.

- The Total Additional Demand includes the Additional residential and employment water supply demand.

- The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity has not been included in the total gap.

- The Collingwood EA identified a committed capacity range of 16,035 m^3/day to 30,300 m^3/day. For the purpose of the assessment, the high range of 30,300 m^3/day is identified.

- Residential Persons provided by Dillon Consulting via email August 11, 2006: Revised Table for Table 3.2.xls

- The service population is as per Appendix C of the Infrastructure Assessment Report, March 2006.

- Employment Data provided by Dillon Consulting via email July 19, 2006: Employmentrevised071906.xls

- Employment Data includes the high end approximation of additional employment land required. The persons per hectare used for each municipality, excluding Barrie, was 38. The persons per hectare used for Barrie was 47.

IGAP - Urban Structure Growth Options
Summary of Water and Wastewater Costs

Category	Option No.	Estimated Cost
Water & Wastewater	Option 1	$815,842,500
	Option 2A	$898,145,000
	Option 2B	$884,440,000
	Option 3	$938,457,500
	Option 4	$943,075,000
	Option 5	$608,685,000
Water	Option 1	$329,442,500
	Option 2A	$293,625,000
	Option 2B	$284,300,000
	Option 3	$314,692,500
	Option 4	$309,305,000
	Option 5	$191,860,000
Wastewater	Option 1	$486,400,000
	Option 2A	$604,520,000
	Option 2B	$600,140,000
	Option 3	$623,765,000
	Option 4	$633,770,000
	Option 5	$416,825,000

Appendix H9
IGAP Option 1 - Business as Usual
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Adjala-Tosorontio	Everett	3,917	0	3,982	2,887	2,080	1,508	1,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Colgan	157	0	244	229	31	0	-100	Equip the wells with larger capacity pumps.	Low	$1,000	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Equip the wells with larger capacity pumps.
	Lisle	657	0	280	218	112	0	400	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Loretto Heights	137	0	308	302	230	0	-200	Supply water from another facility such as Weca	High	$1,500	**$300,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, supply from another source.
	Rosemont	73	0	141	67	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Weca	916	0	246	319	0	0	600	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Hockley	90	0	115	187	73	0	-100	Develop a new well with treatment works.	Medium	$1,500	**$150,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Total		0	5,316	4,209	2,526	1,508	1,650						
City of Barrie		92,490	60,000	217,596	148,474	91,596	62,499	-56,000	Construct a surface water treatment plant.	Medium	$1,000	**$56,000,000**	N/A	Construct a Surface Water Treatment Plant.
Town of Bradford West Gwillimbury		13,986	6,350	46,142	32,409	27,742	19,486	-18,400	Supply 17,900 m^3 water from the Alcona water supply in accordance with the Approved Environmental Assessment and Water supply aggreement.	Medium	$1,250	**$25,500,000**	An upgrade to the trunk watermain feeding the Alcona Reservior will need to be completed. The estimated cost for the aforementioned watermain of 2.5 million is included.	Supply water from Alcona.
Township of Clearview	New Lowell	747	0	5,043	4,796	4,371	4,157	-4,000	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$1,750	**$7,000,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Stayner	6,541	0	25,432	36,460	21,266	30,487	-29,900	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$1,750	**$52,325,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Creemore	2,688	0	5,521	9,120	3,978	6,571	-6,500	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$1,750	**$15,375,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include a trunk watermain from the regional pipeline to a reservoir. The estimated cost for the aforementioned watermain of 4 million is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	McKean Subdivision	1,055	0	392	553	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Colling-Woodlands Subdivision	270	0	188	209	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Buckingham Woods	76	0	48	59	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	36,623	51,197	29,615	41,215	-39,850						
Town of Collingwood		20,640	16,000	51,315	57,494	33,764	37,830	-36,900	Complete further expansion of the existing Water Filtration Plant.	Low	$600	**$22,140,000**	N/A	Complete Environmental Assessment and expand the Water Filtration Plant.
Township of Essa	Angus	6,554	0	13,713	7,516	7,503	4,112	-950	Construct a new well.	Medium	$1,000	**$950,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Construct a new well.
	Thornton-Glen	1,540	0	927	895	177	171	650	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Baxter	225	0	763	710	607	565	-500	Connect to Regional Pipeline.	Medium	$1,800	**$900,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Total		0	15,403	9,120	8,287	4,848	-800						
Town of Innisfil	Innisfil Heights	2,799	0	1,080	970	0	0	1,850	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Crossroads	2,030	0	1,715	990	0	0	1,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Stroud	2,098	0	2,310	2,308	438	438	-200	Develop a new well with treatment works.	Medium	$1,500	**$300,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Churchill	743	0	778	1,011	258	335	-250	Supply from the Alcona to Bradford pipeline.	Medium	L.S.	**$1,500,000**	Booster station and trunk watermain will be required, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, connect to Alcona Water System.
	Goldcrest (Golf Haven and Gold Crest)	702	0	954	865	224	242	-150	Supply from the Alcona to Bradford pipeline.	Medium	L.S.	**$1,500,000**	Abandon existing well supply systems.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, connect to Alcona Water System.

Appendix H9
IGAP Option 1 - Business as Usual
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
	Cookstown	851	0	2,367	1,725	977	712	-850	Supply water from the Alcona water supply in accordance with an Approved Environmental Assessment.	Medium	$1,500	**$6,275,000**	Additional Capacity would be required at the Alcona WFP. The estimated supply cost and trunk watermain of 5 million is included in the total cost.	Construct watermain from Alcona/BWG Pipeline in Accordace with EA.
	Alcona Lakeshore	12,700	5,997	29,855	17,856	17,295	10,344	-5,150	Complete further expansion of the existing Water Filtration Plant.	Medium	$1,250	**$6,437,500**	N/A	Complete Environmental Assessment and expand the existing Water Filtration Plant.
	Total		0	39,060	25,725	19,193	12,071	-3,700						
Town of Midland		20,776	0	28,160	29,327	11,460	11,935	-8,550	Develop of a new well with treatment works.	Medium	$800	**$6,840,000**	Assumes available groundwater supply.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
Town of New Tecumseth	Alliston / Beeton / Hillcrest	23,886	0	23,665	30,539	10,310	13,305	-6,650	Supply water from the Collingwood to Alliston Regional Pipeline in accordance with the Approved Environmental Assessment.	Medium	$1,500	**$9,975,000**	A booster station will be required. The cost is not included.	Increase existing supply from the Collingwood/New Tecumseth Pipeline.
	Tottenham	6,000	0	12,662	10,281	7,912	6,424	-4,300	Supply water from the Collingwood to Alliston Regional Pipeline.	Medium	$1,500	**$11,450,000**	Trunk watermain and booster stations will need to be constructed for supply from Beeton to Tottenham, estimated cost of 5 million is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Supply from Collingwood/New Tecumseth Pipeline.
	Total		0	36,327	40,819	18,222	19,729	-10,950						
City of Orillia		39,502	0	72,069	58,376	42,030	34,044	-18,900	Expand the existing surface water filtration plant.	Medium	$1,500	**$28,350,000**	Review inpacts on Lake Simcoe as suface water source.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
Township of Oro-Medonte	Canterbury	209	0	46	55	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Craighurst	458	0	138	202	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Horseshoe Highlands	3,370	0	3,964	11,710	2,584	7,633	-8,350	Develop two new wells with treatment works.	Medium	$800	**$6,680,000**	The treatment facility will have to be increased in capacity, the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop two new groundwater wells.
	Maplewood	164	0	127	165	0	0	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Robin Crest	850	0	243	553	0	0	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Sugarbush	2,485	0	869	1,052	0	0	1,450	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Cedarbrook	196	0	65	95	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Harbourwood	922	0	354	569	0	0	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lake Simcoe Regional Airport	73	0	53	23	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Medonte Hills	393	0	367	381	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Shanty Bay	1,220	0	302	430	0	0	800	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Warminister	600	0	540	666	0	0	-50	Develop a new well with treatment works.	Medium	L.S	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Total		0	7,068	15,900	2,584	7,633	-5,000						
Town of Penetanguishene	Payette	11,000	3,300	13,604	18,573	6,904	9,426	-7,600	Develop new groundwater wells.	High	$800	**$6,080,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop groundwater wells.
	Lepage	432	0	64	58	0	0	350	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	13,668	18,631	6,904	9,426	-7,250						No Expansion Necessary
Township of Ramara	Bayshore Village	1,244	0	946	1,323	271	379	-100	Expand existing water supply system and treatment facility.	Medium	$2,000	**$200,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Park Lane	50	0	43	48	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lagoon City/Brechin	4,000	0	5,930	5,540	2,930	2,737	-1,500	Expand the existing surface water treatment plant .	High	$1,500	**$2,250,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
	Davy Drive	76	0	103	54	23	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	South Ramara	387	0	331	624	118	223	-200	Expand the existing water supply.	Medium	$2,000	**$400,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Val Harbour	207	0	195	264	55	75	-50	Install a new well pump into the existing well.	Medium	L.S	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Total		0	7,548	7,855	3,398	3,415	-1,850						
Township of Severn	Severn Estates	109	0	62	52	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bass Lake Woodlands	818	0	429	798	105	195	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Sandcastle Estates	389	0	167	260	0	0	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Washago	544	0	365	277	0	0	250	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Coldwater	2,138	0	4,771	5,050	3,340	3,535	-2,900	Expand the existing groundwater supply source.	Medium	$2,000	**$5,800,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	West Shore	2,780	0	2,250	2,278	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	8,044	8,715	3,445	3,731	-1,950						
Township of	Anten Mills	1,558	0	459	569	111	138	1,000	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Del Trend	786	0	318	657	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Elmvale	4,546	0	3,304	3,346	1,015	1,028	1,200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Hillsdale	1,185	0	2,208	2,484	1,140	1,282	-1,300	Expand the existing groundwater supply source.	Medium	$1,000	**$1,300,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.

Appendix H9
IGAP Option 1 - Business as Usual
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Springwater	Midhurst	6,850	0	3,036	3,727	132	162	3,100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Minesing	740	0	719	919	80	103	-200	Currently being expanded to supply 200 m^3/day gap.	N/A	N/A	**$0**	N/A	N/A
	Snow Valley	1,400	0	682	1,054	175	270	350	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Vespra Downs	169	0	69	140	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	10,795	12,894	2,653	2,982	4,250						
Township of Tay	Victoria Harbour/Port McNicoll	7,845	0	31,148	28,033	25,348	22,813	-20,200	Expand the existing surface water treatment plant .	High	$2,000	**$40,400,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant. In addition, Bay Berry and Midland Bay Woods systems would be decomissioned and serviced by Victoria Harbour/Port McNicoll.
	Rope	274	0	60	74	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Midland Bay Woods	301	0	230	285	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bay Berry	392	0	100	124	0	0	250	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Waubaushene	1,225	0	4,146	4,664	2,946	3,314	-3,450	Expand the existing surface water treatment plant .	High	$2,000	**$6,900,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
	Total		0	35,684	33,180	28,294	26,127	-23,200						
Township of Tiny	Perkinsfield	1,382	0	437	661	0	0	700	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bluewater	836	0	614	1,030	0	0	-200	Develop new wells with treatment works.	Medium	$1,000	**$200,000**	The treatment facility and reservoir will have to be expanded, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Georgian Bay Estates	949	0	559	712	0	0	250	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Georgian Sands	3,145	0	1,591	2,353	0	0	800	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	LA Place	198	0	148	215	0	0	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	TeePee Points	123	0	237	182	0	0	-100	Install a new well pump into the existing well.	Low	$1,000	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Sand Castle Estates	490	0	83	123	0	0	350	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Vanier Woods	360	0	104	135	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Wyevale Central	920	0	515	805	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Cook's Lake	400	0	224	228	0	0	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Georgian Highlands	752	0	211	272	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lefaive	309	0	172	177	0	0	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Pennorth	61	0	83	105	0	0	-100	Install a new well pump into the existing well.	Low	$1,000	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Rayko	194	0	83	135	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Sawlog Bay	189	0	91	144	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Thunder Bay	200	0	47	201	0	0	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Whip-Poor-Will 2	360	0	151	510	0	0	-150	Develop a new well with treatment works.	Medium	$1,500	**$225,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Woodland Beach	170	0	49	216	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	5,398	8,202	0	0	2,850						
Town of Wasaga Beach		31,415	0	33,769	37,984	14,220	15,995	-6,550	Develop an additional groundwater well source	Medium	$800	**$5,240,000**	The treatment facility and reservoir will have to be expanded.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
												$329,442,500		

Note 1: The Ultimate Required Capacity includes the existing water supply demand and the additional water supply demand.

Note 2: The Total Additional Demand includes the Additional residential and employment water supply demand.

Note 3: The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity has not been included in the total gap.

Appendix H10
IGAP Option 2A - Single Barrie Area Node with 40% Intensification in County
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Adjala-Tosorontio	Everett	3,917	0	2,700	1,957	798	578	1,950	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Colgan	157	0	213	200	0	0	-50	Equip the wells with larger capacity pumps.	Low	$1,000	**$50,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Equip the wells with larger capacity pumps.
	Lisle	657	0	168	131	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Loretto Heights	137	0	78	77	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Rosemont	73	0	141	67	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Weca	916	0	246	319	0	0	600	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Hockley	90	0	42	68	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	3,588	2,819	798	578	3,050						
City of Barrie		92,490	60,000	256,241	174,843	130,241	88,868	-82,350	Construct and Expand Approved Future Water Filtration Plant.	Medium	$900	**$74,115,000**	N/A	Consrtuct currently proposed surface water treatment plant and expand future WTP.
Town of Bradford West Gwillimbury		13,986	6,350	48,285	33,914	29,885	20,991	-19,950	Supply water from the Alcona water supply in accordance with the Approved Environmental Assessment and Water supply aggreement.	Medium	$1,250	**$27,437,500**	An upgrade to the trunk watermain feeding the Alcona Reservior will need to be completed. The estimated cost for the aforementioned watermain of 2.5 million is included.	Supply water from Alcona.
Township of Clearview	New Lowell	747	0	4,364	4,150	3,692	3,511	-3,500	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$1,750	**$6,125,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Stayner	6,541	0	12,370	17,734	8,203	11,761	-11,200	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$1,750	**$19,600,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Creemore	2,688	0	3,320	5,485	1,777	2,936	-2,800	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$1,750	**$8,900,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include a trunk watermain from the regional pipeline to a reservoir. The estimated cost for the aforementioned watermain of 4 million is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	McKean Subdivision	1,055	0	392	553	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Colling-Woodlands Subdivision	270	0	188	209	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Buckingham Woods	76	0	48	59	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	20,681	28,190	13,672	18,208	-16,950						
Town of Collingwood		20,640	16,000	55,548	62,237	37,997	42,572	-41,600	Complete further expansion of the existing Water Filtration Plant.	Low	$600	**$24,960,000**	N/A	Complete Environmental Assessment and expand the existing Water Filtration Plant.
Township of Essa	Angus	6,554	0	13,416	7,353	7,206	3,949	-800	Construct a new well.	Medium	$1,000	**$800,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Construct a new well.
	Thornton-Glen	1,540	0	990	956	240	232	600	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Baxter	225	0	716	667	560	522	-450	Connect to Regional Pipeline.	Medium	$1,800	**$810,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Total		0	15,123	8,975	8,007	4,703	-650						
Town of Innisfil	Innisfil Heights	2,799	0	1,080	970	0	0	1,850	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Crossroads	2,030	0	1,715	990	0	0	1,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Stroud	2,098	0	2,618	2,615	746	745	-500	Develop a new well with treament works.	Medium	$1,500	**$750,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Churchill	743	0	893	1,160	373	485	-400	Supply from the Alcona to Bradford pipeline.	Medium	L.S.	**$1,500,000**	Booster station and trunk watermain will be required, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, connect to Alcona Water System.
	Goldcrest (Golf Haven and Gold Crest)	702	0	1,103	1,026	373	403	-300	Supply from the Alcona to Bradford pipeline.	Medium	L.S.	**$1,500,000**	Abandon existing well supply systems.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, connect to Alcona Water System.

Appendix H10
IGAP Option 2A - Single Barrie Area Node with 40% Intensification in County
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
	Cookstown	851	0	2,634	1,919	1,244	906	-1,100	Supply water from the Alcona water supply in accordance with an Approved Environmental Assessment.	Medium	$1,500	**$6,650,000**	Additional Capacity would be required at the Alcona WFP. The estimated supply cost and trunk watermain of 5 million is included in the total cost.	Construct watermain from Alcona/BWG Pipeline in Accordace with EA.
	Alcona Lakeshore	12,700	5,997	34,695	20,750	22,135	13,238	-8,050	Complete further expansion of the existing Water Filtration Plant.	High	$1,250	**$10,062,500**	N/A	Complete Environmental Assessment and expand the existing Water Filtration Plant.
	Total		0	44,737	29,431	24,870	15,777	-7,450						
Town of Midland		20,776	0	33,524	34,913	16,824	17,521	-14,150	Develop of a new well with treament works.	Medium	$800	**$11,320,000**	Assumes available groundwater supply.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
Town of New Tecumseth	Alliston / Beeton / Hillcrest	23,886	0	26,223	33,840	12,869	16,606	-9,950	Supply water from the Collingwood to Alliston Regional Pipeline in accordance with the Approved Environmental Assessment.	Medium	$1,500	**$14,925,000**	A booster station will be required. The cost is not included.	Increase existing supply from the Collingwood/New Tecumseth Pipeline.
	Tottenham	6,000	0	14,458	11,739	9,708	7,882	-5,750	Supply water from the Collingwood to Alliston Regional Pipeline.	Medium	$1,500	**$13,625,000**	Trunk watermain and booster stations will need to be constructed for supply from Beeton to Tottenham, estimated cost of 5 million is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Supply from Collingwood/New Tecumseth Pipeline.
	Total		0	40,681	45,579	22,577	24,488	-15,700						
City of Orillia		39,502	0	77,162	62,501	47,123	38,170	-23,000	Expand the existing surface water filtration plant.	Medium	$1,500	**$34,500,000**	Review inpacts on Lake Simcoe as suface water source.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
Township of Oro-Medonte	Canterbury	209	0	46	55	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Craighurst	458	0	138	202	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Horseshoe Highlands	3,370	0	3,964	11,710	2,584	7,633	-8,350	Develop two new wells with treatment works.	Medium	$800	**$6,680,000**	The treatment facility will have to be increased in capacity, the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop two new groundwater wells.
	Maplewood	164	0	127	165	0	0	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Robin Crest	850	0	243	553	0	0	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Sugarbush	2,485	0	869	1,052	0	0	1,450	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Cedarbrook	196	0	65	95	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Harbourwood	922	0	354	569	0	0	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lake Simcoe Regional Airport	73	0	53	23	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Medonte Hills	393	0	367	381	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Shanty Bay	1,220	0	302	430	0	0	800	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Warminister	600	0	540	666	0	0	-50	Develop a new well with treament works.	Medium	L.S.	**$100,000**		Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Total		0	7,068	15,900	2,584	7,633	-5,000						
Town of Penetanguishene	Payette	11,000	3,300	17,500	23,892	10,800	14,745	-12,900	Develop new groundwater wells	High	$800	**$10,320,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Lepage	432	0	64	58	0	0	350	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	17,564	23,950	10,800	14,745	-12,550						No Expansion Necessary
Township of Ramara	Bayshore Village	1,244	0	766	1,071	91	127	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Park Lane	50	0	43	48	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lagoon City/Brechin	4,000	0	4,820	4,503	1,820	1,700	-500	Expand the existing surface water treatment plant .	High	$1,500	**$750,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
	Davy Drive	76	0	80	42	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	South Ramara	387	0	249	469	36	68	-100	Expand the existing water supply.	Medium	$2,000	**$200,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Val Harbour	207	0	158	214	18	25	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	6,115	6,348	1,965	1,920	-350						
Township of Severn	Severn Estates	109	0	62	52	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bass Lake Woodlands	818	0	456	849	132	246	-50	Expand the existing water supply.	N/A	$2,000	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Sandcastle Estates	389	0	167	260	0	0	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Washago	544	0	365	277	0	0	250	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Coldwater	2,138	0	5,167	5,469	3,736	3,955	-3,300	Expand the existing groundwater supply source.	Medium	$2,000	**$6,600,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	West Shore	2,780	0	2,250	2,278	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	8,468	9,185	3,869	4,201	-2,400						
Township of Springwater	Anten Mills	1,558	0	400	495	52	64	1,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Del Trend	786	0	318	657	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Elmvale	4,546	0	2,767	2,802	478	484	1,750	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Hillsdale	1,185	0	1,624	1,827	556	625	-650	Expand the existing groundwater supply source.	Medium	$1,000	**$650,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Midhurst	6,850	0	2,982	3,660	78	95	3,200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary

Appendix H10
IGAP Option 2A - Single Barrie Area Node with 40% Intensification in County
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
	Minesing	740	0	691	882	52	66	-150	Currently being expanded to supply 200 m^3/day gap.	N/A	N/A	**$0**	N/A	N/A
	Snow Valley	1,400	0	585	904	78	120	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Vespra Downs	169	0	69	140	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	9,435	11,367	1,293	1,455	5,800						
Township of Tay	Victoria Harbour/Port McNicoll	7,845	0	11,119	10,007	5,319	4,787	-2,200	Expand the existing surface water treatment plant .	High	$1,500	**$3,300,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant. Bay Berry and Midland Bay Woods systems are to be decomissioned and serviced by Victoria Harbour/Port McNicoll.
	Rope	274	0	60	74	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Midland Bay Woods	301	0	230	285	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bay Berry	392	0	100	124	0	0	250	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Waubaushene	1,225	0	1,796	2,021	596	671	-800	Expand the existing surface water treatment plant .	High	$1,500	**$1,200,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
	Total		0	13,305	12,510	5,915	5,457	-2,550						
Township of Tiny	Perkinsfield	1,382	0	437	661	0	0	700	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bluewater	836	0	614	1,030	0	0	-200	Develop new wells with treament works.	Medium	$1,000	**$200,000**	The treatment facility and reservoir will have to be expanded, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Georgian Bay Estates	949	0	559	712	0	0	250	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Georgian Sands	3,145	0	1,591	2,353	0	0	800	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	LA Place	198	0	148	215	0	0	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	TeePee Points	123	0	237	182	0	0	-100	Install a new well pump into the existing well.	Low	$1,000	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Sand Castle Estates	490	0	83	123	0	0	350	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Vanier Woods	360	0	104	135	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Wyevale Central	920	0	515	805	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Cook's Lake	400	0	224	228	0	0	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Georgian Highlands	752	0	211	272	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lefaive	309	0	172	177	0	0	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Pennorth	61	0	83	105	0	0	-50	Install a new well pump into the existing well.	Low	$1,000	**$50,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Rayko	194	0	83	135	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Sawlog Bay	189	0	91	144	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Thunder Bay	200	0	47	201	0	0	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Whip-Poor-Will 2	360	0	151	510	0	0	-150	Develop a new well with treament works.	Medium	$1,500	**$225,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Woodland Beach	170	0	49	216	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	5,398	8,202	0	0	2,900						
Town of Wasaga Beach		31,415	0	34,088	38,343	14,539	16,354	-6,900	Develop an additional groundwater well source	Medium	$800	**$5,520,000**	The treatment facility and reservoir will have to be expanded.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
				697,009	609,208							**$293,625,000**		

Note 1: The Ultimate Required Capacity includes the existing water supply demand and the additional water supply demand.

Note 2: The Total Additional Demand includes the Additional residential and employment water supply demand.

Note 3: The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity has not been included in the total gap.

Appendix H11
IGAP Option 2B - Barrie and Area Centered Single Node with 16% Intensification
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Adjala-Tosorontio	Everett	3,917	0	2,700	1,957	798	578	1,950	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Colgan	157	0	213	200	0	0	-100	Equip the wells with larger capacity pumps.	Low	$1,000	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Equip the wells with larger capacity pumps.
	Lisle	657	0	168	131	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Loretto Heights	137	0	78	77	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Rosemont	73	0	141	67	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Weca	916	0	246	319	0	0	600	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Hockley	90	0	42	68	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	3,588	2,819	798	578	3,000						
City of Barrie		92,490	60,000	277,792	189,549	151,792	103,574	-97,050	Construct and Expand Approved Future Water Filtration Plant.	Medium	$900	**$87,345,000**	N/A	Consrtuct currently proposed surface water treatment plant and expand future WTP.
Town of Bradford West Gwillimbury		13,986	6,350	46,756	32,841	28,356	19,917	-18,850	Supply water from the Alcona water supply in accordance with the Approved Environmental Assessment and Water supply aggreement.	Medium	$1,250	**$26,062,500**	An upgrade to the trunk watermain feeding the Alcona Reservior will need to be completed. The estimated cost for the aforementioned watermain of 2.5 million is included.	Supply water from Alcona.
Township of Clearview	New Lowell	747	0	4,280	4,071	3,608	3,432	-3,300	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$1,750	**$5,775,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Stayner	6,541	0	12,185	17,469	8,019	11,496	-10,900	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$1,750	**$19,075,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Creemore	2,688	0	3,280	5,419	1,737	2,870	-2,700	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$1,750	**$8,725,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include a trunk watermain from the regional pipeline to a reservoir. The estimated cost for the aforementioned watermain of 4 million is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	McKean Subdivision	1,055	0	392	553	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Colling-Woodlands Subdivision	270	0	188	209	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Buckingham Woods	76	0	48	59	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	20,373	27,779	13,364	17,797	-16,350						
Town of Collingwood		20,640	16,000	52,042	58,308	34,490	38,644	-37,700	Complete further expansion of the existing Water Filtration Plant.	Low	$600	**$22,620,000**	N/A	Complete Environmental Assessment and expand the existing Water Filtration Plant.
Township of Essa	Angus	6,554	0	13,303	7,291	7,093	3,887	-750	Construct a new well.	Medium	$1,000	**$750,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Construct a new well.
	Thornton-Glen	1,540	0	986	952	236	228	600	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Baxter	225	0	708	659	552	513	-400	Connect to Regional Pipeline.	Medium	$1,800	**$720,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Total		0	14,997	8,901	7,881	4,629	-550						
Town of Innisfil	Innisfil Heights	2,799	0	1,080	970	0	0	1,850	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Crossroads	2,030	0	1,715	990	0	0	1,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Stroud	2,098	0	2,532	2,529	660	659	-500	Develop a new well with treament works.	Medium	$1,500	**$750,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Churchill	743	0	850	1,104	330	429	-350	Supply from the Alcona to Bradford pipeline.	Medium	L.S.	**$1,500,000**	Booster station and trunk watermain will be required, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, connect to Alcona Water System.
	Goldcrest (Golf Haven and Gold Crest)	702	0	1,060	979	330	356	-300	Supply from the Alcona to Bradford pipeline.	Medium	L.S.	**$1,500,000**	Abandon existing well supply systems.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, connect to Alcona Water System.

Appendix H11
IGAP Option 2B - Barrie and Area Centered Single Node with 16% Intensification
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
	Cookstown	851	0	2,490	1,815	1,100	802	-950	Supply water from the Alcona water supply in accordance with an Approved Environmental Assessment.	Medium	$1,500	**$6,425,000**	Additional Capacity would be required at the Alcona WFP. The estimated supply cost and trunk watermain of 5 million is included in the total cost.	Construct watermain from Alcona/BWG Pipeline in Accordace with EA.
	Alcona Lakeshore	12,700	5,997	32,146	19,226	19,586	11,714	-6,550	Complete further expansion of the existing Water Filtration Plant.	Medium	$1,250	**$8,187,500**	N/A	Complete Environmental Assessment and expand the existing Water Filtration Plant.
	Total		0	41,873	27,614	22,006	13,960	-5,750						
Town of Midland		20,776	0	29,771	31,004	13,071	13,612	-10,250	Develop of a new well with treament works.	Medium	$800	**$8,200,000**	Assumes available groundwater supply.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
Town of New Tecumseth	Alliston / Beeton / Hillcrest	23,886	0	24,261	31,308	10,906	14,074	-7,400	Supply water from the Collingwood to Alliston Regional Pipeline in accordance with the Approved Environmental Assessment.	Medium	$1,500	**$11,100,000**	A booster station will be required. The cost is not included.	Increase existing supply from the Collingwood/New Tecumseth Pipeline.
	Tottenham	6,000	0	12,978	10,537	8,228	6,680	-4,550	Supply water from the Collingwood to Alliston Regional Pipeline.	Medium	$1,500	**$11,825,000**	Trunk watermain and booster stations will need to be constructed for supply from Beeton to Tottenham, estimated cost of 5 million is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Supply from Collingwood/New Tecumseth Pipeline.
	Total		0	37,239	41,845	19,134	20,755	-11,950						
City of Orillia		39,502	0	77,162	62,501	47,123	38,170	-23,000	Expand the existing surface water filtration plant.	Medium	$1,500	**$34,500,000**	Review inpacts on Lake Simcoe as suface water source.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
Township of Oro-Medonte	Canterbury	209	0	46	55	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Craighurst	458	0	138	202	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Horseshoe Highlands	3,370	0	3,964	11,710	2,584	7,633	-8,350	Develop two new wells with treatment works.	Medium	$800	**$6,680,000**	The treatment facility will have to be increased in capacity, the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop two new groundwater wells.
	Maplewood	164	0	127	165	0	0	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Robin Crest	850	0	243	553	0	0	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Sugarbush	2,485	0	869	1,052	0	0	1,450	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Cedarbrook	196	0	65	95	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Harbourwood	922	0	354	569	0	0	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lake Simcoe Regional Airport	73	0	53	23	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Medonte Hills	393	0	367	381	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Shanty Bay	1,220	0	302	430	0	0	800	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Warminister	600	0	540	666	0	0	-50	Develop a new well with treament works.	Medium	L.S.	**$100,000**		Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Total		0	7,068	15,900	2,584	7,633	-5,000						
Town of Penetanguishene	Payette	11,000	3,300	14,277	19,492	7,577	10,345	-8,500	Develop new groundwater wells	High	$800	**$6,800,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Lepage	432	0	64	58	0	0	350	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	14,341	19,550	7,577	10,345	-8,150						
Township of Ramara	Bayshore Village	1,244	0	765	1,070	90	125	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Park Lane	50	0	43	48	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lagoon City/Brechin	4,000	0	4,799	4,483	1,799	1,681	-500	Expand the existing surface water treatment plant .	High	$1,500	**$750,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
	Davy Drive	76	0	80	42	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	South Ramara	387	0	248	468	36	68	-100	Expand the existing water supply.	Medium	$2,000	**$200,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Val Harbour	207	0	158	214	18	24	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	6,092	6,326	1,942	1,898	-350						
Township of Severn	Severn Estates	109	0	62	52	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bass Lake Woodlands	818	0	456	849	132	246	-50	Expand the existing water supply.	N/A	$2,000	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Sandcastle Estates	389	0	167	260	0	0	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Washago	544	0	365	277	0	0	250	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Coldwater	2,138	0	5,167	5,469	3,736	3,955	-3,350	Expand the existing groundwater supply source.	Medium	$2,000	**$6,700,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	West Shore	2,780	0	2,250	2,278	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	8,468	9,185	3,869	4,201	-2,450						
Township of	Anten Mills	1,558	0	396	491	48	60	1,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Del Trend	786	0	318	657	0	0	100	No Gap	N/A	$1,500	**$0**	N/A	No Expansion Necessary
	Elmvale	4,546	0	2,737	2,772	448	454	1,750	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Hillsdale	1,185	0	1,589	1,788	521	586	-600	Expand the existing groundwater supply source.	Medium	$1,000	**$600,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.

Appendix H11
IGAP Option 2B - Barrie and Area Centered Single Node with 16% Intensification
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Springwater	Midhurst	6,850	0	2,977	3,654	73	89	3,200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Minesing	740	0	687	878	48	62	-150	Currently being expanded to supply 200 m^3/day gap.	N/A	N/A	**$0**	N/A	N/A
	Snow Valley	1,400	0	580	897	73	112	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Vespra Downs	169	0	69	140	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	9,354	11,276	1,212	1,364	5,850						
Township of Tay	Victoria Harbour/Port McNicoll	7,845	0	9,860	8,874	4,060	3,654	-1,050	Expand the existing surface water treatment plant .	High	$1,500	**$1,575,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant. Bay Berry and Midland Bay Woods systems are to be decomissioned and serviced by Victoria Harbour/Port McNicoll.
	Rope	274	0	60	74	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Midland Bay Woods	301	0	230	285	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bay Berry	392	0	100	124	0	0	250	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Waubaushene	1,225	0	1,641	1,846	441	496	-600	Expand the existing surface water treatment plant .	High	$1,500	**$900,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
	Total		0	11,891	11,203	4,501	4,150	-1,200						
Township of Tiny	Perkinsfield	1,382	0	437	661	0	0	700	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bluewater	836	0	614	1,030	0	0	-200	Develop new wells with treament works.	Medium	$1,000	**$200,000**	The treatment facility and reservoir will have to be expanded, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Georgian Bay Estates	949	0	559	712	0	0	250	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Georgian Sands	3,145	0	1,591	2,353	0	0	800	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	LA Place	198	0	148	215	0	0	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	TeePee Points	123	0	237	182	0	0	-100	Install a new well pump into the existing well.	Low	$1,000	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Sand Castle Estates	490	0	83	123	0	0	350	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Vanier Woods	360	0	104	135	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Wyevale Central	920	0	515	805	0	0	100	Install a new well pump into one of the existing wells.	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Cook's Lake	400	0	224	228	0	0	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Georgian Highlands	752	0	211	272	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lefaive	309	0	172	177	0	0	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Pennorth	61	0	83	105	0	0	-50	Install a new well pump into the existing well.	Low	$1,000	**$50,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Rayko	194	0	83	135	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Sawlog Bay	189	0	91	144	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Thunder Bay	200	0	47	201	0	0	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Whip-Poor-Will 2	360	0	151	510	0	0	-150	Develop a new well with treament works.	Medium	$1,500	**$225,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Woodland Beach	170	0	49	216	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	5,398	8,202	0	0	2,900						
Town of Wasaga Beach		31,415	0	32,593	36,661	13,044	14,672	-5,200	Develop an additional groundwater well source	Medium	$800	**$4,160,000**	The treatment facility and reservoir will have to be expanded.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
												$284,300,000		

Note 1: The Ultimate Required Capacity includes the existing water supply demand and the additional water supply demand.

Note 2: The Total Additional Demand includes the Additional residential and employment water supply demand.

Note 3: The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity has not been included in the total gap.

Appendix H12
IGAP Option 3 - Multi-Nodal
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Adjala-Tosorontio	Everett	3,917	0	2,700	1,957	798	578	1,950	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Colgan	157	0	213	200	0	0	-50	Equip the wells with larger capacity pumps.	Low	$1,000	**$50,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Equip the wells with larger capacity pumps.
	Lisle	657	0	168	131	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Loretto Heights	137	0	78	77	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Rosemont	73	0	141	67	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Weca	916	0	246	319	0	0	600	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Hockley	90	0	42	68	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	3,588	2,819	798	578	3,050						
City of Barrie		92,490	60,000	247,698	169,014	121,698	83,039	-76,500	Construct and Expand Approved Future Water Filtration Plant.	Medium	$900	**$68,850,000**	N/A	Consrtuct currently proposed surface water treatment plant and expand future WTP.
Town of Bradford West Gwillimbury		13,986	6,350	64,033	44,976	45,633	32,052	-31,000	Supply water from the Alcona water supply in accordance with the Approved Environmental Assessment and Water supply aggreement.	Medium	$1,250	**$43,750,000**	An upgrade to the trunk watermain feeding the Alcona Reservior and the existing pump station will need to be completed. The estimated cost for the aforementioned upgrades of 5 million is included.	Complete EA to review all alternatives however it is presumed that this will conclude, expand Alcona WTP.
Township of Clearview	New Lowell	747	0	4,280	4,071	3,608	3,432	-3,300	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$1,750	**$5,775,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Stayner	6,541	0	12,185	17,469	8,019	11,496	-10,900	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$1,750	**$19,075,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Creemore	2,688	0	3,280	5,419	1,737	2,870	-2,700	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$1,750	**$8,725,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include a trunk watermain from the regional pipeline to a reservoir. The estimated cost for the aforementioned watermain of 4 million is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	McKean Subdivision	1,055	0	392	553	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Colling-Woodlands Subdivision	270	0	188	209	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Buckingham Woods	76	0	48	59	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	20,373	27,779	13,364	17,797	-16,350						
Town of Collingwood		20,640	16,000	52,042	58,308	34,490	38,644	-37,700	Complete further expansion of the existing Water Filtration Plant.	Low	$600	**$22,620,000**	N/A	Complete Environmental Assessment and expand the existing Water Filtration Plant.
Township of Essa	Angus	6,554	0	13,303	7,291	7,093	3,887	-750	Construct a new well.	Medium	$1,000	**$750,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Construct a new well.
	Thornton-Glen	1,540	0	986	952	236	228	600	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Baxter	225	0	708	659	552	513	-400	Connect to Regional Pipeline.	Medium	$1,800	**$720,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Total		0	14,997	8,901	7,881	4,629	-550						
Town of Innisfil	Innisfil Heights	2,799	0	1,080	970	0	0	1,850	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Crossroads	2,030	0	1,715	990	0	0	1,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Stroud	2,098	0	2,532	2,529	660	659	-500	Develop a new well with treament works.	Medium	$1,500	**$750,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Churchill	743	0	850	1,104	330	429	-350	Supply from the Alcona to Bradford pipeline.	Medium	L.S.	**$1,500,000**	Booster station and trunk watermain will be required, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, connect to Alcona Water System.
	Goldcrest (Golf Haven and Gold Crest)	702	0	1,060	979	330	356	-300	Supply from the Alcona to Bradford pipeline.	Medium	L.S.	**$1,500,000**	Abandon existing well supply systems.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, connect to Alcona Water System.
	Cookstown	851	0	2,490	1,815	1,100	802	-950	Supply water from the Alcona water supply in accordance with an Approved Environmental Assessment.	Medium	$1,500	**$6,425,000**	Additional Capacity would be required at the Alcona WFP. The estimated supply cost and trunk watermain of 5 million is included in the total cost.	Construct watermain from Alcona/BWG Pipeline in Accordace with EA.
	Alcona Lakeshore	12,700	5,997	32,146	19,226	19,586	11,714	-6,550	Complete further expansion of the existing Water Filtration Plant.	Medium	$1,250	**$8,187,500**	N/A	Complete Environmental Assessment and expand the existing Water Filtration Plant.
	Total		0	41,873	27,614	22,006	13,960	-5,750						

Appendix H12
IGAP Option 3 - Multi-Nodal
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Town of Midland		20,776	0	29,771	31,004	13,071	13,612	-10,250	Develop of a new well with treament works.	Medium	$800	**$8,200,000**	Assumes available groundwater supply.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
Town of New Tecumseth	Alliston / Beeton / Hillcrest	23,886	0	40,423	52,165	27,069	34,931	-28,300	Supply water from the Collingwood to Alliston Regional Pipeline in accordance with the Approved Environmental Assessment.	Medium	$1,500	**$42,450,000**	A booster station will be required. The cost is not included.	Increase existing supply from the Collingwood/New Tecumseth Pipeline.
	Tottenham	6,000	0	12,978	10,537	8,228	6,680	-4,550	Supply water from the Collingwood to Alliston Regional Pipeline.	Medium	$1,500	**$11,825,000**	Trunk watermain and booster stations will need to be constructed for supply from Beeton to Tottenham, estimated cost of 5 million is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Supply from Collingwood/New Tecumseth Pipeline.
	Total		0	53,401	62,701	35,296	41,611	-32,850						
City of Orillia		39,502	0	77,162	62,501	47,123	38,170	-23,000	Expand the existing surface water filtration plant.	Medium	$1,500	**$34,500,000**	Review inpacts on Lake Simcoe as suface water source.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
Township of Oro-Medonte	Canterbury	209	0	46	55	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Craighurst	458	0	138	202	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Horseshoe Highlands	3,370	0	3,964	11,710	2,584	7,633	-8,350	Develop two new wells with treatment works.	Medium	$800	**$6,680,000**	The treatment facility will have to be increased in capacity, the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop two new groundwater wells.
	Maplewood	164	0	127	165	0	0	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Robin Crest	850	0	243	553	0	0	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Sugarbush	2,485	0	869	1,052	0	0	1,450	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Cedarbrook	196	0	65	95	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Harbourwood	922	0	354	569	0	0	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lake Simcoe Regional Airport	73	0	53	23	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Medonte Hills	393	0	367	381	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Shanty Bay	1,220	0	302	430	0	0	800	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Warminister	600	0	540	666	0	0	-50	Develop a new well with treament works.	Medium	L.S.	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Total		0	7,068	15,900	2,584	7,633	-5,000						
Town of Penetanguishene	Payette	11,000	3,300	14,277	19,492	7,577	10,345	-8,500	Develop new groundwater wells	High	$800	**$6,800,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Lepage	432	0	64	58	0	0	350	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	14,341	19,550	7,577	10,345	-8,150						No Expansion Necessary
Township of Ramara	Bayshore Village	1,244	0	765	1,070	90	125	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Park Lane	50	0	43	48	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lagoon City/Brechin	4,000	0	4,799	4,483	1,799	1,681	-500	Expand the existing surface water treatment plant .	High	$1,500	**$750,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
	Davy Drive	76	0	80	42	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	South Ramara	387	0	248	468	36	68	-100	Expand the existing water supply.	Medium	$2,000	**$200,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Val Harbour	207	0	158	214	18	24	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	6,092	6,326	1,942	1,898	-350						
Township of Severn	Severn Estates	109	0	62	52	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bass Lake Woodlands	818	0	456	849	132	246	-50	Expand the existing water supply.	N/A	$2,000	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Sandcastle Estates	389	0	167	260	0	0	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Washago	544	0	365	277	0	0	250	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Coldwater	2,138	0	5,167	5,469	3,736	3,955	-3,300	Expand the existing groundwater supply source.	Medium	$2,000	**$6,600,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	West Shore	2,780	0	2,250	2,278	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	8,468	9,185	3,869	4,201	-2,400						

Appendix H12
IGAP Option 3 - Multi-Nodal
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Springwater	Anten Mills	1,558	0	396	491	48	60	1,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Del Trend	786	0	318	657	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Elmvale	4,546	0	2,737	2,772	448	454	1,750	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Hillsdale	1,185	0	1,589	1,788	521	586	-600	Expand the existing groundwater supply source.	Medium	$1,000	**$600,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Midhurst	6,850	0	2,977	3,654	73	89	3,200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Minesing	740	0	687	878	48	62	-150	Currently being expanded to supply 200 m^3/day gap.	N/A	N/A	**$0**	N/A	N/A
	Snow Valley	1,400	0	580	897	73	112	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Vespra Downs	169	0	69	140	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	9,354	11,276	1,212	1,364	5,850						
Township of Tay	Victoria Harbour/Port McNicoll	7,845	0	9,860	8,874	4,060	3,654	-1,050	Expand the existing surface water treatment plant .	High	$1,500	**$1,575,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant. Bay Berry and Midland Bay Woods systems are to be decomissioned and serviced by Victoria Harbour/Port McNicoll.
	Rope	274	0	60	74	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Midland Bay Woods	301	0	230	285	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bay Berry	392	0	100	124	0	0	250	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Waubaushene	1,225	0	1,641	1,846	441	496	-600	Expand the existing surface water treatment plant .	High	$1,500	**$900,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
	Total		0	11,891	11,203	4,501	4,150	-1,200						
Township of Tiny	Perkinsfield	1,382	0	437	661	0	0	700	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bluewater	836	0	614	1,030	0	0	-200	Develop new wells with treament works.	Medium	$1,000	**$200,000**	The treatment facility and reservoir will have to be expanded, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Georgian Bay Estates	949	0	559	712	0	0	250	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Georgian Sands	3,145	0	1,591	2,353	0	0	800	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	LA Place	198	0	148	215	0	0	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	TeePee Points	123	0	237	182	0	0	-100	Install a new well pump into the existing well.	Low	$1,000	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Sand Castle Estates	490	0	83	123	0	0	350	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Vanier Woods	360	0	104	135	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Wyevale Central	920	0	515	805	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Cook's Lake	400	0	224	228	0	0	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Georgian Highlands	752	0	211	272	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lefaive	309	0	172	177	0	0	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Pennorth	61	0	83	105	0	0	-50	Install a new well pump into the existing well.	Low	$1,000	**$50,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Rayko	194	0	83	135	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Sawlog Bay	189	0	91	144	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Thunder Bay	200	0	47	201	0	0	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Whip-Poor-Will 2	360	0	151	510	0	0	-150	Develop a new well with treament works.	Medium	$1,500	**$225,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Woodland Beach	170	0	49	216	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	5,398	8,202	0	0	2,900						
Town of Wasaga Beach		31,415	0	32,593	36,661	13,044	14,672	-5,200	Develop an additional groundwater well source	Medium	$800	**$4,160,000**	The treatment facility and reservoir will have to be expanded.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
				700,141		376,089						**$314,692,500**		

Note 1: The Ultimate Required Capacity includes the existing water supply demand and the additional water supply demand.

Note 2: The Total Additional Demand includes the Additional residential and employment water supply demand.

Note 3: The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity has not been included in the total gap.

Appendix H13
IGAP Option 4 - South Simcoe Dispersed
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Adjala-Tosorontio	Everett	3,917	0	2,700	1,957	798	578	1,950	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Colgan	157	0	213	200	0	0	-50	Equip the wells with larger capacity pumps.	Low	$1,000	**$50,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Equip the wells with larger capacity pumps.
	Lisle	657	0	168	131	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Loretto Heights	137	0	78	77	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Rosemont	73	0	141	67	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Weca	916	0	246	319	0	0	600	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Hockley	90	0	42	68	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	3,588	2,819	798	578	3,050						
City of Barrie		92,490	60,000	247,698	169,014	121,698	83,039	-76,500	Construct and Expand Approved Future Water Filtration Plant.	Medium	$900	**$68,850,000**	N/A	Consrtuct currently proposed surface water treatment plant and expand future WTP.
Town of Bradford West Gwillimbury		13,986	6,350	55,396	38,909	36,996	25,985	-24,900	Supply water from the Alcona water supply in accordance with the Approved Environmental Assessment and Water supply aggreement.	Medium	$1,250	**$36,125,000**	An upgrade to the trunk watermain feeding the Alcona Reservior and the existing pump station will need to be completed. The estimated cost for the aforementioned upgrades of 5 million is included.	Complete EA to review all alternatives however it is presumed that this will conclude, expand Alcona WTP.
Township of Clearview	New Lowell	747	0	4,280	4,071	3,608	3,432	-3,300	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$1,750	**$5,775,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Stayner	6,541	0	12,185	17,469	8,019	11,496	-10,900	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$1,750	**$19,075,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Creemore	2,688	0	3,280	5,419	1,737	2,870	-2,700	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$1,750	**$8,725,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include a trunk watermain from the regional pipeline to a reservoir. The estimated cost for the aforementioned watermain of 4 million is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	McKean Subdivision	1,055	0	392	553	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Colling-Woodlands Subdivision	270	0	188	209	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Buckingham Woods	76	0	48	59	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	20,373	27,779	13,364	17,797	-16,350						
Town of Collingwood		20,640	16,000	52,042	58,308	34,490	38,644	-37,700	Complete further expansion of the existing Water Filtration Plant.	Low	$600	**$22,620,000**	N/A	Complete Environmental Assessment and expand the existing Water Filtration Plant.
Township of Essa	Angus	6,554	0	13,303	7,291	7,093	3,887	-750	Construct a new well.	Medium	$1,000	**$750,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Construct a new well.
	Thornton-Glen	1,540	0	986	952	236	228	600	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Baxter	225	0	708	659	552	513	-400	Connect to Regional Pipeline.	Medium	$1,800	**$720,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Total		0	14,997	8,901	7,881	4,629	-550						
Town of Innisfil	Innisfil Heights	2,799	0	1,080	970	0	0	1,850	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Crossroads	2,030	0	1,715	990	0	0	1,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Stroud	2,098	0	2,532	2,529	660	659	-500	Develop a new well with treament works.	Medium	$1,500	**$750,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Churchill	743	0	850	1,104	330	429	-350	Supply from the Alcona to Bradford pipeline.	Medium	L.S.	**$1,500,000**	Booster station and trunk watermain will be required, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, connect to Alcona Water System.
	Goldcrest (Golf Haven and Gold Crest)	702	0	1,060	979	330	356	-300	Supply from the Alcona to Bradford pipeline.	Medium	L.S.	**$1,500,000**	Abandon existing well supply systems.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, connect to Alcona Water System.
	Cookstown	851	0	4,086	2,978	2,696	1,965	-2,100	Supply water from the Alcona water supply in accordance with an Approved Environmental Assessment.	Medium	$1,500	**$8,150,000**	Additional Capacity would be required at the Alcona WFP. The estimated supply cost and trunk watermain of 5 million is included in the total cost.	Construct watermain from Alcona/BWG Pipeline in Accordace with EA.
	Alcona Lakeshore	12,700	5,997	48,382	28,936	35,822	21,425	-16,250	Complete further expansion of the existing Water Filtration Plant.	Medium	$1,500	**$24,375,000**	N/A	Complete Environmental Assessment and expand the existing Water Filtration Plant.
	Total		0	59,706	38,488	39,839	24,834	-16,600						

Appendix H13
IGAP Option 4 - South Simcoe Dispersed Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Town of Midland		20,776	0	29,771	31,004	13,071	13,612	-10,250	Develop of a new well with treament works.	Medium	$800	**$8,200,000**	Assumes available groundwater supply.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
Town of New Tecumseth	Alliston / Beeton / Hillcrest	23,886	0	32,344	41,738	18,989	24,505	-17,850	Supply water from the Collingwood to Alliston Regional Pipeline in accordance with the Approved Environmental Assessment.	Medium	$1,500	**$26,775,000**	A booster station will be required. The cost is not included.	Increase existing supply from the Collingwood/New Tecumseth Pipeline.
	Tottenham	6,000	0	12,978	10,537	8,228	6,680	-4,550	Supply water from the Collingwood to Alliston Regional Pipeline.	Medium	$1,500	**$11,825,000**	Trunk watermain and booster stations will need to be constructed for supply from Beeton to Tottenham, estimated cost of 5 million is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Supply from Collingwood/New Tecumseth Pipeline.
	Total		0	45,322	52,275	27,217	31,185	-22,400						
City of Orillia		39,502	0	77,162	62,501	47,123	38,170	-23,000	Expand the existing surface water filtration plant.	Medium	$1,500	**$34,500,000**	Review inpacts on Lake Simcoe as suface water source.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
Township of Oro-Medonte	Canterbury	209	0	46	55	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Craighurst	458	0	138	202	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Horseshoe Highlands	3,370	0	3,964	11,710	2,584	7,633	-8,350	Develop two new wells with treatment works.	Medium	$800	**$6,680,000**	The treatment facility will have to be increased in capacity, the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop two new groundwater wells.
	Maplewood	164	0	127	165	0	0	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Robin Crest	850	0	243	553	0	0	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Sugarbush	2,485	0	869	1,052	0	0	1,450	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Cedarbrook	196	0	65	95	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Harbourwood	922	0	354	569	0	0	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lake Simcoe Regional Airport	73	0	53	23	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Medonte Hills	393	0	367	381	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Shanty Bay	1,220	0	302	430	0	0	800	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Warminister	600	0	540	666	0	0	-50	Develop a new well with treament works.	Medium	L.S.	**$100,000**	The treatment facility, reservoirs and high lift pump stations and inground reservoir will need to be expanded, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Total		0	7,068	15,900	2,584	7,633	-5,000						
Town of Penetanguishene	Payette	11,000	3,300	14,277	19,492	7,577	10,345	-8,500	Develop new groundwater wells	High	$800	**$6,800,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Lepage	432	0	64	58	0	0	350	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	14,341	19,550	7,577	10,345	-8,150						No Expansion Necessary
Township of Ramara	Bayshore Village	1,244	0	765	1,070	90	125	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Park Lane	50	0	43	48	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lagoon City/Brechin	4,000	0	4,799	4,483	1,799	1,681	-500	Expand the existing surface water treatment plant .	High	$1,500	**$750,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
	Davy Drive	76	0	80	42	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	South Ramara	387	0	248	468	36	68	-100	Expand the existing water supply.	Medium	$2,000	**$200,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Val Harbour	207	0	158	214	18	24	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	6,092	6,326	1,942	1,898	-350						
Township of Severn	Severn Estates	109	0	62	52	0	0	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bass Lake Woodlands	818	0	456	849	132	246	-50	Expand the existing water supply.	N/A	$2,000	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Sandcastle Estates	389	0	167	260	0	0	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Washago	544	0	365	277	0	0	250	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Coldwater	2,138	0	5,167	5,469	3,736	3,955	-3,300	Expand the existing groundwater supply source.	Medium	$2,000	**$6,600,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	West Shore	2,780	0	2,250	2,278	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	8,468	9,185	3,869	4,201	-2,400						

Appendix H13
IGAP Option 4 - South Simcoe Dispersed
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Springwater	Anten Mills	1,558	0	396	491	48	60	1,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Del Trend	786	0	318	657	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Elmvale	4,546	0	2,737	2,772	448	454	1,750	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Hillsdale	1,185	0	1,589	1,788	521	586	-600	Expand the existing groundwater supply source.	Medium	$1,000	**$600,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Midhurst	6,850	0	2,977	3,654	73	89	3,200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Minesing	740	0	687	878	48	62	-150	Currently being expanded to supply 200 m^3/day gap.	N/A	N/A	**$0**	N/A	N/A
	Snow Valley	1,400	0	580	897	73	112	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Vespra Downs	169	0	69	140	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	9,354	11,276	1,212	1,364	5,850						
Township of Tay	Victoria Harbour/Port McNicoll	7,845	0	9,860	8,874	4,060	3,654	-1,050	Expand the existing surface water treatment plant .	High	$1,500	**$1,575,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant. Bay Berry and Midland Bay Woods systems are to be decomissioned and serviced by Victoria Harbour/Port McNicoll.
	Rope	274	0	60	74	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Midland Bay Woods	301	0	230	285	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bay Berry	392	0	100	124	0	0	250	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Waubaushene	1,225	0	1,641	1,846	441	496	-600	Expand the existing surface water treatment plant .	High	$1,500	**$900,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
	Total		0	11,891	11,203	4,501	4,150	-1,200						
Township of Tiny	Perkinsfield	1,382	0	437	661	0	0	700	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bluewater	836	0	614	1,030	0	0	-200	Develop new wells with treament works.	Medium	$1,000	**$200,000**	The treatment facility and reservoir will have to be expanded, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Georgian Bay Estates	949	0	559	712	0	0	250	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Georgian Sands	3,145	0	1,591	2,353	0	0	800	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	LA Place	198	0	148	215	0	0	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	TeePee Points	123	0	237	182	0	0	-100	Install a new well pump into the existing well.	Low	$1,000	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Sand Castle Estates	490	0	83	123	0	0	350	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Vanier Woods	360	0	104	135	0	0	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Wyevale Central	920	0	515	805	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Cook's Lake	400	0	224	228	0	0	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Georgian Highlands	752	0	211	272	0	0	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lefaive	309	0	172	177	0	0	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Pennorth	61	0	83	105	0	0	-50	Install a new well pump into the existing well.	Low	$1,000	**$50,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Rayko	194	0	83	135	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Sawlog Bay	189	0	91	144	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Thunder Bay	200	0	47	201	0	0	-0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Whip-Poor-Will 2	360	0	151	510	0	0	-150	Develop a new well with treament works.	Medium	$1,500	**$225,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Woodland Beach	170	0	49	216	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total		0	5,398	8,202	0	0	2,900						
Town of Wasaga Beach		31,415	0	32,593	36,661	13,044	14,672	-5,200	Develop an additional groundwater well source	Medium	$800	**$4,160,000**	The treatment facility and reservoir will have to be expanded.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
												$309,305,000		

Note 1: The Ultimate Required Capacity includes the existing water supply demand and the additional water supply demand.

Note 2: The Total Additional Demand includes the Additional residential and employment water supply demand.

Note 3: The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity has not been included in the total gap.

Appendix H3
Recommended Urban Structure
Option 5 - Optimized Barrie and Area Centered Single Node
Water Supply Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Adjala-Tosorontio	Everett	3,917	0	3,963	2,873	2,061	1,494	1,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Colgan	157	0	406	380	193	180	-200	Develop a new well with treatment works.	Low	$1,500	**$300,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Lisle	657	0	320	249	152	118	400	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Loretto Heights	137	0	149	146	71	69	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Rosemont	73	0	268	128	127	61	-50	Develop a new well with treatment works.	Medium	$1,500	**$75,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Weca	916	0	468	607	222	288	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Hockley	90	0	80	130	38	62	-50	Develop a new well with treatment works.	Medium	$1,500	**$75,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Total	5,947	0	5,654	4,513	2,864	2,273	1,450						
City of Barrie		92,490	60,000	296,035	201,997	170,035	116,022	-109,500	Construct and Expand Approved Future Water Filtration Plant.	Medium	$900	**$98,550,000**	N/A	Construct currently proposed surface water treatment plant and expand future WTP.
Town of Bradford West Gwillimbury		13,986	6,350	36,557	25,677	18,157	12,753	-11,700	Supply water from the Alcona water supply in accordance with the Approved Environmental Assessment and Water supply agreement.	Medium	$1,250	**$17,125,000**	An upgrade to the trunk watermain feeding the Alcona Reservoir will need to be completed. The estimated cost for the aforementioned watermain of 2.5 million is included.	Supply water from Alcona.
Township of Clearview	New Lowell	747	0	1,335	1,270	663	631	-500	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$800	**$400,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir. However, Cost Sharing of the existing Collingwood/Alliston Watermain will be required and is not included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Stayner	6,541	0	8,278	11,868	4,112	5,895	-5,300	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$800	**$4,240,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include trunk watermain from the regional pipeline to a reservoir. However, Cost Sharing of the existing Collingwood/Alliston Watermain will be required and is not included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	Creemore	2,688	0	3,065	5,064	1,523	2,515	-2,400	Supply through the existing tee connection from the regional pipeline (Collingwood to Alliston).	High	$800	**$5,920,000**	Due to a single source feed, the municipality should construct a minimum of 48 hours storage which is not included in the estimated cost. Expansion will also include a trunk watermain from the regional pipeline to a reservoir. The estimated cost for the aforementioned watermain of 4 million is included. However, Cost Sharing of the existing Collingwood/Alliston Watermain will be required and is not included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Connect to Regional Pipeline.
	McKean Subdivision	1,055	0	779	1,099	387	0	-50	Develop a new well with treatment works.	Medium	$1,500	**$75,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Colling-Woodlands Subdivision	270	0	373	415	185	0	-150	Develop a new well with treatment works.	Medium	$1,500	**$225,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Buckingham Woods	76	0	95	117	47	0	-50	Develop a new well with treatment works.	Medium	$1,500	**$75,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Total	11,376	0	13,925	19,833	6,916	9,041	-8,450						
Town of Collingwood		20,640	30,300	27,498	30,810	9,947	11,145	-10,200	Complete expansion of the existing Water Filtration Plant.	Low	$800	**$8,160,000**	N/A	Expand the existing Water Filtration Plant in accordance with the completed EA.
Township of Essa	Angus	6,554	0	11,441	6,270	5,231	2,867	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Thornton-Glen	1,540	0	1,382	1,334	632	610	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Baxter	225	0	287	268	131	122	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total	8,319	0	13,110	7,871	5,994	3,599	500						
Town of Innisfil	Innisfil Heights	2,799	0	1,785	1,603	705	633	1,200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Crossroads	2,030	0	1,715	990	0	0	1,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Stroud	2,098	0	3,093	3,090	1,221	1,220	-1,000	Develop a new well with treatment works.	Medium	$1,250	**$6,250,000**	Booster station and watermain from Alcona will be required, estimated cost of 5 Million is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Construct watermain from Alcona and connect to Alcona WFP.
	Churchill	743	0	859	1,116	339	441	-400	Supply from the Alcona to Bradford pipeline.	Medium	L.S.	**$1,500,000**	Booster station and trunk watermain will be required, estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, connect to Alcona Water System.
	Goldcrest (Golf Haven and Gold Crest)	702	0	1,206	1,137	476	514	-400	Supply from the Alcona to Bradford pipeline.	Medium	L.S.	**$1,500,000**	Abandon existing well supply systems.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, connect to Alcona Water System.
	Cookstown	851	0	2,590	1,888	1,200	875	-1,000	Supply water from the Alcona water supply in accordance with an Approved Environmental Assessment.	Medium	$1,250	**$6,250,000**	Additional Capacity would be required at the Alcona WFP. The estimated supply cost and trunk watermain of 5 million is included in the total cost.	Construct watermain from Alcona/BWG Pipeline in accordance with EA.
	Alcona Lakeshore	12,700	5,997	21,581	12,907	9,021	5,396	-200	Complete further expansion of the existing Water Filtration Plant.	Medium	$1,250	**$250,000**	N/A	Complete Environmental Assessment and expand the existing Water Filtration Plant.
	Total	21,923	0	32,830	22,732	12,963	9,078	-750						

Appendix H3
Recommended Urban Structure
Option 5 - Optimized Barrie and Area Centered Single Node
Water Supply Systems Cost Analysis

		Current Rated	Committed Capacity	Ultimate Required Capacity		Total Additional Demand				Evaluation Criteria				
Town of Midland		20,776	0	21,488	22,379	4,788	4,987	-1,600	Develop of a new well with treatment works.	Medium	$1,000	**$1,600,000**	Assumes available groundwater supply.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
Town of New Tecumseth	Alliston / Beeton / Hillcrest	23,886	0	23,083	29,788	9,729	12,554	-5,900	Supply water from the Collingwood to Alliston Regional Pipeline in accordance with the Approved Environmental Assessment.	Medium	$800	**$9,720,000**	A booster station will be required, estimated cost of 5 million is included.	Increase existing supply from the Collingwood/New Tecumseth Pipeline.
	Tottenham	6,000	0	8,211	6,666	3,460	2,810	-650	Supply water from the Collingwood to Alliston Regional Pipeline.	Medium	$800	**$5,520,000**	Trunk watermain and booster stations will need to be constructed for supply from Beeton to Tottenham, estimated cost of 5 million is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Supply from Collingwood/New Tecumseth Pipeline.
	Total	29,886	0	31,294	36,454	13,189	15,364	-6,550						
City of Orillia		39,502	0	36,398	29,483	6,359	5,151	10,100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Oro-Medonte	Canterbury	209	0	110	131	64	76	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Craighurst	458	0	330	484	192	281	-50	Develop a new well with treatment works.	Medium	$1,500	**$75,000**	The treatment facility will have to be increased in capacity, the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop two new groundwater wells.
	Horseshoe Highlands	3,370	0	3,299	9,745	1,919	5,668	-6,400	Develop two new wells with treatment works.	Medium	$1,000	**$6,400,000**	The treatment facility will have to be increased in capacity, the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop two new groundwater wells.
	Maplewood	164	0	304	394	177	229	-250	Develop a new well with treatment works.	Medium	$1,500	**$375,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Robin Crest	850	0	581	1,323	338	769	-450	Develop a new well with treatment works.	Medium	$1,500	**$675,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Sugarbush	2,485	0	2,077	2,514	1,208	1,462	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Cedarbrook	196	0	155	226	90	132	-100	Develop a new well with treatment works.	Medium	$1,500	**$150,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Harbourwood	922	0	846	1,359	492	791	-450	Develop a new well with treatment works.	Medium	$1,500	**$675,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Lake Simcoe Regional Airport	73	0	127	55	74	32	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Medonte Hills	393	0	877	910	510	529	-500	Develop a new well with treatment works.	Medium	$1,500	**$750,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Shanty Bay	1,220	0	722	1,028	420	598	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Warminister	600	0	1,291	1,591	751	925	-1,000	Develop a new well with treatment works.	Medium	$1,000	**$1,000,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Total	10,939	0	10,719	19,761	6,235	11,494	-8,900						
Town of Penetanguishene	Payette	11,000	3,300	10,331	14,105	3,631	4,958	-3,100	Develop new groundwater wells	Medium	$1,000	**$3,100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Lepage	432	0	99	89	35	31	350	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Total	11,432	0	10,430	14,194	3,666	4,989	-2,750						
Township of Ramara	Bayshore Village	1,244	0	1,037	1,163	362	406	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Park Lane	50	0	65	74	23	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lagoon City/Brechin	4,000	0	4,608	4,306	1,608	1,503	-300	Expand the existing surface water treatment plant .	Medium	$1,500	**$450,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Filtration Plant.
	Davy Drive	76	0	123	86	43	30	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	South Ramara	387	0	326	616	114	215	-300	Expand the existing water supply.	Medium	$1,500	**$450,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Val Harbour	207	0	215	291	75	102	-100	Expand the existing water supply.	Medium	$1,500	**$150,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Total	5,964	0	6,375	6,536	2,225	2,255	-600						
Township of Severn	Severn Estates	109	0	90	75	28	24	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bass Lake Woodlands	818	0	472	877	148	275	-100	Expand the existing water supply.	N/A	$1,500	**$150,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Sandcastle Estates	389	0	244	378	76	118	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Washago	544	0	531	404	166	126	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Coldwater	2,138	0	2,805	2,969	1,374	1,454	-800	Expand the existing groundwater supply source.	Medium	$1,500	**$1,200,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	West Shore	2,780	0	3,275	3,316	1,025	0	-550	Expand the existing water supply.	Medium	$1,500	**$825,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Total	6,778	0	7,417	8,020	2,818	1,997	-1,300						
Township of Springwater	Anten Mills	1,558	0	529	655	181	224	900	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Del Trend	786	0	483	998	165	342	-200	Expand the existing groundwater supply source.	Medium	$1,000	**$200,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Elmvale	4,546	0	3,480	3,523	1,191	1,206	1,000	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Hillsdale	1,185	0	1,624	1,827	556	625	-650	Expand the existing groundwater supply source.	Medium	$1,000	**$650,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Midhurst	6,850	0	4,415	5,420	1,511	1,855	1,400	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Minesing	740	0	971	1,241	332	425	-500	Expand the existing groundwater supply source.	N/A	$1,000	**$500,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Snow Valley	1,400	0	771	1,192	264	408	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Vespra Downs	169	0	105	212	36	73	-50	Expand the existing groundwater supply source.	Medium	$1,500	**$75,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Expand Existing Water Supply Source.
	Total	17,234	0	12,377	15,068	4,235	5,156	2,100						
	Victoria Harbour/Port McNicoll	7,845	0	7,514	6,762	1,454	1,308	1,100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Rope	274	0	98	121	18	22	150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary

Appendix H3
Recommended Urban Structure
Option 5 - Optimized Barrie and Area Centered Single Node
Water Supply Systems Cost Analysis

		Current Rated	Committed Capacity	Ultimate Required Capacity		Total Additional Demand				Evaluation Criteria				
Township of Tay	Midland Bay Woods	301	0	281	348	51	63	-50	Expand existing groundwater supply source or decommission and service from Victoria Harbour/Port McNicoll	High	$1,500	**$75,000**	N/A	In March 2006, the Midland Bay Woods Water Treatment Plant was decommissioned. The Victoria Harbour Water Treatment Plant now services the area.
	Bay Berry	392	0	122	151	22	27	200	No Gap	N/A	N/A	**$0**	N/A	In March 2006, the Bayberry Estates Water Treatment Plant was decommissioned. The Victoria Harbour Water Treatment Plant now services the area.
	Waubaushene	1,225	0	1,465	1,648	265	298	-400	Expand the existing surface water treatment plant .	High	$1,500	**$600,000**	N/A	The Township has advised that the Waubaushene Water Treatment Plant will be decommissioned and the area will be serviced by the Victoria Harbour Water Treatment Plant by December 31, 2006.
	Total	10,037	0	9,480	9,030	1,810	1,719	1,000						
Township of Tiny	Perkinsfield	1,382	0	677	1,024	240	363	400	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Bluewater	836	0	951	1,595	337	565	-800	Develop an additional well with associated treatment and storage works.	Medium	$1,000	**$800,000**	The treatment facility and reservoir will have to be expanded and the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Georgian Bay Estates	949	0	866	1,102	307	391	-150	Develop an additional well with associated treatment and storage works.	Medium	$1,000	**$150,000**	The treatment facility and reservoir will have to be expanded and the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Georgian Sands	3,145	0	2,465	3,645	874	1,292	-500	Develop an additional well with associated treatment and storage works.	Medium	$1,000	**$500,000**	The treatment facility and reservoir will have to be expanded and the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	LA Place	198	0	230	332	81	118	-100	Develop an additional well with associated treatment and storage works.	Medium	$1,000	**$100,000**	The treatment facility and reservoir will have to be expanded and the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	TeePee Points	123	0	367	281	130	100	-200	Install a new well pump into the existing well.	Low	$1,000	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Sand Castle Estates	490	0	129	191	46	68	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Vanier Woods	360	0	161	210	57	74	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Wyevale Central	920	0	797	1,247	283	442	-350	Install a new well pump into one of the existing wells.	N/A	L.S.	**$100,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Cook's Lake	400	0	346	353	123	125	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Georgian Highlands	752	0	326	421	116	149	300	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Lefaive	309	0	266	274	94	97	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Pennorth	61	0	129	162	46	57	-100	Install a new well pump into the existing well.	N/A	L.S.	**$200,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Install a new well pump.
	Rayko	194	0	129	209	46	74	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Sawlog Bay	189	0	141	223	50	79	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Thunder Bay	200	0	72	312	26	111	-100	Develop an additional well with associated treatment and storage works.	Medium	L.S.	**$200,000**	The treatment facility and reservoir will have to be expanded and the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Whip-Poor-Will 2	360	0	234	791	83	280	-450	Develop an additional well with associated treatment and storage works.	Medium	$1,500	**$675,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well.
	Woodland Beach	170	0	77	334	27	118	-100	Develop an additional well with associated treatment and storage works.	Medium	L.S.	**$200,000**	The treatment facility and reservoir will have to be expanded and the estimated cost is included.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop new groundwater wells.
	Total	11,038	0	8,361	12,706	2,964	0	-1,650						
Town of Wasaga Beach		31,415	0	36,239	40,762	16,690	18,773	-9,300	Operate existing offline groundwater well and develop an additional well with treatment works	Medium	L.S.	**$2,500,000**	The treatment facility and reservoir of the existing well will have to be expanded. The estimated cost includes $250,000 to operate the existing offline well, $2,250,000 for a new well, however, excludes any additional storage capacity.	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude, Develop a new groundwater well and begin operation of existing offline well.
						291,856		-158,100				**$191,860,000**		

Note 1: The Ultimate Required Capacity includes the existing water supply demand and the additional water supply demand.
Note 2: The Total Additional Demand includes the Additional residential and employment water supply demand.
Note 3: The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity has not been included in the total gap.
Note 4: The Collingwood EA identified a committed capacity range of 16,035 m^3/day to 30,300 m^3/day. For the purpose of the assessment, the high range of 30,300 m^3/day

-$3,720,000

$80,000

369,682

Appendix H5
IGAP Option 1 - Business as Usual
Wastewater Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Town of Bradford West Gwillimbury		8,870	10,980	45,142	20,314	27,742	12,484	-11,450	Expand the Existing WPCP	High	$3,500	**$40,075,000**	Review Impacts on Lake Simcoe via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
City of Barrie		57,100	18,900	186,046	82,768	69,746	31,028	-25,650	Expand the Existing WPCP	High	$3,500	**$89,775,000**	Review Impacts on Lake Simcoe via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Township of Clearview	Stayner	2,500	0	24,716	11,995	21,316	10,345	-9,500	Existing WPCP cannot be expanded due to limits on receiving Lamont Creek	Extremely High	$3,200	**$40,400,000**	N/A	Pump raw sewage to Wasaga Beach and/or Collingwood. Note: The total cost includes the cost per cubic meter and $10,000,000 for a pump station and forcemain to either Collingwood or Wasaga Beach.
									Raw wastewater could be pumped to either Collingwood or Wasaga Beach	Medium or High			Cross Boundary Servicing Agreements Required	
									Treated effluent could be pumped to another discharge point	High			Cross Boundary Servicing Agreements Required	
	Creemore	1,400	0	5,318	1,649	3,989	1,237	-200	Expanding the WPCP may have constraints from the receiving stream (Mad River)	High	$3,500	**$700,000**	Review Impacts on Stream via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
									Raw wastewater could be pumped to either Collingwood or Wasaga Beach	High			Cross Boundary Servicing Agreements Required	
									Treated effluent could be pumped to another discharge point	High			Cross Boundary Servicing Agreements Required	
Town of Collingwood		24,545	0	48,743	57,812	33,764	40,046	-33,300	Expand the Existing WPCP	High	$3,000	**$99,900,000**	Review Impacts of new outfall on Georgian Bay via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is also suggested that an intensive program to eliminate I/I be implemented to reduce flows. Subsequently Expand Existing Wastewater Treatment Plant.
Township of Essa - Angus		5,511	0	13,701	5,428	7,501	2,972	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Town of Innisfil	Alcona Lakeshore	14,370	0	36,753	15,104	17,583	7,226	-750	Optimize the existing plant capacity.	Low	L.S	**$1,000,000**	N/A	Reduce inflow and infiltration and optimize the wastewater treatment plant.
	Cookstown	825	0	2,595	999	1,071	412	-150	Expand existing WPCP using existing discharge stream	Extremely High	$7,300,000	**$500,000**	Review Impacts on receiving stream via ACS Model	Reinvestigate the Historical Flows as the flow meter(s) were faulty in 2003 & 2004. In the interim reduce historical per capita flow by eliminating Inflow/Infiltration (I/I).
									Pump Wastewater to another facility (Alliston or Alcona)	High	$8,000,000		Possibly Cross Boundary Servicing Agreements Required	
									Expand existing WPCP and discharge effluent elsewhere	High	$8,200,000		Possibly Cross Boundary Servicing Agreements Required	
									Reduce I/I and Per Capita Flows	Low	$500,000 (L.S.)		N/A	
Town of Midland		15,665	0	25,460	17,744	11,460	7,987	-2,000	Expand existing WPCP	High	$3,500	**$7,000,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Town of New Tecumseth (Note 1)	Tottenham	2,509	16,642	12,918	6,481	7,918	3,973	-3,950	Expand existing WPCP using existing discharge stream	High	$4,500	**$27,775,000**	Review Impacts on receiving stream via ACS Model	Expand Regional Wastewater Treatment Plant in accordance with the completed Environmental Assessment and subsequently pump sewage to Alliston. Note: The total cost includes $10,000,000 for a pump station and forcemain.
									Divert Wastewater and associated loadings to Alliston Regional Plant	High			Review Impacts on receiving stream via ACS Model	
	Alliston Sir Frederic Banting & Regional WWTP	9,530		24,444	12,994	10,310	5,292	-3,450	Retrofit Existing & Expand WPCP using existing discharge stream	High	$4,500	**$15,525,000**	Review Impacts on receiving stream via ACS Model	Expand Regional Wastewater Treatment Plant in accordance with the completed Environmental Assessment.
City of Orillia		27,300	0	70,444	45,728	42,030	27,283	-18,400	Expand existing WPCP	High	$4,500	**$82,800,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Town of Penetanguishene	Fox Street	1,500	0	1,349	1,300	180	173	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Main Street	4,545	2,205	11,483	10,070	6,652	5,833	-5,500	Expand the Existing WPCP	High	$3,500	**$19,250,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.

Appendix H5
IGAP Option 1 - Business as Usual
Wastewater Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Ramara	Lagoon City	1,713	0	5,189	3,354	2,881	1,862	-1,700	Expand the Existing WPCP	High	$3,500	**$5,950,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	Bayshore Village	399	0	932	457	271	133	-50	Expand the Existing WPCP	High	$3,500	**$175,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is
Township of Severn	Washago	228	0	318	102	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Coldwater	545	0	4,663	1,439	3,340	1,031	-900	Expand existing WPCP	High	$4,500	**$4,050,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	West Shore	1,390	0	2,250	1,013	0	0	400	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Springwater	Elmvale	1,800	0	3,342	1,756	1,053	553	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Snow Valley Highlands (See Note 5)	225	0	500	225	0	0	0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Tay - Port McNicoll / Village of Victoria Harbour		1,918	0	29,674	13,353	25,452	11,453	-11,450	Expand existing WPCP	High	$4,500	**$51,525,000**	N/A	Complete an Environmental Assessment to review all alternatives, however, the potential growth should be re-evaluated first.
Town of Wasaga Beach		15,433	0	29,653	8,652	14,220	4,149	6,800	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
						308,478						**$486,400,000**		

Note 1: The Completed EA for New Tecumseth Wastewater allows the Regional WWTP to expand to 23,000 m^3/day. The Sir Frederic Banting WWTP will remain at the current capacity of 5,681 m^3/day and the Tottenham WWTP will be decommissioned. The value of 16,642 m^3/day is the difference between the expanded capacity and the adjusted rated capacities of the Regional and Tottenham WWTPs (adjusted to compensate for current Provincial Orders).

Note 2: The Ultimate Required Capacity includes the existing sewage flow and the additional sewage flow demand.

Note 3: The Total Additional Demand includes the Additional residential and employment sewage demand.

Note 4: The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity Increase has not been included in the total gap.

Note 5: Snow Valley Highlands Wastewater Treatment Plant only became operational in 2006 and therefore it does not have any historical flow data and is not referenced in the March 2006 Infrastructure Report .

Appendix H6
IGAP Option 2A - Single Barrie Area Node with 40% Intensification in County
Wastewater Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Town of Bradford West Gwillimbury		8,870	10,980	47,285	21,278	29,885	13,448	-12,400	Expand the Existing WPCP	High	$3,500	**$43,400,000**	Review Impacts on Lake Simcoe via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
City of Barrie		57,100	18,900	224,691	99,960	108,391	48,221	-42,850	Expand the Existing WPCP	High	$4,500	**$192,825,000**	Review Impacts on Lake Simcoe via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Township of Clearview	Stayner	2,500	0	14,611	7,091	11,211	5,441	-4,600	Existing WPCP cannot be expanded due to limits on receiving Lamont Creek	Extremely High	$3,200	**$24,720,000**	N/A	Pump raw sewage to Wasaga Beach and/or Collingwood. Note: The total cost includes the cost per cubic meter and $10,000,000 for a pump station and forcemain to either Collingwood or Wasaga Beach.
									Raw wastewater could be pumped to either Collingwood or Wasaga Beach	Medium or High			Cross Boundary Servicing Agreements Required	
									Treated effluent could be pumped to another discharge point	High			Cross Boundary Servicing Agreements Required	
	Creemore	1,400	0	3,790	1,175	2,461	763	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Town of Collingwood		24,545	0	52,976	62,833	37,997	45,067	-38,300	Expand the Existing WPCP	High	$3,000	**$114,900,000**	Review Impacts of new outfall on Georgian Bay via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is also suggested that an intensive program to eliminate I/I be implemented to reduce flows. Subsequently Expand Existing Wastewater Treatment Plant.
Township of Essa - Angus		5,511	0	14,207	5,628	8,007	3,172	-100	Reduce I/I and Per Capita Flows, Optimize plant.	High	L.S.	**$200,000**	Review Impacts of new outfall on Georgian Bay	Reduce historical per capita flow by eliminating inflow and infiltration and optimize the wastewater treatment plant.
Town of Innisfil	Alcona Lakeshore	14,370	0	40,154	16,502	20,984	8,624	-2,150	Expand the Existing WPCP	High	$3,500	**$7,525,000**	Review Impacts on receiving stream via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	Cookstown	825	0	3,856	1,484	2,332	898	-650	Expand existing WPCP using existing discharge stream	Extremely High	$7,300,000	**$500,000**	Review Impacts on receiving stream via ACS Model	Reinvestigate the Historical Flows as the flow meter(s) were faulty in 2003 & 2004. In the interim reduce historical per capita flow by eliminating Inflow/Infiltration (I/I).
									Pump Wastewater to another facility (Alliston or Alcona)	High	$8,000,000		Possibly Cross Boundary Servicing Agreements Required	
									Expand existing WPCP and discharge effluent elsewhere	High	$8,200,000		Possibly Cross Boundary Servicing Agreements Required	
									Reduce I/I and Per Capita Flows	Low	$500,000 (L.S.)		N/A	
Town of Midland		15,665	0	30,824	21,482	16,824	11,725	-5,800	Expand existing WPCP	High	$3,500	**$20,300,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Town of New Tecumseth	Tottenham	2,509	16,642	14,708	7,379	9,708	4,871	-4,850	Expand existing WPCP using existing discharge stream	High	$4,500	**$31,825,000**	Review Impacts on receiving stream via ACS Model	Expand Regional Wastewater Treatment Plant in accordance with the completed Environmental Assessment and subsequently pump sewage to Alliston. Note: The total cost includes $10,000,000 for a pump station and forcemain.
									Divert Wastewater and associated loadings to Alliston Regional Plant	High			Review Impacts on receiving stream via ACS Model	
	Alliston Sir Frederic Banting & Regional WWTP	9,530		27,002	14,307	12,869	6,605	-4,800	Retrofit Existing & Expand WPCP using existing discharge stream	High	$4,500	**$21,600,000**	Review Impacts on receiving stream via ACS Model	Expand Regional Wastewater Treatment Plant in accordance with the completed Environmental Assessment.
City of Orillia		27,300	0	75,537	49,035	47,123	30,590	-21,750	Expand existing WPCP	High	$4,500	**$97,875,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Town of Penetanguishene	Fox Street	1,500	0	1,385	1,335	216	208	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Main Street	4,545	2,205	15,415	13,518	10,584	9,281	-8,950	Expand the Existing WPCP	High	$3,500	**$31,325,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.

Appendix H6
IGAP Option 2A - Single Barrie Area Node with 40% Intensification in County
Wastewater Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Ramara	Lagoon City	1,713	0	4,182	2,704	1,874	1,211	-1,000	Expand the Existing WPCP	High	$3,500	**$3,500,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	Bayshore Village	399	0	752	369	91	44	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Severn	Washago	228	0	318	102	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Coldwater	545	0	5,192	1,603	3,869	1,194	-1,050	Expand existing WPCP	High	$4,500	**$4,725,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	West Shore	1,390	0	2,250	1,013	0	0	400	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Springwater	Elmvale	1,800	0	3,582	1,882	1,293	679	-100	Reduce I/I and Per Capita Flows, Optimize plant.	N/A	L.S.	**$200,000**	N/A	Reduce historical per capita flow by eliminating inflow and infiltration and optimize the plant.
	Snow Valley Highlands (See Note 5)	225	0	500	225			0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Tay - Port McNicoll / Village of Victoria Harbour		1,918	0	10,137	4,562	5,915	2,662	-2,600	Expand existing WPCP	High	$3,500	**$9,100,000**	N/A	Complete an Environmental Assessment to review all alternatives, however, the potential growth should be re-evaluated first.
Town of Wasaga Beach		15,433	0	29,972	8,745	14,539	4,242	6,700	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
						346,171						**$604,520,000**		

Note 1: The Completed EA for New Tecumseth Wastewater allows the Regional WWTP to expand to 23,000 m^3/day. The Sir Frederic Banting WWTP will remain at the current capacity of 5,681 m^3/day and the Tottenham WWTP will be decommissioned. The value of 16,642 m^3/day is the difference between the expanded capacity and the adjusted rated capacities of the Regional and Tottenham WWTPs (adjusted to compensate for current Provincial Orders).

Note 2: The Ultimate Required Capacity includes the existing sewage flow and the additional sewage flow demand.

Note 3: The Total Additional Demand includes the Additional residential and employment sewage demand.

Note 4: The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity Increase has not been included in the total gap.

Note 5: Snow Valley Highlands Wastewater Treatment Plant only became operational in 2006 and therefore it does not have any historical flow data and is not referenced in the March 2006 Infrastructure Report .

Appendix H7
IGAP Option 2B - Barrie and Area Centered Single Node with 16% Intensification
Wastewater Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Town of Bradford West Gwillimbury		8,870	10,980	45,756	20,590	28,356	12,760	-11,700	Expand the Existing WPCP	High	$3,500	**$40,950,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
City of Barrie		57,100	18,900	246,242	109,548	129,942	57,808	-52,450	Expand the Existing WPCP	High	$4,500	**$236,025,000**	Review Impacts on Lake Simcoe via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Township of Clearview	Stayner	2,500	0	14,359	6,969	10,959	5,319	-4,450	Existing WPCP cannot be expanded due to limits on receiving Lamont Creek	Extremely High	$3,200	**$24,240,000**	N/A	Pump raw sewage to Wasaga Beach and/or Collingwood. Note: The total cost includes the cost per cubic meter and $10,000,000 for a pump station and forcemain to either Collingwood or Wasaga Beach.
									Raw wastewater could be pumped to either Collingwood or Wasaga Beach	Medium or High			Cross Boundary Servicing Agreements Required	
									Treated effluent could be pumped to another discharge point	High			Cross Boundary Servicing Agreements Required	
	Creemore	1,400	0	3,735	1,158	2,406	746	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Town of Collingwood		24,545	0	49,469	58,674	34,490	40,908	-34,150	Expand the Existing WPCP	High	$3,000	**$102,450,000**	Review Impacts of new outfall on Georgian Bay via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is also suggested that an intensive program to eliminate I/I be implemented to reduce flows. Subsequently Expand Existing Wastewater Treatment Plant.
Township of Essa - Angus		5,511	0	14,081	5,578	7,881	3,122	-50	Reduce I/I and Per Capita Flows, Optimize plant.	High	L.S.	**$200,000**	Review Impacts of new outfall on Georgian Bay	Reduce historical per capita flow by eliminating inflow and infiltration and optimize the wastewater treatment plant.
Town of Innisfil	Alcona Lakeshore	14,370	0	37,738	15,509	18,568	7,631	-1,150	Expand the Existing WPCP	High	$3,500	**$4,025,000**	Review Impacts on receiving stream via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	Cookstown	825	0	3,587	1,381	2,063	794	-550	Expand existing WPCP using existing discharge stream	Extremely High	$7,300,000	**$500,000**	Review Impacts on receiving stream via ACS Model	Reinvestigate the Historical Flows as the flow meter(s) were faulty in 2003 & 2004. In the interim reduce historical per capita flow by eliminating Inflow/Infiltration (I/I).
									Pump Wastewater to another facility (Alliston or Alcona)	High	$8,000,000		Possibly Cross Boundary Servicing Agreements Required	
									Expand existing WPCP and discharge effluent elsewhere	High	$8,200,000		Possibly Cross Boundary Servicing Agreements Required	
									Reduce I/I and Per Capita Flows	Low	$500,000 (L.S.)		N/A	
Town of Midland		15,665	0	27,071	18,866	13,071	9,109	-3,200	Expand existing WPCP	High	$3,500	**$11,200,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Town of New Tecumseth	Tottenham	2,509	16,642	13,228	6,637	8,228	4,128	-4,150	Expand existing WPCP using existing discharge stream	High	$4,500	**$28,675,000**	Review Impacts on receiving stream via ACS Model	Expand Regional Wastewater Treatment Plant in accordance with the completed Environmental Assessment and subsequently pump sewage to Alliston. Note: The total cost includes $10,000,000 for a pump station and forcemain.
									Divert Wastewater and associated loadings to Alliston Regional Plant	High			Review Impacts on receiving stream via ACS Model	
	Alliston Sir Frederic Banting & Regional WWTP	9,530		25,040	13,300	10,906	5,598	-3,750	Retrofit Existing & Expand WPCP using existing discharge stream	High	$4,500	**$16,875,000**	Review Impacts on receiving stream via ACS Model	Expand Regional Wastewater Treatment Plant in accordance with the completed Environmental Assessment.
City of Orillia		27,300	0	75,537	49,035	47,123	30,590	-21,750	Expand existing WPCP	High	$4,500	**$97,875,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Town of Penetanguishene	Fox Street	1,500	0	1,321	1,273	152	146	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Main Street	4,545	2,205	12,256	10,748	7,425	6,511	-6,200	Expand the Existing WPCP	High	$3,500	**$21,700,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.

Appendix H7
IGAP Option 2B - Barrie and Area Centered Single Node with 16% Intensification
Wastewater Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Ramara	Lagoon City	1,713	0	4,161	2,690	1,853	1,198	-1,000	Expand the Existing WPCP	High	$3,500	**$3,500,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	Bayshore Village	399	0	751	368	90	44	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Severn	Washago	228	0	318	102	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Coldwater	545	0	5,192	1,603	3,869	1,194	-1,050	Expand existing WPCP	High	$4,500	**$4,725,000**	Review Impacts of expanded outfall on the receiving stream	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	West Shore	1,390	0	2,250	1,013	0	0	400	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Springwater	Elmvale	1,800	0	3,501	1,840	1,212	637	-50	Reduce I/I and Per Capita Flows, Optimize plant.	N/A	L.S.	**$200,000**	N/A	Reduce historical per capita flow by eliminating inflow and infiltration and optimize the plant.
	Snow Valley Highlands (See Note 5)	225	0	500	225			0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Tay - Port McNicoll / Village of Victoria Harbour		1,918	0	8,723	3,925	4,501	2,025	-2,000	Expand existing WPCP	High	$3,500	**$7,000,000**	N/A	Complete an Environmental Assessment to review all alternatives, however, the potential growth should be re-evaluated first.
Town of Wasaga Beach		15,433	0	28,477	8,309	13,044	3,806	7,100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
						346,138						**$600,140,000**		

Note 1: The Completed EA for New Tecumseth Wastewater allows the Regional WWTP to expand to 23,000 m^3/day. The Sir Frederic Banting WWTP will remain at the current capacity of 5,681 m^3/day and the Tottenham WWTP will be decommissioned. The value of 16,642 m^3/day is the difference between the expanded capacity and the adjusted rated capacities of the Regional and Tottenham WWTPs (adjusted to compensate for current Provincial Orders).

Note 2: The Ultimate Required Capacity includes the existing sewage flow and the additional sewage flow demand.

Note 3: The Total Additional Demand includes the Additional residential and employment sewage demand.

Note 4: The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity Increase has not been included in the total gap.

Note 5: Snow Valley Highlands Wastewater Treatment Plant only became operational in 2006 and therefore it does not have any historical flow data and is not referenced in the March 2006 Infrastructure Report .

Appendix H8
IGAP Option 3 - Multi-Nodal
Wastewater Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Town of Bradford West Gwillimbury		8,870	10,980	63,033	28,365	45,633	20,535	-19,500	Expand the Existing WPCP	High	$4,500	**$87,750,000**	Review Impacts on Lake Simcoe via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
City of Barrie		57,100	18,900	216,148	96,159	99,848	44,420	-39,050	Expand the Existing WPCP	High	$4,500	**$175,725,000**	Review Impacts on Lake Simcoe via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Township of Clearview	Stayner	2,500	0	14,359	6,969	10,959	5,319	-4,450	Existing WPCP cannot be expanded due to limits on receiving Lamont Creek	Extremely High	$3,200	**$24,240,000**	N/A	Pump raw sewage to Wasaga Beach and/or Collingwood. Note: The total cost includes the cost per cubic meter and $10,000,000 for a pump station and forcemain to either Collingwood or Wasaga Beach.
									Raw wastewater could be pumped to either Collingwood or Wasaga Beach	Medium or High			Cross Boundary Servicing Agreements Required	
									Treated effluent could be pumped to another discharge point	High			Cross Boundary Servicing Agreements Required	
	Creemore	1,400	0	3,735	1,158	2,406	746	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Town of Collingwood		24,545	0	49,469	58,674	34,490	40,908	-34,150	Expand the Existing WPCP	High	$3,000	**$102,450,000**	Review Impacts of new outfall on Georgian Bay via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is also suggested that an intensive program to eliminate I/I be implemented to reduce flows. Subsequently Expand Existing Wastewater Treatment Plant.
Township of Essa - Angus		5,511	0	14,081	5,578	7,881	3,122	-50	Reduce I/I and Per Capita Flows, Optimize plant.	High	L.S.	**$200,000**	Review Impacts of new outfall on Georgian Bay	Reduce historical per capita flow by eliminating inflow and infiltration and optimize the wastewater treatment plant.
Town of Innisfil	Alcona Lakeshore	14,370	0	37,738	15,509	18,568	7,631	-1,150	Expand the Existing WPCP	High	$3,500	**$4,025,000**	Review Impacts on receiving stream via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	Cookstown	825	0	3,587	1,381	2,063	794	-550	Expand existing WPCP using existing discharge stream	Extremely High	$7,300,000	**$500,000**	Review Impacts on receiving stream via ACS Model	Reinvestigate the Historical Flows as the flow meter(s) were faulty in 2003 & 2004. In the interim reduce historical per capita flow by eliminating Inflow/Infiltration (I/I).
									Pump Wastewater to another facility (Alliston or Alcona)	High	$8,000,000		Possibly Cross Boundary Servicing Agreements Required	
									Expand existing WPCP and discharge effluent elsewhere	High	$8,200,000		Possibly Cross Boundary Servicing Agreements Required	
									Reduce I/I and Per Capita Flows	Low	$500,000 (L.S.)		N/A	
Town of Midland		15,665	0	27,071	18,866	13,071	9,109	-3,200	Expand existing WPCP	High	$3,500	**$11,200,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Town of New Tecumseth	Tottenham	2,509	16,642	13,228	6,637	8,228	4,128	-4,150	Expand existing WPCP using existing discharge stream	High	$4,500	**$28,675,000**	Review Impacts on receiving stream via ACS Model	Expand Regional Wastewater Treatment Plant in accordance with the completed Environmental Assessment and subsequently pump sewage to Alliston. Note: The total cost includes $10,000,000 for a pump station and forcemain.
									Divert Wastewater and associated loadings to Alliston Regional Plant	High			Review Impacts on receiving stream via ACS Model	
	Alliston Sir Frederic Banting & Regional WWTP	9,530		41,202	21,595	27,068	13,892	-12,000	Retrofit Existing & Expand WPCP using existing discharge stream	High	$4,500	**$54,000,000**	Review Impacts on receiving stream via ACS Model	Expand Regional Wastewater Treatment Plant in accordance with the completed Environmental Assessment.
City of Orillia		27,300	0	75,537	49,035	47,123	30,590	-21,750	Expand existing WPCP	High	$4,500	**$97,875,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Town of Penetanguishene	Fox Street	1,500	0	1,321	1,273	152	146	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Main Street	4,545	2,205	12,256	10,748	7,425	6,511	-6,200	Expand the Existing WPCP	High	$3,500	**$21,700,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.

Appendix H8
IGAP Option 3 - Multi-Nodal
Wastewater Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Ramara	Lagoon City	1,713	0	4,161	2,690	1,853	1,198	-1,000	Expand the Existing WPCP	High	$3,500	**$3,500,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	Bayshore Village	399	0	751	368	90	44	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Severn	Washago	228	0	318	102	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Coldwater	545	0	5,192	1,603	3,869	1,194	-1,050	Expand existing WPCP	High	$4,500	**$4,725,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	West Shore	1,390	0	2,250	1,013	0	0	400	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Springwater	Elmvale	1,800	0	3,501	1,840	1,212	637	-50	Reduce I/I and Per Capita Flows, Optimize plant.	N/A	L.S.	**$200,000**	N/A	Reduce historical per capita flow by eliminating inflow and infiltration and optimize the plant.
	Snow Valley Highlands (See Note 5)	225	0	500	225			0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Tay - Port McNicoll / Village of Victoria Harbour		1,918	0	8,723	3,925	4,501	2,025	-2,000	Expand existing WPCP	High	$3,500	**$7,000,000**	N/A	Complete an Environmental Assessment to review all alternatives, however, the potential growth should be re-evaluated first.
Town of Wasaga Beach		15,433	0	28,477	8,309	13,044	3,806	7,100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
						349,481						**$623,765,000**		

Note 1: The Completed EA for New Tecumseth Wastewater allows the Regional WWTP to expand to 23,000 m^3/day. The Sir Frederic Banting WWTP will remain at the current capacity of 5,681 m^3/day and the Tottenham WWTP will be decommissioned. The value of 16,642 m^3/day is the difference between the expanded capacity and the adjusted rated capacities of the Regional and Tottenham WWTPs (adjusted to compensate for current Provincial Orders).

Note 2: The Ultimate Required Capacity includes the existing sewage flow and the additional sewage flow demand.

Note 3: The Total Additional Demand includes the Additional residential and employment sewage demand.

Note 4: The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity Increase has not been included in the total gap.

Note 5: Snow Valley Highlands Wastewater Treatment Plant only became operational in 2006 and therefore it does not have any historical flow data and is not referenced in the March 2006 Infrastructure Report .

Appendix H9
IGAP Option 4 - South Simcoe Dispersed Wastewater Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Town of Bradford West Gwillimbury		8,870	10,980	54,396	24,478	36,996	16,648	-15,600	Expand the Existing WPCP	High	$4,500	**$70,200,000**	Review Impacts on Lake Simcoe via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
City of Barrie		57,100	18,900	216,148	96,159	99,848	44,420	-39,050	Expand the Existing WPCP	High	$4,500	**$175,725,000**	Review Impacts on Lake Simcoe via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Township of Clearview	Stayner	2,500	0	14,359	6,969	10,959	5,319	-4,450	Existing WPCP cannot be expanded due to limits on receiving Lamont Creek	Extremely High	$3,200	**$24,240,000**	N/A	Pump raw sewage to Wasaga Beach and/or Collingwood. Note: The total cost includes the cost per cubic meter and $10,000,000 for a pump station and forcemain to either Collingwood or Wasaga Beach.
									Raw wastewater could be pumped to either Collingwood or Wasaga Beach	Medium or High			Cross Boundary Servicing Agreements Required	
									Treated effluent could be pumped to another discharge point	High			Cross Boundary Servicing Agreements Required	
	Creemore	1,400	0	3,735	1,158	2,406	746	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Town of Collingwood		24,545	0	49,469	58,674	34,490	40,908	-34,150	Expand the Existing WPCP	High	$3,000	**$102,450,000**	Review Impacts of new outfall on Georgian Bay via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is also suggested that an intensive program to eliminate I/I be implemented to reduce flows. Subsequently Expand Existing Wastewater Treatment Plant.
Township of Essa - Angus		5,511	0	14,081	5,578	7,881	3,122	-50	Reduce I/I and Per Capita Flows, Optimize plant.	High	L.S.	**$200,000**	Review Impacts of new outfall on Georgian Bay	Reduce historical per capita flow by eliminating inflow and infiltration and optimize the wastewater treatment plant.
Town of Innisfil	Alcona Lakeshore	14,370	0	52,785	21,693	33,615	13,815	-7,300	Expand the Existing WPCP	High	$4,500	**$32,850,000**	Review Impacts on receiving stream via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	Cookstown	825	0	5,259	2,024	3,735	1,438	-1,200	Pump Wastewater to another facility (Alcona or Alliston)	High	$3,200	**$13,840,000**	Possibly Cross Boundary Servicing Agreements Required	Reinvestigate the Historical Flows as the flow meter(s) were faulty in 2003 & 2004. Complete EA and review all alternatives however, it is presumed that this will conclude pump raw sewage to Alliston or Alcona. Note: The total cost includes the cost per cubic meter and $10,000,000 for a pump station and forcemain to eitherAlcona or Alliston.
									Expand existing Wastewater Treatment Plant.	High	$3,200	**$3,840,000**	Review Impacts on receiving stream via ACS Model	
Town of Midland		15,665	0	27,071	18,866	13,071	9,109	-3,200	Expand existing WPCP	High	$3,500	**$11,200,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Town of New Tecumseth	Tottenham	2,509	16,642	13,228	6,637	8,228	4,128	-4,150	Expand existing WPCP using existing discharge stream	High	$4,500	**$28,675,000**	Review Impacts on receiving stream via ACS Model	Expand Regional Wastewater Treatment Plant in accordance with the completed Environmental Assessment and subsequently pump sewage to Alliston. Note: The total cost includes $10,000,000 for a pump station and forcemain.
									Divert Wastewater and associated loadings to Alliston Regional Plant	High			Review Impacts on receiving stream via ACS Model	
	Alliston Sir Frederic Banting & Regional WWTP	9,530		33,122	17,448	18,989	9,746	-7,900	Retrofit Existing & Expand WPCP using existing discharge stream	High	$4,500	**$35,550,000**	Review Impacts on receiving stream via ACS Model	Expand Regional Wastewater Treatment Plant in accordance with the completed Environmental Assessment.
City of Orillia		27,300	0	75,537	49,035	47,123	30,590	-21,750	Expand existing WPCP	High	$4,500	**$97,875,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Town of Penetanguishene	Fox Street	1,500	0	1,321	1,273	152	146	200	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Main Street	4,545	2,205	12,256	10,748	7,425	6,511	-6,200	Expand the Existing WPCP	High	$3,500	**$21,700,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.

Appendix H9
IGAP Option 4 - South Simcoe Dispersed Wastewater Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Township of Ramara	Lagoon City	1,713	0	4,161	2,690	1,853	1,198	-1,000	Expand the Existing WPCP	High	$3,500	**$3,500,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	Bayshore Village	399	0	751	368	90	44	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Severn	Washago	228	0	318	102	0	0	100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Coldwater	545	0	5,192	1,603	3,869	1,194	-1,050	Expand existing WPCP	High	$4,500	**$4,725,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	West Shore	1,390	0	2,250	1,013	0	0	400	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Springwater	Elmvale	1,800	0	3,501	1,840	1,212	637	-50	Reduce I/I and Per Capita Flows, Optimize plant.	N/A	L.S.	**$200,000**	N/A	Reduce historical per capita flow by eliminating inflow and infiltration and optimize the plant.
	Snow Valley Highlands (See Note 5)	225	0	500	225			0	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Township of Tay - Port McNicoll / Village of Victoria Harbour		1,918	0	8,723	3,925	4,501	2,025	-2,000	Expand existing WPCP	High	$3,500	**$7,000,000**	N/A	Complete an Environmental Assessment to review all alternatives, however, the potential growth should be re-evaluated first.
Town of Wasaga Beach		15,433	0	28,477	8,309	13,044	3,806	7,100	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
						349,484						**$633,770,000**		

Note 1: The Completed EA for New Tecumseth Wastewater allows the Regional WWTP to expand to 23,000 m^3/day. The Sir Frederic Banting WWTP will remain at the current capacity of 5,681 m^3/day and the Tottenham WWTP will be decommissioned. The value of 16,642 m^3/day is the difference between the expanded capacity and the adjusted rated capacities of the Regional and Tottenham WWTPs (adjusted to compensate for current Provincial Orders).

Note 2: The Ultimate Required Capacity includes the existing sewage flow and the additional sewage flow demand.

Note 3: The Total Additional Demand includes the Additional residential and employment sewage demand.

Note 4: The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity Increase has not been included in the total gap.

Note 5: Snow Valley Highlands Wastewater Treatment Plant only became operational in 2006 and therefore it does not have any historical flow data and is not referenced in the March 2006 Infrastructure Report .

Appendix H1
Recommended Urban Structure
Option 5 - Optimized Barrie and Area Centered Single Node
Wastewater Systems Cost Analysis

System		Current Rated Capacity (m^3/day)	Committed Capacity Increases (m^3/day) (as Identified by Class EA's and Design Briefs)	Ultimate Required Capacity		Total Additional Demand		Total Gap (m^3/day)	Alternatives to Close Gap	Evaluation Criteria				Suggested Course of Action
				Persons	m^3/day	Persons	m^3/day			Environmental	Estimated Costs per m^3/day	Total Cost	Other Issues	
Town of Bradford West Gwillimbury		8,870	10,980	35,557	16,001	18,157	8,171	-7,150	Expand the Existing WPCP	High	$3,500	**$25,025,000**	N/A	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
City of Barrie		57,100	18,900	264,485	117,664	148,185	65,924	-60,550	Expand the Existing WPCP	High	$4,500	**$272,475,000**	Review Impacts on Lake Simcoe via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is
Township of Clearview	Stayner	2,500	0	7,512	3,646	4,112	1,996	-1,150	Existing WPCP cannot be expanded due to limits on receiving Lamont Creek	Extremely High	$3,000	**$13,450,000**	N/A	Pump raw sewage to Wasaga Beach and/or Collingwood. Note: The total cost includes the cost per cubic meter and $10,000,000 for a pump station and forcemain to either Collingwood or Wasaga Beach.
									Raw wastewater could be pumped to either Collingwood or Wasaga Beach	Medium or High			Cross Boundary Servicing Agreements Required	
									Treated effluent could be pumped to another discharge point	High			Cross Boundary Servicing Agreements Required	
	Creemore	1,400	0	2,852	884	1,523	472	500	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Town of Collingwood		24,545	0	24,926	29,564	9,947	11,798	-5,000	Expand the Existing WPCP	High	$3,000	**$15,000,000**	Review Impacts of new outfall on Georgian Bay via ACS Model	Complete Environmental Assessment to review all alternatives, however, it is also
Township of Essa - Angus		5,511	0	11,431	4,529	5,231	2,072	1,000	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Town of Innisfil	Alcona Lakeshore	14,370	0	28,191	11,586	9,021	3,707	2,800	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Cookstown	825	0	2,724	1,049	1,200	462	-200	Expand existing WPCP using existing discharge stream	High	$7,300,000	**$500,000**	Review Impacts on receiving stream via ACS Model	Reinvestigate the Historical Flows as the flow meter(s) were faulty in 2003 & 2004. In the interim reduce historical per capita flow by eliminating Inflow/Infiltration (I/I).
									Pump Wastewater to another facility (Alliston	High	$8,000,000		Possibly Cross Boundary	
									Expand existing WPCP and discharge effluent elsewhere	High	$8,200,000		Possibly Cross Boundary Servicing Agreements Required	
									Reduce I/I and Per Capita Flows	Low	$500,000 (L.S.)		N/A	
Town of Midland		15,665	0	18,788	13,094	4,788	3,337	2,600	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Town of New Tecumseth	Tottenham	2,509	16,642	8,460	4,245	3,460	1,736	-1,750	Expand existing WPCP using existing discharge stream	High	$4,500	**$34,100,000**	Review Impacts on receiving stream via ACS Model	Expand Regional Wastewater Treatment Plant in accordance with the completed Environmental Assessment and subsequently pump sewage to Alliston. Note: The total cost includes the cost per cubic meter times the Ultimate Required Capacity in Tottenham (4,245m^3/day) and $10,000,000 for a pump station and forcemain to Alliston and $5,000,000 for decommission existing WWTP.
									Divert Wastewater and associated loadings to Alliston Regional Plant	High			Review Impacts on receiving stream via ACS Model	
	Alliston Sir Frederic Banting & Regional WWTP	9,530		23,862	12,695	9,729	4,993	-3,200	Retrofit Existing & Expand WPCP using existing discharge stream	High	$4,500	**$39,400,000**	Review Impacts on receiving stream via ACS Model	Expand Regional Wastewater Treatment Plant in accordance with the completed Environmental Assessment. Note: The total cost includes the cost per cubic meter and $25,000,000 for the retrofits to the existing Regional WWTP.
City of Orillia		27,300	0	34,773	22,573	6,359	4,128	4,750	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Town of Penetanguishene	Fox Street	1,500	0	1,883	1,815	714	688	-300	Expand the Existing WPCP	High	$3,500	**$1,050,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	Main Street	4,545	2,205	7,783	6,825	2,952	2,588	-2,300	Expand the Existing WPCP	High	$3,500	**$8,050,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Township of Ramara	Lagoon City	1,713	0	3,916	2,532	1,608	1,040	-900	Expand the Existing WPCP	High	$3,500	**$3,150,000**	Review Impacts of new outfall on Georgian Bay	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	Bayshore Village	399	0	1,023	502	362	178	-100	Expand the Existing WPCP	High	$4,500	**$450,000**	Review Impacts of new outfall on	Complete Environmental Assessment to
Township of Severn	Washago	228	0	484	155	166	53	50	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
	Coldwater	545	0	2,697	833	1,374	424	-300	Expand existing WPCP	High	$4,500	**$1,350,000**	Review Impacts of expanded outfall on the receiving stream	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
	West Shore	1,390	0	3,275	1,474	1,025	461	-100	Expand existing WPCP	High	$3,500	**$350,000**	Review Impacts of expanded outfall on the receiving stream	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Township of	Elmvale	1,800	0	3,480	1,829	1,191	626	0	Reduce I/I and Per Capita Flows, Optimize plant.	N/A	L.S.	**$200,000**	N/A	Reduce historical per capita flow by eliminating inflow and infiltration and optimize the plant.

Appendix H1
Recommended Urban Structure
Option 5 - Optimized Barrie and Area Centered Single Node
Wastewater Systems Cost Analysis

DRAFT

		Current Rated	Committed Capacity Increases (m^3/day)	Ultimate Required Capacity		Total Additional Demand		Total Gap		Evaluation Criteria				
Township of Springwater	Snow Valley Highlands (See Note 5)	225	0	1,542	892	1,150	667	-650	Expand existing WPCP	High	$3,500	**$2,275,000**	Review Impacts of expanded outfall on the receiving stream	Complete Environmental Assessment to review all alternatives, however, it is presumed that this will conclude Expand Existing Wastewater Treatment Plant.
Township of Tay - Port McNicoll / Village of		4,282	0	6,929	3,118	1,454	654	1,150	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
Town of Wasaga Beach		15,433	0	32,123	9,372	16,690	4,870	6,050	No Gap	N/A	N/A	**$0**	N/A	No Expansion Necessary
						250,399		-64,750				**$416,825,000**		

Note 1: The Completed EA for New Tecumseth Wastewater allows the Regional WWTP to expand to 23,000 m^3/day. The Sir Frederic Banting WWTP will remain at the current capacity of 5,681 m^3/day and the Tottenham WWTP will be decommissioned. The value of 16,642 m^3/day is the difference between the expanded capacity

Note 2: The Ultimate Required Capacity includes the existing sewage flow and the additional sewage flow demand.

Note 3: The Total Additional Demand includes the Additional residential and employment sewage demand.

Note 4: The Total Gap is the difference between the current rated capacity and the Ultimate required capacity. The Committed Capacity Increase has not been included in the total gap.

Note 5: Snow Valley Highlands Wastewater Treatment Plant only became operational in 2006 and therefore it does not have any historical flow data and is not referenced in

APPENDIX I: DENSITY ASSUMPTIONS

1.0 PURPOSE

The following is a brief overview documenting how densities were used in the GPA for the residential land supply analysis. The following will specifically address the following:

- Approach to determining residential land supply;
- Exploration of appropriate densities; and,
- Selection of an appropriate density.

2.0 APPROACH TO RESIDENTIAL LAND SUPPLY

The analysis undertaken to determine residential land supply considered the following components:

- Development inventory (draft/final approved plans);
- Intensification potential;
- Vacant land inventory.

The four options used the findings found in the *Communities Report* (March 2006) as inputs for each option's residential land supply analysis. The unit projections were derived from densities found in existing approved local official plans.

For the refinement of two of the four options it was determined that higher densities should be used to reflect current provincial policy direction found in the *Growth Plan for the GGH*. Higher densities were applied to the entire vacant land inventory. Intensification potential was drawn from the Physical Intensification Report (June 2006)[1] and the development inventory remained unchanged.

3.0 CURRENT DENSITIES

The purpose of this exercise was to determine an appropriate density that could be used for all municipalitie's vacant land inventory. The search for an appropriate density considered the following:

- Historical built densities;
- Local official plan densities for Barrie, Orillia and area municipalities;
- Recent built densities in study area;
- Recent built densities in the GTA;

A review of local official plans for Barrie, Orillia and the sixteen municipalities of Simcoe County concluded that appropriate densities are found for townhomes and apartment dwelling types in most official plans. Generally speaking, a range of around 37-53 upgh is used for townhomes and approximately 75-150 upgh for apartments. However, a wide range of densities were found for single and semi detached dwellings. Some densities were significantly lower than others, depending on the municipality. To better

[1] Intensification values used in the original four options was also based on the preliminary findings of the physical intensification assessment (17,039). The refinement of the two options used the final figure from the intensification assessment (17,011).

understand the densities for single and semi detached dwelling types a GIS analysis of existing build developments and brief literature review was undertaken. The scope of this research considered over twenty different developments. The literature review consisted of the following documents:

- *Breaking Ground: An Illustration of Alternative Development Standards in Ontario's New Communities,* Ministry of Municipal Affairs and Housing, 1997.
- *A Practitioner's Guide to Urban Intensification,* Canadian Urban Institute, 1996.
- *Growth Related Integrated Development Strategy,* City of Hamilton and Dillon Consulting Limited, 2006. Appendix C, PEIL Neighbourhood Concepts.
- Background Planning Studies for West Whitby, Town of Whitby, 2006 (draft).
- City of Pickering Growth Management Strategy, City of Pickering, 2005.

The literature review provided data for sample sites reflecting alternative density standards (high density for singles and semis). The GIS analysis tested a number of other sample site reflecting a wider range of densities for singles and semis. The following is quick summary of the results.

Densities for singles and semis found for the following areas within the GTA were as follows:

- Hamilton (22);
- Ajax (21);
- Whitby (16-18);
- Markham (7.5-19);
- Oakville (46, includes some townhomes);
- Vaughan (22).

Similarly, sample areas found within the study area were as follows:

- Bradford (12-13);
- Barrie (9-19);
- Essa (18.5);
- Orillia (19);
- New Tecumseth (19).

The average density found within the study area was estimated to be 15 upgh. The range was found to be from 9-19 upgh. The following images are examples of some of the sample areas reviewed.

Previous Page, Left: Barrie, 9 upgh, older neighbourhood east of downtown. Right: Barrie, 19 upgh, newer neighbourhood east of downtown.

Top Left: Bradford, 13.5 upgh, newer development on western edge of built up area. Bottom Left: Alliston, 19 upgh. Top Right: Orillia, 19 upgh.

4.0 DENSITY FOR VACANT LAND INVENTORY

Based on a review of various densities the following was considered to be reasonable level to satisfy the requirement for higher densities, given the local building context:

- Singles and Semi-detached 17 upgh
- Townhomes 53 upgh (as found in local official plans)
- Apartment 150 upgh (as found in local official plans)

The result is that the vacant land inventory was adjusted from approximately 43,000 units (*Communities Report*) to 70,000 units. The majority of the gain stems from using increased densities for single and semi detached dwelling units.

APPENDIX J: POPULATION AND UNIT DEMAND/SUPPLY GAP CALCUALTION AND COMPARISON FOR PREFERRED OPTION

2006-2031 SIMCOE SUPPLY (UNITS)

	1			2			3			4			
Municipality	DEVELOPMENT INVENTORY			VACANT LAND INVENTORY			INTENSIFICATION			TOTAL APPROVED DEVELOPMENT INVENTORY (1+2+3)			
	Low (Singles & Semi Detached)	Medium (Townhomes)	High (Apartments)	Low (Singles & Semi Detached)	Medium (Townhomes)	High (Apartments)	Low (Singles & Semi Detached)	Medium (Townhomes)	High (Apartments)	Total - Low (Single & Semi)	Total - Medium (Town)	Total - High (Apartments)	Total
Township of Adjala-Tosorontio	439	0	0	804	0	0	0	0	0	1,243	0	0	1,243
City of Barrie	6,040	1,632	1,069	0	0	0	0	177	3,496	6,040	1,809	4,565	12,414
Town of Bradford West-Gwillimbury	2,390	365	79	4,051	2,368	2,234	0	83	286	6,441	2,816	2,599	11,856
Township of Clearview	3,789	1,780	14	4,774	3,510	0	0	82	0	8,563	5,372	14	13,949
Town of Collingwood	1,613	1,333	553	1,607	9,180	420	0	25	945	3,220	10,538	1,918	15,675
Township of Essa	1,222	599	28	676	230	0	0	4	28	1,898	833	56	2,786
Town of Innisfil	4,440	194	145	2,437	20	0	0	238	382	6,877	452	527	7,856
Town of Midland	1,226	476	456	867	643	1,214	0	6	960	2,093	1,125	2,630	5,848
Town of New Tecumseth	3,995	646	970	0	0	0	0	132	733	3,995	778	1,703	6,476
City of Orillia	1,157	374	1,113	2,469	315	834	1,040	2,155	4,354	4,666	2,844	6,301	13,811
Township of Oro-Medonte	1,385	0	0	5,489	0	0	0	0	0	6,874	0	0	6,874
Town of Penetanguishene	396	281	0	1,095	640	604	60	331	532	1,551	1,252	1,136	3,940
Township of Ramara	287	382	108	1,260	207	0	0	7	0	1,547	596	108	2,250
Township of Severn	64	0	0	2,856	0	0	0	0	0	2,920	0	0	2,920
Township of Springwater	769	30	29	206	0	0	0	54	0	975	84	29	1,088
Township of Tay	725	209	0	9,598	1,575	0	0	8	379	10,323	1,792	379	12,494
Township of Tiny	1,156	0	0	4,870	153	0	0	0	0	6,026	153	0	6,179
Town of Wasaga Beach	1,913	633	0	2,708	466	0	0	37	477	4,621	1,136	477	6,235
Sub-Total	**33,006**	**8,934**	**4,564**	**45,766**	**19,307**	**5,306**	**1,100**	**3,339**	**12,572**	**79,872**	**31,580**	**22,442**	**133,894**
Total	**46,504**			**70,379**			**17,011**						

Notes

[1] Development Inventory data from *Existing Capacities Report, Communities Report* (March 2006). See Table 5.2 and Table 5.1. Development Invenotry comprised of Draft and Final plans of subdivision and development applications under review. Data in Communities Report is listed by Water Service Area and Sanitary Service Area. Adjustment of 121 units was added in Innisfil (uses Sanitary Service figure for Shoreline North and South, minus difference from Water Service table). All other figures are from water services table.

[2] Vacant Land Inventory data from *Existing Capacities Assessment, Communities Report* (March 2006). See Table 6.4. Vacant Land Inventory developed from all designated lands within an existing approved urban boundary not constrained by environmental features which are protected from development as stated in the PPS and not subject to a development application. VLI is modified to higher densities than found in most Official Plans (17 upgh for singles/semis and 53 upgh for townhomes and 150 upgh for apartments).

[3] Intensification data from *Existing Capapacities Assessment, Physical Intensification Report(June 2006).*

[4] This set of totals is the sum of 1, 2 and 3.

STUDY AREA POPULATION COMPARISON

	1	2	3	4	5	6	7	8
Population Municipality	Lapointe PPUs (2031)	2006 Existing Dwelling Count	2031 Unit Count	Local Official Plan Population	Plan Horizon Year	County Official Plan Population (2016)	Consulting 2026 Population	GPA Projected 2031 Total Population
Township of Adjala-Tosorontio	2.70	3,883	5,205	14,900	2016	13,700	15,300	14,070
City of Barrie	2.52	47,526	96,635	175,000	2021	-	226,300	243,803
Town of Bradford West-Gwillimbury	2.80	8,309	14,652	47,800	2026	34,400	34,000	40,955
Township of Clearview	2.52	5,195	8,457	18,794	2021	16,700	18,400	21,336
Town of Collingwood	2.16	7,765	13,143	30,224	2021	18,900	22,800	28,422
Township of Essa	2.71	6,332	9,174	22,000	2021*	18,400	21,200	24,826
Town of Innisfil	2.53	11,634	17,905	45,200	2011	40,800	45,100	45,256
Town of Midland	2.16	7,055	9,984	38,274	2021*	18,985	17,600	21,574
Town of New Tecumseth	2.53	10,494	16,742	42,400	2021	32,300	38,600	42,317
City of Orillia	2.16	12,577	16,791	28,000	2021*	-	35,600	36,282
Township of Oro-Medonte	2.53	7,604	10,817	26,000	2016	25,000	26,700	27,341
Town of Penetanguishene	2.25	3,487	5,470	10,493	2021	10,640	10,900	12,308
Township of Ramara	2.25	3,951	5,341	14,900	2026	12,400	12,600	12,017
Township of Severn	2.34	4,868	6,260	19,400	2026	15,500	16,100	14,643
Township of Springwater	2.71	6,168	8,344	24,404	2016	22,600	22,600	22,579
Township of Tay	2.34	3,836	4,951	11,257	2021	11,175	10,900	11,583
Township of Tiny	2.25	4,266	6,016	32,633	2021	13,100	13,500	13,536
Town of Wasaga Beach	2.16	6,885	15,305	35,000	2021*	14,400	28,900	33,071
Total		**161,835**	**271,192**	**636,679**		**319,000**	**617,100**	**665,916**

Notes

1-Lapointe Consulting (see Appedix C)

2-Lapointe Consulting (See Appendix C)

3-Land supply analysis doesn't include the First Nations communities. Together, Chirstian Island and Mnjikaning add 1284 people to the 2031 total, bringing the total populatin to 667,200

4-From local Official Plans

5-From local Official Plan. In cases where horizon year is not stated it was assumed to be 2021 (*).

6-County of Simcoe Official Plan

7-Hemson Consulting, "Population, Households and Employment Forecasts Update" (2004). See Table 3. Doesn't include First Nations.

8-Lapointe Consulting, doesn't include First Nations communities.

2006-2031 SIMCOE DEMAND (LAPOINTE CONSULTING, UNITS)

5

DEMAND				
Municipality	Low (Single/Semi)	Medium (Towns)	High (Apartments)	Totals
Township of Adjala-Tosorontio	1,137	93	93	1,322
City of Barrie	34,376	7,366	7,366	49,109
Gwillimbury	5,074	634	634	6,343
Township of Clearview	2,806	228	228	3,262
Town of Collingwood	2,420	2,151	807	5,378
Township of Essa	2,416	142	284	2,842
Town of Innisfil	5,331	627	314	6,271
Town of Midland	1,903	293	732	2,929
Town of New Tecumseth	4,936	562	750	6,248
City of Orillia	2,866	506	843	4,214
Township of Oro-Medonte	2,732	321	161	3,213
Town of Penetanguishene	1,487	198	297	1,983
Township of Ramara	1,181	139	69	1,390
Township of Severn	1,183	139	70	1,392
Township of Springwater	1,850	218	109	2,176
Township of Tay	948	112	56	1,115
Township of Tiny	1,488	175	88	1,750
Town of Wasaga Beach	6,736	842	842	8,420
Totals	**80,870**	**14,745**	**13,742**	**109,357**

5- Demand generated by Lapointe Consulting. See Table 10 in Appendix C.

DEMAND/SUPPLY GAP (UNITS)

6

DIFFERENCE (4-5)			
Municipality	Low (Single/Semi)	Medium (Towns)	High (Apartments)
Township of Adjala-Tosorontio	106	-93	-93
City of Barrie	-28,336	-5,557	-2,801
Town of Bradford West-Gwillimbury	1,367	2,182	1,965
Township of Clearview	5,757	5,144	-214
Town of Collingwood	800	8,387	1,111
Township of Essa	-518	691	-228
Town of Innisfil	1,546	-175	213
Town of Midland	190	832	1,898
Town of New Tecumseth	-941	216	953
City of Orillia	1,800	2,338	5,458
Township of Oro-Medonte	4,142	-321	-161
Town of Penetanguishene	64	1,054	839
Township of Ramara	366	457	39
Township of Severn	1,737	-139	-70
Township of Springwater	-875	-134	-80
Township of Tay	9,375	1,680	323
Township of Tiny	4,538	-22	-88
Town of Wasaga Beach	-2,115	294	-365

Indicates a surplus of units
Indicates a shortage of units

6- Table 4 minus Table 5. Table 6 converted in hectares based on 17upgh (singles and semis), 53 upgh (towns) and 150 upgh (apartments).

DEMAND/SUPPLY GAP (ha)

7

LAND SUPPLY (ha)				
Municipality	Low (Single/Semi) ha	Medium (Towns) ha	High (Apartments) ha	Total ha
Township of Adjala-Tosorontio	6	-2	-1	4
City of Barrie	-1,667	-105	-19	-1,790
Town of Bradford West-Gwillimbury	80	41	13	135
Township of Clearview	339	97	-1	434
Town of Collingwood	47	158	7	213
Township of Essa	-30	13	-2	-19
Town of Innisfil	91	-3	1	89
Town of Midland	11	16	13	40
Town of New Tecumseth	-55	4	6	-45
City of Orillia	106	44	36	186
Township of Oro-Medonte	244	-6	-1	236
Town of Penetanguishene	4	20	6	29
Township of Ramara	22	9	0	30
Township of Severn	102	-3	0	99
Township of Springwater	-51	-3	-1	-55
Township of Tay	551	32	2	585
Township of Tiny	267	0	-1	266
Town of Wasaga Beach	-124	6	-2	-121

Indicates a surplus of land
Indicates a shortage of land

7- Table 6 converted in hectares, based on 17upgh (singles and semis), 53 upgh (towns) and 150 upgh (apartments). Note that the above final land supply was calculated based on the final demand population found in Table 10 of Appendix C, resulting in a slightly different land supply total than initially calculated and circulated. The result is that the urban area in Barrie is now 1790 ha, not 1785 ha.

APPENDIX K: FINANCIAL VIABILITY ANALYSIS

1.0 PURPOSE

The purpose of the financial analysis component of the study is to identify and assess differences in the financial cost of the growth options under consideration, as input to choosing the preferred option. Two aspects were considered: the overall cost of each option, and whether any of the options would place an excessive financial burden on individual municipalities. For this report, the following numbering for options is used:

Option 1	Business as Usual
Option 2	Barrie and Area Centred (40% intensification)
Option 3	Barrie and Area Centred (Physical Potentials Intensification)
Option 4	Multi-Nodal – 3 Nodes
Option 5	Multi-Nodal - Dispersed

2.0 METHODOLOGY

2.1 Total Capital Cost

The only municipal services for which cost estimates were available are water and wastewater. For water and wastewater, only treatment plant capital costs have been assessed (including in some cases pipes to interconnect plants); no significant differences in operating costs are expected, and distribution pipes are presumed to be the responsibility of the developer.

The capital costs to provide water and wastewater services were estimated by the Ainley Group. For each growth option, Ainley allocated the proposed housing in each municipality to the existing water and wastewater treatment plants; identified gaps between the existing and required capacity; and estimated the cost of increasing capacity. It should be noted that water and wastewater volumes were based on current usage, expressed as cubic meters per day per capita of residential population. For example, Alliston (in New Tecumseth) currently uses 1.3 m^3/day of water per capita, whereas Barrie uses 0.7 m^3/day. Although expressed as a function of residential population, this includes both residential and non-residential use, as well as such factors as inflow and infiltration. For a few municipalities, where there was deemed to be a shortfall of employment land, additional employment development was added to the projections, and water and wastewater volumes increased accordingly. In a few systems, there is already a gap between current capacity and the capacity required to serve existing development; in these cases, a share of the capital costs was allocated to existing development, and only the growth-related share has been considered in this analysis. The total growth-related costs for each option are summarized in **Table 1**. This gives a preliminary ranking of the options.

Options 2 to 5 assume a total of 109,050 additional residential units in the study area between 2006 and 2031, all fully serviced. Option 1, the "Business As Usual" case, allows for only 101,766 fully or partially serviced[1] new residential units, approximately enough to meet growth requirements through 2029; of these, 6,657 would have only water service and thus would require septic systems. For these reasons, Option 1 is not directly comparable to the other options. It is included only for completeness.

It is not only *how much* it will cost to expand treatment plants that matters, but *when* the cost is incurred. For example, a capital cost of $10 million that needs to be incurred immediately is actually

[1] Note for comparison of options, only the fully serviced population was considered for all options.

much more expensive than the same cost incurred 20 years from now. The first cost would probably need to be financed by borrowing, thus incurring interest charges; the second cost could be financed through regular contributions to a reserve fund, which would earn interest. A cost of $10 million incurred immediately is equivalent to a cost of $30 million in 20 years, assuming an interest rate of 6%.

In order to estimate when the costs would be incurred, it was first necessary to estimate when development in each service area would occur. A plausible development scenario was created for each growth option, taking into account the status of the proposed development: land already designated for development was assumed to be developed earlier, urban/expansion land later, and intensification evenly throughout the study period. Based on these scenarios, it was possible to estimate approximately when each water and wastewater system is likely to run out of capacity in each growth option. Capital costs were divided into two components: lump sum and per capita. Lump sum costs were assumed to be incurred as soon as the plant ran out of capacity; per capita costs were assumed to be spread out, incurred as development occurs, since in most cases it will be possible to expand plants in phases as required. The total costs for each option, expressed in Net Present Value terms, are summarized in **Table 2**. As can be seen, taking the timing of capital costs into consideration does not change the ranking of the options. Therefore the rest of the financial analysis was based on total costs without adjusting for inflation or interest.

2.2 Per Capita Costs by Municipality

To evaluate the impact of water and wastewater costs on individual municipalities, three factors were considered: total cost, potential financing difficulties, and development mix. For all factors, only the *differences* between the options were considered; for example, it is noteworthy if total costs for a given municipality are much higher in one option than in the other options; it is not significant to the present analysis if costs are high in all options, because this does not help in distinguishing between the options.

The costs being considered here are all growth-related, and thus will ultimately be paid by developers and home-buyers through development charges; however, very high servicing costs would lead to excessively high development charges, which could be an obstacle to development. Moreover, the municipality might ultimately be at risk, if it incurred capital costs that could not be recovered. To evaluate the total cost, the average cost per capita of providing water and wastewater services was calculated, as shown in **Table 3**; note that this includes the cost of servicing both residential and employment development.

2.3 Potential Financing Difficulties

High costs by themselves need not be an issue, if the municipality is able to finance them and eventually pass them on to development through development charges. However, in a small but quickly-growing municipality, it is possible for the capital costs needing to be financed to exceed the municipality's borrowing capacity. To get an indicator of whether this is likely to become an issue in any of the options, two amounts were compared for each municipality: the municipality's remaining borrowing capacity, and the water and wastewater capital costs it will incur over the next ten years. Neither amount can be calculated precisely: borrowing capacity depends on the interest rate and term of the debt (7% over 15 years is assumed), while the capital cost estimates depend on how quickly development will occur (and therefore how soon the municipality will run out of water and/or wastewater treatment capacity) and to what extent the necessary capital works can be phased over time. But even an imprecise calculation can give an indication of whether or not financing difficulties are likely. The results of this comparison are shown in **Table 4**.

The timing of capital costs becomes especially important if large lump sum costs would be incurred early in the study period, since these may need to be financed through debt. To get an indication of whether

this may be a problem in any of the options, the capital costs identified by Ainley as lump-sum costs were considered in more detail. Only lump-sum costs were considered; as discussed above, municipalities are assumed to be able to phase in the per capita portion of plant expansion costs as required to serve development, so there should be no long gaps between when a cost is incurred, and when the development charges to pay for it are received. Lump sum costs that would be incurred well in the future (a cut-off date of 2015 was used) could presumably be financed through reserve funds, and so are not considered to be problematic. Municipalities with both large lump sum costs in some options but not others, and a high ratio of capital costs to borrowing capacity, were noted.

2.4 Employment/Residential Development Ratio

The balance between residential development and employment-land development can have significant impacts a municipality's financial situation, for several reasons:

1. Employment lands are often developed years or even decades after residential land in the same area. Since it usually makes sense to install services up front for the entire area (residential and employment) based on ultimate development, there may be long delays between capital expenditures (on roads, water mains, wastewater mains, etc.) to service employment lands, and receiving revenue (development charges, property taxes, etc.) from these lands.
2. Historically, many municipalities have covered some or all servicing capital costs themselves, rather than recovering them through development charges.
3. On the other hand, employment lands tend to have a positive impact on a municipality's operating budget, because they create less demand for many municipal services than residential development, relative to the property tax revenues they pay.

The first two points suggest that a high ratio of employment land to residential development could be problematic, at least in a municipality that is financially constrained (high capital costs relative to borrowing capacity). On further consideration, however, this turns out not to be a useful way of distinguishing between options, because of the nature of the options under consideration. In most municipalities, employment land development is not considered explicitly, but is implicitly assumed to be serviced by existing residential/employment water and wastewater infrastructure. In these municipalities, therefore, the ratio between employment land and residential development is implicitly assumed to be the same in all options. There are several municipalities which were deemed to have a shortage of employment lands, so additional employment lands were explicitly added in the calculation of water and wastewater treatment capacity requirements. The same amount of employment land was assumed in all options. The only way that the ratio of employment land to residential development can differ between options in these municipalities, therefore, is if the amount of residential development changes. If one of these municipalities is financially constrained, then allocating more residential development to it will lower the ratio of employment land to residential development, theoretically alleviating the financial difficulties of servicing the employment land (see points 1 and 2 above); but a far more important impact will be to increase total capital costs in order to service the additional residential land, therefore constrain the municipality's finances ever further. This negative impact would outweigh any possible positive impact of the lower employment/residential ratio. The first two points above therefore do not offer a useful way of distinguishing which of the options is preferable.

The third point suggests that a high employment/residential ratio would be desirable. In fact, municipalities generally prefer to have more employment land, because of the long-term benefits to their operating budgets. But operating benefits cannot be used to distinguish between options, because there is no way to say that it is better for one municipality to have this benefit than another.

For these reasons, the ratio of employment land development to residential development has not been used in evaluating the options.

3.0 ANALYSIS

3.1 Total Capital Cost

Water-related costs account for approximately one-third of total costs, and wastewater the remaining two-thirds. Expansion of treatment plants accounts for 95% of expenditures; the remainder is primarily for pumps and mains to link small systems to large ones as a less expensive alternative to expanding local plants.

As can be seen in Tables 1, Option 1 is the least expensive of the five options in terms of total cost, but only because fewer units are served; measured by per capita cost, Option 2 is the least expensive, Options 1 and 3 are slightly more expensive, and Options 4 and 5 are significantly more expensive.. **Table 1** shows the total cost regardless of timing; **Table 2** shows the net present value of total costs taking into account the time value of money. It results in the same ranking as **Table 1**, except that Option 1 is shown as equal in cost to Option 1, even though fewer units are serviced.

Option 3 is slightly more expensive than Option 2, because more development is assumed to occur in areas with high volumes of water usage and wastewater generation per capita. It is not certain that these differences in volumes will persist over the study period, since they may be the result of solvable problems such as inflow and infiltration, or they may reflect a high proportion of non-residential to residential development which may not apply to future development. When total costs are recalculated without these differences in volumes, Option 3 is shown as slightly less expensive than Option 2. For evaluation purposes, Options 2 and 3 should be considered equal in total cost.

Table 1: Total Growth-Related Water and Wastewater Capital Costs

	Option 1	Option 2	Option 3	Option 4	Option 5
Water	339,000,000	282,000,000	291,000,000	312,000,000	307,000,000
Wastewater	486,000,000	600,000,000	605,000,000	624,000,000	630,000,000
Total	**825,000,000**	**882,000,000**	**896,000,000**	**936,000,000**	**937,000,000**
Cost per Capita					
Water	958	756	780	830	814
Wastewater	1,577	1,734	1,746	1,785	1,802
Total	**2,535**	**2,490**	**2,527**	**2,615**	**2,616**

Table 2: Net Present Value of Water and Wastewater Capital Costs*

	Option 1	Option 2	Option 3	Option 4	Option 5
Water	171,000,000	128,000,000	131,000,000	139,000,000	138,000,000
Wastewater	205,000,000	247,000,000	249,000,000	254,000,000	261,000,000
Total	**376,000,000**	**375,000,000**	**380,000,000**	**393,000,000**	**399,000,000**

*Discount rate for net present value calculation is 7%.

Options 4 and 5 are significantly more expensive than the other options, by as much as $50 million. The reason for this cost difference is that whereas Option 2 puts most urban expansion development in Innisfil near Barrie, where the incremental cost of water and wastewater treatment is fairly low (approximately $7,000 for each additional residential unit, including an allowance for non-residential development), Options 4 and 5 put half of the urban expansion development in higher-cost areas: Bradford West Gwillimbury (incremental cost $12,000 – 14,000 per unit), New Tecumseth (incremental cost $10,000 per unit) and Innisfil (Option 5 only, incremental cost $12,000 per unit). Bradford West Gwillimbury's incremental cost for wastewater treatment is especially high because to accommodate higher volumes of wastewater, the plant would need to be converted to a different and more expensive treatment process. In Innisfil, the additional development in Option 5 would trigger the need for construction of a trunk wastewater main to pump sewage to Alliston or Alcona for treatment, at a cost of $10 million. Shifting 11,146 residential units from the Barrie service area to Bradford West Gwillimbury and New Tecumseth (i.e., the difference between Options 2 and 4) increases capital costs by $42 million, or $3,800 for each unit shifted. Putting half of these units in Innisfil (outside the area serviced by Barrie) adds another $1,200 per unit shifted.

3.2 Per Capita Costs by Municipality

Table 3 shows the total cost per capita of the water and wastewater capital costs needed to serve development. As discussed above, it is only *differences* between options that matter at this stage. Differences of less than $300 per capita are ignored.

Table 3: Per Capita Cost by Municipality

	Option 1	Option 2	Option 3	Option 4	Option 5
Township of Adjala-Tosorontio	194	0	0	0	0
City of Barrie	1,899	2,392	2,348	2,326	2,326
Town of Bradford West Gwillimbury	2,364	2,363	2,370	2,882	2,874
Township of Clearview	3,944	4,326	4,341	4,326	4,326
Town of Collingwood	3,615	3,626	3,681	3,626	3,626
Township of Essa	223	212	226	212	212
Town of Innisfil	854	1,005	1,126	1,005	2,145
Town of Midland	1,208	1,484	1,879	1,484	1,484
Town of New Tecumseth	3,551	3,579	3,631	3,880	3,778
City of Orillia	2,645	2,809	2,809	2,809	2,809
Township of Oro-Medonte	2,366	2,366	2,366	2,366	2,366
Town of Penetanguishene	3,698	3,761	3,856	3,761	3,761
Township of Ramara	2,805	2,273	2,248	2,273	2,273
Township of Severn	2,896	2,979	2,953	2,953	2,953
Township of Springwater	484	647	644	647	647
Township of Tay	3,687	2,065	2,267	2,065	2,065
Township of Tiny	Costs are not growth-related				
Town of Wasaga Beach	368	319	380	319	319

The following municipalities would incur significantly higher costs in some options than in others:

- Per capita costs in Bradford West Gwillimbury would be $500 higher in Options 4 and 5 than in the other options.
- Per capita costs in Innisfil would be $1000 or more higher in Option 5 than in the other options.
- Per capita costs in Midland would be $400 or more higher in Option 3 than in the other options.
- Per capita costs in Ramara would be $500 higher in Option 1 than in the other options.
- Per capita costs in Tay would be $1,400 or more higher in Option 1 than in the other options.

This gives a clear ranking of options:

- Option 2 is preferred in this respect because it would not impose significantly higher costs on any municipality.
- Option 3 and 4 tie for second, in that only one municipality in each option would incur significantly higher costs (Midland in Option 3, Bradford West Gwillimbury in Option 4); the amount of the difference is moderate ($400-500 per capita).
- Options 1 and 5 are the least preferred option, because two municipalities (Ramara and Tay in Option 1, Bradford West Gwillimbury and Innisfil in Option 5) would incur significantly higher per capita costs; for Innisfil and Tay, the increases in costs would be large ($1000 or more per capita).

3.3 Potential Financing Difficulties

Table 4 shows the ratio of the water and wastewater plant capital costs that each municipality is projected to incur over the next 10 years (2006-2015) to the municipality's current borrowing capacity (based on its 2004 Financial Information Return, and borrowing at 6% over 15 years).

Table 4: Ratio of Capital Costs to Borrowing Capacity

	Option 1	Option 2	Option 3	Option 4	Option 5
Township of Adjala-Tosorontio	0.00	0.00	0.00	0.00	0.00
City of Barrie	0.28	0.23	0.23	0.23	0.23
Town of Bradford West Gwillimbury	0.62	0.69	0.67	0.87	0.85
Township of Clearview	1.32	1.00	0.96	1.00	1.00
Town of Collingwood	0.48	1.10	1.06	1.10	1.10
Township of Essa	0.02	0.01	0.01	0.01	0.01
Town of Innisfil	0.24	0.24	0.24	0.24	0.43
Town of Midland	0.06	0.07	0.08	0.07	0.07
Town of New Tecumseth	1.25	1.06	1.07	1.02	1.10
City of Orillia	0.07	0.25	0.19	0.25	0.25
Township of Oro-Medonte	0.13	0.11	0.11	0.11	0.11
Town of Penetanguishene	0.94	1.12	1.45	1.12	1.12
Township of Ramara	0.17	0.08	0.07	0.08	0.08
Township of Severn	0.00	0.25	0.21	0.25	0.25
Township of Springwater	0.04	0.01	0.01	0.01	0.01
Township of Tay	0.29	0.05	0.05	0.05	0.05
Township of Tiny	0.02	0.02	0.02	0.02	0.02
Town of Wasaga Beach	0.00	0.00	0.00	0.00	0.00

For most municipalities, the ratios in **Table 4** are below 0.5, meaning that the municipality could finance all water and wastewater treatment plant capital costs for the next ten years using less than half of its current borrowing capacity. These municipalities are not likely to have financing problems in any of the options. A few municipalities have ratios close to or higher than 1, meaning that financing difficulties are a distinct possibility. (A ratio above 1 does not necessarily mean that a municipality *will* have financing difficulties; for example, the capital costs may occur several years from now, after substantial development has occurred which has both paid development charges into a reserve fund to help finance these capital costs, and increased the municipality's property tax revenues and thus its borrowing capacity. A ratio close to 1 or higher is simply an indication that financing difficulties are possible.)

The following municipalities have ratios in this range for at least one option:

- Bradford West Gwillimbury's ratio is between 0.6 and 0.7 in Options 1, 2 and 3, but around 0.9 in Options 4 and 5, reflecting the additional growth, and thus additional capital costs, projected for this municipality in the latter two options.
- Clearview's ratios are 1.3 in Option 1, and close to 1.0 in the other options, making financing difficulties likely in all options, but more likely in Option 1.
- New Tecumseth's ratio is also significantly higher in Option 1 (1.25) than in the other options (between 1.0 and 1.1)
- Conversely, Collingwood's ratio is much lower (0.5) in Option 1 than in the other options (around 1.1.)
- Penetanguishene's ratio is much higher (1.45) in Option 3 than in the other options (around 1.1, except 0.9 in Option 1), indicating that financing difficulties are much more likely in Option 3.

To summarize by option:

- Option 1 would exacerbate financing difficulties in Clearview and New Tecumseth, but reduce them in Collingwood and (slightly) in Penetanguishene, compared to all the other options. On balance, the negative impacts on Clearview and New Tecumseth would slightly outweigh the positive impacts on Collingwood and Penetanguishene.

- Other than the differences with Option 1 noted above, Option 2 would not create financing difficulties for any municipality beyond those they would encounter in Options 3, 4 and 5.
- Option 3 has the potential to create severe financing difficulties for Penetanguishene.
- Options 4 and 5 might stretch Bradford West Gwillimbury's ability to finance its capital costs.

Based on this factor alone, Option 2 would be the preferred option; Options 1, 4 and 5 would be slightly worse and so would be tied for second place; and Option 3 would be the least preferred option.

As discussed above, lump sum costs (e.g., for building a pipe connecting a small plant to a larger one) are likely to be particularly difficult to finance compared to plant expansion costs, because there is no opportunity to phase them in over time. Three municipalities show differences in this respect:

- In Option 1, Innisfil would need to spend $1,000,000, or 2% of its borrowing capacity to reduce inflow and infiltration and optimize its Alcona Lakeshore wastewater plant, though not until approximately 2018. This is not a significant amount.
- In Option 5, the same municipality would need to spend $10,000,000 to pump wastewater from its Cookstown plant to another facility (Alcona or Alliston); this expense would likely be incurred around 2010, and would not be needed in the other options. This is a significant amount, as it represents approximately 20% of the municipality's remaining borrowing capacity. However, it would still leave Innisfil with plenty of borrowing capacity for other services.
- In Option 1, Ramara would need to spend $100,000 (0.5% of its borrowing capacity, an insignificant amount) to install a new well pump at its Val Harbour water plant.
- Bradford-West Gwillimbury would need to spend $2.5 million in Options 4 and 5 to upgrade a pumping station. (Upgrades to the trunk water main would be required in all options). The additional expense would probably not be incurred for a number of years, as it will be needed only if there is significant greenfield development. Moreover, the municipality should have no difficulty in financing it, because $2.5 million represents only approximately 5% of its borrowing capacity.

Consideration of lump sum costs does not, therefore, add anything to the above analysis of potential financing difficulties.

4.0 SUMMARY

Table 5 summarizes the differences between the options from the perspective of the financial analysis.

Table 5: Summary of Options

	Option 1	Option 2	Option 3	Option 4	Option 5
Total Capital Cost per Capita	Slightly higher cost than Option 2	Lowest cost	Slightly higher cost than Option 2	Significantly higher cost than Option 2	Significantly higher cost than Option 2
Per Capita Costs by Municipality	Tay would face significantly higher costs and Ramara moderately higher costs	Lowest cost in all municipalities	Midland would face moderately higher costs	BWG would face moderately higher costs	Innisfil would face significantly higher costs and BWG moderately higher costs
Potential Financing Difficulties	Slightly worse than Option 2 on balance	Best option	Potential to create severe difficulties for Penetanguishene	Slightly worse than Option 2	Slightly worse than Option 2
Conclusion	**Less preferred**	**Preferred option**	**Less preferred**	**Less preferred**	**Least preferred**

In purely financial terms, Option 2 is clearly the preferred option, since it is the best option in all respects. Options 1, 3 and 4 each have advantages and disadvantages, but none of them are clearly better or worse than the others. Option 5 is worse than each of Options 1, 3 and 4 in at least one criterion, and so is the least preferred option.

Although the financial analysis clearly points to Option 2 as the preferred option, financial considerations are just one factor in choosing between the options, and not necessarily the most important factor. Financial considerations should be weighed against other factors in choosing the preferred growth option.