City of Barrie Municipal Comprehensive Review Report: Servicing Growth

One City, One Vision, One Plan

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Introduction

The City of Barrie is preparing a new Official Plan in accordance with section 17 of the *Planning Act*, R.S.O., 1990. The new Official Plan must be consistent with the *Provincial Policy Statement, 2020* (PPS) and must conform to or not conflict with *A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2020* ('Growth Plan'). To ensure conformity to applicable Provincial plans, the new Official Plan must occur through and by supported by a Municipal Comprehensive Review (MCR). Provincial legislation and policy require that this MCR include both an assessment of the land needed to accommodate future growth, as well as the City's ability to service and finance that growth.

Work to demonstrate the City's ability to accommodate the forecast growth to 2051 is documented in a Land Needs Assessment Report (LNAR) and associated addendums which were prepared by Watson and Associates Economists Ltd. ('Watson') and Dillon Consulting Limited ('Dillon'). The LNAR and its associated addendums – see Appendix "D" to adoption staff report DEV001-22 – demonstrate that the City must expand its settlement area[1] boundary out to the municipal boundary to accommodate the forecast growth. Further, the LNAR and the addendums recommend new minimum intensification and density targets required to accommodate the forecast growth following the expansion of the settlement area. These recommended densities and targets are incorporated in the new Official Plan. The completion of the work required to determine if Barrie can accommodate its growth forecast to 2051 and inclusion of the results of that work in the draft new Official Plan satisfy the first component of the MCR. The other component involves assessing the City's capacity to service the forecast growth.

Building on the results of the LNAR and associated addendums, this report documents the work completed by staff to assess the City's ability to service the forecast growth. In doing so the City demonstrates – to Council, the public, and the Minister of Municipal Affairs and Housing (MMAH) – that the planning for future growth is done in an integrated, comprehensive and holistic manner.

The development and implementation of the new Official Plan, along with the MCR, a part of which is documented in this report, is part of a broader 'Building Barrie' initiative that will see Barrie transform into a mid-sized city over the next 30 years. Additional city building work, such as the development of new infrastructure and public service facility master and strategic plans, will support this transition. The completion of the MCR and implementation of the new Official Plan therefore marks the beginning of a multi-year work program that will see the development and revision of new and innovative plans which will support Barrie's growth as an urbanizing complete community. It is anticipated that this future work will continue to implement and demonstrate conformity to applicable Provincial Plans, particularly the Growth Plan.

Report Summary

This MCR report demonstrates that the City has completed an in-depth assessment of its capacity to service the forecast growth. Further, the results of the capacity assessment confirm that the community structure and growth management strategy proposed in the draft new Official Plan is feasible, though

[1] Land within a settlement area is planned for development over a planning horizon, measured in years. Planning horizons, measured in years, also include growth targets. Both are prescribed by the Province. Municipalities can expand their settlement area boundaries, increasing the amount of land planned for development, to reflect new growth targets.

some further planning is needed (as discussed most in-depth in chapter 3 of this report). While assessing the City's capacity to service the forecast growth is only one element of an MCR, it is perhaps the most complex. To expedite the approval of the new Official Plan and provide transparency, this MCR report details how staff conducted the service capacity assessment.

The report is organized by chapters and follows work completed by staff to assess the City's capacity to service the forecast growth. Each chapter provides in-depth and technical background information on how data was acquired, how it was analyzed, and what the results mean. This report is intended to be read in its entirety as each component of the service capacity assessment, as summarized below, builds on work discussed in the previous chapter.

Chapter 1: Growth Management

Chapter one provides an overview of the City's land needs to accommodate growth to the 2051 planning horizon, as well as the work undertaken by the City's consulting team to determine those land needs. Need for land is driven by population and employment growth targets outlined in Schedule 3 of the Growth Plan. This chapter documents work completed by Watson to evaluate Barrie's land need in relation to the city's Schedule 3 growth forecasts, leading to the development of the original LNAR. Initially, the LNAR reported that, with a 50% intensification target, Barrie will need to expand the settlement area boundary by 271 hectares, leaving a small amount of land for future growth. However, Council's direction for staff to explore employment land conversions and the release of a new Growth Plan resulted in the need for additional work, leading to the development of two addendums to the original LNAR. Ultimately, it was determined that the City will required all the land in the municipal boundary to accommodate the forecast growth. Finally, this chapter outlines how the results of the LNAR and its addendums provided the data required for the development of a spatially-referenced population and employment growth database, one that would serve as the basis for the service capacity assessment.

Chapter 2: Allocating Growth

Building on chapter 1, chapter 2 details the development of a population and employment database that will be used to assess Barrie's ability to service the forecast growth. This database, referred to as the 2051 MCR Growth Forecast, distributes Barrie's forecast population and employment growth over the planning horizon. More specifically, the 2051 MCR Growth Forecast distributes the forecast growth according to the LNAR and its addendums. Meaning, growth within the Delineated Built-Up Area (DBUA), commonly referred to as 'old Barrie', is directed to intensification areas such as the Urban Growth Centre (UGC) and other Strategic Growth Areas (SGA). Further, growth directed to the Salem and Hewitt's Designated Greenfield Areas (DGA) is increased to meet new density targets. The locations of these growth areas are illustrated on Map 1 of the draft new Official Plan. The distribution of people and jobs in the 2051 MCR Growth Forecast is reflected in the community structure and growth management policies of the draft new Official Plan. By providing a detailed account of how the 2051 MCR Growth Forecast database was developed, this highly technical chapter provides transparency to much of the background work done to enable staff to assess the City's ability to service the forecast growth.

Chapter 3: Infrastructure and Public Service Facilities

Chapter 3 documents work completed by staff to assess whether the City can service the forecast growth. Specifically, staff evaluate the City's existing and planned infrastructure and public services facilities to determine if they have the capacity to service the forecast growth to 2051. Infrastructure and public

service facilities, both of which have specific definition in the Growth Plan, are key components for the healthy growth of a city as well as its communities.

The information reported in chapter 3 demonstrates that Barrie does not have sufficient existing and planned infrastructure and public service capacity to accommodate the forecast growth to 2051. This result, however, is not unexpected as the most recently completed master and strategic plans have a planning horizon of 2041. Therefore, estimates on what additional infrastructure and public service facilities required to service the forecast growth are provided. In total, staff estimate that approximately $925,816,000 worth of additional investment – $417,456,000 for infrastructure and $508,360,000 for public service facilities – will be required over the 30-year forecast period. This ultimate cost of the additional infrastructure and public service facilities required to service the forecast growth will be confirmed through new master and strategic plans, which are required to implement the draft new Official Plan.

The findings presented in chapter 3, and the MCR in general, serve as a launchpad for new master and strategic plans, or updates to the same. This is because the master and strategic plans in-effect at the time this report was written are based on growth assumptions which are not in line with the 2051 MCR Growth Forecast and therefore the new Official Plan. As such, this chapter confirms that new master and strategic plans, which provide the detailed and technical solutions that address any service deficits identified in the service capacity assessment, are required. In this sense the service capacity assessment documented in chapter 3 does not try to plan the infrastructure and public service facilities required to service the forecast growth. Rather, it attempts to determine whether existing and planned infrastructure and public service facilities are sufficient to service the forecast growth. Information on what is required to service the forecast growth and at what cost, while provided, will be confirmed through new master and strategic plans.

Chapter 4: Fiscal Responsibility

Chapter 4 outline how Barrie will cover the costs of the additional infrastructure and public service facilities required to service forecast growth while maintaining financial viability. In doing so this chapter charts a path for how the City will satisfy and demonstrate conformity with Growth Plan policies related to financial responsibility, in particular policy 2.2.8.3.b), which asks municipalities to consider the life cycle costs of the infrastructure and public service facility assets needed to support forecasted growth. The chapter focuses on existing financial planning and funding tools, demonstrating how each contributes to the City's ability to pay for the infrastructure and public service facilities required to service Barrie's growth to 2051.

Chapter 1: Documenting Supporting Work

Introduction

This chapter provides an overview of the land needs assessment component of the MCR. The purpose of this overview is two-fold. First, due to the length and complexity of the MCR, a chronological and transparent summary for work was required. Secondly, and more importantly, the purpose of the summary is to demonstrate how the land needs assessment component of the MCR work completed by the City's consulting team, being Watson and Dillon, serves as the foundation for the analysis of the City's capacity to service the forecast growth.

The forthcoming overview begins with a discussion of the MCR work completed leading up to the publication of Watson's Land Needs Assessment Report and Draft 1 of the Official Plan. The chapter then discusses impacts of Growth Plan (2019) Amendment 1, employment area land conversions, and land needs assessment report addendums, and the eventual release of Draft 2 of the new Official Plan. This summary of work provides the context for the forthcoming chapters, which focus on the work completed to assess the City's ability to service the forecast growth.

MCR Overview

The land needs oriented MCR work completed in support of the new Official Plan was completed in several steps. The following provides an overview of each step. The purpose of the overview is to provide transparency into the process as well as demonstrate how this work supports the service capacity assessment.

Consultants Recruited and Project Kick-Off: September 2018

Work began on the preparation of a new Official Plan by the City of Barrie in September 2018. To support the project, two consulting teams were retained, being Dillon and Watson. The Dillon consulting team was retained to assist in the preparation of the new Plan as well as to help with the background analysis required to complete a MCR as required by the Growth Plan, 2019. Watson was retained to assist with the aspects of the MCR related to land budgeting and land needs analysis.

Land Needs Assessment Report: October 2018 to November 2019

Beginning in October 2018, Watson undertook the necessary land needs analysis to 2041. This work, and associated planning horizon and growth forecasts was done according to Growth Plan 2019 and the Land Needs Assessment Methodology (LNAM) in-effect at that time. As part of this work, extensive engagement and consultation was held (a summary of all engagement work is provided in Appendix "B" to adoption staff report DEV001-22).

Watson completed the first draft of the LNAR in May 2019. The results of the LNAR were presented to Council in October 2019, by way of a presentation and staff report to City Building Committee (City Building Committee Item 19-G-315). Three viable growth management options were presented. Council ultimately endorsed Growth Scenario 2, being a 50% intensification target, with a Designated Greenfield Area (DGA) density of 63 people and jobs per hectare, and a Settlement Area boundary expansion.

To further support Growth Scenario 2, Council directed staff to explore the conversion of existing employment area lands for non-employment uses, as permitted through an MCR in the Growth Plan.

LNAR Addendum 1: January 2020 to May 2020

As directed by Council, planning staff undertook a public process for the conversion of employment area lands. Public Notice of the process was issued (see Appendix "B" to adoption staff report DEV001-22) and proposals were accepted in keeping with the established process until December 20, 2019. The submissions had to be accompanied by a planning justification report to provide professional planning opinion on the site's worthiness against established criteria, as well a concept plan of what the site could be used for if not for Industrial Employment uses.

In total, the City received 17 submissions within the timeframe provided. Letters of consideration were also received on two other sites that had already been identified as good candidates for conversion as they conformed with previous growth management analyses undertaken by the City; these two sites had not been assigned any employment growth by Watson to 2051 in the draft LNAR as they had been identified as potential conversion sites in an MCR previously completed by Watson. This means that while these two sites represent a conversion, they did not impact on the quantum of land that the City would need to accommodate the forecasted job growth.

City staff met with each planning consultant who represented the individual sites to review their submissions. Following an assessment of all conversion proposals, staff determined that a total of 12 sites could be supported for conversion. This means that 43 hectares of employment area land would result in conversion to non-employment (i.e., non-industrial) uses. To ensure there was sufficient land to accommodate the forecast growth to 2041 and accommodate the employment area land conversion requests, Watson was asked to prepare an addendum to the original LNAR.

As per Addendum 1 to the LNAR (see Appendix "D" to adoption staff report DEV001-22), Watson determined that the City's settlement area boundary needed to expand by approximately 304 developable hectares to accommodate growth 2041. Of the 304 hectares required to 2041, 170 hectares was for new employment area lands (i.e. land for industrial-type uses), which includes land for roads, stormwater ponds, and infrastructure corridors. The remaining 134 hectares was for community area lands (i.e., population growth and other non-industrial uses). This meant that while the employment area land conversions resulted in an increased need for new employment area lands to 2041, rising from 116 hectares to 170 hectares, the community area land need reduced from 165 hectares to 135 hectares.

The assessment and resulting recommendation were documented in a Memorandum to Council (see Circulation List Item A3 200525). With this process concluded, staff worked with Watson to create the Addendum to the original Land Needs Assessment Report, which was presented to Council in May 2020.

Official Plan Draft 1: September 2018 to September 2020

The first full draft of the new Official Plan was ready for public release in June 2020, but due to the COVID-19 Pandemic and State of Emergency declared by the City of Barrie, its release was postponed until September 2020. Draft 1 of the new OP had a planning horizon of 2041 and was developed based on the results of the rigorous analysis completed by Watson for the development of the LNAR and Addendum 1.

Growth Plan Amendment and Revised LNAM: August 2020 to December 2020

In August 2020, the Province released amendments to the Growth Plan and the new LNAM, which came into effect on August 28, 2020. While Staff had hoped the legislation would have some transitional wording to account for the work done to date, it did not and MMAH staff notified City staff that the new

Official Plan must conform to the new Growth Plan. As such the draft new Official Plan had to be amended to incorporate the 2051 planning horizon and associated forecasts for population and employment growth. Following consultation with MMAH and the Ontario Growth Secretariat, staff began work to revise the draft 1 of the draft new Official Plan to reflect the 2051 planning horizon and associated population and employment targets. To fully address the impact of the extended planning horizon and associated growth the City retained Dillion to prepare another addendum to the LNAR.

LNAR Addendum 2: January 2021 to May 2021

To accommodate the extended planning horizon of 2051, and the additional population and employment growth, the City retained Dillon to prepare Addendum 2 to the LNAR. Building on the original LNAR and Addendum 1, Addendum 2 was based on a scoped land need assessment to bring the draft Official Plan in conformity with the new Growth Plan. While the new Growth Plan was released with a revised LNAM, it was determined that much of the work completed by Watson in 2018 and 2019 was still relevant and that a simple extension of that work was all that was required. Specifically, Watson's original Land Needs Assessment Report and Addendum 1 took into consideration factors such as, but not limited to, affordability, market need, market absorption, and demographic change. Therefore, the work completed to date was deemed to provide a sound foundation for Addendum 2. Additionally, the results of LNAR Addendum 2 indicate that only 32 hectares of land remained for growth between the draft 2041 settlement area boundary and the municipal boarder. Due to the limited land supply staff determined that an update to the previous LNAR and amending work would be able to bridge the gap from the technically sound work up to 2041 into 2051. This work would demonstrate how the additional population and employment numbers could be accommodated in the City of Barrie.

Based on the above, staff worked with Dillon to prepare a 'Made in Barrie' solution. This solution came in the form of a scoped LNAM. To summarize, the scoped LNAM builds on Watson's previous work to determine:

- Is there is sufficient capacity in the Built-Up Area to accommodate 50% intensification?
- Can the City meet or exceed the minimum DGA density target?
- How many additional dwelling units are required to accommodate the 2041-2051 growth forecast?

This 'Made in Barrie' LNAM was presented to and discussed with MMAH and the Ontario Growth Secretariat (OGS). The MMAH and OGS staff would consider the approach, and the findings of Addendum 2, comprehensively and as part of the MCR package that would be submitted for approval along with the final draft of the Official Plan.

Following the scoped LNAM methodology, Dillion determined that:

- The settlement boundary would need to be extended to become contiguous with the municipal boundary.
- The City could support future growth into 2051 by directing 50% of intensification into the existing Built-Up Area of the City and 50% into the DGA.

- The minimum density target for the DGA into 2051 would need to be revised to 79 people and jobs per hectare.
- To accommodate the additional employment area land employment, the settlement area boundary as further expanded to create new DGA employment land.

Official Plan Draft 2

Following the completion of LNAR Addendum 2, a second draft of the Official Plan was prepared and released as part of the statutory process for public review and consultation on May 6, 2021. Draft 2 was significantly revised to address comments received from the Province, the public, as well as key stakeholders. More importantly, Draft 2 reflected a 2051 planning horizon and the associated population and employment targets, as guided by Addendum 2. Specifically, the Settlement Area boundary was further expanded and was made contiguous with the Municipal Boundary, and the Designated Greenfield Area (DGA) minimum density target increased to 79 persons and jobs per hectare.

Conclusion

Staff are of the opinion that the land needs component of the MCR, supported by work by both Watson and Dillon, reveals that Barrie will be able to accommodate growth to the 2051 planning horizon. While the City's ability to accommodate the forecast growth to 2051 within the municipal boundary has been confirmed, the City's capacity to service the growth needs to be examined. The work summarized in this chapter has provided the foundation upon which an examination of servicing has been conducted – the results of which are summarized in the subsequent chapters of this report.

Chapter 2: Allocating Growth

Introduction

This chapter documents the development of a database that contains a spatially referenced distribution of Barrie's forecast population and employment growth to 2051. Referred to as the '2051 MCR Growth Forecast', this database allocates Barrie's population and employment forecast growth as per the results of the Land Needs Assessment Report and associated addendums, and according to the Community Structure and growth management strategy presented in the new Official Plan. The 2051 MCR Growth Forecast database was developed to facilitate an analysis of the City's capacity to service the forecast growth. As the analysis of the City's capacity to service the forecast growth is a critical component of the MCR, the work involved in the development of the 2051 MCR Growth Forecast database needed to be documented to demonstrate rigour and provide transparency.

Background

The 2051 MCR Growth Forecast is a spatially referenced population and employment distribution GIS layer that is built upon a population and employment database prepared by Watson for the development of the 2018 Master Plans. This 2018 population and employment database ('the 2018 Master Plan database') pre-dates the new Official Plan, and as such is built on a different set of assumptions and growth targets. Specifically, the 2018 Master Plan database assumed a lower intensification target than proposed in the new Official Plan. This means that a greater amount of growth was being directed to the Designated Greenfield Area (DGA). Based on these assumption Barrie would have used up all the land between the (current) 2031 Settlement Area boundary and the municipal boundary by 2041, with a municipal boundary expansion (i.e. annexation) would be required for any post-2041 growth. However, as demonstrated in the LNAR and associated addendums prepared for this MCR, Barrie can accommodate growth to 2051 within the current municipal boundary by increasing the intensification and DGA density target.

The above demonstrates that that the population and employment distribution developed for the 2018 master plans are not fully in alignment with the population and employment growth assumptions reflected in the LNAR and associated Addendums. However, as there is some alignment, and the demographic underpinnings of the 2018 Master Plans database is sound, and founded on rigorous work and analysis, it was determined that it should not be abandoned. Rather, it was determined that the 2018 Master Plan database can be adapted to reflect the population and employment growth distribution as recommended in the LNAR and associated addendums.

To adapt 2018 Master Plan database, staff adjusted its population and employment allocations at the 2041- and 2051-year marks. These adjustments are informed by and based on the population and employment distribution figures in Addendums 1 and 2 to the original Land Needs Assessment Report. In addition to the adjustments, the 2018 database was also revised to reflect population and employment growth resulting from development approvals and build out of development proposals. Minor adjustments were also made to account for errors, such as the allocation of population growth to lands within designated employment areas. The result of these adjustments was the development of the 2051 MCR Growth Forecast database. What follows is a detailed account of how staff developed the 2051 MCR Growth Forecast database.

Methodology

As noted above, both the 2018 Master Plan database and the 2051 MCR Growth Forecast database distribute Barrie's forecast population and employment to 2051. However, due to differences in how that growth is distributed, the 2018 Master Plan database is not in alignment with the results of the LNAR and its addendums. Table 1 (below) illustrates these differences; note the increased amount of growth, measured in persons, between the 2018 Master Plan database and the LNAR by the Barrie at the 2041- and 2051-year marks.

Table 1 – Population Growth Forecast[2] Differences

Policy Area	Population Growth Forecast by Year – 2018 Master Plan		Population Growth by Year – 2051 MCR Growth Forecast Database		**Differences**	
	2041	2051	2041	2051	**2041**	**2051**
Built-Up Area (DBUA)	169,840	188,628	181,890	194,355	**12,050**	**5,727**
DGA	75,481	76,368	77,872	94,705	**2,391**	**18,337**
Totals	245,321	264,996	259,762	289,060	**11,441**	**24,064**

As shown in Table 1, the 2018 Master Plan database, which was based on an older version of the Growth Plan and different growth management assumptions, allocates insufficient population and employment growth to Barrie by 2051. As such, it could not be used to determine the City's capacity to service the forecast growth.

To produce a new population and employment distribution, being the 2051 MCR Forecast database, the 2018 Master Plan database needed to be revised to reflect the forecasts of the in-effect Growth Plan as well as the Community Structure and growth management strategy proposed for Barrie in the new Official Plan. The following describes the steps staff took to revise the 2018 Master Plan database to produce the 2051 MCR Growth Forecast database.

Step 1: Prepare Methodology to develop the 2051 MCR Growth Forecast Database

To produce the 2051 MCR Growth Forecast database, the population and employment growth allocated to individual SGUs would need to be revised until the database reflects the population and employment growth forecasts reflected in the LNAR and its addendums. The revisions were to be made at the 2041- and 2051-year marks rather than at five-year intervals, between 2021-2051. Interval based revisions were not made for two key reasons. First, staff did not have sufficient data to accurately conduct or justify interval-based redistributions. Secondly, and most importantly, interval-based revisions were not

[2] As discussed in Chapter 1, the original Land Needs Assessment report prepared for this MCR was completed under the 2019 Growth Plan. As such, Table one features the 2041 population growth forecast from the original Land Needs Assessment Report and the 2051 population forecast from Addendum 2. Both forecasts exclude a Census undercount of 3%.

required as the forthcoming assessment of the City's capacity to service the forecast growth. Rather, the service capacity assessment, the focus of Chapter 3, was designed to evaluate the cumulative impact of the forecast growth, being total growth at the 2041- and 2051-year intervals.

The revisions, being the addition or removal of population and employment growth, are made on a 'net change' basis. This means that the population and employment allocations in the 2018 Master Plan database, as determined by Watson when the database was developed, remained place. Rather than revise Watson's original distribution staff added to or subtracted from those previously made allocations to reach a revised forecast, one determined by the original LNAR and associated addendums. For example, if the LNAR and associated addendums determined that the 2051 population growth forecast for the Urban Growth Centre (UGC) is 10,000 persons, but 8,000 was already forecasted by Watson in the 2018 Master Plan Database, staff only added a total 2,000 persons to reach the required 10,000. While this example does not reflect the actual forecast for the UGC, it exemplifies how staff made changes to population and employment growth forecast in the 2018 Master Plan database to create the 2051 MCR Growth Forecast.

Sidebar

Small Geographic Units (SGUs): The Building Blocks of the 2051 MCR Growth Forecast Database

The 2018 Master Plan database is a Geographic Information System (GIS) database which contains spatial and statistical/quantitative data. The spatial data is expressed as several hundred polygons that together make up the shape of and cover the area of the City of Barrie. These polygons are referred to as Small Geographic Units (SGUs). Each SGU contains metadata that describes the population and employment growth forecast for the area which the SGU covers. If an area has no growth potential (e.g., a park), then the SGU covering the area will not have any growth allocation. The assigned population and employment growth allocations for each SGU are broken down into five-year intervals. Where appropriate, forecasts are provided for the housing units required to accommodate the forecast population growth. Data on employment growth by type (e.g., industrial vs. work at home) is also provided.

Step 2: Present Methodology to Watson

Before revising the 2018 Master Plan database, staff met with the Watson team to discuss the approach described above. The purpose of the meeting was to help staff understand the metadata in the 2018 Master Plan database and seek input from Watson. The Watson team was not asked to formally approve or endorse the process. Rather, they were asked to comment on the rigor of the work proposed and to identify any errors in the approach. As the purpose of the 2051 MCR Growth Forecast database was to enable a high-level service capacity assessment, the approach presented by staff to create the database was deemed to be acceptable to Watson.

Step 3: Revise Growth Allocations

As illustrated in Table 1, staff were aware of the difference in population (and employment) growth allocation between the 2018 Master Plan database and the LNAR and associated addendums. However, it was insufficient to simply increase the population growth allocation totals in the DBUA and DGA. This is because the community structure and growth management strategy proposed in the new Official Plan allocates growth to geographies smaller than the DBUA and DGA, such as Strategic Growth Areas (SGA). Therefore, the revisions to the 2018 Master Plan database needed to be made at the community structure

element level; community structure elements are discussed in Section 2 of the draft new Official Plan and shown in Map 1 of the same.

The amount of growth allocated to each community structure element was derived from the LNAR and associated addendums. Specifically, the appendices in the LNAR and Addendum 1 identify how much growth must be allocated to each community structure element to accommodate the 2041 Schedule 3 Growth Plan forecast for Barrie. Addendum 2 provides direction on how to distribute the growth over the 2041-2051 period. Staff used these figures to direct the appropriate amount of growth to each community structure element.

Table 2 (below) shows the differences in population growth distribution between the 2018 Master Plan database and the LNAR to the year 2051 for community structure elements in the DBUA.

Table 2 – DBUA Community Structure element growth allocation differences by 2051

Community Structure Element	2018 Master Plan Population Distribution	2051 MCR Growth Forecast Distribution	**Difference**
UGC	12,882	18,036	**5,154**
(SGAs)	23,524	29,654	**6,400**
Allandale MTSA	6,373	6,474	**100**
Remaining DBUA	145,849	140,191	**-5,658**
Totals	188,628	194,355	**5,727**

By revising individual SGUs within these Community Structure elements – which involved a forensic-level review of several hundred SGUs – staff developed a revised population and employment distribution to the year 2051. A community structure element level distribution will allow the service capacity assessment to determine if specific areas of the city – down to individual neighbourhoods and streets – have the capacity to service the forecast growth. The availably of this in-depth information, while not equivalent to a Master Plan level of work, will provide a high degree of certainty and accuracy to the service capacity assessment.

2041-2051 Population Growth

The community structure level population and employment growth distribution for the 2041-2051 period is based on Addendum 2 to the original LNAR. Table 5 of Addendum 2 identifies how growth over the 2041-2051 period, which is estimated as being approximately 1,667 persons or 659 units, can be directed to new DGA land created by further expanding the settlement area boundary to the municipal border. Table 6 of Addendum 2 identifies how much of the remaining 2041-2051 growth, being approximately 17,128 units, is to be accommodated within the DDBUA (8,893 units) and the DGA (8,234 units).

Addendum 2, however, does not provide Community Area level growth distributions. Rather, only policy-area level (e.g. DBUA & DGA) totals are provided. As a result, the 8,234 units which are to be directed to the DGA over the 2041-2051 period were distributed proportionally across all SGUs within the DGA. A proportional distribution was preferred as it allows for the allocation of growth based on the size of the

SGU, with larger SGUs receiving a greater share of the 2041-2051 growth than smaller SGUs. This approach was taken for both population and employment growth. While the adjustments for the 2041-2051 period were proportional for the DGA, a different approach was taken for the DBUA.

A different approach was required for the DBUA as a significant amount of its growth over the 2041-2051 period needed to be transferred to the DGA. This adjustment was required as the 2018 Master Plan database assumed that the DGA would be built out by 2041 and unable to accommodate any future growth. As a result, all post-2041 growth was directed to the DBUA. With the increase of the DGA density target to 79 persons and jobs per hectare, as proposed in the new draft Official Plan, more people and jobs can be accommodated in the DGA, and over a longer period of time, than forecast in the 2018 Master Plan database. Specifically, the higher density target led to approximately 16,000 persons worth of growth being transferred from the DBUA to the DGA over the 2041-2051 period.

While a transfer of 16,000 persons worth of growth from one policy area to another may seem significant, it is not a result of an unreasonable amount of growth being directed to the DGA. On the contrary, it is a result of far too little growth being directed to the DGA over the forecast period, and an unreasonable amount of growth being directed to the DBUA. The reallocation of growth over the 2041-2051 period therefore relieves a significant amount of pressure from the DBUA and strikes a balanced approach to managing growth. It is important to note that the growth re-directed from the DBUA to the DGA was done according to the community structure and growth management policies of the new Official Plan. This meant that intensification areas such as the UGC and MTSAs saw little to no reductions over the 2041-2051 period, reflecting their role as population and growth centres for Barrie over the forecast period. SGUs that had no population growth beyond 2041 were not adjusted.

Employment growth over the 2041-2051 period is reported in Section 4 of Addendum 2 of the LNAR. Specifically, it is determined that 580 population-related jobs can be accommodated on new Community Area DGA lands. A further 5,075 jobs are to be accommodated on new Employment Area DGA lands. The SGUs in the south-west corner of the Salem DGA were revised to reflect this forecast growth.

Step 4: Reconcile Development Applications and SGU Build-Out

Changes to the 2018 Master Plan database were also required to reflect population and employment growth resulting from development applications or build-out of SGUs. In some instances, population growth resulting from development applications was significantly different than what was forecast in the 2018 Master Plan database. The population and employment distribution was revised to reflect differences between forecast and actual growth. Further, staff also revised the database to reflect the build-out of SGUs. For example, if a subdivision consisting of only ground-related housing is approved in 2020, it was assumed that full-build out would occur within 10 years, and that major redevelopment of the subdivision would likely not occur until after 2051. This meant that any additional population growth in the subdivision, and therefore the SGU, would likely only occur through the addition of second and thirds suites and minor infill, resulting in little to no population growth following build-out of the subdivision. As a result, some SGUs in the database are characterized by significant growth until 2031 and 2041, with little growth afterwards, representing their build-out scenario.

Step 5: Corrections

While making the revisions to the 2018 Master Plan database, staff identified SGUs for which population and employment growth was erroneously assigned. These erroneous assignments were often population

growth that had been allocated to employment lands which could not accommodate population over the forecast period. Further, staff identified population growth allocated to lands that are now identified as open space or part of the natural heritage system and as such cannot accommodate growth.

Step 6: Confirmation

Upon completion of the revisions described above, staff met with the Watson team to present the 2051 MCR Growth Forecast Database. The Watson team was asked to comment on the results and identify potential errors. Following a brief review, the Watson team confirmed that the approach taken by staff to 'ground truth' the 2018 database was acceptable, and that the 2051 MCR Growth Forecast database could be used for the purpose it was developed, being the assessment of the City's existing and planned infrastructure and public services facilities to determine if they have the capacity to service the forecast growth.

Results

A summary of all changes made to the 2018 Master Plan database to create the 2051 MCR Growth Forecast database is provided in tabular and map format at the end of this chapter. Table 3 (below) provides a summary of the population growth adjustments made to the 2018 Master Plan database. As shown in Table 3, the adjustments made by staff indicate that the 2051 MCR Growth Forecast successfully accommodates the Schedule 3 population growth targets for Barrie.

Table 3 - 2051 MCR Growth Forecast Summary Table – Population[3]

Community Structure Element		2016 Population	2016-2041 Growth	2041 Population	2041-2051 Growth	2051 Population
Built Up Area	Urban Growth Centre	4,077	13,337	17,414	622	18,036
	Strategic Growth Areas	5,269	18,363	23,632	6,022	29,654
	MTSA 1[4]	1,326	4,310	5,636	838	6,474
	Remaining DBUA	121,586	13,622	135,208	4983	140,191
DGA	Salem/Hewitt's DGAs	287	40,964	41,251	13,091	54,342
	MTSA 2	325	19,424	19,749	74	19,823
	Strategic Growth Areas	0	2,910	2,910	1,008	3,918

[3] Excluding a 3% Census undercount. When included the population total for 2051 equals 298,000.

[4] The forecast a population growth for the Allandale MTSA was reported as 8,700 persons in the original Land Need Assessment Report. This growth forecast was revised due to a reduction in the boundaries of the MTSA.

	Remaining DGA	8,570	5,392	13,962	2,660	16,622
Totals		141,440	118,322	259,762	29,298	289,060

Table 4 (below) shows how the adjustments to Watson's 2018 result in the successful distribution of the 2051 employment growth forecasts for Barrie as per Schedule 3 of the Growth Plan.

Table 4 - 2051 MCR Growth Forecast Summary Table – Employment

Community Structure Element		2016 Employment	2016-2041 Growth	2041 Employment	2041-2051 Growth	2051 Employment
Built Up Area	Population Related Jobs	49,941	20,248	70,189	11,233	81,422
	Employment Area Jobs	19,988	7,269	27,257	1,907	29,164
DGA	Population Related Jobs	1,261	11,410	12,671	2,402	15,073
	Employment Area Jobs	2,421	15,901	18,322	6,020	24,342
Totals		73,611	54,828	128,439	21,562	150,001

Conclusion

The in-depth and systematic revisions made to the 2018 Master Plan database, as discussed above, led to the creation of development of the 2051 MCR Growth Forecast database. The 2051 MCR Growth Forecast database was developed to facilitate a comprehensive review of the City's capacity to service the forecast growth, which is the focus of Chapter 3. This assessment will determine if the community structure and growth management strategy proposed in the new Official Plan is feasible. As the success and accuracy of the service capacity assessment, which is a core component of the MCR, is largely dependent on the quality and integrity of the data on which it is based, a documentation of the methodology followed by staff to develop the 2051 MCR Growth Forecast database was required to demonstrate quantitative rigour. As demonstrated in this chapter, the work leading to the development of the 2051 MCR Growth Forecast database was indeed rigorous and thorough, and therefore suitable to support further MCR work and the ultimate implementation of the new Official Plan.

Table 5 - SGU Adjustments to Create 2051 MCR Growth Forecast Database

SGU	Total Population Watson's 2018 Growth Allocation to 2051	MCR Delt (-/+)	Total Population MCR Growth Allocation to 2051	SGU	Total Population Watson's 2018 Growth Allocation to 2051	MCR Delt (-/+)	Total Population MCR Growth Allocation to 2051	SGU	Total Population Watson's 2018 Growth Allocation to 2051	MCR Delt (-/+)	Total Population MCR Growth Allocation to 2051
1	3	-1	2	462	41	-1	40	901	132	-3	129
2	3	-3	0	463	34	-1	33	902	115	-1	114
3	3	-3	0	464	99	-3	96	904	39	-2	37
4	0	-38	-38	465	24	-1	23	905	41	-1	40
5	0	-15	-15	466	66	-4	62	906	54	-2	52
9	0	-10	-10	468	52	-2	50	907	53	-2	51
20	73	-1	72	469	126	-4	122	908	57	-2	55
21	220	-3	217	470	157	-4	153	909	63	-4	59
22	208	-3	205	471	85	-5	80	910	144	-4	140
23	68	-1	67	473	45	-2	43	911	311	-22	289
24	187	-2	185	474	49	-2	47	912	103	-3	100
29	223	-4	219	475	15	-2	13	913	68	-2	66
31	299	-4	295	476	44	-2	42	917	223	-10	213
35	281	-6	275	477	59	-2	57	919	52	-1	51
36	2,894	-310	2,584	478	48	-1	47	920	87	-2	85
54	122	-2	120	479	41	-1	40	921	53	-1	52
57	211	-3	208	480	309	-9	300	922	113	-4	109
58	15	613	628	481	192	-110	82	923	65	-4	61
59	181	-3	178	483	79	-2	77	924	81	-4	77
60	349	-5	344	484	158	-3	155	925	767	-767	0
61	92	-1	91	485	390	-3	387	926	93	-1	92
62	223	-3	220	486	264	-185	79	927	51	-1	50
63	104	-1	103	487	162	-6	156	929	42	-1	41
64	150	-2	148	488	5,857	1,650	7,507	930	412	-170	242
66	48	-1	47	489	7,388	1,761	9,149	931	41	-1	40
67	97	-1	96	495	6,545	1,549	8,094	932	82	-2	80
69	70	96	166	496	2,295	129	2,424	933	100	-4	96
74	0	-23	-23	497	4,212	4,791	9,003	935	93	-1	92
75	0	167	167	498	6,108	1,446	7,554	936	164	-2	162
77	75	-1	74	499	5,690	1,298	6,988	937	176	-4	172
78	75	-1	74	503	6,978	1,463	8,441	938	367	-16	351
79	110	-1	109	504	187	-2	185	939	98	-2	96
80	104	-1	103	505	316	-4	312	940	81	-1	80
81	62	-1	61	506	106	-1	105	941	53	-1	52
82	144	-1	143	507	142	-2	140	942	405	-8	397
83	55	-1	54	508	111	-2	109	944	29	-1	28
85	68	-7	61	509	184	-3	181	945	63	-3	60
86	221	-5	216	510	46	-1	45	946	94	-2	92
87	76	-2	74	511	499	-21	478	947	256	-13	243
88	753	-17	736	512	96	-1	95	948	98	-4	94

90	100	-2	98	514	59	-1	58	949	53	-3	50
91	178	-3	175	515	343	-5	338	950	382	370	752
92	119	-3	116	516	218	-3	215	951	128	-2	126
95	332	170	502	517	124	-2	122	952	242	-5	237
98	136	-1	135	518	91	-1	90	953	145	-2	143
99	69	-1	68	519	393	-6	387	954	91	-3	88
100	42	-1	41	520	59	-1	58	955	55	-1	54
102	92	-2	90	521	450	-6	444	956	46	-1	45
104	0	-40	-40	522	63	-1	62	958	83	-1	82
105	104	-5	99	523	182	-2	180	959	33	-1	32
106	61	-3	58	524	202	-3	199	960	39	-1	38
107	56	-1	55	526	304	-5	299	961	164	-5	159
108	80	-5	75	527	114	-2	112	962	69	-1	68
109	53	-1	52	528	165	-2	163	963	90	-2	88
110	476	-147	329	529	88	-1	87	964	123	-3	120
112	71	-1	70	530	98	-1	97	965	101	-2	99
113	87	-2	85	531	81	-1	80	966	137	-3	134
116	408	-11	397	532	301	-4	297	967	111	-2	109
117	215	-6	209	533	218	-5	213	968	132	-3	129
118	93	-3	90	534	139	-1	138	969	218	-5	213
119	121	-4	117	535	249	-3	246	970	132	-7	125
120	585	-231	354	536	560	-9	551	971	41	-1	40
121	202	-7	195	537	395	-5	390	972	25	-1	24
122	117	-1	116	538	49	-1	48	974	63	-1	62
123	84	35	119	540	36	-2	34	975	33	-1	32
124	170	-2	168	543	51	-1	50	976	71	-1	70
125	142	-2	140	544	131	-2	129	977	149	-1	148
126	127	-2	125	545	428	-12	416	978	181	-1	180
127	244	-3	241	546	559	-14	545	979	30	-1	29
128	37	-31	6	547	75	-1	74	980	309	-3	306
129	0	1,443	1,443	549	491	-7	484	981	52	-5	47
130	0	246	246	550	80	-1	79	982	67	-2	65
131	0	147	147	551	113	-2	111	983	98	-4	94
136	0	393	393	552	277	-4	273	984	98	-3	95
139	2,214	-420	1,794	553	77	-1	76	985	48	-2	46
140	543	-12	531	554	312	-7	305	986	62	-1	61
141	265	-7	258	555	63	-1	62	987	89	-1	88
142	37	-1	36	556	186	-2	184	988	124	-1	123
143	55	-1	54	557	58	-1	57	989	201	-5	196
144	79	-2	77	558	66	-1	65	990	77	-2	75
145	95	-2	93	559	315	-50	265	991	78	-2	76
146	258	-4	254	564	81	-1	80	992	248	-8	240
147	59	-2	57	565	115	-3	112	994	87	-2	85
149	378	-10	368	567	357	-5	352	995	170	-3	167
150	31	-1	30	568	140	-2	138	996	49	-2	47

151	343	-2	341	571	213	-3	210	1001	66	-2	64
152	202	-4	198	572	209	-2	207	1002	268	-11	257
153	49	-1	48	573	270	-4	266	1003	69	-3	66
154	97	-2	95	574	100	-2	98	1004	68	-2	66
155	70	-1	69	575	203	-3	200	1007	92	-1	91
156	40	-1	39	576	195	-4	191	1009	0	-7	-7
158	73	-2	71	577	122	-3	119	1011	416	-86	330
159	56	-2	54	578	284	-4	280	1015	99	-3	96
160	275	17	292	579	262	-5	257	1017	85	-1	84
163	860	268	1,128	580	97	-1	96	1018	576	-12	564
166	42	-1	41	581	69	-1	68	1019	157	784	941
167	147	207	354	582	218	-3	215	1021	45	-1	44
168	67	-2	65	583	92	-1	91	1022	62	-1	61
169	39	-3	36	585	682	-10	672	1023	70	-1	69
171	375	-10	365	586	136	-2	134	1024	47	-1	46
172	162	-3	159	587	28	-1	27	1026	235	115	350
173	97	-3	94	588	0	-12	-12	1029	10	-2	8
174	58	-2	56	590	61	-1	60	1033	0	-1	-1
175	206	-5	201	591	61	-1	60	1034	0	-15	-15
176	91	-3	88	592	0	-30	-30	1035	0	-10	-10
177	40	-1	39	593	253	-5	248	1036	0	-3	-3
178	64	-2	62	594	81	-1	80	1037	0	-3	-3
179	144	-3	141	595	167	-4	163	1038	0	1,400	1,400
180	74	-1	73	596	156	-2	154	1039	337	-27	310
181	72	-1	71	597	175	-2	173	1041	349	-4	345
183	161	-6	155	598	67	-2	65	1043	92	-1	91
184	0	-53	-53	600	52	-1	51	1044	381	-179	202
185	0	-25	-25	601	204	-3	201	1045	0	-1	-1
186	100	-1	99	602	77	-1	76	1046	92	-2	90
187	277	-1	276	603	130	-2	128	1047	0	-20	-20
189	206	-3	203	605	385	-7	378	1048	0	-12	-12
190	68	-1	67	606	85	-1	84	1049	59	-2	57
191	139	-2	137	607	70	-1	69	1051	0	-16	-16
192	80	-1	79	608	213	-2	211	1056	5	-13	-8
193	306	-10	296	609	222	-3	219	1060	0	-1	-1
194	336	-10	326	610	105	-2	103	1061	0	-3	-3
195	234	-2	232	611	228	-4	224	1062	155	-16	139
196	155	-2	153	614	160	-2	158	1063	0	-9	-9
198	0	-19	-19	616	351	-7	344	1064	78	192	270
199	54	-11	43	618	0	-31	-31	1068	487	-77	410
200	0	-5	-5	621	413	-6	407	1069	33	-2	31
201	65	-6	59	623	230	-8	222	1070	25	-1	24
202	0	-8	-8	624	80	-1	79	1071	12	-1	11
209	50	-1	49	625	97	-2	95	1072	20	-1	19
210	33	-1	32	626	93	-3	90	1073	77	-1	76

212	16	-2	14	633	20	807	827	1074	38	-2	36
213	78	-2	76	637	108	-4	104	1075	0	-9	-9
216	5	-3	2	638	283	-4	279	1077	20	-2	18
217	10	-30	-20	639	133	-2	131	1078	74	-3	71
218	0	-2	-2	640	594	-8	586	1080	480	-480	0
219	0	-19	-19	641	104	-1	103	1081	771	53	824
220	0	-11	-11	642	302	-4	298	1082	0	-9	-9
221	0	-3	-3	643	186	-3	183	1083	0	-2	-2
222	0	-2	-2	644	66	-2	64	1084	151	173	324
223	0	-1	-1	645	101	-2	99	1085	0	-1	-1
225	3,034	1,312	4,346	646	127	-2	125	1088	26	-1	25
227	593	202	795	647	159	-4	155	1093	78	-2	76
231	83	978	1,061	648	66	-1	65	1094	339	-6	333
232	210	-3	207	649	379	-4	375	1097	322	-7	315
234	401	-6	395	650	102	-2	100	1098	82	-2	80
235	58	-1	57	652	522	-13	509	1099	65	-1	64
238	144	-4	140	653	87	-2	85	1100	42	-1	41
239	48	-1	47	654	42	-1	41	1101	59	-2	57
240	42	-2	40	660	172	-3	169	1102	62	-1	61
241	70	-2	68	661	207	-3	204	1104	239	168	407
242	76	-3	73	662	77	-1	76	1107	75	-1	74
243	60	-2	58	663	259	-4	255	1108	80	-3	77
244	39	-1	38	664	296	-4	292	1109	43	-1	42
245	56	-2	54	665	81	-2	79	1110	47	-1	46
246	65	-1	64	666	109	-1	108	1111	578	-6	572
247	64	-1	63	667	97	-2	95	1112	242	-4	238
248	123	-1	122	668	165	-1	164	1113	133	-3	130
249	77	-2	75	669	78	-2	76	1114	168	-3	165
250	391	-10	381	670	338	-5	333	1116	92	-2	90
251	57	-1	56	671	50	-1	49	1119	308	296	604
252	125	-2	123	672	109	-2	107	1122	273	-9	264
253	81	-1	80	673	195	-4	191	1123	25	-1	24
254	852	-12	840	674	112	-2	110	1124	95	-2	93
255	285	-4	281	676	251	-5	246	1129	68	82	150
256	0	610	610	677	48	-1	47	1132	130	-3	127
257	411	-403	8	678	48	-1	47	1133	450	-273	177
258	5,191	-2,228	2,963	679	124	-2	122	1134	251	152	403
259	57	-1	56	680	107	-2	105	1136	0	-1	-1
260	346	-6	340	681	42	-1	41	1137	47	-1	46
261	122	-2	120	682	104	-1	103	1138	340	-9	331
262	116	-2	114	683	513	-4	509	1139	206	-3	203
263	129	-2	127	684	87	-2	85	1141	569	-14	555
264	120	-1	119	685	84	-2	82	1142	366	-66	300
265	87	-2	85	686	87	-1	86	1144	199	-5	194
266	273	-8	265	687	240	-3	237	1146	0	436	436

267	73	-1	72	691	51	-1	50	1148	466	-10	456
268	150	-1	149	692	60	-1	59	1149	34	-1	33
269	891	-539	352	693	86	-4	82	1150	92	-3	89
270	100	-2	98	694	84	-1	83	1151	212	-3	209
271	159	-3	156	695	96	-2	94	1152	36	-3	33
272	201	-3	198	697	104	-1	103	1153	33	-1	32
273	171	-2	169	698	158	-2	156	1154	18	-1	17
274	108	-2	106	699	58	-1	57	1155	52	-4	48
275	68	-2	66	700	182	-2	180	1157	25	-4	21
276	231	-3	228	701	165	-3	162	1158	0	-5	-5
277	198	79	277	702	194	-4	190	1162	219	-7	212
278	229	-3	226	703	52	-1	51	1163	327	150	477
279	344	-10	334	704	73	-2	71	1165	31	-1	30
280	261	-3	258	708	160	194	354	1166	47	-1	46
281	206	-2	204	713	133	-3	130	1167	248	-5	243
282	173	-2	171	714	56	-2	54	1168	303	-3	300
283	177	-2	175	715	52	-6	46	1168	0	391	391
284	263	35	298	716	95	-3	92	1169	38	-1	37
285	85	-1	84	717	83	-3	80	1170	30	-1	29
286	1,309	-671	638	718	79	-4	75	1171	83	-2	81
287	140	-2	138	719	125	-3	122	1172	100	-2	98
288	450	-14	436	720	121	-3	118	1173	97	-3	94
289	122	-2	120	721	22	-1	21	1175	200	-2	198
290	57	-1	56	722	127	-3	124	1179	165	-3	162
291	226	-3	223	723	100	-3	97	1180	296	350	646
292	486	-9	477	724	67	-1	66	1181	44	-1	43
293	56	-1	55	725	162	-4	158	1183	56	-1	55
294	178	-5	173	726	75	-2	73	1185	121	-2	119
295	115	-2	113	727	69	-2	67	1186	121	-2	119
296	101	-1	100	728	64	-2	62	1188	161	-2	159
297	306	-4	302	729	63	-2	61	1189	158	-2	156
298	115	-2	113	730	133	-3	130	1190	60	-1	59
299	519	-11	508	731	67	-1	66	1191	25	-1	24
300	136	-2	134	732	374	-6	368	1192	47	-1	46
301	270	-4	266	733	99	-2	97	1193	193	-3	190
302	165	-2	163	734	327	207	534	1196	42	-5	37
303	158	-7	151	735	71	143	214	1197	51	-1	50
304	145	-3	142	739	76	65	141	1198	77	-1	76
305	69	-5	64	742	385	149	534	1199	91	-2	89
306	191	-4	187	744	38	339	377	1200	136	-3	133
307	325	-7	318	746	78	-2	76	1204	33	-3	30
308	100	-1	99	747	174	-3	171	1205	31	-2	29
310	26	-1	25	748	86	-1	85	1208	59	-3	56
313	1,932	-139	1,793	749	296	272	568	1209	58	-1	57
314	537	126	663	750	0	-2	-2	1210	10	-1	9

316	455	-40	415	751	100	-2	98	1213	0	-4	-4
319	366	-3	363	752	348	32	380	1214	0	1,186	1,186
320	161	-2	159	753	158	-2	156	1215	0	-7	-7
321	1,618	-91	1,527	754	71	-1	70	1216	331	-20	311
322	199	-3	196	756	40	-1	39	1220	2,416	506	2,922
323	151	-2	149	757	425	-7	418	1221	2,189	-735	1,454
324	136	-2	134	758	94	-2	92	1221	0	2,174	2,174
328	235	-5	230	759	97	-3	94	1230	423	134	557
337	320	-6	314	760	367	-159	208	1231	0	-4	-4
338	205	-3	202	761	258	-133	125	1233	468	-468	0
339	307	-5	302	762	74	-3	71	1234	65	-65	0
342	175	-4	171	763	42	-2	40	1235	0	-20	-20
343	26	-1	25	764	137	-59	78	1236	0	-5	-5
344	87	-2	85	765	115	-1	114	1238	131	-3	128
345	93	-2	91	766	69	-1	68	1239	33	-1	32
346	60	-1	59	767	382	47	429	1240	30	-1	29
347	248	-6	242	770	360	355	715	1241	114	-5	109
348	31	-1	30	779	50	-1	49	1242	80	19	99
349	59	-3	56	780	87	-2	85	1246	225	-4	221
350	181	-7	174	782	171	-4	167	1247	39	-1	38
351	44	-1	43	783	195	662	857	1248	255	-7	248
352	75	-2	73	784	246	-82	164	1254	368	58	426
357	151	-2	149	787	38	-1	37	1256	0	-3	-3
358	64	-1	63	788	97	-2	95	1257	0	-12	-12
359	684	-82	602	789	76	-2	74	1259	928	419	1,347
360	185	-4	181	790	74	-2	72	1262	0	910	910
361	188	-3	185	791	62	-2	60	1264	0	-4	-4
362	81	-1	80	792	73	-2	71	1265	0	-14	-14
363	502	-94	408	793	120	-3	117	1267	0	-9	-9
364	380	-8	372	794	84	-2	82	1268	0	-2	-2
365	104	-2	102	795	89	-6	83	1269	5	-9	-4
366	310	-4	306	796	77	-11	66	1270	0	-3	-3
367	106	-2	104	797	722	-13	709	1272	0	-6	-6
368	179	-3	176	799	75	-2	73	1273	0	-1	-1
369	141	-2	139	800	49	-1	48	1274	161	-3	158
370	154	-2	152	801	79	-2	77	1275	468	-9	459
371	165	-2	163	802	216	-3	213	1277	0	-3	-3
372	239	-6	233	803	173	-2	171	1279	72	-2	70
373	235	-4	231	804	91	-1	90	1280	96	-1	95
374	121	-2	119	805	115	-2	113	1281	140	-2	138
375	355	-6	349	806	530	-8	522	1282	77	-1	76
376	172	-2	170	807	227	-3	224	1283	241	-3	238
377	75	-1	74	808	369	-5	364	1286	277	282	559
378	82	-1	81	809	310	-3	307	1288	30	-1	29
379	201	-3	198	810	405	-5	400	1289	30	-1	29

380	70	-1	69	811	276	-3	273	1291	373	-7	366
381	410	-8	402	812	336	-5	331	1292	237	-6	231
382	64	-4	60	813	179	-3	176	1293	266	-266	0
383	46	-1	45	814	168	-2	166	1299	130	-1	129
384	143	-3	140	817	72	-1	71	1301	508	36	544
385	63	-1	62	819	15	-2	13	1311	40	-1	39
386	57	-1	56	822	161	-2	159	1315	77	-2	75
387	524	-85	439	823	265	-7	258	1316	45	-1	44
388	190	-3	187	824	49	-1	48	1318	81	-1	80
389	292	-8	284	825	50	-1	49	1319	57	-1	56
390	77	-2	75	826	123	-2	121	1320	58	-1	57
391	587	-225	362	827	38	-1	37	1321	58	-1	57
392	27	-2	25	828	441	-9	432	1322	74	-1	73
393	49	-3	46	829	138	-2	136	1323	53	-1	52
394	151	-4	147	830	55	-1	54	1324	145	-2	143
395	46	-3	43	831	309	-6	303	1325	30	-1	29
396	84	-5	79	832	65	-1	64	1326	20	-1	19
397	52	-4	48	833	95	-1	94	1327	107	-1	106
398	79	-2	77	834	220	-3	217	1328	43	-1	42
399	303	-40	263	835	332	-6	326	1329	251	-164	87
401	58	-2	56	836	64	-1	63	1331	131	-2	129
402	52	-2	50	837	60	-1	59	1333	103	-1	102
403	194	-7	187	838	268	-4	264	1334	44	-1	43
406	45	-2	43	839	287	-5	282	1338	30	-1	29
407	23	-1	22	840	271	-4	267	1340	56	140	196
408	176	309	485	841	75	-1	74	1342	80	-1	79
409	3	47	50	842	204	-4	200	1345	187	-3	184
410	278	-64	214	843	158	-2	156	1347	0	-1	-1
411	68	-2	66	844	165	-2	163	1348	44	-1	43
412	221	-3	218	845	108	-1	107	1349	0	-3	-3
413	44	-2	42	846	261	-4	257	1350	314	-314	0
414	5	-1	4	847	166	-3	163	1351	0	-4	-4
415	40	-2	38	848	308	-5	303	1352	0	-3	-3
416	85	-4	81	849	197	-5	192	1353	38	-42	-4
417	62	-3	59	850	93	-1	92	1356	0	309	309
418	108	-2	106	851	327	-6	321	1357	159	-1	158
420	77	-6	71	852	72	-1	71	1360	384	168	552
421	188	-3	185	853	118	-2	116	1361	251	-251	0
422	78	-1	77	854	94	-2	92	1362	315	-315	0
423	235	-4	231	855	422	-8	414	1363	2,574	319	2,893
424	74	-1	73	856	66	-1	65	1365	299	-2	297
425	46	-1	45	857	0	-6	-6	1366	208	-3	205
426	59	-1	58	858	81	-1	80	1367	195	233	428
427	91	-1	90	860	129	-2	127	1369	73	-2	71
428	80	-1	79	864	627	-607	20	1370	308	360	668

429	277	-5	272	869	193	-2	191	1373	133	-2	131
430	65	-1	64	870	246	-6	240	1374	216	146	362
431	70	-1	69	871	137	-2	135	1375	47	-1	46
432	500	-102	398	872	91	-1	90	1376	540	-540	0
433	162	-2	160	873	140	-2	138	1377	0	3,918	3,918
434	163	-6	157	874	127	-2	125	1378	58	-3	55
435	38	-1	37	875	102	-2	100	1382	60	-1	59
436	49	-1	48	876	441	-7	434	1384	130	-130	0
437	85	-2	83	877	123	-1	122	1386	90	-4	86
438	48	-1	47	878	135	-2	133	1387	152	45	197
439	49	-1	48	879	92	-2	90	1388	320	420	740
440	46	-1	45	880	56	-1	55	1389	341	118	459
441	324	-9	315	882	363	-6	357	1392	48	-1	47
442	35	-1	34	883	50	-2	48	1396	280	-4	276
443	104	-3	101	884	192	-4	188	1398	90	-6	84
444	28	-1	27	885	291	-5	286	1399	946	-205	741
445	75	-4	71	886	61	-1	60	1400	26	103	129
446	135	-2	133	887	58	-1	57	1401	353	-353	0
447	59	-1	58	888	196	-3	193	1402	442	-320	122
448	209	-4	205	889	122	-2	120	1405	163	151	314
449	98	-5	93	890	256	-4	252	1406	95	-95	0
450	128	-2	126	891	124	-1	123	1407	144	-113	31
451	142	-2	140	892	446	-6	440	1408	47	-1	46
452	150	-2	148	893	138	-1	137	1413	0	-2	-2
455	74	-2	72	894	457	-7	450	1416	221	271	492
456	65	-2	63	895	0	-13	-13	1420	238	-238	0
457	80	-2	78	896	95	-1	94	1421	122	150	272
458	65	-2	63	897	472	-7	465	1422	92	-92	0
459	27	-1	26	898	109	-1	108	1424	150	150	300
460	54	-3	51	899	226	-5	221	1425	1,408	-1,408	0
461	16	-1	15	900	372	-6	366	**TOTALS**	**220,783**	**24,064**	**244,847**[5]

[5] An additional 44,213 persons of growth is being contributed by SGUs which were not revised in the development of the 2051 MCR Growth Forecast. The total population growth by 2051, excluding a 3% Census undercount, equals 289,060 persons.

Figure 1 – Map illustrating population growth revisions to 2018 Master Plan Database to develop the 2051 MCR Growth Forecast Database.

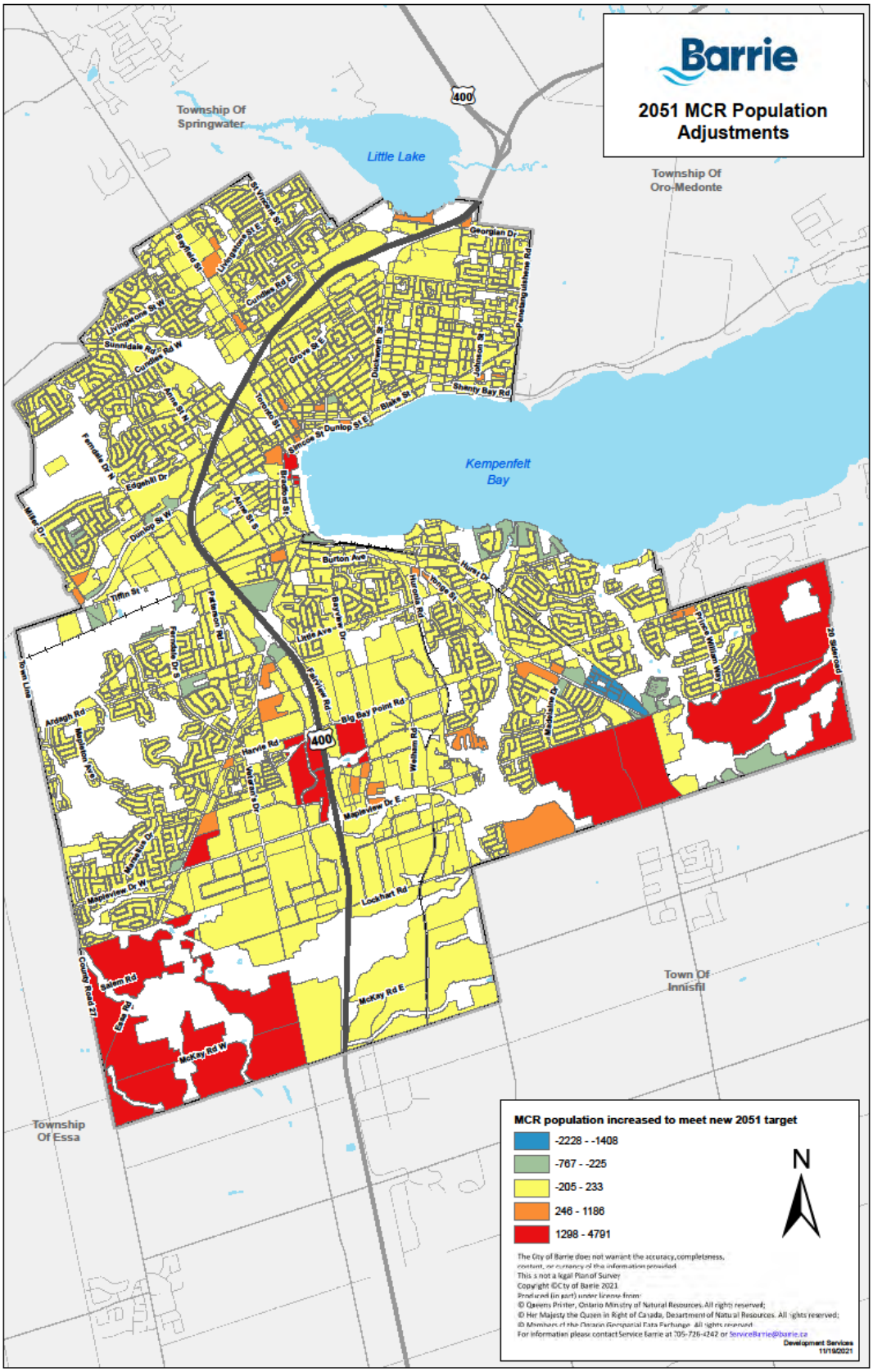
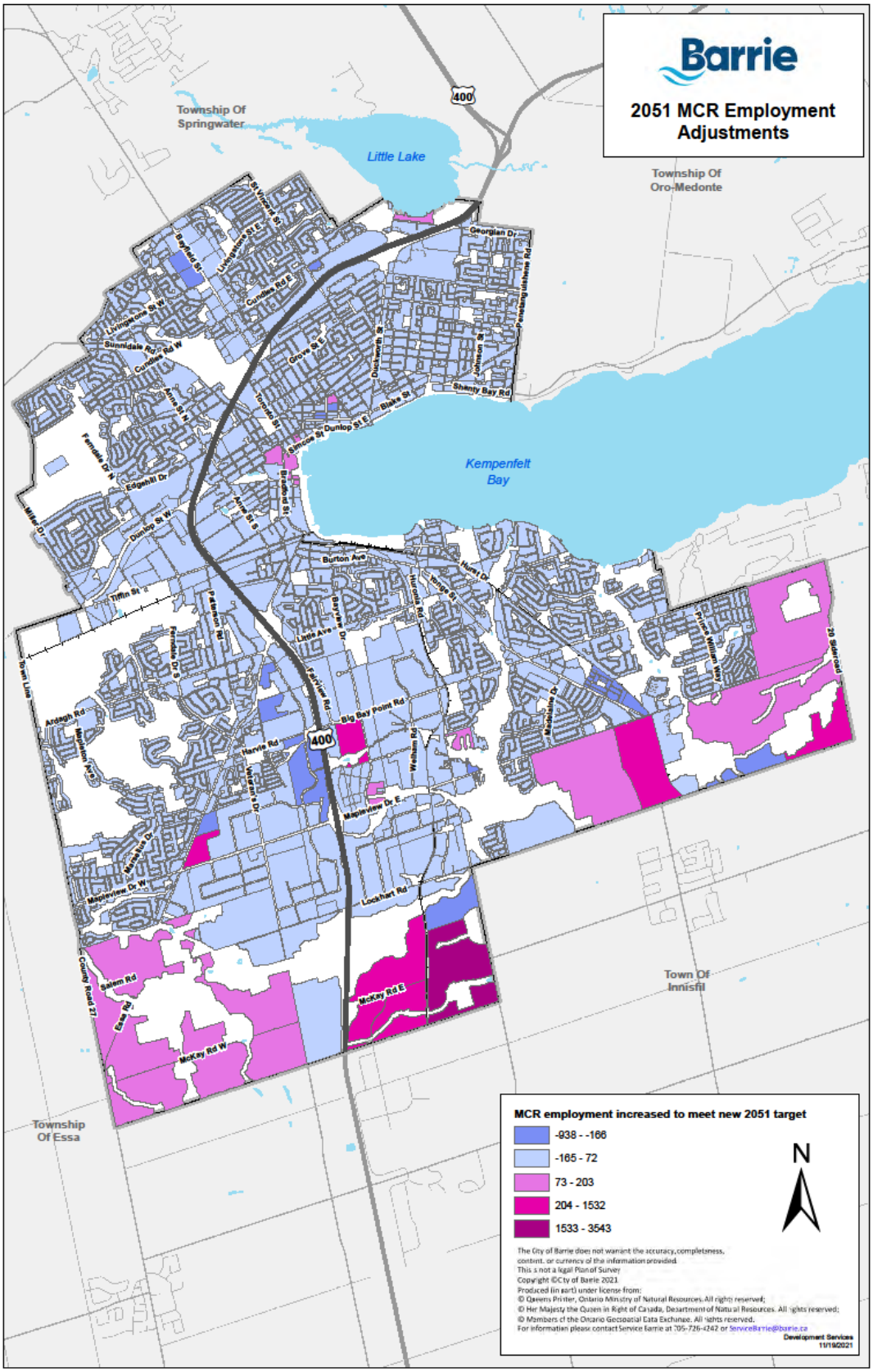


Figure 2 – Map illustrating employment growth revisions to 2018 Master Plan Database to develop the 2051 MCR Growth Forecast Database.



Chapter 3: Servicing Growth

Introduction

Barrie is forecast to grow to 298,000 people and 150,000 jobs by 2051. While the City has already planned to accommodate and service a portion of the forecast growth, largely through in-effect master and strategic plans, more work needs to be done. Specifically, the in-effect master and strategic plans have varying horizon years, with some planning to service growth up to 2041 while others only planning to service growth to 2031. As required by Growth Plan policies 2.2.1.3.b), 2.2.5.9.e), and 2.2.8.3.a)-d) – text provided below - the City must plan to manage the forecast growth by ensuring there is sufficient planned or existing infrastructure & public service facilities to service the forecast growth to 2051, as well as any conversion of *employment area* lands, and the proposed settlement area boundary expansion.

Growth Plan Policy 2.2.1.3.b)

"Upper-and single-tier municipalities will undertake integrated planning to manage forecasted growth to the horizon of this Plan, which will:

b) be supported by planning for infrastructure and public service facilities by considering the full life cycle costs of these assets and developing options to pay for these costs over the long-term;"

Growth Plan Policy 2.2.5.9.e)

"The conversion of lands within *employment areas* to non-employment uses may be permitted only through a *municipal comprehensive review* where it is demonstrated that:

e) there are existing or planned infrastructure and public service facilities to accommodate the proposed uses."

Growth Plan Policy 2.2.8.3.a)-d)

"Where the need for a *settlement area* boundary expansion has been justified in accordance with policy 2.2.8.2, the feasibility of the proposed expansion will be determined and the most appropriate location for the proposed expansion will be identified based on the comprehensive application of all of the policies in this Plan, including the following:

a) there is sufficient capacity in existing or planned infrastructure and public service facilities;

b) the infrastructure and public service facilities needed would be financially viable over the full life cycle of these assets;

c) the proposed expansion would be informed by applicable water and wastewater master plans or equivalent and *stormwater master plans* or equivalent, as appropriate;

d) the proposed expansion, including the associated water, wastewater and stormwater servicing, would be planned and demonstrated to avoid, or if avoidance is not possible, minimize and mitigate any potential negative impacts on watershed conditions and the *water resource system*, including the *quality and quantity of water*;"

The purpose of this chapter is to demonstrate how the City, through the MCR completed in support of the draft new Official Plan, has completed integrated planning to service the forecast growth. This chapter documents the review of existing and planned infrastructure and public service facilities to determine if they are of sufficient capacity to accommodate the forecast growth. While none of the in-effect master and strategic plans for infrastructure and public service facilities have a planning horizon of 2051, based on that fact alone that does not mean that the City cannot accommodate the forecast growth. Rather, a more nuanced approach is required to support the implementation of the draft new Official Plan and work toward conformity with the Growth Plan. To that end staff developed a strategy to:

- evaluate of the capacity of the City's existing and planned infrastructure and public service facilities,
- assess what additional infrastructure and public service facilities investments are required (or if any can be deferred) to support the growth management strategy proposed in the Official Plan and therefore service the forecast growth to 2051, and
- estimate the costs of any required (or deferred) infrastructure and public service facilities required to service the forecast growth.

By implementing this strategy this MCR, as detailed in this chapter, points to information and servicing gaps which will need to be addressed through new master and strategic plans. In doing so this chapter demonstrates that the City is planning for growth in a comprehensive, integrated, and iterative manner, in conformity with the Growth Plan.

Infrastructure and Public Service Facilities

To assess the capacity of Barrie's existing and planned infrastructure and public service facilities and determine if the City can service the forecast growth, staff conducted a series of delta assessments. As the name suggests, the delta assessments investigate and quantify difference to identify service gaps and provide high-level recommendations for how they can be remedied. New master plans developed following the implementation of the new Official Plan will provide the detailed, technical, and solutions-oriented information on the most appropriate and cost-effective solutions to the service gaps identified in by the delta assessments. While new master plans for infrastructure and public service facilities are required to ensure the analysis of future investments into 2051 is fully supportable, the delta assessment answer the following questions:

1. Is there sufficient existing or planned infrastructure and public service facilities to service the forecast population and employment growth into 2051?

a) What additional infrastructure and public service facilities are required (or can be deferred) to service the forecast growth? and,

b) What are the estimated cost and savings of any additional (or deferred) infrastructure and public service facilities?

Answers to these questions, which summarize the results of the delta assessments, are provided in Table 6 - Infrastructure and Table 7 – Public Service Facilities (see below). It should be noted that Table 6 – Infrastructure, has two planning horizons, being 2041 and 2051. This is for two main reasons. First, a significant amount of work was completed as part of this MCR to the year 2041 when a new Growth Plan, with population and employment forecasts to 2051, was released. Second, many of the City's in-effect

infrastructure master and strategic plans have a horizon year of 2041. As such, information on service capacity for the 2041-2051 period is very limited or not available. Due to the limited amount of information available, as discussed in the limitations section of this chapter, staff focused their analysis on water and wastewater infrastructure/servicing capacity. The delta assessment for public service facilities, the results of which are in Table 7, followed a methodology that was slightly different than the delta assessment methodology for infrastructure and allowed staff to evaluate public service facilities servicing capacity and need to the year 2051. As such, the results of the delta assessment of public service facilities are displayed differently than the results for infrastructure.

New Master Plans are Required

The work done to complete this component of the MCR does not replace the need for revised/updated master or strategic plans. This is because the delta assessments are only intended to determine if the existing and planned infrastructure and public service facilities are sufficient to service the 2051 MCR Growth Forecasts, and if not, what investments – both material and financial – are required to reconcile any service deficits. The delta assessments address 'the what' is needed to service the forecast growth. New master and strategic plans that offer technical solutions – 'the how' – will be prepared following the approval of the new Official Plan. This master plan level work is not being completed for two key reasons. Firstly, the implementation of a new land use policy framework was critical for the City of Barrie. In addition to addressing Barrie's land use challenges, a new policy framework was required as it provides strategic direction – by way of establishing a community structure, density targets, etc. – for new master plans to follow. Secondly, as with all municipalities subject to the Growth Plan, Barrie must be in conformity with the Growth Plan by July 1, 2022. It was determined that the simultaneous development of a new land use policy framework and a complete range of new master plans was not feasible with the resources available to meet the conformity deadline.

The remainder of this chapter focuses on the work completed to conduct the delta assessments. While this chapter focuses on highlighting any additional investments needed to support infrastructure and public service facility needs into the future, the financial tools used to plan for and reconcile the servicing needed to support the forecast growth is addressed in chapter 4 of this report.

Table 6 - Infrastructure Capacity Assessment Results by Asset Type

Asset Type	Summary	Estimated Capital Cost	Investment for 2041-2051	Estimated Capital Cost	Total Estimated Capital Cost
Water Supply	Existing and planned water supply infrastructure is insufficient to service the forecast growth. Additional reservoir and pumping capacity are required.	$8,800,000	Additional wells, pumping capacity, and expansion of Surface Water Treatment Facility (SwTF).	$43,900,000	$54,700,000
Water Distribution	Existing and planned water distribution infrastructure is insufficient to service the forecast growth. Upgrades are required to existing and planned pipe infrastructure to deliver higher volumes of water to certain areas of the city	$17,456,000	N/A	N/A	$17,456,000
Wastewater Collection	Existing and planned wastewater collection infrastructure is insufficient to service the forecast growth. Both existing and planned sewer lines need to be upsized to accommodate increased flows as well as service areas where growth was not previously anticipated.	$389,000[6]	N/A	N/A	$389,000[7]
Wastewater Treatment	Existing and planned wastewater treatment infrastructure is insufficient to service the forecast growth. Additional upgrades and retrofits than those considered in the master plan will be required, and will be required earlier, to service the forecast growth.	$46,300,000	An additional 16,000 m3/day of treatment capacity is required to accommodate growth over the 2041-2051 period.	$139,000,000	$185,300,000
Drainage	Due to reduced land need by 2041, some drainage infrastructure can be deferred. The cost savings associated with these deferrals are integrated with any cost savings associated with deferred transportation infrastructure.	N/A	N/A	N/A	N/A
Transportation	Existing and planned transportation infrastructure is insufficient to service the forecast growth. The reduced land need to 2041 means the City will need to build and maintain less kilometers of roads, as well as operate fewer busses, than anticipated in the 2018 Transportation Master Plan. However, due to the revised distribution of growth, as reported in chapter 2 , significant transportation improvements are required in addition to those already identified, particularly within the DBUA.	$160,000,000	N/A	N/A	$160,000,000

[7] As most of the required improvements will be funded by local benefit, a large portion of the cost of expanding planned or existing infrastructure will be paid for by development. Despite this, staff estimate the actual costs will be higher than those reported here.

Table 7 – Public Service Facility Capacity Assessment Results by Asset Type		
Asset Type	**Summary**	**Estimated Capital Cost to 2051**
Parks and Parkland	There is currently insufficient capacity in existing and planned parks and parkland to service the forecast growth. 164.56 hectares of additional parks and parkland may be required over what is recommended in the in-effect master plan to service the forecast growth to 2051.	The cost of the parkland required to 2051 will need to be determined through new Parks Master Plan or equivalent. For the purpose of this report staff estimate that the cost of creating the parkland required to 2051 is approximately $356 million.
Recreation/Community Facilities	There is currently insufficient capacity in existing and planned recreational/community facilities to service the forecast growth. The following additional facilities will be required to accommodate the forecast growth. As these facilities are typically co-located, they are being reported here; certain Public Service Facilities (e.g., skateboard & bmx parks) were not included in the delta assessment.	Based on past practice, and ongoing planning for a new community centre in the Hewitt's DGA, it is assumed that any new pools/aquatic centres, gyms, and ice pads/arenas will be co-located. Estimated cost of building one new community centre with co-located aquatic, pool, and ice facilities is estimated to be between $90-110 million.
Libraries	There is currently insufficient capacity in existing and planned libraries to service the forecast growth. An additional 31,500 square feet of library floor space may be required to service growth forecast over the 2041-2051 period. This is in addition to the 77,100 square feet required up to 2041.	As determined through the most recent library strategic / master plans, two new library branches have been included in the city's future capital plans. A library branch within the planned Hewitt Community Centre is currently estimated to cost $7.55M. This cost will be further refined as time and designs advance. A library branch within the planned Salem Community Centre currently estimated to cost $14M. This cost will be further refined as time and designs advance. Based on the costs of these known projects, the estimated cost of providing the 31,000 square feet of library floor space required to 2051 is approximately $17,360,000.
Fire and Police	There is currently insufficient capacity in existing and planned fire and police facilities to service the forecast growth.	Fire: Using the cost estimates from the in-effect Barrie Fire Master plan, staff estimate that an additional two fire stations will cost approximately $12,000,000 (not adjusted for inflation or increase in cost of materials, equipment, or apparatuses). Actual cost forecasts to be confirmed through a new Barrie Fire Master Plan or equivalent.
Operation Centres/Yards	There is sufficient capacity in existing and planned operation centres/yards to service the forecast growth. The anticipated reconstruction of the Ferndale OP centre, and the eventual constriction of a satellite yard in south Barrie, means that no additional operation centre/yard space is required to service the forecast growth.	N/A

Methodology

Assessing the Delta

The purpose of the delta assessments completed as part of this MCR is to determine whether Barrie's existing and planned infrastructure and public service facilities can service the forecast growth and determine what additional investments may be required should service deficiencies be identified. In this sense the delta assessment will identify servicing gaps as well as provide high-level estimates on how they can be reconciled so that Barrie can accommodate growth to 2051.

The starting point for the delta assessment is the in-effect infrastructure and public service facilities master and strategic plans. Each master or strategic plan is based on population and employment distributions to a specific planning horizon, similar to the 2051 MCR Growth Forecast developed for this MCR. Further, each master and strategic plan recommends what investments are required to service the forecast population and employment growth. This combination of growth assumptions, planning horizon, and investment recommendations constitute a 'reference scenario'. Using these reference scenarios staff determine whether the service capacity of existing and planned assets is sufficient or if additional investments are required. The in-effect infrastructure master plans all have the same reference scenario; they were all completed in 2018, have the same population and employment distributions, and all have a planning horizon of 2041. In contrast, the public service facilities master and strategic plans were not completed at the same time, have varying planning horizons – none of which look to 2051 – and rely on different population and employment distribution assumptions.

To conduct a comprehensive analysis of the service capacity of existing and planned infrastructure and public service facilities, as well as allow staff to address the data alignment issues discussed above, a step-by-step methodology was developed. This methodology is discussed below. While the delta assessment methodology is similar for infrastructure and public service facilities, there are key differences, being that the infrastructure delta assessments are more quantitative in nature while the public service facilities delta assessments are more qualitative. Differences in approach are discussed in each step.

Step-By-Step Overview

The delta assessments completed for each infrastructure and public service facilities asset followed the methodology described below. As the results of the delta assessment will play an important role in informing future master plan work, a transparent overview of the methodology used to conduct the delta assessments was required.

Step 1: Create the 2051 MCR Growth Forecast database

To conduct the delta assessment for both infrastructure and public service facilities, a robust database that distributes population and employment growth according to the community structure in the new Official Plan to the year 2051 was required. This development of this database, referred to as the 2051 MCR Growth Forecast database, is discussed in detail in Chapter 2 of this report.

Step 2: Determining Scope

In this step staff determine which infrastructure and public service facilities assets were to be subject to a delta assessment. As the core purpose of the delta assessment is to determine if the existing and planned infrastructure and public service facility assets have the capacity to service the forecast growth, assets which have been identified to have reached their service capacity at time of writing of this report

were not included in this assessment. Assets which are known to have reached their service capacity are deemed to be out of scope, as per Tables 8 and 9 below.

Infrastructure Assets

As this MCR is largely a Growth Plan conformity exercise to support the new Official Plan, staff relied on the definition of infrastructure to determine which assets are to be subject to the delta assessments. The Growth Plan defines infrastructure as:

> "Physical structures (facilities and corridors) that form the foundation for development. Infrastructure includes: sewage and water systems, septage treatment systems, stormwater management systems, waste management systems, electricity generation facilities, electricity transmission and distribution systems, communications/telecommunications, transit and transportation corridors and facilities, oil and gas pipelines and associated facilities. (PPS, 2020)"

The definition provides clear direction on which infrastructure assets are to be evaluated through delta assessment. However, the City of Barrie does not operate all infrastructure asset types listed. For clarity, Table 8 below outlines which infrastructure assets are in or out of scope for the purpose of conducting the delta assessments.

Table 8 – Scope of Delta Assessment for Infrastructure Assets

Infrastructure Asset Type	In/Out of Scope	Justification
Sewage and water systems	In scope	As the City of Barrie is expected to double in population and employment by 2051, the City must demonstrate ability to service this forecast growth as part of the MCR.
Septage treatment systems	Out of scope	The City of Barrie does not own or operate this type of infrastructure.
Stormwater management systems	In scope	Barrie's growth over the next 30 years will result in an increase in impermeable surfaces. This runoff must be managed as per Provincial legislation to ensure continued protection of natural heritage resources, agricultural lands, other infrastructure, and other sensitive elements of the region's natural heritage system.
Waste management systems	Out of scope	The City has, through previous work, identified that the existing Barrie landfill will reach capacity by 2035 (see 2012 Waste Management Strategy). As the capacity of this infrastructure asset has already been determined to be insufficient to service growth to 2051, no delta assessment is required. The City is, at time of writing, developing solutions to address this service deficit, including the adoption of a circular economy model to waste management.
Electricity generation facilities	Out of scope	The City of Barrie does not own or operate this type of infrastructure.

Electricity transmission and distribution systems	Out of scope	The City of Barrie does not own or operate this type of infrastructure.
Communications/ telecommunications	Out of scope	The City of Barrie does not own or operate this type of infrastructure.
Transit and transportation corridors and facilities	In scope	As Barrie grows, so will the demand for transportation infrastructure. Barrie's ability to manage this demand will have a significant impact on City's ability to meet a 50% intensification target, create the conditions for the establishment of bus rapid transit along intensification corridors, and reduce automobile dependency. As such, a delta assessment of the City's transit system and network is required.
Oil and gas pipelines and associated facilities	Out of scope	The City of Barrie does not own or operate this type of infrastructure.

Public Service Facilities

Similar to infrastructure, the Growth Plan provides direction on what constitutes a public service facility. Public service facilities are defined as:

> "Lands, buildings and structures for the provision of programs and services provided or subsidized by a government or other body, such as social assistance, recreation, police and fire protection, health and educational programs, long-term care services, and cultural services. *Public service facilities* do not include infrastructure. (PPS, 2020)"

Some of the public service facilities listed in the definition are not applicable to Barrie. Further, certain public service facilities that exist in Barrie are omitted from the definition (i.e., the marina). Table 9 (next page) provides a list of public service facilities that were included in a delta assessment, as well as justification for those facilities excluded.

Table 9 - Scope of Delta Assessment for public service facilities assets

Public Service Facility (public service facilities)	In/Out of Scope	Justification
Parks, Recreation, & Community Centres (including gyms, pools, fitness centres, and cultural facilities)	In Scope	These public service facilities are a key element of a complete community and must be assessed to ensure Barrie's current and future residents will continue to have places and spaces to recreate up to and beyond 2051 as the city grows.

Libraries (including health and education programs)	In Scope	Libraries are key community hubs that offer places for residents to connect, learn, and grow, and are a key element of a complete community.
Fire and Emergency Services Facilities	In Scope	Emergency services must be available to ensure Barrie's current and future residents are able to live in a safe and secure community.
Operations Centres/Yards	In Scope	Barrie's operations centres maintain the City's assets, and are critical to ensuring their continued operation.
Waterfront Marina	Out of Scope	While the City operates a marina, marinas are not a required element of a complete community. Further, Barrie is serviced by several private sector marinas, and it is anticipated that these businesses will expand in response to any increase in demand/growth.
Corporate Office Space	Out of Scope	Although meeting the definition of a public service facility as per Growth Plan, the need for additional corporate office space has been identified in previous asset management work with solutions already being developed (see Staff Report FCT001-18). As such this public service facility is out of scope for the purpose of this MCR.
Long Term Care	Out of Scope	The City of Barrie does not operate long term care homes/facilities. This service is provided by the regional service manager, being the County of Simcoe.
Social Housing	Out of Scope	The City of Barrie is not the service manager for social housing in Simcoe County. Rather, the upper-tier government for the region, being the County of Simcoe, is the social housing service manager for the region. As expansion of existing social housing public service facilities was not planned at the time this report was written, this public service facility is out of scope.

Similar to infrastructure, there are several recreation-oriented public service facilities which have been identified as not fundamental to Barrie's continued growth as a complete community. This includes recreational facilities such as skate parks, off-leash dog parks, outdoor aquatics, outdoor ice rinks, track and field, and community gardens. While important, these recreational facilities have been determined to be supplementary to more 'core' public service facilities such as community centres. Therefore, they have been excluded from the scope of the public service facilities delta assessment.

Step 3: Ask the Right Questions

A series of questions were developed to guide both the infrastructure and public service facilities delta assessments. For infrastructure, these questions were posed to the City's infrastructure planning team

and answered through a series of internal technical memos. The findings of these internal technical memos are summarized and contextualized in the Results section of this chapter. A similar process was followed for public service facilities. However, rather than pose the research questions to staff in various departments, it was planning staff that reviewed the applicable master and strategic plans for PFSs to gather the required information to answer each research question. However, throughout the Official Plan project, significant input from all departments has been requested, received and incorporated into all materials.

The research questions, shown in Tables 10 & 11 below, were specifically developed to determine:

1. Whether each infrastructure and public service facilities asset type has the capacity to service the forecast growth to 2051.
2. The investments needed should there be service deficits.
3. The costs of the investments. And,
4. What constraints, if any, exist which would prevent the expansion or installation of the infrastructure of PFs required to reconcile any service deficits/service the forecast growth.

In this sense, the research questions are intended to provide a high-level, yet comprehensive picture of the City's infrastructure and public service facilities needs to the year 2051. Future master and strategic plans will provide the detailed and technical solutions to address the infrastructure and public service facilities needs identified through the delta assessments.

Questions for Infrastructure Assets

For infrastructure assets, the research questions were broken down into those that were policy-area specific or city-wide. The purpose of policy-area specific questions was to differentiate between infrastructure which operates on smaller scales (e.g., sewer catchment areas). Also, a policy-area specific approach will shed light on how targeted growth – which is growth that is directed to certain areas of the city, such as Strategic Growth Areas, as per Map 1 of the new Official Plan – impact infrastructure need. In this sense the delta assessments 'ground-truth' and verify that the community structure proposed in the new Official Plan can be serviced. For certain infrastructure asset types, such as transportation, the impacts of growth are felt city-wide despite localized growth. As such, certain infrastructure types have delta assessment questions geared more towards cumulative city impacts over policy area specific impacts. In other cases, impacts are registered most on a local scale; thus, the questions in these cases are also geared accordingly.

Table 10 - Research Questions for Infrastructure Assets

Question Focus	Infrastructure Asset Type	Questions
Policy Area Specific Impacts	Water Distribution	Is the existing or planned infrastructure sufficient to service the 2051 MCR population and employment forecast? If not, what are

	Wastewater Collection	infrastructure improvements required to service the 2051 growth forecasts?
	Water Supply and Storage	
	Drainage	
Cumulative (City-Wide) Impacts	Wastewater Distribution	Please describe the cumulative impact of the 2051 population and employment growth on this infrastructure asset type. Specifically, please speak to any capacity limitations and any infrastructure improvements needed to service the 2051 growth forecasts.
	Wastewater Treatment	
	Transportation	

Questions for Public Service Facilities

The research questions developed for the public service facilities delta assessment differ from those developed for the infrastructure delta assessment. Specifically, policy-area specific questions for public service facilities were not required. This is because the criteria or metrics used to quantify service capacity and service need in this MCR are based on service level ratios (i.e., number of people to be serviced by a facility), and not location of facility. Technical information such as appropriate locations for public service facilities as well as what services they should offer will be determined by new strategic and master plans following careful consideration of information such as demographics, trends in/demand for services, etc.

Table 11 - Research Questions for Public Service Facilities

Public Service Facility (public service facilities)	Research Questions
Parks, Recreation, & Community Centres (including gyms, pools, fitness centres, and cultural facilities)	Are the existing or planned public service facilities sufficient to service the forecast population and employment growth to 2051? If not, what improvements are required to service the forecast growth and what is the cost of these improvements?
Libraries (including health and education programs)	
Fire and Emergency Services Facilities	

Operations Centres/Yards	
Waste Management Facility (landfill)	
Corporate Office Space	

Step 4: Conduct the Delta Assessment

Infrastructure Delta Assessment

The delta assessments conducted for infrastructure were conducted by staff in the infrastructure planning team. Specifically, infrastructure planning staff were provided the georeferenced population and employment distribution, being 2051 MCR Growth Forecast database discussed in Chapter 2, along with the research questions. Staff then used this data to quantify how many additional people and jobs require servicing over what was planned in the applicable master plans. Once the difference, or delta, is quantified, staff used industry standard service level ratios – i.e., the amount of people and jobs to be serviced by each infrastructure type according to a unique metric (like treated liters per hour or vehicles per hour) – to quantify the infrastructure required to service the population and employment growth that is forecast to occur between the horizon plan of a given master plan and 2051. Using this strategy staff were able to quantify whether the existing and planned infrastructure are sufficient to service the forecast population and employment growth, and if not, what additional infrastructure investments are required. Once staff determined infrastructure need to 2051 per infrastructure asset type, if applicable, staff estimated the capital costs of the additional infrastructure.

The infrastructure investments required to 2051, as well as their estimated costs, are reported in the results section of this chapter. A component of the delta assessment required making assumptions regarding service levels. Wherever possible, service levels or demand ratios were kept at the same level as those in the in-effect master plans. For transparency, the service level/ratio assumed for each delta assessment is reported in the results section below.

Public Service Facilities Delta Assessment

The delta assessments for public service facilities were conducted in the same manner as those for infrastructure, with slight differences. The main difference being that the delta assessments for public service facilities were completed by planning staff rather than staff from each team responsible for each PFS asset type, simply due to the amount of time available for dedication across the organization to this work. As with infrastructure, staff began the delta assessment by quantifying how much of the forecast population growth, and if appropriate, employment growth, must be serviced by planned or existing public service facilities. In other words, staff determined the delta in population (and employment) growth between the horizon of an applicable master or strategic plan and 2051. Using industry standards service level ratios, many of which were reported in the strategic plans for each public service facility type, staff determined the additional public service facilities required to service the population (and employment) growth between the horizon of each applicable public service facilities master plan and 2051.

Once staff determine the public service facilities investments required to service growth to 2051, staff collected information on potential capital costs. As the City has built and currently operates almost all of the additional public service facilities asset types required to service growth to 2051, many of these costs

could be calculated based on known costs. However, this information was disaggregated, and required staff to work with various departments to collect and verify cost estimates. Where costs could not be calculated based on existing and planned public service facilities, staff relayed on Environmental Assessments, studies, and other cost assessments.

Step 5: Answer the Questions and Summarize Results

In this final step of the delta assessment staff answer the questions and report the findings. In addition to answering the questions, staff provided context to the findings, and identify where there is potential for error, improvements in analysis, or limitations in addition to those identified below.

Limitations: Quality, Variability and Availability of Data

Scope of Infrastructure Delta Assessment

A key limitation of this methodology is the inability to conduct delta assessments for all infrastructure asset types for the entire forecast period. Rather, the delta assessment can only be completed up to 2041 for most infrastructure types. This limitation is a result of a limitation of the source documents, being the infrastructure master plans. Specifically, the infrastructure master plans have a planning horizon of 2041, with no information on infrastructure need being provided over the 2041-2051 period. While it is possible to extend the forecast of the in-effect master plans to forecast infrastructure need to 2051, doing so was determined not feasible for several reasons. It should be emphasized that this same limitation was not encountered for public service facilities; for the most part, high-level estimations into 2051 could be made, based on extending the methodology used in existing planning documents for public service facilities.

First, as noted in Chapter 2, the population and employment distribution in the 2051 MCR Growth Forecast database does not align with the population and employment distribution used in the in-effect master plans. This misalignment is most pronounced near the end of the planning horizon where the greatest divergence between the two growth scenarios is observed. As such, continuing to use the in-effect master plans to forecast infrastructure need for the 2041-2051 period was deemed not to produce accurate results, particularly for infrastructure assets which are area-specific. This is because demand for area-specific infrastructure assets, such as sewer catchment areas, depends on localized distribution of population and employment. Demand for non-area specific infrastructure assets, such as the WwTF, is determined using city-wide population and employment totals. As such it was determined that staff can only provide accurate infrastructure need for city-wide infrastructure assets, specifically the WwTF and water supply.

Second, extending the planning horizon of the in-effect master plans can be characterized as preparing a whole new set of 'mini-master plans' for the 2041-2051 period. It was determined that this level of work was not possible due to capacity limitations. Third, doing an in-depth infrastructure demand assessment for the 2041-2051 period would have delayed the OP/MCR project to such an extent that meeting the July 2nd, 2022 Growth Plan Conformity deadline could have been in jeopardy.

Lastly, and perhaps most importantly, the Adoption of the new Official Plan will trigger an update to all infrastructure master plans. As such a scoped infrastructure need assessment for the 2041-2051 period, being an assessment of water supply and waste water treatment, was appropriate and therefore this limitation was deemed acceptable.

End of Life/Renewal of Existing Assets

The delta assessments completed as part of this MCR do not contemplate the need for replacement of existing infrastructure and public service facilities assets. This is because the delta assessments only assess whether there is sufficient capacity in existing assets, and if not, what investments are required to service the forecast growth. The delta assessments do not contemplate the replacement of existing assets. This limitation was deemed acceptable as the adoption of the new Official Plan will trigger the development of new master plans. These new master plans will not only contemplate infrastructure need for the 2041-2051 period but will also forecast the replacement of existing infrastructure asset over the *entire* forecast period. In addition, the City has developed Asset Management Plans (AMPs) for all infrastructure and public service facilities asset types. These AMPs complement in-effect master plans and future master plans, allowing the City to comprehensively plan for the eventual replacement of assets once they reach end of life. In other words, the AMPs mitigate, at least in part, the limited scope of the delta assessments, enabling this MCR to focus on the need for new infrastructure and public service facilities required to service the forecast growth.

Assumptions Behind Population and Employment Distribution

The population and employment distribution reflected in the 2051 MCR Growth Forecast represents a snapshot in time. That is, it reflects growth resulting from all known population and job yielding applications and market trends in demand for housing. Over time, new development applications are received and approved, and the real estate market and housing demand will shift. These new applications and shifts in trends cannot be reflected in the 2051 MCR Growth Forecast as it is the product of a static database and assumptions which were true at one point in time. Therefore, the 2051 MCR Growth Forecast is most accurate over the short term, and degree of accuracy degrades over time, particularly for years later on in the forecast (e.g. 2046-2051). The population and employment distribution in the 2051 MCR Growth Forecast database will be 'ground-truthed', and if required, revised, through the development of new master plans. As a result, this limitation was deemed to be acceptable.

Results

This section summarizes the findings of the delta assessment completed for infrastructure and public service facilities. Cost estimates associated with any additional infrastructure and public service facilities needed to service and accommodate the 2051 MCR Growth Forecast are also provided. The impact of these costs is discussed in chapter 4.

Infrastructure

The delta assessment for infrastructure was driven by a series of research questions. These research questions are answered below for each infrastructure asset type. The questions are numbered and appear in bold. Each question is followed by an answer. By answering these questions, the City demonstrates conformity to the applicable GP policies discussed in the introduction of the chapter.

Water Supply & Storage

Question 1:

Is the existing or planned infrastructure sufficient to service the 2051 MCR population and employment forecast? If not, what are infrastructure improvements required to service the 2051 growth forecasts?

The delta assessment demonstrates that there is currently insufficient planned or existing infrastructure to service the forecast growth, and as such additional water supply & storage infrastructure is required over what is recommended in the in-effect master plans, as detailed below.

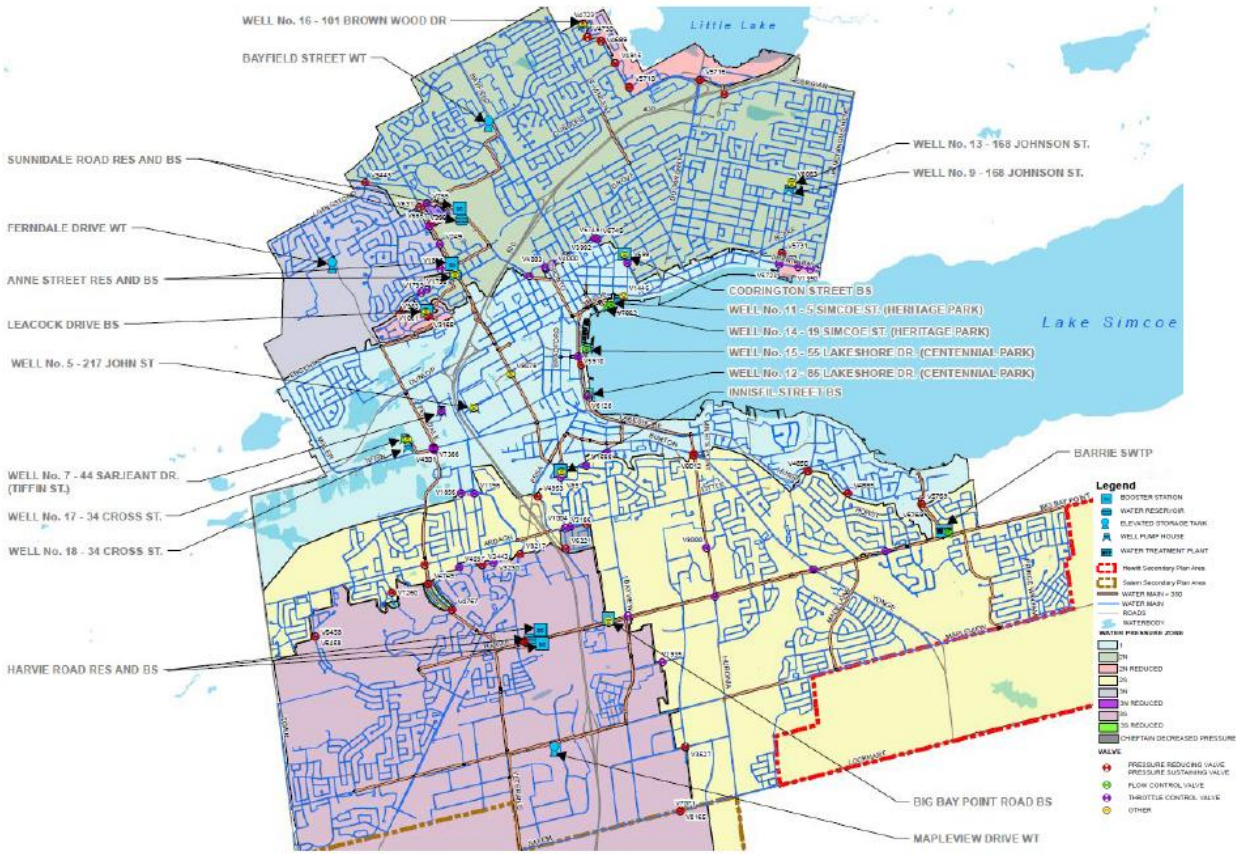
Barrie's water supply system is unique in that it is fed by both ground and surface water sources. Further, water is stored in decentralized reservoirs which service different pressure zones. See Figure 1 for an illustration of the pressure zones, wells, pump and booster stations, and reservoirs. As such the impacts on and demand for water, which are presented below according to pressure zone in Table 12, reflect the revised population and employment growth distribution that is reflected in the community structure proposed in the Adopted Official Plan.

Table 12 – Summary of Additional Water Supply & Storage Infrastructure Required to 2041

Pressure Zone	Infrastructure Need (Pump Stations & Reservoirs)	Cost
Zone 1	The revised population and employment growth distribution in the 2051 MCR Growth Forecast scenario means that Well 4a will be required before 2041 rather than after 2041 as recommended in the in-effect Master Plans.	The cost to add the required equipment and expand the pump house is approximately $2,000,000
Zone 2n	Expand Bayfield Elevated Tower reservoir to +5 Megaliters (ML) to meet the minimum fire flow requirements.	$6,000,000

Figure 3

Water Pressure Zones and Infrastructure



Question 2:

Are there any critical constraints – e.g. high water table, wetlands, contaminated soils – that would make servicing the 2051 growth forecasts not possible/feasible?

Constraints are summarized in Table 13 below.

Table 13 – Water Supply and Storage Constraints	
Pressure Zone	**Constraints**
Zone 2N	The requirement for the expansion of the Bayfield Elevated Tower reservoir will trigger a Municipal Environmental Assessment (EA). It is possible that the EA would recommend against co-locating the new Elevated Tower adjacent to the existing tower. While this location is ideal due to its elevation and space available, the exact location of the new reservoir tower will be unknown until the EA is completed.
Zone 2S	The Surface Water Treatment Facility ('SwTF') will need to be rerated. Re-rating the SwTF would require increasing capacity at the low lift booster pump station, identifying, minor process optimization/improvements throughout the SwTF, and revising operating temperature of filter membranes.

Question 3:
Can any infrastructure improvements thought to be required be deferred?

It is anticipated that the Salem Reservoir could be downsized from 20ML to 15ML within the 2041-time horizon, and only if growth in this pressure zone, being Zone 2S, remains modest post 2041. However, due to the large amount of growth directed to this pressure zone over the 2041-2051 period – for which infrastructure need has not been determined – it is unlikely that this deferral is feasible.

Question 4:
Are there any other considerations planning staff should be aware of?

As indicated in the answer to question 1, a new well, being Well 4a, is anticipated to be required before than forecast in the Master Plans. This well is currently not constructed. It is possible that Well 19, which is partially constructed, could supply the water needed for pressure zone 2N. However, it is not possible to determine if this is appropriate at this scale. Rather, a new Master Plan, or update thereof, will be required to determine if Well 19 can adequately supply pressure zone 2N, eliminating need for the construction for Well 4a. Further, a new Master Plan, or update thereof, will need to consider whether the Salem Reservoir should consist of two 10ML tanks, as currently proposed, or four 5ML tanks.

Question 5 (Cumulative Impact):
Please describe the cumulative impact of the 2051 population and employment growth on this infrastructure asset type. Specifically, please speak to any capacity limitations and any infrastructure improvements needed to service the 2051 growth forecasts.

Given the nature of Barrie's water supply system, a cumulative system impact assessment is not required. Rather, impacts were assessed at the pressure zone level. However, consideration was given for how impacts on one pressure zone affect another pressure zone, particularly where pressure zones share infrastructure, a well or water reservoir (e.g., pressure zone 1 partially feeds zone 2N and all of 3N, but no others).

Impact of service sharing was not considered as part of this delta assessment.

2041-2051 Period

As mentioned in the limitations section of this chapter, delta assessments were only completed for certain assets for the 2041-2051 period. While the city's Water supply and storage system is decentralized and pressure zone-based, staff determined that delta assessment for the 2041-2051 was possible – due to additional growth being directed to specific areas of the city, and the complexity of the delta assessment being lower due to the few water supply and storage assets involved – and necessary.

Table 14 below outlines the additional infrastructure estimated to be required to service the 2041-2051 population and employment growth in the MCR Growth Forecast. In total, the additional infrastructure is estimated to cost $44 million dollars, with most of this cost being driven by the need to expand the Surface Water Treatment Facility (SwTF) to 18 ML ($34,400,000). The need for additional infrastructure is driven largely by increased population and employment densities in specific pressure zone, with the biggest impact being observed in pressure zone 2n, triggering the need for expansion the SwTF.

Table 14 – Summary of Additional Water Supply and Storage Infrastructure need for 2041-2051		
Pressure Zone	**Infrastructure Need (Wells, Pump Stations, & Reservoirs)**	**Cost**
Zone 1	Well 3a	$2,000,000
Zone 2s	Expand SwTF to 90 ML	$34,400,000
Zone 2n	Upgrade Anne BPS from 189 l/s to 201 l/s	$1,800,000
Zone 3s	Upgrade Salem BPS from 400 l/s to 460 l/s	$1,200,000
	Total	$43,900,000

Water Distribution

Question 1:

Is the existing or planned infrastructure sufficient to service the 2051 MCR population and employment forecast? If not, what are infrastructure improvements required to service the 2051 growth forecasts?

The water distribution delta assessment demonstrates that there is insufficient existing and planned infrastructure to service the forecast growth to 2051, and that additional infrastructure investments are required than recommended in the in-effect master plan.

A list of water distribution infrastructure required to service the forecast growth is summarized in Table 15 (next page). The results of the delta assessment are organized according to community structure element. In certain cases community structure elements are broken down into sub components. For example, the Bayfield Strategic Growth Area (SGA), which extends from the intersection of Bayfield Street and Sophia Street to just north of Bayfield Street and Hanmer Street, is broken down into smaller segments. These smaller segments are numbered and identified in Figure 2.

As was anticipated, the greatest amount of additional water distribution infrastructure required is within the intensification areas such as the Urban Growth Centre and the Strategic Growth Areas. This additional need for infrastructure is expected as the 2051 MCR Growth Forecast scenario directs a greater amount of growth to lands within the Built-Up Area than the Reference Scenario used to inform the Master plans.

The additional linear water infrastructure recommendations in the table below are based on meeting Barrie's fire flow requirements. Minimum fire flow requirements are much greater than maximum daily demands. In some cases where fire flows were close to meeting Barrie's requirements watermain upgrades were not recommended due to a combination of cost, limited benefit, and water quality considerations.

The recommendations in the table below are all less than 400mm in diameter and are therefore local benefit and are typically constructed or financed by developers. The red lines on Figure 4 (next page) depict the location of the watermain improvements summarized in the Table 15.

Table 15 – Summary of Additional Water Distribution Infrastructure Required to 2041		
Community Structure Element/Policy Area	**Infrastructure Need (Watermains)**	**Cost**
Urban Growth Centre	85 meters of 150mm watermain	$116,000
Allandale MTSA	550 meters of 300mm watermain	$1,031,000
Bayfield SGA – North of Livingstone	510 meters of 250mm watermain	$831,000
Bayfield SGA – Highway 400 to Cundles Road	545 meters of 250mm watermain	$891,000
Bayfield SGA – Highway 400 to Sophia Street	220 meters of 200mm watermain	$330,000
Essa/400 SGA (West)	980 meters of 200mm watermain	$1,466,000
Yonge St/Big Bay Point Road SGA	550 metres of 300mm watermain	$1,039,000
Essa Road/Mapleview Drive SGA	1290 metres of 300mm watermain	$2,419,000
Remaining Built-Up Area lands (various locations)	350 meters of 300mm watermain	$521,000
Salem and Hewitt's DGA	4310 meters of 300mm watermain	$1,650,000
Remaining DGA (outside Salem and Hewitt's)	1046 meters of 200mm watermain	$1,561,000
	Total	$17,456,000

Figure 4

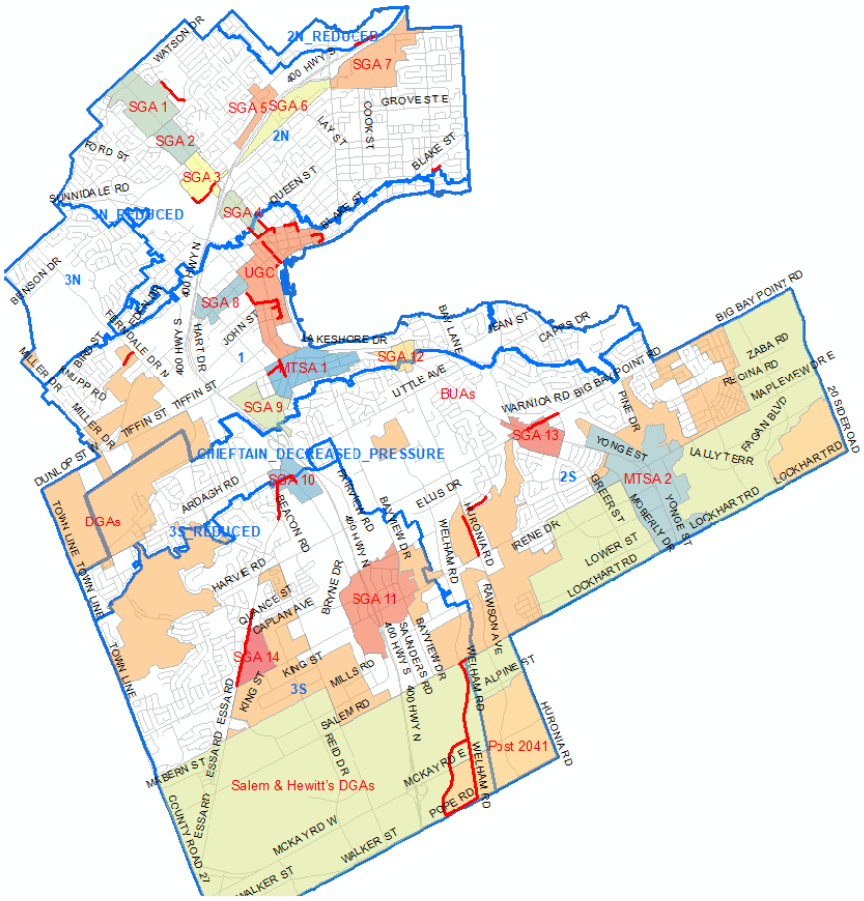


Figure 4 - The additional water distribution required, as described in Table 15, is identified by red lines.

Question 2:

Are there any critical constraints – e.g. high water table, wetlands, contaminated soils – that would make servicing the 2051 growth forecasts not possible/feasible?

In almost all cases, the most significant constraint to upsizing infrastructure to service the 2051 MCR Growth Forecast is the age and condition of existing infrastructure. Older infrastructure is susceptible to damage during excavation or when connecting older infrastructure to newer, larger infrastructure. As such, the costs for upgrading water distribution infrastructure, as outlined in Table 15, may be greater than reported.

High ground water, particularly around the historic centre of Barrie, have been identified as potential constraints to upsizing infrastructure in order to service the 2051 MCR Growth Forecast. High ground water caused challenges during excavation and construction, such as the need for dewatering. This may increase costs and poses a safety issue for construction crew.

Lastly, water contamination issues have been cited as a constraint. Locations of former industrial operations, such as the waterfront tannery, have introduced contaminants into the soil due to negligence, poor environmental practices, or improper storage and waste management. The contaminants in are presently 'stored' in the soil. Disturbing contaminated soil may result in the release of said contaminants into the environment and potentially into the municipal water system should infrastructure be damaged

during excavation/construction. As a result certain infrastructure improvements may be prohibitively expensive or dangerous to undertake, potentially limiting built form/development potential in the area.

Question 3:
Can any infrastructure improvements thought to be required be deferred?

Due to the reduced land need to 2041, certain watermain improvements in which were anticipated to be required by 2041 can be deferred. Specifically, approximately 4.3km of local benefit watermains can be deferred in the Salem DGA and 6.5km of local benefit watermains are deferred in the Post 2041 Hewitt's DGA. As these watermains are less than 400mm, and subject to local benefit – meaning the costs of their construction are to be paid for by developers/builders – there is no direct cost savings to the City. However, it is anticipated that the deferral of these watermains will lead to reduced operating costs.

Question 4:
Are there any other considerations planning staff should be aware of?

It is anticipated that additional, short term water distribution infrastructure will be required within the Salem and Hewitt's DGAs as they develop. The purpose of this additional, short-term infrastructure is to ensure adequate system security and redundancy as they system is built out. The additional costs for the installation of this short-term infrastructure will be paid by builders/developers.

Question 5 (Cumulative Impact):
Please describe the cumulative impact of the 2051 population and employment growth on this infrastructure asset type. Specifically, please speak to any capacity limitations and any infrastructure improvements needed to service the 2051 growth forecasts.

The cumulative Max Day Demand (MDD) impacts resulting from population and employment growth changes associated with the 2051 MCR Growth Forecast are small in relation to meeting fire flow requirements. As such, the 2051 MCR Growth Forecast is unlikely to result in any upsizing of existing or proposed transmission watermains that have not already identified in the 2019 Water Distribution MP. Furthermore, proposed developments in each pressure zone are spread over large areas and the design of the City's water supply and looped system, which is a looped network with many redundancies, will further mitigate local impacts.

Wastewater Collection

Question 1:
Is the existing or planned infrastructure sufficient to service the 2051 MCR population and employment forecast? If not, what are infrastructure improvements required to service the 2051 growth forecasts?

The delta assessment demonstrates that there is currently insufficient planned or existing wastewater collection infrastructure to service the forecast growth, and as such additional wastewater collection infrastructure is required over what is recommended in the in-effect master plans, as detailed below.

The wastewater treatment master plan includes a ±12,000m^3 peak hourly flow attenuation facility at the Wastewater Treatment Facility (WwTF). This facility would provide temporary storage of peak hourly sewage flows and mitigate the adverse affects of these flows exceeding the affective treatment capacity of the WwTF. Without the attenuation facility, complex processes that treat the sewage would become

destabilized and ineffective at treating the income wastewater. This attenuation facility is required now and continues to be required in the 2051 MCR Growth Forecast.

The anticipated wastewater collection infrastructure improvements identified in Table 16 (below), and illustrated in Figure 4, were derived using Barrie's Wastewater Collection Policies and Design Guidelines. Like other infrastructure asset types discussed earlier in this chapter, the anticipated improvements are organized by community structure element/policy area. The improvements are organized in this way as they are triggered by the population and employment growth distribution in the 2051 MCR Growth Forecast, which itself is modelled after the community structure in the Adopted Official Plan. Please see Figure 3 for map identifying locations of the recommend upgrades.

Table 16 – Summary of Additional Water Collection Infrastructure Required to 2041

Community Structure Element/Policy Area	Infrastructure Need (Sewer Lines)	Cost
Urban Growth Centre	240 metres @ 450mm (Mary Street, South of Dunlop)	$389,000
Barrie South Go MTSA	Redirect sanitary flows on Yonge Street, south of Mapleview Drive, to the Hewitt's trunk sewer.	None $429,000 – partially funded by DC
Georgian/RVH SGA	Add additional parallel sanitary sewer from Dunsmore to the Grove Street PS:	$489,000 – local benefit
Essa/400 (West) SGA	530 meters @ 450mm, along Morrow Road and Ardagh Road	$135,000 – partially funded through DCs

Figure 4

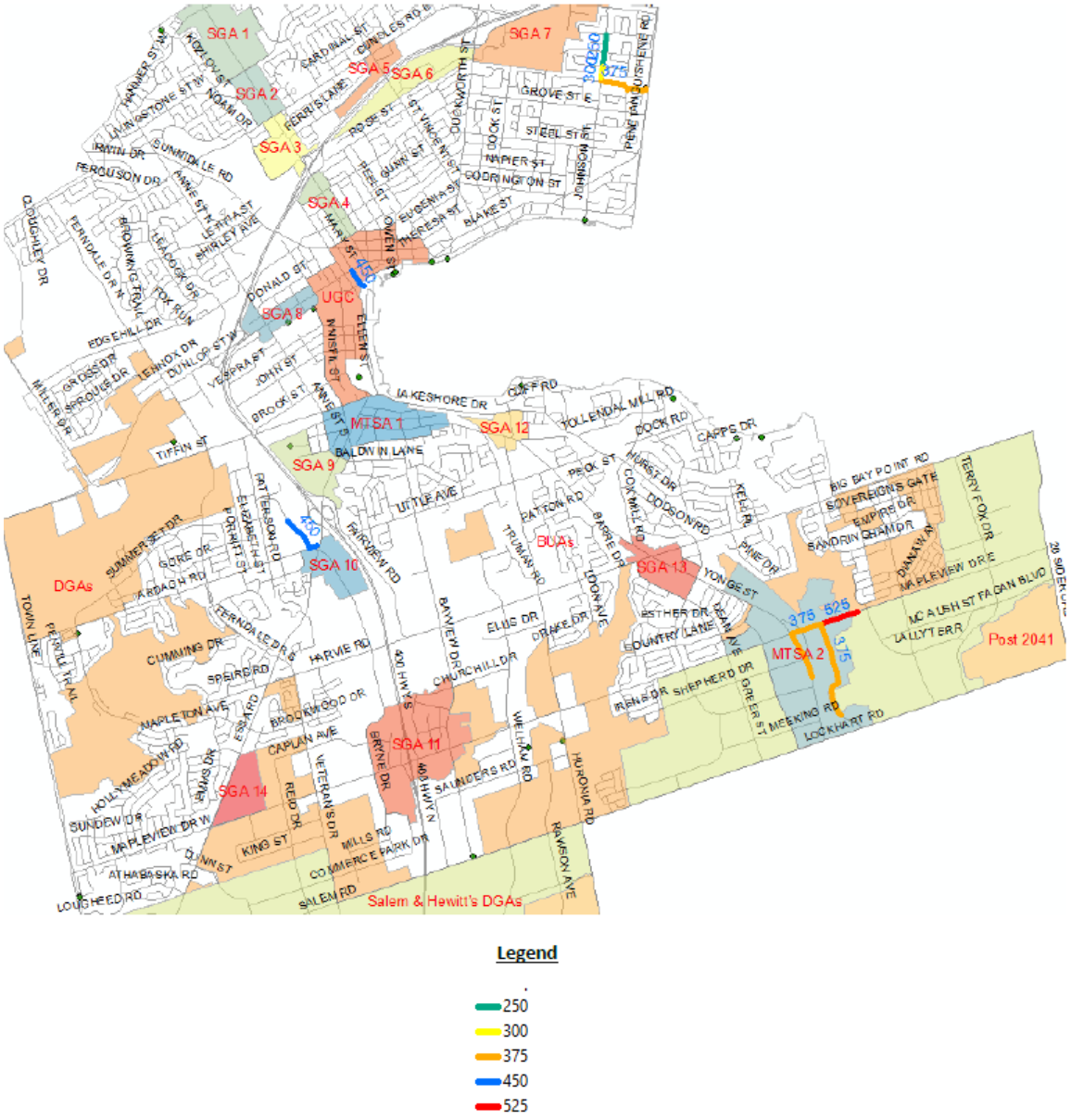


Figure 4 – The anticipated additional sewer infrastructure *needed to service the 2051 MCR Growth Forecast are identified in colour coded lines according to the legend.*

The costs in Table 16 use the same assumptions from the 2019 Wastewater Collection MP for open cut with surface restoration but assume 50% contingencies. Any sewers recommendations less than 400mm in diameter in Table 16 are local benefit and are typically funded by developers as a condition of development approval. Sewers greater than 400mm in diameter in the Salem and Hewitt's DGA are funding 100% from Development Cost Charges. Sewers in the Built-Up Area and DGA land outside of the Salem and Hewitt's DGA are funded partially from Development Cost Charges and partially from wastewater user rates.

Question 2:
Are there any critical constraints – e.g., high water table, wetlands, contaminated soils – that would make servicing the 2051 growth forecast not possible/feasible?

Similar to water distribution infrastructure, the primary constraint to all anticipated infrastructure need is the age and condition of existing infrastructure, high water table, and possible soil contamination. In addition, and only applicable to the Barrie South GO MTSA, is the complication of upgrading infrastructure under the Metrolinx rail crossing along Mapleview Drive, west of Yonge Street. It is anticipated that the need to move/relocate/alter the existing rail infrastructure will increase the cost of upgrading the existing sewer infrastructure.

Question 3:
Can any infrastructure improvements thought to be required be deferred?

As with water distribution infrastructure, some of the sewer infrastructure which was anticipated to be required by 2041 in the Salem and Hewitt's DGA can potentially be deferred until after 2041 due to a reduced land need. However, the infrastructure subject to the deferral is of local benefit, meaning it is to be constructed by developers/builders, not the City. As such, the deferral of this infrastructure represents no capital savings for the City. The potential deferral of this infrastructure, however, is anticipated to translate into reduced operating cost savings over the time. This is because that City will take possession of the infrastructure later than anticipated, shortening the time under which the infrastructure is under City ownership. Notwithstanding the above, whether this infrastructure is actually deferred depends on the pace of development in the Salem and Hewitt's DGA. Should the City grow faster than anticipated, the infrastructure identified as subject to potential deferral may be required at or before 2041.

Question 4:
Are there any other considerations planning staff should be aware of?

At present, the Royal Victoria Hospital uses water for cooling. Should this demand for water cease due to a shift to an alternate form of cooling, the wastewater infrastructure need in the applicable sewer catchment area would be reduced. However, staff are unaware of such a change occurring any time soon. On the contrary, staff are aware that RVH will expand over the forecast period. This will result in increased sewer flows which not considered as part of this delta assessment for wastewater distribution.

The in-effect Master Plan recommends the replacement of the existing sewer west of Highway 400 with a single, larger sewer. Through the delta assessment staff noted that, as an alternative, the existing sewer can be left in place, and a second sewer line be installed parallel to the existing sewer line, representing a potential cost savings.

Question 5 (Cumulative Impact):
Please describe the cumulative impact of the 2051 population and employment growth on this infrastructure asset type. Specifically, please speak to any capacity limitations and any infrastructure improvements needed to service the 2051 growth forecasts.

As the wastewater collection system is linear, rather than looped, there are no system-wide or cumulative impacts to consider. Rather, cumulative impacts are observed at the sewer catchment area level and

result in the additional infrastructure outlined in Table 16. There are no additional capacity limitations or deferrals beyond what was indicated in answers to questions 1, 2, and 3.

Wastewater Treatment

Question 1:

Is the existing or planned infrastructure sufficient to service the 2051 MCR population and employment forecast? If not, what are infrastructure improvements required to service the 2051 growth forecasts?

Barrie's waste water treatment system is centralized, with one Waste Water Treatment Facility (WwTF) servicing the entire city. The City does not own or operate any partial servicing systems, communal septic beds, or other non-traditional waste water treatment systems. As such, the impact of the forecast growth will be borne by the City's singular WwTF. As such, a policy area focused assessment is not required. Information regarding additional infrastructure required to service the forecast growth will is provided in the answer to question 5 below.

Question 2:

Are there any critical constraints – e.g. high water table, wetlands, contaminated soils – that would make servicing the 2051 growth forecast not possible/feasible?

Critical constraints are as follows:

1. Existing flood line constraints at Dyment Creek (north of WwTF) and Hotchkiss Creek (south of WwTF) will impact how the WwTF expands.
2. Permits will be required from the LSRCA for any work required within the regulated area which covers much of the WwTF.
3. Storm water management, such as the use of Low Impact Design, is a new requirement – as per LSRCA policy – and was not considered in the 2019 MP.
4. Poor soil conditions (foundational structure and piling).
5. Foundation piling to address poor soil conditions will introduce source water protection risks.
6. The additional WwTF expansion would present addition risk to groundwater supply/aquifer.
7. Property boundaries and land use changes in close proximity of the WwTF may make it more difficult to obtain regulatory approval to expand the WwTF.
8. Additional noise consideration from the additional WwTF expansion due to existing and proposed land use changes within UGC.
9. Loss of developable property due to widening of Bradford St. and Tiffin St. and other potential realignment work.
10. Road access to the WwTF for trucks and other vehicles.

Question 3:
Can any infrastructure improvements thought to be required be deferred?

No, the WwTF infrastructure requirements cannot be deferred because of the increased volumes of sewage that needs to be treated within the 2041-time horizon.

Question 4:
Are there any other consideration planning staff should be aware of?

Some of the following WwTF elements will be further studied starting in 2021. The results of these additional studies may impact which infrastructure improvements are required to service the 2051 MCR Growth Forecast and how and when those improvements are implemented.

1. Effluent pipe to outfall and outfall chamber relocation to accommodate additional primary digesters construction.
2. Outfall capacity and condition assessment to accommodate additional flows.
3. Biogas treatment and power generation.
4. Climate change impact on flood lines.
5. Site aesthetics to the neighbouring buildings in consideration of the built form proposed in the UGC.
6. Proximity to the waterfront (potential aesthetic and odour concerns).
7. Additional flows from septage disposal at the WwTF.

Question 5:
Please describe the cumulative impact of the 2051 population and employment growth on this infrastructure asset type. Specifically, please speak to any capacity limitations and any infrastructure improvements needed to service the 2051 growth forecasts.

The delta assessment demonstrates that there is currently insufficient planned or existing wastewater treatment infrastructure to service the forecast growth. As such additional wastewater treatment infrastructure is required over what is recommended in the in-effect master plans, as detailed below.

The existing 76,000 m3/day City of Barrie Wastewater Treatment Facility (WwTF) infrastructure and the planned infrastructure in the 2019 Wastewater Treatment Masterplan (MP) are not sufficient to service the 2041 Municipal Comprehensive Review population and employment forecast as a result of an increase to the growth forecast. Increased treatment capacity is required at the WwTF and this capacity may need to be implemented sooner to accommodate the 2041 OP Update growth.

Based on the MCR undertaken as part of the OP Update, the 2041 equivalent population has been calculated to be 396,616 which corresponds to ±100,000 m3/day of wastewater flow to the Barrie WwTF by 2041 or ±4,000 m3/day more than what was anticipated in the MP (the projected flows are based on an average day per equivalent population flow of 250 Litres per person per day).

The following additional improvements are required in addition to the recommendation in the Master Plan:

1. Additional in-plant storage.
2. Increased plant hydraulic capacity to handle peak flows.
3. Ability to handle peak flows in access to the Master Plan recommended peak flows.

In addition to the required improvements, which are directly related to the increased population and employment growth in the 2051 MCR Growth Forecast, the following improvements are required. Staff determined these improvements are necessary as more detailed information became available since the completion of the MP; this information was gathered though various performance metric measurements and observations since the MP was complete. These additional improvements are integral to the WwTF expansion and are needed to meet the 2041 MCR population and employment forecast.

1. New hydro substation and back up power.
2. Primary effluent screening mechanism for the MBR system.
3. Sludge loading facility.
4. Septage receiving station and side stream treatment.
5. New Operation/Maintenance building.
6. Odour control.

It is important to also consider the carbon neutrality (net zero emissions) targets when undertaking the WwTF expansion by 2041. The City has mandated to meet the carbon neutrality goals by 2050. The aforementioned goals might trigger other technology options considerations when expanding the system.

Cost to add additional 4,000 m_3/day average day treatment capacity to the WwTF within the 2041 time horizon has been estimated at $50.8 million. This cost assessment has taken site constraints, complex retrofit and poor soils into consideration. This cost was calculated using latest costs information from the capital plan.

2041-2051 Period

The 2041-2051 period adds substantially more growth to lands within the current municipal boundary than previously forecast in the population and employment growth distribution prepared by Watson in 2018. As a result of this increase an additional 16,000m3 of treatment capacity is required at the existing WwTF. Staff estimate that the required expansion will cost approximate $139 million, which is in addition to the $46 million required for the period up to 2041. These costs have taken potential regulatory issues, site constraints, complex retrofit, staging and poor soils into consideration and was calculated using latest costs information from the capital plan.

Drainage

Question 1:

Is the existing or planned infrastructure sufficient to service the 2051 MCR population and employment forecast? If not, what are infrastructure improvements required to service the 2051 growth forecasts?

No additional drainage infrastructure is required over the recommendations in the 2019 Drainage Master Plan. This result may seem counterintuitive given the large amount of development forecast for Barrie over the planning horizon, but it is not unexpected. This is because the 2019 drainage MP recommended that infrastructure be sized to include a 20% increase in flows over existing conditions to account for climate change and minor increases in imperviousness from non development related activities throughout the City. Further, the recent LID and volume control requirements in the latest drainage guidelines from Barrie, LSRCA and MECP mean that any redevelopment in the existing built boundary should result in a net benefit to the natural environment and reduce strain/impact on the City's drainage infrastructure. It is also expected that local storm sewers that convey the minor storm event flows will be upgraded either as part of development approval, via local benefit, or be included as part of ongoing capital transportation improvements.

Question 2:

Are there any critical constraints – e.g. high water table, wetlands, contaminated soils – that would make servicing the 2051 growth forecasts not possible/feasible?

As noted in discussions related to other infrastructure asset types, Barrie's historic neighbourhoods, particularly those along the waterfront and in the UGC, have poor soil conditions and soil contamination. Theses areas, which are anticipated to see significant re-development over the forecast period, have limited stormwater management capacity. Therefore, new developments will need to incorporate stormwater management on site or through local benefit. In both cases, the aforementioned poor soil conditions will introduce complexity and therefore cost, but neither are seen as constraints that would prohibit development or the 2051 MCR Growth Forecast from being accommodated as proposed in the Adopted Official Plan.

Question 3:

Can any infrastructure improvements thought to be required be deferred?

Yes, stormwater infrastructure in the Salem and Hewitt's DGA which was anticipated to be needed by 2041 can potentially be deferred to the post 2041 period due reduced land need. The deferral of this infrastructure would be confirmed through an update to the master plans. These deferrals are outlined in Table 17 below.

Table 17 – Summary of Drainage Infrastructure not required to 2041

Location	Potential Deferrals
Salem DGA	Drainage on 4.3km of roads (11.3 lane kms of road)
Hewitt's DGA	6.5km of roads (15.2 lanes kms of road)

Question 4:
Are there any other considerations planning staff should be aware of?

There are several ongoing capital projects which will result in or trigger drainage infrastructure improvements. For example, bridge replacements may trigger culvert upgrades or replacements, as doing such would is only possible when excavations are underway as part of the bridge replacement. These costs of these draining infrastructure improvements are included in the broader transportation infrastructure upgrades.

Question 5 (Cumulative Impact):
Please describe the cumulative impact of the 2051 population and employment growth on this infrastructure asset type. Specifically, please speak to any capacity limitations and any infrastructure improvements needed to service the 2051 growth forecasts.

The City of Barrie stormwater/drainage management system, like the water distribution system, is decentralized, with individual catchment areas and drainage basins and receiving bodies. As such, the delta assessment for this infrastructure type does not need a cumulative assessment. Rather, the assessment is completed at the catchment area level.

Transportation

Everyday, residents, visitors, and businesses interact with and rely on the City's transportation network. As such, Barrie's transportation network is a highly visible infrastructure asset. It is also the largest asset class owned by the City, subject to significant wear and the most costly to build and maintain. The additional population and employment growth forecast for Barrie by 2051 will put additional pressure on the transportation network. Further, additional infrastructure improvements, beyond what is recommended in the transportation master plan, are expected.

Additional limitations

Transportation demand, being the need for transportation infrastructure, is unlike water distribution or wastewater treatment demand. That is, the City's transportation network absorbs traffic flows in a dynamic manner – when demand is high, traffic flow towards nearest available avenue of travel and when that is not possible traffic volumes exceed road capacity, resulting in reduced levels of service that manifest as longer wait times, lower travel speeds, and congestion. Water infrastructure, however, is more static as pipes cannot operate beyond their designed capacity. Further, there are often multiple solutions through which the City can address increases in demand for transportation (e.g., road widening, improving transit service, providing HOV lanes, improving active transportation facilities, or a combination of solutions). In contrast, demand for water infrastructure cannot be addressed in such a way; solutions are either to increase capacity or increase conservation. While there are multiple solutions for meeting transportation service needs, due to the limited scope of the delta assessment, staff relied on the in-effect transportation master plan to quantify infrastructure need resulting from the 2051 MCR Growth Forecast. This means that alignment with the TMP has been maintained; in other words, should the TMP recommend widenings for certain transportation network elements, and should those elements reach capacity by 2051, the solution would be to continue to widen the street rather than explore and analyze alternatives.

As with other assessments, this means quantifying how much more (or less) infrastructure is needed to service the forecast growth. However, as the transportation master plan is based on a population and employment distribution that is significantly different than the 2051 MCR Growth Forecast, some of the recommendations proposed in the master plan are no longer required or appropriate. These obsolete recommendations cannot be categorized as deferrals as they will never be required. Rather, different solutions will be required. As the scope of the delta assessment excludes the development of infrastructure demand solutions – such work is expected to be done as part of a new transportation master plan – staff could only extrapolate need based on existing recommendations, even if such recommendations are no longer appropriate. This means that the delta assessment for transportation infrastructure is less accurate than the assessments completed for water related infrastructure. Despite this limitation staff endeavored to quantify the infrastructure delta to provide some measure of impact.

It is important to note that the cost estimates associated with the transportation delta assessment are based on cost estimate practices used in the in-effect transportation master plan. Staff note that the next TMP will use a different set of cost assumptions (e.g., increased contingencies). As a result, it is anticipated that the actual cost for accommodating the 2051 MCR Growth Forecast will be greater than those reported here. However, as costs depend largely on level of service, it is not possible to quantify how the potential increase in costs. Therefore, for the purpose of this MCR and transportation delta assessment the costs and their underlying assumptions are all based on those from the in-effect transportation master plan.

Question 1:
Is the existing or planned infrastructure sufficient to service the 2051 MCR population and employment forecast? If not, what are infrastructure improvements required to service the 2051 growth forecasts?

The delta assessment for transportation infrastructure was completed at a network/city-wide level. Information regarding additional transportation infrastructure investment is provided in response to question 5 below.

Question 2:
Are there any critical constraints – e.g. high water table, wetlands, contaminated soils – that would make servicing the 2051 growth forecasts not possible/feasible?

There are no critical constraints that would prohibit the implementation of the additional infrastructure required to accommodate the 2051 MCR Growth Forecast.

Question 3:
Can any infrastructure improvements thought to be required be deferred?

As a result of the reduced land need to 2041, approximately 6km of municipal arterial/collector road improvements can be deferred to the post 2041 period. However, these roads will require renewal as their condition varies and were not designed to accommodate increased traffic volumes.

Question 4:
Are there any other considerations planning staff should be aware of?

No.

Question 5 (Cumulative Impact):
Please describe the cumulative impact of the 2051 population and employment growth on this infrastructure asset type. Specifically, please speak to any capacity limitations and any infrastructure improvements needed to service the 2051 growth forecasts.

The transportation delta assessment examines the transportation network as whole rather than specific policy areas. While location specific improvements are required to address additional traffic flows related to increased population and employment growth, an tabular breakdown is not provided. As indicated above, staff could only conduct the delta assessment by extrapolating from recommendations in the in-effect TMP. However, as some of the recommendations in the TMP are no longer appropriate (e.g. widening of particular road), staff have only used the recommendations to quantify need, such as the number of additional lanes required, but not where these additional lanes are to be provided, whether those lanes will be multi-purpose (e.g. HOV lanes) of if the lanes are to be added along the entire stretch of one road or several parallel roads. Such detailed and technical information will be provided by way of a new or updated TMP.

The delta assessment concluded that additional transportation infrastructure improvements are anticipated to be required over recommendations contained in the current Transportation Master Plan. Select intersection and corridor improvements are required with an estimated cost of $160,000,000.00. This represents an 8% increase over the current transportation infrastructure recommendations contained within the Transportation Master Plan. For reference, the cost of the TMP program, which to be implemented over the 2019-2041 timeframe, is estimated at 2 billion dollars.

The cost increase of the additional transportation infrastructure required to 2041 is based on maintaining a similar service level as today. As discussed in the limitations section of this chapter, the additional transportation infrastructure improvements recommended above do not attempt to improve service levels over and above what is recommended in the transportation master plan. Doing so would require the establishment of new service levels, which is not within the scope of this MCR. Further, transportation improvements which exceed the established service levels would be DC ineligible (i.e. could not be paid using DCs).

This translates into the transportation master plan network recommendations having very little spare capacity, and thus, the 2041 MCR is triggering the requirement for select network improvements.

The infrastructure recommendations resulting from the delta assessment are subject to change as part of the planned Transportation Master Plan update, which is the nearest term opportunity to undertake this work following industry accepted practices.

Transit

Question 1:
Is the existing or planned infrastructure sufficient to service the 2051 MCR population and employment forecast? If not, what are infrastructure improvements required to service the 2051 growth forecasts?

The transit delta assessment was completed at the city-wide/network level vs. at the policy area specific level. As such, there are no policy-area specific limitations.

The results of the delta assessment indicate there is sufficient spare capacity in the transit system to accommodate growth to 2041. This is partly due to the more compact distribution of population and employment growth and the creation of population/growth centres (e.g. Strategic Growth Areas).

Question 2:
Are there any critical constraints – e.g. high water table, wetlands, contaminated soils – that would make servicing the 2051 growth forecasts not possible/feasible?

There are no critical constraints which would prohibit expanding the transit network and system beyond what is needed to accommodate growth to 2041.

Question 3:
Can any infrastructure improvements thought to be required be deferred?

Yes, due to the reduced land need to 2041, the following deferrals are possible.

- 2 buses for the McKay Industrial route.
- 1 bus for the transit on demand zone in the southeast corner of Hewitt's DGA and 1 spare bus.

These deferrals equal approximately $2.6 million dollars in savings.

Question 4:
Are there any other considerations planning staff should be aware of?

None.

Question 5 (Cumulative Impact):
Please describe the cumulative impact of the 2051 population and employment growth on this infrastructure asset type. Specifically, please speak to any capacity limitations and any infrastructure improvements needed to service the 2051 growth forecasts.

As indicated in response to question number 1, there is spare capacity in the transit system. This spare capacity is sufficient to service the 2051 MCR Growth Forecast up to 2041. System capacity beyond 2041 is unknown and will need to be evaluated as part of the upcoming new TMP or equivalent update.

Further, as indicated in response to question three, the reduced land need to 2041 indicates a potential a cost savings of $2.6 million, which is equivalent to four buses. The deferral this infrastructure will be confirmed through an update to or a new TMP.

Public Service Facilities

The purpose of this section is to document the results of the delta assessment completed for public service facilities. The information gathered through the delta assessment is used to demonstrate how the City, through this MCR, has considered the impact of the forecast growth on its public service facilities to ensure Barrie continues to grow as a complete community.

Parks, Recreation, & Community Centres

The delta assessment for community centres is based on the recommendations proposed in the 2010 Parks and Recreation Master Plan, its subsequent update in 2017, and the 2019 Outdoor Recreation Facility Study. While the 2010 Master Plan is comprehensive in addressing a broad range of public service facilities under the umbrella of parks and recreation, the 2017 update focuses on arenas/ice pads, indoor aquatics, gyms, fitness space, soccer fields and baseball diamonds, as well as space for youth and older adults. The 2019 Outdoor Recreation Facility study provides more detailed direction on:

- Rectangular sports fields
- Ball diamonds
- Cricket pitches
- Outdoor tennis and pickleball courts
- Outdoor basketball courts
- Splash pads
- Playgrounds
- Outdoor skating rinks
- Skateboard parks

As these public service facilities are planned through three different master plans, all of which were completed at different times, the delta assessment for the public service facilities is broken down into three categories. Group 1 consists of public service facilities addressed only in the original 2010 Master Plan and excluded from the 2017 update. Group 2 consists of public service facilities addressed in the 2017 Parks and Recreation Master Plan Update but exclude those addressed in the 2019 Outdoor Recreation Facility Study. Group 3 focuses on public service facilities only addressed in the 2019 Outdoor Recreation Facility Study. This approach allows staff to use the most recent information available to conduct the delta assessment for each public service facility.

Group 1: Parks and Parkland

Question 1:

Are the existing or planned public service facilities sufficient to service the forecast population and employment growth to 2051? If not, what improvements are required to service the forecast growth and what is the cost of these improvements?

The 2010 Parks and Recreation Master Plan recognizes that Barrie is an urbanizing municipality with limited opportunities for the creation of new parks and parkland through the development approval process, particularly within the Built-Up Area. At the time of writing, the 2010 master plan indicated Barrie had a total of 1,200 hectares of parkland – including 253 hectares of land in Little Lake Park, which is outside the municipal boundary. This resulted in a service level ratio of 8.6 hectares of parks and parkland per 1,000 residents. Excluding Little Lake Park, the City owns or leases approximately 310 hectares of active open space areas, resulting in a service level ratio of 2.2 hectares per 1,000 residents. This indicates that Barrie was deficient in parkland at the time the 2010 master plan was written as it was not at the standard service level ratio of 4.7 hectares of parkland per 1,000 residents.

The 2010 master plan does not recommend that Barrie attempt to reach the accepted service level ratio of 4.7 hectares per 1,000 residents. As indicated above, this is challenging for an urbanizing municipality with a fixed land area. As such, the 2010 master plan recommends that Barrie maintain the (deficient) in-effect service level ratio of 2.2 hectares per 1,000 residents. To achieve this ratio, 69 hectares of land needed to be added to the active parkland supply to meet the 2031 population growth forecast, being 210,000 residents. This need for an additional 69 hectares does not reflect parkland to be dedicated to

the City through the development approvals process in the Salem and Hewitt's DGA. As per the 2018 Parkland Master Parkland agreements for Salem and Hewitt's, the City will receive 34.86 hectares of parkland from lands subject to the agreement. The addition of new parkland dedicated to the City's parkland supply reduced the parkland need from 69 hectares to 34.14 hectares to 2031.

Barrie is forecast to grow by 88,000 people – from 210,000 to 298,000 – over the 2031-2051 period. Using the reduced service level ratio of 2.2 hectares per 1,000 people, staff estimate that an additional 193.6 hectares of parkland will be required by 2051 to service the forecast growth. This is in addition to the 34.14 hectares the City requires to 2031.

To calculate the cost of the additional 193.6 hectares of land estimated to be required by 2051 a number of broad assumptions have to be made. Firstly, it is unclear how much of the required parkland will be dedicated to the City through development on new DGA land created as a result of the settlement area boundary expansion. For this MCR report, it is assumed that 15% of the land required to 2051, being approximately 29.04 hectares, will be collected through the development approvals process, with the remaining 85%, being 164.56 hectares, will need to be collected through other means. Second, it is unclear as to how much land will be required. This is because the service level ratio of 2.2 hectares per 1,000 persons is based on a 2010 industry standard vs. a current Barrie-specific ratio based on usership rates. As the only available information at the time of writing was the service level ratio from the 2010 master plan, this service ratio used the master plan was used in this report. Thirdly, and most important, is the varying cost of land. Specifically, the cost of land is increasing rapidly in southern Ontario, introducing a high degree of uncertainty in cost estimates. Further, it is unclear how much the required parkland to 2051 will be created in Barrie or in adjacent municipalities, or if the costs will be borne by Barrie alone or will costs be spread out should Barrie partner with other municipalities to create shared park facilities.

Based on these assumptions, staff estimate that the cost of parkland is approximately $2.9 million per hectare. This is an average per hectare cost, with the cost of certain parks, such parks with programmed spaces and facilities, costing more, whereas passive or naturalized parks will cost less. At $2.9 million per heater the cost of establishing the 164.56 hectares of parkland required to 2051 is approximately $362 million.

Question 2:
Are there any critical constraints – e.g., high water table, wetlands, contaminated soils – that would prohibit the expansion of the public service facilities and therefore the ability to service the growth forecast to 2051?

Yes. In 2018 the City entered into a Master Parkland Agreement with land owners in the Hewitt's and Salem DGA. This agreement defines a pre-determined amount of parkland to be dedicated to the City through the development process for land within the Hewitt's and Salem DGA. However, the agreement is limited to Hewitt's and Salem DGA lands that are within the current settlement area boundary, which has enough DGA land to accommodate growth to 2031.

As per this agreement the total amount of land to be dedicated to the City will be 26.9 hectares in the Hewitt's DGA and 16.01 in the Salem DGA for a total of 42.91 hectares. Of that, 8.05 hectares are being dedicated as Cash-in-Lieu of parkland. Therefore, the net total actual land being dedicated to the City is 34.86 hectares. This parkland dedication remains fixed for lands and will not increase, regardless of the

number of units or people to be accommodated in the existing DGA. The DGA density target proposed in the new Official Plan will lead to an increase in the number of people to be accommodated on DGA lands subject to the parkland agreement. However, the City cannot, through the development approvals process, collect more parkland in the area subject to the agreement to provide the additional population growth with access to greenspace. As such, the City will need to look for alternate solutions to provide greenspaces for the additional population that is to be allocated in the DGA. Alternatively, the City may need to accept a revised level of service for parkland for the DGA.

Question 3:
Can any recommended improvements, thought to be required, be deferred?

As indicated in the 2010 master plan, Barrie was already deficient in meeting the service level ratio for parkland, being 4.7 hectares of parkland for every 1,000 residents. Rather, Barrie was achieving 2.2 hectares for every 1,000 residents. To maintain this reduced level of service, another 69 hectares of parkland need to be added to the supply by 2031. To maintain the reduced service level rations, staff do not recommend any reduction or deferral to the additional parkland required to maintain the already deficient standard.

Question 4:
Are there any other consideration planning staff should be aware of?

The parkland dedication agreement referenced above only applies to existing Salem and Hewitt's DGA land. Lands within the DBUA, although largely developed, and newly created DGA lands are not subject to this agreement. Therefore, it is possible for the City to develop a parkland acquisition strategy that focuses on reconciling the parkland deficit by acquiring more land within DBUA and on new DGA lands through the development review process or other means. Alternatively, and as per past practices, parkland may be acquired outside the City to address the service deficit. A comprehensive analysis of how to reconcile the parkland deficit will be completed as part of the forthcoming new parkland master plan.

Group 2: Community Centres and Sports Facilities

Arenas/Ice Pads

Question 1:
Are the existing or planned public service facilities sufficient to service the forecast population and employment growth to 2051? If not, what improvements are required to service the forecast growth and what is the cost of these improvements?

The 2017 Update to the Parks & Recreation Growth Strategy – henceforth 2017 parks and recreation master plan update – uses a service level ratio/target of 1 ice pad per 19,000 residents. The planning horizon and population growth target for Barrie at the time the 2017 master plan update was written was 2031 and 210,000 people, respectively. That represented a growth of 65,500. Using the service level ratio indicated above an additional four new ice pads were required. The estimated cost of four new ice pads at that time was $40 million dollars.

Barrie is forecast to grow by another 88,000 people over the 2031-2051 period. Using a ratio of 1 ice pad per 19,000 residents, Barrie will need an additional 4 ice pads to service the population growth over the 2031-2051 period. Accounting for inflation, the approximate cost for the additional four ice pads is estimated to be $44 million dollars.

As per past practice, new arenas and ice pads will be co-located with other community facilities such as indoor aquatics, gyms and fitness space in a new community centre. Therefore, the costs of new ice pads and arenas will be aggregated with the costs of other community facilities. The cost of a new community centre with co-located facilities is approximately $90-$110 million dollars.

Question 2:
Are there any critical constraints – e.g., high water table, wetlands, contaminated soils – that would prohibit the expansion of the public service facilities and therefore the ability to service the growth forecast to 2051?

As the location of the additional ice pads is unknown at the time of writing, it is not possible to determine whether there are any critical constraints which would prevent the construction of the required ice pads.

Question 3:
Can any recommended improvements thought to be required by be deferred?

No, staff do not recommend reducing the level of service or deferring the provision of additional ice pads to service the 2051 MCR Growth Forecast**.**

Question 4:
Are there any other consideration planning staff should be aware of?

A major limitation of the needs assessment completed for the 2017 master plan update, and therefore a limitation of this delta assessment, is the lack of registration level data to conduct the needs assessment. With access to registration level data, it would have been possible to evaluate community demand for ice pads based on actual usage. As no such information was available at the time the master plan was written, as standard service level was assumed, being 1 pad for every 19,000 residents. It is possible that with registration level data the need for ice pads may be different than what is forecast using the standard service level.

Indoor Aquatics, Gyms, and Fitness Space

These three public service facilities are often co-located in one facility or community centre and recommended to be co-located in the 2017 master plan (pg. 13). Therefore, they are grouped here under one subheading.

Question 1:
Are the existing or planned public service facilities sufficient to service the forecast population and employment growth to 2051? If not, what improvements are required to service the forecast growth and what is the cost of these improvements?

Indoor Aquatics
The 2017 master plan update indicates that an additional 1.6 indoor aquatic facilities will be required by 2031 to service a population of 210,000 people. This need assessment was based on a service level ratio of 1 aquatic centre for every 45,000 residents. No cost estimate was provided for these 1.6 additional pools.

When the standard ratio is applied to the 2031-2051 population growth of 88,000 people, staff estimate that another two aquatic centres will be required by 2051. The 2017 master plan update indicates that the pools required up to 2031 be full size pools. Based on this recommendation, it is assumed that the pools required for the 2031-2051 period will also need to be full size pools.

As per past practice, new aquatic facilities will be co-located with other community facilities such as ice rinks/pads, gyms and fitness space in a new community centre. Therefore, the costs of new ice pads and arenas will be aggregated with the costs of other community facilities. The cost of a new community centre with co-located facilities is approximately $90-$110 million dollars.

Gyms

The 2017 master plan update relies on a standard service level ratio of 1 gym per 45,000 residents to conduct a needs assessment to 2031. Using this ratio the 2017 master plan estimates that an additional 2.1 gyms will be required by 2031. Using the same ratio for the 2031-2051 period, staff estimate that another two gyms will be required by 2051. The 2017 master plan update does not indicate the size of the gyms required for the 2017-2031 period. Therefore, staff cannot estimate the size of the additional gyms required for the 2031-2051 period.

As per past practice, new gyms will be co-located with other community facilities such as ice rinks/pads, indoor aquatics, and fitness space in a new community centre. Therefore, the costs of new ice pads and arenas will be aggregated with the costs of other community facilities. The cost of a new community centre with co-located facilities is approximately $90-$110 million dollars.

Fitness Space

The 2017 master plan update uses a service level ratio of 1 equipment-based fitness centre for every 45,000 residents. Based on this ratio, an additional five equipment-based fitness centres are required by 2031. Using the same service level ratio for the 2031-2051 period, staff estimate that an additional 2 equipment-based fitness centres will be required by 2051. The size of these additional fitness centres is not provided due to the lack of a market assessment being completed at the time the 2017 master plan update was written. Further, no cost estimates were provided for the construction of the fitness centres required by 2031. As such, staff are unable use the 2017 master plan update to estimate the cost for the additional two fitness centres required by 2051.

As per past practice, new fitness space will be co-located with other community facilities such as gyms, ice rinks/pads, and indoor aquatics in a new community centre. Therefore, the costs of new ice pads and arenas will be aggregated with the costs of other community facilities. The cost of new community centre with co-located facilities is approximately $90-$110 million dollars.

Question 2:

Are there any critical constraints – e.g., high water table, wetlands, contaminated soils – that would prohibit the expansion of the public service facilities and therefore the ability to service the growth forecast to 2051?

The assessment of critical constraints could not be completed at this time as the location or size of facility required is unknown.

Question 3:
Can any recommended improvements thought to be required by be deferred?

No, none of the improvements required to service the 2051 MCR Growth Forecast can be deferred**.**

Question 4:
Are there any other consideration planning staff should be aware of?

The 2017 master plan update for these public service facilities relies on standard service levels to quantity need to 2031. These standard service levels are population driven. The 2017 master plan notes that while the use of these ratios is appropriate at a high-level, but more detailed information collected through a market analysis for equipment-based fitness centers is required to determine details such size of facility and type of equipment provided.

The 2017 master plan update indicates that the existing fitness space facilities were at capacity at the time of writing (pg. 13). Therefore, future fitness space facilities yet to be constructed should feature greater square footage than what is currently being provided to meet anticipated demand.

Group 3: Outdoor Recreation Facilities

Outdoor recreation facilities, such as soccer fields and playgrounds are the last group of public service facilities related to parks and recreation are addressed through the 2019 Outdoor Recreation Facility Study. This study provides direction on the recreational facilities to be provided within existing and planned parks, as well as what recreational facilities are required in new and yet to planned parks, to the year 2031, with some direction being provided to 2041.

The planning horizon for the 2019 Outdoor Recreation Master Plan is 2041, with detailed information only being provided up to 2031. As the plan recommends a series of investments required to service population growth to 2041 and a forecast population of 253,000 people, it is appropriate to assume that there the existing and planned outdoor recreation facilities are insufficient to service the forecast growth to 2051. However, no additional analysis was completed for outdoor recreation facilities for two main reasons. First, planning for outdoor recreation facilities requires a detailed overview of demographics and market trends. For example, shifting cultural values and increased understanding sports medicine may result reduced interest in contact sports such as football. Without such an assessment it is difficult to evaluate need or demand for outdoor recreational facilities. Second, outdoor recreation facilities are often planned on or as part of community centres and parks. As such, planning for community centres and parks, which is required to service the growth to 2051, will facilitate planning for outdoor recreational facilities. It is on this basis that a detailed delta assessment for outdoor recreational facilities was not completed.

Libraries

The delta assessment for libraries is based on the 2018 Barrie Public Library Master Facilities Plan Recommendation Report (2018 libraries master plan).

Question 1:
Are the existing or planned public service facilities sufficient to service the forecast population and employment growth to 2051? If not, what improvements are required to service the forecast growth and what is the cost of these improvements?

At the time the library master plan was written it was estimated that Barrie will have 96,200 square feet of library floor space by 2041. As discussed in the library master plan, 96,200 square feet of library space is not an acceptable level of service. To reconcile the service deficit the master plan recommends the City create 80,900 square feet of library floor space by 2041, for a total of 177,100 square feet, using a lower-than-average service level ratio of 0.7 square feet of library floor space per resident. Included in the 177,100 total are the new libraries to be constructed in the Salem and Hewitt's DGA. Since the report was written the City added 4,500 square feet of library floor space through the establishment of a boutique library in the Holly neighbourhood. This brings Barrie's library floor space to a total of approximately 100,000 square feet at the time this MCR report was written. Therefore, an additional 77,100 square feet for library floor space are required to service population growth to 2041.

As the planning horizon for the library master plan is 2041, there is currently insufficient planned capacity to service growth to 2051. The forecast population growth for Barrie over the 2041-2051 period is 45,000 people. Using the above-mentioned ratio of 0.7 square feet per person, an additional 31,500 square feet of library floor space would be required to service the 2041-2051 population growth. This is in addition to the 77,100 square feet already required.

The 2018 libraries master plan does not provide clear cost estimates for the construction of the library floor space required to service the forecast growth. Based on the estimated costs of construction for the new Salem library, being approximately $14,000,000 for a 25,000 square facility, translating to a per square foot cost of $560, the estimated cost for the additional 31,500 square feet of library floor space required to service the 2041-2051 growth is approximately $17,360,000.

Question 2:
Are there any critical constraints – e.g., high water table, wetlands, contaminated soils – that would prohibit the expansion of the public service facilities and therefore the ability to service the growth forecast to 2051?

As the proposed locations of the additional libraries recommended to service the population growth to 2041 have not been investigated (e.g., via a feasibility study or equivalent), the physical critical constraints are unknown.

Staff estimate that the significant cost of constructing the additional library floor space to 2041 and 2041 will be a critical constraint, even at the reduced service level of 0.7 square feet of library floor space per resident.

Question 3:
Can any recommended improvements thought to be required by be deferred?
No, none of the improvements required to service the 2051 MCR Growth Forecast can be deferred**.**

Question 4:
Are there any other consideration planning staff should be aware of?

Unlike other public service facilities (e.g., soccer fields), where need was likely exacerbated by a population-based service level ratio, the service deficit to 2041 referenced in answer to question one is likely the result of a lack of continued investment in libraries/maintenance of an acceptable service level

ratio. This lack of ongoing investment created has resulted in a service deficit which will be difficult to reconcile.

Fire and Police

Question 1:

Are the existing or planned public service facilities sufficient to service the forecast population and employment growth to 2051? If not, what improvements are required to service the forecast growth and what is the cost of these improvements?

Barrie Fire

The delta assessment for Barrie Fire is based on the Fire Master Plan - 2016-2025 (Barrie Fire Master Plan). While the focus of the Barrie Fire Master Plan is the 10-year period, being between 2016-2025, an outlook out to 2031 is included. A series of recommendations are proposed to enable Barrie Fire to fulfil its legislative and municipal mandate. A significant number of these recommendations focus on improving the operational capacity and efficiency of Barrie Fire, such as improved communication, public education, and training. Further, the report also features facility recommendations, such as the construction of new fire stations. However, these recommendations only extend, at a maximum, to the year 2031, when the population of Barrie was expected to be 204,720 – this figure excludes a 3% undercount and therefore is lower than 2031 forecast population of 210,000 people as per the then in-effect Growth Plan. This indicates there is currently insufficient existing fire-oriented public service facilities to address the growth forecast for the 2031-2051 period.

Using the population driven service level ratios referenced in the Barrie Fire Master Plan (pg. 76), being one fire station for every 20,000-25,000 residents, it is estimated that two additional fire stations may be required by 2051. The capital cost for constructing and outfitting of a new station, as estimated in the Barrie Fire Master Plan for south-west Barrie (pg. 93), is approximately $6,000,000. Using this figure as a reference point, it is estimated that the two additional fire stations required to service the 2031-2051 growth will be approximately $12,000,000 (not adjusted for inflation or increase in cost of materials, equipment, or apparatuses).

Barrie Police

The Barrie Police does not have a stand-alone facilities master plan. Rather, the most recent master plan equivalent document available at the time of writing was a Site Evaluation Report for the First Responders' Campus (2015). This document was prepared as part of the process for the selection of a new headquarters for the Barrie Police Service. The report compares two different sites, one being located on Fairview Road and the other on Bayview Drive. At the time of writing this chapter, the Fairview Road location had been selected as the preferred site and the campus was already under construction and near completion. As the Site Evaluation Report is the only document that evaluates facility needs of the Barrie Police Service, it was used as the basis for the assessment.

As the first responders' campus was nearing completion at the time of writing this report, staff only understood an assessment of whether the facility had sufficient capacity to meet the space requirements for the Barrie Police Service beyond 2040. The Site Evaluation Report indicates that the design of the buildings will allow for both a vertical and horizontal expansion. Further, the report indicates that specific design features need to be included in the final design of the building as to allow its expansion in the

future. Staff have confirmed with the purchasing department and Barrie polices that the building can be expanded. As a result, staff are of the opinion that the first responders' campus is adequately planned as to allow for future expansions that would allow Barrie Police to service Barrie's growth to 2051.

Staff estimate that Barrie Police will need an additional 2,200 square meters of additional space to service the population growth over the 2040-2051. This estimate is based on a needs assessment completed for the Barrie Police Service for the 2030-2040 period - see pages 8-9 of the Site Evaluation Report. At an average cost of $2,723 per square meter (see page 47 of the Site Evaluation Report), the 2,200 square meter expansion required to service the 2040-2051 population growth is estimated at approximately $6,000,000.

Question 2:
Are there any critical constraints – e.g., high water table, wetlands, contaminated soils – that would prohibit the expansion of the public service facilities and therefore the ability to service the growth forecast to 2051?

Barrie Fire
As the exact location of the additional two fire stations required to service the 2031-2051 population growth needs further determination, this delta assessment could not evaluate whether there are any critical constraints which would prohibit their construction.

Barrie Police
Critical constraints which may negatively impact the construction of the first responders' campus have been mitigated through the design of the building and the development review process. As the building is nearing, staff do not foresee any critical constraints at this time.

Question 3:
Can any recommended improvements thought to be required by be deferred?

Barrie Fire
No, staff are of the opinion that the two additional stations required by 2051 represent a minimum level of service. Further, it is anticipated that over the forecast period, being 2031-2051, additional fire stations as well as other equipment and apparatuses (e.g., pump truck) will likely reach their end of life. As the Barrie Fire Master Plan only evaluated the operational life of existing fire stations and equipment, and only until the year 2031, staff are unable to determine how many other fire stations or apparatuses, if any, will reach their end of life between 2031-2051 period. Therefore, it is reasonable to anticipate that additional costs will be incurred over the 2031-2051 period to replace aging and end of life equipment and facilities. As with all public service facilities subject to this delta assessment, detailed, technical, and solutions-oriented recommendations will need to be developed through a subsequent Barrie Fire Master Plan or update to same.

Barrie Police
It is anticipated that the First Responders Campus may need to be expanded at some point before 2040-2051 to address operational space needs of the Barrie Police Service. To maintain the same level of service

it is expected that a future expansion to the First Responders Campus will be required. The deferral of this expansion is not recommended.

Question 4:
Are there any other considerations planning staff should be aware of?

No, there is no additional information to convey at this time.

Operation Centers/Yards

Question 1:
Are the existing or planned public service facilities sufficient to service the forecast population and employment growth to 2051? If not, what improvements are required to service the forecast growth and what is the cost of these improvements?

The Yards Operations Master Plan (Ops master plan), completed in 2016, is the baseline for this delta assessment. The Ops master plan evaluates the operational needs of the roads, parks, fleet, and traffic divisions to the year 2031. Following a rigorous analysis of both qualitative and quantitative information, the Ops master plan determines that the R. A. Archer Operations Centre (Ferndale Ops Centre) is at capacity and alternatives are required for the City to maintain its current service levels to 2031. Included in this assessment is a space requirement assessment for each division. Through this assessment it is determined that each division could continue to operate out of the existing Ferndale Ops Centre if significant improvements are made.

In an effort to maximize the functional capacity of the Ferndale Ops Centre, and possibly defer the need for a satellite facility, as well as reduce its size, a Master Plan Feasibility Study was prepared for the Ferndale Ops Centre in 2020. The feasibility study recommends two options, one being expansion/renovation of the existing building/yard and the other being full reconstruction. It was ultimately determined that full reconstruction is the preferred option. Despite the operational improvements that could be achieved through the reconstruction of the Ferndale Ops Centre, the feasibility study determined that a satellite yard will be required over the long term. Further, the study recommended that the City evaluate which services could be re-located to the satellite facility as this would affect the ultimate design of the Ferndale Ops Centre reconstruction. The cost of the Ferndale Ops Centre reconstruction was estimated at $51 million.

Based on the work undertaken so far, being the anticipated reconstruction of the Ferndale Ops Centre, and the eventual constriction of a satellite yard in south Barrie, staff are of the opinion that there is sufficient planned operational capacity to service the 2051 MCR Growth Forecast. In the short term (up to 2031) staff anticipate that the reconstruction of the Ferndale Ops Centre will be sufficient to address existing operational challenges and service the forecast population growth. Staff are also of the opinion that sufficient planning has been undertaken to determine both the potential location of a satellite facility as well as its role and function in supporting the City's operational divisions over the 2031-2051 period.

Question 2:
Are there any critical constraints – e.g., high water table, wetlands, contaminated soils – that would prohibit the expansion of the public service facilities and therefore the ability to service the growth forecast to 2051?

There are no unknown critical constraints related to the reconstruction of the Ferndale Ops Centre. Rather, limitations of the Ferndale Ops Centre site have been identified through the 2020 Master Plan Feasibility Study. As a result of these limitations the need for a satellite facility was confirmed. The Ops master plan (2016) includes an analysis of potential satellite facility locations. It is anticipated that additional work will need to be completed to confirm the preferred satellite yard location. This site assessment will need to be completed following the reconstruction of the Ferndale Ops Centre once it has been determined which operation divisions will need additional space or cannot be accommodated at the Ferndale site over the forecast period. It is anticipated that critical constraint assessment will be determined at that time. Staff are of the opinion that a critical constraint assessment for these satellite locations is not required at this time as there is sufficient planned capacity at the Ferndale Ops Centre over the short term.

Question 3:
Can any recommended improvements, thought to be required, be deferred?

Due to the operational constraints at the Ferndale Ops Centre the deferral of its reconstruction is not recommended.

Question 4
Are there any other considerations planning staff should be aware of?

No.

Waste Management Facility

The delta assessment completed for Barrie's one and only waste management facility is based on the Sustainable Waste Management Strategy completed in 2012. The Waste Management Strategy had a planning horizon of 20 years (2032) and a targeted population of 200,000. This figure is 10,000 persons less than the 2031 population forecast of 210,000 for Barrie as per the then in-effect Growth Plan. The Waste Management Strategy is more than just an operational needs assessment. Rather, it is a comprehensive strategy aimed at improving public awareness to reduce waste production through diversion, new programs (e.g., green bin/organics collection), and at improving operational efficiencies.

Question 1:
Are the existing or planned public service facilities sufficient to service the forecast population and employment growth to 2051? If not, what improvements are required to service the forecast growth and what is the cost of these improvements?

As noted in the introduction to this delta assessment, the original 2012 Waste Management Strategy only extends to 2032. This planning horizon is recommended to be extended every five years. These incremental extensions would see the Solid Waste Management Strategy expand to and match the planning horizon of the 2051 MCR Growth Forecast. If this policy environment/framework was to continue to be in place, staff would be satisfied that sufficient planning has been done to ensure Barrie will be able to serve the growing population over the forecast period, being to the year 2051. In conducting this delta assessment staff learned that the 2019 update to the 2012 Waste Management Strategy was halted as a

result of regulatory changes at the Provincial level. To complement these changes the City has adopted a circular economy approach as of March 2021.

It is anticipated that the circular economy approach, along with recent Provincial policy and legislative changes, will extend the life of the landfill. At this time, however, it is too early to determine what impact the circular economy approach, in combination with regulatory changes, will have on the City's landfill or what additional improvements are required to the waste management facility to adapt to a new waste management paradigm. At the time of writing the City was implementing a series of short-term initiatives to implement the circular economy approach and respond to regulatory changes. It is anticipated that medium and long terms waste management planning will be undertaken shortly. Based on the ongoing work staff are satisfied that sufficient work has and will continue to be completed to ensure the waste management facility or its equivalent, will be adequate to service the growth forecast for Barrie in the 2051 MCR Growth Forecast.

Question 2:
Are there any critical constraints – e.g., high water table, wetlands, contaminated soils – that would prohibit the expansion of the public service facilities and therefore the ability to service the growth forecast to 2051?

Lack of space to expand the landfill was noted as a critical constraint in the 2012 Waste Management Strategy. Based on diversion and waste production rates at the time the 2012 Waste Management Strategy was written the landfill was estimated to be full by 2035.

It is anticipated that the shift to a circular economy model and new regulatory changes will extend the life of the landfill. At the time this delta assessment was completed, staff had insufficient information to determine if, and by how much, the circular economy approach and changes to Provincial regulation would extend the life of the landfill. This work is currently underway and it is anticipated that this critical constraint, being the lack of space, is a key consideration.

Question 3:
Can any recommended improvements, thought to be required, be deferred?

No, staff do not recommend that any improvements, particularly those that can extend the life of the landfill, be deferred.

Question 4:
Are there any other considerations planning staff should be aware of?

Staff anticipate that additional improvements will be required to the entire waste management system, from collection to storage, to adapt to a circular economy paradigm. As this new approach is currently in its implementation phase, staff are unable to determine what additional improvements are required or how much they cost.

Conclusion

This chapter of the MCR report provides an overview of the work completed to determine the city's ability to service the forecast growth. This work was driven by the need to demonstrate that the City is planning for growth in a comprehensive manner and will continue to conform to the Growth Plan. The second yet equally important goal of this chapter is the demonstration – to the public, stakeholders, businesses, and

Council – that the implementation of the new Official Plan is supported by in-depth and rigorous work which has been completed and will be further supplemented with future master planning work. Further, this chapter demonstrates that the implementation of the new Official Plan is done in a holistic manner by assessing the impact on and demand for infrastructure and public services facilities City-wide, and not just for areas of anticipated growth/being added to the Settlement Area or subject to an employment area land conversion. In this sense, the work summarized by staff in this chapter is true to the *One City, One Vision, One Plan* philosophy that underpins every policy in the new Official Plan.

Results of Delta Assessments & Next Steps

This chapter provides a summary of the work, which took the form of delta assessments, completed by staff to examine whether existing and planned infrastructure and public service facilities have the capacity to service the forecast growth. This chapter also documents the results of the delta assessments.

As outlined in the results section of this chapter there is currently insufficient capacity in existing and planned infrastructure and public service facilities to service the forecast growth to 2051. This result is not surprising given that none of the in-effect infrastructure and public service facilities master and strategic plans have a planning horizon of 2051. The 2051 horizon came out of the Growth Plan update in 2020 that provided an expanded time horizon. While staff had hypothesized that service deficits would be identified through the delta assessments, it was unclear which infrastructure or public service facilities would require additional investment to service the forecast growth or how much such investments would cost. Further, the delta assessments effectively 'ground truth' the community structure and growth management strategy proposed in the new Official Plan by demonstrating that both are feasible and can be serviced once the additional infrastructure and public service facilities investments are made. The planning of the additional infrastructure and public service facilities required to service the forecast growth will be completed following the adoption of the new Official Plan through the development of new master and strategic plans.

Chapter 4: Financial Viability

Introduction

This final chapter of the MCR report provides an outline of how Barrie will cover the costs of the additional infrastructure and public service facilities required to service growth forecast to 2051 while maintaining financial viability. In doing so this chapter demonstrates how the implementation of the new Official Plan is supported financial planning practices which are in keeping with the Growth Plan. Of particular interest are policies related to planning for growth in a financially responsible manner, such as Growth Plan policy 2.2.8.3.b), which asks municipalities to consider the life cycle costs of the infrastructure and public service facility assets needed to support forecasted growth.

Background

As highlighted in chapter 3 of this report, additional infrastructure and public service facilities are needed to service the 2051 population and employment growth forecasts. This result was anticipated as none of the infrastructure and public service facilities master and strategic plans in-effect at the time this MCR work was completed had a planning horizon of 2051. Therefore, new master and strategic plans, or updates to the same, are required to support the implementation of the new Official Plan. However, the detailed, technical, and solutions-oriented work – being the planning of new infrastructure and public service facilities – is not being completed as part of this MCR. Rather, the implementation of the new Official Plan was planned to trigger the development of new infrastructure and public service facilities master and strategic plans.

While the detailed planning for infrastructure and public service facilities will be done following the implementation of the new Official Plan, it is important to, in the interim, demonstrate to Council, to the public, and to the Ministry of Municipal Affairs and Housing, that the City has the appropriate financial tools in place to properly plan for the infrastructure and public service facilities needed to support the forecasted 2051 population and employment growth. Moreover, in association with demonstrating the City's fiscal ability to support the realization of the 2051 growth targets, this chapter – in accordance with Growth Plan policy 2.2.8.3 – will also demonstrate that the proposed *settlement area* expansion and employment area conversions are feasible as both can be supported by infrastructure and public service facilities that will be financially viable over their life cycle.

Summary of Need

This section provides a high-level summary of the infrastructure and public service facilities required to accommodate the population and employment growth forecasts for Barrie as per Schedule 3 of the Growth Plan. This summary of need also includes what is needed to service development on lands subject to employment area land conversion as well as growth directed to new DGA land created through the expansion of the settlement area boundary.

A breakdown of the additional infrastructure and public service facilities estimated to be required to service the forecast growth is provided in Tables 6 and 7 in chapter 3 of this report. As is expected, the costs associated with accommodating the forecast growth, particularly for infrastructure, are significant. In total, the estimated cost of the infrastructure required to service the forecast growth is upward of $417,456,000 (in 2021 dollars). The costs of this additional infrastructure will be spread over a 30-year period, between 2021-2051.

This cost estimate, however, is anticipated to be lower than the ultimate actual cost for several reasons. Firstly, as discussed in the limitations section of chapter 3, staff could not complete a delta assessment for certain infrastructure assets for the 2041-2051 period. As such, the costs for these assets are not included in the figure reported. Secondly, the figure reported does not account for increases in construction cost, inflation, and land value. This is exacerbated by the timeframe of the planning horizon, being 30 years, over which the costs of land and construction are expected to increase considerably. Lastly, the delta assessments conducted for this MCR only provide coarse and high-level estimates for infrastructure need. Actual costs will be determined through new master plans that will rely on most up-to-date cost estimate practices. Further cost increases are expected as a result of increased complexity of the design of infrastructure. For example, stormwater management infrastructure will need to be designed to be resilient against climate change while street cross-sections will become more complex as Barrie continues to urbanize, offer more mobility options, and as the City adopts a complete streets approach to street design. Therefore, the figure reported above should only be viewed as reference point, one which confirms that additional investments in infrastructure will be required, and that these costs will need be determined through more detailed planning processes and will need to be accounted for in future financial planning exercises.

The costs tabulated for new or expanded public service facilities are also significant, with approximately $508,360,000 worth of additional investment in public service facilities being required to service growth to 2051. Similar to infrastructure, this cost is estimated to be lower than the actual costs. The primary reason for this being the length of the planning horizon, being 2021 to 2051, during which costs for land, construction, and materials are expected to increase. Further, unlike infrastructure, for which the service ratios remain relatively constant over time, residents' interests diversify and needs change over time. As a result, the City will need to adopt new practices to deliver an even broader array of services, resulting in a higher cost to operate public service facilities than estimated in this report.

The remainder of this chapter will demonstrate how the estimated cost of the additional infrastructure and public service facilities required to service the forecast growth will be reconciled and absorbed over the long term to ensure their financial viability.

Financial Planning Tools

The City of Barrie uses a series of complex and integrated financial planning tools to ensure that the City can provide and pay for the infrastructure and public service facilities required to service the forecast population and employment growth. The remainder of this chapter highlights each of these tools to demonstrate that the City has and will continue to plan for infrastructure and public service facilities in fiscally sustainable manner to ensure these assets remain financially viable to 2051 and beyond, demonstrating conformity with Growth Plan policies 2.2.1.3.b) and 2.2.8.3.b).

The City has and continues to rely on strategic planning tools to ensure there is sufficient existing and planned infrastructure to service the forecast growth. At time of writing the City had in place long-, medium-, and short-term plans for the delivery of infrastructure and public service facilities. In addition to estimating the infrastructure and public service facilities required to service growth, the planning tools employed by the City also provide capital and operational cost estimates, with long term plans having greater variability than short term plans. What follows is a discussion of each of these tools, how they are used to plan for infrastructure and estimate costs.

Master and Strategic Plans

Master plans are developed for all infrastructure and public service facilities in response to demand driven by population and employment growth. Infrastructure master plans also respond to the need for the City to manage its growing and aging infrastructure assets and public service facilities. As demonstrated in chapter 3, each master plan relies on industry standard demands or service level ratios to estimate how much infrastructure or public service facilities are required to accommodate the forecast growth. The remainder of this section focuses on master plans and how their use demonstrates that the City of Barrie has and will continue to ensure the cost of provisioning infrastructure and public service facilities is accounted for and that these assets are viable over their life cycle.

At time of writing, five infrastructure-related master plans – all of which can be accessed on the City's website – are being used to guide the provision of infrastructure at the City of Barrie. These master plans are:

- 2019 Transportation Master Plan.
- 2019 Water Supply Master Plan.
- 2019 Water Distribution and Storage Master Plan.
- 2019 Wastewater Collection Master Plan.
- 2019 Wastewater Treatment Master Plan.
- 2017 Drainage Master Plan.

In addition to the above, the City relies on master plans for public service facilities to ensure their timely delivery and ongoing operation. Due to the board definition of public service facilities several of the City's in-effect public service facilities master plans are complimented by subordinate plans. These subordinate plans provide additional direction on smaller components of the broader or parent master plan (e.g. parks master plan->outdoor recreation master plan->playgrounds). At time of writing, the following master plans were in-effect:

- 2010 Parks and Recreation Master Plan (Updated in 2017 for the Salem and Hewitt's DGA lands).
    - 2018 Outdoor Recreation Master Plan.
- 2018 Libraries Master Plan.
- 2016-2025 Barrie Fire Master Plan.
- 2015 First Responders Campus Site Evaluation report (re Barrie Police).
- 2016 Yard Operations Master Plan (and subsequent Master Plan Feasibility Study).
- 2018 Barrie City Hall Conceptualization Study.
- 2012 Waterfront & Barrie Marina Strategic Plan.
- 2019 Outdoor Recreation Facility Study.

Each master plan is based on the population and employment growth forecasts for Barrie in Schedule 3 of the Growth Plan. As noted in Chapter 2 and 3, not all master plans were developed at the same time, and as such they have different planning horizons and growth forecasts. Nonetheless, each master plan is based on the population and employment growth forecasts provided in the Growth Plan in-effect at that time.

The 2051 MCR Growth Forecast, as discussed in Chapter 2 of this report, differs significantly from growth forecasts used to develop the master and strategic plans. Specifically, the 2051 MCR Growth Forecast has a longer planning horizon, higher growth forecasts, and higher population and employment densities. The degree of variation between underlying growth assumptions of the in-effect master plans and 2051 MCR Growth Forecast increases with time, with greatest degree of change and uncertainty being over the 2041-2051 period. As such, it is insufficient to simply update the existing master plans. Rather, new master plans are required. These new master plans will need to take into consideration the anticipated infrastructure and public service facilities investments discussed in Chapter 3 of this report, all of which are a result of the revised population and employment growth distribution in the 2051 MCR Growth Forecast. Specifically, the new master plans will reconcile the need for additional infrastructure and public service facilities by presenting comprehensive and technical solutions that are based on best practices, revised service levels, and revised costing methodologies. The approval and implementation of the new Official Plan is the trigger which will initiate the development of these new master plans.

Capital Plan(s)

The City uses capital plans to implement capital improvements recommended to service the City's forecast growth as per the in-effect master plans. In contrast to master plans, which have a long planning horizon, capital plans are approved annually as part of the City's budget. In addition to annual capital plans, the City also developed a 4-year Capital Forecast for 2022-2025 as well as a Capital Outlook for 2021-2030, in 2021. While the capital plans include capital projects recommended for infrastructure in the master plans, they also include incidental costs such as replacement of equipment that is damaged or failing prematurely. The capital plans also incorporate projects that are of strategic importance to Council. For example, in 2021 Council approved the installation of water infrastructure to Barrie's employment area lands. This project was a strategic initiative for Council and responded to increased demand for serviced employment area lands close to Highway 400. While capital plans have a short-term planning horizon, they do report budget impacts of each capital project over 10 years. For example, the Wastewater Inflow/Infiltration Reduction Action Plan (Project No. 000931) requires $1,200,000 in actual and forecast study costs with another $2,700,000 in forecast construction costs over 10 years, totaling $4,900,000 in costs over the 2021-2031 period. Reporting costs in such a way ensures that the costs of the project are accounted for in future budgets, pending Council approval.

Capital plans are an important implementation tool as they ensure that infrastructure investments required to service the forecast growth are realized in a timely manner. By using both master plans and capital plans Barrie can and will continue to deliver infrastructure to service the forecast growth as well as ensure financial viability of infrastructure assets by accounting for their costs over the long term.

Asset Management Plans

The City began developing and providing Asset Management Plans (AMP) approximately a decade ago. Each AMP is based on a different asset portfolio, such as facilities, fleet, recreation and culture, stormwater, transit, transportation, and water.

The AMPs track the levels of service and performance standards for the City's assets, the state of these assets, and the actions and resources required to ensure the City can continue to deliver services at an appropriate service level in a way that:

- minimizes costs;
- maintains an acceptable level of risk;
- meets regulatory requirements; and,
- ensures financial sustainability.

The information presented in an AMP feeds into the financial planning (e.g., Capital Planning); the information also helps the City better track the life cycle of its assets and maintain their health, and it helps the City better plan for Barrie's growth.

In 2021, the City began delivering a new set of asset management plans, which pay particular attention to the funding gap between what the City has budgeted for maintaining assets and service delivery, and the actual funding needed to sustain the City's assets. Following the release of these newer plans, the City continues to address how to close the funding gap. For instance, to help address the funding gap revealed through the Stormwater Asset Management Plan, the City is working on the creation of a dedicated Stormwater Climate Action Fund. For those asset management plans to come after the new Official Plan is implemented, the planning horizon considered will be to 2051.

Long Range Financial Plan

The City prepares a Long-Range Financial Plan (LRFP) to identify key financial pressures and to make strategic recommendations to assist in managing growth. Specifically, the LRFP considers projected revenues and expenditures over a long-term period, using assumptions about micro- and macro-economic conditions, integrates other City plans and studies as well as other salient variables. The LRFP provides insight into future financial capacity so that strategies can be employed to achieve long-term financial sustainability. One such strategy, one which came by way of a staff recommendation to Council, was to revise the phasing policies of the new Official Plan. Specifically, as per staff report FIN018-21, it was recommended that the phasing policies of the draft new Official Plan be revised as not to allow development approvals proceed into later phases should preceding phases not be substantially planned or developed. As per the recommendation in staff report FIN018-21, and Council's direction, the draft new Official Plan was revised to require 60% registration, or equivalent, in Phase 1 prior to development being permitted in subsequent phases. In contrast, the in-effect Official Plan requires that a phase reach 60% draft approval or equivalent before development can proceed onto a subsequent phase. The key difference between draft approval and registration is that the City can collect a portion of the DCs at the registration phase. These DCs are critical in the delivery of infrastructure and public service facilities which service growth. This demonstrates how the City uses the Long Range Financial Plan to affect policy change and maintain financial viability.

Funding Tools

The City of Barrie uses a wide range of tools to fund its infrastructure and public service facilities. The following section focuses on the main financial tools and demonstrating how each of these tools has and will continue to be used by the City to fund the capital and operational costs related to both asset types.

Development Charges

The City of Barrie has and will continue to rely on Development Charge (DC's) revenues to pay for the capital costs related to the provision of infrastructure and certain public service facilities. At the time of writing, By-law 2019-055 2019 – City-Wide Development Charges (DC By-Law) was in-effect. This DC By-Law was based on findings of a 2019 DC Background Study which was amended in 2021 to reflect legislative changes. The DC Background study, and associated addendum, provides the City direction on how much of development charges collected should be collected for each eligible service listed in Section 2(4) of the *Development Charges Act 1997, S.O. 1997, c. 27* (DCA). Table 18 (below), from the City's DC By-Law, provides a breakdown of the DCs collected for each edible form of development, as prescribed in Section 2(2) of the DCA, fund each eligible service.

Table 18 – Residential and Non-Residential DC

Service	RESIDENTIAL					NON-RESIDENTIAL			
	Single and Semi-Detached Dwelling	Other Multiples	Apartments - 2 Bedrooms +	Apartments - Bachelor and 1 Bedroom	Special Care/Special Dwelling Units	Retail (per m² of Gross Floor Area)	Non-Retail (per m² of Gross Floor Area)	Retail (per ft² of Gross Floor Area)	Non-Retail (per ft² of Gross Floor Area)
Municipal Wide Services/Classes									
Services Related to a Highway	29,220	23,130	16,364	11,488	9,896	169.48	117.27	15.74	10.89
Public Works	576	455	322	226	195	3.33	2.31	0.31	0.21
Protection	1,934	1,531	1,083	761	655	11.42	8.03	1.06	0.75
Ambulance Services	246	194	137	97	83	0.43	0.32	0.04	0.03
Transit Services	1,218	964	682	479	412	7.37	4.94	0.69	0.46
Waste Diversion	453	359	254	179	153	0.43	0.32	0.04	0.03
Wastewater Services - Facilities	6,265	4,958	3,509	2,463	2,122	36.33	25.15	3.38	2.33
Wastewater Services - Facilities Related Debt	3,746	2,966	2,098	1,473	1,270	21.73	15.04	2.02	1.40
Water Services - Facilities	81	63	45	32	28	0.46	0.32	0.04	0.03
Water Services - Facilities Related Debt	5,209	4,124	2,917	2,048	1,764	30.21	20.90	2.80	1.94
Parking	212	168	119	83	72	1.29	0.86	0.12	0.08
Airport	41	33	24	15	13	0.26	0.17	0.02	0.02
Parks and Recreation	8,560	6,776	4,795	3,366	2,899	8.18	5.49	0.76	0.51
Library Services	839	664	469	330	284	0.75	0.54	0.07	0.05
Growth Studies	789	625	442	311	267	4.74	3.23	0.44	0.30
Housing Services	713	564	399	280	242	0.00	0.00	0.00	0.00
Long Term Care	44	35	25	18	15	0.11	0.11	0.01	0.01
Total Municipal Wide Services/Classes	**60,146**	**47,609**	**33,684**	**23,649**	**20,370**	**296.52**	**205.00**	**27.54**	**19.04**
Area Specific Services									
Former City Municipal Boundary Areas:									
Stormwater Drainage and Control Services	6,833	5,409	3,826	2,686	2,314	36.94	10.04	3.44	0.93
Wastewater Services - Collection Systems	1,199	949	672	472	406	14.88	4.05	1.38	0.38
Water Services - Distribution Systems	441	349	248	173	149	5.46	1.49	0.51	0.14
Total Area Specific Services - Former City Municipal Boundary Areas	**8,473**	**6,707**	**4,746**	**3,331**	**2,869**	**57.28**	**15.58**	**5.33**	**1.45**
Total Services - Former City Municipal Boundary Areas	**68,619**	**54,316**	**38,430**	**26,980**	**23,239**	**353.80**	**220.58**	**32.87**	**20.49**
Area Specific Services									
Salem & Hewitt's Secondary Plan Areas:									
Wastewater Services - Collection Systems	5,262	4,166	2,947	2,070	1,783	32.07	19.83	2.98	1.84
Water Services - Distribution Systems	5,665	4,485	3,172	2,228	1,919	34.53	21.35	3.21	1.98
Total Area Specific Services - Salem & Hewitt's Secondary Plan Areas	**10,927**	**8,651**	**6,119**	**4,298**	**3,702**	**66.60**	**41.18**	**6.19**	**3.82**
Total Services - Salem & Hewitt's Secondary Plan Areas	**71,073**	**56,260**	**39,803**	**27,947**	**24,072**	**363.12**	**246.18**	**33.73**	**22.86**

As permitted by the DCA, DCs collected as a result of development are collected into a fund which is used to finance eligible infrastructure and public service facilities capital costs (e.g., expansion to WwTF or a new library). The City will continue to update the DC By-Law on an annual basis to reflect and keep pace with the population and employment growth forecast for Barrie in Schedule 3 of the Growth Plan. These future DC By-Laws will be supported by new or updated DC Background studies.

These DC Background studies provide the City with options as to how to pay for the capital costs related with servicing and accommodating the forecast growth. Specifically, the capital costs of providing the

infrastructure and public service facilities requires to servicing and accommodating the forecast growth – which are determined through individual Master Plans and Capital Plan, as discussed above – are taken into consideration when conducting a DC Background Study. Therefore, by doing an update to the DC Background study the City will develop options to pay for the capital portion of the life cycle costs referred Growth Plan policies 2.2.1.3.b) &2.2.8.3.b). In doing so the City will conform to said policy. The funding tools discussed below provide the remaining funds required to cover operational and other costs.

Local Benefit Policy

The 2017 DC Background Study identifies which infrastructure qualifies for local benefit, which means which infrastructure is to be paid for by the developer. Local benefit expenses are in addition to DCs collected under the DC By-Law. Local benefit applies to all types of infrastructure, from transportation to stormwater/drainage systems. Most notably, sewer upgrades up to 400mm are local benefit. This means that any sewer collection system upgrades, up to 400mm, which are required to service a development proposal are to be paid for by the developer. This local benefit policy applies to sewer collection systems internal and external to a development; that is, developers must pay for upgrades the entire length of a local sewer line if the upgrade is required to service the proposed development, not just the portion adjacent to the lands subject to development proposal. Staff anticipate that a significant amount of sewer collection system upgrades within the Built-Up Area will be local benefit, lessening the financial burden on the City.

Through this MCR staff have initiated discussions as to whether the City's local benefit is appropriate given the scale of growth forecast for the Barrie. Staff anticipate that the list of infrastructure eligible for local benefit may need to be expanded as the City's infrastructure needs grow (e.g., new standards in Active Transportation require upgrades to transportation network, the costs of some of these upgrades may be passed onto the developer via local benefit). Staff will investigate expanding what infrastructure is eligible for local benefit in the new or updated DC Background study.

The use of a local benefit policy demonstrates that the City has and will continue to comprehensively consider the cost of development and find way to mitigate or offset these costs where possible. While local benefit helps the City mitigate incurring the capital costs associated with infill development, the operational costs of this new infrastructure is absorbed by the City. The life cycle costs of these assets are addressed through asset management plans discussed above.

Dedicated Infrastructure Renewal Fund

The City of Barrie owns approximately $2.7 billion in infrastructure, based on historical costs. The current dollar value of this infrastructure is considerably higher, at more than $5 billion in replacement costs. The City's annual requirements for repairing and rehabilitating aging infrastructure are considerably higher than current funding levels, resulting in a significant backlog in infrastructure renewal. The condition of infrastructure has a direct impact on service levels as well as the reputation of the City. The Dedicated Infrastructure Renewal Funding ('DIRF') portion of the annual tax capital reserve contribution was approved by Council starting in the 2015 budget year to address the significant backlog of infrastructure renewal work. Council's direction prescribes an annual increase to the reserve contribution equivalent to a 1% property tax increase for the typical residential taxpayer. This funding will be used to increase infrastructure rehabilitation for tax-supported infrastructure – roads, sidewalks, parks, buildings, fleet, and equipment. As presented to Council in the City's updated Long Range Financial Plan in October 2021,

the City's Reserves are under pressure. The DIRF is a key financial tool to address this financial pressure and allows the City to sustainably maintain its infrastructure.

Community Benefit Charge

At the time writing a Community Benefit Charge By-Law (CBC By-Law) was not in effect. However, City Council has approved funds for staff to develop a CBC strategy. The purpose of this strategy is to determine whether the implementation of a CBC By-Law would be financially beneficial to the City of Barrie. This demonstrates that the City will investigate and, if deemed appropriate, implement additional financial tools to pay for the cost of operating public service facilities needed to service the forecast population growth.

Taxation

Alike for all municipalities in Ontario, taxation is one of the City's key sources of revenue with which to pay for the infrastructure and public service facilities required to service and accommodate the forecast population and employment growth. Taxes are collected for all residential and non-residential properties within the city of Barrie. Tax rates are determined annually by Council. The process for establishing the annual tax rate is part of the annual budgetary process. The final decisions on which project to fund is up to City Council. This process ensures that infrastructure and public service facilities required to service and accommodate the forecast growth – in the Built-Up Area, existing DGA land, and new DGA land created through a settlement area boundary expansion – are built, maintained, or replaced in a timely fashion, and that the funds required to cover the capital and operating costs of these projects are allocated appropriately.

Conclusion

The City of Barrie has long used both strategic financial planning tools to fund the infrastructure and public service facilities required to service growth. As demonstrated in this chapter, these tools enable the City to determine the capital and operational costs of the infrastructure and public service facilities required to service and accommodate the forecast growth as well as raise the funds required to pay for the cost of these assets over the long term. While the planning of the infrastructure and public service facilities required to service and accommodate the forecast growth is not part of this MCR, it is important to demonstrate that the City has, in the past, completed the work required to satisfy Growth Plan policies 2.2.1.3.b) and 2.2.8.3.b) and will do so again through the development of new strategic and master plans, a new/updated DC By-Law, and updated asset management plans following the approval and implementation of the new Official Plan. In this sense, the City is on a trajectory to conform with the applicable Growth Plan policies.