Chapter 1

Section 1.07

Treasury Board Secretariat

Infrastructure Planning

Follow-Up on VFM Section 3.07, *2015 Annual Report*

RECOMMENDATION STATUS OVERVIEW					
	# of Actions Recommended	Status of Actions Recommended			
		Fully Implemented	In Process of Being Implemented	Little or No Progress	Will Not Be Implemented
Recommendation 1	3		3		
Recommendation 2	1	1			
Recommendation 3	1		1		
Recommendation 4	1		1		
Recommendation 5	2	2			
Recommendation 6	1	1			
Total	**9**	**4**	**5**	**0**	**0**
%	**100**	**44**	**56**	**0**	**0**

Overall Conclusion

According to the information that the Treasury Board Secretariat (Secretariat) and the Ministry of Infrastructure (Ministry) provided to us, as of June 30, 2017, 44% of actions we recommended in our *2015 Annual Report* have been fully implemented, and 56% of the recommended actions are in the process of being implemented.

Overall, the Secretariat and Ministry have done the following:

- completed a number of recommendations on updating their guidelines and instructions to the ministries to submit more detailed information for their infrastructure plans;
- implemented a process to monitor project cost overruns and delays; and
- provided additional training to analysts to improve documentation to support their analyses and recommendations to the Treasury Board/Management Board of Cabinet.

However, some significant areas that still require work include:

- defining the desired condition at which to maintain infrastructure assets;
- striking a balance between funding new projects and funding repair/rehabilitation projects; and
- developing a cross-sector province-wide framework to prioritize infrastructure investments.

Background

Ontario's portfolio of public infrastructure includes highways, bridges, transit systems, schools, universities, hospitals, government buildings, and a wide variety of other assets. It has a replacement value of close to $550 billion.

The Ontario Government oversees about 40% of these assets, either directly or through broader-public-sector organizations, such as school boards and hospitals. The remaining assets are managed by other entities, including municipalities, universities, social service facilities and long-term-care facilities. Much of Ontario's current stock of infrastructure was built between the end of the Second World War and the 1970s. Infrastructure spending slowed between 1980 and 2005 but picked up again in the last 12 years. However, Ontario is managing an aging asset portfolio. The average age of hospitals in Ontario, for example, is 45 years, while the average of schools is 38 years.

Infrastructure spending includes preserving or expanding existing assets and building new ones. In the last 10 years, Ontario's largest infrastructure spending has been in the transportation sector, followed by health and education. For example, the Province spent nearly $24 billion on transit projects, more than $25 billion on roads and bridges, nearly $30 billion on major hospital and other health-care projects, and nearly $23 billion on schools and post-secondary facilities between 2007/08 and 2016/17.

Proper planning is necessary to ensure infrastructure needs are identified and existing infrastructure is adequately maintained and renewed for public use. Such planning must take into account the benefits of infrastructure investment, the risks to the public when needed facilities are not built or are allowed to deteriorate, and the resources required to meet future demand.

At the time of our audit in 2015, we noted that the Treasury Board Secretariat (Secretariat), which is responsible for reviewing and making recommendations to the government on infrastructure funding requests from ministries, generally evaluated each ministry's requests on a stand-alone, historical basis; it did no comparison at an overall provincial level to ensure the most pressing needs, within the combined ministries, receive top priority for funding.

Some of our significant observations included the following:

- Two-thirds of funding was planned to go toward building new assets and one-third to repairs and renewals of existing facilities; however, the Province's analyses determined that it should be the other way around in order to adequately maintain and renew existing public infrastructure.
- No guidelines existed for the desired condition at which facilities should be maintained, and ministries lacked consistency among themselves on how to measure the condition of asset classes such as highways, bridges, schools, and hospitals.
- Ontario lacked a reliable estimate of its infrastructure deficit—the investment needed to rehabilitate existing assets to an acceptable condition—to better inform where and when spending should be directed.
- An independent assessment calculated that the Ministry of Education needed $1.4 billion a year to maintain schools in a state of good repair. However, actual annual funding in the previous five years ranged from $150 million to $500 million.
- A similar assessment done for the Ministry of Health and Long-Term Care identified annual capital funding needs of $392 million for the province's hospitals. However, actual capital funding since 2010/11 was just $56 million and rose to $125 million in 2014/15.
- Our audit found that existing funding did not address significant pressures faced by ministries for new projects. For example, 100,000 students were using temporary

portables and about 10% of schools in the province were operating at over 120% capacity. Although portables are needed to provide some flexibility to address changes in school capacity, existing funding was not sufficient to renovate the existing buildings and to replace these structures with more permanent classrooms in some cases.

- The Secretariat did not know how well individual construction projects were managed. Our review of reports from the ministries to the Secretariat noted that information was generally reported at a program level only and not on individual projects within a program. Instead, the Secretariat relied on ministries to monitor individual projects.

Our audit report recommended, among other things, that the Secretariat do the following:

- work with ministries to better identify, measure and quantify the Province's infrastructure investment needs;
- ensure that ministries are putting forward viable strategies that address bridging the gap between actual infrastructure needs and available funding;
- ensure that funding strikes an appropriate balance between new projects versus repair/rehabilitation and replacement of existing assets to minimize lifecycle costs; and
- require ministries to report on project cost overruns and delays to monitor the status of significant infrastructure projects under way in the province.

We received commitment from the Secretariat that it would take action to address our recommendations.

Following the release of our audit report, the Ministry of Infrastructure was established as a stand-alone ministry on June 13, 2016 with a mandate to guide Ontario's infrastructure planning and develop a strategic approach to capital planning. The Ministry and Secretariat have been collaborating in addressing the recommendations.

Status of Actions Taken on Recommendations

We conducted assurance work between April 1, 2017 and June 30, 2017. We obtained written representation from the Treasury Board Secretariat (Secretariat) and Ministry of Infrastructure (Ministry) that effective September 1, 2017, they have provided us with a complete update of the status of the recommendations we made in the original audit two years ago.

The status of each of our recommendations is as follows.

Complete, Reliable Information Needed for Effective Capital Planning

Recommendation 1

To better identify, measure and quantify the province's infrastructure investment needs, the Treasury Board Secretariat, working with ministries, should:

- *define how ministries should identify and measure the condition of all asset classes and determine how to assist those ministries that currently lack the capacity to do so;*

  Status: In the process of being implemented by May 2020.

Details

Our 2015 audit noted that there was no reliable estimate of the overall infrastructure deficit within the Government's portfolio of assets. Ministries lacked agreement among themselves on how to consistently measure and compare conditions of various asset classes and some ministries were not able to undertake this work. As a result, the information provided by ministries on asset conditions to the Treasury Board Secretariat (Secretariat) was inconsistent among ministries.

In September 2016, the Ministry started to work with the other provincial ministries to assess their infrastructure planning practices. This action was in response to the need to develop an evidence-based and transparent infrastructure planning and investment process. The need for a new process was identified in our 2015 audit, in the *Infrastructure for Jobs and Prosperity Act, 2015* (proclaimed in May 2016), and in the 2016 Ministry of Infrastructure Mandate Letter from the Premier. The Ministry found significant variations across the ministries, including:

- inconsistent methods of managing assets, measuring state of good repair, and measuring whether the asset, such as a building or bridge, is functioning properly;
- incomplete data on infrastructure investments in renewal/rehabilitation versus expansion;
- no framework for prioritizing requests across sectors or between renewal/rehabilitation and expansion projects; and
- a lack of clarity on how a proposed infrastructure investment would contribute to the achievement of the desired or needed service level.

The initial results of this work and the Ministry's proposed three-year work plan to address the findings of the assessment were reported to the Treasury Board/Management Board of Cabinet in February 2017.

The actions in the three-year work plan include:

- update the Infrastructure Asset Management Framework to bring consistency, where possible, to how the Ontario Public Service manages assets and measures asset condition;
- develop a method for accurately tracking investments in renewal/rehabilitation versus expansion;
- design a cross-sector framework to prioritize projects; and
- create guidelines to bring consistency and transparency to ministries' methods for forecasting service needs and demand, where possible.

The Ministry anticipates working with the other ministries to improve the internal infrastructure planning process over the next three years, from May 2017 to May 2020, by carrying out the actions in the proposed work plan.

The Ministry also plans to conduct research, including the engagement of consultants, to inform asset management planning. This would include an update to the Infrastructure Asset Management Framework beginning this fiscal year.

- *provide guidance to ministries on the desired condition at which to maintain infrastructure assets;*

  Status: In the process of being implemented by May 2020.

Details

In September 2016, the Secretariat and the Ministry engaged a Canadian think-tank—a group of experts who give advice—to research best practices in other jurisdictions in managing and analyzing infrastructure data.

The Secretariat and the Ministry anticipate that the results of this work will help guide ministries in determining the desired condition at which to maintain their infrastructure assets. They also expect the results to help develop an infrastructure needs/benefits framework to get the greatest benefit from future investments.

Initial research completed by the think-tank in February 2017 found that an asset should be renewed when the annualized lifecycle cost of renewing it is less than the annualized cost of operating and maintaining the asset, as calculated by the ministries. The annualized lifecycle cost approach was identified as a best practice. The think-tank is in the process of confirming this research with experts in other jurisdictions and expects to complete this work by summer 2017.

After the work of the think-tank is completed, the Ministry anticipates that it will work with the Secretariat and ministries to strengthen asset management planning over the next three years, from May 2017 to May 2020. This planning will include a consistent approach for collecting and reporting asset inventory information. Information on asset inventory will include the location, value, age and condition of provincial assets. The information will be used to identify key trends and expected needs for public infrastructure over the next 10 years.

- *publicly report on the progress made in achieving targets set for the desired condition for the province's infrastructure.*
  Status: In the process of being implemented by May 2020.

Details

As we noted in our 2015 audit report, the Government is required to make public a Long-Term Infrastructure Plan within three years of passing the *Infrastructure for Jobs and Prosperity Act, 2015,* which came into effect on May 1, 2016. Subsequent plans must be publicly available at least every five years after the first one is released. At minimum, these plans will be required to include:

- a description of provincial infrastructure assets, including an assessment of age, value and condition of the assets;
- an estimate of the Government's anticipated infrastructure needs for at least the next ten years; and
- a strategy to meet those needs.

The Ministry is currently working with the Secretariat and ministries to develop the infrastructure plan. This plan is expected to outline the age and condition of infrastructure assets and is expected to be released to the public by the end of 2017. However, it will not include information on the desired condition that ministries should maintain infrastructure assets. Research in this area is still ongoing, including the work by the Canadian think-tank as discussed above, which is expected to be completed by summer 2017. When research is completed, the Ministry anticipates that it will use the results to work with the Secretariat and ministries over the next three years, from May 2017 to May 2020, to improve the infrastructure planning process.

Existing Funding Does Not Address Significant Pressures Faced by Ministries for New Projects

Recommendation 2

The Treasury Board Secretariat should ensure that ministries put forward viable strategies that address bridging the gap between actual infrastructure needs and the funding allocated including options such as adjusting service levels, delivering the same service levels more efficiently, and internally realigning expenses.

Status: Fully implemented.

Details

As we reported in 2015, ministries are required to identify their potential infrastructure gap—the difference between their actual infrastructure needs and the funding allocated—and to identify strategies to bridge the gap, as part of their infrastructure plans. However, in our review of the plans submitted by ministries, we noted the strategy was often to defer their infrastructure needs to future years.

Since our audit, the Secretariat continues to require ministries to identify strategies to meet their infrastructure needs. The ministries also need to identify ways to complete infrastructure projects within the context of both provincial priorities and the ministries' share of funding.

In addition, as part of the process to develop their infrastructure plans, the ministries are now required to review their programs for effectiveness, efficiency and sustainability. Based on these assessments, they must identify opportunities to improve outcomes. This includes assessing risks when asking for changes to their programs. That assessment will be incorporated in the recommendations that are presented to the Treasury Board/Management Board of Cabinet for approval.

In the 2017/18 infrastructure plan submissions, we noted ministries had to complete a section entitled "Strategy to Meet Need" for each of their program areas. In contrast, the prior requirement was for a short description of strategies for the ministry as a whole. For example, in the 2016/17 submission for condition of schools, the Ministry of Education's infrastructure plan submission had only a high level statement that said: "renewal, retrofit and/or replacement of existing schools based on condition." Compare this to the 2017/18 submission, which identified specific strategies that the Ministry of Education had carried out to address its needs. One of the strategies, for example, was directing school boards to apply their proceeds from the sale of assets to renovate their existing school inventory. The Ministry of Education is also continuing with a process to consolidate schools. The goal is to find savings through combining schools and to address the backlog of infrastructure renovation projects.

In September 2016, the Secretariat also created a group of ministry staff to help guide the development and analysis of infrastructure plan submissions from the ministries. The purpose of this group is the following:

- to serve as a place for ministries to have more consistent and frequent contact throughout the infrastructure planning process;
- to solicit ministry feedback in advance of releasing major new capital requirements; and
- to provide suggestions for improvements and collaborate on best practices. This would include discussing new requirements on strategies to meet the gap between the needs in the infrastructure plans and the funding that is available.

The group meets on a regular basis (for instance, seven times between September and December 2016 and plans to meet monthly during the next budget planning cycle) and the agenda is shaped by both the Secretariat and input from the ministries.

Funding Allocations Not Always Based on Need

Recommendation 3

The Treasury Board Secretariat should make use of all relevant and available ministry information such as the condition of assets and what is needed to meet target service levels in ensuring that funding allocations strike an appropriate balance between funding new projects versus funding repair/rehabilitation and replacement of existing assets to minimize lifecycle costs and prolong the life of assets.

Status: In the process of being implemented by December 2017.

Details

In our 2015 audit, we found that the Secretariat's internal analysis had noted that investments on new projects had historically been favoured over renewal projects. The Secretariat estimated that two-thirds of the Province's capital funding should go to renewing existing assets. However, the Province's 10-year capital plan for infrastructure spending that the ministries proposed had only about one-third of funding allocated to renewal.

After our audit, in fall 2016, the Secretariat began requiring ministries to identify how much of their capital spending is on renewal of assets. The Secretariat's analysis of the 2017/18 infrastructure plans submitted by the ministries found that an estimated 43% of funds allocated to capital were for renewal projects.

In addition, the ministries are also now required to submit detailed infrastructure plans that include:

- a summary inventory of their assets;
- a description of the differences between current and target service levels; and
- a strategy to meet renewal and expansion needs based on long-term forecasts of service levels.

The Ministry of Infrastructure is also currently updating its analysis of investments needed to maintain service levels. Its goal is to find a balance between repairing existing assets and expansion in order to meet demographic growth. This analysis will use simulation scenarios to look at trade-offs across the sectors and at trade-offs between renewal and expansion.

The simulations will track existing assets over time and take into consideration that these assets will get older, deteriorate in condition, and require investments to keep in a state of good repair. New assets can be added to either replace existing assets or to account for expansion. The amount of investment in the scenarios determines how much rehabilitation, replacement and expansion can be undertaken. The costs and benefits of the investment scenarios can be compared, once the initial investment is established.

The Ministry, working with the Secretariat, expects to improve the infrastructure planning process using this analysis and data in the Long-Term Infrastructure Plan, which is expected to be released by the end of 2017.

Recommendation 4

To ensure the Province makes the most effective infrastructure investments, the Treasury Board Secretariat should ensure that funding allocated to ministries is supported by an objective analysis of needs prioritized on a province-wide basis as well as by individual ministries.

Status: In the process of being implemented by May 2020.

Details

After our audit, in December 2016 and January 2017, the Ministry met with ministries that have capital assets to assess their approaches to asset management, project prioritization and service level/needs planning. The findings from these meetings identified:

- the need for improved asset management, including province-wide consistency in measuring the condition of assets and how well they are functioning;
- that deferred maintenance is a significant concern; and
- that funding needs to shift from expansion to renewal projects.

In February 2017, the Ministry proposed to the Treasury Board/Management Board of Cabinet two key recommendations to address these findings:

- develop a new 12-month planning cycle to provide more time for in-depth planning in advance of fiscal decision-making; and
- develop a new method to prioritize investments within and across sectors.

The Secretariat expects to provide more details of the changes to the infrastructure planning process by the end of 2017.

The Ministry is also working on two tools for economic analysis that it will use for two purposes: to assess the appropriate level of public stock and investment to achieve the most economic growth; and to give funding to the sectors that provide the largest impact on provincial gross domestic product (GDP). The two models are:

- Optimal method—determines the total amount that should be invested in public infrastructure to maximize long-term GDP impact and the number of jobs supported; and
- Efficient allocation—estimates in which sectors the highest marginal returns on GDP are achieved through infrastructure investments.

These two models are still under review and development, and the Ministry is working on confirming the data and methodology before making them part of the budget planning process. The Ministry will use the results from applying the above tools to inform recommendations it provides to the Secretariat on infrastructure funding requests made by ministries.

As well, over the next three years, from May 2017 to May 2020, the Ministry will be working with the Secretariat and provincial ministries to develop a cross-sector framework for determining infrastructure investment priorities.

Inadequate Review by Secretariat of Ministry Submissions

Recommendation 5

To ensure an appropriate review of ministries' proposed infrastructure plans, the Treasury Board Secretariat should:

- *ensure that proper documentation of analysts' work is completed and made centrally accessible and provide the training necessary to address knowledge gaps;*
  Status: Fully implemented.

Details

After our audit, the Secretariat updated its Analyst Guide to Infrastructure to include detailed instructions for managing records. This step ensures that the assessment of infrastructure funding requests and recommendations to Treasury Board/Management Board of Cabinet is properly documented. The guide specifies keeping analysis and assessment notes, as well as email correspondence, meeting notes and other documents that support the analysis and recommendations.

The Secretariat now has a folder on its shared drive, where all documentation to support infrastructure investment recommendations to Treasury Board/Management Board of Cabinet must be saved in appropriate folders and be centrally accessible.

The Secretariat also updated its Capital Planning Division Analyst Checklist. The checklist reminds analysts to have all back-up documentation and source data organized in a clearly marked binder and to save all sign-off material in a folder on the shared drive, not on their local drive, before final sign-off.

In order to address gaps in training noted in our 2015 audit report, the Secretariat launched a new training curriculum in June 2016. Courses included:

- broad concepts of government decision-making, appropriations, capital planning overview, and financial concepts;
- training on collaboration with the Ontario Financing Authority; and
- technical courses on cap and trade, and infrastructure analytics, which includes analyzing and interpreting complex data, for improved decision-making.

Although attendance was not mandatory, according to the Secretariat's records, capital analysts employed at the Secretariat attended an average of four courses (out of seven available courses) in summer 2016.

- *amend the tools that analysts currently use to assess ministry proposals to better enable them to clearly determine whether key criteria have been satisfied by a project proposal, and train all analysts in the consistent use of these tools.*
  Status: Fully implemented.

Details

At the time of our audit in 2015, the tools that analysts used to assess ministry proposals included an analysis checklist, a prioritization-scoring template, and a best-practices guide. However, in our review of these tools, we found they did not ensure that infrastructure requests met the Secretariat's criteria to support recommendations, such as aligning with government policy objectives and addressing imminent health or safety risks.

After our audit, between February 2016 and July 2016, the Secretariat completed an assessment of its current suite of tools used during assessment of proposals. Key findings of this assessment included the need to:

- clearly articulate submission expectations to ministries;
- ensure ministries are providing multiple, realistic options as part of their submission with clear rationale as to why the preferred option was chosen;
- link the initiative at hand to current related government activities; and
- clearly articulate citations and assumptions for analysis in the submissions.

In addition, the Secretariat introduced or amended the following tools to ensure the appropriate information is available to support its analysis:

- Interest Calculator to determine interest on debt;

- Proportion Renewal Report to track renewal and expansion activities of ministries;
- Analysts Guide to Capital Planning;
- Capital Planning Division Analysts Checklist; and
- Borrowing Template to determine borrowing requirements for capital.

In addition to these tools, the Secretariat made it a requirement for analysts to prepare sector and ministry overviews to brief the Assistant Deputy Minister of the Secretariat's Capital Planning Division in advance of the analysts receiving ministry submissions. The exercise of preparing for the brief helped to improve analyst expertise on the files and ensured they focused on issues and concerns that were identified in previous years' infrastructure plans.

Training on the use of these new and amended assessment tools was incorporated into the new training curriculum that began in early 2016 as noted in the first bullet point of **Recommendation 5**.

Insufficient Monitoring of Infrastructure Spending

Recommendation 6

To ensure adequate monitoring of infrastructure investments in the province, the Treasury Board Secretariat should require ministries to report information on project cost overruns and delays to inform future decisions and to monitor the status of significant infrastructure projects under way in the province.

Status: Fully implemented.

Details

In August 2015, the Treasury Board/Management Board of Cabinet issued a new directive—the Directive for Major Public Infrastructure Projects—to support the planning and approval of major infrastructure projects. This directive applies to all major public infrastructure projects with the following characteristics:

- the projects have provincial funding of $20 million or more. The exception is the transportation sector. For this sector, the directive applies when provincial funding is $50 million or more for expansion projects, and $75 million or more for rehabilitation projects;
- the projects pose significant risk to the government because of a high probability of an event that could prevent achieving the project's objectives; or
- the projects are of significant interest to the province.

Under this new directive, ministries must report quarterly:

- on all approved major public infrastructure projects for which a construction contract was awarded during the quarter;
- on all major projects for which construction is under way; and
- on projects that were substantially completed during the quarter.

The reporting requirements were rolled out to all ministries in January 2017 for the third quarter of the 2016/17 fiscal year. They specify the information ministries are to report. The information includes the project status, cost and timelines, and any variances from the approved project terms. In future quarters, variances will also be tracked quarter-over-quarter to demonstrate project changes over time. If a project's scope, schedule or cost changes substantially, a description and risk assessment is also required. See **Figure 1** for a summary of the quarterly reporting process.

In addition, the Treasury Board/Management Board of Cabinet also created the Infrastructure Delivery Leadership Council (Council) in September 2016 as envisioned in the directive to:

- analyze and recommend an infrastructure delivery model;
- review proposed changes to project scopes, timing, project financing and/or delivery model. The Council would approve minor variations and escalate significant changes

to Treasury Board/Management Board of Cabinet; and

- administer the quarterly risk-based reporting on major projects.

This Council is an executive-level committee. It is chaired by the Assistant Deputy Minister of Capital Planning Division, has a Vice-Chair from the Ministry of Infrastructure, and its members are representatives from ministries that have major capital assets.

The directive requires ministries to provide the quarterly reports to the Secretariat.

In May 2017, the Secretariat presented the first quarterly report to the Council. The report listed 52 projects with a total project cost of $28.1 billion. Of the 48 projects under construction during the quarter, five were identified as high risk for delay or cost overruns:

- three from the Ministry of Transportation relating to the procurement of light rail vehicles;
- one from the Ministry of Health and Long-Term Care on a hospital expansion project; and
- one from the Ministry of the Attorney General relating to a courthouse project.

The Secretariat will present the quarterly report to the Treasury Board/Management Board of Cabinet and continue to monitor and review these projects as part of the quarterly reporting process.

Figure 1: Quarterly Reporting Process

Source of data: Treasury Board Secretariat

Ministries

- Report on status of projects using tools and processes outlined by the Treasury Board Secretariat
- May advise on status of high-risk projects as required

Treasury Board Secretariat

- Reviews quarterly submissions from ministries
- Assesses levels of risk to project scope, cost and timing/schedule

Infrastructure Delivery Leadership Council (Council)

- Reviews and approves risk report on projects
- Provides recommendations to Treasury Board/Management Board of Cabinet based on results of risk-based quarterly reporting

Treasury Board/Management Board of Cabinet

- Reviews report from the Council on the status of major projects
- Provides additional direction as needed after review of Council report on major projects