



Continuous Improvement in Capital Project Management

Date: December 8, 2021
To: TTC Board
From: Chief Executive Officer

Summary

The TTC's capital project portfolio is comprised of projects/programs of varying scale and complexity. The portfolio ranges from significant major construction, procurement and technology projects/programs, to more routine ongoing state of good repair programs. As part of the TTC's commitment to continuous improvement in the planning, management and delivery of capital projects, the TTC has undertaken an internal review of major projects/programs to identify areas of opportunity to further develop the organization's capability in project delivery.

The purpose of this report is to inform the Board of priority actions being taken to continuously improve the way in which the TTC's Capital Program is planned, managed and delivered as outlined in Table 1. This includes key actions in the areas of governance, procurement and contract management as well as resource planning. In addition, this report provides an update on the establishment of a Capital Projects Assurance Function (CPAF) in accordance with Board direction. This new function will provide independent assurance reviews of capital project implementation, and report to the CEO. Assurance reviews will assess the status and compliance of capital projects with project management best practices and relevant TTC policies and standards. A target operating model has been developed for the new function and an implementation plan is currently underway. Continuous improvement in how we plan, manage and deliver our capital program is a key deliverable under the TTC's Corporate Plan – Critical Path 1 – *Transform for Financial Sustainability*.

Recommendations

It is recommended that the TTC Board:

1. Receive for information the priority actions for improving capital project management in Table 1.

Financial Summary

The priority actions included in Table 1 inform the work plan for key capital and corporate service functions within the organization that will be addressed through current approved funding. The priority actions have been identified as a key next step towards strengthening our financial oversight and accountabilities by further integrating our project management, contract management and financial management processes.

The establishment of the CPAF will require approximately six capital positions that are supported by a roster of consultants with specific expertise in capital project management and assurance review. There will be no capital budget request to fund the required capital positions and roster of consultants. Existing capital positions within the Portfolio Management Office (PfMO) will be repurposed to support the CPAF function. The 2022 Capital Budget and Plan submission includes a funding request of \$515,000 to support the CPAF consultant roster.

The Interim Chief Financial Officer has reviewed this report and agrees with the financial impact information.

Equity/Accessibility Matters

A cornerstone of the TTC's Corporate Plan 2018-2022 is accessibility and we are committed to ensuring reliable, safe and inclusive transit services for all our customers. The TTC's capital plan includes a range of capital projects and programs that will enable the TTC to meet its accessibility responsibilities. This includes key projects such as the Easier Access Program, vehicle procurements, and ensuring all capital projects and programs are designed to be in compliance with the *Accessibility for Ontarians with Disabilities Act, 2005 (AODA)*. The priority actions identified in this report ensure the TTC continues to improve its ability to effectively plan and deliver capital projects that meet the key objective of providing a safe and inclusive transit system for customers.

Decision History

In April 2019, the Board directed the CEO of the TTC to implement a function independent of project management that would review major project implementation and report to the CEO as well as the TTC Board on the status of major projects.

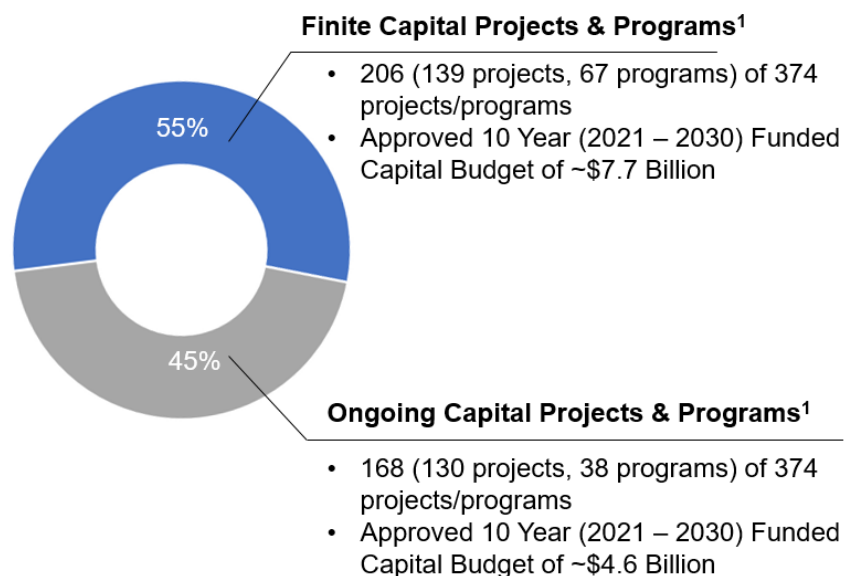
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Issue Background

The TTC provides stewardship over one of the City of Toronto's largest capital programs with a 10-year (2021 – 2030) approved Capital Budget and Plan valued at approximately \$12.4 Billion. The first 10 years (2021-2030) of the TTC's Capital Investment Plan (CIP) currently has an unfunded value of \$9.9 Billion and \$15.5 Billion over the 15 year CIP planning horizon. These large capital investments provide for the safety and reliability of Toronto's transit network, while supporting the City's future growth and city building objectives.

Currently, the TTC's approved 2021-2030 Capital Budget and Plan includes a combined total of approximately 374 finite and ongoing projects/programs which vary in size and complexity. Approximately 55% of the portfolio is delivered through the execution of **finite** capital projects and programs (139 stand alone projects and 67 programs). The remaining 45% of the portfolio is comprised of **ongoing** capital projects and programs which are executed yearly to maintain assets in a state of good repair (e.g. track improvements, replacement of bus components, etc.).

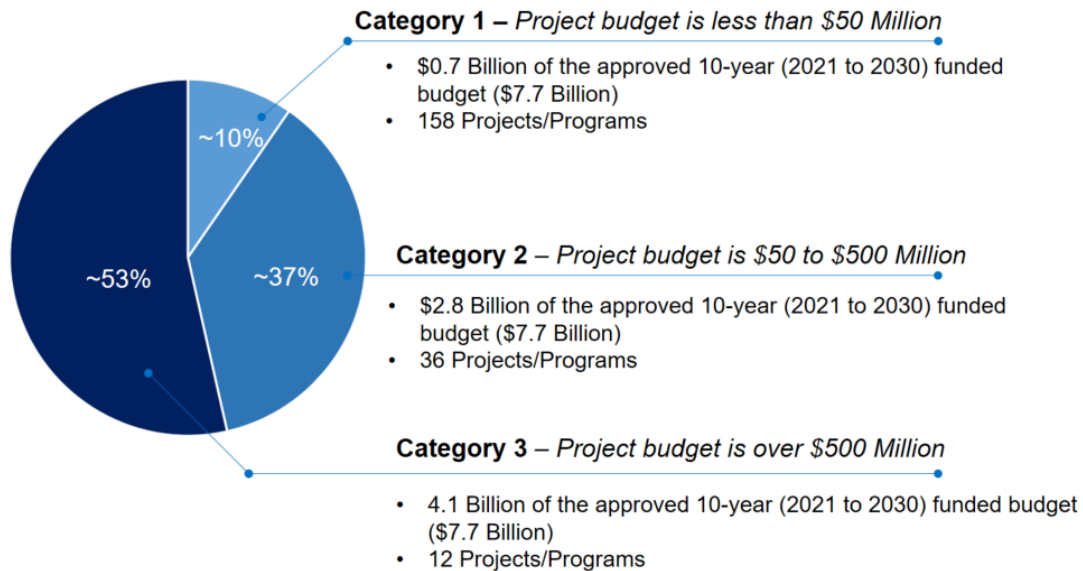
Chart 1 – Overview of the TTC's Portfolio



[1] The above numbers are based on the 2021 approved capital budget and plan; and do not include projects and programs that are unfunded or ended in 2020.

The TTC utilizes a categorization framework for capital projects/programs in order to assess and scale the level of project oversight and rigour required. The categorization framework considers type, size and complexity of the projects/programs.

Chart 2 – Categorization of Finite Projects/Programs by Budget Only



Given the complexity and variation in project/program scope, risk profile and type, the TTC is employing a variety of strategies to ensure that measures are being taken to provide oversight appropriate to the nature of the capital project work underway.

Comments

The TTC has undertaken an internal review of major projects/programs to identify areas of opportunity to continue to improve the organization's capability in the planning, management and delivery of capital projects. The streams of internal review include:

- Major Project Reviews – assessed lessons learned across various major projects (Category 3 type projects)
- Executive Contract Review Committee (ECRC) – assessed contract change requests across the entire capital portfolio (small and major projects)

The lessons learned through these various initiatives have been summarized in Table 1 and form the basis for identifying priority areas of focus for the organization. This internal review leverages previous work by the organization as a result of the TTC Capital Delivery Review conducted in late 2016 that focused predominantly on major capital projects (Category 3) and transit expansion (Category 4). Recent efforts over the last several years have focused on the TTC's largest capital projects, with emphasis on the development of a Project Management Framework (Stage-Gating, Project Categorization, etc.); improvements to project reporting (e.g. quarterly Major Project Update report, Project Status Reports, etc.); implementation of the Project Review Board (internal monthly review of Category 3 projects); amongst other initiatives.

As the organization has evolved over the last several years, and the composition of the TTC Capital Portfolio has shifted to predominantly Category 1 through 3 projects/programs following the upload of transit expansion projects (SSE, Relief Line, YNSE) to the Province, an internal review was initiated. The following provides an overview:

Major Project Review - Lessons Learned

The TTC has reviewed the lessons learned from major projects such as ATC, TYSSE, Leslie Barns, Relief Line South (Preliminary Work) and McNicoll Bus Garage to identify opportunities to continuously improve the management and delivery of projects. The Major Project Review looked at each project across the project lifecycle from initiation and development to closeout. Opportunities identified include:

- Enhanced commercial involvement in pre-contract phase;
- Improvements in mechanisms and resourcing to resolve third party interdependencies (e.g. permits and approvals);
- Program and Portfolio Management approach to identify interdependencies;
- Perform early market sounding to establish market capacity to undertake work;
- Include operations early to define requirements (e.g. business unit sponsorship).

Executive Contract Review Committee (ECRC)

The ECRC is an internal control mechanism that was established in October 2020 by the CEO to monitor and review the management, as well as, performance of current contracts and projects from a financial, commercial and project management perspective. The Committee is comprised of the Deputy CEO, Chief Financial Officer, Chief Capital Officer and the Chief of Staff. The work of this Committee focuses on strengthening our financial oversight and accountability to link the authority we receive for our budgets with how those funds are spent, with a focus on our contract and project change accountabilities.

All project types (Category 1 through 3) are subject to review of the ECRC when there is a project contract change request. The objectives of ECRC are to:

- Ensure the prudent management of resources;
- Monitor and understand any amendments/changes; and
- Identify ways in which to course correct, if necessary, to minimize risk and cost.

Over the last year, the ECRC review of contract change requests provided valuable insights that have contributed to changes that will:

- Clarify roles, responsibilities and accountabilities in capital delivery to ensure all necessary staff are involved in project delivery;
- Refine our planning and design review and approval processes to ensure we have all business requirements and specifications identified up front to meet business needs; minimize addendums to RFPs; and reduce scope change and delays during project execution;
- Provide more flexible procurement strategies and options adaptable to the services required, including revising terms and conditions to ensure we achieve best value from contractors; and,
- Strengthen our commercial and financial management review and approval processes to ensure we minimize project overruns and reduce risk in how we manage our contracts specifically, and our projects, more generally.

As a result of the major project review and the broader capital portfolio review through the ECRC process, key actions have been identified in the table below to focus the organization's activities in capital project and program management maturity.

Table 1. Priority Actions

Theme	Current Status	Key Actions
<p>Corporate Governance and Oversight</p>	<p>The TTC has established a governance framework for major capital projects that includes at the enterprise level the following corporate governance structures to provide Executive level oversight:</p> <ul style="list-style-type: none"> • Investment Panel - reviews new capital initiatives seeking funding in advance of the Capital Budget Process to assess alignment to corporate plan priorities and Board directives confirms business case, project readiness to proceed and cash flow timing; recommends capital funding priorities for new requests based on critical need and funding availability; confirms updates to the Capital Investment Plan; • Project Review Board - reviews major capital projects (Category 3; high risk, high impact projects) for status on scope, budget, risk and mitigation; • Executive Contract Review Committee (ECRC) – reviews and approves all contract change requests and identifies key trends indicating opportunities for improvement or further risk mitigation. 	<p>With the establishment of a capital projects assurance function (CPAF) further refine the integration of CPAF in the organization's corporate governance and oversight framework and processes to ensure clear roles and responsibilities in capital delivery and oversight.</p>
<p>Project/Program Governance</p>	<p>Established governance framework for major projects and introduced the sponsorship model on major projects and programs.</p>	<p>Formalize sponsor role accountabilities between Delivery and Business Sponsor Groups across the entire life cycle of projects, including budget approvals, project changes, and major stage gate reviews.</p> <p>Further strengthen sponsorship role within the organization by providing additional support to business units (i.e. targeted training opportunities, additional resourcing capacity, etc.)</p>

Theme	Current Status	Key Actions
Project Planning	The TTC has reviewed its existing design review and sign-off processes and procedures and identified continuous improvement opportunities that will strengthen engineering design reviews and approvals for capital projects during the planning phase of the project lifecycle.	With the operationalization of the sponsorship model, the business requirements, design review and approval processes will be reviewed to ensure: <ul style="list-style-type: none"> • Clear roles and responsibilities, • Application of new standards to ensure resiliency and accessibility of our assets; and • To minimize number of addendums and scope changes.
Program and Portfolio Management	Established the identification of project interdependencies as a mandatory reporting requirement that has improved schedule development and management, project planning and risk management.	With the identification of project interdependencies earlier in the project lifecycle, there is now a need to: <ul style="list-style-type: none"> • Reorient the capital planning and budget structures and how the TTC's Capital Investment Plan is organized to identify linkages; • Implement enhanced portfolio governance and reporting mechanisms (e.g. mode and site based portfolios). <p>These actions will support better investment decision making, maximize the use of resources and become more outcome focused.</p>
Procurement Planning and Management	Utilized the following suite of procurement strategies to reduce pricing, maximize value, improve vendor performance and increase vendor participation: <ul style="list-style-type: none"> • Category Management and Strategic Sourcing for critical materials and services procurement categories; • Vendor Days, Market Sounding and Requests for Information (RFIs) to explore the marketplace; • Rosters and Vendors of Record (Shared Services with the City and the Province) for access to best pricing; 	Continue transitioning to category management; utilizing strategic sourcing activities; and leveraging the full suite of contract structures as existing contracts expire and new contracts are required. These activities will help accelerate the acquisition of services and resources from vendors for capital project delivery; increase vendor participation to ensure TTC is able to secure better pricing; and strengthen contract and financial management.

Theme	Current Status	Key Actions
	<ul style="list-style-type: none"> Multi-year awards, Blanket Contracts, Master Services, Framework and Pricing Agreements for multiple users and to reduce procurement effort. 	
Procurement Planning and Management	<p>Procurement Options Analysis have been implemented on large complex major projects over the last several years (Category 3). This includes McNicoll Bus Garage and Bloor-Yonge Capacity project.</p>	<p>Incorporate requirement for Category 2 (projects greater than \$50 million/ medium complexity) to undertake a procurement options analysis into corporate policies and standards.</p> <p>Build capacity with the new Commercial Management function to support the organization in implementing POA requirements and to define appropriate procurement and commercial management strategies.</p>
Procurement Planning and Management	<p>The following measures are in place to support procurement planning:</p> <ul style="list-style-type: none"> Monitoring and reporting of contract spending against contract expiry dates; Regularized meetings between procurement and departmental staff teams to identify key procurement priorities and activities; emergent issues; current contract status and upcoming expiries; and future business needs; Real time dashboards of key procurement and contract statuses under development for use by Executive and Senior management to manage contract spending; payments and expiries. <p>With the maturing of Category Management and Strategic Sourcing practices, there is an opportunity to extend procurement planning horizons beyond contract expiry dates with multi-year sourcing plans.</p>	<p>Procurement staff to work with Heads to develop sourcing plans that extend out 1 to 3 years to ensure procurement activities are initiated in advance of expiry dates and contract management issues are mitigated.</p>

Theme	Current Status	Key Actions
<p>Contract & Commercial Management</p>	<p>The TTC has developed a draft dispute escalation process for major projects to proactively manage commercial issues with third parties.</p>	<p>Accelerate the development of a consistent approach to dispute resolution process that is scalable to the size and complexity of the projects to ensure consistent practices across all TTC capital projects:</p> <ul style="list-style-type: none"> • Category 2 and 3 Projects (large) • Category 1 Projects (small) <p>The dispute escalation process is designed to escalate disputes within the organization by allowing for additional independent review outside of the initial decision maker(s).</p> <p>For large capital projects, the escalation process will include additional checks and balances by escalating the dispute to other areas within the organization, for an additional review of the dispute. The escalation process is designed to ensure that one group or department is not the sole decision maker relating to the dispute. This also allows the project group to continue to focus on completing the project, while the dispute is escalated to a different part of the organization.</p> <p>The escalation process, depending on the project and specific governance model established, may include the dispute being escalated from one part of the organization (e.g. EC&E) to another part of the organization (e.g. Commercial Management). Escalation may also include a specific steering/project committee which committee includes senior representatives of both the contractor/vendor and TTC.</p>

Theme	Current Status	Key Actions
		<p>If no formal committee is established, the dispute would be directly escalated to senior representatives of each party. The process will also establish that all disputes that are not resolved through the escalation process will proceed by way of binding arbitration (based on an established \$ threshold). In addition, to the binding arbitration process, mediation or use of an independent third party referee will also be included as options for the parties.</p> <p>For smaller capital projects, a similar dispute escalation has recently been included in our contract template, but because of the relatively small dollar amounts in dispute, binding arbitration is not a mandatory requirement (the costs of the arbitrator in some cases is more than the amount in dispute). For smaller capital projects, disputes will continue to be escalated internally for review, and if they remain unresolved, each party will continue to have the right to adjudicate through the Construction Act or commence formal legal proceedings, including small claims court.</p>

Theme	Current Status	Key Actions
Contract & Commercial Management	<p>Increased focus on contract terms and conditions to ensure business requirements are being met; service performance can be monitored and evaluated by:</p> <ul style="list-style-type: none"> • Utilizing Negotiated Requests for Proposal (NRFPs) that include service performance metrics and other operational KPIs to monitor service performance against contractual specifications; • Utilizing Statements of Work requiring payments based on milestone deliverables, where appropriate, rather than time and materials; • Reviewing terms and conditions for design services to strengthen protection from errors and omissions. 	<p>Continue to improve vendor relationship management by refining the performance and accountability of vendors by:</p> <ul style="list-style-type: none"> • Applying category expertise for contract negotiations within the category management model; • Continuing to review and tighten contract terms and conditions to ensure clear parameters are established for delivery and performance to prevent delays and cost overruns and to ensure best value.
Financial Management	<p>The interdependencies between financial planning and management, procurement, commercial/contract management and project management have resulted in the following actions being taken that more strongly link funding with spending authority for procurements and capital project delivery:</p> <ul style="list-style-type: none"> • Amended internal procurement approval processes to ensure funding confirmation prior to awards and amendments; • Integrated scheduling/timing impacts with cost impacts of project delays; • Established ECRC to review and approve contract amendments above 5% or \$250k and impacts on project, commercial and financial management; • Establishing a process to document, track and monitor all contracts and associated contract change allowances within an approved project against the overall project budget to ensure the project budget is not exceeded as a result of contract changes. 	<p>Through the Finance and Commercial Management Transformations currently underway, the centralization of these functions will enable the TTC to further distinguish commercial and financial accountabilities from project management responsibilities. As a result, the organization will have strengthened capacity to ensure project change requests are reviewed for commercial and financial impacts independent of project staff.</p>

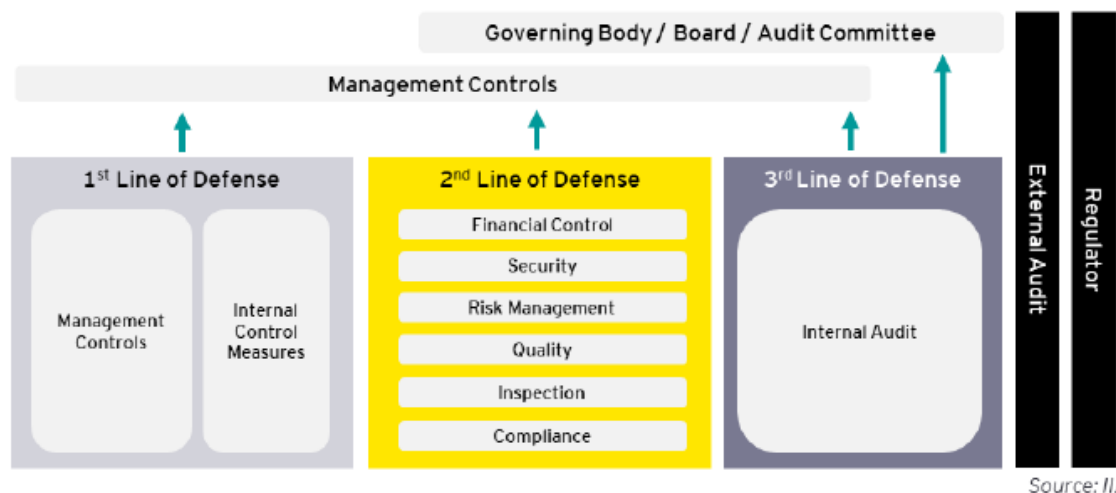
Theme	Current Status	Key Actions
Resource Planning & Management	Resource planning is undertaken for large, complex construction projects.	Currently applying a consistent approach to resource planning by taking a programmatic view and ensuring projects are adequately staffed to provide the necessary control and oversight by including corporate services roles needed to support project delivery.

Capital Projects Assurance Function

In April 2019, the Board directed the CEO of the TTC to implement a function independent of project management that would review major project implementation. In response, the CEO has initiated the establishment of a Capital Projects Assurance Function (CPAF), and engaged Ernst and Young (EY) to support development and implementation. As conceptualized, the new function would review major capital projects implementation and report quarterly to the CEO on the status and compliance of major capital projects with project management best practices and relevant TTC policies and standards. An independent project oversight and assurance function is a next step in advancing the project management discipline within the organization.

A current state assessment and jurisdiction scan was undertaken by EY in order to develop a proposed operating model for the CPAF. In line with EY's recommendation, the operating model for CPAF is based on the Institute of Internal Audit's three lines of defense model (depicted in Figure 1 below), which is used for effective risk management and control.

Figure 1 – Three Lines of Defense Model



The first line of defense includes functions that own and manage risks, provides operational assurance through the maintenance and execution of internal control procedures, and are responsible for implementing corrective actions to address deficiencies in internal controls. Project management teams serve as a first line of defense as they are responsible for the management of project risks and controls on a daily basis.

The second line of defense includes functions that are established to strengthen and monitor the adequacy and effectiveness of the first line of defense controls; and may provide frameworks, oversight and ensure compliance. As the purpose of the CPAF is to perform an independent assessment of capital project performance; and evaluate the adequacy of capital project management capability, capacity and management systems to ensure successful project delivery, it fits within the second line of defense.

The third line of defense includes internal audit. The TTC's Audit, Risk and Compliance department naturally serves as the third line of defense as it focuses on broader corporate risks, the effectiveness of internal controls including the first and second lines of defense, and provides independent assurance to the Board and Senior Management that the TTC's strategic, legislative, operational and financial objectives are likely to be achieved.

Given the diverse cross section of projects and programs within the TTC which vary by type, size, and complexity; the CPAF will be using various approaches that are tailored to the risk profile of the projects/programs. These approaches include Deep Dives, Stage Gate Reviews and Periodic Monitoring. Project reviews will focus on various aspects of project management and controls including scope management, risk management, cost management, to identify opportunities to improve project/program success.

In addition to strengthening project governance and controls within the TTC, the CPAF will provide other benefits to multiple stakeholders:

- Increases transparency and objectivity in gauging the success of major projects;
- Optimizes performance and fosters a proactive project culture through the early identification and mitigation of potential risks to successful project delivery;
- Provides information to enable timely and effective decisions which promote conditions for project success;
- Helps to ensure that the disciplines and best practices for delivering high profile projects are followed; and
- Fosters a culture of continuous improvement in capital project management by promoting the conditions for success using the assurance reviews as a mechanism to identify immature processes and gaps in project delivery while monitoring the application of best practices.

Implementation Plan

To ensure independence from the Groups/Departments that deliver capital projects/ programs, the CPAF will be established under the office of the CEO. The CPAF will consist of a small internal team which is augmented with external consultants that are highly qualified and well-respected experts in project/program management and project controls. Specialized subject matter expertise to undertake detailed independent assurance reviews in the areas of IT, Construction and Vehicles project/program procurement is being sought through the development of a consultant roster that will augment the CPAF core team.

To implement this operating model, an implementation plan has been initiated with three parallel work streams underway:

- *Work Stream 1 – Setting up the CPAF:* This includes developing the governance and policies, setting KPIs, hiring the core internal team and developing processes, procedures and templates to promote consistency and standardization of assurance reviews.

- *Work Stream 2 – Building a Consultant Roster:* This involves conducting a competitive procurement process to build a roster of qualified consultants to conduct assurance reviews as required. The TTC has issued a Request for Supplier Qualification (RFSQ) which is currently in market to identify prequalified proponents eligible to join the roster to bid on future Requests for Service under the program.
- *Work Stream 3 – Conducting a Pilot Deep Dive Review:* To test the operating model and improve the governance and policies guiding the CPAF, a pilot deep dive review was conducted on a major capital project (Easier Access III Program). The objectives of the pilot are to:
 - 1) Help define and develop business processes to support the operations of CPAF; and
 - 2) Provide the CEO and the Board with an independent assessment of the progress of Easier Access III program. The results of the pilot review will be shared in a report to the Board.

The TTC is in the process of concluding Work Stream 3 and utilizing the findings to improve the policies and processes in development under Work Stream 1. Further information will be shared with the Board as the new function is implemented and a work program is established for the CPAF. In the interim, the CEO may continue to identify additional pilot reviews to be undertaken.

The introduction of the Capital Projects Assurance Function will provide an additional layer of oversight and create the opportunity to proactively assess compliance with best practices and TTC policies in capital projects.

Signature

Richard J. Leary
Chief Executive Officer