



Calgary

City Auditor's Office

Public Spaces Delivery – Parks & Open Spaces Capital Project Management Audit

July 12, 2023



THIS PAGE LEFT INTENTIONALLY BLANK

Table of Contents

Executive Summary	5
1.0 Background	6
2.0 Audit Objective, Scope, and Approach	8
2.1 Audit Objective	8
2.2 Audit Scope.....	8
2.3 Audit Approach.....	9
3.0 Results	9
3.1 Alignment to CPMF Standards	11
4.0 Observations and Recommendations	14
4.1 Corporate Project Management Framework - Level 2 Mandated Project Requirements	14
4.2 Corporate Project Management Framework - Non-Mandated Standards	15

The City Auditor's Office conducted this audit in conformance with the *International Standards for the Professional Practice of Internal Auditing*.

Executive Summary

The Public Spaces Delivery business unit implements projects from detailed design through construction to deliver on Council's strategic direction for "Safely Building a Vibrant and Resilient City Together." The City's Corporate Project Management Framework (CPMF) provides project guidance and best practices for managing capital projects within The City. As the projects vary greatly in size, the Corporate Project Management Center has developed a project classification tool, which helps Project Managers classify their projects into one of three categories (Level 1, Level 2 & Level 3) based on the size and complexity of a project. This audit focused on Level 2 projects as collectively, these projects represent a high proportion of Public Spaces Delivery project management activity: Level 2 projects represented an allocated budget of \$25m during the period 2020-2023. We selected Parks & Open Spaces capital projects in our sample due to the high interest of citizens in these projects.

The objective of this audit was to assess the effectiveness of the capital project management processes that support the delivery of Level 2 Parks & Open Spaces projects. Processes reviewed included project schedule, cost, quality management, risk mitigation and project governance and communications utilizing the City's CPMF as representing good practice in project management.

We concluded that the capital project management processes that supported our two sample Parks and Open Spaces projects were partially effective. Examples of effective processes included monthly progress reporting with reporting of risks, changes documented via the use of a change order request, and performing quality inspections at various stages of the project, including third-party technical inspections. We raised two observations and recommendations to further support effective project management processes for medium-sized projects. Recommendation one speaks to applying mandatory requirements of the CPMF Estimation, Contingency, and Schedule Standard for Level 2 projects. Recommendation two is an opportunity for Public Spaces Delivery to review and evaluate whether non-mandated elements of the CPMF Standards would add value to the project management process and support the success of future Level 1 and 2 projects.

Public Spaces Delivery have agreed to our recommendations and have indicated in their response a commitment to implement these actions no later than December 31, 2023. The City Auditor's Office will monitor the status of commitments as part of its ongoing recommendation follow-up process.

1.0 Background

The Public Spaces Delivery business unit (BU) implements projects from detailed design through construction by bringing strong technical, commercial, and interested party understanding to delivering infrastructure and working closely with Community Services and Operational Services to transition completed projects successfully.

The Business & Engineering Services division within Infrastructure Services (IS) department helps City business units consistently apply corporate standards and best practices in project and asset management. The Business & Engineering project management team, the Project Management Governance & Technology (PMG&T), works to develop and sustain corporate excellence in project management. The PMG&T stewards The City's Corporate Project Management Framework (CPMF), a program created to ensure consistency and transparency among capital projects. The CPMF consists of a project management policy for capital projects, project management practice guides, and a set of standards and guidance documents.

As the projects at The City vary significantly in size, scope, complexity, interested party/Indigenous People involvement and other characteristics, the PMG&T has developed a project classification tool to serve two essential functions: to identify the complexity of a project and to help a Project Manager select the project management tools, templates and processes to provide an appropriate level of detail for project definition, reporting, controls, and governance. The Project Classification Tool is a mandatory CPMF requirement for all capital projects. It helps Project Managers classify their projects into one of three categories of complexity given below in Table 1: Project Level Classification Criteria.

Table 1: Project Level Classification Criteria

Project Level	Level 1 Project	Level 2 Project	Level 3 Project
Project Characteristics	Small size and scope, common understanding of outcomes, few stakeholders, no major constraints.	Medium size and scope, some uncertainty in outcomes, many stakeholders but no major impact on the external community, medium level of risk and constraints.	Large size and scope, uncertainty in outcomes, many stakeholders including impact on the external community, high level of risk and constraints.
Project Requirements	The project must be conducted in alignment with: <ul style="list-style-type: none"> a. The Project Management for Capital Projects Policy. b. The City of Calgary Project Management Practices Guide. c. Comply with the following Corporate Project Management Standards: <ol style="list-style-type: none"> 1. Stage-Gate 2. Business Case 	The project must be conducted in alignment with: <ul style="list-style-type: none"> a. The Project Management for Capital Projects Policy. b. The City of Calgary Project Management Practices Guide. c. Comply with the following Corporate Project Management Standards: <ol style="list-style-type: none"> 1. Stage-Gate 2. Business Case 	The project must align with: <ul style="list-style-type: none"> a. The Project Management for Capital Projects Policy. b. The City of Calgary Project Management Practices Guide. c. Comply with All Corporate Project Management Standards.

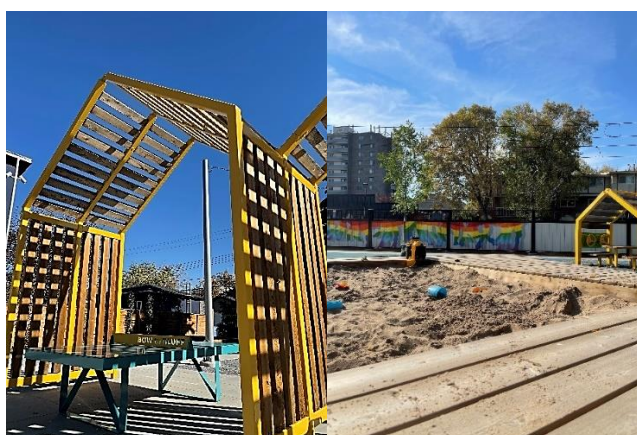
Project Level	Level 1 Project	Level 2 Project	Level 3 Project
	3. Estimation, Contingency & Schedule	3. Estimation, Contingency & Schedule	

While individually at The City Level 3 projects are the most significant in terms of dollar value, collectively, The City delivers a significant number of smaller-scale projects. While these projects have lower individual risk, citizens care about the completion of these projects on time, to budget and to the appropriate quality. During 2020-2023, the Public Spaces Delivery BU oversaw 82 Level 1 and Level 2 projects with an allocated total budget of \$29M. Of the 82, 32 (37%) were Level 1 and 50 (63%) were Level 2 projects.

Projects delivered by the Public Spaces Delivery BU include Mobility, Bridges and Structures, Buildings, and Parks & Open Spaces projects. This audit focused on Parks & Open Spaces projects as these projects are of high interest to citizens. We selected two Parks & Open Spaces Level 2 projects to be the focus of our audit fieldwork: "Bow to the Bluff Hillhurst-Sunnyside LRT Corridor Revitalization Initiative" from the Construction phase and "Buckmaster Park Area Improvements" from the Detailed Design phase. A brief overview of these two projects is as follows:

Bow to the Bluff Hillhurst-Sunnyside LRT Corridor Revitalization Initiative:

The Bow to Bluff Hillhurst-Sunnyside LRT Corridor Revitalization Initiative provides an overarching, long-term citizen-centred vision, and functional framework to guide future development throughout the Bow to Bluff corridor. The Bow to Bluff corridor consists of a series of public spaces that run along the Sunnyside LRT line from Memorial Drive to McHugh Bluff in the Hillhurst-Sunnyside neighbourhood of Calgary, Alberta. The Project Charter included an estimated budget of \$3M (Class 4 Estimate).



Bow to Bluff Corridor - <https://www.calgary.ca/planning/parks-rec/bow-to-bluff-corridor.html>

Buckmaster Park:

The Buckmaster Park Area Improvements project is part of the "Established Area Growth and Change Strategy Phase 1 Public Realm Implementation Program". The Buckmaster Park area between 21st Avenue SW and 23rd Avenue SW will be the centrepiece of upgraded park improvements. The project will focus on increasing activity in the park, upgrading existing

amenities, and improving connectivity with the surrounding neighbourhood. The Program Charter included an estimated budget of \$4M (Class 5 Estimate).



Buckmaster Park Area Improvements - <https://www.calgary.ca/planning/transportation/buckmaster-park-improvements.html>

2.0 Audit Objective, Scope, and Approach

2.1 Audit Objective

The objective of this audit was to assess the effectiveness of the capital project management processes that support the delivery of Level 2 Parks & Open Spaces projects. The objective was achieved for our two sample projects by:

- Assessing the effectiveness of project schedule, cost, quality management and related risk mitigation processes.
- Assessing the effectiveness of project governance and communications.

2.2 Audit Scope

The scope of the audit included the following Level 2 projects managed by Public Spaces Delivery:

#	Project Name	Level	Phase
1	Bow to the Bluff	2	4. Construction
2	Buckmaster Park	2	3. Detailed Design

The technical components of the two projects (e.g., assessment of the quality of materials used) were not included in the audit scope.

2.3 Audit Approach

The audit focused on evaluating the design and operating effectiveness of key controls utilized in project management for project schedule, cost, quality and governance management and their alignment with recommended CPMF guidance.

3.0 Results

Our assessment of the two Parks and Open Spaces Level 2 capital projects focused on the following six CPMF Standards and associated guidance:

- Estimation, Contingency & Schedule (mandatory for Level 2 projects).
- Risk Management;
- Project Management Quality Management (PMQA);
- Project Change Control;
- Records & Information Management; and
- Project Governance and Team Roles and Responsibilities.

We concluded that the capital project management processes that supported our two sample Parks and Open Spaces projects were partially effective. A full summary of the processes and alignment to the CPMF Standards and associated guidance is set out in section 3.1 below. The capital project management processes aligned with some of the Standards' requirements (section 3.1). Examples of effective processes included monthly progress reporting with reporting of risks, changes documented via the use of a change order request, and performing quality inspections at various stages of the project, including third-party technical inspections. However, we identified two observations and recommendations to support future effective project management processes for medium-sized projects (section 4).

While the project processes aligned to parts of the mandated Estimation, Contingency & Schedule Standard, for example changes to the baseline schedule completed through the change management process, not all components were not fully utilized. An initial project schedule with milestone dates and the linkage between contingency calculations and project risk assessments were missing (Recommendation 1). Eleven of the thirteen CPMF Standards are not mandated for Level 2 projects but represent good practice that supports project managers in mitigating the risks to on-time, schedule, and quality delivery. In our assessment, we identified the following non-mandated Standards, where considering and incorporating components from these Standards into Level 1 and 2 project processes would support the success of future projects (Recommendation 2):

- Risk Management;
- Project Governance and Team Roles and Responsibilities;
- Project Change Control; and
- Records & Information Management.

Incorporating the above Standards would add value to the project management process by supporting effective monitoring and decision-making, reducing the risk of schedule delays, and supporting the timely and on-budget delivery of future Parks and Open Space projects.

To assist with the capital management process, the Public Spaces Delivery BU have recently hired a Project Delivery Coordinator to evaluate current processes and to support alignment to the CPMF by formalizing and outlining the expectations for Project Managers. Formalized guidance and expectations support transitions between Project Managers during the project lifespan, something that occurred in both projects in our sample.

In completing our assessment, we additionally identified an opportunity to better align the Estimation, Contingency & Schedule Standard with the Risk Management Standard for Level 2 projects. We passed this information to PMG&T to inform future Standards revisions.

3.1 Alignment to CPMF Standards

CPMF Standard	Requirements assessed	Processes that aligned to this Standard	Opportunities for future improvement
Estimation, Contingency & Schedule (mandatory for Level 2 projects)	<u>Contingency</u> <ul style="list-style-type: none"> Project contingency for cost estimates shall be based on project risk assessment per the Project Risk Management Standard. Contingency designated at Class 3 to Class 1 estimates. Unused contingency released as identified in the Project Plan. Project contingency dollars should not be used to address project changes. 	<u>Contingency</u> <ul style="list-style-type: none"> ✓ Contingencies designated at class 3 to class 1 estimates. ✓ Contingences are transferred to the parent account and held until the CCC (Construction Completion Certification) and FAC (Final Acceptance Completion) stages. However, the process is not formally documented. 	<u>Contingency</u> <ul style="list-style-type: none"> The contingency calculation was not linked to the project risk assessment. Unable to distinguish if project contingencies were used to address project changes. (Recommendation 1)
	<u>Schedule</u> <ul style="list-style-type: none"> Use of a project schedule which outlines the plan for executing project activities (e.g., a work breakdown of tasks). Initial project schedules identify milestones or key deliverables at a high level. Changes to the schedule are completed through the project change control process. 	<u>Schedule</u> <ul style="list-style-type: none"> ✓ Project schedule baseline based on work breakdown structure (WBS), including activity durations, and identifying critical path. ✓ Changes to the baseline schedule were completed through the change management process. 	<u>Schedule</u> <ul style="list-style-type: none"> Initial project schedule with preliminary milestone dates was not available. (Recommendation 1)

CPMF Standard	Requirements assessed	Processes that aligned to this Standard	Opportunities for future improvement
	<ul style="list-style-type: none"> Project schedule approved based on the governance structure. 		
Risk Management	<ul style="list-style-type: none"> Risk Management Plan and Risk Register. Risk Register initiated in conjunction with development of the project plan. Project risks identified in the Business Case/Project Charter included in the Risk Register. Project Risk Reporting and escalation process. Lessons Learned exercises. 	<ul style="list-style-type: none"> ✓ Monthly progress reporting, which includes risks. ✓ Monthly project meetings with Project Managers and Project Sponsor, including escalating project risks, as necessary. ✓ Initial Project Risk Register developed at planning, however not maintained (i.e., not updated). 	<ul style="list-style-type: none"> Adopting a standardized approach to risk management by developing and maintaining a Risk Register. Performing and documenting a Lessons Learned exercise and applying/assessing against future projects. (Recommendation 2)
Project Management Quality Management (PMQA)	<ul style="list-style-type: none"> PMQA assessments to occur at various stages of the project (planning, stage gate, close out). Detailed assessments by independent Quality Assessors. 	<ul style="list-style-type: none"> ✓ Project Coordinators performed quality inspections at various stages of the project. ✓ We observed the existence of third-party technical inspection reports over specific items. 	<ul style="list-style-type: none"> Consider using relevant CPMF standards in formalizing quality management processes at the BU and project level. (Recommendation 2)
Project Change Control	<ul style="list-style-type: none"> Supporting log of all changes (approved and rejected). Change request analyzed and approved by Project Sponsor. Communicate decision. 	<ul style="list-style-type: none"> ✓ Changes are documented via the use of a change order request. ✓ Change log used to track approved changes. ✓ Change communicated to key stakeholders involved in the process. 	<ul style="list-style-type: none"> Supporting log of all changes, including rejected changes. Formal documentation of Project Sponsor evaluation and approval of change order. (Recommendation 2)

CPMF Standard	Requirements assessed	Processes that aligned to this Standard	Opportunities for future improvement
Records & Information Management	<ul style="list-style-type: none"> Project records shall be available and accessible when required. Capital Construction Project Records Management Checklist. 	<ul style="list-style-type: none"> ✓ Projects files organized based on the Calgary Parks Filing System document, which identifies a limited number of records for a capital project. 	<ul style="list-style-type: none"> Use of CPMF Records Management Checklist, which identifies records related to the management of capital construction projects. Including identifying which records are not pertinent/applicable, along with a brief explanation. (Recommendation 2)
Project Governance and Team Roles and Responsibilities	<ul style="list-style-type: none"> Capital projects shall have a documented governance structure. Governance structure defines authorities/limitations for the delivery of the project, escalating project changes and issues. 	<ul style="list-style-type: none"> ✓ Limited required roles from a project perspective were identified during the chartering/stage-gating process. 	<ul style="list-style-type: none"> Documented roles and responsibilities for Project Manager, Sponsor and Project Team. (Recommendation 2)

We would like to thank the staff from Public Spaces Delivery for their assistance and support throughout this audit.

4.0 Observations and Recommendations

4.1 Corporate Project Management Framework - Level 2 Mandated Project Requirements

Mandated elements of the CPMF were not utilized to manage the two projects analyzed. The CPMF Estimation, Contingency, & Schedule Standard applies to all capital projects regardless of the project level. The stated purpose of this Standard is "to build consistency in estimating and contingency, to develop a common estimating and contingency language, and to align with the strengths of current industry estimating and contingency practices."

From our analysis of the two projects, we identified the following requirements of the Standard were missing:

- Initial project schedule with milestone dates; and
- The linkage between contingency calculations and project risk assessments (instead, project contingency dollars were used to address project changes).

These required elements of the Standard support effective monitoring and decision-making and reduce the risk of schedule overruns and delays that could impact the timely and on-budget delivery of each project.

Recommendation 1

The Director, Public Spaces Delivery, incorporate the application of the CPMF Estimation, Contingency & Schedule Standard requirements into the project management process for Level 2 projects.

Management Response:

Agreed.

Infrastructure Services has been working on implementing various control systems to support the quality of project management within the Department. Notably the Quality Management System (QMS) system will track and ensure all required project management deliverables are completed during the various phases of the project. This System will support the implementation of this recommendation by facilitating standardized processes for the Department and Public Space Delivery Business Unit.

Infrastructure Services is also supporting Project Managers through training and orientation to be compliant with all CPMF requirements.

Action Plan	Responsibility
Parks and Open Spaces Delivery will: <ul style="list-style-type: none"> • Develop a schedule with milestones during the initial project planning stage, and maintain it during the project 	<u>Lead:</u> Manager Parks and Open Spaces Delivery, PSD <u>Support:</u> Capital Delivery Coordinator, PSD <u>Commitment Date:</u> December 31, 2023

Action Plan	Responsibility
lifecycle through change manage processes <ul style="list-style-type: none"> Determine project contingency based on the risk of the project as directed in CPMF Standards and utilize contingency to manage project uncertainties. 	

4.2 Corporate Project Management Framework - Non-Mandated Standards

The CPMF provides guidance and best practices to support the management of City capital projects. All 13 CPMF Standards are mandated for Level 3 projects; 11 of 13 Standards are not mandated for Level 1 and 2 projects. The projects analyzed in this audit were Level 2 projects and therefore were not required to follow all CPMF Standards.

We identified the following non-mandated Standards, where incorporating components of the Standards into Level 1 and 2 project processes would support the success of future Public Space Delivery projects:

Standard	Component	Value for Level 1 and 2 Projects
Risk Management	<ul style="list-style-type: none"> Project risk assessment Lessons Learned exercises 	Adopting a standardized approach to risk management for capital projects supports more efficient resource allocation, increased complexity management and stakeholder satisfaction.
Project Governance and Team Roles & Responsibilities	<ul style="list-style-type: none"> Documented roles and responsibilities 	Supports effective decision-making, resource allocation, and improved project communication.
Project Change Control	<ul style="list-style-type: none"> Standardized change control process and supporting log of all changes (approved and rejected) 	Supports the project manager in managing risks such as schedule delays, budget overruns, quality issues, and scope creep by documenting and analyzing all proposed changes. It also supports the project sponsor's evaluation of changes.
Records and Information Management	<ul style="list-style-type: none"> Records Management Checklist 	Supports the consideration of all relevant documents during the phases of a capital project and is an effective tool to support changes in project roles such as project managers.

There is an opportunity for Public Spaces Delivery to review and evaluate whether non-mandated elements of the CPMF would add value to the project management process utilized for Level 1 and 2 projects by reducing the risk of schedule delays, cost overruns, quality issues and scope creep.

Recommendation 2

The Director, Public Space Delivery review and evaluate the following Standards to consider the incorporation of the following key components into project management processes for Level 1 and 2 projects:

- Risk Management;
- Project Governance and Teams Roles & Responsibilities;
- Project Change Control; and
- Records and Information Management.

Management Response:

Agreed.

Infrastructure Services have implemented a ‘Major Project Reporting’ process whereby project managers (PM) present their projects to their peers and managers. The process covers the Lessons Learned Exercise component of the Risk Management Standard. The process highlights project risks, reviews project schedules and budgets, and supports PM to review possible future issues on their projects, and develops Lessons Learned Exercises. This process is being extended to cover all high-risk Level 2 and 3 projects.

Action Plan	Responsibility
<p>In addition, Parks and Open Spaces Delivery are considering the incorporating the following deliverables into the process for managing higher risk Level 1 and 2 projects:</p> <ul style="list-style-type: none"> • Risk management plans with risk registers and identify mitigation actions within the risk register, • Developing project governance, and teams’ roles & responsibilities clearly in project charters, • Implementing project change control processes with Project Control support, and • Managing records and information management according to corporate standards. 	<p><u>Lead:</u> Manager Parks and Open Spaces Delivery, PSD</p> <p><u>Support:</u> Capital Delivery Coordinator, PSD</p> <p><u>Commitment Date:</u> December 31, 2023</p>