



Assessment of the Mattagami  
Wastewater Treatment Plant  
Construction  
City of Timmins

February 17, 2016

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# Executive summary

# Executive summary

## Scope overview:

The City of Timmins (“City”) engaged Deloitte LLP (“Deloitte”) to conduct an assessment of the Mattagami Wastewater Treatment Plant Construction project.

Deloitte’s scope was to identify opportunities for improvement for future capital projects undertaken by the City.

The purpose of this report is to provide the CAO with the key findings and recommendations, including details necessary for the City to successfully action the opportunities for improvement for future capital projects.

## Key findings:

The review resulted in Deloitte identifying opportunities for improvement in four capital project process areas; project estimate, communication, change management, and project management. Below are key findings from each of the areas reviewed.

1. Development of project contingency did not follow industry practices for large capital projects.
2. Communications and reporting with Council were lacking throughout the project.
3. Change order management and controls were lacking throughout the project.
4. Project related accountabilities and responsibilities were not defined or fully understood.

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## Key recommendations:

The report outlines our recommendations for each of the four capital project process areas identified as having opportunities for improvement. Below are the key recommendations that should be addressed in the near term to expedite improvements in each area.

1. The City should establish an estimating process that includes guidelines for establishing contingencies for large capital projects in accordance with a well vetted project risk profile and the current project phase.
2. The City should develop and implement standard project reporting in a consistent format that efficiently provides relevant, accurate and timely project information related to both work performed to date as well as forecasts and trends on the future of the project.
3. The City should proactively identify and report all key assumptions and risks when presenting estimates and status reports to Council.
4. The City should develop and implement a documented change management process that specifies all necessary standards and controls, including adherence to contract terms.
5. The City should commence the systematic development and implementation of key processes and procedures incorporating the standards, rules, guidelines and principles required to manage capital projects.

# Background

# Project background

- The City is currently undertaking the construction of the Mattagami Wastewater Treatment Plant Upgrade to Secondary Treatment project (“Project”). The Project is near completion with final costs anticipated at \$80.56M.
- For this Project, the City engaged WSP Canada Inc. (“WSP”), formally known as Genivar Inc. to carry out the feasibility study and conceptual design during the estimate phase. WSP was also later contracted by the City to provide consulting engineering services and contract administration for the Project. North America Construction Ltd. (“NAC”) was contracted by the City for construction of the Project.

# Scope, objectives and approach

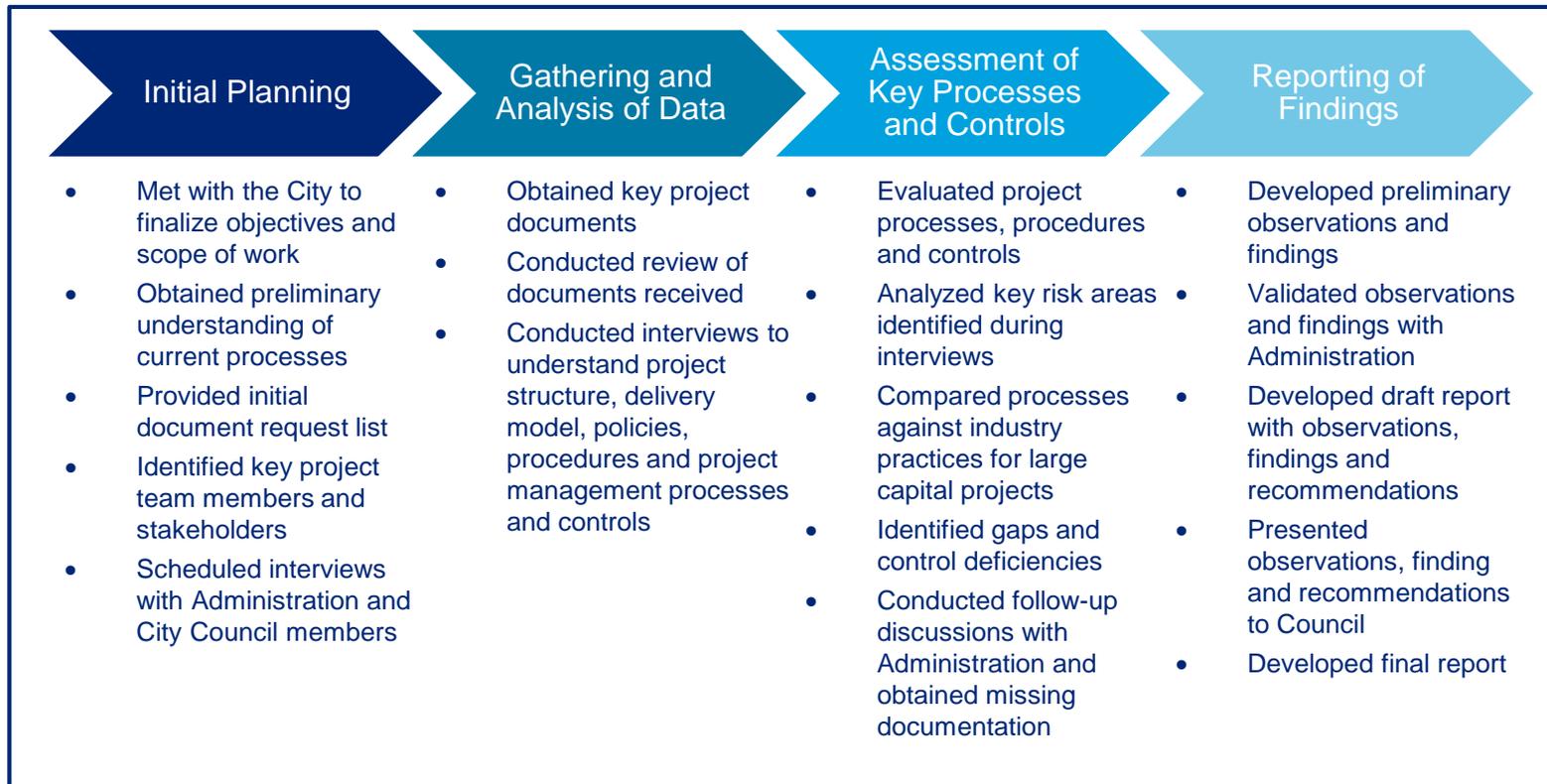
# Engagement scope and objectives

- The City engaged Deloitte to conduct an assessment of the Project.
- Deloitte’s scope was to identify opportunities for improvement for future capital projects undertaken by the City.
- The purpose of this report is to provide the CAO with the key findings and recommendations, including details necessary for the City to successfully action the opportunities for improvement for future capital projects.
- The review resulted in Deloitte identifying opportunities for improvements in the following four capital project process areas:

<b>Project Estimate</b>			<b>Communication</b>
<b>Change Management</b>			<b>Project Management</b>

# Our approach

Deloitte’s approach was based on its proven methodology and experience assessing similar projects and project organizations. The table below summarizes our overall approach and key activities for this engagement.



# Summary of observations, findings and recommendations

# Observations, key findings and recommendations



## Project Estimate

### Observations

Our observations related to the project estimating process area can be summarized into four areas, the funding application, contingency, risk, and additional scope items. Refer to Appendix C for a timeline summarizing cost escalation on the project from May 2009 to September 2015.

#### **Funding application**

We understand that the Provincial Government instructed the City to advance the Project as part of a federal/provincial funding program, the Building Canada Fund (“BCF”), which had an application deadline of May 1, 2009. We understand that City Council instructed Administration to prepare a funding application for the Project 14 days prior to the application deadline. This required Administration to develop the funding application, including the conceptual project estimate, in a highly expedited manner.

#### **Contingency**

Administration informed us that they held the belief that in order to qualify for funding, the project needed to be “shovel ready” (that is ready for the expedited start of construction) and that funding would be more attainable if the total project cost was estimated below \$60M. This contributed to the conceptual estimate included in the funding application being set at \$59.5M including a 10% contingency. Industry practice, as defined by the Association for the Advancement of Cost Engineering (“AACE”), states that a 30% to 100% contingency should be included in a project estimate at the concept screening phase. At the time the funding application was being prepared, the Project was in the concept phase. As such, the amount of contingency included in the conceptual estimate did not align with industry practices.

#### **Risk**

A proactive risk identification process was not used for the Project and risks were not well documented. Only three risks were listed in the funding application but no analysis or assessment and no values for potential delay or cost impact were assigned to them. These risks consisted of site conditions, climate change and project timing. Administration’s files contained no additional risk documentation and these risks were not reported to Council. This limited level of risk evaluation did not align with industry practices. As a result, the cost estimate included in the funding application did not take into consideration the risk profile of the Project.

#### **Additional scope**

Administration informed us that they limited the focus of the funding application solely to the Mattagami Wastewater Treatment Plant’s Secondary Treatment Facility. Therefore, additional and necessary scope to upgrade the existing facility was not identified prior to the submission of the funding application or taken into consideration when setting contingency. Administration visited similar facilities throughout the province in the months leading up to February 2010. These visits resulted in the identification of \$14M of upgrades to the existing facility to alleviate constraints in the primary treatment that resulted from the planned changes to the secondary treatment. The upgrades involved the grit removal system, screening system, and digester system. As a result, the cost estimate included in the funding application did not take into consideration the impact of the additional scope items. When upgrading an existing facility, it is industry practice to consider the impact of such upgrades on all other aspects of the facility.

# Observations, key findings and recommendations



## Project Estimate

### Key Findings

Development of contingency did not follow industry practices for large capital projects. The estimate included in the funding application did not account for the risk of significant additional scope. Additional scope that was identified in the months leading up to February 2010 ultimately increased the project budget by \$14M. The Project contingency was established without considering the Project's phase or risks. The contingency was also impacted by the belief that the estimate was required to be below \$60M and that the Project needed to be "shovel ready" in order to qualify for funding. As a result, these items impacted the estimate that was presented to Council and submitted for funding.

### Recommendations

The City should establish an estimating process that includes guidelines for establishing contingencies for large capital projects in accordance with a well vetted project risk profile and the current project phase.

# Observations, key findings and recommendations



## Communication

### Observations

Our observations related to the communication process area can be summarized into four areas, presentations and reports, project estimate and risk reporting, additional scope and risk reporting, and contingency request.

#### **Presentations and reports**

Project status updates were provided to Council through various forms of presentations and reports. Administration developed and delivered administration reports to Council that focused on specific issues or approval requests and a third party consultant developed and delivered presentations to Council that focused on technical details. These reports and presentations were not provided on a regular basis, and were not consistent in format and content. As a result, Council received irregular and inconsistent information. Additionally, neither the presentations nor reports included key information such as schedule updates, forecasting and risk summaries.

#### **Project estimate and risk reporting**

Some assumptions and risks associated with the Project estimate were documented and communicated to Council, however they were not comprehensive and did not reflect the scale of the Project. A Project estimate of approximately \$50M to be submitted as part of the funding application was presented to and approved by Council on April 27, 2009. At the time, only one documented risk was communicated to Council. This risk was that the funding application would not be accepted due to the Project not being “shovel ready” or completed within the required timelines. The next project estimate that was presented to Council was in the February 8, 2010 administration report, which was 9 months after the submission of the funding application and which included an estimate of \$60M. This report did not include any explanation of the \$10M increase from the previously reported Project estimate value. Additionally, the only risk documented and communicated to Council in the report was related to the need of a full time project manager for this Project. Council was not informed of the Project budget on a regular basis and was only provided with minimal information on the Project’s risks.

#### **Additional scope and risk reporting**

Risks associated with the need for upgrades to the existing facility were not considered prior to the submission of the funding application. When upgrading an existing facility, it is industry practice to consider the impact of such upgrades on all other aspects of the facility. The required upgrades were identified in the months leading up to February 2010 and the resulting scope changes were presented to Council on October 13, 2011. These scope changes increased the Project budget by \$14M.

#### **Contingency request**

On July 30, 2012, Council awarded the construction tender and approved a revised budget envelope. The revised budget envelope included a contingency of 5.4% rather than 10%, which was requested by Administration. The request for 10% contingency was communicated to Council through a presentation, however, it was not supported by any risk or cost trend analysis that would be required for Council to make an informed decision.

# Observations, key findings and recommendations



## Communication

### Key Findings

Communications and reporting with Council were lacking throughout the Project. Council was not properly informed of the assumptions and risks associated with the funding application and were not provided with presentations and reports with sufficient content or within an appropriate timeframe to facilitate effective project accountability, oversight and governance. Similarly, scope changes were not identified and communicated to Council in a timely manner.

### Recommendations

The City should develop and implement standard project reporting in a consistent format that efficiently provides relevant, accurate and timely project information related to both work performed to date as well as forecasts and trends on the future of the project.

The City should proactively identify and report all key assumptions and risks when presenting estimates and status reports to Council.

# Observations, key findings and recommendations



## Change Management

### Observations

Our observations related to the change management process area can be summarized into three areas, process, change order documentation, and contract compliance.

#### Process

The City does not have a documented change order process or limits of authority for the approval of change orders. We understand that the project followed a change management practice that consisted of regular meetings between Administration and the third party consultant to manage and review change orders. We understand that relevant and supporting documentation for change orders were reviewed by Administration during these meetings.

#### Change order documentation

Deloitte conducted a review of the Project's change orders on a sampling basis. The review identified a lack of pertinent information and supporting documentation. Change orders did not include schedule impact, cost type, change category and date blocks for signatures. Eight of the 10 change orders reviewed in depth, including four of the largest change orders in value, did not contain sufficient detail and supporting information in the City's records to warrant approval. Additionally, 46 of the 49 change orders were signed by only one member of Administration. This was not in conformance with the City's Governing Procurement Policies and Procedures, which would govern change order management in the absence of a documented and Council approved change order process. The Procurement Policies and Procedures state that any procurement that has been restricted to a single source must be approved by the Department Head or City Agent if under \$25,000 or by Council if greater than \$25,000. No change orders valued less than \$25,000 were approved by the department head or City Agent and no change orders valued over \$25,000 were approved by Council. In addition to not being in conformance with the City's requirements, change management did not align with industry practices and controls.

#### Contract compliance

Deloitte conducted a review of the Project's change orders on a sampling basis to assess compliance of change order management with the third party consultant's and contractor's contracts. Ten change orders were selected for review, including four of the largest change orders in value, however, only five of them were assessed for compliance as the documentation for the remaining five change orders were not dated. For all five change orders reviewed, the following three instances of non-compliance with respective contracts were identified. The contractor did not provide estimates of the cost to complete the work defined in the contemplated change notice (CCN), within 14 days of the date of the CCN. The contractor did not report the actual amount and cost of labour associated with changes to the third party consultant in full detail on each working day. The third party consultant did not submit Change of Scope Approval forms, which indicated anticipated impacts to the Project's cost and schedule, to the City prior to commencement of the work associated with the change.

# Observations, key findings and recommendations



## Change Management

### Key Findings

Change order management and controls were lacking throughout the Project. Necessary controls to review and approve change orders were not in place for this Project. Additionally, change management practices did not align with the third party consultant's and contractor's contracts. As a result, the lack of a disciplined approach to managing change has eroded accountability and the audit trail.

### Recommendations

The City should develop and implement a documented change management process that specifies all necessary standards and controls, including adherence to contract terms. A change management process should be developed in accordance with the City's Governing Procurement Policies and Procedures.

# Observations, key findings and recommendations



## Project Management

### Observations

Our observations related to the project management process area can be summarized into three areas, standards, project manager, and project execution.

#### Standards

Formally documented project management policies, procedures and processes do not exist. In addition, roles, responsibilities and accountabilities were not documented for the Project. The lack of standards limits the ability to provide personnel with guidance on their roles and responsibilities or the ability to hold them accountable.

#### Project manager

Given that the Project was significantly larger and more complex than any other project current Administration had undertaken, attempts were made to find a contract project manager with relevant experience. However, Administration was unsuccessful in securing a suitable candidate. As a result, an internal project manager was tasked to manage the project, however, no one within Administration had previous experience in managing and delivering a project of this magnitude. In addition, the Project Manager was not provided with any training on how to manage a project of this size and complexity and maintained other responsibilities that impacted his ability to focus on the Project.

#### Project execution

Despite the Project's significant size, it was managed and administered in a similar manner to all other projects undertaken by Administration. Important project management controls and activities, including consultant and contractor oversight and contract administration were lacking. As a result, the Project was managed based on individual knowledge, experience, and undocumented practices, and was heavily dependent on interpersonal trust versus measurable accountability.

# Observations, key findings and recommendations



## Project Management

### Key Findings

Project related accountabilities and responsibilities were not defined or fully understood. There was an over reliance on interpersonal trust versus measurable accountability on the Project. The focus and discipline necessary for an organization taking on a project of this size was not applied and as a result, practices throughout the City fall below acceptable project management standards.

### Recommendations

The City should commence the systematic development and implementation of key processes and procedures incorporating the standards, rules, guidelines and principles required to manage capital projects.

# Appendices

# Appendix A – Interviews

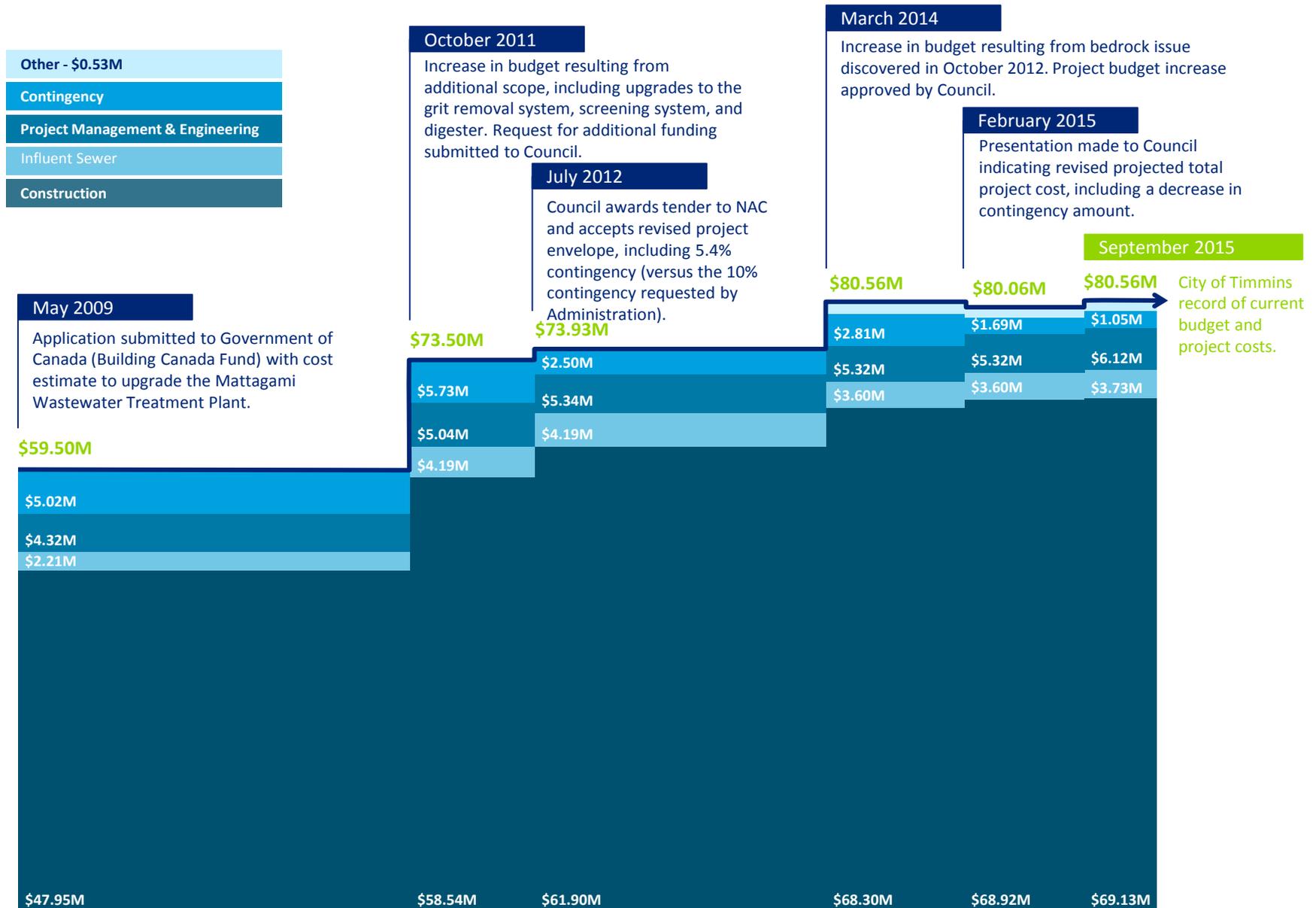
Name	Position
Joe Torlone	Chief Administrative Officer
Jim Howie	Director of Finance and Treasurer
Keld Scott	Chief Accountant
Luc Duval	Director of Public Works and Engineering
Patrick Seguin	Manager of Engineering
Mayor Steven Black	Mayor of City of Timmins
Joe Campbell	City Councilor
Michael Doody	City Councilor
Rick Dubeau	City Councilor
Andre Grzela	City Councilor
Walter Wawrzaszek Sr	City Councilor
Noella Rinaldo	City Councilor

# Appendix B – Documentation

- Deloitte received documentation from the City in multiple phases throughout the review
- Over 10,000 documents were provided by the City
- Deloitte conducted a comprehensive review of the key documents
- Below is an overview of the documents received:

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- Media clips (18 documents)
  - Consultant’s construction meeting agendas #1 to #33
  - Consultant’s construction meeting minutes #1 to #32
  - Consultant’s progress reports (24 documents)
  - Progress payments #1 to #34
  - Report workshop documents (23 documents)
  - Schedule planning aids/documents (35 documents)
  - Dynamic compaction package
  - Claim documents (44 documents)
  - Contracts, by-laws, agreements, and addendums
  - Administrative reports (17 reports)
  - Committee of the whole minutes (11 documents)
  - In-camera minutes (3 documents)
  - Presentations to Council (6 documents)
  - Council meeting minutes (13 documents)
  - RFP documents (13 documents)
  - Tender documents (8 documents)
  - Cost worksheets (3 documents)
  - Building Canada Fund documents (10 documents)
  - Geotechnical documents
  - Allowance items documents
  - Contemplated Change Notices #1 to #72
  - Change Orders #1 to #49
  - Commissioning O&M documents
  - Ministry of Environment documents
  - Project correspondence
  - Project photos
  - Request for Information documents
  - Shop drawings
  - Site Instructions #1 to #26
  - Site Reports #1 to #21

# Appendix C – Project cost escalation summary



Note: Values are rounded

# Disclaimer

- This report outlines our observations, which are based on interviews, review of project documentation, our experience performing reviews on similar projects, and comparison with industry practices for the delivery of major capital projects.
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- The services provided do not constitute an audit, compilation, review, or attestation as described in the pronouncements on professional standards issued by the Chartered Professional Accountants Canada or other regulatory bodies and, therefore, we do not express an opinion or any other form of assurance as a result of performing the services described below. Our work cannot be relied upon to disclose certain errors, fraud or illegal acts that may exist and which might have been detected had we performed an audit in accordance with generally accepted auditing standards.
- We reserve the right, but will be under no obligation, to review this report, and if we consider it necessary, to revise our report in light of any information, which becomes known to us after the date of this report, including information provided by the Contractor and its Subcontractors.

**Deloitte.**