



New Calgary Central Library

October 05, 2015



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The City Auditor's Office completes all projects in conformance with the *International Standards for the Professional Practice of Internal Auditing*.

Executive Summary

The vision for Calgary's New Central Library (NCL) is "to inspire all."¹ The NCL project has a budget of \$245 million, and is expected to be completed by Q4 2018. Preparatory site work has been undertaken in 2014 and building construction is expected to start in September 2015. The project is being managed by Calgary Municipal Land Corporation (CMLC) on behalf of the City of Calgary's Community Services & Protective Services (CS&PS) and the Calgary Public Library (CPL). A Project Agreement (effective February 2013) sets out the funding, duties and obligations of CMLC and The City.

The site of the NCL is in Calgary's East Village, just east of City Hall. The site is bisected by two traffic corridors: a Light Rail Transit line which moves in a north/south arc across the site, and the east/west 8th Ave. pedestrian corridor which add to the technical complexities of the project. There are a wide range of key stakeholders, including: CPL, CMLC, business units across The City (particularly Transit, and CS&PS), the architects, the public, other local landowners and businesses, as well as companies involved in the project's planning and construction.

The audit focused on the design of the project management framework and the governance structure, as established by March 2015, supporting capital construction of the library. We evaluated whether a robust project governance framework had been established, and secondly, whether a comprehensive project management framework had been created. Establishing strong project management practices prior to project construction assists in managing project risk, particularly reputational risk, and managing cost, quality and time of the construction. We measured project management practices against best practices outlined by the Project Management Institute in the Project Management Body of Knowledge (PMBOK).

A robust project governance framework has been established. As mandated in the Project Agreement, the NCL Steering Committee was established to oversee and direct the NCL project. The Committee approves key milestones, provides strategic guidance, and quality assurance and support to the Project. Members of the NCL Steering Committee include The City, CMLC and CPL. We noted that defined roles and responsibilities exist for the NCL Steering Committee and regular meetings are held to monitor risks, project status and approve key decisions.

A PMBOK-based project management framework has been adopted, but is not fully utilized at this stage of the project. Key project processes such as time and cost management, quality, procurement, safety, environmental and risk management have been established. A change order process has been defined, and project reporting processes are in place. We identified five areas where project controls are missing or required enhancement, however, since the NCL project is still in the early days of construction, they do not represent a significant risk at this point in time. Nonetheless, we believe it is important that these controls are implemented on a timely basis once building construction commences, project expenditure accelerates and timelines become more constrained. The two areas of greater importance are project performance monitoring, and benefits realization.

Monitoring of project budget and schedule has been put in place, however, given the size and complexity of the NCL, project performance measures should also be defined and monitored.

¹¹ Progress update on the NCL project, CS&PS report to the Priorities & Finance Committee, February 19, 2013.

Project performance measures assess the magnitude of variation from the project baseline and provide early indication of variances from cost, quality, and schedule to allow immediate action to be taken. The NCL Steering Committee approved a revised budget and cost baseline in January 2015. The project manager anticipates starting detailed cash flow analysis and associated performance measurement tracking against baseline when building construction starts. We recommended prompt definition and implementation of performance measures to establish a structured process for monitoring project progress, and to reduce the risk of cost or time overruns.

Benefits realization is the process by which projects achieve their stated objectives. Given the large dollar investment, numerous stakeholders, and public visibility, the project should demonstrate value for the construction cost investment. Benefits of the project are documented across a number of different project documents, and are only partly quantified. We recommended that quantifiable project benefits be articulated, consolidated and summarized, and that responsibility and accountability for benefits realization is assigned.

CS&PS have agreed to our recommendations, and have indicated in their responses a commitment to implement action plans in 2016. We believe that these action plan timelines will address risk exposure given that the project is in the early stages of construction. Given the high dollar investment commitment and the wide public benefit of this project, the City Auditor's Office plans to provide periodic independent assurance on the effectiveness of construction project management until the successful completion of the New Central Library which is scheduled to occur in 2018.

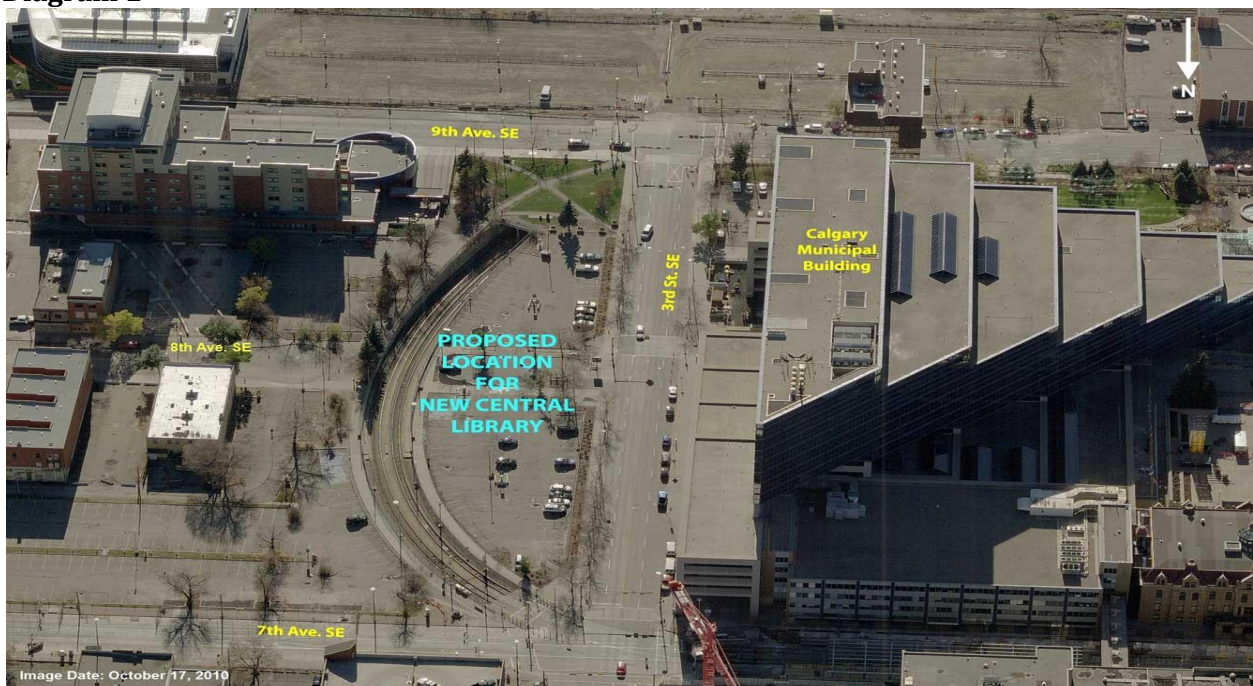
We would like to thank CS&PS, CMLC and the project manager for their assistance and support throughout this audit.

1.0 Background

The current Central Library was built in two phases in 1963, and 1974 when the population of Calgary was less than 400,000. Today the current building cannot meet the needs of Calgary's population, has building code compliance issues related to accessibility and fire protection, and inadequate infrastructure for power distribution and new technologies. In 2004, Council recognized the need for a new central library and approved \$40 million towards its development.

In July 2011, Council approved the site for the library and in February 2013 Council directed City Administration to proceed with the project and announced Calgary Municipal Land Corporation (CMLC) as the developer. The site of the New Central Library (NCL) is in Calgary's East Village, just east of City Hall. As shown in Diagram 1, the site is bisected by two traffic corridors: a Light Rail Transit (LRT) line which moves in a north/south arc across the site, and the east/west 8th Ave. pedestrian corridor which add to the technical complexities of the project.

Diagram 1



Source: <http://mycity/OurOrg/Dept/CSPS/OurNews/Pages/NewCentralLibraryNov22-2013.aspx>

The City and CMLC entered into a Project Agreement, effective February 26, 2013, whereby The City and CMLC each agreed to contribute funds to the project budget for the library project and CMLC agreed to undertake development of the library project on the terms and conditions set out in the Project Agreement. The Project Agreement states the City will contribute a maximum of \$175 million to the Project Budget to pay for costs of the library project. CMLC will contribute \$70 million. In the event that the total cost for the library project exceeds the project budget and given that The City's maximum contribution is \$175 million, CMLC will be responsible for any costs in excess of the project budget unless the additional costs are solely attributable to: (i) pre-existing site conditions, (ii) City initiated change orders, or (iii) a breach of the Project Agreement by The City.

As required by the Project Agreement, a steering committee consisting of The City of Calgary's representative and CMLC's representative was established. The Calgary Public Library (CPL) is also formally represented on the NCL Steering Committee. The Steering Committee is empowered to oversee and direct the project, approve key milestones, provide strategic guidance, quality assurance and support to the project. The Steering Committee is responsible for reporting progress to and soliciting input from key stakeholders including Council, the Mayor, the City Manager and City Administration.

Since February 2013, the concept design for the NCL, prepared by architects (selected through a global competition), has been developed. On April 30, 2014, the Prime Design Consultant Team presented the design to the Calgary Public Library Board and it was endorsed as presented. The CPL, as the principal stakeholder, continues to work closely with CMLC throughout the increasingly detailed design (e.g. mechanical, sustainability, accessibility, electrical, security) work to ensure the facility will deliver on program objectives, while staying within the approved \$245 million budget. Diagram 2 shows an artist's rendering of the NCL.

Diagram 2



Source <http://www.calgarymlc.ca/new-central-library>

There are a number of key milestones that need to be completed before building construction commences. The LRT encapsulation is expected to be complete by Q3 2015. Tenders for foundation, structure and exterior cladding, interior construction and landscape are expected to occur in Q3 2015 and in Q4 2015.

This audit was undertaken as part of the City Auditor's Office 2015 Annual Audit Plan.

2.0 Audit Objectives, Scope and Approach

2.1 Audit Objective

The objective of this audit was to evaluate the design of the project management framework and the governance structure supporting the capital construction for the NCL.

2.2 Audit Scope

The scope of the audit was to assess the documented project management processes and procedures in place to manage the NCL project. The documented project management processes were assessed against best practices outlined by the Project Management Institute in the Project Management Body of Knowledge (PMBOK).

2.3 Audit Approach

Our audit approach included the following:

- Review of project management documents, reports, studies and relevant correspondence;
- Review of the project delivery strategy and associated documents;
- Review of the NCL governance structure; and
- Interviews with staff and other personnel associated with the NCL project (e.g. project manager, CMLC, City staff).

During the planning phase of the audit, we conducted a high level risk assessment including the identification of anticipated project management controls to mitigate the risk. The recommended controls are based on project management best practices. We reviewed the high-level project management controls in place during our fieldwork. A risk and control assessment matrix that maps controls to the identified risks is included in Appendix A.

3.0 Results

We reviewed the project governance structure and supporting project management framework.

3.1 Project Governance

PMBOK states that a "... project governance framework provides the project manager and team with structure, processes, decision making models and tools for managing the project, while supporting and controlling the project for successful delivery. Project governance is a critical element of any project, especially on complex and risky projects."²

Our review of the governance structure noted that a defined governance structure, with defined roles and responsibilities, is in place to provide oversight and project monitoring.

Three major agreements govern the NCL project – the Project Agreement, Transit Construction Protocol Agreement and the License of Occupation. The overarching agreement is the Project Agreement between The City and CMLC which defines the funding requirements and roles and responsibilities between The City and CMLC. The Project Agreement also sets

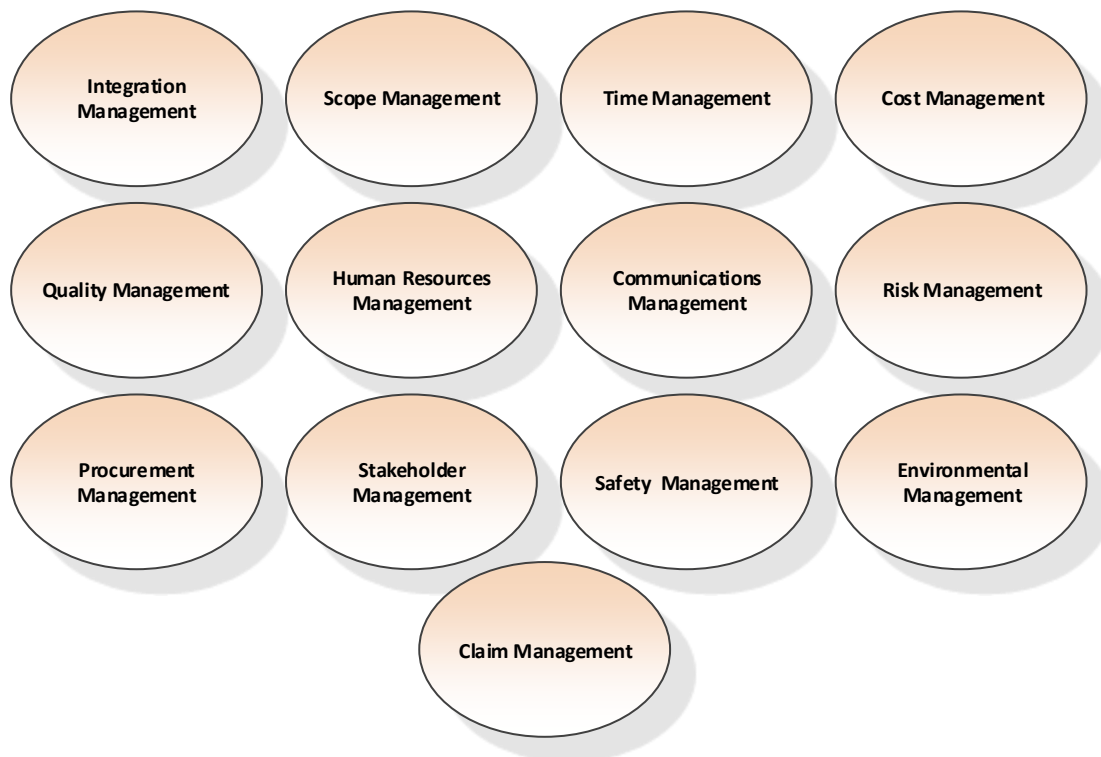
² Project Management Body of Knowledge (PMBOK Guide), Fifth Edition, page 34.

out the change order process to be followed. The purpose of the Transit Construction Protocol Agreement is to set out the terms and conditions between Calgary Transit and CMLC for the design and construction of the encapsulation tunnel and any related infrastructure and development as required under the provisions of the Project Agreement. The License of Occupation agreement between The City and CMLC authorizes CMLC to access the land and to undertake construction.

The Project Agreement mandated a steering committee be established to oversee and provide direction regarding all matters associated with the NCL project. The NCL Steering Committee was established in 2013 to provide governance over the project with The City, CMLC and CPL as members. Roles and responsibilities of the NCL Steering Committee were defined in a Terms of Reference document. The NCL Steering Committee meets monthly to obtain the project status, discuss and monitor risks, and approve key decisions.

3.2 Project Management Framework

Strong project management practices and project performance monitoring are critical to the success of any large construction project. We evaluated the project management framework against the key knowledge areas³ of project management using the PMBOK⁴:



³ A knowledge area represents a complete set of concepts, terms, and activities that make up a professional field, project management field, or area of specialization. These knowledge areas are used on projects as appropriate.

⁴ Includes PMBOK fifth edition knowledge areas and the construction project management knowledge areas from the PMBOK Construction Extension.

We assessed all of the project management key areas and observed the foundations of an effective project management framework have been established. We also identified opportunities to further strengthen current processes by enhancing and formalizing the monitoring of project performance, project benefits, stakeholder communications and project risk.

We have chosen to highlight in the results section three key areas (integration, time, and cost management) where we observed that an effective project management framework is in place, as well as opportunities to strengthen current processes under the categories of monitoring of project performance, project benefits, stakeholder communications and project risk.

Integration Management

Project integration management includes the processes and activities needed to identify and coordinate the various processes and project management activities, and to manage the interdependencies among the project management knowledge areas. We reviewed the project management plan which explains how the project will be monitored and controlled with respect to: scope, time, cost, quality, human resources, communications, procurement and risk management. Our review of project documentation, meeting minutes and reports noted that the processes outlined in the project management plan are being followed and implemented, and therefore integration management is in place.

Time Management

A master project schedule exists which identifies key events, milestones and critical activities. The schedule is monitored on a regular basis by The City, CMLC, the project manager and the construction manager. The encapsulation of the LRT tracks that bisect the library site – the necessary first step toward delivering the NCL – began in May 2014, and is progressing on schedule.

Schedule performance is reported to the monthly NCL Steering Committee meetings. A milestone schedule status is included in the project status reports, for review by the NCL Steering Committee, which shows the activity, scheduled completion date, forecast completion/actual date and percentage complete.

Cost Management

Initial rough order of magnitude cost estimations were developed in 2012. Since 2012, many iterations were completed with respect to the design and costing of the design. Meetings were held with CMLC, the construction manager, architects, and the project manager to price changes made to the design. During our fieldwork, we noted CMLC planned to have the drawings reviewed by an independent company to identify errors or omissions in order to provide more accurate costs and tenders. Once the final estimates and review are complete, the package tenders for foundation, structure and exterior, interior, and landscaping are expected to go out in Q3 2015.

Current project performance for cost is reported to the monthly NCL Steering Committee meetings. Costs are tracked in an Excel-based cost tracking log by the construction manager and the project manager. The budget log is part of the cost tracking log and we validated that the budget log is included in summary within the monthly project status reports for review by the Steering Committee. The monthly project status reports show the budget allocation, commitments, forecast at completion, and money spent to date.

Monitoring of Project Performance

Construction for the building is expected to commence in September 2015. Once construction commences spending will increase and timelines may become constrained, increasing the importance of rigorous cost, schedule, and risk monitoring. Regularly monitoring the schedule performance can provide early indications of possible activity coordination problems, resource conflicts, and cost overruns.

At the time of our audit fieldwork, the project manager planned to implement performance measures such as earned value management for project performance monitoring. Project performance measures are used to assess the magnitude of variation from the approved baselines to enable corrective action to be taken in a timely manner. Discussions with City project staff, CMLC, and the project manager noted that a more detailed cash flow analysis is planned on being prepared once spending for the site and building commences. Performance metrics enable project managers to assess the status of projects in terms of schedule, cost and profitability, and foresee any potential risks. We recommended defining and implementing performance measures such as earned value management in order to accurately monitor project costs; prepare detailed cash flows; and to provide reporting on the performance measures on a regular basis (Recommendation 1).

Project Benefits

The project business case includes success criteria but not quantifiable benefits. Other project documentation includes some project benefits, but they have not been collated and summarized. A plan to monitor benefits realized is not in place. Quantification of benefits and monitoring would allow value of the project to be clearly demonstrated on completion. We made a recommendation to articulate, consolidate, and summarize the quantifiable project benefits to facilitate benefits realization and to assign responsibility and accountability to perform benefits realization monitoring (Recommendation 2).

Stakeholder Communications

Our review noted that the management of communication to stakeholders has occurred to date through several channels, in particular, through the design review process. However, no formal detailed communication plan and stakeholder management plan exists. We made a recommendation to ensure there are consistent processes for communication and the right stakeholders are receiving timely and relevant communication as the project progresses (Recommendation 3).

Project Risk

CMLC is responsible for updating and maintaining the project risk register, and provides monthly status updates to the NCL Steering Committee, including significant risks and planned mitigation strategies. Our review of risk registers from January 2015 and February 2015 identified that risk categories such as construction claims were missing, and risk owners were not identified in all cases. Risk definitions were also not defined. We made recommendations to review the risk register to ensure all categories of risk have been considered and that significant risks are monitored. We made another recommendation to ensure all risk owners are identified with an appropriate response/mitigation strategy and to provide clarity and awareness of the risk definitions (Recommendations 4 and 5).

4.0 Observations and Recommendations

4.1 Project Performance Monitoring

While project financial cost and schedule status are tracked, project performance measures have not been implemented to date.

The project's financial status is monitored by using an Excel-based cost tracking log. The cost tracking log tracks: financial commitments, budget allocation, changes, cash allowances and cash flows. A summary of the cost tracking log is included within the monthly project status reports, prepared by the project manager, for review by the NCL Steering Committee.

The project's schedule is monitored by the project manager, construction manager, CMLC and The City. A milestone schedule status is included in the project status reports for review by the NCL Steering Committee, which shows the activity, scheduled completion date, forecast completion/actual date and percentage complete.

Project performance measures are used to assess the magnitude of variation from the original scope baseline. Earned Value Management (EVM) is a methodology that integrates the scope, cost, and schedule baseline to assess and measure project performance and progress. For accuracy in monitoring performance, it is important to calculate performance measures against the approved baseline and not on revised estimates.

Discussion with the project manager and CMLC indicated that cash flows are tracked by the construction manager, reviewed by the project manager and then sent to CMLC for approval. We have been advised that more detailed cash flow tracking will be completed once spending starts on the building. We were also advised by the project manager that EVM is planned on being used as a performance measure.

Project performance monitoring reduces the risk of cost/time overruns by providing a structured method of identifying deviations at an early stage.

Recommendation 1

The General Manager, CS&PS, recommend that the NCL Steering Committee implement project performance monitoring by:

- a) Formalizing performance measurements (e.g. earned value management) to accurately monitor project performance for costs and schedule.
- b) Preparing detailed cash flows which would allow accurate tracking of planned vs. actual results.
- c) Calculating and reporting on performance measures on a regular basis.

Management Response

Action Plan	Responsibility
<p>Agree.</p> <p>CMLC will develop performance measures on earned value, an implementation schedule, and the reporting mechanism, and present this plan to Steering Committee for approval.</p> <p>CMLC will modify its current cash-flow projections to The City's required tracking format, and implement immediately upon Steering Committee approval.</p>	<p><u>Lead</u>: CMLC: Director, Development</p> <p><u>Support</u>: City: Coordinator, New Central Library Project</p> <p><u>Commitment Date</u>: February 17, 2016</p>

4.2 Benefits Realization

A complete benefits realization plan is not in place.

Benefits realization is the process to deliver and measure the achievement of the benefits as outlined in the business case, and allows stakeholders to see the value the project has delivered in return for the investment. Without quantification of expected benefits, it is not possible for the project to clearly demonstrate value delivered, which is a reputational risk to The City.

The project business case includes success criteria but not quantifiable benefits. Other project documentation includes some project benefits, but they have not been collated and summarized. A plan to monitor benefits realized is not in place.

Quantification of benefits and determination of ownership of benefits realization would allow value of the project to be clearly demonstrated upon completion.

Recommendation 2

The General Manager, CS&PS, recommend that the NCL Steering Committee implement a benefits realization plan by:

- a) Articulating, consolidating and summarizing the quantifiable project benefits; and
- b) Assign responsibility and accountability for benefits realization post construction.

Management Response

Action Plan	Responsibility
<p>Agree.</p> <p>The Calgary Public Library will develop a summary of quantifiable benefits that are expected to be realized once the new facility is operational. This summary will provide the basis for measuring and reporting performance against targets on an annual basis.</p> <p>A plan containing the performance measures as well as the reporting mechanism and implementation schedule will be presented to the Steering Committee for approval.</p>	<p><u>Lead</u>: Calgary Public Library: Project Director</p> <p><u>Support</u>: City: Coordinator, New Central Library Project; CMLC: Director, Development</p> <p><u>Commitment Date</u>: February 17, 2016</p>

4.3 Stakeholder & Communication Management Plan

Stakeholder management and detailed communication plans are not documented.

Initial preliminary stakeholders were identified in the project business case, and in the NCL Project Agreement execution project charter. A high-level communication plan has been included in the Project Management plan.

Project stakeholders have been identified by the project manager, The City and CMLC; and have been engaged in the project to date in a number of different ways:

- Participating in an extensive public engagement program (more than 16,000 Calgarians provided input)
- Involving CPL, The City, CMLC and the architects in the design review process
- Attending various meetings (e.g. Steering Committee, Working Committee, Integrated Project Team, construction meetings).

The PMBOK standards expect projects to implement:

- A stakeholder management plan to state how the project will effectively engage stakeholders throughout the project life cycle based on the analysis of their needs, interests, and potential impact on project success.
- A communications plan to state how project communications will be planned, structured, monitored, and controlled. The objective of the plan is to meet stakeholder requirements and to assist in timely and appropriate planning, collection, creation, distribution, control, monitoring, and the ultimate disposition of project information.

We observed that day to day management of stakeholders takes place, for example, through the design review process. However, no formal documented stakeholder management plan exists. Key items relating to stakeholder management were not documented, such as, who

will own and manage the key relationships, and schedule of stakeholders that need to be involved.

We also identified that there is no detailed communication plan that outlines how communication will be structured (e.g. stakeholder communication requirements, person responsible for communicating the information, methods or technologies used to convey the information, and how the communication will be monitored and controlled).

It is critical for project success to identify the diverse stakeholders early in the project and to analyze their levels of interest, expectations, as well as their importance and influence. Stakeholders' perspectives, involvement and ability to influence the project may change throughout the project lifecycle. Periodically conducting a stakeholder analysis will assist the project team in determining the right approach to effective stakeholder communication, risk mitigation and engagement throughout the project.

Inadequate communications planning may lead to problems such as delay in message delivery, insufficient communication to stakeholder, or inappropriate communication (e.g. too much detail, or wrong audience).

Recommendation 3

The General Manager, CS&PS, recommend that the NCL Steering Committee ensure there are consistent processes for communication in place and that the right stakeholders are receiving timely and relevant communication.

Management Response

Action Plan	Responsibility
<p>Agree</p> <p>City Administration will work with CMLC and the CPL to document the project's stakeholder engagement, communications, and decision-making process. The plan should include the appropriate cross-party 'sign-offs' to ensure all parties have written confirmations in effect. The document will be presented to the Steering Committee for approval.</p>	<p><u>Lead</u>: City: Coordinator, New Central Library Project</p> <p><u>Support</u>: CMLC: Director, Development; CPL: Project Director</p> <p><u>Commitment Date</u>: February 17, 2016</p>

4.4 Risk Identification

The risk register is not fully complete as not all categories of risk have been considered.

Risks to the project can be categorized by sources of risk, the area of the project affected or other useful categories to determine the areas of the project most exposed to the effects of uncertainty.

We obtained risk registers that were dated January 2015 and February 2015. We analyzed the risk registers for high-level categories of risk and observed that the risk of construction claims were not included. Construction claims may arise as the result of an unresolved request for a change order, project performance (quality of work performed) or a contract document interpretation. Risks, if not identified, monitored and mitigated, could impact project costs and schedule.

Recommendation 4

The General Manager, CS&PS, recommend that the NCL Steering Committee review the risk register to ensure all categories of risk have been considered.

Management Response

Action Plan	Responsibility
<p>Agree</p> <p>CMLC will update the Risk Register to include risk of construction claims, and to document any other risk category not previously identified. An updated risk register will be presented to the Steering Committee in conjunction with Recommendation # 5.</p>	<p><u>Lead</u>: CMLC: Director, Development</p> <p><u>Support</u>: City: Coordinator, New Central Library Project; CPL: Project Director</p> <p><u>Commitment Date</u>: February 17, 2016</p>

4.5 Risk Management

The risk management plan recognizes the importance of having risk owners identified, but the risk register did not show owners assigned to more than half the risks. Risk scoring definitions are also not documented.

Our review of two risk registers from January 2015 and February 2015 noted that approximately 63% of risk owners were not identified. We informed CMLC, who indicated that owners will be identified for all risks. We also noted there were no definitions to support the probability and impact scoring on the risk assessment. The approach to date has been to assign 0 when the risk has been eliminated or no impact exists and 5 is assigned in the cases where the risk is the most severe in terms of impact or probability.

Without a risk owner, the risk management plan may not be effective. Without clear definitions of risk impact and probability, risks may be treated inconsistently, and the risk management plan may not be appropriately aligned to the severity of the risk.

Recommendation 5

The General Manager, CS&PS, recommend that the NCL Steering Committee:

- a) Determine a risk owner and response/mitigation strategy for all key risks on the risk register; and
- b) Ensure that there is consistent understanding of the risk assessment scoring process.

Management Response

Action Plan	Responsibility
<p>Agree</p> <p>City Administration will initiate a workshop with CMLC and the CPL to:</p> <ul style="list-style-type: none"> review the updated Risk Register including any items arising from Recommendation # 4; review the definitions to support scoring on probability and impact; and assign risk owners for each risk category. <p>A revised Risk Register and supporting documentation will be presented to Steering Committee for approval. The Risk Register would then be updated by all identified risk owners on a regular basis at Steering Committee Meetings.</p>	<p><u>Lead:</u> City: Coordinator, New Central Library Project</p> <p><u>Support:</u> CMLC: Director, Development; CPL: Project Director</p> <p><u>Commitment Date:</u> February 17, 2016</p>

5.0 Appendix A: Risk & Control Assessment

Audit Objective: Assess the project management framework and governance structure in place to manage the NCL project

Council Priority/Strategic Action: A prosperous city. A city of inspiring neighborhoods.

#	Risk	Description of Risk Impact	Rating of Risk Before Controls			Best Practices	PMBOK Reference	Control in Place Y/N
			Impact (L,M,H)	Likelihood (L,M,H)	Overall Risk (L,M,H)			
1	Lack of a clear governance structure and accountability.	Inappropriate or inadequate decisions may be made. Reporting does not focus on key success factors (schedule, cost and performance) and provide for transparency and accountability.	H	H	H	Defined project organizational structure exists Decision making framework Roles, responsibilities and accountabilities are defined Regular reporting on project status Change order process	PMBOK Project Governance	Y
2	Cost overruns	Additional financing may need to be obtained. There could also be reputational impacts to The City.	H	H	H	Authorized project charter developed Project Management Plan developed & updated on a regular basis Change log	Project Integration Management	Y
3						Scope baseline Scope management plan	Project Scope Management	Y

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#	Risk	Description of Risk Impact	Rating of Risk Before Controls			Best Practices	PMBOK Reference	Control in Place Y/N
			Impact (L,M,H)	Likelihood (L,M,H)	Overall Risk (L,M,H)			
4						Cost baseline Cost management plan	Project Cost Management	Y
5	Schedule delays	There may be additional costs to get back on schedule. There could also be reputational impacts to The City.	H	H	H	Project schedule Schedule management plan	Project Time Management	Y
6	Poor quality facility built	There may be additional costs and schedule delays to remedy poor construction quality. There could also be reputational impacts and safety could be compromised.	H	H	H	Quality management plan Quality metrics Process Improvement plan	Project Quality Management	Y
7	Incomplete project team	Project team may result in inefficiency and increased costs. Project costs, schedules, risks, quality and other project areas may be impacted if resources and labour with specific skill sets and competencies cannot be acquired when needed.	H	M	H	Human Resource Management Plan	Project HR Management	Y
8	Communication gaps	Changes in scope, significant issues, schedule or milestone issues may arise and may not be resolved in a timely manner resulting in an increase in costs and/or possible schedule delays.	H	M	H	Stakeholder Register Stakeholder management plan Communication management plan Issue log & issue management process	Project Communications Management Project Stakeholder Management	Y

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Attachment

#	Risk	Description of Risk Impact	Rating of Risk Before Controls			Best Practices	PMBOK Reference	Control in Place Y/N
			Impact (L,M,H)	Likelihood (L,M,H)	Overall Risk (L,M,H)			
9	Risks to project delivery are not managed	Events may be uncertain and have a negative or positive impact on project objectives such as scope, schedule, cost, and quality.	H	H	H	Risk Management plan Risk register developed with risk responses Risks are monitored & risk register updated	Project Risk management	Y
10	Procurement non-compliance	The City's stated procurement policies and procedures are not followed which may result in financial costs and reputational risk for The City.	H	H	H	Procurement management plan	Project Procurement Management	Y
11	Safety incidents	The project is executed in a manner which does not prevent accidents, personal injury, fatalities or property damage resulting in increased costs.	H	H	H	Safety management plan Safety training Safety zoning & signage Traffic Management Plan	Project Safety Management PMBOK Construction Extension	Y
12	Environmental impacts or incidents	Environmental impacts are not minimized resulting in possible penalties and/or costs. There is also a reputational risk to The City.	H	M	H	Environmental Management plan	Project Environmental Management PMBOK Construction Extension	Y
13	Inadequate claim management	Claims are not resolved at the earliest opportunity which may result in higher costs and more disruption to the project.	H	H	H	Claim identification & management	Project Claim Management PMBOK Construction Extension	N