

Proactive Audit Involvement in Capital Projects

March 31, 2015



The Office of the City Auditor conducted this project in accordance with the International Standards for the Professional Practice of Internal Auditing

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Proactive Involvement in Capital Projects

1. Introduction

The objective of proactive audit involvement in major capital projects is to determine if sound project management practices as set out in the City's Project Management Reference Guide (PMRG) are being applied consistently through all stages of a project.

Benefits accrue to both the Administration and Office of the City Auditor (OCA) from proactive audit involvement in major capital projects. For example:

- Project documentation is current and readily available, thus eliminating the administrative challenge of locating archived documentation after a project is complete.
- Administration receives more timely input into actual project management practices, allowing improvements to be made as the project progresses.
- Timely objective assessments of project management practices increase stakeholders' confidence that the project is progressing in an appropriately-controlled manner.
- Improved audit efficiency as project staff gain familiarity with current issues.

2. Corporate Centre for Project Management

In 2012, the Administration established the Corporate Centre for Project Management (CCPM) to lead the improvement of project management for all construction projects across the Corporation. Starting in 2012, a project management training program was developed specifically for City staff. The CCPM has continued its efforts to inform City staff on leading project management practices by providing "Lunch and Learn" sessions on current project management topics.

In October 2013, the CCPM rolled out the first version of the PMRG. The guide is intended to standardize project management practices and was to be used for new capital construction projects starting in July 2014. Full deployment is expected by the end of 2015.

The CCPM has been working with business areas to enhance the functionality and add new tools to the PMRG to help standardize practices across the corporation. The latest update to the PMRG was rolled out in December 2014. In 2016, the CCPM will be introducing a Project Management Information System (PMIS) which will assist in managing the project documentation and information by automating some of the tools provided in the PMRG.

PROJECT MANAGEMENT PRINCIPLES

The project management principles set out in the PMRG cover 13 project management knowledge areas (or principles) based on the Project Management Body of Knowledge (PMBOK).¹ These principles are depicted in Figure 1.



Figure 1 – Project Management Principles

The relationship and interaction among the 13 principles influence project outcomes. The manner in which they are executed affects the efficiency and effectiveness of service delivery. The City developed the graphic in Figure 2 as a quick, easy reference to show and explain what stage a project is at in its life cycle.

Figure 2 – Project Life Cycle



Each time a project moves to a new stage, decisions are made that define the scope, level of detail available or required, and the potential to influence costs. As the project moves through these stages, different work groups and sometimes different departments take the lead in managing the project. The project management principles set out in Figure 1 are applied at all stages in the project management life cycle.

¹ The Project Management Body of Knowledge is published by the Project Management Institute (PMI)

3. OCA 2014 Proactive Involvement

Over the past two years, staff from the OCA and the CCPM have met with project management teams in various departments to observe and provide feedback on project management practices.

With the adoption of a standard project management process and understanding how it is being applied to some major projects, there is opportunity to assess and compare the maturity of project management practices across the corporation. Over the past few months, the OCA and CCPM have been developing a quality review checklist to facilitate standardized monitoring of project management practices for larger, high profile and sensitive projects. When complete, this tool will allow individual project teams to self-assess their own performance and participate in peer reviews. It will also allow the CCPM to better monitor and assist project managers in improving their performance. In addition, the OCA can use the tool to assess or validate project management practices across the corporation.

In 2014, the OCA was proactively involved with four major capital projects: Rogers Place and Related Facilities, Walterdale Bridge Replacement, Valley Line Light Rail Transit – Stage 1, and Alex Decoteau Park.

The remainder of this report provides a brief description of each of these capital projects, current project status, observations relative to monitoring and reporting activities that demonstrate the application of project management principles, and areas for improvement that have been or will be implemented on a go-forward basis.

3.1. Rogers Place and Related Facilities

BACKGROUND

Rogers Place and Related Facilities is a \$605.4 million project located in the heart of Edmonton. It will be the major showpiece in the new Arena District and the new home of the Edmonton Oilers. It is set to open its doors in September 2016.

The facility will feature sleek exterior architecture with a roofline intended to evoke the image of an oil drop and



curvilinear stainless-steel siding intended to evoke the shapes of drifting snow. Rogers Place will seat 18,647 for hockey games and 20,734 for concerts and other events. Seating options will range from a large lower bowl containing 52% of all seats to the newest in premium seating options: loge seats.





The arena will feature clubs on every level that overlook the ice surface. Other amenities will include generous concourses, varied food & beverage options, a full-service restaurant, on-street media and production studios, and the largest high-



definition scoreboard in the NHL.

In addition to the NHL rink, the structure will house a community rink, Winter Garden, LRT connection, and pedestrian walkway corridor.

Private commercial/office space is being constructed on the southeast corner of the facility. This space is fully funded by private developers and is not reflected in Table 1, Rogers Place and Related Facilities Funding.

		Source of Funds					
	Budget	Community Revitalization Levy	Other City Funding	Edmonton Arena Corp.*	Ticket Surcharge	Grants & Other Revenue	
NHL Arena	\$480.7	\$120.0	\$80.0	\$130.0	\$125.0	\$25.7	
Winter Garden	56.6	25.0		31.5		0.1	
Pedestrian Walkway	15.0	15.0					
LRT Connection	7.0	7.0					
Community Rink	21.1	7.0				14.1	
Arena Land	25.0	25.0					
TOTAL	\$605.4	\$199.0	\$80.0	\$161.5	\$125.0	\$39.9	

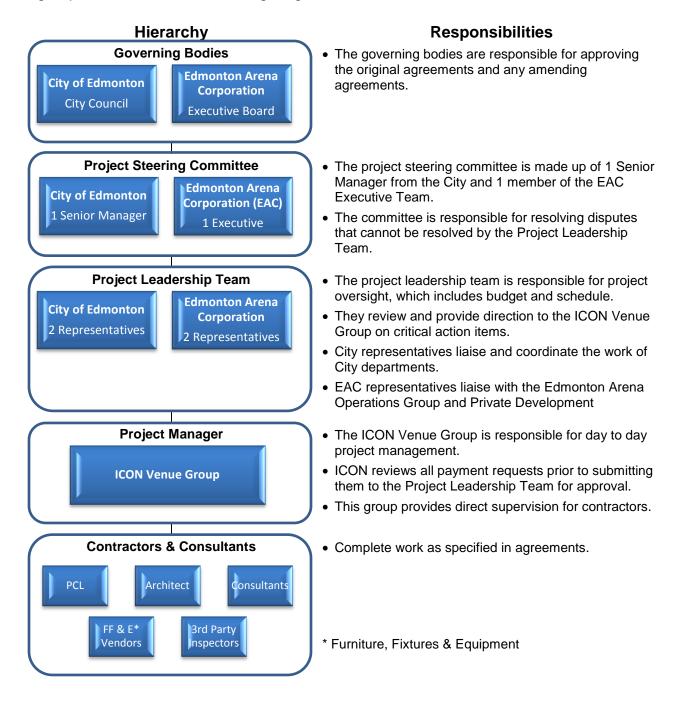
Table 1, Rogers Place and Related Facilities Funding (millions of dollars)

* Includes Lease funding for \$137.8 million and a cash contribution of \$23.7 million

For more information visit the City of Edmonton <u>Arena and Entertainment District</u> <u>webpage</u> and the Rogers Place Website <u>www.rogersplace.ca</u>.

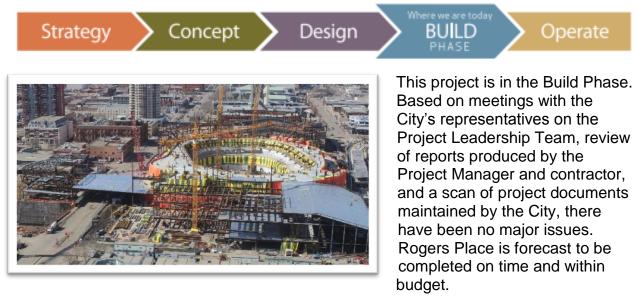
PROJECT MANAGEMENT STRUCTURE

The project is being managed jointly by the City of Edmonton and the Edmonton Arena Corporation (EAC). The project management structure and key responsibilities of each group are set out in the following diagram.



Over the past year, we met with the City's representatives on the Project Leadership Team every other month. Discussions included the project status and project monitoring and reporting activities.

PROJECT STATUS



The City's two representatives on the Project Leadership Team have specific roles relative to project. One representative focuses on construction project management oversight to ensure the project is constructed on time, within budget, and in compliance with the quality requirements set out in various agreements. The other representative's focus is on three additional success factors to demonstrate that the project has a positive influence on the Downtown: economic activity, operational effectiveness, and social benefit.

PROJECT MANAGEMENT MONITORING AND REPORTING

This section summarizes the monitoring and reporting that is completed for this project.

Daily

Daily progress is monitored by the Project Management consultant, ICON Venue Group, and the Downtown Arena Project Office in the Facility and Landscape Infrastructure Branch in Community Services Department to ensure that issues are being addressed in a timely manner.

Weekly

On a weekly basis, two meetings are scheduled:

 Project Leadership Team Meeting – The Project Leadership Team and Project Manager discuss new and unresolved critical action items, budget, schedule, design items, and risk and exposure for the project. They also discuss potential impacts of Arena District development on construction activity.

 Owner, Developer, Architect, and Construction Manager Team Meeting – Attendees include the Project Management Team, Project Manager, Contractor, Architect, and other stakeholders that may be impacted by items to be discussed. Discussions cover the following topics: health and safety; the environment; permits; the status and outstanding issues related to contracts; design; construction and quality control; and communications and public interactions.

Monthly

Two monthly status reports are produced: one by the Project Manager and the other by the Contractor. Both reports include an executive summary that can be used to provide City management a high-level overview of the project status.

The Project Manager's report includes:

- Financial Information covering the budget, contingency use, risk exposure, invoices processed in the period, and project funding;
- Detailed construction schedule;
- Meeting minutes from the Project Leadership Team and the Owner, Developer Architect, and Construction Manager Team meetings;
- Project change and design completion logs; and
- Progress photographs.

The Contractor's report includes:

- Health, Safety and Environment statistics;
- Financial information on the status of the Guaranteed Maximum Price agreement;
- Change order status;
- Schedule status, including action plans to address any slippage;
- Quality management status;
- Value engineering tracking & reporting;
- Sustainability initiatives (LEED); and
- Progress photographs.

INFLUENCE ON DOWNTOWN

In addition to the success factors of time, cost, scope and quality, three additional success factors have been established for this project. The following are descriptions of these success factors and related actions of the Project Leadership Team.



Economic Activity

The direct impact of development in the area surrounding the arena is critical to the success of the Community Revitalization Levy (CRL). The indirect impact of additional development and investment in the downtown is also beneficial to the overall financial health of the City. The City's representatives monitor development activities outside the City's control to optimize positive development opportunities and mitigate the potential for negative impact on the downtown.

Operational Effectiveness

Event-attendees, surrounding businesses and residents need to feel that the Arena District is safe and a good place to be if the project is to be successful. The City's representatives are instrumental in coordinating efforts in the areas of security, policing, cleanliness, and accessibility. For example, Edmonton Police Service, Peace Officers, Transit Security, Corporate Security, Private Security, Bylaw Enforcement, and the Community all need to share information with respect to both event-planning management and resourcing for times when events are not scheduled. Proactively combining knowledge gained from the local environment with expertise developed throughout North America is expected to result in a better overall experience for Edmontonians and visitors.

Social Benefits

The project is intended to create increased opportunities for working and living in the surrounding area. The City representatives work with a Community Benefits Committee to ensure potential negative impacts are appropriately addressed and positive impacts are leveraged.

A formal mechanism has been



established to ensure ongoing dialogue between the City, the Oilers, the facility Operator, the Communities, and Social Agencies. Early results include: PCL engaged local agencies to recruit and hire local individuals and Norquest College initiated a Hospitality Program to train local residents for future employment in the Arena District.

OPPORTUNITIES FOR IMPROVEMENT

Risk Management

The meeting minutes and monthly reports we reviewed demonstrate that current risks are discussed. We noted that the risk register used for this project is based on a template included in the City's PMRG, but that recent risk discussions and assessments were not recorded in the risk register. The risk register was last updated in May 2014.

Process Improvement

We discussed the importance of tracking all identified risks and maintaining the risk register. The City representatives acknowledged the importance of keeping the risk register current and are working with the Project Manager to develop a process to incorporate a risk register within the monthly report.

CONCLUSION

The project management structure clearly assigns oversight and project management responsibilities. Based on our discussion with Project Leadership Team members and review of reports, sound project management principles are being applied. The area of improvement discussed above is intended to help the Roger's Place Project Team continue to improve their project management practices.

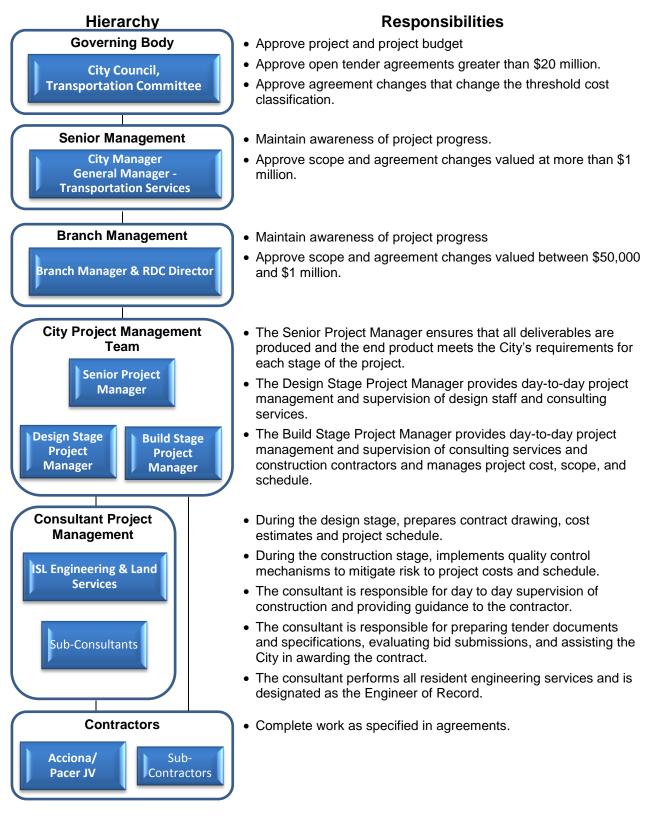
3.2. Walterdale Bridge Replacement



BACKGROUND

The new Walterdale Bridge will be a 43-metre tall signature arch with no supporting piers in the river. The bridge is designed to initially carry three northbound lanes of traffic with provision for an additional lane in the future. The bridge structure includes a shared-use path to enhance pedestrian and cyclist crossings. The project also includes realignment of two major roadways leading to the bridge and construction of multi-use trails on both sides of the river. The construction contract calls for the new Walterdale Bridge to be open to traffic by September 15, 2015. The existing bridge will be removed in 2016. The total approved budget for design and construction of the new bridge and removal of the existing bridge is \$157.5 million. \$2.5 million for preliminary design was funded from the 2009 Bridge Replacement Composite project and \$155 million for detailed design and construction is funded from the Walterdale Bridge Replacement project.

PROJECT MANAGEMENT STRUCTURE



Over the past year, we met with the City's representatives on the Walterdale Bridge Replacement team every other month. Discussions included the project status and project monitoring and reporting activities.

PROJECT STATUS



Based on our review of project documentation and discussions with the City's project team, we believe the following two factors have the greatest potential to negatively impact the project cost and schedule:

• The consulting services contract for the design and build phases increased from \$11.1 million to \$18.4 million (65 percent). The increase was attributed to the contract being extended by one year and for other items that the project team classified as scope changes. Half of the \$7.3 million change order was funded through the adjustment approved in 2013; the remainder was funded from the project contingency.

Appropriate procurement and budget procedures appear to have been followed. However, due to the magnitude and complexity of the change order, it will be included in the Change Order Review that is included in our 2015 Annual Work Plan.

• The delivery of the steel arch being fabricated in Korea has been delayed by 11 months. The original project schedule indicated the steel would start arriving in April 2014. The central part of the arch started arriving in March 2015. The remaining parts of the arch, roadway deck, and shared-use path components are either still being fabricated or in-transit.

PROJECT MANAGEMENT MONITORING AND REPORTING

This section summarizes the monitoring and reporting that has been completed for this project.

Daily

The City's construction project manager is on-site daily to monitor the performance of consultants and contractors. In addition, both the consultant and contractor are required to provide daily reports that summarize the work completed that day and a list of work planned for the following day.

Weekly

Construction Progress meetings (attended by City, Consultant, and Contractor representatives) are held weekly. The consultant prepares and circulates minutes from the meetings that briefly describe current safety, project schedule, Quality Control and Assurance, change management, environmental, utility, historical resource issues, and risk management.

Monthly

Internal Construction Progress meetings (attended by City and Consultant representatives) are held monthly. The consultant prepares and circulates minutes from the meetings that provide a history and current status for issues that have not been resolved in prior months.

A project-specific monthly status report that contains the information suggested in the PMRG reporting template is not being prepared by either the consultant or City team members. The project status report is intended to provide decision makers (e.g., branch managers, general managers) with enough detail to understand not only the status of cost and schedule but also issues that could prevent the project from achieving its objectives. Instead, the Roadway Design and Construction Branch



(RDC) prepares a monthly high-level summary that lists the cost and schedule status for more than 100 approved capital projects. This summary is shared with project stakeholders. In addition, the RDC Branch Manager provides a detailed verbal update to the Transportation Services Leadership Team monthly.

OPPORTUNITIES FOR IMPROVEMENT

Roles and Responsibilities

In our January 22, 2014 status report titled "Capital Project Advisory Assistance," we noted that project documentation did not clearly specify the roles and responsibilities of each project manager. In response, the Corporate Centre for Project Management prepared a high-level comparison of roles for City project manager and consultant project managers. This comparison does not identify specific responsibilities such as reporting, document management, and quality management because they will vary depending on the project management hierarchy established for each project.

The description of work in the consultant agreement identifies three groups as being responsible for project management for the Walterdale Bridge Replacement Project: the City, consultant, and contractor. This structure requires that each group accept responsibility for specific project management tasks. Our discussion with the project team indicates that specific responsibilities have been defined, discussed, and agreed to among the groups. However, specific responsibilities have not been documented, increasing the risk of duplication of effort and the potential for disagreement on accountability if tasks are not completed.

Process Improvement for Future Projects

We discussed the importance of documenting responsibilities when a role is shared among multiple groups. RDC Management agreed to document project management responsibilities for future capital projects when multiple parties share a role.

Risk Management

The City's Project Management Reference Guide (PMRG) describes risk management as an ongoing process that is to be applied for all projects. The instructions for completing risk registers state: "The Risk Register keeps the information of the risks of a project and is [to be] updated on a regular basis."

In our January 22, 2014 status report, we noted that the risk assessment completed during the design stage had not been updated at the beginning of the build stage. Following discussion at a bi-monthly status meeting, a new risk register was prepared; however, the register did not include all the information described in the PMRG. Weekly Construction Progress Meeting minutes maintained by the consultant include titles for current risks, suggesting that risks are being discussed. However, the risk register/matrix is not being updated to reflect the actual risks, mitigating strategies, potential impacts on cost and schedule, and assigned responsibilities.

Process Improvement for This and Future Projects

Following discussions on the importance of risk management, the City's project manager prepared a risk register using the PMRG template and committed to updating the register on a regular basis for the remainder of the project. RDC management has agreed to prepare and maintain risk registers for future projects to demonstrate the application of PMRG risk management requirements.

Project Documentation and Document Management

Appropriate and timely project documentation is crucial for the successful delivery of a project and for the organization's ability to promptly respond to audit, legal, and FOIP enquiries. Document management, which includes storage, retrieval, and retention of project documents, is a critical part of effective project management.

The project team maintains detailed daily documentation and weekly and monthly meeting notes that support project management activities. We noted that part of the project documentation is maintained by the City and part is being maintained by the consultant. We were advised that most of the documentation is maintained in electronic format and that some larger documents are stored in paper files. We were also advised that the documentation maintained by the consultant will be transferred to the City at the conclusion of the project.

While we were able to locate detailed project documentation, some summary documents (e.g., contingency tracking statement, complete change order log) and approved quality management plans were not in the electronic files we reviewed. Without complete and accurate documentation, the performance of consultants and contractors cannot be effectively managed or assessed objectively.

Process Improvement for This and Future Projects RDC management has acknowledged the need to improve documentation and document management practices for the remainder of this project and for future projects.

CONCLUSION

Overall, the Walterdale Bridge Replacement project team are applying the 13 project management principles set out in the PMRG. We observed that project management practices have improved when compared to those we assessed in 2008 during our review of the 23rd Avenue & Gateway Boulevard Interchange Project. The three areas of improvement discussed above are intended to help RDC continue to improve their project management practices.

3.3. Valley Line LRT – Stage 1

BACKGROUND

The Valley Line LRT will be a low-floor urban style system that operates predominantly at-grade in a dedicated right-of-way either in the centre of the street or adjacent to the road right-ofway. The new LRT system will not be physically connected to the existing ETS LRT network, but will include a convenient passenger connection to the existing system at Churchill Station.



The entire Valley Line LRT Project is envisioned as an approximately 27-kilometer line running from Millwoods to the City's downtown core and then westward to Lewis Farms. As illustrated in the map, the Valley Line - Stage 1 will span 13 kilometers running from terminus stations at Millwoods station and Centre West station. The alignment includes 11 at-grade stops and one elevated station at Davies.

Stage 1 includes several notable infrastructure components including an elevated guideway, tunnelled sections, bridges, an operations and maintenance facility, and passenger connections between the Valley Line and the existing ETS LRT and bus network.

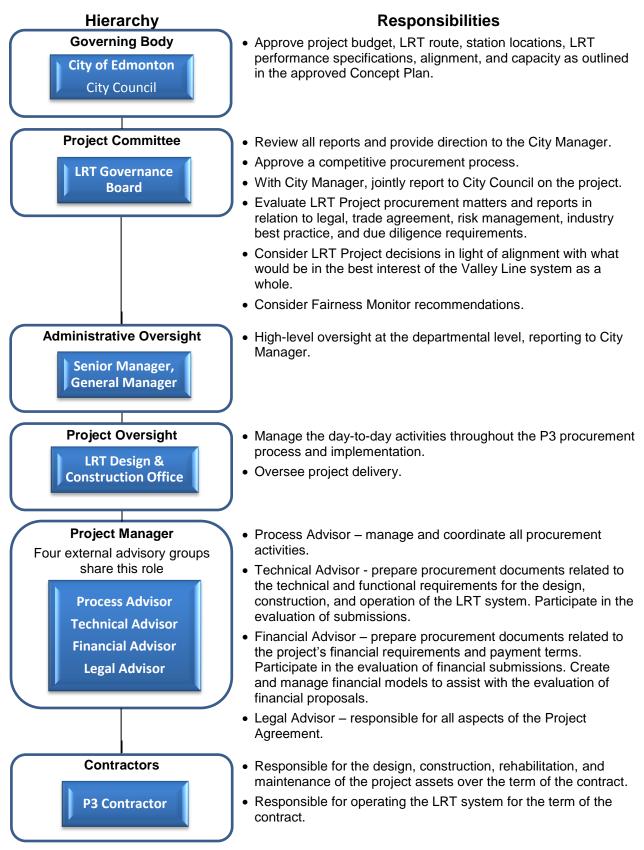
Construction is expected to be complete near the end of 2020. The project is being delivered as a public-private-partnership (P3) and will be designed, constructed, operated, and maintained by a private sector consortium under a 30-year contract.

The approved budget for the Valley Line LRT – Stage 1 is \$1.8 billion. Approximately one-half of the project is funded by the City. The remainder will be funded by the Provincial and Federal Governments.

In order to assist with the management and oversight of the Valley Line LRT - Stage 1 Project, City Council established a Governance Board to oversee the P3 procurement.



PROJECT MANAGEMENT STRUCTURE – PROCUREMENT PHASE





In April 2014, the City issued a Request for Qualifications (RFQ) for private sector consortiums able to undertake all aspects of the project including design, construction, operation, and maintenance for a 30-year operating term. After evaluating the responses to the RFQ, the City shortlisted three of the teams to advance to the Request for Proposal (RFP) phase of the procurement process.

In September 2014, the City issued an RFP to the three shortlisted teams. The RFP procurement process will ultimately lead to a contract award by the end of 2015.

Land acquisition and early works are underway to enable the successful P3 Proponent to start LRT construction in 2016.

- Land acquisition commenced in 2012 and the City now holds title to approximately three-quarters of the required property for stage 1 of the Valley Line. The remainder of the properties will be acquired by the end of 2015.
- Utility relocations are underway and will continue into 2016. Several contracts will be tendered in 2015, including building demolitions, 51 Avenue urbanization, and the removal of the Chinese Gate at 102 Avenue and 97 Street.

PROJECT MANAGEMENT MONITORING AND REPORTING

Monthly reports are produced that include a detailed earned value analysis,² financial and schedule performance, risk management, and activities planned for the next reporting period. The following three actions support the application of sound project management practice for a P3 project:

Tendering Process

The P3 procurement process described above is patterned after the Government of Alberta Model, with specific modifications for LRT.

A key characteristic of the Alberta Model is the use of a request for proposal process that results in the selection of a preferred contractor based solely on price. There will be no subjective evaluations and no post-bid negotiations since the project agreement and bidders' design solutions will be subject to a collaborative process and several technical reviews during the request for proposal phase.

² Earned Value Analysis (EVA) is an industry standard method of measuring a project's progress at any given point in time, forecasting its completion date and final cost, and analyzing variances in the schedule and budget as the project proceeds.

P3 Advisors

City Administration has extensive experience delivering major infrastructure projects (including LRT) using a variety of methods. However, City Administration has yet to procure a P3 project. As such, the City retained various advisors (financial, legal, and technical) to assist in developing the procurement process and supporting documents related to the City's first P3 procurement. The firms selected bring experience from other P3 contracts in the transportation industry and from around the globe. Working alongside the P3 Advisors, City personnel are able to acquire additional knowledge and skills for P3 procurement and implementation.

Fairness Monitor

An independent consultant in the role of Fairness Monitor has been retained. The Fairness Monitor is expected to review and monitor certain aspects of the City's implementation and administration of the procurement to assess its overall fairness to respondents, proponents, and the City. In carrying out its duties, the Fairness Monitor is also expected to be aware of the prevalent procurement practices and procedures adopted by municipalities and other governmental entities in the procurement of capital projects of similar size and scope in Canada, particularly Alberta.

Public Engagement

Prior to starting the P3 procurement, the City actively engaged the public to discuss the design and operation of the proposed new LRT system, from identifying the corridor in 2009 through developing the concept plan to completing preliminary design in 2013.

The RFP for the implementation of the Valley Line – Stage 1 project requires that



the successful bidding team design and implement a public communication and public information program to ensure that the citizens of Edmonton are appropriately informed throughout the project's implementation.



As part the City's ongoing commitment to public involvement, City Council's Transportation Committee in 2014 encouraged the establishment of a Citizen Working Group to enable the City to maintain a dialogue with stakeholders throughout the procurement, detailed design and construction phases of the Valley Line LRT -Stage 1 project. With the Citizen Working Group's launch anticipated in March 2015, the City will recruit volunteer members by seeking appointments from community leagues and other community-based organizations.

Facilitated by the Valley Line's Community Relations Advisor, the Citizen Working Group will focus on the regular and timely exchange of information with their communities and other stakeholders.

CONCLUSION

We believe the LRT Design and Construction project team has demonstrated their commitment to learning and applying sound project management practices in a P3 environment. The LRT Governance Board provides oversight to ensure that due diligence is applied throughout the life of a project.

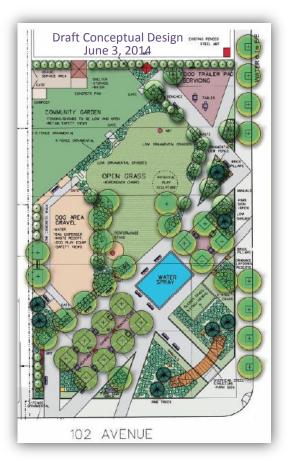
3.4. Alex Decoteau Park

BACKGROUND

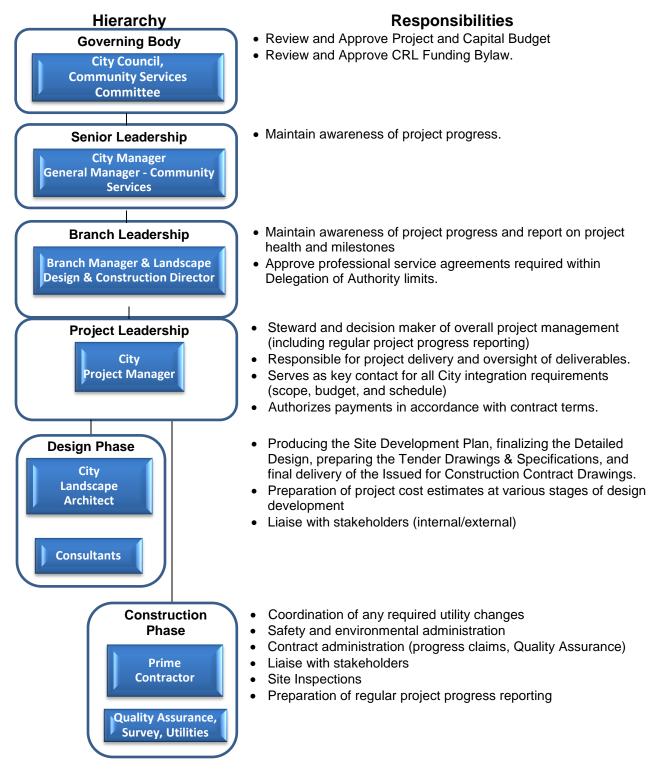
Alex Decoteau Park is being constructed on City-owned property at the northwest corner of 105th Street and 102nd Avenue. This is the first park space being developed within the Central Warehouse neighbourhood. The neighbourhood is planned to become a dense residential community. This project will transform a surface parking lot into a vibrant and attractive neighbourhood park helping to make the Downtown a more attractive place to live, work, play and invest. The park is named after Canada's first aboriginal police officer.



The Alex Decoteau Park Development will advance key corporate and departmental goals by creating park space and encouraging investment in underdeveloped areas. The project goal is to create a safe, green, and walkable park that will be comfortable, accessible, and provide space for a range of activities. The Downtown Edmonton Community League (DECL) was engaged in the review of the conceptual design and is supportive of this project. Design work is underway with the park opening planned for the fall of 2016.



PROJECT MANAGEMENT STRUCTURE



Our first meeting with the Decoteau Park team was in late 2014, shortly after the reorganization of the Landscape Design and Construction Section. Discussions included project status reports and planned monitoring and reporting activities.

PROJECT STATUS



The Alex Decoteau Project is currently in the Design Phase. A preliminary site development plan has been developed that incorporates feedback from DECL and other stakeholders.



The current site development plan includes elements like a water feature, community garden, art spaces, passive green spaces, and an off-leash area.

The detailed design and construction drawings will be completed in 2015 with construction planned to start in spring of 2016.

Landscape Design and Construction is working with the Corporate Centre for Project Management to implement project management practices that are specific to park development and aligned with the PMRG. Templates and other project management tools, such as a risk register and various project logs, are currently being developed and refined.

We will continue our proactive involvement with this project and provide input on project management practices as the Alex Decoteau Park project team develop and implement a project management framework specific to park development projects.

CONCLUSION

At the time of this review, this project was in the early stage of design. In addition, the project team had only been together for a short time. We believe the project team has demonstrated their commitment to learning and applying sound project management practices.