OFFICE OF THE
City Auditor

Capital Construction Audit

Roads Design and Construction Branch

June 1, 2011

THE CITY OF Edmonton

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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Roads Design and Construction Branch
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Executive Summary

During the 2010 budget deliberations, Council expressed uncertainty regarding the Capital Construction Department's efficiency and effectiveness, particularly with regard to neighbourhood reconstruction activity. Accordingly, we focused our audit on the Roads Design and Construction Branch (RDC) activities, which include neighbourhood reconstruction activities.

RDC provides design, construction, and project management services for roadway infrastructure projects. It acts as an in-house contractor for client departments while client departments define and budget for capital projects.

Our review objectives included an assessment of RDC's approach toward managing capital and/or operating funds, project management practices, and the overall efficiency and effectiveness of RDC's service delivery. Our evaluation of efficiency and effectiveness included reviewing the Branch's management of project schedules, budgets, resourcing levels, scope creep, and quality.

The accuracy, completeness, and readability of budget documents have a direct impact on decision makers' understanding of the information presented and confidence in the decisions they make. Accuracy and completeness of the information contained in budget documents and effective communication with and among stakeholders is essential for informed decision-making and monitoring of service delivery.

During our review of the 2011 operating budget documents, we identified an overstatement of personnel costs associated with seasonal positions. We noted that most of these positions were not included in the Full-Time Equivalents (FTEs) reported. We also noted that Council was not informed of seven new full-time positions approved between printing the budget documents and budget discussions at Council.

During our review of capital budget documents, we noted that project profile descriptions are incomplete and tend to lack clarity. For example, when we reviewed project profiles that requested a change to approved budgets, we had to compare previous versions of the project profile to the current version in order to understand the reason for the change. We also noted that most of the capital budget for road infrastructure projects is approved in the form of composite projects. The scope and budget for specific projects such as the Scona Road reconstruction are not adequately identified.

During our discussions with senior management, they advised us that they believe our observations on budget issues are faced by the entire Corporation.

The budget practices we observed prevent effective monitoring and reporting, increase the risk of making poor decisions, and lack transparency. Corporate reviews of the City's financial system and the capital budget process are currently underway that may resolve the issues we identified.

We also observed inconsistent project management practices, which limit the ability to demonstrate that projects are being delivered in a cost-effective and efficient manner. We believe that implementing a strong project management office would provide a framework in which the City could ensure that its projects are conducted optimally. The following are our observations relative to the five focus areas:

1. Adherence to schedules – It appears project schedules tend to be overly optimistic; the capacity of the City and road construction industry may be over-estimated.

2. Management of project budgets – Cost estimating deficiencies identified in our prior audits have still not been effectively resolved. Expenditures are managed to the funding made available by the client departments, not to meeting the identified need.

3. Management of resourcing levels – Client requests for changes in scope are not being effectively managed, resulting in design rework. We also noted evidence that suggests review of changes to consultant contracts are not subjected to the same rigour as that for construction contractors.

4. Management of scope creep – With client departments defining the scope and controlling funding for capital projects, RDC exercises little control on managing scope creep. If the client department decides to expand the project scope, RDC tries to accommodate the client's wishes, even if it requires rework.

5. Management of quality – The quality of work on most projects is managed reasonably well. In construction meeting minutes, we noted that the City had concerns in two of our case studies. In both cases, this ultimately impacted the City's ability to complete the scheduled work on time.

The Roads Design and Construction Branch, Neighbourhood Renewal Section has begun to implement some of the basic principles of effective project management for projects it manages. Some benefits are being seen in the area of neighbourhood design, where multiple stakeholders are being engaged in the early planning phase to minimize design changes later in the process. Until the City implements an effective Project Management Office and project management framework, the benefits from initiatives will be limited.

On May 3, 2011, Council discussed a report titled *2012-2015 Capital Budget – Capital Direction Setting*. The discussion included consideration of capital needs and funding constraints. Our recommendations complement the discussion surrounding that report

by recommending increased clarity on requested capital projects and increased understanding of the capacity to complete identified needs.

We met with Finance and Treasury Department representatives near the end of our review to share our observations in anticipation of its preparation for 2012-2015 Capital Budget discussions with Council.

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Capital Construction Audit
Roads Design and Construction Branch

1. Introduction

During City Council's 2011 Budget deliberations, there was uncertainty expressed regarding the Capital Construction Department's efficiency and effectiveness. Part of the discussion focused on the neighbourhood reconstruction activity and associated resource requirements. Following discussions with the City Manager and General Manager of the Capital Construction Department, the Office of the City Auditor (OCA) initiated an audit of the Roads Design and Construction Branch (RDC) as an emerging issue.

2. Background

Capital Construction Department

In early 2008, the City Manager implemented an organizational change that was intended to create a strategic and adaptive organization that would better respond to the realities of the economy. The structure was intended to encourage a greater level of alignment among activities that have city-wide and multi-departmental impacts.

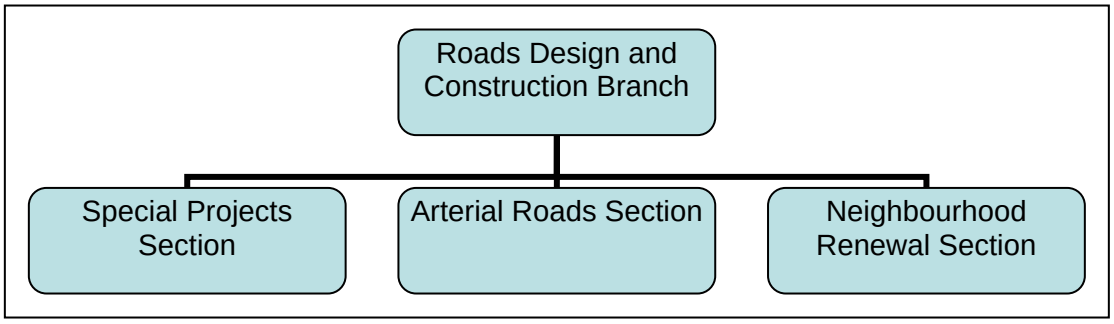
The Capital Construction Department was established to consolidate capital project construction expertise. A major capital projects planning and delivery framework was to be developed to define the stages of project planning and delivery. The Department was established to optimize resource requirements, support more consistent capital project planning and delivery, allow more effective financial and risk management, and support greater role clarity for City departments' involvement at various stages in project planning and implementation.

In 2008, the Building Design and Construction and LRT Construction Branches were transferred to the Capital Construction Department. In 2009, RDC was transferred from the Transportation Department. In 2010, a Project Management Office was established within the Capital Construction Department.

Roads Design and Construction Branch

RDC provides engineering design expertise, construction services, and project management services for road right-of-way infrastructure projects to client departments within the City organization. RDC determines project delivery method options and decides whether to utilize internal resources or establish and manage contracts for consultants and contractors. Responsibilities for developing project concept plans and preparing capital budgets for Council approval rests with their client departments. Figure 1 outlines the organizational structure of RDC.

Figure 1 – RDC Organization Chart



Typical major projects managed by each section include:

- Special Projects Section – freeway interchange and bridge construction, rehabilitation, and reconstruction.
- Arterial Roadways Section – major roadway corridor construction, rehabilitation, and reconstruction, and streetscape projects.
- Neighbourhood Renewal Section – neighbourhood and roadway reconstruction.

Table 1 presents the operating budgets approved by Council for RDC. We noted that Council only approves the net operating expenditures or tax levy because the majority of the costs incurred are charged to capital projects. The budgets we reviewed included information on the gross expenditure requirement.

Table 1 – RDC Operating Expenditures
(thousands of dollars)

Operating Expenditures	2009		2010		2011
	Budget	Actual	Budget	Actual	Budget
Gross Expenditures	$7,387	$7,457	$11,168	$10,640	$16,584
Less: Charged to capital	5,624	5,769	9,470	9,039	15,003
Net Operating/Tax Levy	$1,763	$1,688	$1,698	$1,601	$1,581
Full-time Equivalents	68		79		91

The majority of the capital projects undertaken by RDC are for the Transportation Department. Other capital projects it manages include the construction of foot bridges and work for Great Neighbourhoods.

Table 2 is the capital budget summary for roads projects included in the 2009-2013 Capital Priorities Plan/Approved Funded Budget. The budget estimates were prepared by the Transportation Department. RDC is responsible for managing assigned roadway and neighbourhood construction projects. Other roads projects (e.g., Street Light Rehabilitation, Operating Yards and Facilities, and Environmental Services/Facilities) are typically managed by the Transportation Department. Table 2 also presents the

2009 and 2010 actual expenditures and 2011 budget associated with capital projects that RDC manages on behalf of the City.

Table 2 – Capital Expenditures
(thousands of dollars)

2009-2013 Capital Priorities Plan	2009	2010	2011
Transportation Department	**Plan**	**Plan**	**Plan**
Total for Roads	$391,893	$395,496	$315,726
Less: Transportation Managed	32,425	45,240	47,267
Road Construction Projects	$359,468	$350,256	$268,459
Roads Design & Construction	**Actual**	**Actual**	**Budget**
Actual/Budgeted Expenditures	$281,945	$290,872	$339,962
Percent of Plan Spent	78.4%	83.0%	

Finance and Treasury Department

The Finance and Treasury Department supports the Corporation's vision by providing the information necessary to make sound financial decisions and plan for the future, while meeting statutory financial reporting requirements.

The Department provides strategic and technical advice and direct financial services to all departments, authorities, boards, and commissions of the City of Edmonton. Services are provided under the City's shared services model. Under this model, service delivery is carried out with the customer in mind and looked at from the customer's perspective.

3. Audit Objectives, Scope, & Methodology

There were three objectives established for this audit:

1. Evaluate RDC's approach toward managing capital and/or operating funds for construction projects.

   We evaluated the impact of decision-making practices on project specifications, cost, staffing, scope changes, and project delivery. Our evaluation was based on information gathered through interviews of managers and staff from RDC, and the Transportation and Finance and Treasury Departments and review of documents supporting our sample of capital projects.

2. Evaluate project management practices against an established project management maturity model.

   We looked for evidence that leading project management practices have been or are being implemented. We reviewed a sample of projects, conducted individual interviews and used anonymous voting technology to gather information on actual and perceived project management practices.

3. Evaluate the efficiency and effectiveness of RDC.

   We assessed whether the City is receiving fair value for its dollars and whether those dollars are being used effectively. To achieve this objective, we reviewed budgeting and cost allocation practices and benchmarked Branch activities against those of similar organizations.

To meet these objectives we focused our review on answering the following questions with regard to roadway construction projects:

- How well are schedules adhered to?
- How well are budgets managed?
- How well are resourcing levels(i.e., dollars, staff, contractors) managed?
- How well is scope creep managed?
- How well is quality (i.e., review and fix quality problems) managed?

The manner in which RDC delivers its services is intended to be guided by project management principles. We therefore assessed the information collected against the Project Management Body of Knowledge (PMBOK)[1] to evaluate the efficiency and effectiveness or maturity of RDC's services. Appendix 1 describes the nine project management knowledge areas. The relationship and interaction among these areas influence project outcomes. The manner in which they are executed reflects the efficiency and effectiveness of service delivery.

Since this audit was completed during winter months, we were unable to observe construction activity. Our observations are based on reviews of project and budget documents, including construction site minutes, as well as discussions with management and staff from the Capital Construction, Transportation, and Finance and Treasury departments.

4. Observations and Analysis

Our observations have been summarized into three areas: Budget Documents and Process, Project Management, and Case Studies.

4.1. Budget Documents and Process

The accuracy, completeness, and readability of budget documents have a direct impact on the decision makers' understanding of the information presented and confidence in the decisions they make. The information contained in budget documents and effective communication with and among stakeholders is essential for informed decision-making and monitoring of service delivery.

[1] PMBOK® - Guide Fourth Edition published by the Project Management Institute, Inc.

During our discussions with senior management, they advised us that they believe our observations on the budget processes are due in part to the lack of clarity in corporate process documentation and are applicable to the entire Corporation. The additional work required to test their assertions was outside the scope and schedule set for this review. However, observations contained in prior audit reports such as the Parks Branch Audit, IT Corporate Audit, Transportation Planning Branch Audit, Consultant Services Review, and 23rd Avenue/Gateway Boulevard Interchange Review support management's assertions. Recommendations one through three address these observations.

4.1.1. Operating Budget

We reviewed the 2011 operating budget documents used in Council's budget deliberations, the final budget document following Council approval, various support documentation, and the budget deliberation recording to better understand the RDC budget and issues that emerged during budget deliberations. The following list summarizes key issues that we believe negatively impacted the decision-making process and the ability to effectively monitor expenditures:

- New Positions – Seven new positions approved in November 2010 were not disclosed during budget deliberations.
- Seasonal Positions – Seasonal positions are not accurately recorded in the budget documents. FTEs are understated and wages and benefits are overstated.
- Annualization – The budget carried forward from the service package is overstated.
- Overtime – The 2011 budget for overtime is significantly lower than 2010 actual expenditures.

4.1.1.1 New Positions

In early November 2010, after the 2011 budget documents were sent for printing, the City Manager approved seven new positions or full-time equivalents (FTEs) for RDC. Council was not informed about the increase of seven FTEs either through an addendum to the budget documents, during the department overview presentation, or during deliberations on the Department's request for a further 12 FTEs.

The 2011 budget documents understated gross expenditures by $775,000 and seven FTEs due to the late approval of these positions. We did note the Final Approved Budget Document was adjusted to reflect the additional seven FTEs.

4.1.1.2 Seasonal Positions

The budget instructions state that all FTEs for the operating and capital budgets are to be identified in the operating budget. An FTE is defined as the hours (and associated personnel costs) that one full-time employee would work in a year. In general:

- If a position is funded for a full year, it is equivalent to 1.0 FTE.

- If a position is funded for six months, it is equivalent to 0.5 FTE.

The budget document reviewed by Council shows there are 84 FTEs in 2011; seven FTEs for seasonal positions and 77 FTEs for full-time positions. In 2010, RDC employed 30 seasonal construction inspectors and budgeted for an additional 12 inspectors in 2011 to meet growth requirements, for a total of 42 seasonal positions. These positions are filled for approximately six months of the year, which equates to 21 FTEs. Consequently, the FTEs in the budget document are understated by 14 FTEs.

For 2010, RDC budgeted approximately $0.48 million for wages and benefits for the 30 seasonal positions ($16,000 per position). The budget for wages and benefits for 42 positions in the 2011 budget is $3.2 million ($75,000 per position). We estimated the salary and benefits for one Seasonal Inspector to be between $40,000 and $47,000 per year, for a six to seven month construction season, for a total cost of $2.0 million. We estimate that the 2011 expenditure budget is overstated by $1.2 million for seasonal position wages and salaries.

4.1.1.3 Annualization

One of the budget principles for 2011 was to have departments identify the full-year cost for service packages in addition to the actual requirement. The difference, titled "Annualization" was identified to provide Council with funds to allocate for one-time expenditures during budget deliberations.

The service package submitted for RDC showed a 2011 budget requirement of $2.8 million and annualization of $0.9 million for a total of $3.7 million. RDC included the $3.7 million in their budget rather than the $2.8 million. Approximately two-thirds of the service package was for seasonal positions (see 4.1.1.2) and one-third for permanent full-time positions. We estimate that the 2011 expenditure budget is overstated by $0.3 million because of the annualization of wages and salaries for full-time positions.

4.1.1.4 Overtime

In August 2010, in response to our Overtime Review, departments were instructed to review overtime usage with a view to managing overtime more effectively.

RDC identified workload demands, construction schedules, late changes and additions to projects by clients, and changes in delivery schedules by clients as factors that influence the amount of overtime incurred by the Branch. They indicated their plan to manage overtime includes increased staffing levels and continued monitoring of overtime use.

In 2010, RDC incurred $1.2 million in overtime. For 2011, RDC Management estimates they will require $0.7 million for overtime. They will need to monitor overtime closely with the projected increase in capital spending on roads from $290.9 million in 2010 to $340.0 million in 2011.

4.1.1.5 Summary of Impact on 2011 Operating Budget

The OCA recalculated the RDC personnel costs based on the above findings. Table 3 shows the result of our recalculation.

Table 3 – 2011 Expenditure Requirement

Budget Item	2011 Budget	
	Expenditures ($000)	FTEs
Expenditures as presented to Council for review	$15,809	84
• New Positions approved November 2010	775	7
Expenditures reflected in Approved Budget	16,584	91
Corrections		
• Wages and benefits for seasonal positions	(1,200)	14
• Annualization of salaries/benefits for new full-time positions	(300)	--
Estimated requirement	$15,004	105

The expenditure budget for RDC has been overstated by $1.5 million dollars and the number of employees has been understated by 14 FTEs. Our recalculation was reviewed with Finance and Treasury staff to confirm the accuracy of our calculations.

The Administration has initiated an SAP Financial System Review to identify opportunities to use SAP to its maximum capability to provide optimal benefit to the City. The initial scope of this initiative includes a Process and System Review, a Reporting and Analytics Review, and a Review of Training Requirements. Project documentation indicates that the review of the operating and capital budget system will be dependent on the outcome of the current SAP structural capabilities assessment.

Impact Assessment

The 2011 budget documents show that 90.5 percent of RDC expenditures are funded from the capital budget and 9.5 percent are funded from the operating budget. Regardless of the funding source, the information contained in the budget documents did not reflect RDC's resourcing requirements, preventing effective monitoring and reporting on the financial performance and budget trends. As a result of our audit, a budget adjustment has been processed and the SAP financial reporting system has been adjusted to reflect RDC's resourcing requirements.

No Recommendation

Inaccurate information also limits the ability of stakeholders to make effective decisions on resourcing and service delivery.

The budget preparation system and process needs to be reviewed to reduce the risk of inaccurate or incomplete information being used for decision-making.

Recommendations 1 & 2

4.1.2. Capital Budget Presentation / Management

We reviewed the 2009–2013 capital budget documents and supplemental budget adjustment reports to determine the quality of information available for capital projects undertaken by RDC. We observed two conditions that limit the effectiveness of the decision-making and project management processes:

- Most of the capital budget is approved in the form of composite projects. Consequently, there is no corporate record of the budget approved or allocated to specific projects.
- Budget requests and changes to capital projects are not consistently documented in a manner that is transparent and easily understood.

The capital priorities plan approved in December 2008 included $1.1 billion dollars for roadway projects for the 3-year period 2009-2011. Approximately 90 percent of roadway construction is managed by RDC with the remainder managed by Transportation.

The majority of the work RDC undertakes is done for the Transportation Department. RDC does not prepare or have project budgets approved by Council. Under the current process, Transportation is the owner of the roadway capital budget, providing RDC with direction on the scope, schedule and funding available for capital projects while retaining control of the overall capital budget.

4.1.2.1 Composite Projects

In 2010, RDC reported actual capital expenditures of $291 million on 83 projects. Seventy-seven of the projects (93%) with expenditures of $193 million (65%) were funded from composite projects. The Financial Strategy and Budget Planning office in the Finance and Treasury Department defines a composite project as:

> An on-going project intended to deal with on-going infrastructure needs such as annual replacement, upgrade and rehabilitation requirements. Generally, a composite project is the grouping of similar, often smaller routine capital improvements.

We identified the following issues with composite projects.

1. The City has not defined criteria to determine at what level projects become significant enough to set up as a specific project in the capital priorities plan. For example, four recent projects valued in excess of $10.0 million that are funded from one or more composite projects are:
   - 87th Avenue and 170th Street improvements – original estimate $13.6 million.
   - Scona Road reconstruction – $18.6 million.
   - Fulton Place reconstruction – $17.2 million.
   - Meadowlark Place reconstruction – $17.2 million.

2. The City has not developed a formal process for allocating funds from composite profiles to specific capital projects as they are initiated.

3. We also noted that the composite project profiles only provide a general description of the type of work covered by the program, funding sources, and a listing of potential locations. The project profiles do not provide any information on the scope, cost or schedule for specific projects. Administrative Directive A1424A, *Project Management for Projects(1999)* states:

> Projects should not be submitted for capital budget consideration until completion of the Concept Phase of the project. At the conclusion of the Concept Phase the estimated cost, project master schedule and project scope should be available.

Impact Assessment

The lack of formal recognition of scope, budget, and transfer of responsibility and authority for projects significantly compromises the project management process. While providing flexibility to address changing needs, the process also allows client departments to easily change the scope of a project by allocating additional or removing funding from the composite funding pool. For example, while we were reviewing project status reports prepared by RDC, we noted a project for work on the Whitemud ramps at 53rd Avenue. This project is within the boundaries set for the Quesnell Bridge/Whitemud Drive rehabilitation project and was funded from a composite project.

The lack of information for specific project profiles prevents Council from making informed decisions on projects that may be significant or sensitive.

Criteria need to be developed for establishing specific projects that are funded through composite projects. Further, a corporate process needs to be developed to formally transfer funds from composite projects to specific projects. These changes would increase transparency and accountability for specific capital projects. The descriptions included on project profiles also need to be assessed to ensure that Council receives adequate information on which to base its decisions.

Recommendations 3

4.1.2.2 Capital Project Budget Requests and Changes

Our review of capital project profiles and budget adjustments for the Quesnell Bridge/Whitemud Drive rehabilitation and widening project (Quesnell/Whitemud) shows that the reasons for budget requests are not clearly documented. Only by comparing project profiles from one version to the next were we able to determine the scope changes associated with budget requests. Table 4 provides a summary of changes derived by comparing versions of project profiles for the Whitemud Drive/Terwillegar Drive – Stage 1 project. This project originally included Quesnell/Whitemud.

Table 4 – Whitemud Drive/Terwillegar Drive Budget Evolution
(thousands of dollars)

Date and Description	Budget
September 2005 2006-2010 Project Profile 03-66-1461, Whitemud/Terwillegar – Stage 1. Scope included design and commencement of construction of Whitemud Drive/Terwillegar Drive, Terwillegar Drive/40th Avenue Interchange, widening of Rabbit Hill Road, new multi-use river bridge, noise attenuation along Whitemud Drive, and rehabilitation and widening of Fox Drive Bridge, Quesnell Bridge and Whitemud Drive.	$101.3
July 2006 Budget adjustment to hire a design-build team for twinning of 23rd Avenue from 119 Street to Hodgson Way.	10.3
October 2006 Delete widening of Rabbit Hill Road and new multi-use river bridge. Add widening of 119 Street.	69.3
August 2007 Budget adjustment transferring budget to 23rd Ave./Gateway Boulevard Interchange project	(130.0)
February 2008 Budget adjustment transferring budget to profile 08-66-1462, Quesnell Bridge/Whitemud Drive Rehabilitation and Widening with a redefined scope and project limits.	(11.8)
September 2010 2008-2012 Project Profile: Scope includes design and commencement of construction of Whitemud Drive/Terwillegar Drive, noise attenuation along Whitemud Drive, rehabilitation and widening of Fox Drive Bridge, Quesnell Bridge and Whitemud Drive, widening of 119 Street and twinning of 23rd Avenue (also reflected in the project profile dated Feb. 2011).	$39.1

The description of the scope on the 2008-2012 Project Profile 03-66-1461 suggests the Quesnell Bridge/Whitemud Drive project continues to be a significant part of this capital project even though funding was removed and a new project profile created. Through discussions with RDC management and review of supporting documentation, we determined that between $5.8 million and $9.8 million was allocated for design work on the Quesnell Bridge/Whitemud Drive project. We were advised that the remaining budget was for Smith Crossing, located on 23rd Avenue between 119th Street and Terwillegar Drive.

Finance and Treasury Department management were reviewing the capital budget process during our review of Capital Construction. We met with representatives near the end of our review to share our observations in anticipation of its preparation for the 2012-2015 Capital Budget process discussions.

Impact Assessment

Current capital budgeting practices are not transparent and make it difficult to determine the reason for budget changes after a major project is initially approved. This can result in Council not fully understanding the nature or impact of its decisions. Information on profiles is not being updated consistently, resulting in inaccurate or incomplete information being published.

Project profiles are the official capital budget approvals. Current documentation practices for specific capital projects do not provide the information necessary to fully apply project management principles. This limits the ability to effectively assess project outcomes and overall performance.

The Administration needs to review its current process for documenting capital budget requests. An effective quality control process needs to be implemented to ensure that documentation is complete and provides meaningful, current and adequate information to fully and transparently support all budget change requests or changes in project scope.

Recommendation 3

4.2. Project Management

The OCA has issued a number of reports that contained recommendations that the City improve its project management practices. The following is a list of these reports:

Year	Audit Title
1993	Project Management Audit
1998	Value-For-Money: Project Management – Cost Estimating
2000	Follow-up Audit Report: Project Management – Cost Estimating
2006	Project Change Order Review
2006	Transportation Planning Branch Audit
2008	Post Implementation Review – MAIN-LINK
2008	23rd Avenue & Gateway Boulevard Interchange Project Review
2009	Information Technology Corporate Audit
2010	Parks Branch Audit

The City's actions, over the past 18 years, to address the recommendations in earlier reports resulted in insignificant change. A corporate project management framework does not exist and the results of more recent audits continue to indicate that more effort is required to improve the City's project management performance.

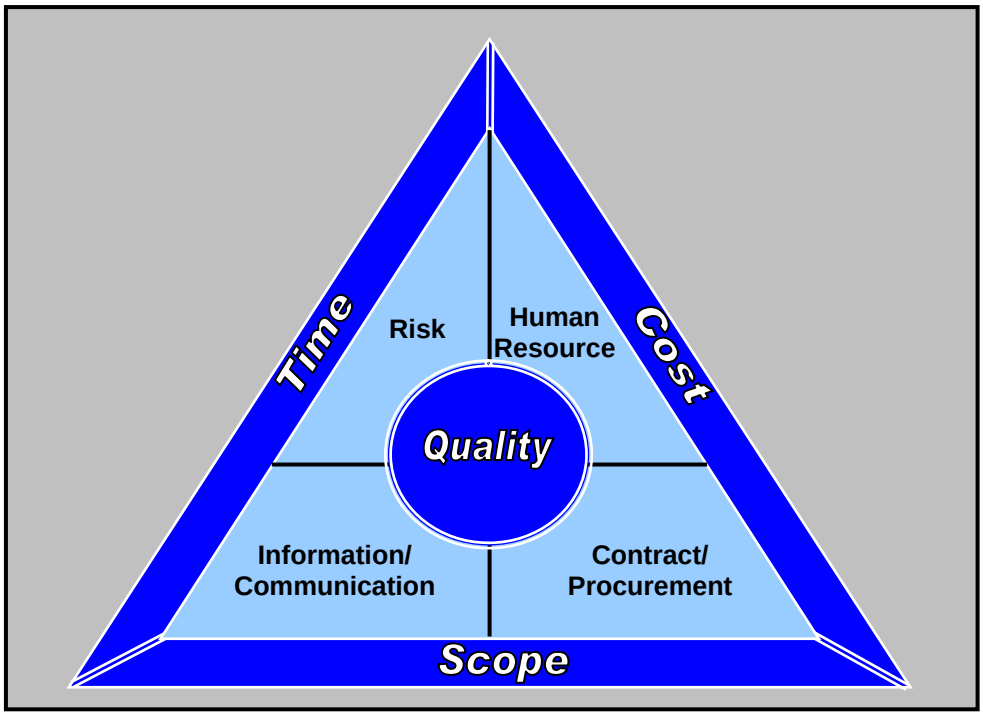
The project management framework is comprised of nine project management knowledge areas. The descriptions of these areas are provided in Appendix 1. The relationship and interaction among these areas influence project outcomes. The manner in which they are executed reflects the efficiency and effectiveness of service delivery.

Recent examples of practices that demonstrate the current project management framework is ineffective are:

- The results of our 2009 Consulting Services Review are a reflection of the ineffectiveness of the contract/procurement knowledge area, and
- The results of our 2010 Overtime Review are a reflection of the ineffectiveness of the human resource knowledge area.

Figure 2 depicts the interrelationships of the nine knowledge areas. The dark blue triangle and circle represent the core functions, the light blue inner triangle represents facilitating functions and the outer grey rectangle represents integration of project management knowledge areas. Together, they describe the project management framework.

Figure 2 – Project Management Framework



Understanding the relationships among the project management functions allows better decisions when tradeoffs need to be made. For example:

- To bring a project in on time, the organization might end up with increased costs and a decreased scope.
- To meet the project budget might require a longer schedule or decreased scope.
- A scope increase might take more time and cost more.
- Ineffective or inefficient implementation of facilitating functions can result in lower quality, higher cost, longer schedule or change in scope.

4.2.1. Project Management Office

Our 2008 report on the 23rd Avenue & Gateway Boulevard Interchange included a recommendation that the Administration explore establishing a project management office. Their initial response was "…Administration does not intend to develop an office of that nature." However, the City Manager established the Capital Construction Department as an alternate option for managing all capital projects.

In 2010, the General Manager of Capital Construction established a Project Management Office (PMO) with one position. An additional four positions were approved in the 2011 budget. The PMO operates under the City's shared services model. Under this model, service delivery is carried out with the customer in mind and looked at from the customer's perspective.

The PMO is presently collecting information on project management practices from operating areas across the Corporation and developing a project management directive and corporate project management manual.

In 2010, PM Solutions[2] published a research report titled "The State of the PMO 2010" that was designed to help understand the nature of current PMO practices and discover trends that may facilitate solutions to challenges. The introduction to the report states:

> There's a direct correlation between the maturity of a company's PMO and the value it provides. Mature PMOs are far more likely to meet critical success factors. They also demonstrate significantly greater improvements in cost savings per project, schedule and budget performance, productivity, and they have fewer failed projects.

Table 5 shows organizations with mature PMOs have a higher likelihood of delivering projects under budget and ahead of schedule.

Table 5 – Impact of PMO on Performance

Performance Measure	Reported Value		
	Maturity Level 1-2	Maturity Level 3-5	Difference
Percentage of projects delivered under budget	27%	34%	7%
Percentage of projects delivered ahead of schedule	15%	25%	10%
Percentage improvements in productivity	16%	29%	13%
Percentage cost savings per project (% of total project cost)	13%	24%	11%

[2] PM Solutions is a project management firm helping organizations execute, govern, and measure their portfolios to improve business performance. PM Solutions is registered with the Project Management Institute as an experienced project management consulting firm.

The report concludes “the PMO is fast becoming an organizational fixture that provides significant value.”

Impact Assessment

The creation of a PMO and development of directive and guidance documents are the first steps in improving project management practice. In order to maximize potential benefits, however, the PMO will need to be assigned a governance role to ensure project management practices are being followed.

The PMO will need to have governance responsibilities that allow monitoring of all project management activities to ensure compliance with defined project management practices. This will ensure the corporation receives the greatest benefit from the standardization of project management practices.

Recommendation 4

4.2.2. Project Management Maturity

We surveyed a total of 44 individuals (30 RDC staff members, 11 Capital Construction management staff and three Transportation managers) to obtain their perspective on the maturity level for each of the project management knowledge areas defined in Appendix 1. We administered the surveys using anonymous voting technology to gather individuals’ understanding of where their organizational unit ranks in terms of project management maturity.[3] The following are brief descriptions of the maturity levels:

1 – Initial	There are no formal or consistent processes.
2 – Repeatable	There is a consistent approach to basic processes.
3 – Defined	There is a consistent comprehensive approach to processes.
4 – Managed	Project portfolio management is institutionalized and integrated into business planning processes.
5 – Optimized	The organization is project-centered with an established approach to continuous improvement of project management practices.

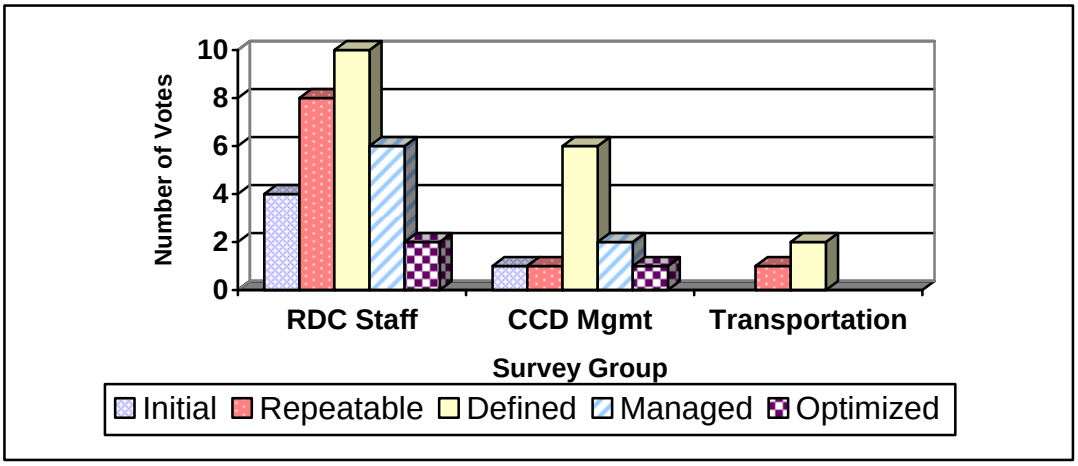
We categorized the results of our survey into three groups:

- Roads Design and Construction staff (RDC Staff) completed a self-assessment of project management practices in their organizational units.
- Supervisors, Directors, the Branch Manager, the General Manager, and the Project Management Office (CCD Mgmt) completed the survey providing their perspective on project management practices.
- Management from the Transportation Department (Transportation) provided their assessment of RDC practices from a client perspective.

[3] Fincher, Anita, U.S. Dept. of Agriculture, National Finance Center and Dr. Ginger Levin, GLH, Inc.; "Project Management Maturity Model," as presented at Project Management Institute 28th Annual Seminars & Symposium, Chicago, IL; September 29 to October 1, 1997.

Figure 3 aggregates the votes by maturity level from all nine knowledge areas. The chart is presented to reflect the number of participants in each group.

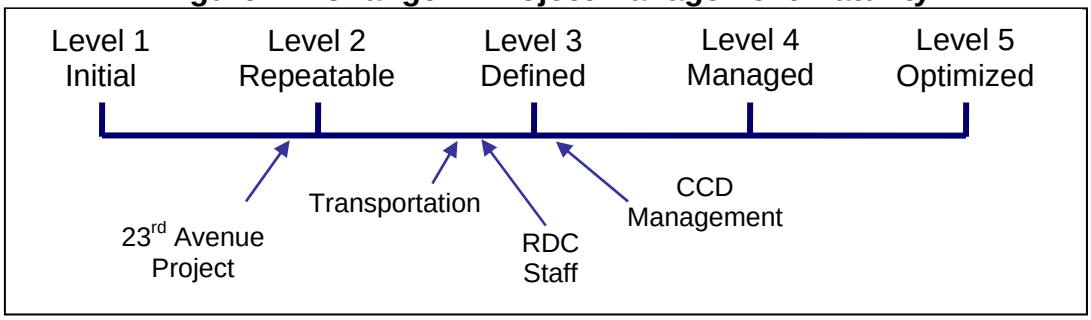
Figure 3 – Project Management Maturity Survey Results



The survey shows inconsistent interpretation and/or practice of project management across the branch. The two lowest rated knowledge areas were time and cost management as defined in Appendix 1.

In 2007, as part of our 23rd Avenue/Gateway Boulevard Interchange Review, we assessed the project management practices from an overall perspective. At that time we rated practices below the repeatable maturity level. Figure 4 compares the results of our 2007 assessment against the results of the Administration's current self-assessment.

Figure 4 – Change in Project Management Maturity



We reviewed a number of projects in detail to assess the impact of current project management practices on the four core project management functions. Overall, the results confirm the distribution of the maturity assessment results that we gathered through the survey. The results of our review are summarized in the three case studies included in Section 4.3 of this report.

Impact Assessment

PM Solution's report on *The State of the PMO 2010* suggests the potential to achieve the greatest performance gains is achieved after reaching level 3 maturity. While we are encouraged by the following recent events, it must be noted it has been 18 years since project management concerns were first raised by the OCA.

- A basic project management training program has been developed by an external consultant who specializes in project management. The consultant is also delivering the program to the Capital Construction and Transportation Department staff members involved in project management activities. Most staff members are in the third year of the four-year program.
- In 2010, the Project Management Office was established. While still in the early stages of set-up, staff members have started to accumulate knowledge and gain a better understanding of the gaps that still exist.
- The RDC Branch has started to generate formal project status reports that are discussed with the client departments. The Branch has also developed a year-end performance measurement report.

We believe that senior management needs to demonstrate strong ongoing support for all project management initiatives. To be effective, the PMO will need to have a strong governance responsibility and authority over all project management practices across the corporation. Only under these conditions will the City be able to make significant strides in improving the efficiency and effectiveness of its project management practices and evolve to a higher project management maturity level.

Recommendation 4

4.2.3. Performance Reporting

Our research led us to two municipalities that had established project management offices.

- The City of Calgary set up a Corporate Project Management Centre in 2006. They have defined a process for monitoring and controlling projects. The reporting template includes financial, timeline, risk and project change request measures.
- The City of Austin (TX) centralized Project Management in 2003. Table 6 presents key performance indicators that are included in a presentation they made at the American Public Works Association (APWA) International Public Works Congress and Exposition in August 2010.

Table 6 – Austin Performance Measures

Key Performance Indicators	Results for FY10Q1
Percent of projects delivered on schedule	90%
Percent of projects delivered within budget	90%
Change orders during construction	5.5%

In 2009, RDC developed a year-end report that provides information on projects delivered within budget and completed in a given year. Corporate performance measures for project management have not been developed. Table 7 shows the results reported by RDC.

Table 7 – RDC Reported Performance Measures

Key Performance Indicators	2009	2010	Target
Number of single year projects	65	95	
Percentage of projects completed	92%	73%	80%
Total budget for completed projects	$111 million	$164 million	
Percentage of total budget spent	89%	98%	80%

We reviewed the 2009 and 2010 RDC reports and identified the following shortcomings that affect the reliability and effectiveness of the reported results:

1. Reports are produced manually, rather than being produced automatically from the data recorded in SAP. This increases the risk of generating inaccurate reports.
2. The budget for completed projects is based on the total budget for all projects completed, not on the individual project results. Our analysis of 2010 data shows that 75% of the projects listed by RDC were completed within budget.
3. Projects are a combination of single-year projects and the current year portions of multi-year projects.
4. The budget used for multi-year projects may reflect either the current year or the total multi-year budget.
5. Budget and actual cost data was not entered for all projects.
6. Year-end is assumed as the scheduled completion date for all projects.

Impact Assessment

While there are some deficiencies in the method used to report performance measures, RDC has taken some steps that demonstrate a desire to monitor performance. RDC management needs to engage the PMO to establish meaningful performance measures. They also need to engage the SAP Financial Review team to ensure future system enhancements address efficient data collection and reporting rather than relying on manual processes for collecting and analyzing data that should be readily available.

The City will need to monitor performance for a number of years before reliable trend data is available that can be used for analytical and decision-making purposes. In the interim, RDC needs to determine the root cause for the decrease in the percentage of projects completed on time as reported in Table 7, (e.g., performance issues, City staff and contractors approaching or reaching capacity). In addition, the City needs to evaluate the pace and priorities with which it undertakes new projects in order to avoid overly aggressive schedules that limit the effectiveness of its project management framework.

Recommendations 4 & 5

4.3. Case Studies

We completed three case studies to further assess the efficiency and effectiveness of services delivered by RDC, one for each of the three sections within the branch:

- Quesnell Bridge/Whitemud Drive Rehabilitation and Widening,
- 87 Avenue/170 Street Intersection Improvements, and
- Neighbourhood Renewal projects: Fulton Place and Meadowlark Neighbourhoods.

We used the five questions listed in section 3 and the nine project management knowledge areas to guide our review of the three case studies. We based our observations on our review of project documentation and interviews of management and staff in each section. In this section we describe the significant findings for each case reviewed. Our observations relative to the five questions are provided in section 5.

4.3.1. Quesnell Bridge / Whitemud Drive Rehabilitation and Widening

Project Description

The Quesnell Bridge over the North Saskatchewan River and the Whitemud Bridge over Fox Drive were constructed in 1968. This project includes fully rehabilitating both bridges and widening Whitemud Drive to six continuous lanes and associated auxiliary lanes between 149 Street and 53 Avenue. This project was originally approved in September 2005 in the Whitemud Drive/Terwillegar Drive – Stage 1 project, which had a budget of $101 million. The project was postponed to provide funding for the 23rd Avenue/Gateway Boulevard Interchange Project.

In July 2007, a consultant was hired to provide external professional engineering consulting services, preliminary/detailed design and construction services for the period July 2007 through March 2011. The contract included the following statement:

> The consultant is responsible for overall project management during the design and construction phase. This includes monitoring City and external agencies to ensure their work is completed on time.

In February 2008, Council approved the Quesnell Bridge/Whitemud Drive Rehabilitation & Widening project to initiate construction. The budget was approved at $181.7 million with construction to be completed by November 1, 2010.

Significant Audit Findings

Readiness for Market

The original plan was to provide potential bidders two months to respond to the bridge rehabilitation tender. Over the two-month period eight addenda were issued, the last one was issued one day before the tender closed. The addenda included reissuing more than 150 drawings and changes to pricing sheets. Some of the original drawings

were blank in the tender documents. The blank drawing pages had the notation: "Information To Follow."

Impact Assessment

Having to issue eight addenda, including revised drawings and pricing sheets, during the tender period suggests that not only had the design schedule slipped, but the City had not finalized the design before asking contractors to quote on the job.

The City's Instructions to Bidders, Section 1.8, Changes to Tender Documents, paragraph 1.8.2 states: "Any errors, omissions, discrepancies or clauses requiring clarification shall be reported to the City at least five days prior to the Tender closing date."

In order to provide bidders the opportunity to identify errors, omissions, etc., addenda need to be issued more than five days prior to the closing date. If addenda are issued during the final five days, the closing date should also be changed to allow vendors appropriate opportunity to respond. In this case, the one day allowed placed vendors at a disadvantage and may have impacted their ability to submit competitive bids.

Recommendation 5

Project Schedule

By September 2007, a work plan was in place that identified several key project risks, including tight design and construction schedules. However, the risk register was incomplete. Risks were not defined or were missing and mitigation strategies were not fully documented.

The 2010 minutes from construction site meetings made frequent reference for the need for a contractors' construction schedule. The August 2010 minutes indicated that the construction schedule had slipped drastically. The consultant's response in September was that construction was off by three weeks. In December 2010, the contractor advised the City that work would not be complete until the end of July 2011. The Transportation and Public Works Committee was informed in March 2011 that the work would not be complete until the end of August 2011.

Impact Assessment

With incomplete risk assessment documentation and by not acknowledging and addressing slippage as it occurs, effective risk mitigation cannot be done. Regardless of the cause of the delay, neither the design schedule risk nor the construction schedule risk was managed effectively.

Recommendation 6

Cost Estimating

The Preliminary Engineering Report issued in March 2008 estimated the overall construction cost at $161.7 million, including a 37.5 percent overall contingency. The consultant used 2007 prices (the peak of the construction boom) to estimate

construction unit prices. The consultant indicated that it assumed there would be no cost escalation over 2007 levels and that the City was experiencing the same or lower unit pricing on construction contracts.

Near the end of 2008, the consultant's pre-tender cost estimates were significantly higher than the available budget. Consequently, a tender was issued for only the main construction contract. The contract scope included road works and drainage, rehabilitation and widening of the Quesnell Bridge and of the Whitemud Drive Bridge over Fox Drive. The main construction contract did not include four items included in the original project scope: noise attenuation, northbound road improvements, bridge de-icing system, and rehabilitation of river piers. The bid price for the contract turned out to be about one-half of the consultant's pre-tender cost estimates.

In our report on the 23rd Avenue/Gateway Boulevard interchange project, we observed:

> Transportation's cost estimating methodology is primarily based on historical costs of roadway projects. The Department has limited experience with pricing for bridge structures. Transportation does not have cost estimating expertise and relied on estimates prepared by the engineering consultants. … The current cost estimating methodology is not effective for large/complex projects. Transportation should research practices being implemented in other jurisdictions and adopt best practices to enhance cost estimating effectiveness.[4]

Impact Assessment

The number and frequency of changes to the budget shows that effective quality assurance processes are not in place. The pre-tender estimate for this project is nearly double the actual bid price. This indicates that an effective cost-estimating process has yet to be developed.

In our report on the 23rd Avenue/Gateway Boulevard Interchange we recommended "that the City Manager ensure that costing models and quality assurance processes for major and/or complex projects are enhanced." This recommendation has not been fully implemented.

No Recommendation

Managing Consultant Costs

As mentioned earlier, because the consultant's pre-tender estimate for the bridge rehabilitation was significantly higher than the available budget, four elements of the originally planned scope of the project were not tendered. When the City received bids that were about one-half of what was anticipated, those elements were added back into the total project scope. The May 2009 Supplemental Budget Adjustment approved by Council included the following items:

[4] "23rd Avenue & Gateway Boulevard Interchange Project Review," September 3, 2008, pp. 9-10.

- One line item decreased the Quesnell/Whitemud budget by approximately $70 million due to “lower than budgeted tender.” The reduction included removing funding for a bridge de-icing system, noise attenuation, Whitemud/Terwillegar improvements, and rehabilitation of river piers, and
- Three line items that added back approximately $29 million for the four non-tendered items; a bridge de-icing system, noise attenuation, Whitemud Drive/Terwillegar drive northbound improvements, and rehabilitation of river piers.

These four items were already included in the preliminary design and were planned for the detailed design. The net impact on the amount of design and construction project management work to be done by the consultant should be close to zero.

In January 2010, the Transportation and Public Works Committee approved an increase to the Consultant’s agreement which included $0.7 million for “Changes in accordance with the May 27, 2009 Council Approved Budget Adjustment.”

Impact Assessment

This example illustrates the City is not effectively challenging consultant assertions regarding scope changes and increases in consulting fees. This results in increased costs to the City.

Recommendation 7

Project Budget

With the majority of the originally-approved funding for the project being diverted to other projects (including the 23rd Avenue/Gateway Boulevard interchange project), a new capital project profile was created and approved in 2008. As shown in Table 8, that project profile has been modified twice since its original approval.

The original budget of $181.8 million approved in February 2008 included funding for a bridge de-icing system, noise attenuation, Whitemud/Terwillegar improvements, and rehabilitation of river piers in addition to the bridge rehabilitation and road widening. The budget was increased by $20.0 million in the 2009-2013 Capital Priorities Plan approved in December 2008. The project profile did not identify the reason for the increase.

Table 8 – Current Project Funding for Quesnell Bridge/Whitemud Drive
(millions of dollars)

Approved	Description	Amount
February 2008	Council approval of project and funding sources • Debt Financing $170.0 • Transfer from Terwillegar/Whitemud Drive Stage 1 11.8	$181.8
Dec 2008	Estimated cost revised – explanation not documented	20.0
May 2009	Supplemental Budget Adjustment • Decrease due to tender being lower than estimate • Increase for non-tendered items: bridge piers, bridge de-icing system, noise attenuation and widening at Whitemud Drive/Terwillegar Drive.	(69.8) 28.7
April 2010	**Approved Profile**	**$160.7**[1]
Funding included in the Terwillegar Drive/Whitemud Drive Project		5.8 to 9.8[2]
Estimated Budget for Quesnell Bridge/Whitemud Drive Project		$166.5 to $170.5[3]

1. In a recent report to the Transportation and Public Works Committee, the total budget for the Quesnell Bridge/Whitemud Drive Rehabilitation and Widening project was stated as $160.7 million. This is the amount approved by Council for project 08-66-1462, Quesnell Bridge/Whitemud Drive Rehabilitation and Widening. The project profile states "All design costs have been previously accounted in Council approved project 03-66-1461 (Whitemud/Terwillegar Stage 1)."

2. As shown in Table 4 on page 10, the Whitemud/Terwillegar project includes funding for a number of projects including Smith Crossing, twinning of 23rd Avenue, 119th Street widening and Quesnell Bridge/Whitemud Drive. Documentation provided by RDC shows that the budget included in Terwillegar/Whitemud Drive Stage 1 project for Quesnell Bridge/Whitemud consulting services ranges from $5.8 million to $9.8 million dollars. The actual consulting expenditures recorded against this project are approximately $6.9 million of the $17.8 million consulting contract.

3. While not being able to confirm the exact budget for the Quesnell Bridge/Whitemud Drive project, we determined that the total project budget is higher than the $160.7 million reported to the Transportation and Public Works Committee.

Impact Assessment

The method of budgeting and adjusting budgets does not provide assurance that decision makers are aware of total project budgets.

Recommendation 3

Anticipated Projected Expenditures

The original value of the consulting and construction contracts issued for the Quesnell Bridge/Whitemud Drive project was $140.5 million. Over the construction period a number of change orders were issued, increasing their value to $149.5 million. With internal costs estimated at $17.6 million, we estimate the total expenditures on the project will be $167.1 million. Table 9 summarizes the contracts, change orders and internal costs.

Table 9 – Projected Expenditures on Quesnell Bridge/Whitemud Drive
(millions of dollars)

Contract/Description	Amount (excludes GST)
Contracts	
➢ Consultant – Original contact ($9.4) • Change order one: Additional design and on-site project management in 2010 ($5.8) • Change order two: 2011 construction work and supporting the dispute resolution process ($2.5)	$17.7
➢ Bridge Rehabilitation & Widening – Original contract ($83.7) • Change order one: Accelerate payment for "costs yet to be reviewed" ($2.0) • Change order two: Unforeseen rehabilitation elements ($8.3)	94.0
➢ Retaining Wall – Original contract ($19.5) • Change order one: Multi-use trail ($0.3) • Change order two: Wood retaining walls for the multi-use trail, arched wall surface finish and a safety fence.($0.9)	20.7
➢ 53rd Avenue to Terwillegar Drive Widening and Noise Attenuation	7.5
➢ Roadwork, 53rd Avenue to 170th Street	9.6
Total Contract Value	**$149.5**
➢ Internal Costs (in-house project management, barricading, line painting, street lighting, signals, transit detours & shuttle, surveying, City-supplied materials & testing)	17.6
Total Estimated Cost	**$167.1**
Estimated Project Budget (Table 8)	**$166.5 to $170.5**

We noted three items that have or may impact the final project cost:

1. The bridge de-icing system included in the original project scope was not tendered.
2. Noise attenuation requirements were significantly less than expected.
3. There are several million dollars for outstanding claims that are scheduled for future arbitration.

Impact Assessment

The method of recording costs does not provide assurance that stakeholders are aware of total anticipated project costs.

Recommendation 3

Quality Issues

In the consultant's "Initial Preliminary Design Report" (May 2004), the future service life goal for the bridges was stated as 50 years. The report also indicated that the design would include a deck protection system capable of providing at least a 25-year surface. The expected life of the asset was not communicated consistently to Council as it varied dramatically from one capital project profile summary sheet to the next (e.g., "25 to 30 years"; "25 to 50 years"; other sheets were silent on expected asset life).

In the 2010 construction site meeting minutes, we observed some additional quality issues, including:

- *Handrail* – the contractor has interpreted the specifications differently than the City but will not be compelled to provide any remedial procedures.
- *List of 2009 Deficiencies* – the deficiencies were not being addressed until the latter part of 2010.

We identified at least four items mentioned in 2010 construction site meeting minutes for which the City is asking for additional warranties over and above the standard warranty on construction work:

- *Zinga Coating* – guaranteeing to conduct remedial work at the contractor's expense if the product fails to perform as intended,
- *Bearing Welding Procedures* – the contractor has been asked to provide specific warranty on work done,
- *Pier 1 Joint* – the contractor has been asked to provide a warranty letter before removing and replacing the jointing, and
- *Pier Delamination* – the contractor has been asked to provide an extended warranty.

Impact Assessment

Based on these observations, we concluded that the City and/or consultant determined that some aspects of the work on this project were not implemented in a manner that was fully acceptable to the City. It appears that special measures were required to protect the City from certain construction quality concerns. These items may result in additional costs to the City in the long-term.

No Recommendation

4.3.2. 87 Avenue/170 Street Improvements

Project Description

This project provided capacity upgrading (road widening and transit priority lanes) and rehabilitation work (lighting, curb & gutter, sidewalks and curb ramps) at the intersection

of 87th Avenue and 170th Street. Project limits were defined as Whitemud Drive and 90th Avenue on 170th Street, and 165th Street and 175th Street on 87th Avenue.

Project requirements, developed by the Transportation Planning Branch, were described in its May 2008 Concept Planning Report with costs estimated at $13.6M. The report was silent on the year of construction. This information was provided to the Arterials Roads Section to initiate formal design work leading to construction. Transportation verbally advised the Section that capital funding for this project was approved in three separate composite profiles:

- 05-66-1665, Transit Priority Corridors,
- 09-66-1480, Inner Ring Loop & Highway Connectors, and
- 09-66-1020, Arterial/Primary/Highway/Renewal.

The composite profiles did not communicate the scope of work, construction year, or project cost estimate. Administrative Directive A1424, *Project Management for Projects (1999)*, requires that these components be defined prior to seeking budget approval. The actual budget allocations from each of the three profiles were not formally documented or communicated to the Section during the pass-off.

Significant Audit Findings

Scope Changes and Cost Estimates

The preliminary design, prepared by the Section, to address the requirements set out in the Concept Plan revised the estimated cost from $13.6 million to $14.8 million. The 2009 Preliminary Design Report included refined project detail with drawings and a schedule that indicated construction would be complete in 2010.

We noted that an Engineer-In-Training completed the work in this phase and that more senior engineers provided formal oversight. We commend the Section for demonstrating appropriate levels of review and oversight for this component of the design phase.

As the design work proceeded into the Detailed Engineering Phase, the Section procured the services of an outside consultant. During the detailed design phase, there were significant reductions to the project scope. Reductions included elimination of noise attenuation and retaining walls, reduction in project limits, and realignment of walkways. At the same time, Transportation also requested additions to the project scope. The additions included double left turn bays, a new sidewalk, and changes to lighting. These changes resulted in the estimated cost of the project being reduced to $9.2 million.

Seven bids were received for this project ranging from $7.3 million to $9.4 million. The company with the lowest evaluated bid was awarded the contract.

In 2009, a formal process to evaluate the need for scope changes was not in place and the cost in both time and dollars was not tracked. In early 2011, RDC initiated a more

formal process for reviewing scope changes. The review template includes consideration of impact on scope, schedule, cost and quality of the project. The evaluation requires approval of both the client department and RDC project manager.

Impact Assessment

There is no corporate process acknowledging the project scope, cost and responsibility for projects funded from composite profiles. The absence of a corporate process to track funding allocations creates ambiguity, is not transparent, and makes corporate performance tracking ineffective.

The absence of any formal control (gate point) increases the likelihood of increasing project spending up to the available budget rather than minimizing expenditures to meet the original need identified by the client in concept planning.

We believe that a corporate process needs to be established to demonstrate that both the client and service provider clearly understand the project scope, available capital budget, and the construction period. The process should include extracting composite program funding for any large or potentially sensitive project by the agreed to amount and creating a specific project approved by the appropriate level.

Recommendations 3

Making changes to project scope during the preliminary or detailed design phase results in design rework (inefficient use of resources), and more importantly, has a direct effect on the total project construction costs. All parties currently identified on the Project Change Request form used to document scope changes have vested interests in the project and may not be able to complete an objective evaluation.

Any scope change requests by clients after a formal pass-off should be directed to an objective party, such as the Corporate Project Management Office, for detailed review and decision-making. This would require the PMO to have the organizational authority to refuse the change and to work with the client to improve their internal processes to increase the accuracy and effectiveness of work completed by the Branch making the request.

Recommendation 6

Readiness for the Market

When the Section prepared the Preliminary Design Report, the intention was to release the tender to market on February 10, 2010, with the tender closing on March 10, 2010. This provided the potential contractors one month to review the tender documents and submit their bids.

The tender was actually released on April 7, 2010, a slippage of approximately two months. This delay was due to several factors, including late hiring of the design consultant, land purchase negotiations, and changes in design. In order to minimize the impact on the construction schedule, the amount of time potential contractors were allowed to submit a bid was reduced from four weeks to approximately two weeks.

During this two-week period, three addenda were issued, with the last addendum issued two days before the tender closing date.

Impact Assessment

The City's Instructions to Bidders, Section 1.8, Changes to Tender Documents, paragraph 1.8.2 states: "If no errors, omissions, discrepancies or clauses requiring clarification are reported to the City at least five days prior to the Tender closing date, the City shall be entitled to determine, in its sole discretion, the intent of the Tender Documents."

In order to provide bidders the opportunity to identify errors, omissions, etc., addenda need to be issued more than five days prior to the closing date. In this case, the two days placed vendors at a disadvantage and may have impacted their ability to submit competitive bids.

The Administration needs to review and define the minimum time bidders are provided to respond to tenders following the issue of an addendum in order to maximize the benefits of the competitive process. With defined timelines for bidders, operational areas would be required to review their process to ensure they can deliver complete drawings and specifications for tenders in a timely manner.

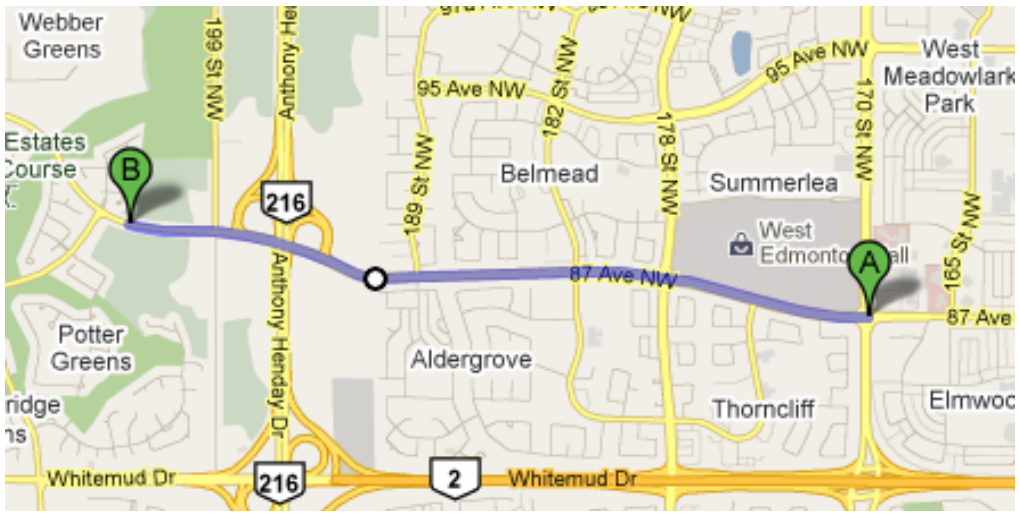
Recommendation 5

Project Procurement Management

The original contract and purchasing documents associated with this project were specific to the 87th Avenue/170th Street construction site. While reviewing the purchase order file, we noted a change order that was issued to increase the scope of work to include the widening of Webber Green Drive from 199 Street to Suder Green. The total value of this change order exceeded $1.1 million.

Figure 5 shows that the Webber Green Drive location is approximately four kilometers from 87th Avenue/170th Street.

Figure 5 – Location of Webber Greens



87th Avenue/170th Street construction site (Point A)
Webber Green Drive construction site (Point B)

The three composite profiles used to fund the 87th Avenue/170th Street project did not make reference to Webber Green Drive. Neither did composite profile 09-66-1440 (Arterial Network Improvements) that was the named funding source in the December 2010 Preliminary Year-end Financial Results – Operating and Capital. We noted that the explanation provided in the 2010 year-end financial results indicates a $1.5 million planned expenditure versus the $1.1 million dollar extension to the contract.

Upon further review, we were able to determine that Edmonton Transit initiated the Webber Green project to access Federal grant money. Due to time constraints for applying for the grant money, RDC chose to ask the contractor to undertake the additional work. The contractor agreed to undertake the additional work at the unit costs in the original bid.

Ultimately, the plans for widening of Webber Green Drive were not signed off until the second week of September. This did not allow time to undertake construction in 2010 and the construction schedule was changed to 2011.

Impact Assessment

Under the TILMA[5] agreement, an open and competitive process is to be followed for construction agreements over $200,000. Part V, Exceptions to the Agreement states – "(h) where an unforeseeable situation of urgency exists and the goods, services or construction could not be obtained in time by means of open procurement procedures;"

With the two construction sites physically separated, funding coming from different composite projects, not being identified as a priority in the Capital Priorities Plan and the explanation provided by Edmonton Transit, it is difficult to classify the Webber Green Drive project as a scope change. This does not facilitate transparency. Also, given that the plans were not ready and construction was delayed a year to 2011, it appears there was no urgency from the point of view of service delivery.

We believe that the only possible reason for considering this contract exempt from TILMA requirements would be to meet the deadline for applying for grant funding. If this is a valid exemption, the City should have projects with approved concept plans and cost estimates ready to support urgent applications.

This is a significant internal control weakness in the way emergent projects are handled by the Branch, which results in construction works that are fundamentally premature. This increases risks that a project will not be delivered on budget (i.e., costs appear to have increased from $1.1M to $1.5M, a 36% increase) and on time (i.e., deadline for construction completion was ultimately adjusted from 2010 to 2011).

The City may wish to use the PMO as the corporate authority for providing increased control over project procurement management given our findings (e.g., using project change orders for unrelated work, formulation of guidelines surrounding go-to-market timing strategy, etc.). Structuring a PMO with a governance role that includes monitoring and ensuring compliance with policies, directives and procedures would fundamentally address this weakness.

Recommendations 3, 5 & 6

4.3.3. Neighbourhood Renewal Projects

Definition of Neighbourhood Renewal

Neighbourhood Renewal, as defined by the Transportation Department, includes three separate processes:

1. Roadway Surface Sealing – applying an emulsion to cover the roadway and slow down the formation of cracks and holes in the pavement surface,
2. Neighbourhood Rehabilitation – adding asphalt to the roadway (pavement overlays) and minor sidewalk repair to reduce trip hazards, and

[5] TILMA: Trade, Investment, and Labour Mobility Agreement – A partnership between the governments of Alberta and British Columbia.

3. Neighbourhood Reconstruction – replacing roadway, sidewalks, curbs and gutters, and street lighting.

The Transportation Department is responsible for assessing the condition of the roads, sidewalks, and street lighting within neighbourhoods and maintaining a priority list of planned repairs and reconstructions. Transportation is also responsible for obtaining both annual and long-term capital funding for the projects to be undertaken and for assigning the work to be done. Although Transportation assigns the majority of neighbourhood renewal work to the Neighbourhood Renewal Section, the Transportation Department plans to carry out approximately $7 million in neighbourhood renewal work using its own crews in 2011 for such things as surface sealing and pavement overlays.

There may be a perception of duplication of responsibilities because Transportation does not assign all neighbourhood renewal work to the Section. However, based on our discussions with Transportation and RDC management it appears the two groups work reasonably well together to ensure that project assignments are clearly differentiated.

Project Description

We focused our attention primarily on the reconstruction of the Fulton Place and Meadowlark Neighbourhoods because of the relative value of those projects ($17.2 million each). We did, however, also review some miscellaneous road-related construction projects (roads, sidewalk and collector rehabilitations, etc.) that are managed by the Section.

Neighbourhood reconstruction projects are funded primarily from two composite projects. The budgets approved in the original 2009-2013 Capital Priorities Plan are:

- 09-66-1055, Neighbourhood Renewal Program $202.8 million, and
- 09-66-1056, Neighbourhood Renewal Program 2% Tax Levy $247.0 million.

Approval for specific projects is not specifically documented.

<u>Neighbourhood reconstruction processes</u>

Although neighbourhood reconstruction projects have been referred to as two-year and three-year projects during budget discussions, current processes take four years to complete. The four-year reconstruction cycle and scheduled projects are set out in Table 10 below.

Table 10 – Neighbourhood Reconstruction Cycle

Year	Project Initiation Yr 1	Preliminary Design Yr 2	In-Field Design & Construction Yr 3	In-Field Design & Construction Yr 4	No.[1]
2009	Community Consultation, Stakeholder Desired Outcomes Discussions, Concept Design, Utility Work Begins	Fulton Place Rio Terrace Sherbrooke Parkallen	Lendrum Meadowlark	Parkdale	7
2010		West Jasper Place Capilano Woodcroft[2]	Fulton Place Rio Terrace Sherbrooke Parkallen	Lendrum Meadowlark	9
2011		Windsor Park Canora Delton Terrace Heights Dovercourt	West Jasper Place Capilano	Fulton Place Rio Terrace Sherbrooke Parkallen	11
2012		Argyll North Glenora Cromdale Avenmore Grovenor King Edward Park Hazeldean	Windsor Park Canora Delton Terrace Heights Dovercourt Woodcroft[2]	West Jasper Place Capilano	15
2013		Laurie Heights Glenora	Argyll North Glenora Cromdale Avenmore Grovenor King Edward Park Hazeldean	Windsor Park Canora Delton Terrace Heights Dovercourt Woodcroft[2]	15
2014		Six neighbourhoods not yet assigned	Laurie Heights Glenora	Argyll North Glenora Cromdale Avenmore Grovenor King Edward Park Hazeldean	15

[1] Number of neighbourhoods with assigned resources in years 2 though 4.
[2] With the exception of the Woodcroft Neighbourhood (which has no significant activity scheduled in 2011), preliminary design happens in year two, followed by years three and four for in-field design and construction. In general, the square colour follows a neighbourhood from year to year.

The current process begins with the Transportation Department establishing the neighbourhood reconstruction priority list. In the first year of the reconstruction cycle:

- Transportation selects neighbourhoods and prepares the concept designs.
- Community consultations take place that involve both RDC and the Transportation Department.

- Stakeholder discussions take place with Transportation Planning, Transportation Operations, Edmonton Transit, Edmonton Police Service, Great Neighbourhoods, Planning and Development, and the Office of Traffic Safety.
- Utilities assess their infrastructure and complete repairs and relocate components as required.

In the second year, the Section prepares preliminary and detailed plans and, through a negotiation process, arrives at an agreement with the Transportation Department and other stakeholders on the construction to be done, the projected cost, and schedule. Construction takes place in the third and fourth year. Due to the nature of the work, detailed design work takes place largely during construction to address individual property profile alignments.

Following construction completion, the Section transfers responsibility for the completed neighbourhood reconstruction back to Transportation for ongoing maintenance.

Significant Audit Findings

Project Coordination and Schedule

One of the ongoing challenges faced by the Section is coordinating the interests of all stakeholders. For example, Edmonton Police Service, Great Neighbourhoods, or Planning and Development may want to enhance a neighbourhood design, but the Transportation funding and mandate only covers replacement of “like with like,” not such things as streetscape enhancements, crime preventative design, or decorative streetlights and sidewalks. Although the current organizational structure does not require that all stakeholders be part of the process, the Neighbourhood Renewal Section attempts to effectively manage the interests of all stakeholders in order to minimize disruption in the neighbourhoods. This should be a standard practice.

We noted during our review of construction site meeting minutes that the Section experiences some challenges even after taking on the assigned projects. We noted that it was not uncommon to have design changes requested by the client department after design and/or construction were underway. We also observed that work by other departments or organizations may impact construction sequencing. For example, in one instance, an organization did not complete utility work that needed to be done, requiring the contractor to return to the site for a small piece of construction. This led to the contractor having to remobilize to the site at additional expense.

We also noted that some of the design change requests passed to the Section were not feasible (e.g., a request to narrow intersections to increase walk-ability that would have resulted in buses not being able to turn easily). In other instances, the concept designs provided to the Section were not complete (e.g., identification of driveways constructed without permits or areas where sidewalks should be constructed because of changes to neighbourhoods). Cases such as these require the Section to re-engage the Transportation Department, impacting the schedule and potentially requiring rework of design documents.

The Section has several initiatives underway, including a draft project charter that would establish a standardized process for designing neighbourhood reconstructions. The charter envisions involving every stakeholder group early in the process to ensure that preliminary design incorporates stakeholder interests as much as possible. The draft charter also incorporates a relatively detailed project management framework that captures the essence of good project management practices. We noted that there has been little recent action to finalize and implement the project charter. In addition to the draft project charter, the Section has introduced more formalized mentoring processes for new staff and standardized templates to facilitate consistent processes for each design project.

Impact Assessment

Without an effective means of obtaining and consolidating desired features from all possible stakeholders, some design changes that could serve the interests of all stakeholders may be missed.

We believe that the project charter process needs to be finalized to ensure all stakeholder requirements are evaluated and addressed prior to completion of the concept design.

Recommendations 3 & 6

The length of time allocated to initial planning (two years) contributes to the idea that designs do not need to be finalized during concept planning. Allowing non-critical design changes throughout the design process can be counterproductive and require rework.

Planning and design processes should be examined to determine whether the current four-year cycle could be reduced. For example, reducing the cycle to three years would require community consultation, stakeholder discussions, concept plans and preliminary designs to be completed within a calendar year. This would also require that concept plans be more rigorously developed and locked down prior to the Section engaging in preliminary and final design and construction.

No Recommendation

Internal versus external design costs

Prior to 2009, the Section's design role was primarily that of a contract manager responsible for managing contracts with the consultants that actually produced the preliminary and detailed designs. In 2009, the Section undertook one neighbourhood design using only in-house resources to allow comparison of internal and external design costs.

We reviewed the design costs for the one neighbourhood designed using in-house resources and five neighbourhoods where consultants were hired to complete the design work. Table 11 shows that design costs are significantly lower for the project designed in-house.

Table 11 – Internal/External Design Cost Comparison

	In-House Design (1 project)	**External Design** (Average for 5 projects)
Total project cost	$17 million (estimate)	$15 million
Design cost *Percent of Total project cost*	$170,000 *1.0%*	$370,000 *2.5%*

In response to the special tax levy for neighbourhood reconstruction, the Section is planning to increase the number of neighbourhoods under design and/or construction to 15 per year by 2012 (see Table 10). In view of the potential design savings per neighbourhood, the Section is planning to increase the ratio of neighbourhood designs completed in-house instead of relying entirely on external consultants for design services. By 2012, the Section intends to have sufficient design staff to undertake six of the 15 designs internally (40 percent), which could result in savings of up to $200,000 per neighbourhood.

Impact Assessment

Based on our analysis, the Section could save up to $200,000 for each neighbourhood design it conducts in-house, including all overheads for internal labour. The strategy presented in the 2011 budget to increase internal design capacity to handle 40% of the neighbourhood designs appears to have merit.

No Recommendation

Managing contractors

The City relies on a contractor to take whatever actions are required to meet its scheduled responsibilities. The Section recently added bonus and penalty clauses to contracts to encourage contractors to stay on or ahead of schedule.

The reconstruction costs for the Fulton Place Neighbourhood and Meadowlark Neighbourhood are the same value, $17.2 million. In one case, a contractor with neighbourhood reconstruction experience was hired. In the other, a contractor with no neighbourhood reconstruction experience was hired. There was a significant difference in the amount of work completed and the effort the Section expended to manage the contracts.

The experienced contractor completed the 2010 assigned work and began work on some of the activities scheduled for 2011. Based on the financial records maintained for this project for 2010 and forecasted costs for 2011, the contract/project management costs will be approximately 7% of the total project costs.

The inexperienced contractor completed only 70 percent of its planned work for 2010. We observed several entries in construction site meeting minutes and responses in our interviews with the City's construction project manager that indicated ongoing issues with this contractor. For example, in a site meeting 20 days into construction, the contractor indicated that they were 10 days behind schedule. The contractor was also late submitting its safety policies, hazard risk assessment, and planned schedule.

Based on the financial records maintained for this project for 2010 and forecast costs for 2011, the contract/project management costs for this project will be approximately 9% of the total project costs.

Discussions with Section staff on actions taken to keep the construction on schedule indicated that the City's ability to direct work to keep on schedule is not clearly defined. We noted that the Section has no documented escalation process to more effectively manage under-performing contractors.

Section staff members indicated that poor performance in the first year of a neighbourhood reconstruction project is not uncommon with inexperienced contractors. They also indicated that new contractors usually rise to meet the challenge in the second year of construction.

Impact Assessment

Allowing new contractors to take a full construction season to adapt to unfamiliar conditions costs the City, adds challenges to the overall neighbourhood construction schedules, and may inconvenience residents for extended periods of time.

The Section should engage the Law Branch to determine what changes can be made to contract documents to add clarity on the City's role in managing the project schedule. Discussions could include a process to further develop market capacity.

Recommendation 5

5. Conclusions and Recommendations

During budget deliberations, Council expressed uncertainty regarding the Capital Construction Department's efficiency and effectiveness, particularly with the neighbourhood reconstruction activity. Our review focused on RDC activities, which include neighbourhood reconstruction activities.

To achieve our objectives, we reviewed project and budget documentation and met with management and staff from the Capital Construction, Transportation, and Finance and Treasury Departments.

RDC provides design, construction, and project management services on roadway infrastructure projects. It acts as an in-house contractor for client departments. Capital projects are established by client departments, which define and manage the scope and funding.

The operating and capital budget practices we observed prevent effective monitoring and reporting, increase the risk of making poor decisions, and lack transparency. We met with Finance and Treasury Department representatives near the end of our review to share our observations in anticipation of its preparation for 2012-2015 Capital Budget discussions with Council.

We also observed inconsistent project management practices, which limit the ability to demonstrate that projects are being delivered in a cost-effective and efficient manner.

We focused our review on the following five questions to assess whether RDC is operating in an efficient and effective manner:

1. How well are schedules adhered to?

   Based on our observations it appears project schedules tend to be overly optimistic. We noted evidence that indicates RDC over-estimates the capacity of in-house and external resources.

2. How well are budgets managed?

   Cost estimating deficiencies identified in our prior audits have not been effectively resolved. Also, formal budget approval is not obtained for most projects assigned to the Branch. Instead, expenditures are managed to the funding made available by the client departments.

3. How well are resourcing levels (i.e., dollars, staff, contractors) managed?

   RDC does not effectively control client requests, resulting in rework of designs. There is evidence that suggests RDC does not apply the same rigour in holding consultants accountable for their work as they do for contractors.

4. How well is scope creep managed?

   With client departments defining the scope and controlling funding for capital projects, RDC has little control on managing scope creep.

5. How well is quality (i.e., review and fix quality problems) managed?

   The quality of work on most projects is managed well. However, requests for additional warranties for specific work on the Quesnell Bridge/Whitemud Drive project suggests that the Administration has concerns with the long-term performance of the end product. Also, the quality of budget information and performance reporting needs to be improved.

We believe that the following seven recommendations and management action plans address the issues identified in section 4 of this report. Implementing these recommendations will enhance the City's ownership and project management abilities, ensuring that projects are managed effectively and efficiently.

Recommendations 1 through 3 are directed to the Chief Financial Officer and Treasurer as they relate to the operating and capital budget processes. The remaining recommendations are directed to Capital Construction Department Management.

Recommendation 1 – Increased scope for the SAP Financial Review

Reference Section: 4.1.1

The OCA recommends that the Chief Financial Officer and Treasurer ensure that the enhancement of operating and capital budget systems are included in the scope of the SAP Financial Review.

Management Response and Action Plan

Accepted

Action Plan: A corporate financial information system and consistent processes is an integral tool in financial decision-making, monitoring and reporting. A financial system and process review began in February, 2011 which will help define go forward steps to improving process and financial systems, including key system and process changes required to implement a capital and operating Budget system.

A project management position has been implemented for the planning of the capital and operating budget system. Over the course of the remainder of the year, a project manager will be recruited and project planning will begin. An estimated timeline and project budget and business case for the project will be established. At this time funding has not been approved to enhance or replace our existing budget systems.

Funding will be requested as part of the 2012 budget process to fund the resources required to document current process and requirements gathering, and to prepare the RFP, vendor selection and implementation would follow with a planned implementation of mid 2014.

Some changes would be made ahead of the tool implementation to improve process and controls. These changes would occur as part of the current process and requirements work that would be undertaken in 2012.

Planned Implementation Date: SAP review completion – July 30th, 2011

Budget systems project – dependent on funding. 36-40 months estimated time to fully implement.

Responsible Party: Branch Manager, Corporate Finance, Financial Services Department.

Recommendation 2 – Clarity of roles, responsibilities and process

Reference Section: 4.1.1

The OCA recommends that the Chief Financial Officer and Treasurer review current budgeting practices and agree on roles, responsibilities and processes that ensure:

- Council is provided with accurate information on which to base decisions.
- The budget is maintained in a manner that facilitates effective management oversight.

Management Response and Action Plan

Accepted

Action Plan: The role and expectation for Financial Services within the City is undergoing a transformation. The Way We Finance is currently under development and will include recommendations for financial governance, planning and management frameworks. An initial overview of the Way We Finance process and deliverables is expected to be provided to City Council in the third quarter, 2011. Budget roles and responsibilities for the 2012 process will be dealt with through the action plan for recommendation 4.

Planned Implementation Date: October 31st, 2011

Responsible Party: Branch Manager, Corporate Finance, Financial Services Department.

Recommendation 3 – Completeness of capital project profiles

Reference Section: 4.1.2, 4.3.1, 4.3.2 & 4.3.3

The OCA recommends that the Chief Financial Officer and Treasurer ensure that capital project profiles are maintained in a manner that ensures Council and Administration have the information necessary to make informed decisions. This includes:

a. Providing complete description of the project scope.

b. Documenting reason for subsequent budget requests.

c. Identification of total project budget and costs.

d. Establishing criteria for the use of composite projects.

e. Establishing a process to reduce composite projects when specific projects are initiated and to formally transfer responsibility and accountability.

f. Working with the Project Management Office to align capital budget and project management processes.

Management Response and Action Plan

Accepted

Action Plan: Addressing this recommendation will take place in two phases. Phase 1 will result in requirements, definitions and thresholds being articulated as part of the instructions on Capital Budgets.

Thresholds regarding what projects are eligible for composite projects will be established through the Capital Project Priorities Committee (CPPC).

Project scopes will be well defined and transfers relating to the projects will be clearly understood and articulated to Council during the Supplementary Budget Adjustment process.

Phase 2 will ensure that appropriate business cases are completed for all approved projects. Any changes to the scope as outlined on the business case will be evaluated and approved.

Delegated authorities will be reviewed to ensure an appropriate balance between timely approval and transparency. These authorities will need to be endorsed by council and appropriate directives established to facilitate the changes in policy.

Planned Implementation Date:

Phase 1 implemented with 2012-14 Capital Budget instructions July 1, 2011.

Phase 2 will commence in 2011 with full implementation plan scheduled for 2-3 years in conjunction with the PMO.

Responsible Party: Branch Manager, Corporate Finance, Financial Services Department

Recommendation 4 – PMO governance role and performance measures

Reference Section: 4.2.1, 4.2.2 & 4.2.3

The OCA recommends that the General Manager, Capital Construction Department ensure that the Project Management Office has the responsibility and authority necessary to standardize project management practices across the corporation, (including developing and implementing industry standard performance measures to track project cost, schedule, quality and scope), create an action plan to maximize the benefits of defined processes, and ensure compliance with established project management practices.

Management Response and Action Plan

Accepted

Action Plan: In March 2010, Corporate Leadership Team, (CLT) approved the creation of a Corporate Project Management Office (PMO) with the mandate to lead the improvement of project management practice across the Corporation. The initial focus is on project management for all construction projects as it is the focus of previous OCA's recommendations and construction projects represent a significant percentage of the capital budget. The scope will be extended at a later date to include all CoE projects. The Director of the PMO was hired in June 2010. Four contractors were brought in September 2010 to help with the PMO start-up activities. Recruitment of permanent staff started in 2011.

The PMO started developing the "Project Management for Construction Projects" Administrative Directive in October 2010 with extensive input and consultation across the Corporation. The Directive defines the authority and responsibility of the PMO in developing and implementing the Corporate Project Management Practice and a Project Management Information System (PMIS) to support the Practice; setting project performance indicators and standards across the Corporation; and providing compliance monitoring of the project management activities for all Construction Projects to the Corporate Leadership Team.

The PMO has started the project planning activities for the development of the Corporate Project Management Practice and PMIS. The objective is to complete the development by end of 2012 and to have 50% of the business units involved in construction projects consistently following the Practice by end of 2013, and the remaining business units over 2014-2015. The PMO goals and objectives can be found in the "Business Case for the Corporate PMO Program" document which was approved by the General Manager, CCD on April 20, 2011.

Planned Implementation Date: Approval and Implementation of the Administrative Directive – June 2011

Responsible Party: Director, Project Management Office

Recommendation 5 – Review and monitor capacity to meet workload expectations

Reference Section: 4.2.3, 4.3.2, & 4.3.3

The OCA recommends that the Branch Manager, Roads Design and Construction review and monitor internal resource and industry capacity to identify opportunities to build market capacity, ensure the City does not prematurely go to market and to proactively advise Council and other stakeholders on the ability to meet capital budget expectations.

Management Response and Action Plan

Accepted

Action Plan: Branch Manager, Roads Design and Construction will ensure that each new project has a complete description for scope with clear identification of the total project budget funding and costs and schedule. Based on our business model and project management processes determine both internal and external resources required to deliver the project to meet approved schedule. Evaluate each tender to gauge industry (number of bidders) and actual cost as it relates to original estimates. Report quarterly on the health of each project in conjunction with the Project Management Office. Advise Branch Manager, Corporate Finance if the ability to meet capital budget expectations is in jeopardy to ensure that transparency is achieved. This will be accomplished through project/risk charters signed by project owner (Branch Manager) and project delivery manager (Branch Manager)

Planned Implementation Date: Immediately

Responsible Party: Branch Manager, Roads Design and Construction

Recommendation 6 – Project quality control

Reference Section: 4.3.1, 4.3.2 & 4.3.3

The OCA recommends that the Director of the Project Management Office establish a quality control process to ensure that quality information is produced at each phase of a project to minimize the risks to project costs and schedule due to scope and contract changes. This includes ensuring that staff and consultants are required to undertake thorough risk assessments, develop appropriate mitigation strategies, and actively monitor and report on risks.

Management Response and Action Plan

Accepted

Action Plan: The Project Management Office has started the project planning activities for the development of the Corporate Project Management Practice. The Practice will be documented in the Online Project Management Manual. The processes and deliverables required for scope management, cost management, time (schedule) management and risk management (covering risk assessments, mitigation, monitoring and reporting) will be defined in the Practice. Project roles and responsibilities for developing each deliverable (e.g. risk register and individual risk mitigation strategy) and for the quality control (through review and signoff) of each deliverable will be defined in the Practice.

The PMO will be regularly reporting compliance monitoring of the project management practice to Corporate Leadership Team. Compliance will be enforced by the Corporate Leadership Team and their delegated management representatives in response to the PMO's compliance monitoring reports.

In addition, the PMO will be developing a Corporate Project Management Training Strategy in 2011 to align the project management training programs with the Corporate Project Management Practice and with project management competency assessment. The Director of PMO is acquiring a Change Management resource to assist in the development and implementation of a Change Management program to support business units in the consistent application of the defined processes.

The PMO will work with departments to put in place the training and change management programs and to make available orientation programs to ensure consultants and vendors are aware and can comply with the defined processes.

Planned Implementation Date:
Implementation of the Corporate Project Management Practice and PMIS - end of 2012
Completion of the Project Management Training Strategy – end of 2011
Completion of the Project Management Change Management Plan – end of 2011
50% of the business units involved in construction projects consistently following the Practice - end of 2013
Remaining business units consistently following the Practice - end of 2015

Responsible Party: Director, Project Management Office

Recommendation 7 – Managing consulting costs

Reference Section: 4.3.1,

The OCA recommends that the Branch Manager, Roads Design and Construction ensure that all contract change requests are adequately documented and researched prior to approval to maximize the benefits and minimize costs.

Management Response and Action Plan

Accepted

Action Plan: The Professional Services Agreement (PSA) Implementation project was rolled out in March 2011 with a process redesign and a new toolbox. One of the changes was to identify individuals within each Branch as PSA Specialist and Contracting Managers. Key responsibilities will include reviewing checklists and documents such as business cases, resource engagement to ensure process is being followed, etc. Training sessions commenced in April 2011 and are continuing into June 2011. Roads will have 16 staff trained .In addition to this training all change requests will be documented and evaluated to ensure value is added prior to approval in conjunction with Materials Management.

Planned Implementation Date: Immediately

Responsible Party: Branch Manager, Roads Design and Construction

The OCA thanks the management and staff of the Capital Construction, Transportation, and Finance and Treasury Departments and the Law Branch that assisted us with this project for their cooperation and support.

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Appendix 1

Project Management Framework

The overall goal of effective project management is to achieve project success. Many studies have shown that improving project management practices leads to improved project efficiency and effectiveness. The Project Management Institute framework includes nine knowledge areas.

Four knowledge areas are core functions that embody a project's basic management objectives. They represent a set of core parameters, which deal with project outputs and deliverables. These core functions are described as:

1. Scope – The identification, definition and documentation of project objectives.
2. Time – The planning, estimating, scheduling, and control of activities, which are necessary to accomplish project objectives.
3. Cost – The estimating, budgeting, and control of project financial resources.
4. Quality – The process of ensuring that all aspects of a project and its results fully meet the specified needs and agreed-upon expectations of clients, participants, and stakeholders.

Four knowledge areas are facilitating functions. Each of these functions influences the success of the project by effectively guiding people's performance. These functions are intended to influence the work involved in achieving desired outputs and deliverables. The facilitating functions are described as:

5. Human Resources – The management of the organization's people to achieve objectives.
6. Information/Communication – The process of establishing understandings between people to implement a project and to accomplish objectives.
7. Risk – The preparation for possible events in advance of their occurrence.
8. Contract/Procurement – The management of the acquisition of goods and services.

The final function is the integration of the four core and four facilitating functions. This function is described as:

9. Integration – Overall, effective project management integrates each of the other knowledge areas progressively throughout the project life cycle, with the aim of satisfying the stakeholders that the established project requirements were accomplished.